PARISH REGISTER AGGREGATE ANALYSES

Second edition

Roger Schofield and Andrew Hinde

PARISH REGISTER AGGREGATE ANALYSES:
the *Population History of England* database and introductory guide

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Introduction to the second edition

It is more than 20 years since the first edition of this work was published.[1] At that time it was designed to accompany a CD-ROM containing the data on counts of baptisms, marriages and burials assembled by local population historians for 404 English parishes and used by E.A. Wrigley and R.S. Schofield in *The Population History of England, 1541-1871: a Reconstruction*.[2] This CD-ROM was distributed by the Local Population Studies Society (LPSS), who had been in receipt of a bequest for the purpose. Since then, digital technology has moved on and CD-ROMs are going the way of the fax machine. LPSS decided in 2018 to switch to electronic distribution of the data. At the same time, it was recognized that during the last few decades, data for many parish registers that were not among the 404 analysed by Wrigley and Schofield have been transcribed and rendered machine readable. The switch to electronic distribution, especially if this could be achieved by allowing anyone to download the data from a web site, offered the possibility of augmenting the *Population History of England* database with data for additional parishes, provided that the quality of these registers was of a sufficiently high standard.

Accordingly, in 2019 a project was set in train by LPSS with three objectives in mind:

(1) to make the original *Population History of England* database available through a dedicated web site to both LPSS members and the general public;
(2) to prepare a second edition of the guide which accompanied the original data, *Parish Register Aggregate Analyses*, and to make this available electronically;
(3) gradually to augment the database with data for additional parishes but in the same format as for the parishes the original *Population History of England* database, provided that the quality of the data for the additional parishes could be assured.

This document marks the realization of the second of these objectives.

The data in the *Population History of England* database are monthly frequencies of baptisms, burials and marriages recorded in the registers of 404 English parishes which, when aggregated, formed the basis of a reconstruction of English population history from the sixteenth to the nineteenth century that was described in *The Population History of England, 1541-1871: a Reconstruction*.[3]

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[1]   R. Schofield, *Parish Register Aggregate Analyses: the* Population History of England *Database and Introductory Guide* (Colchester, 1998).

[2]   E.A. Wrigley and R.S. Schofield, *The Population History of England, 1541-1871: a Reconstruction* (London, 1981).

[3]   Wrigley and Schofield, *Population History of England*. Later, Wrigley and Schofield, together with Ros Davies and Jim Oeppen of the Cambridge Group for the History of Population and Social Structure, published a second book which took a different method of analysis, family reconstitution, and applied it to a very much smaller set of 26 parishes, to derive some detailed demographic characteristics, such as age at marriage, age-specific marital fertility, and the chance of dying when an infant or an adult (E.A. Wrigley, R.S. Schofield, R.S. Davies and J.E. Oeppen, *English Population History from Family Reconstitution, 1580-1837* (Cambridge, 1997). Although this second book fills in some detailed demographic behaviour missing from Wrigley and Schofield, *Population History of England*, it does so in a way which can be said to strengthen the earlier book's conclusions.

When Wrigley and Schofield wrote the earlier book, based on the numbers of events, they concentrated on national population trends and their relation to economic circumstances, and only occasionally considered local variations. Despite the passage of time, it is still evident that the demographic experiences of individual parishes were far from uniform and much work needs to be done in identifying and explaining local differences. Only in this way can those aspects of English demographic and economic history in which there was uniformity of behaviour throughout the country be distinguished from those where the national aggregate reflects an average condition that few communities may actually have experienced, and which may therefore tend to lead to misguided conclusions about the relations between demographic and economic behaviour in the past. For example, the striking absence of evidence that changes in food prices exerted any considerable influence upon either short- or long-term national mortality fluctuations deserves extensive local and regional study to test the possibility that such influences were present locally but were masked by aggregation.

The monthly totals of events were tabulated with the assistance of a large number of local historians whose names are listed in the Appendix of *The Population History of England, 1541-1871*. Indeed, the volume of the basic data is so great (some 3,500,000 monthly totals were involved) that the collection of data for the original 404 parishes far exceeded the resources of the Cambridge Group for the History of Population and Social Structure, where Wrigley and Schofield were based at the time. The reconstruction of the population history of England, therefore, owed an immense debt to local historians and, as a mark of their appreciation, Wrigley and Schofield dedicated their book to them. They also resolved that the data should be made generally available so that local historians could use them both to pursue their own interests and to contribute to a fuller appreciation of the national picture. For each parish they also provided some derived statistics on seasonality and epidemic mortality, and added a few items of standard information on the geographical, social and economic characteristics of the parishes.

This introduction to the data and their uses will first give a brief description of the different items of information and the way in which they have been laid out in the electronic files. Then the quality of the data will be discussed, in particular the accuracy of the tabulations and the degree of under-recording of vital events in the Anglican parish registers. Finally, some suggestions will be made on the ways in which the parish information can be used to throw light on such questions as seasonality, crisis mortality, short-run fluctuations and long-term population change. Throughout this introduction reference will often be made to *The Population History of England* for a fuller discussion of particular points, or for a national framework within which local patterns can be compared and appreciated.[4]

The data

The database is arranged in as convenient way as possible for all potential users of the data. The data are in Excel (.xlsx) files, and there is an accompanying text (.txt) file for each parish, which gives some details of the characteristics of the parish.

For each parish the following data are provided (the titles to the right of the page represent the names of each worksheet within the parish workbook in the 'Excel' version).

monthly and annual totals of baptisms	bap_year
monthly and annual totals of burials	bur_year
monthly and annual totals of marriages	mar_year

[4] There are several other descriptions of English parish registers in print. See, for example, R. Wall, 'English population statistics before 1800', *History of the Family*, 9 (2004), pp. 81-95; and R. Finlay, *Parish Registers, an Introduction*, Historical Geography Research Series 7 (London, 1981).

totals of baptisms in each month and year by decade	bap_10
totals of burials in each month and year by decade	bur_10
totals of marriages in each month and year by decade	mar_10
monthly seasonality index of baptisms by half-century	bap_50
monthly seasonality index of burials by half-century	bur_50
monthly seasonality index of marriages by half-century	mar_50
periods of epidemic mortality, with information on duration and severity	crisis

All of these data have been corrected as explained below. For those who wish to work with the uncorrected data, the original monthly totals of baptisms, burials and marriages for those years where corrections have been applied are also included in the data, as follows

original monthly totals of baptisms	bap_orig
original monthly totals of burials	bur_orig
original monthly totals of marriages	mar_orig

Additional information about each parish (for example population size in 1811, distance to nearest market town) are to be found in the text file for the parish.

Baptisms, burials and marriages

The information on baptisms, burials and marriages can be found in the worksheets 'bap_year', 'bur_year', and 'mar_year'. The information relating to individual years is laid out in a standard format. First the calendar year is identified, then the monthly totals of registered events are given for January to December, followed by the annual total. The latter may be greater than the sum of the monthly totals if events were dated so imprecisely that they could not be assigned to a particular month.

Periods of registration covered

The years for which registration data are available vary according to parish and type of event, reflecting the accident of survival of register volumes, other interruptions in parish registration, or the availability of transcripts from which the tabulations were made. All parishes, however, have data that run without serious interruption through a minimum 'core' period of 1662 to 1811.[5] On each of the three worksheets, the years before continuous registration begins are indicated by asterisks in the column representing January. The last year for which data are printed is 1839, and if registration data cease to be available before that date, asterisks are again placed on the appropriate lines.

Defective data

If data are lacking or defective for some months or years within the period covered by the register, the appropriate lines have been annotated with a hash sign (#) in the column following the annual total. In such cases the data printed in the main body of information are the corrected monthly and annual totals of events. The corresponding original totals for the years affected can be found in the worksheets named 'bap_orig', 'bur_orig' and 'mar_orig'.

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[5]   'Serious interruption' is defined as 20 blank years in any run of 40 years (30 years in the case of marriages). If any series of events suffered such an interruption, registration for all the series for that parish was considered to begin after that date. For further details and information on the distributions of dates at which the original 404 parish tabulations begin and end, see Wrigley and Schofield, *Population History of England*, p. 57. The web site www.lpssparish.com also includes a downloadable spreadsheet with details of the first and last years of the baptism, marriage and burial series for each of the 404 parishes.

The methods by which periods of defective registration were identified, and the corrected monthly totals calculated, are described in detail in *The Population History of England*.[6] It should be remembered that these methods were designed to give reasonable results over a large number of parishes, and often represented a compromise between many conflicting considerations. Consequently, the corrections made in any particular instance may appear less than ideal, and the user may be able to improve upon them. For example, the corrected values were calculated by interpolating smoothly across a period of defective registration, and then adjusting the monthly totals involved to take account of fluctuations to be found amongst the whole set of parishes that had complete registration during this period. In this way a parish might acquire a general seasonal pattern of events that it did not experience, or might appear to suffer from a fluctuation in mortality that was widespread, but did not actually affect the parish. The purpose of providing the original monthly totals of events in the three worksheets entitled 'bap_orig', 'bur_orig' and 'mar_orig', is of course, to enable the user to see the magnitude of the changes made and to work with the uncorrected, but defective, data, if that should seem preferable.

Seasonal indices

Two series of seasonal indices are provided. The first, comprising the worksheets, 'bap_10', 'bur_10' and 'mar_10' are simply totals of events by month, for the whole decade. It should be noted that if a complete decade of data is not present in the basic data, the numbers in the 'bap_10', 'bur_10' and 'mar_10' worksheets still represent the total number of events recorded in that month in the relevant decade for the years that are present.

In order to bring out the seasonal patterns more clearly the monthly totals are first aggregated into half-centuries, and that has been expressed in relative terms by calculating an index number that has been scaled so that the value 100 would represent an even distribution of events by months, based on a uniform daily rate with no seasonal pattern. For each parish, therefore, it is easy to pick out the seasonal pattern simply by observing how far the monthly seasonal index numbers for each half-century diverge from the 'uniform daily rate' figure of 100. For example, an index number of baptisms for 105 in January and 90 in July would mean that baptisms in January were running at 5 per cent above the average daily rate over the whole half century, while in July they were running at 10 per cent below average. These data are found in the worksheets, 'bap_50', 'bur_50', and 'mar_50'.

Epidemics

This worksheet contains summary information of periods of epidemic mortality detected in the parish: the months when they began, reached a maximum, and ended, followed by the duration of the epidemic in months, and two indicators of its severity. The first (headed 'SR Peak') is the ratio of the number of burials in the *maximum* month of the crisis to the 'normal' number of burials, forecast for that month on the basis of mortality before the epidemic. The second indicator (headed 'SR Total') is a similar ratio calculated for the whole crisis period. The identification of an epidemic presupposes some rules for deciding that mortality over a period of one or more months was high enough to warrant distinguishing it from normal underlying mortality. Usually some conventional ratio is taken, for example, twice the normal monthly number of burials. The epidemics listed here were identified in a rather different manner. Instead of a fixed ratio, the criterion used was a measure of the probability that the numbers of burials recorded in any month, or sequence of months, were too great to have arisen by chance given the underlying level of mortality in 'normal' years.[7]

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[6]   Wrigley and Schofield, *Population History of England*, pp. 20-32 and 697-707.
[7]   Wrigley and Schofield, *Population History of England*, pp. 646-8. They used monthly burial data rather than annual data, and attempted to forecast the number of burials each month in each parish. They then regarded any single month with a number of burials 3.36 or more standard errors above the forecast trend, or 'any run of two or more consecutive months, each of which was at least 2.05 standard errors above the forecast trend value' as constituting crisis mortality (p. 647). The standard error is bigger for smaller parishes than for larger parishes, and this means that in smaller parishes the number of burials has to rise proportionately further above the trend for a crisis to be confirmed than it does in larger parishes. It should be noted that the numbers 3.36 and 2.05 have no basis in theory, but were derived after experimentation. In addition, the approach of identifying mortality crises by using deviations from trend of more than a certain number of standard errors involves the

Parish characteristics

The characteristics for each parish are found in a separate file in the 'Characteristics' folder. These files are text files and are best viewed in a mono-spaced font. Some of these data were collected so that Wrigley and Schofield could check the representativeness of the 404 parishes in terms of their, size, location, occupational structure and so forth.[8] Other items of information were collected in connection with other studies, or specifically for the purpose of relating the population history of parishes to their geographical, social or economic characteristics. Where data were lacking under any head, the entry has been left blank.

Table 1 gives the sources from which the data on parish characteristics were taken and adds some explanatory notes. All these items need careful evaluation in the light of local circumstances.

Table 1   Parish characteristics in data base

Characteristic	Details	Source
Position	National grid co-ordinates of the parish church to the nearest 100 metres, first easting, then northing	Ordnance Survey Maps: 1 inch to 1 mile (1946-1947 edition).
Altitude	Altitude in feet above sea level	Ordnance Survey Maps: 1 inch to 1 mile (1946-1947 edition).
Population size	Number of inhabitants at time of 1811 population census	1811 figures as revised in 1851 census, *Numbers of Inhabitants, Vols. I and II*. British Parliamentary Papers (hereafter BPP) 1852-3, LXXXV-LXXXVI.
Farming type	A description of the type of agriculture practised in the parish	J. Thirsk, 'The farming regions of England', in J. Thirsk (ed.), *The Agrarian History of England and Wales, 1540-1640*, Vol. 4 (Cambridge, 1967), pp. 1-112.
Soil type	Soil type	D.P. Bickmore and M.A. Shaw, *The Atlas of Great Britain and Northern Ireland* (Oxford, 1963).
Aggregation	Description of the settlement pattern (e.g. nucleated, dispersed)	County maps produced by A. Bryant (Buckinghamshire, Herefordshire, Norfolk, Oxfordshire: 1824-1835); R.G. Baker (Cambridgeshire: 1830); A. Dury and J. Andrews (Hertfordshire: 1782); C. [and J.] Greenwood (all other counties: 1818-1831).
Open/closed	Number of landowners in 1798	1798 Land Tax Returns, or nearest available assessment, in County Record Offices.
Market towns	Was parish defined as a market town in 1640 and 1700?	1640: A. Everett, 'The marketing of agricultural produce', in J. Thirsk (ed.), *The Agrarian History of England and Wales, 1540-1640*, Vol. 4 (Cambridge, 1967), pp. 468-75. 1700: J. Adams, *Index Villaris* (London, 1700).

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assumption that the distribution of the numbers of burials per month is Normal, which is only a 'rough yardstick' (p. 647). For a more detailed discussion of this, see A. Hinde, 'A review of methods for identifying mortality "crises" using parish register data', *Local Population Studies*, 84 (2010), pp. 82-92.

[8]   The results of this exercise are in Wrigley and Schofield, *Population History of England*, pp. 33-65.

Gentry seats	Number of gentry seats in parish	J. Adams, *Index Villaris* (London, 1700).
Poor	Number of paupers in 1818, description of adequacy of poor law provision in 1818, amount of relief paid in 1784 and 1832 (in £)	1784: BPP 1803-1804, XIII; 1818: BPP 1818 (224) IX; 1832: BPP 1835, XLVII
Real property	Value of real property in 1815	1832: BPP 1835, XLVII
Taxable value	Taxable value in 1524 or 1525, with number of persons assessed	The National Archive, E179; assessments for 15 & 16 Henry VIII, as tabulated in J. Sheail, 'The distribution of wealth in England as indicated in the lay subsidy returns of 1524/5' (unpublished Ph. D. thesis, University of London, 1968)
Nonconformity	Description of the extent of non-conformity in 1831, with summary of defects in Anglican registers	The National Archive HO 71 Returns of the clergy, 1831.
Illegitimacy	Number of illegitimate baptisms and total number of baptisms in 1830	The National Archive HO 71 Returns of the clergy, 1831.
Schools	Details of schools in the parish in 1830 and 1833, listing them according to whether they were 'endowed', 'British National', 'Sunday' or 'other', and indicating the numbers attending	1818: BPP 1819 (224) IX; 1833: BPP 1835 (62) XLI-XLII.
Occupations	Occupational structure in 1831 in broad occupational categories (agriculture (occupiers), agricultural labourers, manufacturing, retail and handicraft, capitalists and professionals, non-agricultural labourers, others, male servants, female servants)	1831 census, *Enumeration Abstract*, BPP 1835 XXXVI - XXXVII
Chapelries	Number and date of foundation of chapelries	1831 census, *Enumeration Abstract*, BPP 1835 XXXVI – XXXVII and *Parish Register Abstracts*, BPP 1833 XXXVIII

The quality of the data

Apart from the periods of missing or defective data already mentioned, the accuracy of the monthly totals may have been affected to a greater or lesser degree by two further factors. First, about 60 per cent of all the parish tabulations were based wholly or partly on transcripts, which can contain copying mistakes. Second, errors may have been made in the counting and recording. It is also important to remember that, however accurate the monthly totals may be, there is still the problem that the figures relate to church ceremonies and not to the vital events of birth, death and marriage.

Precision

Although an attempt was made to control the quality of the transcripts and the tabulations by checking against the original registers, this was not possible in every case. Even where it could be done the number of monthly totals was so large that checking could only reasonably be carried out on a sample basis. Since perfection in such matters is unattainable, tabulations were accepted providing not more than three monthly totals in 100 could be shown to be erroneous.[9] Consequently the *Population History of England* data undoubtedly contain errors, but the latter are unlikely to be frequent or serious enough to vitiate the use of the tabulations for most purposes of demographic analysis even at the local level.

Missing vital events

The fact that the tabulated frequencies refer to church ceremonies and not to vital events imposes some limitations on the inferences that can be drawn from them for the study of local populations. It is by no means easy to estimate the numbers of vital events missing from the Anglican registers, and two chapters of *The Population History of England* are devoted to this task.[10] As can be seen from the various tables in these chapters, the proportions of events that are estimated to have escaped the Anglican registers differed between the three series, and varied considerably over time.[11] It should be emphasised that the estimates of missing events in *The Population History of England* are national ones, and represent the average of a wide range of individual parish experiences with regard both to the level of under-registration and to the pattern of its development over time. In parishes with strong nonconformist communities, or which became heavily urbanised, the totals of events tabulated here may be a very poor guide to the numbers of vital events that actually occurred, especially during the later eighteenth and early nineteenth centuries. On the other hand, in some parishes the Anglican registers continued to record the overwhelming majority of vital events throughout the whole period.[12]

Regional differences

Some idea of the regional differences in the adequacy of Anglican registers at county level just after the end of the parish register period can be found in the Parliamentary Papers.[13] This source compares the numbers of events recorded in the Anglican, and the recently instituted civil, registers in 1839-1840. Fortunately, the same source also reports events recorded in each Registration District for each year between 1831 and 1840; specifying the names of the parishes concerned. Thus more local estimates of the shortfall of Anglican registration at the end of the 1830s can be made by comparing these figures with the corresponding totals of vital events in each Registration District from mid-1837 that are printed in the Registrar General's *Annual Reports*.[14]

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[9]   The tabulations for 203 of the 404 parishes were tested directly. If the same error rate obtains in the 201 unchecked tabulations, then 13 of these might be expected to contain errors in more than 3 per cent of the monthly totals. For further details of the checking procedure, see Wrigley and Schofield, *Population History of England*, pp. 16-8 and 694-6.

[10]   Wrigley and Schofield, *Population History of England*, pp. 89-154. The general view is during the early centuries of Anglican registration of baptisms and burials, the registers were fairly complete as records of births and deaths. A serious deterioration in quality only made its appearance in the late eighteenth and early nineteenth centuries, associated with population increase, urbanisation, the rise of nonconformity, and overwork (leading to lack of diligence) among clergymen. However, for a dissenting view, see P. Razzell, 'An evaluation of the reliability of Anglican adult burial registration', *Local Population Studies*, 77 (2006), pp. 42-57; P. Razzell, C. Spence and M. Woollard, 'The evaluation of Bedfordshire burial registration, 1538-1851', *Local Population Studies*, 84 (2010), pp. 31-54.

[11]   See especially Wrigley and Schofield, *Population History of England*, Table A4.1, pp. 537-60

[12]   For a recent discussion of the accuracy of parish registers, see C. Galley, 'Infant mortality in England, 1538–2000: the parish register period, 1538–1837', *Local Population Studies*, 103, pp. 104-14.

[13]   Reports of Commissioners, British Parliamentary Papers (hereafter BPP) 1845 XXV.

[14]   For the early annual reports of the Registrar General covering the period up to the end of 1840, see *First Annual Report of the Registrar General*, BPP 1839 XVI (187) 1; *Second Annual Report of the Registrar General*, BPP 1840 XVII (263) 1; *Third Annual*

Further information on dissenters and registration deficiencies in each parish at about the same date has been included in the parish characteristics files. The data are taken from the Returns of the Clergy of 1831, which are preserved in the National Archive, class HO 71, and refer to the years 1821-1830. While all this information is helpful, a proper evaluation of any deficiencies in the monthly frequencies of Anglican ceremonies tabulated here obviously requires a detailed investigation of local conditions over a much longer period of time.

Limitations

The more enduring factors that affected the completeness of parish registration such as non-conformity and late baptism should be distinguished from other, temporary factors, such as torn-out pages, absences of the vicar and so on, that caused registration to be seriously defective for limited periods of time. Corrections have been made to the monthly totals in the manner described above in an attempt to offset the latter type of deficiency, but the more enduring background, that is, under-registration of the former type, remain uncorrected in the totals given in the *Population History of England* database. This must always be borne in mind when drawing inferences from the parish data. Above all, the possibility, and in the case of some of the parishes the probability, of very different levels of under-registration having obtained in the sixteenth and the early nineteenth centuries means that special care needs to be taken in drawing conclusions from the parish frequencies about population changes in the long run. Fortunately however, these factors changed relatively slowly, so that the numbers of missing events due to these causes are unlikely to have fluctuated markedly in the short term. Consequently, although one may not be able to specify the proportion of events that are missing from the registers, the fluctuations in the parish totals may still be a reasonable guide to *short-run* variations in the underlying, and imperfectly observed, series of vital events.

The next section will provide remarks about the kinds of studies which can be based on the parish data, beginning with seasonal patterns, and other short-run patterns where the problems of inference are less severe, and then proceeding to consider what may be concluded about long-run population change.

How the data can be used: seasonality

One aspect of population history to which the aggregative tabulations are well suited is the study of the seasonality of events. Once again, however, we need to remember that what we are studying is the seasonality of the ecclesiastical ceremonies associated with vital events, not the seasonality of the vital events themselves. The discrepancy is not serious in the case of deaths and burials, for the necessity of disposing of the corpse led to almost all burials occurring within three days of death. In the case of baptisms, however, there was an immense variation in customs governing the age at which children were baptised, both between parishes and in the same parish over time.[15] Similarly, widely differing customs with regard to timing of betrothal, cohabitation, and the wedding ceremony that solemnised the marriage make the registers, which record the wedding, an uncertain guide to the seasonality of

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Report of the Registrar General, BPP 1841 Session 2 VI (345) 1; *Fourth Annual Report of the Registrar General*, BPP 1842 XIX (423) 1.

[15] There is an extensive literature about baptismal delay. See B. Midi Berry and R.S. Schofield, 'Age at baptism in pre-industrial England', *Population Studies*, 25 (1971), pp. 453-63; M.J. Saxby, 'Ages at baptism in the parish of All Saints, Sudbury, 1809–1828: a new approach to their interpretation', *Local Population Studies*, 70 (2003), pp. 49–56; A. Wright, 'Birth-baptism intervals in Whickham parish, Co. Durham c. 1770–1820', *Local Population Studies*, 77 (2003), pp. 81–7; S. Brush, 'When were babies baptised? Some Welsh evidence', *Local Population Studies*, 72 (2004), pp. 83–7; J. Perkins, 'Birth baptism intervals in 68 Lancashire parish registers, 1646–1917', *Local Population Studies*, 85 (2010), pp. 11–27.

other aspects of marriage such as the formation of unions or the setting up of households.

Nonetheless, the seasonal patterns of ecclesiastical events have much to reveal about life in the past, and the ways in which the seasonal patterns of events in a single parish follow, or diverge from, national patterns, can often throw interesting light on local customs, and local circumstances. Some illuminating examples of local seasonality studies can be found in the pages of *Local Population Studies* and elsewhere.[16] The national seasonal patterns as revealed by the aggregate experience of all 404 parishes are described and discussed in *The Population History of England.*[17]

Calculating index numbers

The monthly index numbers included in the worksheets 'bap_50', 'bur_50' and 'mar_50' are for 50-year periods, and it may well prove instructive to calculate similar index numbers for shorter periods. In doing this it is convenient first to work out a daily rate for the whole period under consideration by dividing the total number of events by the total number of days. The problem of leap years can be handled without too much inaccuracy by assuming 365.25 days in a year, 1,826 days in a quinquennium, and 3,652 days in a decade. Next one calculates the expected numbers of events, assuming an even daily rate, for each of the three groups of months of different lengths: i.e. 31 days for January, March, May, July, August, October and December; 30 days for April, June, September and November, and 28.25 days for February. The index number for any month can then be obtained by dividing the total number of events recorded in that month by the appropriate expected number, and multiplying the result by 100.

In interpreting seasonal patterns it should always be remembered that chance variation can play a part. Since the numbers of events recorded in individual parishes over short periods of time can sometimes be rather small, a significant proportion of the seasonal pattern observed may in fact be due to chance. In these circumstances it may be helpful to apply a statistical test to evaluate the probability of a chance occurrence of an observed pattern, or differences between the two observed patterns before embarking upon finding any explanations. One convenient procedure is the Kolmogorov-Smirnov test, which can be used to evaluate either a single distribution against the hypothesis of 'no seasonality', or an observed difference between two seasonal distributions.[18]

How the data can be used: fluctuations in the series of baptisms, marriages and burials

To identify the major fluctuations in the series of monthly, or annual, parish totals it is often helpful to begin by graphing the series. In some parishes the totals will stay at roughly the same level, while in others the series may rise quite markedly over time. Since, for many purposes, what is at issue is not the absolute size of a fluctuation in a series, but its magnitude relative to the number of events normally being registered at that time, it is helpful to graph using a logarithmic vertical scale. This has the advantage of making equal proportionate fluctuations in the series diverge by the same

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[16]   For studies of baptism seasonality, see for example A. Dyer, 'Seasonality of baptisms: an urban approach', *Local Population Studies*, 27 (1981), pp. 26-34; D. Jacobs, 'Seasonal variation patterns in baptisms and burials for Ruislip, Middlesex', *Local Population Studies*, 48 (1992), pp. 33-40. For marriage seasonality, see A. Kussmaul, *A General View of the Rural Economy of England, 1538-1840* (Cambridge, 1990). These studies make use of some data from parishes outside the *Population History of England* data base, though Kussmaul's work also uses data from the 404 parishes within the data base.

[17]   Wrigley and Schofield, *Population History of England*, pp. 286-305.

[18]   A clear discussion of the Kolmorogov-Smirnov test, with worked examples, can be found in S. Siegel, *Nonparametric Statistics for the Behavioural Sciences* (London, 1956), pp. 47-52 and 127-36.

vertical distance from the prevailing level of the series regardless of how high or low the latter may be. In this way the eye can pick out the major fluctuations quite easily. To calculate the actual size of the fluctuations one first needs to find the 'normal' level at each point in the series, and a convenient way of doing this is to calculate a moving average.[19] The difference between the original figures in the series and the corresponding moving average is then expressed as a percentage of the latter. That is to say, fluctuations are measured as percentage deviations from the changing background level of the series.

It should be remembered, once again, that chance variation is always present, and is likely to comprise a higher proportion of all fluctuations in small parishes than in large ones. For small parishes, therefore, it may be sensible to take a longer moving average as a measure of the trend than in larger parishes. This difference in the relative importance of chance variation also makes it difficult to compare the relative frequencies of major fluctuations in the series between parishes of different sizes, or at different dates in a parish with substantial population growth.

Comparing variability

Providing population sizes are comparable, it is often instructive to compare the degree of variability in the series at different points in time. Since neither the systematic factors producing under-registration (such as nonconformity) nor population size are likely to have varied markedly in the short-run, fluctuations in the series of baptisms, burials and marriages can be taken to reflect fluctuations in the vital processes of fertility, mortality and nuptiality. An exception, of course, must be made in the case of heavy mortality which could well cause a sharp drop in the population size for a short period and so produce fewer events, even though the vital rates instantly returned to normal. With this caveat, however, the relative frequency and magnitude of fluctuations in the series can be studied to throw light on the question of how stable, or how variable, the demographic processes were at different periods in the history of a parish. A convenient measure of variability in the series is the mean absolute annual percentage deviation from trend, which can be calculated on a decadal or quarter-century basis. To obtain this, add together the individual annual percentage deviations from trend, treating negative deviations as if they were positive, and divide by the total number of observations.

The results for individual parishes can then be compared among themselves, or with the national patterns obtained from the whole set of 404 parishes, or regional patterns such as those Michael Drake found in his study of parishes in the Agbrigg and Morley wapentakes near Huddersfield in west Yorkshire.[20]

Extreme fluctuations

Once the percentage deviations from trend have been calculated, it is a simple matter to identify those years or months in which the most extreme fluctuations occurred. Comparative data for the whole set of 404 parishes can be found in *The Population History of England*, though it should be noted that these annual fluctuations take the year as running from July through to the following June.[21] *The Population History of England* identifies the 20 years in which fluctuations *above* the trend in each series were most extreme among the whole set of 404 parishes, and the 20 years in which fluctuations below trend were

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[19]   The moving average for any given month, or year, is calculated by taking the average number of events in a sequence of months or years centred on the month or year of interest. The number of years in the sequence will depend on the particular application, but for annual data an 11-point moving average is a good starting point. This would mean computing the average for the year in question plus the five years either side. Note that the use of moving averages for monthly data is complicated by the existence of seasonal patterns (it is wise to compute moving averages with monthly totals adjusted using index numbers).

[20]   M. Drake, 'An elementary exercise in parish register demography', *Economic History Review*, 14 (1962), pp. 126-46.

[21]   Wrigley and Schofield, *Population History of England*, pp. 320-32.

most extreme.[22] It may prove interesting to see how far the timing of extreme fluctuations in individual parishes followed the overall pattern, and how far there was any similarity in the incidence of extreme fluctuations of parishes in the same county or region, a point not investigated in *The Population History of England*.

Effect on other series

Another topic of interest which is discussed in *The Population History of England* is how far extreme fluctuations in one series were accompanied by sympathetic or contrary movements in other series, either in the same year or in the subsequent year.[23] For example, one might expect in the same year in which there was a surge in burials there would also be fewer than average baptisms, and there may also be an increase in marriages in subsequent years. If this is found to occur in some parishes, but not in others, then it may suggest interesting questions about differences in the social and economic context of the communities being studied.

Food prices

Fluctuations in the series of events may not only have been linked amongst themselves but, as we have already noted, they may also have responded to a greater or lesser degree to fluctuations in the economy, above all to fluctuations in the price of food. If such a relationship existed, it might be expected to be most evident when the economic fluctuations were most striking. The responsiveness of local demographic series can be compared with the national picture to discover whether individual parishes or groups of parishes reacted more or less violently to short-run changes in national prices. In this case the results may be more indicative of the degree to which a parish was integrated into the national economy (that is whether the national price series had any local relevance) than the sensitivity of local demographic behaviour to fluctuations in food prices. However, if local food prices are available, not only can the question of market integration be addressed directly by comparing the local and national price series, but the nature of the demographic response to food price fluctuations *at the local level* can also be investigated.[24]

Measuring responsiveness

One simple way of investigating the responsiveness of each of the demographic series to extreme fluctuations in other series, including prices, is to take a pair of series at a time and tabulate the numbers of occasions on which the 'responding' series is above or below trend in the years of most extreme fluctuations in the other, 'initiating' series. Since we would expect a series to have an almost equal probability of being above or below trend in any year, a marked deviation from an even split around the trend can be taken as indicating the presence of a systematic effect of extreme fluctuations in one series on the level of the other series.[25] The deviation needs to be marked, especially if only twenty or so extreme years are considered, to be confident that the outcome is not likely to have been due to chance.[26]

It should be noted that this is a very weak test of a relationship between the series: in a year of extreme fluctuation in an initiating series the responding series does not also have to experience an extreme fluctuation, it has only to be on the predicted side of the trend for that year to be considered a 'success'.

[22] Wrigley and Schofield, *Population History of England*, Table 8.8, pp. 321-4.
[23] Wrigley and Schofield, *Population History of England*, pp. 325-32.
[24] Information is presented in terms of a real wage series, but short-run fluctuations in this series are driven entirely by movements in the price of a basket of consumables (see Wrigley and Schofield, *Population History of England*, pp. 321 and 638-41).
[25] For a general discussion of the relationship between the food price series and the demographic response in the past, see J. Walter and R. Schofield (eds), *Famine, Disease and the Social Order in Early Modern Society* (Cambridge, 1989).
[26] The probability of obtaining by chance an outcome as extreme as the one observed can be estimated by cumulating the terms of the binomial distribution, as for example in Wrigley and Schofield, *Population History of England*, pp. 326-7. Worked examples of this calculation can be found in Siegel, *Nonparametric Statistics*, pp. 36-42

However, to go further than this, and consider the magnitude of the responses to fluctuations of all sizes requires both more complicated methods of analysis and access to considerable computing power.[27]

How the data can be used: crisis mortality

One form of major annual fluctuations that has been much studied is the massive upward surge in burials, often termed a 'mortality crisis'. While *The Population History of England* contains a considerable amount of information about mortality fluctuations, much more remains to be learned, especially at the local, or regional level. For example, comparisons could be made of the similarities or dissimilarities in patterns of crisis mortality in parishes within the same area, and these could be systematically related to local social and economic characteristics, whether taken from the 'characteristics' files in the database or obtained by local research.[28] In addition, it would be useful to have more detailed local studies of the timing of the spread of some of the major national epidemics throughout the country.

Comparative information on major national fluctuations in mortality based in the pooled experience of the whole set of 404 parishes can be found on both an annual and a monthly basis in *The Population History of England*.[29] Local mortality crises are discussed there, and information is provided on their distribution over time, the proportion of parishes affected in each year, the range of the duration of the crises and their seasonality.[30] The geographic spread of some of the major national crises is also described, and there is an examination of how far the susceptibility of individual parishes to crisis mortality was influenced by factors such as geographic location, altitude, remoteness, and the kind of agriculture practised.[31]

Defining a 'crisis'

The national patterns outlined in *The Population History of England* were based on the information about periods of epidemic mortality reproduced in the parish files in the worksheet entitled 'crisis', so the data here enable local and regional experiences to be compared directly with the national picture. However, it should be remembered that the criterion for identifying these epidemic periods was a measure of the improbability that the numbers of burials recorded could have occurred by chance given the normal current levels of mortality, not the more usual criterion of burials exceeding the normal monthly frequency by a fixed ratio. This alternative approach was adopted to avoid the problem that in small parishes even modest random fluctuations can exceed the fixed ratio and generate spurious crises, thereby overstating the frequency of crises in small parishes compared to larger ones. Unfortunately, the approach used in *The Population History of England*, which involves a variable ratio linked to the variability of the burial series, may create problems in the opposite direction. In small parishes, the burial series are highly variable, hence a period of genuine epidemic mortality may be indistinguishable from a random fluctuation, and the susceptibility of small parishes to crisis mortality thereby understated.[32]

[27]   See Wrigley and Schofield, *Population History of England*, pp. 356-401.

[28]   For examples, see A. Gritt, 'Mortality crisis and household structure: an analysis of parish registers and the Compton Census, Broughton, Lancashire, 1667-1676', *Local Population Studies*, 79 (2007), pp. 38-65; J. Healey, 'Famine and the female mortality advantage: sex, gender and mortality in northwest England, c. 1590–1630', *Continuity and Change*, 30 (2015), pp. 75–92; N. Cummins, M. Kelly and C. Ó Gráda, 'Living standards and plague in London, 1560–1665', *Economic History Review,* 69 (2016), pp. 3–34; S. Scott and C.J. Duncan, 'The mortality crisis of 1623 in north-west England', *Local Population Studies*, 58 (1997), pp. 14-25.

[29]   Wrigley and Schofield, *Population History of England*, pp. 332-40.

[30]   Wrigley and Schofield, *Population History of England*, pp. 645-93.

[31]   Wrigley and Schofield, *Population History of England*, pp. 645-93.

[32]   These issues are discussed, and solutions proposed, in A. Hinde, 'A review of methods for identifying mortality 'crises' using parish register data. *Local Population Studies*, 84 (2010), pp. 82-92. See also D. Connor and A. Hinde, 'Mortality in town and countryside in early modern England, *Local Population Studies*, 89 (2012), pp. 54-67.

This connection, one way or the other, between parish population size and the frequency of crises is part of a wider problem. For in reducing the whole range of variation in mortality to a dichotomy (crisis or non-crisis) some arbitrary cut-off point has to be taken, and the criterion adopted will, to a large extent, determine the results. This will be particularly true of the numbers of crises found, their length and severity. But since crises are but the peaks of more general surges in mortality, the choice of cut-off point has far less influence on other aspects of epidemics such as their seasonal patterns and their distribution through both space and time. Results of this type are, therefore, more 'robust' than measures of the size, frequency or severity of crises. Care, therefore, needs to be taken in interpreting the results of a study of crisis mortality, and comparisons should only be made between patterns of 'crises' or 'epidemics' that have been identified using the same criteria.[33]

How the data can be used: long-run population change

In studying the development of the population of a parish, or group of parishes, over a long period of time we typically ask such questions as what was the rate of growth? How far was this due to migration or natural increase? How far were changes in the latter due to movements in fertility or mortality? Unfortunately, it is by no means an easy matter to answer these questions from the parish totals of events alone, even though graphs of the moving averages of events may seem to offer suggestive clues about the course of local population change.

First and foremost, there is the problem, which has already been raised, that the totals of Anglican ceremonies recorded in the database may not be a good guide to the numbers of vital events that actually occurred. If the proportions of vital events missing from the registers themselves changed over time, as may well have been the case, the totals of ceremonies will give a misleading impression of the course of vital events. And if the proportion of missing events differed between births and deaths, the gap between baptisms and burials will be an unsatisfactory guide to the level of natural increase (births minus deaths). Clearly, before the totals of Anglican ceremonies can be used to draw conclusions about local long term population change, much research needs to be done into the local incidence of under-registration, for example by investigating factors such as late baptism and nonconformity.

Overall patterns

Nonetheless, it may be instructive to compare the patterns traced by the parish totals over time, not only with each other but also with the national patterns based on the full set of 404 parishes, or other more limited sets of aggregative data such as Michael Drake's west Yorkshire parishes (1540-1699) or Krause's 'north' and 'south' groups of parishes, numbering 200 in all in 1659-1794.[34] In drawing comparisons between totals of ecclesiastical events it must always be remembered that the differences observed may owe as much, or more, to local differences in the adequacy of Anglican registration as to differences in demographic behaviour. Annual national totals of baptisms, burials and marriages estimated from the aggregate of the 404 parishes can be found in *The Population History of England.*[35]

The course traced by the annual frequencies of vital events suggests a simple division into three periods, 1539-1639, 1640-1709 and 1710-1873. In the two outer periods all three series increase in number and there is normally a substantial surplus of births over deaths. By contrast in the central period, spanning the later seventeenth century, the frequencies of events show little tendency to grow,

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[33]   If the reader wishes to identify crises on a fixed-ratio basis to compare with other local data not included in the set of 404 parishes, the best way to calculate the current (normal) number of deaths is to take a centred, truncated moving average. This is a moving average which omits the data for the peaks in the burial numbers caused by the crisis one is trying to identify. See Wrigley and Schofield, *Population History of England*, p. 646.

[34]   Drake, 'Elementary exercise'; J.T. Krause, 'Some aspects of population change 1690-1790', in E.L. Jones and G.E. Mingay (eds), *Land, Labour and Population in the Industrial Revolution* (London, 1967), pp. 187-205.

[35]   Wrigley and Schofield, *Population History of England*, pp. 537-60. The relevant figures are in Table A4.1, column 5. The corresponding figures for births, marriages and deaths are given in column 6 of the same table.

while the number of deaths is much closer to, and often exceeds, the number of births. The national totals of Anglican events by and large followed the course of vital events except that the removal of the correction for under-registration means that the balance between baptisms and burials was even more unfavourable in the later seventeenth century, and that the upward movement of both series started later (in the 1730s), and was less pronounced.

Local variation

These patterns represent the sum of the individual experiences of the 404 parishes, which were far from uniform. Some information on the range of local variation is given in *The Population History of England* in terms of two summary measures of the patterns of Anglican events over time, and it may be instructive to see where in these distributions individual parishes lie. The first measure is the decade in which the number of baptisms first exceeded the maximum decadal total recorded for the parish before 1660. The results show that the scatter of the individual parishes around the aggregate recovery point of the 1730s was very wide.[36] The most common outcome (15 per cent of the parishes) was for baptisms to continue to grow without a pause and exceed the pre-1660 maximum at the earliest opportunity (in the 1660s). On the other hand, there were almost as many parishes, 14 per cent of the total, which by 1800-1809 were still not recording as many baptisms as they had produced in their heyday before the mid seventeenth century. It always needs to be remembered that in some parishes baptisms may have failed to grow because of high levels of under-registration, but in others the numbers of births may have remained low and the population may never have regained its early seventeenth century level.

Burial surpluses

The 404 parishes also show considerable variation in the changing relationships between baptisms and burials, and the second summary measure comprises the number of decades in which burials exceeded baptisms. In aggregate the 404 parishes recorded a baptism/burial deficit in only two decades, the 1680s and 1720s, though in the 1550s, 1650s, 1660s and 1670s the surpluses of baptisms over burials were proportionally very low indeed. In the decades from the 1560s to the 1780s there appears to have been a remarkably steady 'background' proportion of parishes recording burial surpluses.[37] This ran at between three and nine per cent, though the parishes were by no means the same in each decade.

The aggregative balance struck in each decade in a parish will, of course, reflect the relative degree of under-registration of births and deaths as well as the combination of levels of fertility and mortality that obtained. In some cases, therefore, the burial surpluses may be spurious owing to the greater under-registration of births than of deaths, a factor that increased up to the end of the eighteenth century.[38]

Out of a notional three centuries (30 decades) in observation, the median parish experience was one of five decades with more burials registered than baptisms.[39] Yet 34 parishes, or eight per cent of the total set, had no decade of deficit, while more than a quarter of the parishes had less than three decades and the same proportion had more than seven decades of deficit. Prominent among parishes with a high proportion of decades in deficit were marshland communities, market towns, and city-centre and London suburban parishes. Although the urban parishes and market towns may have been experiencing a greater incidence of nonconformity, which is likely to have depressed the proportion of births being registered as baptisms by the Church of England more than it did the proportion of burials, the size of the deficits involved are generally large enough to suggest that there was a genuine difference between the balance

[36]   Wrigley and Schofield, *Population History of England*, p. 163.
[37]   Wrigley and Schofield, *Population History of England*, p. 164.
[38]   Wrigley and Schofield, *Population History of England*, pp. 140-1 (Table 5.27, column 4).
[39]   The variation between parishes in the numbers of decades in which deficits were recorded is brought out in Wrigley and Schofield, *Population History of England*, p. 166 (Table 6.3), in which the figures are standardised for the different periods covered by individual registers.

struck between fertility and mortality in these urban and marshland communities, and that obtaining in more isolated and better drained rural parishes.[40]

Under-registration and parish population sizes

Little can be said with any confidence about long term population change on the basis of the parish totals without some knowledge of the scale of under-registration and its relative trends in each of the series over time. It is, therefore, well worth while trying to find out as much as possible about local patterns of under-registration. If, despite all efforts, they remain unknown, it is probably better to renounce any ambitions to draw conclusions about long-term change based on parish register totals and confine the analysis to short-term movements in the parish totals, as described above.

In some cases, however, it may be possible to make suitable corrections to the parish totals to correct for under-registration and so derive series that can be treated as providing a reasonable guide to the underlying frequencies of vital events. The following discussion assumes that this is the case and—to emphasise the point—the series will hereafter be referred to as births and deaths rather than baptisms and burials. However, even if the numbers of vital events can reasonably be estimated, several problems of inference remain. This is because the series reflect both the intensity of demographic activity (the levels of fertility, mortality and nuptiality) and the size and age structure of the population. The problem is that when we consider the numbers of events alone we have no means of distinguishing changes in demographic behaviour (such as fertility) from changes in the size and age structure of the population.

Suppose, for example, that a graph of parish totals shows both births and deaths rising over time, the former more steeply than the latter, and more births being registered than deaths, quite a common occurrence in the sixteenth and late eighteenth centuries. It is tempting to conclude that the population was producing a natural increase (more births than deaths) and so growing in size. This might be the correct inference to draw, but the same pattern could be produced by a rise in both fertility and mortality with no change in the size of the population. In this case the 'surplus' population (of births over deaths) will have emigrated. There is therefore no easy inference from the shape of the graph of events to changes in population size, or to changes in birth and death rates. Nor does the fact that births rose faster than deaths necessarily mean that changes in fertility were more important than changes in mortality over the period. For example, the population may have been growing at exactly the same speed as the number of births recorded, in which case the birth rate would have been constant and the death rate actually declining.

Estimating parish population sizes

Clearly, if we want the parish totals to tell us something about long-term population change, we must find a way of discovering the size of the population that produced the events that we observe. Unfortunately, the size of a parish population is rarely known before the national census enumerations began in 1801.[41] We might be tempted to start with one such figure from say, the 1801 census, and backdate the population size by successively subtracting the surplus of births over deaths recorded in the parish totals. Unfortunately, birth and death were not the only ways of entering and leaving the parish; many people did so on foot, or on horseback. Since the balance between these movements into, and out of, a parish is almost always unknown, any attempt to backdate parish population sizes in this way is likely to run into serious error.

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[40]   For studies of differential mortality in wealden, downland and marshland parishes, see C. Brent, 'Devastating epidemics in the countryside in eastern Sussex, 1558-1640', *Local Population Studies*, 14 (1975), pp. 42-8; and M. Dobson, *Contours of Death and Disease in Early-Modern England* (Cambridge, 1997); on the differences in mortality patterns between market towns and villages, see Connor and Hinde, 'Mortality in town and countryside'.

[41]   Listings in various forms do exist for a minority of parishes before 1801, see J.S.W. Gibson and M. Medlycott, *Local Census Listings 1522-1930: Holdings in the British Isles,* Federation of Family History Societies, 3rd edn (Sheringham, 1992).

Ideally, we should like to know the size of a parish population at frequent intervals so that calculations could be made of its rate of growth and vital rates, and changes plotted over time. One way of doing this would be to apply to the individual parish the same technique of 'back projection' or 'generalised inverse projection' that was developed to derive national population totals from the national series of events based on the aggregate totals of the 404 parishes. But the technique, which entails estimating the amount of migration from the internal consistency of the series of births and deaths, is complex and requires access to a large and powerful computer.[42] A more practical strategy for most local historians would be to attempt to estimate the size of a parish population at as many dates as possible before the nineteenth century using sources such as chantry certificates (1545 and 1548), diocesan population returns (1563, 1603), the Compton Census (1676), late seventeenth century Hearth Tax returns, the Marriage Duty Act censuses of the 1690s, or bishop's visitation returns.[43]

Crude vital rates, growth rates and migration

The numbers of events recorded around those dates can then be related to the population size estimates to calculate crude vital rates: average numbers of events per year per thousand population. Despite the imprecision that often surrounds population size estimates of this kind, they at least enable rough measurements to be made of the levels of fertility, mortality, and nuptiality at the dates concerned. They can then be compared with the more securely grounded measures of the same quantities, based on nineteenth century censuses and vital registration, to see whether there were any significant changes in demographic behaviour over time.

If parish population sizes can be estimated for several dates, growth rates can be calculated for the intervening periods and compared with the national rates given in *The Population History of England*.[44] Comparisons can also be made on a local level, between different periods and parishes.[45] The estimated population growth can also be compared with the size of the natural increase (the surplus of births over deaths) over the same period, the difference being attributable to net migration (the balance between immigration and emigration). Again, the inaccuracy of population size estimates at earlier dates may limit the scope of the conclusions that can be drawn, but the amount of population growth implied by a comparison of two populations counts (for example a Hearth Tax return and the 1801 census) is often strikingly different from the amount generated in the intervening period in the parish by natural increase. Typically, a small rural parish population may grow much less, and market towns much more, than their respective totals of natural increase, implying a considerable migration from the former to the latter.

If an exercise of this kind indicates that a parish experiences little or no net migration, it might be tempting to go one step further and to use the figures for natural increase to interpolate population sizes during the period between the dates at which documentary evidence for population size exists. In this way it would be possible to consider the patterns of population growth in greater detail, and

[42]   Back projection is described in Wrigley and Schofield, *Population History of England*, pp. 195-9, with technical details in pp. 715-38. The procedure of generalised inverse projection is described in J. Oeppen, 'Back projection and inverse projection: members of a wider class of constrained projection methods', *Population Studies*, 47 (1993), pp. 259-67.

[43]   There are several guides to using these sources to estimate population totals. A summary is given in N. Goose and A. Hinde, 'Estimating local population sizes at fixed points in time: part I – general principles', *Local Population Studies* 77 (2006) 66-74; and N. Goose and A. Hinde, 'Estimating local population sizes at fixed points in time: part II – specific sources', *Local Population Studies* 78 (2007), 74-88. See also K. Schürer and T. Arkell (eds), *Surveying the People: the Interpretation and Use of Document Sources for the Study of Population in the Late Seventeenth Century* (Oxford, 1992). For examples of the use of local sources for parish population returns, see A.C. Percival, 'Gloucestershire village populations', *Local Population Studies*, 8 (1972), pp. 39-47; J. Hudson, 'Parish population reconstruction in Stonehouse, Gloucestershire: an experiment using Wrigley and Schofield's correction factors', *Local Population Studies*, 77 (2006), pp. 24-41; I.L. Williams, 'North Wiltshire demography 1676-1700', *Wiltshire Archaeological and Natural History Magazine*, 90 (1997), pp. 110-9.

[44]   Wrigley and Schofield, *Population History of England*, pp. 528-9 (column headed 'CGR')

[45]   Growth rates are conventionally expressed as a cumulative percentage rate per year. If P_1 is the size of the population at a certain date, and P_2 is the size of the population at a future date y years later, then the rate is defined as $\left(\dfrac{P_2}{P_1}\right)^{1/y} \times 100$.

also, by relating the totals of events to the interpolated population totals, to track the demographic development of the parish over time. However, although migration may net out to zero over a long period, it may actually have been substantial, first in one direction and then in the other, in intervening years. Thus, intermediate population totals can only be estimated if both volume and the *timing* of migration during the intervening period can be specified on the basis of local information, or if it seems reasonable to assume that migration occurred at a uniform rate over time.

Arguing from plausible limits

If it proves impossible to estimate the size of a parish population before the nineteenth century, or if this can only be done at one or more widely scattered dates, it may still be possible to reconstruct something of the population history of the parish by looking at the patterns traced by the series of births and deaths over time. For example, the numbers of births or deaths registered in a parish may have risen so greatly that the possibility of the population having remained the same size can be ruled out. National birth rates in pre-industrial England rarely fell outside the range of 27 to 41 per thousand. Consequently, any increase in the numbers of births by a factor of more than 1.5 (41/27) is unlikely to have been produced by an increase in fertility and may be taken as presumptive evidence of population growth. Of course, in making this calculation sufficient numbers of events must be taken at each date (say by considering 25-year or 50-year periods) to lessen the risk of obtaining an untypical ratio from chance fluctuations.

Biological factors also effectively limit the maximum level that the crude birth rate of a large population can reach in normal circumstances to about 55 per 1,000, though this figure can be exceeded in small populations with high proportions of young adults as, for example, in cities with substantial immigration. If, therefore, a parish in more normal circumstances experienced a rise in the number of births to a level which, when related to a population size estimate at an earlier date, implies a birth rate of more than 55 per 1000, it is highly likely that the population grew in the intervening period.

Again, the amount of cumulative natural increase in a parish (the surpluses of births over deaths summed over successive years) can be compared with the trends in the series to draw conclusions about the probable direction of net migration. For example, if there were consistently more births than deaths, yet neither series showed a tendency to rise, then it is unlikely that the parish population grew by the amount of the natural increase, for after some years the implied birth and death rates would become implausibly low. It is much more likely that there was persistent migration out of the parish.[46] Similarly, if a parish consistently recorded more deaths than births yet neither series showed a tendency to fall, as was the case in some market and county towns, it is probable that the population was replenished by in-migration.

Some deceptive ratios

If population size remains unknown, so that the vital rates cannot be calculated, and if a parish appears to have been affected by migration, then care needs to be taken in drawing inferences about the balance of fertility and mortality in the parish from the apparent level of natural increase, or from the ratio between the numbers of births and deaths. Obviously, in a parish subject to in-migration, the number of deaths will be swollen by the presence of immigrants, and in a parish subject to out-migration the deaths of the emigrants will be missing.[47] Since in both cases the deaths refer to a different population than do the births we cannot draw conclusions about the size of the balance between the levels of fertility and mortality from a simple comparison of the numbers of births and deaths. Thus, it does not necessarily follow that mortality was higher than fertility in town parishes recording more deaths

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[46]   See, for example, A. Pallister, 'Some notes on the parish registers of Long Newton and derivations from them', *Durham County Local History Society Bulletin*, 65 (2002), pp. 67-91.

[47]   This point was made forcefully by A. Sharlin, 'Natural increase and decrease in early modern cities', *Past and Present*, 79 (1978), pp. 126-38. See also C. Galley, *The Demography of Early Modern Towns* (Liverpool, 1998), pp. 65-70. The position is more complicated when both in-migration and out-migration occur, and at different ages.

than births, nor that fertility was higher than mortality in country parishes registering more births than deaths. Either *may* have been the case, but it is also possible that the reverse was true and the imbalance caused simply by the presence of a considerable flow of migration into, or out of, the parish.

If the volume of net migration is known, or can be estimated, then the 'surplus' or 'missing' deaths can be subtracted from, or added to, the totals recorded in the register, to obtain a better indication of the balance between fertility and mortality *in the parish*. On the other hand, if the volume between net migration remains unknown, then figures of natural increase, or ratios between births and deaths, should not be used to infer anything about the local demographic regime. In this connection, it is worth remembering that the larger and more varied the collection of parishes being studied, the less significant, proportionally, will be the net migration flows to, or from, the outer world. Consequently, the danger of making false inferences from totals or ratios of births and deaths are most severe in the case of individual parishes or towns, and progressively less troublesome at a regional, and national level.[48]

Another ratio that is sometimes calculated, and which also raises difficulties of interpretation, is the number of births per marriage. Although this is intended to be an indicator of fertility, it will be influenced both by the number of illegitimate births in the total of births recorded and by the proportion of marriages which are remarriages.[49] Where mortality was high and remarriages common it will be influenced by mortality as well as fertility and nuptiality. And even where these confounding influences are absent, or can be allowed for, the ratio will only measure the average number of children per marriage if the population is closed or stationary, and if the three demographic components of fertility, mortality and nuptiality are all constant.[50]

Again, calculating the ratio between the number of marriages and the number of births 25 years earlier provides only a very approximate index of nuptiality.[51] Once more, other factors, such as mortality, remarriage and migration, may intervene to cloud interpretation of results.

Summary

This final section, on deriving long-term population trends, has been an extended one. I have tried to outline some of the complexities of the subject and some pitfalls that lurk to trap the unwary. The range and quality of inferences that may be drawn depend very largely upon the success of local research in discovering the degree of under-registration of vital events in the Anglican registers, and in finding sources on which estimates of parish population sizes can be based so that vital rates can be calculated and due allowance made for the impact of net migration. If little can be discovered about these factors, then only very limited conclusions can be drawn about population totals, and long-term trends and changes in fertility and mortality. In these circumstances it would be wise to leave long-term trends alone and to concentrate on studying the short-term aspects of local population experiences, as described in the earlier sections of this introduction.

Acknowledgements

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[48]   For a study of regional baptism/burial rates, see Drake, 'Elementary exercise'. National birth and death rates are discussed in Wrigley and Schofield, *Population History of England*, pp. 176-89.

[49]   For a study of illegitimacy, see P. Bromfield, 'Incidences and attitudes: a view of bastardy from eighteenth-century rural north Staffordshire, c. 1750-1820', *Midland History*, 27 (2002), pp. 80-98.

[50]   If vital rates are constant, but the population is growing or declining (a situation called a 'stable' population), the mean number of children per marriage can be calculated by taking a weighted average of the totals of marriages in previous years as the denominator in calculating the birth/marriage ratio. See L. Henry, *Manuel de Démographic Historique* (Geneva and Paris, 1967), p. 78.

[51]   See D. Turner, 'The effective family', *Local Population Studies*, 2 (1969), pp. 47-54.

APPENDIX

Figure 1 shows the geographical distribution of the 404 parishes.

Table 2 is an alphabetical list of the 404 parishes, showing the county in which each is located, and the population of the parish in 1811.

Table 3 is a list of the same parishes, but ordered by county.

Figure 1   **Geographical distribution of the aggregative analysis parishes**

Table 2   **Alphabetic list of the 404 parishes, their county and population**

Parish	County	Population in 1811
Abinger	Surrey	629
Addingham	Yorkshire West Riding	1,559
Adel	Yorkshire West Riding	996
Alberbury	Salop	1,772
Albrighton	Salop	911
Alcester	Warwickshire	1,862
Aldenham	Hertfordshire	1,127
Aldershot	Hampshire	498
Almondbury*	Yorkshire West Riding	19,302
Alstonefield	Staffordshire	3,704
Ampthill	Bedfordshire	1,299
Ardingly	Sussex	553
Ardleigh	Essex	1,186
Arnold	Nottinghamshire	3,042
Ashby-de-la-Zouch	Leicestershire	3,403
Ashford	Kent	2,532
Ashfordby	Leicestershire	367
Ashton under Lyne	Lancashire	19,052
Audley*	Staffordshire	2,618
Avening	Gloucestershire	1,602
Aylesbury	Buckinghamshire	3,447
Aynho	Northamptonshire	631
Banbury	Oxfordshire	4,173
Banham	Norfolk	978
Barley	Hertfordshire	593
Barton under Needwood	Staffordshire	1,066
Baschurch*	Salop	1,347
Beddington	Surrey	1,250
Benenden	Kent	1,322
Berkhampstead [Berkhamsted] St Mary	Hertfordshire	864
Berkhampstead [Berkhamsted] St Peter	Hertfordshire	1,963
Berry Pomeroy	Devon	1,179
Berwick on Tweed	Northumberland	7,746
Biddenden	Kent	1,278
Bishops Cannings	Wiltshire	1,349
Bishops Cleeve	Gloucestershire	1,416
Bitterley	Salop	1,103
Blackawton	Devon	1,109
Blunham	Bedfordshire	857

Blyth	Nottinghamshire	1,759
Boldre	Hampshire	1,914
Boln	Bedfordshire	230
Bolney	Sussex	510
Bolton Percy	Yorkshire West Riding	972
Bottesford	Leicestershire	891
Bradwell juxta Mare	Essex	795
Branscombe	Devon	595
Brede	Sussex	787
Breedon	Leicestershire	2,302
Bridekirk	Cumberland	1,552
Bridgewater	Somerset	4,911
Bridlington	Yorkshire East Riding	4,422
Brodsworth	Yorkshire West Riding	358
Bromfield	Salop	610
Bromham	Wiltshire	1,225
Bromley	Kent	2,965
Bromyard	Herefordshire	2,594
Bruton	Somerset	1,746
Bubwith	Yorkshire East Riding	1,260
Budbrooke	Warwickshire	383
Bunbury	Cheshire	3,453
Burnsall	Yorkshire West Riding	1,075
Burslem	Staffordshire	8,625
Burton Joyce	Nottinghamshire	564
Cam	Gloucestershire	1,501
Campton with Shefford	Bedfordshire	860
Carlton juxta Snaith [Carlton]	Yorkshire West Riding	687
Carshalton	Surrey	1,532
Castle Donnington	Leicestershire	2,308
Cavendish	Suffolk	1,074
Chalgrave	Bedfordshire	633
Chardstock	Devon	1,151
Chester Holy Trinity	Cheshire	2,278
Chilvers Coton	Warwickshire	1,873
Chinnor	Oxfordshire	895
Chipping Norton	Oxfordshire	2,331
Chiselhurst	Kent	1,450
Chorley	Lancashire	5,182
Clapham	Yorkshire West Riding	1,706
Clee	Lincolnshire	490
Clophill	Bedfordshire	721
Cobham	Surrey	1,275
Coleorton	Leicestershire	910

Colyton	Devon	1,774
Congresbury	Somerset	913
Conisborough	Yorkshire West Riding	1,047
Cowfold	Sussex	614
Cranbrook	Kent	2,994
Cranfield	Bedfordshire	1,035
Cranley	Surrey	1,009
Crewkerne	Somerset	3,021
Cropwell Bishop	Nottinghamshire	364
Crosthwaite	Cumberland	3,656
Curdworth	Warwickshire	548
Dalston	Cumberland	2,369
Darfield	Yorkshire West Riding	2,449
Darlington	Durham	5,820
Darlton	Nottinghamshire	139
Deane	Lancashire	9,945
Dedham	Essex	1,432
Dengie	Essex	171
Desford	Leicestershire	744
Dewsbury	Yorkshire West Riding	11,571
Docking	Norfolk	994
Dronfield*	Derbyshire	3,115
Dunchurch	Warwickshire	996
Dymock	Gloucestershire	1,342
Earsdon	Northumberland	4,388
Easingwold*	Yorkshire North Riding	1,959
East Bergholt	Suffolk	1,151
East Grinstead	Sussex	2,804
Eastington	Gloucestershire	1,223
Eastry	Kent	909
Eaton Bishop	Herefordshire	381
Eccleshall	Staffordshire	3,618
Edgbaston	Warwickshire	1,180
Edmonton	Middlesex	6,824
Edwinstowe*	Nottinghamshire	1,558
Ellastone	Staffordshire	916
Ellingham	Hampshire	341
Eltham	Kent	1,882
Emley	Yorkshire West Riding	1,261
Enderby	Leicestershire	804
Ercall Magna*	Salop	1,965
Etton	Yorkshire East Riding	338
Eye	Suffolk	1,893
Fairford	Gloucestershire	1,444

Farnham	Yorkshire West Riding	535
Felmersham	Bedfordshire	358
Felpham	Sussex	536
Felton	Northumberland	1,409
Fledborough	Nottinghamshire	82
Flitwick	Bedfordshire	413
Fordingbridge	Hampshire	2,259
Fowlmere	Cambridgeshire	448
Framlingham	Suffolk	1,965
Frant	Sussex	1,439
Fressingfield	Suffolk	1,064
Frodingham	Lincolnshire	355
Frodsham	Cheshire	4,098
Gainsborough	Lincolnshire	5,915
Gatton	Surrey	99
Gawsworth	Cheshire	757
Gedling	Nottinghamshire	1,903
Gilling	Yorkshire North Riding	310
Gisburne* [Gisburn]	Yorkshire West Riding	2,209
Goudhurst	Kent	2,082
Grantham	Lincolnshire	4,777
Gravesend	Kent	3,119
Great Baddow	Essex	1,461
Great Bowden	Leicestershire	826
Great Burstead	Essex	1,533
Great Grimsby	Lincolnshire	2,747
Great Sampford	Essex	603
Great Stukeley	Huntingdonshire	304
Great Yeldham	Essex	437
Greystoke	Cumberland	1,504
Guiseley*	Yorkshire West Riding	6,813
Haddenham	Cambridgeshire	1,304
Hadleigh (Essex)	Essex	311
Hadleigh (Suffolk)	Suffolk	2,592
Hailsham	Sussex	1,029
Harbury	Warwickshire	904
Harlington	Bedfordshire	352
Harting	Sussex	947
Hartland	Devon	1,734
Hartshead	Yorkshire West Riding	1,728
Harwell	Berkshire	661
Hawkshead	Lancashire	1,710
Haxey	Lincolnshire	1,627
Headley	Hampshire	983

Hemel Hempstead	Hertfordshire	3,240
Hemyock	Devon	882
Herne	Kent	1,442
Hinckley	Leicestershire	6,058
Hitchin	Hertfordshire	3,608
Horbury	Yorkshire West Riding	2,356
Horringer	Suffolk	523
Horsley	Gloucestershire	2,925
Hunmanby	Yorkshire East Riding	903
Hunsdon	Hertfordshire	512
Hurstpierpoint	Sussex	1,184
Husbands Bosworth	Leicestershire	1,024
Hythe	Kent	2,318
Ilkley	Yorkshire West Riding	871
Ilsington	Devon	861
Ipswich St Clement	Suffolk	3,305
Ipswich St Lawence	Suffolk	494
Ipswich St Mary Elms	Suffolk	441
Ipswich St Mary Stoke	Suffolk	568
Ipswich St Matthew	Suffolk	1,353
Ipswich St Nicholas	Suffolk	832
Ipswich St Peter	Suffolk	1,125
Ipswich St Stephen	Suffolk	416
Irby on Humber	Lincolnshire	196
Kempston	Bedfordshire	1,161
Kenilworth	Warwickshire	2,279
Kenninghall	Norfolk	1,102
Kibworth Beauchamp	Leicestershire	1,313
Kings Norton	Worcestershire	3,068
Kingsbury	Warwickshire	1,104
Kippax	Yorkshire West Riding	1,573
Kirby Muxloe	Leicestershire	231
Kirkby Mallory	Leicestershire	248
Kirkdale	Yorkshire North Riding	884
Lavenham	Suffolk	1,711
Laxfield	Suffolk	1,003
Leasingham	Lincolnshire	329
Ledbury	Herefordshire	3,191
Ledsham	Yorkshire West Riding	787
Lenham	Kent	1,509
Limpsfield	Surrey	746
Linton	Cambridgeshire	1,373
Little Bowden	Northamptonshire	305
Little Sampford	Essex	338

Long Clawson	Leicestershire	627
Loughborough	Leicestershire	5,556
Ludlow St Lawrence	Salop	4,150
Lugwardine	Herefordshire	518
Maldon All Saints and St Peters	Essex	1,752
Mancetter	Warwickshire	3,710
Market Bosworth	Leicestershire	1,034
Market Harborough	Leicestershire	1,704
Marlesford	Suffolk	381
Marske in Cleveland [Marske by the Sea]	Yorkshire North Riding	890
Martock	Somerset	2,356
Maulden	Bedfordshire	850
Medbourn	Leicestershire	468
Melbourn	Cambridgeshire	972
Melton Mowbray	Leicestershire	2,221
Mendlesham	Suffolk	1,093
Meonstoke	Hampshire	300
Middleton St George	Durham	202
Milborne Port	Somerset	1,000
Mildenhall	Suffolk	2,493
Millbrook	Bedfordshire	335
Milton Ernest	Bedfordshire	332
Milton next Gravesend	Kent	2,470
Minchinhampton	Gloucestershire	3,246
Modbury	Devon	1,890
Monks Kirby	Warwickshire	1,472
Nantwich	Cheshire	4,236
Napton	Warwickshire	848
Newenden	Kent	125
North Cadbury	Somerset	908
North Elmham	Norfolk	896
North Meols	Lancashire	2,492
North Nibley	Gloucestershire	1,290
North Petherton	Somerset	2,615
Northiam	Sussex	1,114
Northill	Bedfordshire	870
Northolt	Middlesex	392
Norwich St Benedict	Norfolk	925
Norwich St Giles	Norfolk	1,043
Norwich St James with Pockthorpe	Norfolk	1,594
Norwich St Margaret	Norfolk	797
Norwich St Saviour	Norfolk	990
Nutfield	Surrey	631
Oakham	Rutland	1,719

Odiham	Hampshire	2,048
Offwell	Devon	312
Onibury	Salop	415
Orwell	Cambridgeshire	422
Oswaldkirk	Yorkshire North Riding	210
Oswestry	Salop	6,733
Otley*	Yorkshire West Riding	8,023
Paignton	Devon	1,639
Pavenham	Bedfordshire	385
Peasenhall	Suffolk	633
Pevensey	Sussex	254
Pitminster	Somerset	1,206
Poleswoth	Warwickshire	1,521
Pontesbury	Salop	2,307
Prestwold	Leicestershire	519
Princes Risborough	Buckinghamshire	1,644
Pulloxhill	Bedfordshire	408
Putney	Surrey	2,881
Quarrington and Old Sleaford	Lincolnshire	285
Radcliffe	Lancashire	2,792
Rattlesden	Suffolk	849
Reculver	Kent	265
Reigate	Surrey	2,440
Rickmansworth	Hertfordshire	3,230
Ringwood	Hampshire	3,269
Riseley	Bedfordshire	650
Rocester	Staffordshire	873
Rochdale	Lancashire	33,577
Romford	Essex	3,244
Romsey	Hampshire	4,297
Ropsley	Lincolnshire	440
Rowington	Warwickshire	839
Saddington	Leicestershire	215
Salehurst	Sussex	1,653
Sandbach	Cheshire	4,784
Sandhurst	Kent	1,012
Sandy	Bedfordshire	1,122
Sawston	Cambridgeshire	603
Saxmundham	Suffolk	957
Scartho	Lincolnshire	133
Sculthorpe	Norfolk	413
Sedgeford	Norfolk	439
Sedgley*	Staffordshire	13,937
Selborne	Hampshire	770

Sessay	Yorkshire North Riding	384
Sevenoaks	Kent	3,444
Shepshed	Leicestershire	3,026
Shipdham	Norfolk	1,412
Shrewsbury St Alkmund	Salop	1,566
Shrewsbury St Chad	Salop	6,322
Shrewsbury St Julian	Salop	2,095
Shrewsbury St Mary	Salop	4,646
Sibton	Suffolk	503
Sittingbourne	Kent	1,362
Skipton	Yorkshire West Riding	4,612
Sonning	Berkshire	1,974
Souldrop	Bedfordshire	212
Southill	Bedfordshire	1,024
Speldhurst	Kent	1,901
St Nicholas at Wade	Kent	480
Stainton in Cleveland [Stainton]	Yorkshire North Riding	806
Standlake	Oxfordshire	577
Stanford	Essex	704
Stanton Lacy	Salop	1,026
Staplehurst	Kent	1,341
Staverton	Devon	1,001
Stevington	Bedfordshire	436
Stoke Gabriel	Devon	572
Stone	Staffordshire	6,270
Stow Maries	Essex	182
Stowe by Chartley	Staffordshire	853
Stradbroke	Suffolk	1,277
Stroud	Gloucestershire	5,321
Studham	Bedfordshire	687
Sundridge	Kent	854
Swaffham	Norfolk	2,350
Swanage	Dorset	1,483
Symondsbury	Dorset	860
Tanworth	Warwickshire	1,682
Tatenhill	Staffordshire	529
Tenterden	Kent	2,786
Tetbury	Gloucestershire	2,533
Thaxted	Essex	1,733
Thorncombe	Dorset	1,189
Thornhill with Flockton*	Yorkshire West Riding	4,705
Thornton in Lonsdale	Yorkshire West Riding	1,152
Thurleigh	Bedfordshire	457
Tingrith	Bedfordshire	128

Toddington	Bedfordshire	1,182
Tonbridge*	Kent	5,932
Topsham	Devon	2,871
Torver	Lancashire	204
Tredington	Warwickshire	964
Tunstall	Lancashire	665
Tynemouth	Northumberland	19,042
Waddington	Yorkshire West Riding	1,088
Walton on the Hill	Surrey	263
Warsop	Nottinghamshire	1,047
Warton	Lancashire	1,477
Waterbeach	Cambridgeshire	680
Watford	Hertfordshire	3,976
Wath upon Dearne*	Yorkshire West Riding	2,681
Wedmore	Somerset	2,480
Wells (Norfolk) [Wells next the Sea]	Norfolk	2,683
Wem*	Salop	3,121
Westbury* (Salop)	Salop	2,195
Westbury on Trym	Gloucestershire	2,046
Westerham	Kent	1,437
Whitburn	Durham	843
White Notley	Essex	375
Wickford	Essex	296
Wickhambreux	Kent	430
Wickhambrook	Suffolk	1,160
Widecombe in the Moor	Devon	1,151
Wigmore	Herefordshire	360
Wigston Magna	Leicestershire	1,901
Wigton	Cumberland	4,051
Willingham	Cambridgeshire	972
Wilmslow	Cheshire	3,710
Wimbledon	Surrey	1,914
Winchcombe	Gloucestershire	1,936
Wing	Buckinghamshire	937
Winkfield	Berkshire	1,439
Wirksworth*	Derbyshire	6,883
Wishford Magna [Great Wishford]	Wiltshire	291
Woburn	Bedfordshire	1,506
Woodbridge	Suffolk	4,332
Woodhorn	Northumberland	1,172
Woodmancote	Sussex	247
Wootton (Bedfordshire)	Bedfordshire	831
Wootton (Oxfordshire)	Oxfordshire	888
Worcester St Helens	Worcestershire	1,412

Worth	Sussex	1,539
Wortham	Suffolk	832
Wotton (Surrey)	Surrey	488
Wotton under Edge	Gloucestershire	3,800
Wrangle	Lincolnshire	843
Wyberton	Lincolnshire	353
Wye	Kent	1,322
Wymondham (Leicestershire)	Leicestershire	437
Wymondham (Norfolk)	Norfolk	3,923
Yalding	Kent	2,059
Yarkhill	Herefordshire	365
Yarm	Yorkshire North Riding	1,431
Yoxford	Suffolk	1,007

Notes An asterisk against the name of a parish denotes that the tabulation of baptisms, marriages and burials for that parish includes totals taken from the registers of a chapelry, or chapelries, within the parish. Alternative names for individual parishes are given in square brackets.

Table 3   **List of the 404 parishes ordered by county with population**

County	Parish	Population in 1811
Bedfordshire	Ampthill	1,299
Bedfordshire	Blunham	857
Bedfordshire	Boln	230
Bedfordshire	Campton with Shefford	860
Bedfordshire	Chalgrave	633
Bedfordshire	Clophill	721
Bedfordshire	Cranfield	1,035
Bedfordshire	Felmersham	358
Bedfordshire	Flitwick	413
Bedfordshire	Harlington	352
Bedfordshire	Kempston	1,161
Bedfordshire	Maulden	850
Bedfordshire	Millbrook	335
Bedfordshire	Milton Ernest	332
Bedfordshire	Northill	870
Bedfordshire	Pavenham	385
Bedfordshire	Pulloxhill	408
Bedfordshire	Riseley	650
Bedfordshire	Sandy	1,122
Bedfordshire	Souldrop	212
Bedfordshire	Southill	1,024
Bedfordshire	Stevington	436
Bedfordshire	Studham	687
Bedfordshire	Thurleigh	457
Bedfordshire	Tingrith	128
Bedfordshire	Toddington	1,182
Bedfordshire	Woburn	1,506
Bedfordshire	Wootton (Bedfordshire)	831
Berkshire	Harwell	661
Berkshire	Sonning	1,974
Berkshire	Winkfield	1,439
Buckinghamshire	Aylesbury	3,447
Buckinghamshire	Princes Risborough	1,644
Buckinghamshire	Wing	937
Cambridgeshire	Fowlmere	448
Cambridgeshire	Haddenham	1,304

Cambridgeshire	Linton	1,373
Cambridgeshire	Melbourn	972
Cambridgeshire	Orwell	422
Cambridgeshire	Sawston	603
Cambridgeshire	Waterbeach	680
Cambridgeshire	Willingham	972
Cheshire	Bunbury	3,453
Cheshire	Chester Holy Trinity	2,278
Cheshire	Frodsham	4,098
Cheshire	Gawsworth	757
Cheshire	Nantwich	4,236
Cheshire	Sandbach	4,784
Cheshire	Wilmslow	3,710
Cumberland	Bridekirk	1,552
Cumberland	Crosthwaite	3,656
Cumberland	Dalston	2,369
Cumberland	Greystoke	1,504
Cumberland	Wigton	4,051
Derbyshire	Dronfield*	3,115
Derbyshire	Wirksworth*	6,883
Devon	Berry Pomeroy	1,179
Devon	Blackawton	1,109
Devon	Branscombe	595
Devon	Chardstock	1,151
Devon	Colyton	1,774
Devon	Hartland	1,734
Devon	Hemyock	882
Devon	Ilsington	861
Devon	Modbury	1,890
Devon	Offwell	312
Devon	Paignton	1,639
Devon	Staverton	1,001
Devon	Stoke Gabriel	572
Devon	Topsham	2,871
Devon	Widecombe in the Moor	1,151
Dorset	Swanage	1,483
Dorset	Symondsbury	860
Dorset	Thorncombe	1,189

Durham	Darlington	5,820
Durham	Middleton St George	202
Durham	Whitburn	843
Essex	Ardleigh	1,186
Essex	Bradwell juxta Mare	795
Essex	Dedham	1,432
Essex	Dengie	171
Essex	Great Baddow	1,461
Essex	Great Burstead	1,533
Essex	Great Sampford	603
Essex	Great Yeldham	437
Essex	Hadleigh (Essex)	311
Essex	Little Sampford	338
Essex	Maldon All Saints and St Peters	1,752
Essex	Romford	3,244
Essex	Stanford	704
Essex	Stow Maries	182
Essex	Thaxted	1,733
Essex	White Notley	375
Essex	Wickford	296
Gloucestershire	Avening	1,602
Gloucestershire	Bishops Cleeve	1,416
Gloucestershire	Cam	1,501
Gloucestershire	Dymock	1,342
Gloucestershire	Eastington	1,223
Gloucestershire	Fairford	1,444
Gloucestershire	Horsley	2,925
Gloucestershire	Minchinhampton	3,246
Gloucestershire	North Nibley	1,290
Gloucestershire	Stroud	5,321
Gloucestershire	Tetbury	2,533
Gloucestershire	Westbury on Trym	2,046
Gloucestershire	Winchcombe	1,936
Gloucestershire	Wotton under Edge	3,800
Hampshire	Aldershot	498
Hampshire	Boldre	1,914
Hampshire	Ellingham	341
Hampshire	Fordingbridge	2,259
Hampshire	Headley	983
Hampshire	Meonstoke	300
Hampshire	Odiham	2,048

Hampshire	Ringwood	3,269
Hampshire	Romsey	4,297
Hampshire	Selborne	770
Herefordshire	Bromyard	2,594
Herefordshire	Eaton Bishop	381
Herefordshire	Ledbury	3,191
Herefordshire	Lugwardine	518
Herefordshire	Wigmore	360
Herefordshire	Yarkhill	365
Hertfordshire	Aldenham	1,127
Hertfordshire	Barley	593
Hertfordshire	Berkhampstead [Berkhamsted] St Mary	864
Hertfordshire	Berkhampstead [Berkhamsted] St Peter	1,963
Hertfordshire	Hemel Hempstead	3,240
Hertfordshire	Hitchin	3,608
Hertfordshire	Hunsdon	512
Hertfordshire	Rickmansworth	3,230
Hertfordshire	Watford	3,976
Huntingdonshire	Great Stukeley	304
Kent	Ashford	2,532
Kent	Benenden	1,322
Kent	Biddenden	1,278
Kent	Bromley	2,965
Kent	Chiselhurst	1,450
Kent	Cranbrook	2,994
Kent	Eastry	909
Kent	Eltham	1,882
Kent	Goudhurst	2,082
Kent	Gravesend	3,119
Kent	Herne	1,442
Kent	Hythe	2,318
Kent	Lenham	1,509
Kent	Milton next Gravesend	2,470
Kent	Newenden	125
Kent	Reculver	265
Kent	Sandhurst	1,012
Kent	Sevenoaks	3,444
Kent	Sittingbourne	1,362
Kent	Speldhurst	1,901
Kent	St Nicholas at Wade	480

Kent	Staplehurst	1,341
Kent	Sundridge	854
Kent	Tenterden	2,786
Kent	Tonbridge*	5,932
Kent	Westerham	1,437
Kent	Wickhambreux	430
Kent	Wye	1,322
Kent	Yalding	2,059
Lancashire	Ashton under Lyne	19,052
Lancashire	Chorley	5,182
Lancashire	Deane	9,945
Lancashire	Hawkshead	1,710
Lancashire	North Meols	2,492
Lancashire	Radcliffe	2,792
Lancashire	Rochdale	33,577
Lancashire	Torver	204
Lancashire	Tunstall	665
Lancashire	Warton	1,477
Leicestershire	Ashby-de-la-Zouch	3,403
Leicestershire	Ashfordby	367
Leicestershire	Bottesford	891
Leicestershire	Breedon	2,302
Leicestershire	Castle Donnington	2,308
Leicestershire	Coleorton	910
Leicestershire	Desford	744
Leicestershire	Enderby	804
Leicestershire	Great Bowden	826
Leicestershire	Hinckley	6,058
Leicestershire	Husbands Bosworth	1,024
Leicestershire	Kibworth Beauchamp	1,313
Leicestershire	Kirby Muxloe	231
Leicestershire	Kirkby Mallory	248
Leicestershire	Long Clawson	627
Leicestershire	Loughborough	5,556
Leicestershire	Market Bosworth	1,034
Leicestershire	Market Harborough	1,704
Leicestershire	Medbourn	468
Leicestershire	Melton Mowbray	2,221
Leicestershire	Prestwold	519
Leicestershire	Saddington	215
Leicestershire	Shepshed	3,026
Leicestershire	Wigston Magna	1,901

Leicestershire	Wymondham (Leicestershire)	437
Lincolnshire	Clee	490
Lincolnshire	Frodingham	355
Lincolnshire	Gainsborough	5,915
Lincolnshire	Grantham	4,777
Lincolnshire	Great Grimsby	2,747
Lincolnshire	Haxey	1,627
Lincolnshire	Irby on Humber	196
Lincolnshire	Leasingham	329
Lincolnshire	Quarrington and Old Sleaford	285
Lincolnshire	Ropsley	440
Lincolnshire	Scartho	133
Lincolnshire	Wrangle	843
Lincolnshire	Wyberton	353
Middlesex	Edmonton	6,824
Middlesex	Northolt	392
Norfolk	Banham	978
Norfolk	Docking	994
Norfolk	Kenninghall	1,102
Norfolk	North Elmham	896
Norfolk	Norwich St Benedict	925
Norfolk	Norwich St Giles	1,043
Norfolk	Norwich St James with Pockthorpe	1,594
Norfolk	Norwich St Margaret	797
Norfolk	Norwich St Saviour	990
Norfolk	Sculthorpe	413
Norfolk	Sedgeford	439
Norfolk	Shipdham	1,412
Norfolk	Swaffham	2,350
Norfolk	Wells (Norfolk) [Wells next the Sea]	2,683
Norfolk	Wymondham (Norfolk)	3,923
Northamptonshire	Aynho	631
Northamptonshire	Little Bowden	305
Northumberland	Berwick on Tweed	7,746
Northumberland	Earsdon	4,388
Northumberland	Felton	1,409
Northumberland	Tynemouth	19,042
Northumberland	Woodhorn	1,172

Nottinghamshire	Arnold	3,042
Nottinghamshire	Blyth	1,759
Nottinghamshire	Burton Joyce	564
Nottinghamshire	Cropwell Bishop	364
Nottinghamshire	Darlton	139
Nottinghamshire	Edwinstowe*	1,558
Nottinghamshire	Fledborough	82
Nottinghamshire	Gedling	1,903
Nottinghamshire	Warsop	1,047
Oxfordshire	Banbury	4,173
Oxfordshire	Chinnor	895
Oxfordshire	Chipping Norton	2,331
Oxfordshire	Standlake	577
Oxfordshire	Wootton (Oxfordshire)	888
Rutland	Oakham	1,719
Salop	Alberbury	1,772
Salop	Albrighton	911
Salop	Baschurch*	1,347
Salop	Bitterley	1,103
Salop	Bromfield	610
Salop	Ercall Magna*	1,965
Salop	Ludlow St Lawrence	4,150
Salop	Onibury	415
Salop	Oswestry	6,733
Salop	Pontesbury	2,307
Salop	Shrewsbury St Alkmund	1,566
Salop	Shrewsbury St Chad	6,322
Salop	Shrewsbury St Julian	2,095
Salop	Shrewsbury St Mary	4,646
Salop	Stanton Lacy	1,026
Salop	Wem*	3,121
Salop	Westbury* (Salop)	2,195
Somerset	Bridgewater	4,911
Somerset	Bruton	1,746
Somerset	Congresbury	913
Somerset	Crewkerne	3,021
Somerset	Martock	2,356
Somerset	Milborne Port	1,000
Somerset	North Cadbury	908
Somerset	North Petherton	2,615

Somerset	Pitminster	1,206
Somerset	Wedmore	2,480
Staffordshire	Alstonefield	3,704
Staffordshire	Audley*	2,618
Staffordshire	Barton under Needwood	1,066
Staffordshire	Burslem	8,625
Staffordshire	Eccleshall	3,618
Staffordshire	Ellastone	916
Staffordshire	Rocester	873
Staffordshire	Sedgley*	13,937
Staffordshire	Stone	6,270
Staffordshire	Stowe by Chartley	853
Staffordshire	Tatenhill	529
Suffolk	Cavendish	1,074
Suffolk	East Bergholt	1,151
Suffolk	Eye	1,893
Suffolk	Framlingham	1,965
Suffolk	Fressingfield	1,064
Suffolk	Hadleigh (Suffolk)	2,592
Suffolk	Horringer	523
Suffolk	Ipswich St Clement	3,305
Suffolk	Ipswich St Lawence	494
Suffolk	Ipswich St Mary Elms	441
Suffolk	Ipswich St Mary Stoke	568
Suffolk	Ipswich St Matthew	1,353
Suffolk	Ipswich St Nicholas	832
Suffolk	Ipswich St Peter	1,125
Suffolk	Ipswich St Stephen	416
Suffolk	Lavenham	1,711
Suffolk	Laxfield	1,003
Suffolk	Marlesford	381
Suffolk	Mendlesham	1,093
Suffolk	Mildenhall	2,493
Suffolk	Peasenhall	633
Suffolk	Rattlesden	849
Suffolk	Saxmundham	957
Suffolk	Sibton	503
Suffolk	Stradbroke	1,277
Suffolk	Wickhambrook	1,160
Suffolk	Woodbridge	4,332
Suffolk	Wortham	832
Suffolk	Yoxford	1,007

Surrey	Abinger	629
Surrey	Beddington	1,250
Surrey	Carshalton	1,532
Surrey	Cobham	1,275
Surrey	Cranley	1,009
Surrey	Gatton	99
Surrey	Limpsfield	746
Surrey	Nutfield	631
Surrey	Putney	2,881
Surrey	Reigate	2,440
Surrey	Walton on the Hill	263
Surrey	Wimbledon	1,914
Surrey	Wotton (Surrey)	488
Sussex	Ardingly	553
Sussex	Bolney	510
Sussex	Brede	787
Sussex	Cowfold	614
Sussex	East Grinstead	2,804
Sussex	Felpham	536
Sussex	Frant	1,439
Sussex	Hailsham	1,029
Sussex	Harting	947
Sussex	Hurstpierpoint	1,184
Sussex	Northiam	1,114
Sussex	Pevensey	254
Sussex	Salehurst	1,653
Sussex	Woodmancote	247
Sussex	Worth	1,539
Warwickshire	Alcester	1,862
Warwickshire	Budbrooke	383
Warwickshire	Chilvers Coton	1,873
Warwickshire	Curdworth	548
Warwickshire	Dunchurch	996
Warwickshire	Edgbaston	1,180
Warwickshire	Harbury	904
Warwickshire	Kenilworth	2,279
Warwickshire	Kingsbury	1,104
Warwickshire	Mancetter	3,710
Warwickshire	Monks Kirby	1,472
Warwickshire	Napton	848
Warwickshire	Poleswoth	1,521

Warwickshire	Rowington	839
Warwickshire	Tanworth	1,682
Warwickshire	Tredington	964
Wiltshire	Bishops Cannings	1,349
Wiltshire	Bromham	1,225
Wiltshire	Wishford Magna [Great Wishford]	291
Worcestershire	Kings Norton	3,068
Worcestershire	Worcester St Helens	1,412
Yorkshire East Riding	Bridlington	4,422
Yorkshire East Riding	Bubwith	1,260
Yorkshire East Riding	Etton	338
Yorkshire East Riding	Hunmanby	903
Yorkshire North Riding	Easingwold*	1,959
Yorkshire North Riding	Gilling	310
Yorkshire North Riding	Kirkdale	884
Yorkshire North Riding	Marske in Cleveland [Marske by the Sea]	890
Yorkshire North Riding	Oswaldkirk	210
Yorkshire North Riding	Sessay	384
Yorkshire North Riding	Stainton in Cleveland [Stainton]	806
Yorkshire North Riding	Yarm	1,431
Yorkshire West Riding	Addingham	1,559
Yorkshire West Riding	Adel	996
Yorkshire West Riding	Almondbury*	19,302
Yorkshire West Riding	Bolton Percy	972
Yorkshire West Riding	Brodsworth	358
Yorkshire West Riding	Burnsall	1,075
Yorkshire West Riding	Carlton juxta Snaith [Carlton]	687
Yorkshire West Riding	Clapham	1,706
Yorkshire West Riding	Conisborough	1,047
Yorkshire West Riding	Darfield	2,449
Yorkshire West Riding	Dewsbury	11,571
Yorkshire West Riding	Emley	1,261
Yorkshire West Riding	Farnham	535
Yorkshire West Riding	Gisburne* [Gisburn]	2,209
Yorkshire West Riding	Guiseley*	6,813
Yorkshire West Riding	Hartshead	1,728
Yorkshire West Riding	Horbury	2,356
Yorkshire West Riding	Ilkley	871
Yorkshire West Riding	Kippax	1,573

Yorkshire West Riding	Ledsham	787
Yorkshire West Riding	Otley*	8,023
Yorkshire West Riding	Skipton	4,612
Yorkshire West Riding	Thornhill with Flockton*	4,705
Yorkshire West Riding	Thornton in Lonsdale	1,152
Yorkshire West Riding	Waddington	1,088
Yorkshire West Riding	Wath upon Dearne*	2,681

Notes An asterisk against the name of a parish denotes that the tabulation of baptisms, marriages and burials for that parish includes totals taken from the registers of a chapelry, or chapelries, within the parish. Alternative names for individual parishes are given in square brackets.