# POPULATION AND MIGRATION STATISTICS COMMITTEE (SCOTLAND)

## POPULATION STATISTICS – GEOGRAPHY

### Introduction

This paper has been written to outline some of the concerns from the local authority side about the geographical areas for which population estimates and small area population estimates are being produced. It seeks to set out some of the issues and find a way forward which will be satisfactory both to data producers and to users. PAMS is asked to note these concerns and to take any necessary action to progress the matter.

### Mid-Year estimates and projections

Mid year estimates of population are produced annually by GROS at a **local authority** level - on the current local authority boundaries – and also for **health board** areas. Population projections are produced bi-annually for the same two geographies, with the next set due at the end of 2005/early 2006 on a 2004 base.

Health Board areas are not exact aggregations of local authority areas which means that GROS have to produce estimates for part local authorities in order to calculate population estimates for both geographies. These boundary differences are largely due to the fact that the health board boundaries have remained the same since the mid 1970's while there have been changes in local authority boundaries – most notably at local government reorganisation in 1995. Note however, the recent announcement of the consultation on the abolition of Argyll and Clyde Health Board and its proposed amalgamation with Greater Glasgow and Highland Health Boards.

From time to time minor changes are made to local authority boundaries. These normally only affect a small number of people. GROS usually amend their population estimates in the next year (if that is necessary), but it does mean that there is a small discontinuity in the estimates for the affected council areas. This may also affect the differences in the boundaries between local authorities and health boards (see above).

Local government re-organisation in 1995 resulted in the abolition of a number of small councils and their amalgamation into new, larger council areas. This particularly affected the more rural parts of Scotland, where the district councils disappeared and the former regional councils became the unitary authorities. A number of these new councils have requested population estimates and projections for the **former district council** areas, because the new councils cover a much larger area than before, figures were previously produced for these areas and these areas are still being recognised as sub-areas within the new councils. It may be appropriate to review whether this requirement remains.

Local government reorganisation also resulted in a substantial discontinuity in the geography for population estimates and projections. This has required considerable reworking of estimates etc in order to provide time series back to at least 1981 in order to identify long term trends.

Local authorities are generally satisfied with estimates and projections for their areas and for health boards. There remain issues of discontinuities in the geography and a possible requirement for estimates and projections for former district council areas. It is recommended that the need for estimates for former local authority areas should be reassessed in the light of the datazone information (see below).

**Small area population estimates**

There has been a demand for a long time for population estimates for areas below local authority level and this requirement has been increasing over time. Many local authorities produce their own small area population estimates, for a variety of geographical areas, for their own purposes. Many different methods are used to produce these so that there is little consistency across areas.

One notable exception has been the population estimates from the Voluntary Population Survey in the former Strathclyde local authority areas. However, changes in IT and legislation regarding electoral registration mean that this is likely to be discontinued.

In March 2001 GROS produced an experimental set of small area population estimates for **postcode sectors** by gender and five year age band. These were compatible with the 1999 mid year estimates of population. This was followed by **ward** estimates which were controlled to the local authority mid year estimates. Both estimates made use of the Community Health Index and an apportionment method.

Further ward and postcode sector estimates were produced for 2000, and following the 2001 Census, for wards for 2002. The 2002 estimates used a different, cohort component, methodology.

Local authorities welcomed these estimates and found the geographies useful. They were involved in consultations on the methods and were generally satisfied with the progress made in producing these small area estimates.

Neighbourhood Statistics has generated a need for population estimates for **datazones** and **intermediate datazones**. These geographies have been created as statistical geographies, to be stable over a reasonable period of time, to be large enough to provide statistically reliable information without problems of confidentiality of the data, and to be flexible enough to aggregate to areas of interest.

Many local authorities have concerns about the shift to a datazone geography. Firstly, because datazones are a statistical geography, they do not relate to any of the administrative or natural geographies which local authorities use most frequently, although attempts were made to use primary school catchments in their design.

Secondly, they are not sufficiently small (cf. Census Output Areas or unit postcodes) to aggregate easily to other geographies, although they may be adequate for approximating to larger areas such as parliamentary constituencies.

Thirdly, local authorities are concerned that producing estimates for datazones appears to mean abandoning ward and postcode sector estimates which were generally much more useful – without adequate consultation.

Fourthly, when local authorities were consulted on the initial datazone boundaries (and subsequently on the intermediate datazones), some were able to make substantial revisions while in other cases no changes were made. This means some inconsistency between local authorities in the size and shape of the datazones.

Fifthly, now that progress has been made to produce provisional population estimates for datazones for 2001 to 2004, several datazones now significantly exceed the upper population target of 1,000 people (due to new housing developments) while others have fallen below the lower target population of 500. This gives us concerns about the viability of the concept and the stability of the datazone boundaries – which was one of the reasons for their creation.

Many authorities have doubts about the ultimate usefulness of datazone geography and are concerned that this appears to be the only geography currently being considered and developed. We would welcome wider consultation on the issue of geography for statistical purposes involving all interested organisations.

In 2005, GROS published total population estimates for areas called **settlements** and **localities** for 2003. These geographies have a long history[1].

Localities were initially defined as continuously built up areas with 500 or more population at the time of the 1971 Census. These were used to produce statistics from the 1981 Census. However, their usefulness then was limited because a named locality often included other places which local authorities and the public would have identified separately and would have wished to have separate population estimates for e.g. Johnstone included Linwood, Elderslie, Kilbarchan and Brookfield. For the 1991 Census GROS took on board some of these concerns and local authorities were involved in identifying localities leading to significant improvements.

By the time of the 2001 Census the need to make a better distinction between rural and urban areas led to a further reworking of the boundaries and to defining a two tier structure of settlements and localities. These were defined based on density of addresses in postcodes.

Again we have a number of concerns about population estimates being published for these areas. Firstly, close examination of the boundaries has shown up anomalies with some postcodes which are part of a built up area being excluded from the locality. GROS are making efforts to tidy up the boundaries of postcodes on the edges of settlements which should help to solve this problem.

Secondly, although the localities identified are much improved, there are still areas where a total population includes a number of places which local authorities would identify separately – examples include in East Renfrewshire, Vale of Leven and Polmont. Local authorities welcome approaches from GROS to look at areas where further improvements could be made.

Thirdly, the settlement estimates, which were published first, could be misleading. Having a total figure for Glasgow of 1,170,000 but parts in a number of local authority areas, including for example, 120,000 in Renfrewshire in Paisley, Johnstone, Linwood etc, all substantial places in their own right, is not useful and difficult to understand. In the settlement figures, there are no separate entries for large towns such as Paisley, Airdrie and Coatbridge while small places such as Gatehouse of Fleet (pop 930) and Kyle of Lochalsh (pop 750) are listed simply because they are geographically separate communities. While an explanation is given in accompanying commentary, with links to more detailed information, many users will not take the time to read this. The locality data is more useful and more intuitive. GROS should consider whether to continue to publish the settlement information and/or how it could be improved.

Local authorities are concerned that GROS now appears to be producing small area population estimates for two sets of geographies – datazones and settlements and localities – neither of which is adequately meeting their needs.

**Geography issues**

It is obvious from the above discussion that there are issues relating to the geographical areas for which population estimates are being produced. The following notes provide further information on more general geography issues.

[1] A good description is given in "Scottish Settlements: Urban and Rural Areas in Scotland", GROS, 2001. www.gro-scotland.gov.uk/statistics/geography/scosett.html

1. Wards – there have been difficulties with ward geography in Scotland because of the frequent reviews of ward boundaries. In most councils, the 1990's saw three different sets of ward boundaries in effect. Firstly those which existed at the time of the 1991 Census, revised boundaries which came into effect at the elections for the new councils and a further set of boundaries effective from the elections in 1999. These are the wards currently in place.

The introduction of a proportional representation voting system for the next local government elections in 2007 means another review of ward boundaries. Since these wards will have either three or four elected members and the number of councillors is to remain the same, the new wards will be substantially larger than the present wards and there will therefore be fewer wards in each council area.

Because of their interest to councillors, local authorities have a need to produce statistics for current ward areas. The increase in the size of the wards in unlikely to change that requirement, so population estimates will continue to be needed for whatever ward boundaries are currently in existence.

Although our main interest is in the current wards, there remain requirements to use historic ward boundaries. The wards as they were in 1991 were used to establish Assisted Areas, Objective 2 areas and CED areas. As long as these areas remain eligible for funding packages, there will be a need for data for these old wards. The 1995 wards form the basis of the Scottish parliamentary constituencies and so retain some validity.

The current wards were used to publish 2001 Census statistics using a best fit of Census Output Areas. This has proved very useful to most local authorities who previously carried out this aggregation themselves. It also brings Scotland into line with England and Wales in having wards as an intermediate geography for the Census.

2. Parliamentary boundaries – there are currently four sets of boundaries for the three legislatures to which Scots elect MPs, MSPs and MEPs. MEPs are elected on a **Scotland** wide basis, so population estimates and projections for this geography are not an issue. Since the elections in May 2005, the **Westminster and Scottish Parliamentary constituency** boundaries no longer match since the number of Scottish MPs has been reduced to 59 following devolution.

The Scottish Parliamentary constituencies are aggregations of the wards as they were in 1995, while the new Westminster constituencies follow the 1999 (i.e. current) ward boundaries.

Information will be required for both sets of parliamentary boundaries. These are quite large areas so it may be possible to use areas such as datazones to provide a reasonable approximation.

Additionally, the list MSPs cover groups of Scottish Parliamentary constituencies.

3. Other geographies – there are a wide variety of other geographies which local authorities, other public bodies and the public have an interest in and for which population estimates (and sometimes projections) are requested. Many of these are local service delivery areas such as school catchments, community council areas, local plan areas, social work teams, housing management areas and police beats. Some, such as Registration Districts, Community Council areas and Civil Parishes have a statutory or legal basis. All these are subject to change from time to time.

An ideal situation would be if a method of producing small area population estimates could be developed which would allow estimates to be made for this wide variety of geographies. The difficulties on doing so are appreciated. It is the view of many local authorities that datazones are not generally adequate for this purpose.

4. Disclosure control - This issue has become a major one for GROS and ONS in recent years. The possibility of identifying, or appearing to identify, an individual increases as geographies become more disaggregated and/or sub-sections of the population are produced e.g. age/gender disaggregations. The danger is also increased if overlapping geographies are used so that very small groups could potentially be identified by differencing.

5. Census geography: - One of the most important aspects of the Census is that it provides information at a very small area of geography. Census Output areas have just over 50 households on average which gives them enormous flexibility to aggregate to other geographies, facilitated by developments in GIS.

Recent developments to look at alternatives to the Census are welcomed, mainly because the Census only takes place every ten years and more frequent information is a major requirement. However, we are anxious to ensure that we retain a flexible small area geography.

**Conclusions**

There are a wide variety of geographies for which population estimates are required. While some of these obviously have a much higher priority than others, some decisions need to be made about which are the most important areas.

Issues for discussion/action:

a) GROS is asked to reassess the need for estimates and/or projections for the former local authority areas in the light of the datazone estimates now being produced;
b) Efforts to tidy up the boundaries of postcodes on the edges of settlements are welcomed and local authorities would be happy to help in this process;
c) Local authorities would like to make further progress in working together with GROS to resolve any unsatisfactory definitions of localities;
d) GROS is asked to consider if and how they publish figures for settlements;
e) what geographies should GROS be expected to produce population statistics for?
f) what level of detail is required for each?
g) how should the population estimates for datazones be informing any review of datazone boundaries?
h) how can local authorities, with their local knowledge, assist GROS in defining the best geographies at which to produce population estimates and projections?
i) how can we ensure that alternatives to the Census retain consistent small area geography?
j) does the issue of statistical geographies need to raised at SCOTSTAT?

**Author:** **Jennifer Boag, Senior Research Officer, Falkirk Council;**
**Lead officer, local authority side PAMS**
**Date:** **24th May 2005**