

## Appendices

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## Appendix A

### Sources and methods

This appendix briefly discusses the data sources and methods used by the authors of this volume. A guide to the maps and details on the geography used are also included. Generally this appendix only discusses issues that are relevant to more than one chapter to avoid duplication between individual chapters.

#### Data sources

A wide variety of sources have been used in this volume, including birth and death registration data, cancer registration data, abortion notifications and congenital anomaly notifications. More details on these data sources can be found within the relevant chapters. These sources have been supplemented, where possible, using data from the ONS Longitudinal Study, and the introductory chapters make use of both Census and survey data.

#### The ONS Longitudinal Study

The ONS Longitudinal Study (LS) is a representative one per cent sample of the population of England and Wales containing linked Census and vital events data for approximately 500,000 people. The LS was begun in the early 1970s by selecting everyone born on one of four particular dates who was enumerated at the 1971 Census. Subsequent samples have been drawn and linked from the 1981 and 1991 Censuses using the LS dates of birth and data from the 2001 Census will also be linked. Population change is reflected by the addition of new sample members born on the LS dates together with the recording of exits via death or emigration. Routinely collected data on mortality, fertility and cancer registration for sample members are linked using the National Health Service Central Register (NHSCR) to perform the link. More details on the LS can be found in the LS Technical Volume.<sup>1</sup>

#### Methods

##### Method of age-standardisation

All rates in chapters 9-12 of this volume are age-standardised. Mortality and cancer incidence increase with age and therefore areas with older populations would generally experience higher crude rates than those with young populations. Age-standardisation enables comparisons of mortality and cancer incidence rates between different areas while allowing for differences in the age structure of the population.

All mortality and cancer rates in this volume are directly standardised using the European Standard Population (Table A1). This is used because it is closest to the demographic profile of the United Kingdom, having a high proportion of the population in the older age groups. The same population is used for both males and females.

Directly standardised rates measure the number of events per 100,000 population that would occur in the standard population if it had the same age-specific rates as the population being studied. Further details of direct standardisation can be found in numerous demography and statistical textbooks.<sup>2,3</sup>

**Table A1**

#### The European Standard Population

Age group	European Standard Population
0	1,600
1-4	6,400
5-9	7,000
10-14	7,000
15-19	7,000
20-24	7,000
25-29	7,000
30-34	7,000
35-39	7,000
40-44	7,000
45-49	7,000
50-54	7,000
55-59	6,000
60-64	5,000
65-69	4,000
70-74	3,000
75-79	2,000
80-84	1,000
85+	1,000
<b>Total</b>	<b>100,000</b>

#### Calculation of confidence intervals

Standard methods for the calculation of the confidence interval for a directly standardised rate are used.<sup>2,3</sup> All confidence intervals for data for countries and regions have been calculated at the 95% level, using the appropriate methods for the rate or percentage under discussion. Where necessary, further details have been discussed within individual chapters. All confidence intervals for local authorities used in the presentation of maps have been calculated at the 90% level.

## Guide to maps

Two main types of map are presented in this volume:

The first are those which divide authorities up into categories based on their value for a particular measure. These categories may be quintiles, in the case of cancer data, or predetermined categories, such as in the data for country of birth, Social Class and so on. These maps are single colour maps, with shading graded from blue to white, where blue denotes high values and white low values.

The second type of map, used in the majority of the chapters that include analysis at local authority level, compares the values for a particular measure with the national value. For different chapters this may be United Kingdom, Great Britain or England and Wales. For this type of map, we have allocated local authorities to categories on the basis of statistical significance, since there may only be a small number of events in any given local authority in a particular age group. We have attached 90% confidence intervals to all rates and percentages. The maps are constructed using the values for these confidence intervals in order to highlight true geographic variation. An authority is:

- Shaded purple if the 90% confidence interval around the rate or percentage excludes and is higher than the 90% confidence interval around the national value. Therefore, all authorities shaded purple had higher rates or percentages than the national value. Those shaded purple are divided into two groups with an equal number of authorities in each. Those shaded dark purple had the highest rates or percentages.
- Shaded green if the 90% confidence interval around the rate or percentage excludes and is lower than the 90% confidence interval around the national value. Therefore, all authorities shaded green had lower rates or percentages than the national value. Those shaded green are divided into two groups with an equal number of authorities in each. Those shaded dark green had the lowest rates or percentages.
- Unshaded if the 90% confidence interval around the rate includes the national 90% confidence interval. These authorities either had similar rates or percentages to the national value, or had large confidence intervals attached to their rates as the number of events in the authority was small.

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## Geography

### England and Wales

Data for England and Wales are presented for authorities as they existed in April 1999. Data for abortions, conceptions, births, mortality, cancer and congenital anomalies have been recast to the latest administrative boundaries using the postcode of usual residence. Postcodes recorded at the time of event were matched to the Central Postcode Directory (CPD) for 1999 to obtain the corresponding administrative area for 1999. Generally, the Isles of Scilly and City of London have been excluded from the analysis due to small numbers in their populations.

Census data was produced for 1999 authorities by re-aggregating original Census data. ONS Census Division supplied us with a

listing of the constituent of each new local authority in terms of its census authorities, wards and enumeration districts.

### Scotland

Data for Scotland are presented for authorities as they existed in April 1999. This data was supplied directly to us by the General Register Office for Scotland (GROS) and the Information and Statistics Division of the NHS in Scotland (ISD).

### Northern Ireland

Data for Northern Ireland are presented for local authorities as they existed at the time the data was collected. There was one boundary change in Northern Ireland during the period of analysis (Rathfriland ward was reallocated to Banbridge from Newry and Mourne in 1993). This data was supplied directly to us by the General Register Office for Northern Ireland (GRONI) and the Northern Ireland Statistics and Research Agency (NISRA).

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## Confidentiality

In each chapter, for all countries, rates and percentages are not included for any local authority where there are less than ten cases in any one category.

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## Data for non-residents

Generally data for non-residents are excluded from the analyses in this volume. There are two exceptions to this. In chapter 5, births data for England, Wales, Scotland and Northern Ireland at local authority level refer to residents of these countries only. However, data at country level for Scotland and Northern Ireland include approximately 280 and 190 births to non-residents respectively.

In chapter 10, data for England, Wales and Scotland at local authority level refer to residents of these countries only. However, data for Northern Ireland at both country and local authority level include approximately 90 deaths per year to non-residents. These deaths to non-residents are allocated to the local authority of occurrence. In addition, data for Scotland at country level include approximately 330 deaths per year to non-residents.

Data on conceptions, abortions, congenital anomalies and cancer refer to residents only, as do all data in chapters 2-4.

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## References

- 1 Hattersley L and Creeser R. *Longitudinal Study 1971-1991. History, organisation and quality of data*. Series LS 7. HMSO (London: 1995).
- 2 Breslow N and Day N. *Statistical Methods in Cancer Research, Volume II: The Design and Analysis of Cohort Studies*. International Agency for Research on Cancer, WHO (Lyon: 1987).
- 3 Armitage P and Berry G. *Statistical Methods in Medical Research*, 2nd edition. Blackwell Scientific Publications (Oxford: 1987).

Appendix B

Reference maps

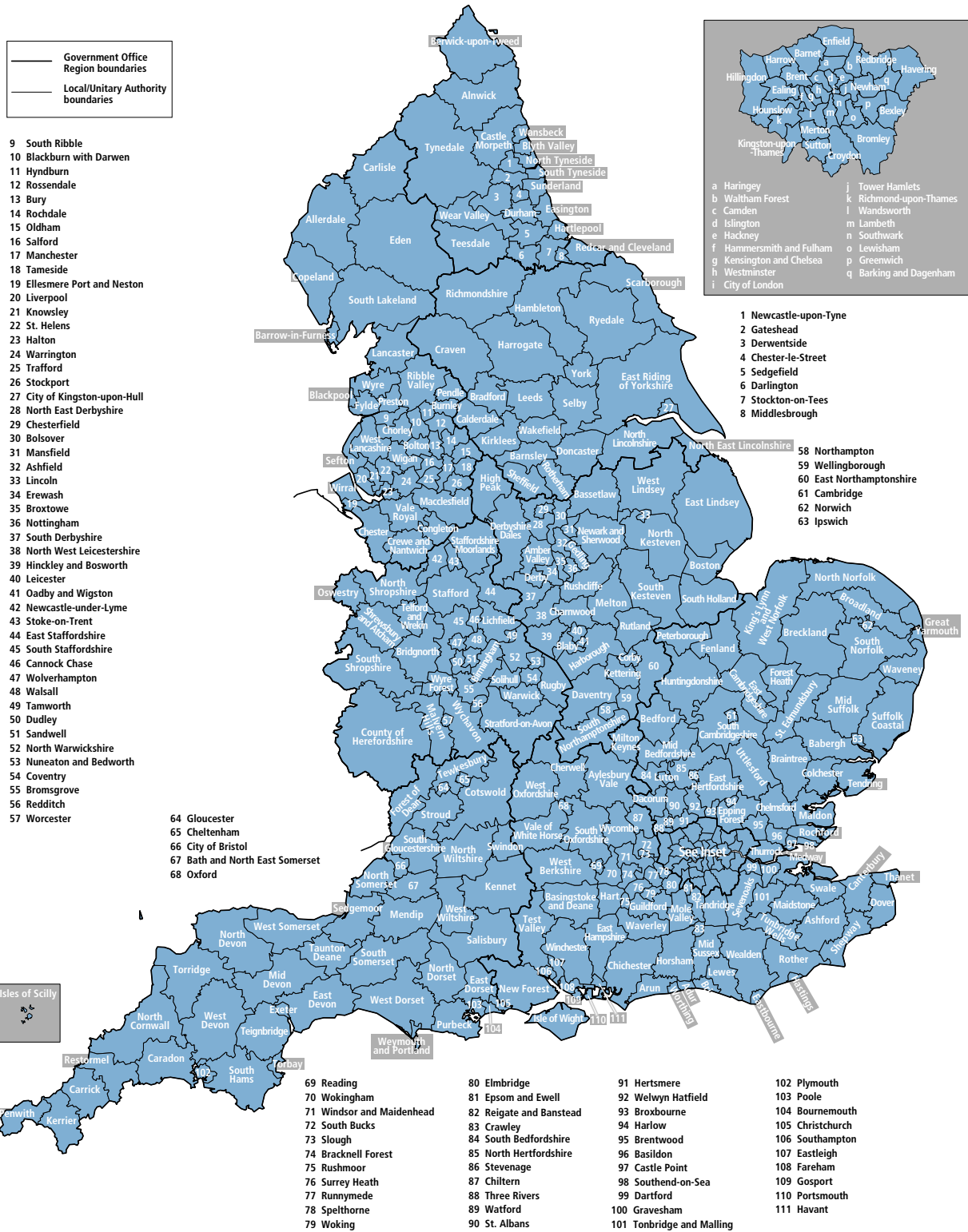
Map A

Countries of the United Kingdom and Government Office Regions of England 1999



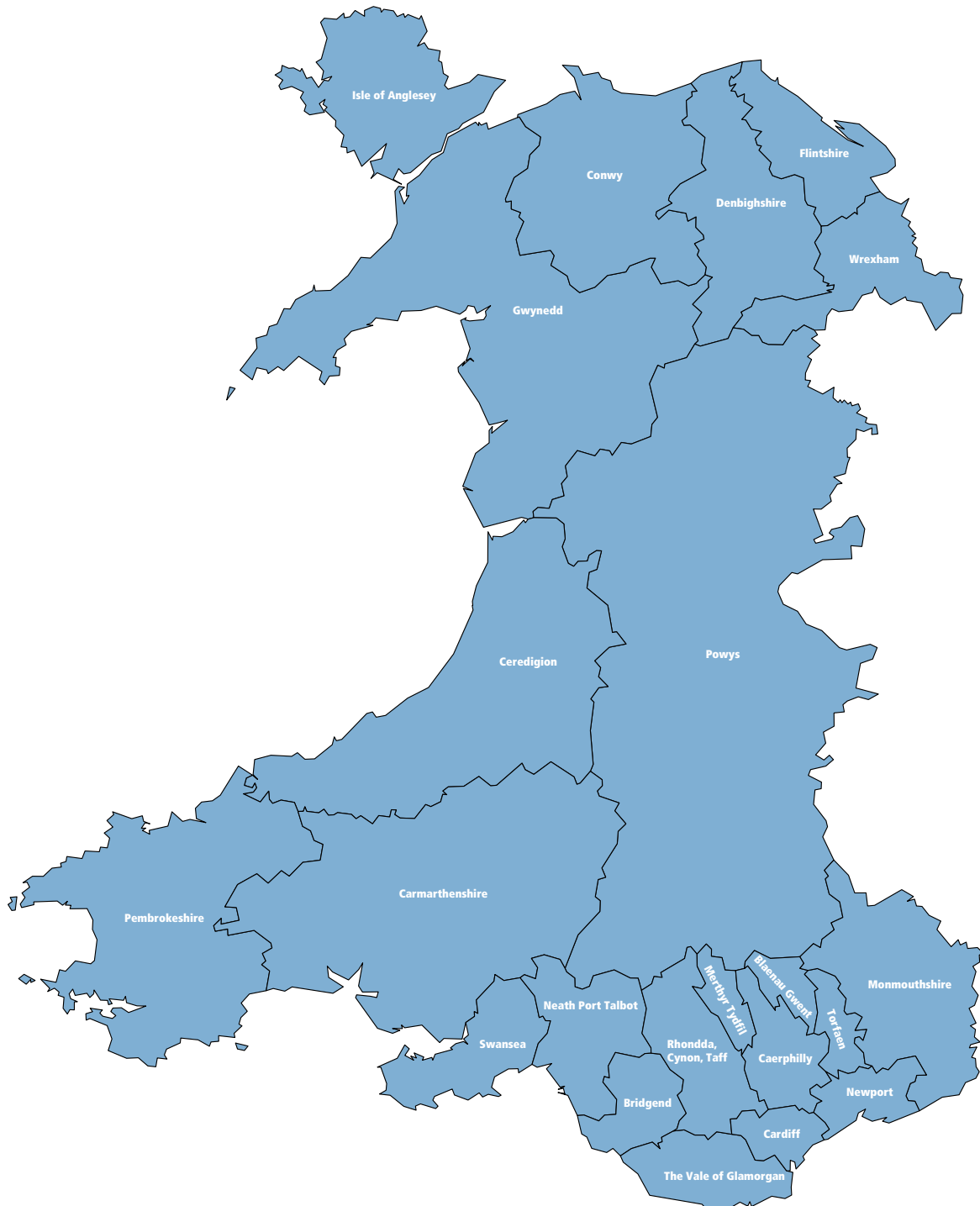
# Map B

## Local and Unitary Authorities, England 1999



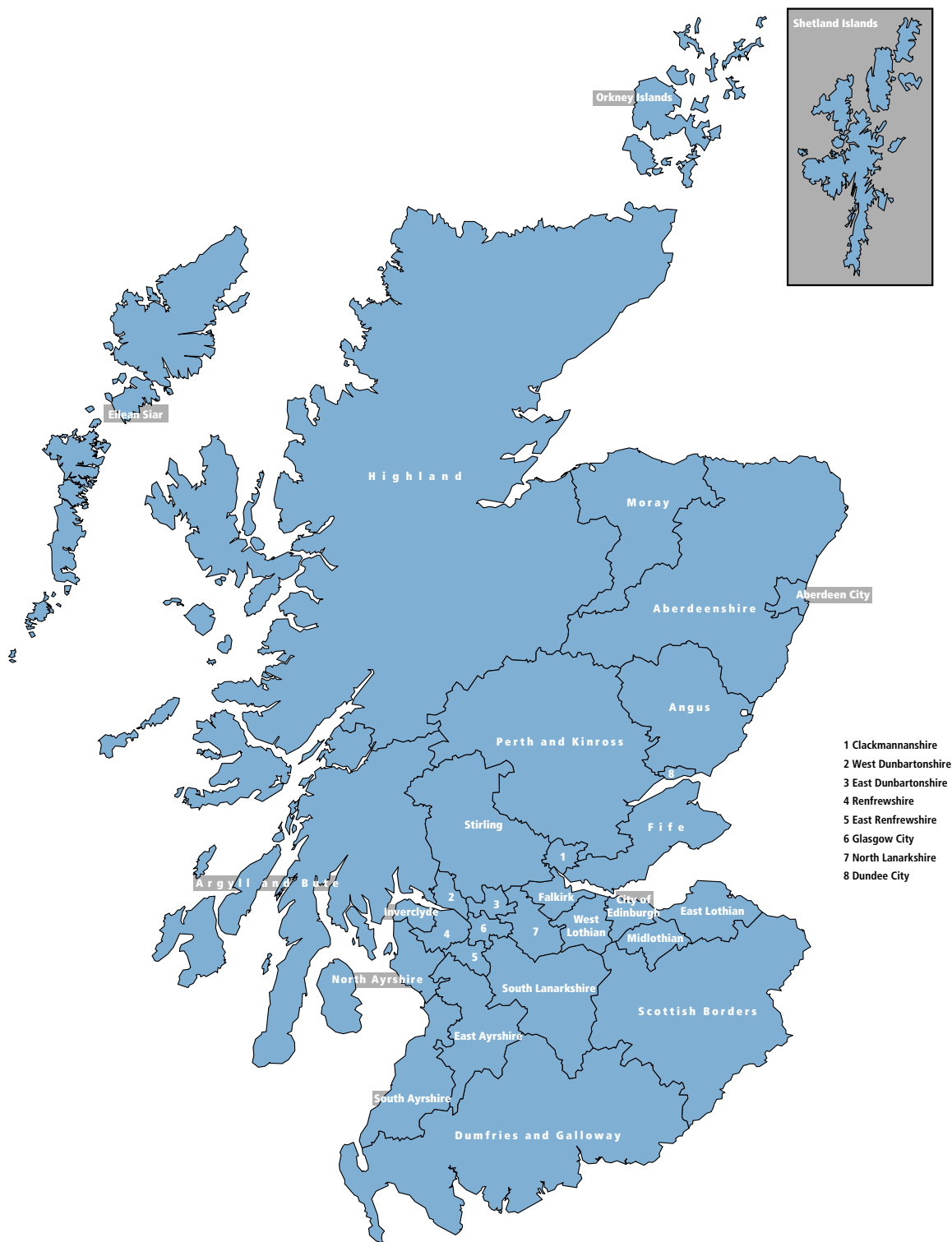
### Map C

#### Unitary Authorities, Wales 1999



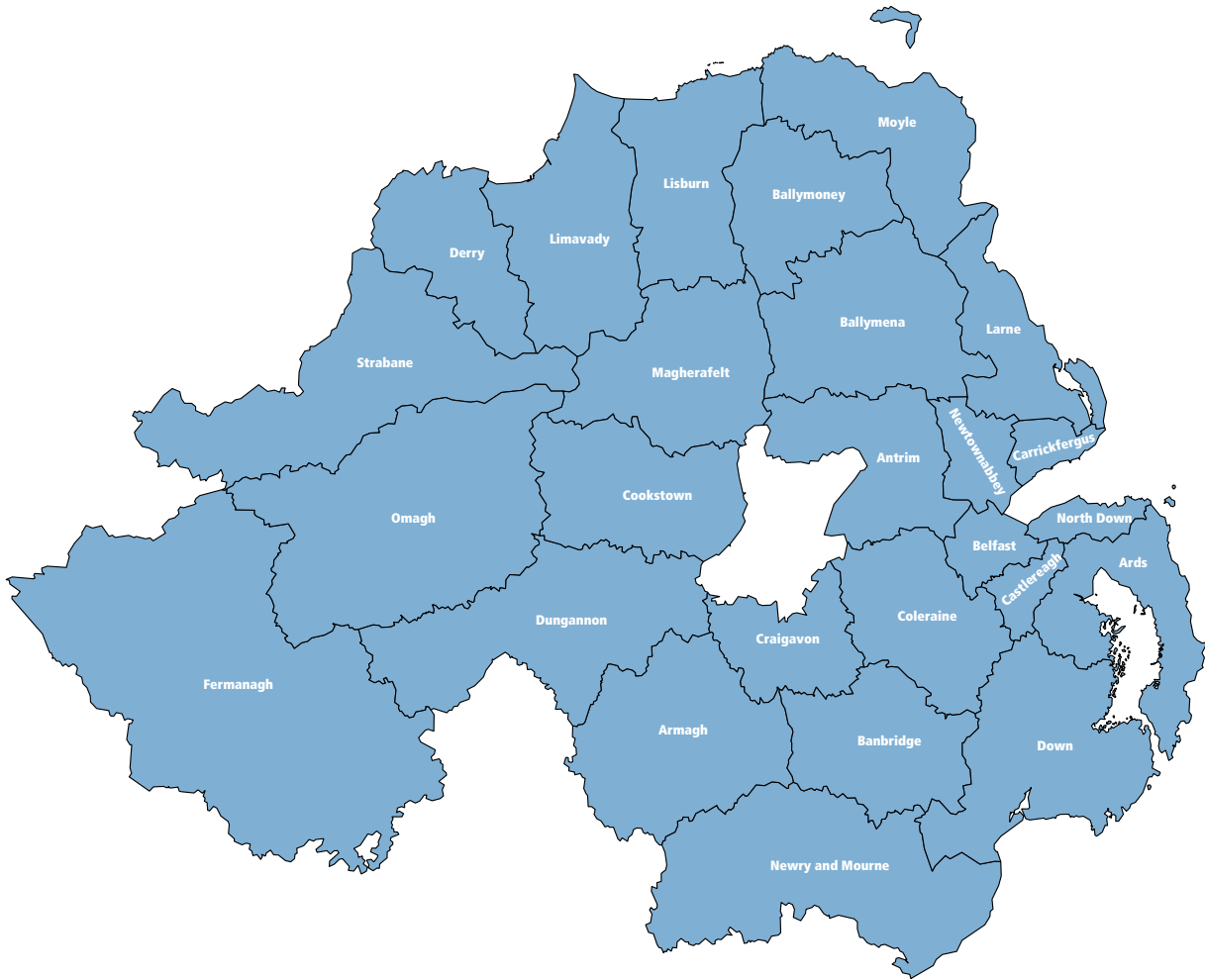
### Map D

#### Local Councils, Scotland 1999



### Map E

District Councils, Northern Ireland 1999



## Appendix C

### External referees

The help received from independent referees is greatly appreciated. They made very valuable comments about the chapters at draft stage and helped to clarify content and consistency of approach across chapters. The overall

responsibility for each chapter rests with the chapter authors. No responsibility for the contents or comments within a chapter rests with the referees. The following provided comments on one or more of the chapters:

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