

Small Area Demographic Projections: requirements and deliverables

Population and household projections for areas within a local authority district

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Introduction

Procedures have been developed to use population, births and deaths data for Output Areas and Super Output Areas in England and Wales and for DataZones in Scotland, aggregating these data to describe any small area required. These data are used to make a population projection in POPGROUP, based on recent levels of fertility and mortality and migration. The projected impact on households is modeled in HOUSEGROUP. Plans or targets for housing development, and their impact on migration and population, are further modeled by linking the two demographic models.

All census and government data are acquired by CCSR and described in separate documentation of the methods. In England and Wales, the projections will begin with estimates from 1991 to the latest small area population estimates, and in Scotland with estimates from 2001 to the latest small area population estimates.

This document describes the small areas that can be projected, specifies the information required from the user or client, other information used by CCSR, and the information delivered by CCSR. If only population projections are requested, then the inputs and outputs referring to households can be ignored. For more detail of the methods used, see 'small area projections - methods June2009.doc'.

Small areas. The small areas will normally cover the whole of one local authority district in England, Wales or Scotland.

How small? The procedures for forecasting will work for small areas of any population, but are not as robust for small populations as for larger populations. Smaller populations often change from year to year in ways different from past trends which are the basis for the projections. We recommend a smallest population of three thousand.

Institutions. The projection may be less reliable if a major institution is present, such as a large prison, boarding school, halls of residence or armed forces base with say more than one hundred residents. The difficulty arises because such populations maintain their age-structure through replacement of those that leave the institution by others of a younger age; the migration data available for small areas is not good enough to model this replacement precisely. It may be advisable to estimate the size of such an institutional population and make assumptions about its future size, outside of the projection of the rest of the population. An independent projection of these 'special populations' is the responsibility of the client, and can then be incorporated within the POPGROUP framework. Otherwise, the projections must be examined and used with caution for areas with large institutional populations.

This said, projections of population and households for Aylesbury Vale wards with populations as low as 1,600 and with several sizeable institutions have been prepared using the standard methods, with useful results for planning strategy.

1. Requirements

The following are required from the client (1.1 to 1.3 for population projections, 1.4 for household projections):

- 1.1. List of small areas in one Local Authority District in England or Wales or Scotland, with two items in each row:
 - 1.1.1. Short label (up to 8 characters: the name of the area as it will appear in outputs whenever there is space only for a short label), and
 - 1.1.2. Long label (the name of the area as it will appear in output where there is space for the full name).
- 1.2. A short and a long label for the District as a whole.
- 1.3. To show how each small area is composed of 2001 census areas, either (a) a statement that 2001 Census wards or a specified aggregate of them should be used, or (b) a complete list of 2001 Census Output Areas (in Scotland, DataZones) in the District, with three items in each row as follows:
 - 1.3.1. 2001 Census Output Area/DataZone code
 - 1.3.2. User's small area short label (one of those given in 1.1.1 above)
 - 1.3.3. Weight (it must be 1 unless the Census Output Area/DataZone code appears more than once to indicate that it is shared between more than one small area, in which case its weights must sum to 1).
- 1.4. For household projections led by housing targets: up to three housing scenarios, each having a short identifier and each consisting of a list of all the small areas, with items in each row as follows (a spreadsheet for each scenario would be most suitable):
 - 1.4.1. User's small area short label
 - 1.4.2. For each year of the projection 2001-02, 2002-03, ... , the number of new housing units expected in the small area. These must be blank for each year in which population estimates are available for the sub-district areas, but are expected to be filled for every subsequent year.

2. Deliverables

- 2.1. POPGROUP and HOUSEGROUP *output files* for each projection, with instructions on how to interrogate them. Interrogation software is supplied whether or not the client has POPGROUP and HOUSEGROUP software, to help production of tables and charts. All the output files are Excel files from which results can also be

extracted directly. The detailed output files include for each year of the projection, the population at single year of age, births and fertility rate, deaths and mortality rate, migration flows, and numbers of households and dwellings.

- 2.2. POPGROUP and HOUSEGROUP *input files* for each projection, with instructions on how to use them to develop further forecasts. This requires the POPGROUP and HOUSEGROUP software. The input files contain full details of the base population, subsequent population estimates, births, deaths and estimated migration, the assumptions made for the projections, with documentation.
- 2.3. *Summary tables* including the following information for each small area and the District:
 - 2.3.1. Population: past, recent and projected population, fertility, mortality, migration and age structure.
 - 2.3.2. Households: past, recent and projected household population, households, dwellings, household size, for a 'migration-led' projection unconstrained by housing targets, and for one or more 'dwellings-led' projections when constrained by the housing targets provided.
- 2.4. *Documentation* of the method of data preparation and projection.

3. Data provided by EdgeAnalytics

- 3.1. Births, deaths for Output Areas and DataZones, and population estimates for Lower-level Super Output Areas (LSOAs) and DataZones. Net migration at each age and sex is estimated from the change in population in past years.
- 3.2. Migration age-sex profiles from the census ward(s) containing each small area.
- 3.3. Projected changes in the level of age-specific fertility and age-sex specific mortality from the government projections for the country containing the district.
- 3.4. Household membership rates for household types, as estimated and projected by government, scaled to be consistent with numbers of households and their type in each small area in 2001.
- 3.5. The relationship between households and dwellings for each small area is taken for each small area from the 2001 Census, as recorded in tables UV53 and UV55.