

2150411
COPY
NO NOT REMOVE

Making

local

population statistics:

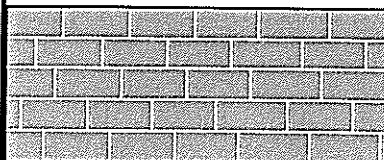
a guide

for practitioners

Estimating

with

Confidence



V.12 Electoral ward boundary reviews: forecasting the size of the electorate five years ahead

Ward boundaries are regularly reviewed to maintain an appropriate equality between the number of electors each ward councillor represents. In order to provide for some stability, reviews take into account the likely size of the electorate five years beyond the date of the review. Making forecasts of the electorate for current and alternative boundaries involves (a) management and analysis of data similar to that needed for forecasting the whole population, and (b) coping with alternative boundaries. This section describes a method for achieving and using the required forecasts.

Summary

- Methods used should be easily understood and sufficiently flexible to deal with many alternative boundaries.
- Minimum data required include the extent and location of new housing, past trends in the electorate in each current ward, and a count of the current electorate in very small areas derived from electoral registers.

Requirements

Government Commissions review ward boundaries within each Local Authority - the Local Government Commission for England, the Local Government Boundary Commission for Scotland, and the Local Government Boundary Commission for Wales. In some cases the total number of councillors is reviewed as well as equality between the number of electors represented by each councillor. The commissions ask that each Local Authority draw up an initial proposal that takes into account both the most recent available electorate figures and forecasts of the electorate five years into the future, for each proposed ward boundary.

The purpose of the forecasts is to ensure as far as is practicable that changes occurring in the number or location of electors shortly after the review do not significantly upset the general balance of the ratio of voters to elected members - the electoral ratio.

In the commissions' remit, equality of electorate is the most important criterion for setting new boundaries; two other criteria are: easily recognisable boundaries and community interest.

The commissions expect the Chief Executive of the council to provide councillors with the forecast of the electorate in order to de-politicise the statistical basis on which the proposal is based. Political parties will be very interested in the number and placing of new ward boundaries. The result will affect their overall representation as well as the personal future of existing Councillors and candidates.

The tolerance for inequality between ward electoral ratios are not set exactly. However, in England, it is expected that no new ward should be forecast to be more than 10% different from the Local Authority average. In the current review in Scotland no rural ward is expected to be more than 10% different from the Local authority average in rural areas; tighter equality - 5% - is expected in Scottish urban areas because there are not clearly defined communities which ward boundaries must respect.

The commissions do not specify how the forecasts are to be carried out nor the way in which the results should be used.

Logically, the statistics required for a review are:

For the Local Authority as a whole:

- D1. The total electorate
- D2. The electoral ratio*

For each existing ward and each suggested ward:

- W1. The electorate.
- W2. The electoral ratio*
- W3. Percentage difference between the electoral ratio for the ward and for the Local Authority, $(100*(W2-D2)/D2)$
- W4. The number of electors (if any) over or below the limits advised by the relevant commission.

* The number of electors divided by the number of councillors.

Comment: number of councillors in each ward:

In many English shire areas there can be 1, 2 or 3 councillors in a ward. In other council areas where every ward has the same number of councillors - Scotland, and English metropolitan areas, it is equivalent to use as Local Authority electoral ratio the authority electorate divided by the number of wards, and for ward electoral ratio the electorate of each ward.

Comment: Scotland

There is one councillor elected in every ward. The balance of electorates between wards is often called parity. There have been three reviews of ward boundaries since 1980 in Scotland, in each of which all authorities have been reviewed. The latest (1996-1998) is the

first time that the Commission has had the opportunity to determine the number of councillors for unitary councils.

Comment: England

Parishes are often used as small area building blocks, because they have accepted boundaries which often coincide with recognised communities.

In county areas, forecasts of the county electoral division are also required. These are also called wards, but county wards and district wards can be different.

The Boundary Commission examines all boundaries in turn, but will turn to specific areas if there are unusual circumstances. For example, areas which have experienced very fast change or major boundary changes in the council areas themselves.

<p>List A List of Councillors (to tick them off as they come to see you with their own good ideas) A lockable office Coloured pens Plenty of large scale maps Headache pills Large supply of black coffee</p> <p>List B Complete set of electoral registers Map showing the boundaries of polling districts Definitive list of new housing sites Map showing the location of new housing sites Some basic statistics on the electorate, population and households for the last few years A simple spreadsheet package</p> <p>(Contributed by Jenny Boag, Falkirk Council – with thanks to Andy Smith for List A)</p>
--

Table 25 Equipment needed for a ward boundary review

A five-step approach to forecasting the electorate

There is no standard way of producing forecasts of the electorate or of the population for small areas, though some methods have been documented (see Section V.11

. This is because the driving force behind population change is not the same in each area - in particular housing development leads directly to more population in some areas at some times, while in others population movement occurs to a greater extent within existing housing stock.

The advice here is intended to provide a framework which will be relevant in all areas, and assume that no forecasts of population for areas within the Local Authority already exist. It identifies data and analysis that will provide the requirements stated above, but provides for different analyses in areas that require them.

- Step 1** Local authority review
- Step 2** Compile and review data for small areas
- Step 3** Analyse small area housing data and choose method for forecasting the electorate of small areas
- Step 4** Forecast the electorate for areas smaller than wards and tabulate results
- Step 5** Forecasts for proposed new ward boundaries

These five steps are described below. Annexes provide more detail and advice on geography and data management, and the relationship between housing development and population change. Relevant published technical work was listed in section V-11.

Step 1 Local authority review

A. Adult population forecast (aged 18+) for the Local Authority, for five years beyond the review.

B. The ratio electors/adult population for current and past years. Examination of the trend will lead to a choice of the ratio for five years into the future. This may be the average of recent years, or the extrapolation of a trend estimated by eye or by regression.

Electors in future year (D1) = A x B.

Derive the target Local Authority's electoral ratio (D2) = future electors/councillors.

Comment: Scotland and Wales:

The commissions in Scotland and Wales set a target number of electors per ward for each of seven groups of demographically like councils. The number of new wards is derived from the Local Authority's current electorate, by dividing it by the target number of electors per ward.

Comment: source for the Local Authority population forecast (A)

ONS, GRO(S), and the Welsh Office plan to produce population projections for each Local Authority area with detail of age and sex. Prior to 1998, only counties in English shire areas, and districts in other areas, were forecast by the government office. Some Local Authorities produce their own population projections that can be used here, but their advantage over the government projections will need to be justified to the commission.

Comment: attainers on the electorate in B

All those whose 18th birthday falls during the 'live' period of the electoral register one year after the February date it is published, are eligible to be included in the register and in the forecasts, as well as those who are already 18 at the time of collection.

Step 2 Compile and review data for small areas

Data

For each of the past 5 years (and preferably 10 years), add the following to a spreadsheet:

Electorate The total electorate in each ward, as submitted to government in standard format - Form RPF29 in England, and a similar form in Wales and Scotland.

Housing The net number of housing units completed (including conversions and demolitions) in each ward; also those expected in the five years following the review date. See Annexe 2 for notes on housing to be included.

Comment: Where one review has rapidly followed another (as in Scotland in the 1990s)

The compilation of data for several years may be impossible: shorter time periods will have to suffice, or this analysis will not be possible. In Scotland, only the current electorate for existing wards was available at the time the most recent review was started. Old and new wards can sometimes be aggregated to provide a longer time series, although only for larger areas.

Analysis

For each ward, add the ward electorate change of the past five years to the current electorate, to serve as a crude forecast forward for five years. Calculate the ward indicators W2, W3 and W4 at the end of each five year period, and the % changes in each five year period.

This analysis will show the likely problem areas: those wards that are close to or beyond the limits suggested by the commission, and have changed in a direction which if continued is unlikely to bring them within the limits.

If all current wards are within the limits, and proposed housing developments for the next five years are continuations of developments in the past 5 years, the proposal may be for no change to the status quo. The commissions are nonetheless likely to want forecasts for each polling district in order to consider the whole picture and alternatives to the status quo.

The same data will now be needed for each polling district within each ward, in order to consider alternative boundaries. See Geography and data management, later in this section.

Step 3 Analyse small area data housing data and choose a method for forecasting the electorate of small areas

The allocation of the forecast Local Authority electorate to existing and proposed wards should ideally take into account:

- expected housing development; and
- movement within the existing housing stock.

In some areas population change is highly associated with housing development. However, in most areas the majority of population movement triggered by new housing development will be local and within, rather than into, the local housing market. Forecasts based on local housing tend to be over-optimistic in the population growth associated with new housing. In other areas population change is rapid where there is little new housing. This is often the case in inner urban areas which have experienced either depopulation or new immigration from overseas, and in areas with changing populations of students or armed forces.

The data compiled above should now be used to examine whether in the recent past electorate change has been associated with housing developments. Page 219 gives more details. If some areas have change unrelated to housing development, then this should be reflected in the forecast by continuing the immediate past trend in electorate before applying the additional effect of housing development.

The main option within Step 4 (below) is whether electoral change is to be determined

- a. using the past trend in the electorate, as well as housing development, or
- b. solely from the location of new housing development.

The choice should be made on the basis of analysis as just suggested, but also may depend on the existence of data to construct a five-year past trend in the electorate.

Comment

If population is changing for reasons other than housing change, ask *why* it is changing, and whether it will continue to change in the same way.

Step 4 Forecast the electorate for areas smaller than wards and tabulate results

Complete this step for each polling district

- 4.i Derive an initial future electorate in each area without consideration of housing development
 - a. Initial future electorate = current electorate + (change in electorate in past five years).
 - b. Initial future electorate = current electorate
- 4.ii Add (deduct) electorate expected from housing developments in each area
Multiply an appropriate electorate-per-dwelling factor (see page 219) by the effective change in housing:
 - a. The difference between housing expected in the next five years and the housing experienced in the past five years.
 - b. All housing expected in the area in the next five years.
- 4.iii Constrain the electorate to the total in the Local Authority.

Scale all the small areas' electorate up or down by the same proportion to make their total consistent with the Local authority total already forecast (see above). If ward schemes are being devised within large areas, see Annexe 1, then the scaling takes place within the relevant large area, whose total forecast electorate has been derived using the same steps 4.i. to 4.iii.

Step 5 Forecasts for alternative boundaries

The same staff that prepare the technical forecast from Step 4 may also be asked to prepare initial proposals. It is likely that they will be asked to provide subsequent forecasts for

alternative proposals based on boundaries that do not coincide with existing polling districts.

This will involve counting the electorate from registers (or with other technical means such as a GIS) in parts of polling districts, and determining in which part housing developments are sited. Step 4 will then be repeated with new data for the new small areas.

Geography and data management

The minimum requirement is to consider the smallest existing electoral areas such as polling districts, and to make initial analysis of alternative wards on the basis of aggregations of these. This is a sensible starting point because the electorate is published for these areas, they are likely to be understood by politicians, they are likely to be natural electoral areas, and they restrict the number of alternatives to be initially considered to manageable proportions. Parishes may be the appropriate building block in English shire areas.

It may be possible to divide the Local Authority into large areas within which schemes of wards may be arranged separately. This can only be done on agreement of the Council, but would be a shortcut in the consultation and technical process, by confining the problem of redrawing boundaries to a small area when changes are requested. Otherwise each suggested alteration could result in numerous alternative changes at the other end of the council area by its knock-on effect. This was the practice for example in Falkirk as reported by Jennifer Boag in LARIA news, September 1997. The Commissions warn that those large areas should have entitlement to roughly a whole number of councillors, to avoid wide and unacceptable variations in parity between wards in different areas.

A Geographical Information System (GIS) software may be useful, if the location of both housing and electorate can be allocated spatial references independent of existing electoral boundaries - through for example postcodes or an address register. An experienced GIS user can then set the software to recalculate the required statistics after any proposed change of boundary. A similar approach has been discussed for planning census enumeration districts (by David Martin in Population Trends 88, Summer 1997, pages 36-42). However there is no standard software for this task and unless the housing and electoral data is already attached to a GIS, it may be costly and time consuming to develop and attach them for the sole purpose of boundary review.

Information management

Experience suggests that the whole exercise, from the announcement of the review to the approval of the final scheme by the Secretary of State, may see a large number of alternatives being suggested and having to be worked up in detail. This means that detailed recording of all the schemes and part schemes is essential, partly to keep track of what is going on and partly because schemes are open to critical scrutiny by councillors and the public. This needs to include lists of the electoral areas and part areas included in each ward in each scheme, and lists of new housing sites in each ward.

Naming wards in each scheme is a useful way of keeping track and distinguishing between different schemes, as well as giving some indication of the area covered by each ward. Some imagination may be required if several alternatives are developed in the same area!

Where it is necessary to split electoral polling districts or other electoral divisions, it is worth keeping a detailed list of the streets (with house numbers or house names) and numbers of electors in each part, as this can often be reused for alternative schemes.

Other notes on the forecast method:

Taking the average of the adjacent years' electorate

The electorate in small areas can be somewhat erratic from one year to another as a result of administrative changes in canvassing rather than real changes in the electorate. For the purposes of reviewing past trends and calculating a forecast, the electorate of any year may be better replaced by the average of the electorate in the relevant year and the year previous, in order to iron out such temporal quirks that do not reflect real changes in the electorate.

Continuation of the trend of the last five years for areas smaller than polling districts

Where small areas are considered, past change may be too difficult to derive from existing copies of the electoral register. In this case, it is reasonable to assume the same rate of change as in the electoral area that contains the small area. Comment: in one authority this was interpreted as inconsistent use of the data and not used for fear of rejection by Councillors.

How is the trend to smaller households, and therefore fewer electors in each household, taken into account?

It is not explicitly modelled. The use of an electorate-per-dwelling factor based on current evidence may overestimate the impact of new dwellings. The constraint in Step 4.iii ensures that such an error is spread over all small areas. Falkirk Council found that a regression of electorate-per-dwelling against time helped to estimate the likely future impact of new dwellings.

Accuracy

The methods above are not exact. They would not cope with some systematic changes, for example a recent housing estate where for the first time teenagers were becoming electors. Sophisticated demographic monitoring *may* be able to forecast such changes. Use of ageing a previous age structure, taking into account annual records of deaths and of new entrants onto the register (attainers) could be used, but this is beyond the scope of these notes.

In any case the future is not predictable to any great degree. The *Estimating with Confidence* studies showed that 1 in 10 estimates of the *current* total population of wards are often in error by more than 10%. Forecasts of the electorate are likely to have at least that level of error. It is therefore unrealistic to expect that the boundary review will be based on accurate forecasts. The same work showed that population estimates were not biased - they were equally likely to be over-estimates as under-estimates. This is the best one can hope for.

Quality of electoral registers

In some areas, the Electoral Registration Officer (ERO) changes the method or the vigour with which the electoral register is compiled. This can affect the count of electors, for example by removing those who have not replied to a postal canvas, and including those who have responded to registration campaigns.

Incomplete registration of the electorate

The method proposed takes the recent past electors/population ratio (in step 1) as the guide to the future. The commissions do not specify that this should be so. Analysis at census year would show that some wards have more complete registration than others. Again, Local Authorities may wish to argue that the wards would be more equally registered during the five years after the review, and adjust the forecasts accordingly.

Housing and population movement

Past and expected housing

It is reasonable to include only major sites, for example those with more than 10 dwellings. However, include as much of the information as is available: several sites of eight houses could quickly add up to a substantial increase in electorate.

For future housing, it is reasonable to include all sites with outline planning permission for major building, conversion or demolition.

Inclusion of land released for house-building but without planning permission is likely to lead to over-estimates of electorate change, and disputes for and against the likelihood of particular developments going ahead. Only if the results of a land availability survey are agreed by Council and House Builders Association as good predictions of future development, should such information be considered for electorate projections.

Forecasts that are determined by housing plans tend to over-estimate the population or electorate, partly because some plans do not come to fruition within the expected time-scale, and partly because they are partly filled by existing residents currently living within other households from nearby housing stock.

Appropriate electorate-per-dwelling factor

Dwellings vary in the number of adults they are likely to house. Two per dwelling may be assumed except where it is known that the sites are of flats for elderly people, when 1 elector per dwelling can be assumed. Other assumptions may be justified on the basis of analysis of the electoral register, the census, or surveys, for different areas of housing.

Investigating whether electorate change is associated with housing developments alone

Analysis

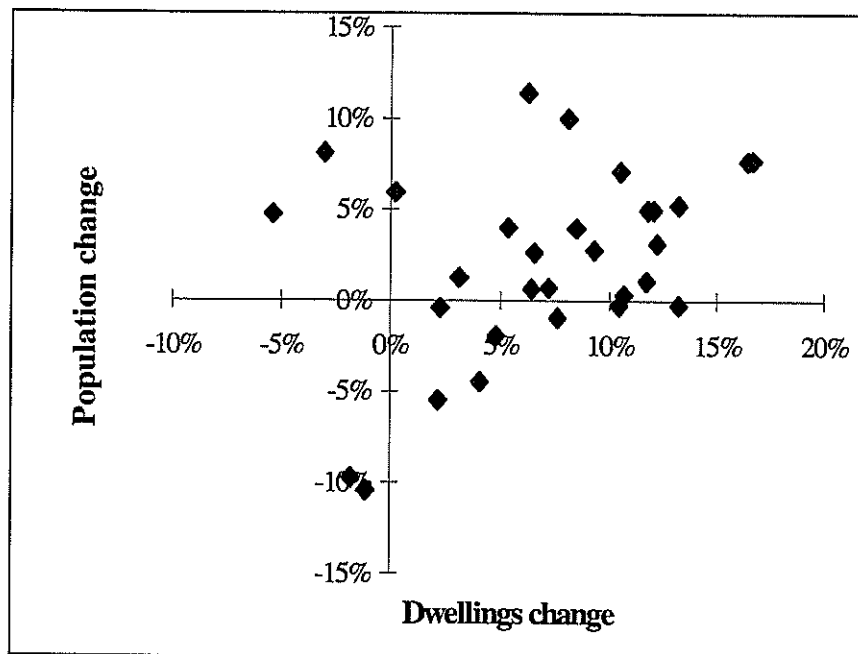
Plot electorate change in past 5 (10) years on one axis, and housing completions in the same period. Do the two go hand in hand - do the wards lie on a straight line?

The three graphs show ten years of change in housing (occupied households from the census) plotted against population change, migration, and the electorate, for the 30 wards of one Local Authority, which has inner city areas as well as rural communities. In this Local Authority:

- Population change and migration are not closely related to change in dwellings. In the inner city there are wards where natural growth and immigration has led to population

growth without any change in the number of dwellings. In other areas the conversion of Victorian terraces to flats by housing associations has created an increase in dwellings with no increase in population.

- Where there less than 5% housing change, the electorate has usually decreased, due to smaller households, i.e. less electors per household.
- For many wards, electorate change is highly related to changes in housing. The electorate is more highly related to dwellings than is the population as a whole, since each household includes at least one adult.
- In some wards electorate change was unrelated to housing change. In the third graph, two wards with 12% increase in dwellings and 0% increase in dwellings each had a 2% increase in electors. All the three wards which lie away from the main close relationship between electors and dwellings change, are within the inner city of Bradford.
- In this district, it would be wrong to assume that future electorate can be forecast solely by the new housing in each ward. The past trend in electorate should be included in the forecast, at least for those wards whose electorate growth is not related to change in the number of dwellings.



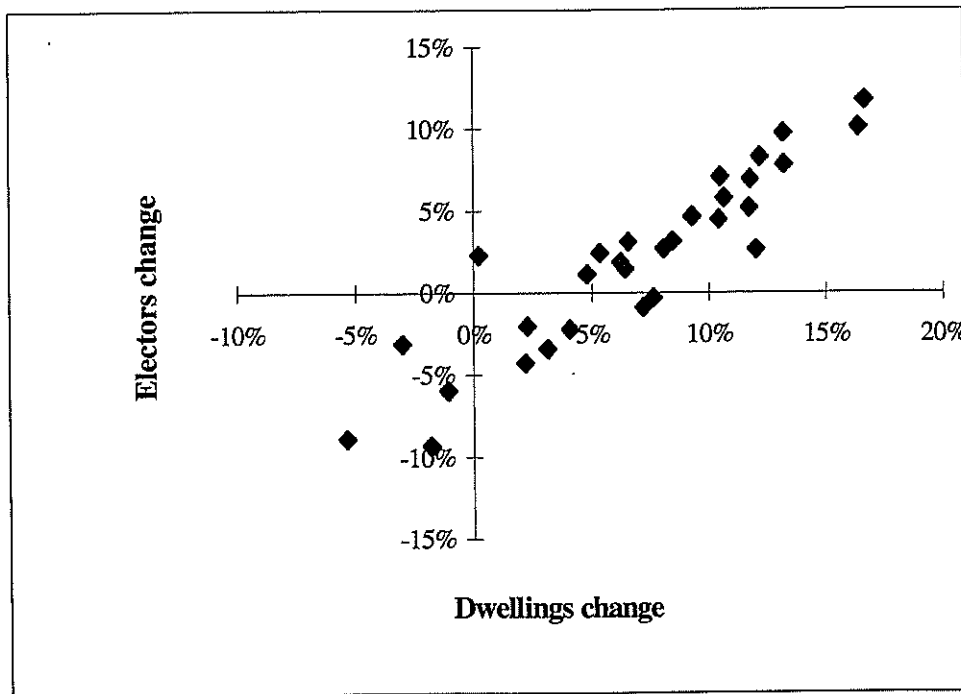
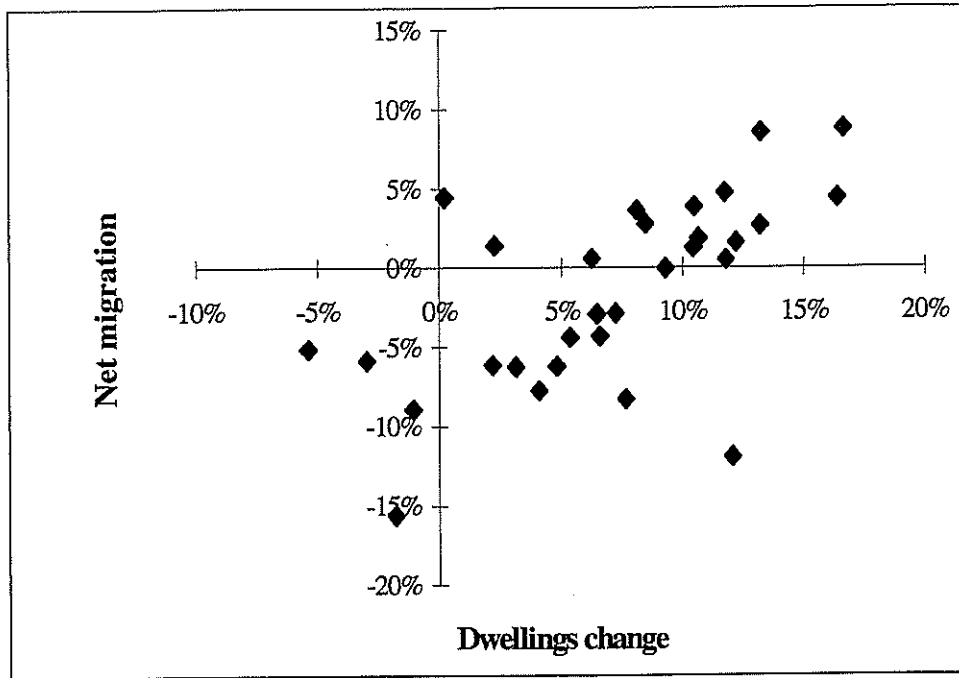


Figure 14 The above figures represent population and dwellings change 1981-1991 in 30 wards in the Bradford District

Author: Stephen Ludi Simpson, Bradford District Council