Contents

Preface xiii

Introduction 1

The data used: the parish registers and their shortcomings 3
Aggregative tabulations and local historians 5
The problem of demographic inference from aggregative data 7
Demographic structure and environment 8
The unit of analysis 9
The presentation of results 10

Part 1 From parish register data to national vital series

1. The basic data 15
   The parish tabulations 16
   Registration coverage over time 18
   Completeness of registration 19
   Patterns of defective registration 23
   Correcting defective registration 30

2. The representativeness of the data 33
   A demographic check 33
   Some indirect checks 37
   A bias discovered and corrected 45
   Compensating for differences in length of registration 56
   The consequences of weighting by parish population size 62

3. Inflation to national frequencies 66
   The aggregative sample and Rickman's 1836 survey 66
   The aggregative sample and the parish register returns of 1801 71
   Incorporating London into national estimates 77
   National inflation ratios 83

4. From baptisms and burials to births and deaths 89
   I Corrections for nonconformity and late baptism 89
   The growth of nonconformity 89
   The Quakers 92
   The effects of delayed baptism 96
   A method of correction 97

Combined results of correcting for nonconformity and delayed baptism 100

5. From baptisms and burials to births and deaths 103
II Final inflation ratios: offsetting other causes of non-registration 103
The use of age data from censuses 103
Adjusting age data in the 1821 and 1841 censuses 104
The level of mortality between 1821 and 1841 113
Early-nineteenth-century net migration 118
Mortality levels in the early nineteenth century 120
The censuses of 1801, 1811, and 1821 122
Decadal birth and death totals 1801–41 126
Anglican registration in the 1830s 130
Birth and death totals before 1801 136
The application of final inflation ratios 139
Assessment of the new estimates 142
Retrospect 152

Part 2 English population history

6. Secular trends: some basic patterns 157
The task defined 157
The overall pattern of events 160
Regional variation 162
London 166
Comparison with other studies 170
Population growth 174
Estimating crude rates of natural increase 179

7. Secular trends: back-projection estimates of population characteristics and vital rates 192
Recent attempts to make fuller use of parish registers 193
Aggregative back projection 195
A comparison of nineteenth-century census data and the results of back projection 199
Estimates of population size 207
The age structure of the population 215
Estimates of net migration 219
Fertility and mortality 228
The determinants of the intrinsic growth rate 235
Back projection and family reconstitution 248
Proportions never marrying 257
A simple model of the changes in the components of fertility that led to population growth in the eighteenth century 265
Sensitivity tests: alternative data sets 269
Sensitivity tests: migration and mortality schedules 277

8. Short-term variation: some basic patterns 285
Seasonal patterns 286

Annual variation and co-variation 305
Annual fluctuations 309
Crude birth, death, and marriage rates 310
Annual percentage deviation from trend in vital rates and real wages 313
Extreme fluctuations 320
Mortality crises 332
Mortality crises and monthly death rates 336
The timing of mortality crises in England and abroad 340
The analysis of co-movements 342
Internal structure within the series 344
Co-movements between the series 348
Summary 353

9. Short-term variation: vital rates, prices, and weather 356
The data 356
Methods of analysis 357
Nuptiality and mortality 359
Fertility and mortality 363
Fertility and nuptiality 366
Vital rates and wheat prices 368
Analysis by sub-period 373
Runs of high prices, threshold effects, and other nonlinearities 377
Weather and vital rates 384
Concise summary of conclusions 398

10. The economic setting of long-term trends in English fertility and mortality 402
Population growth, prices, and real wages 402
Mortality fluctuations and real-wage trends 412
Fertility fluctuations and real-wage trends 417
Marriage behaviour and real-wage trends 421
The timing of turning points in the real-wage, nuptiality, and fertility series 430
Nuptiality and fertility in the later nineteenth century 435
The lag between real-wage and fertility changes 438
Age-structural changes and the dependency ratio 443
Conclusion 450

11. Conclusion: a dynamic model of the relationship between population and environment in early modern England 454
The reliability of the results presented earlier in the volume 454
Modelling the setting of pre-industrial populations 457
English experience viewed in model terms 466
The limitations of models 480
Concluding remarks 483

Appendices

1. A list of the aggregative sample parishes and of the names of those who carried out the aggregative tabulations 485

2. Monthly, annual, quinquennial, and decennial totals of births, deaths, and marriages (England less Monmouth) 493
3. Back-projection results: population and net migration totals; age structure; natural increase; net-migration and population growth rates; fertility, mortality, and crude vital rates 527
4. From parish register data to estimated national totals of births, deaths, and marriages (England less Monmouth) 536
5. National population totals: the results of back projection compared with earlier estimates 563
   Population estimates before 1700 563
   Population estimates after 1700 576
6. English population totals 1801–71 588
7. Rickman's parish register returns of 1801 and 1841 597
   The reliability of the 1801 national totals 597
   County estimates 619
   Comparison of the 1801 and 1841 returns 624
   Summary 629
8. English birth and death totals 1841–71 631
9. A real wage series 1500–1912 using the Phelps Brown and Hopkins wage and price data 638
10. Local mortality crises 645
   Identifying local crises 646
   The distribution of local crises through time 649
   The seasonality of local crises 657
   Local crisis characteristics by quinquennium 659
   Some extended periods of local crisis mortality 664
   The causes of local crises 667
   The geographical spread of local crisis mortality 670
   The structure of local crisis mortality 685
11. Sequential sampling to estimate the proportion of monthly totals wrongly recorded 694
   Statistical basis 694
   Practical operation 695
12. The detection of periods of defective registration 697
   General strategy 697
   The reference period 698
   The test period 699
   Testing for 'peaks' 700
   Finding the edges of a 'peak' 700
   Testing for 'troughs' 701
   Finding the edges of a 'trough' 703
13. The replacement of defective monthly frequencies 705
   Interpolation 705
   Monthly variation 705
   Replacement 707
14. The derivation of two families of 'English' life tables 708
15. Aggregative back projection 715
   Back projection 715
   The derivation of measures of fertility and mortality 730

Testing the technique of back projection 733
Birth and death totals before 1541 736
16. Econometric procedures. 739

Bibliography 741

Index 759