Technical note: GLA 2011 Round Borough Population Projections

Introduction

Each year the GLA produces updated borough population projections incorporating the latest births, deaths, migration, and development data. These projections subsequently form constraints to the GLA's ward and ethnic group projections.

These updated inputs result in changes to output. In this round the GLA has also made additional improvements to methodology to ensure the projections better reflect reality and are more consistent with other sources of evidence on the size and distribution of London's population. As a result there may be significant differences between the 2010 round output and the new 2011 round output.

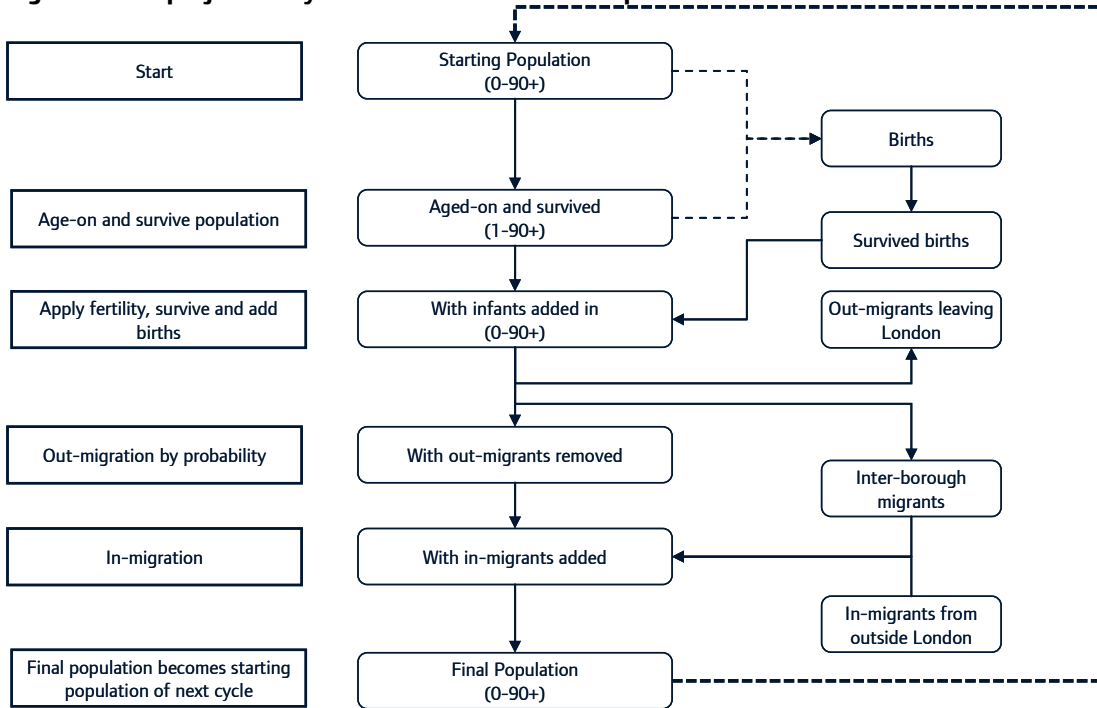The impetus for making these changes are:

- the release of the results of ONS' Improving Migration and Population Statistics (IMPS) programme that has lead to greatly revised international migration figures from 2006 to 2010 which have in turn resulted in noticeably different 'indicative' ONS mid year estimates for some London boroughs.

- the availability of GP registration data to the GLA, which together with child benefit, school roll and independent population count data for some boroughs, gives an improved evidence base for revising migration rates for school age pupils and the elderly.

- the decision to no longer constrain the Greater London total population to the ONS mid year estimate value. The use in the GLA projections of accurate historic development data from the London Development Database (LDD) made this seem a redundant step.

Overview of methodology

A document comprehensively detailing the current GLA methodology is scheduled for release in the first quarter of 2012.

The GLA generates migration-led projections using a cohort component model that operates from a base of the 2001 ONS Mid Year Estimate (MYE) through to 2031. The model projects forward a year at a time from its base by a cycle of ageing on the population, and taking account of births, deaths and migration.
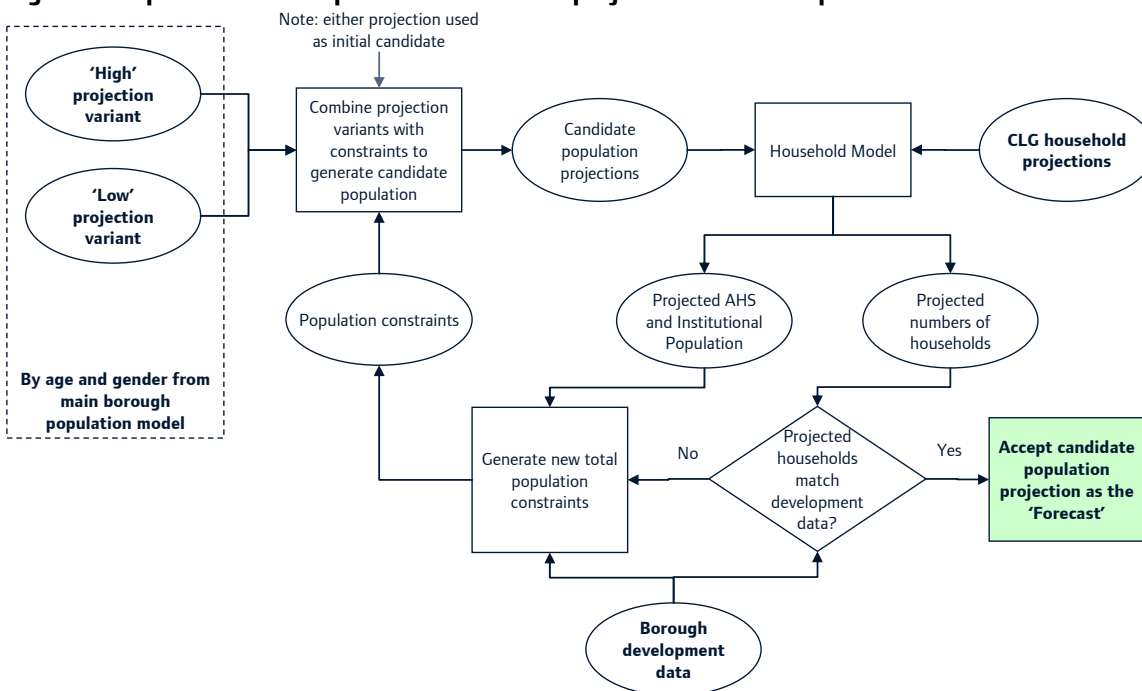
Figure 1: The projection cycle used in the cohort component model

Start	Starting Population (0-90+)
Age-on and survive population	Aged-on and survived (1-90+)
Apply fertility, survive and add births	With infants added in (0-90+)
Out-migration by probability	With out-migrants removed
In-migration	With in-migrants added
Final population becomes starting population of next cycle	Final Population (0-90+)

Births → Survived births → Out-migrants leaving London → Inter-borough migrants → In-migrants from outside London

"High" and "Low" migration-led projections are produced using this model. These differ in the assumed level of out-migration from each borough to destinations outside of London.

A development-linked set of projections is then produced for each borough via an iterative process that generates candidate projections from weighted averages of the *High* and *Low* variants, and tests whether these populations are consistent with the number of available dwelling spaces. This process makes use of household formation rates from the 2008-based Department of Communities and Local Government (DCLG) household projections to determine how many dwelling spaces would be required for a given population.

Figure 2: Representation of process used to link projections to development data

Note: either projection used as initial candidate

'High' projection variant / 'Low' projection variant → Combine projection variants with constraints to generate candidate population → Candidate population projections → Household Model ← CLG household projections

By age and gender from main borough population model

Population constraints

Projected AHS and Institutional Population / Projected numbers of households

Generate new total population constraints ← No — Projected households match development data? — Yes → **Accept candidate population projection as the 'Forecast'**

Borough development data

Data used in the 2011 round of projections

Births and Deaths

Births from historic ONS MYE were used for births to mid-year 2002-10. ONS calendar year births for 2010 were used as a proxy for births to mid-year 2011. Note that for the 2010 round the latest birth and death data came from the 2009 MYE.

Fertility and mortality trends

Age Specific Fertility Rate (ASFR) and Age Specific Mortality Rate (ASMR) trends beyond 2011 were taken from the "Principal" assumptions used in the 2010-based ONS National Population Projections (NPP) for England. Proportional changes in these rates were used to roll the estimated 2011 ASFR rate forward to 2031.

The fertility assumptions used in the 2010-based NPP differ from those used in the 2008-based NPP in that several years of increasing fertility are projected before a decline, whereas previously an immediate decline was assumed. The 2010 round of GLA projections used the 2008 NPP assumptions, but delayed by five years with fertility rates held constant in the intervening period.

Figure 3: Comparison of fertility rate trends for England from successive rounds of NPP
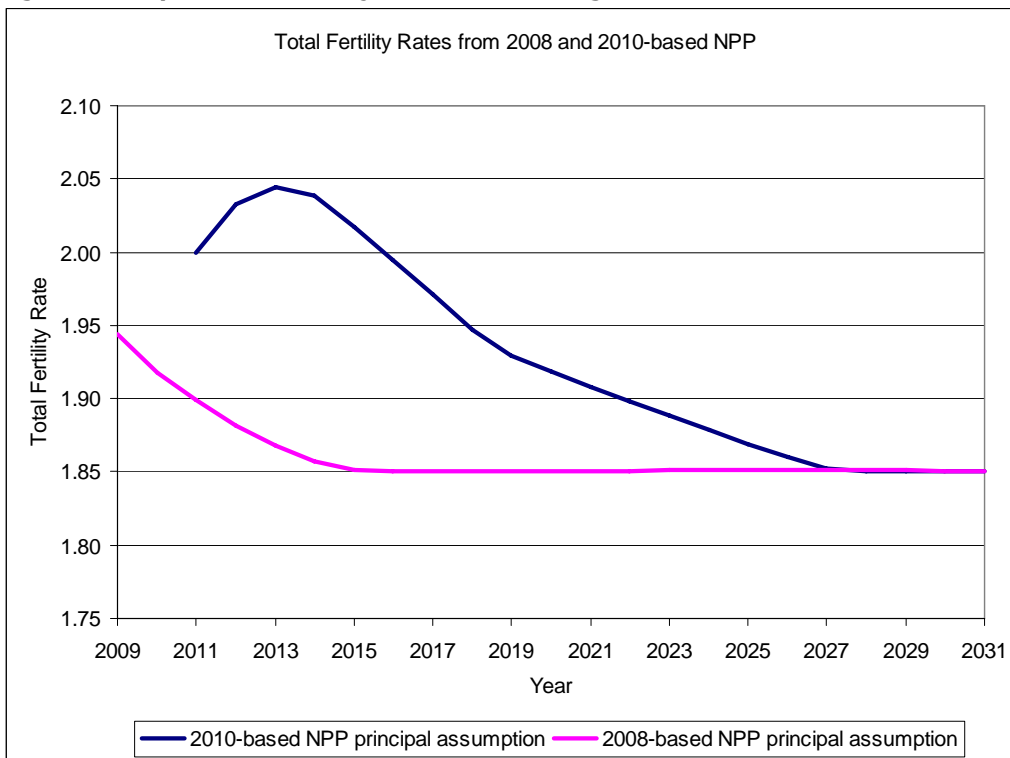
In the GLA 2011 round projections, the new assumptions are applied without any delay. Note that though the NPP long term assumption for both 2008 and 2010-based projections has total fertility rates at 1.85, the 2010-based rates reach this from a higher starting point meaning the long-term proportional decrease in rates is actually greater than is the case for the 2008-based trend.

Figure 4: Comparison of proportional fertility rate changes derived from NPP

Proportional changes in Total Fertility Rate using different NPP-based assumptions
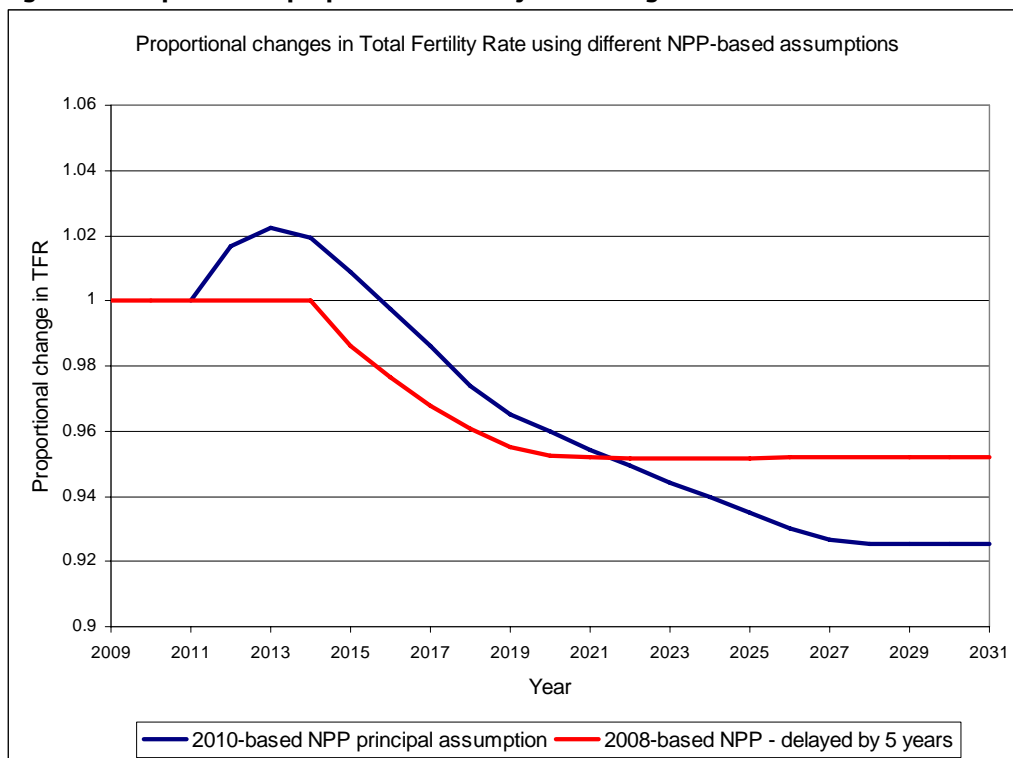
Dwellings

Historic dwelling changes

For 2002 to 2004, borough–supplied figures were used. For 2005 to 2011, completions data from the London Development Database were used together with CLG vacancy data to estimate changes in the number of dwelling spaces available.

Projected dwelling changes

The development trajectories used in the published projections are based on the targets from the Strategic Housing and Land Availability Assessment (SHLAA) carried out in 2009.

Migration data

Domestic flows

For 2002 to 2010, domestic migration flows were taken from moves recorded in the National Health Service Central Register (NHSCR).

International flows

For 2002 to 2005, international flows were based on the ONS MYE values, modified to fit with capacity as estimated using development data/CLG household formation rates.

For 2006 to 2010, the ONS inflow estimates using the IMPS methodology were used unchanged.

Migration rates

Anecdotal evidence from colleagues in boroughs has suggested that the age and gender-specific migration rates derived from the 2001 Census were deemed to no longer adequately represent current patterns in many parts of London. Therefore, adjustments were made – primarily to the rates governing migration to domestic locations outside of London – such that the numbers of children and the elderly better fit with other sources of evidence (namely child benefit claims and GP registrations).

Future migration trends

International inflows are assumed constant beyond 2010 and fixed at the mean inflow for the last five years of historic data.

All other migration flows are projected forward using constant age and gender specific probabilities. The probabilities used are an average of the previous five years of probabilities that have been scaled to fit estimated flows and populations.

Household formation rates

Rates were taken from the 2008-based DCLG household projections. For three boroughs (Newham, Tower Hamlets, and Waltham Forest), household formation rates were adjusted to give total populations more consistent with other sources of evidence (the revised international flows from IMPS and the boroughs' own population count data that made use of cross-linked administrative datasets).

Variants and supporting outputs

For the 2011 round, the GLA will release several variants of projections. These will include a set using higher future fertility trends than the standard projections and a set assuming no future change in the number of dwellings available (zero housing development).

Additional supporting outputs will be released via the London Datastore. These outputs will include data such as fertility rates, migration flows, and life expectancy which are calculated within the models.

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