



Education
Funding
Agency

School capacity (SCAP) survey 2014

**Guide to forecasting pupil numbers in
school place planning**

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Section 1: Introduction

Effective pupil place planning is a fundamental element of the local authority's role as strategic commissioner of good school places. It is under-pinned by strong use of relevant data drawn from a wide variety of sources.

Who is this guide for?

This guide is primarily for local authority commissioners involved in planning and organising school places, particularly those with direct responsibility for producing pupil forecasts. It will help you to:

- prepare accurate forecasts of pupil numbers
- validate your calculations.

What is this guide for?

The purpose of this guide is to suggest ways of improving the accuracy of pupil forecasts and give examples of good practice. This is because research shows that:

- local authorities use a wide variety of methods to forecast pupil numbers
- no single method has consistently provided accurate results.

What the guide covers

This guide:

- outlines why you need to produce forecasts and how those forecasts should take account of building programmes (Section 2)
- sets out general principles that apply to any forecasting exercise (Section 3)
- provides guidance on making your projections (Section 3)
- offers advice on taking account of housing developments (Section 4)
- advises on how to validate your forecasts (Annex 1)
- provides some case studies (Annex 2).

Section 2: Why produce forecasts?

Local authorities need to produce forecasts so that your school place planners have up to date information on the overall capacity required within the school systems in the area, and so that authorities can take strategic decisions about how many places are likely to be needed (where, when and for how long).

Accurate and consistently derived forecasts of pupil numbers are also essential in providing the DfE with information to support basic need capital allocations. We expect local authorities to forecast demand for school places based on groups of schools (planning areas) that reflect local geography, reasonable travel distances and patterns of supply and demand. For some this could be at local authority level. This ensures your authority receives a fair level of capital funding, to help meet future demand for additional school places.

Robust forecasts are also important to:

- identify medium - to long-term capacity requirements of the school system, for example a shortfall of places due to population growth from housing developments
- plan other children's services in the short, medium and long term
- agree investment from other services and housing developers for infrastructure projects including new towns and housing developments through Section 106/Community Infrastructure Levy (CIL) negotiations
- provide local authorities with information to plan other services for new towns and housing developments.

DfE Forecast requirements

The DfE requires projections of primary and secondary pupil numbers to produce the basic-need capital allocations Irrespective of the structure of your school system:

- Primary projections must cover Reception to Years 6
- Secondary projections must cover Years 7 to 11, but may also include Years 12 and 13 for schools with sixth forms.

The DfE requires the following forecasts:

- five years ahead for primary forecasts
- seven years ahead for secondary forecasts.

You may also need to produce forecasts covering different time periods across the short, medium and long term depending on your local requirements.

Factors that impact on pupil numbers

There are a number of factors that impact on pupil numbers. Some may impact on the overall number of pupils, others only on some schools or in some planning areas of your authority. Identifying and understanding the potential impact of these factors is an important part of producing useful and accurate forecasts.

Issues to consider include:

- changes in Government policy, for example extensions to early years education, changes to the school leaving age, ongoing developments to 14–19 education
- demographic changes within your authority
- changes to national and international migration rates
- internal factors such as the way schools are organised within your authority and within neighbouring authorities.

2.1 School organisation

Most local authorities face significant school organisation issues brought about by a range of factors including:

- rising birth rates and pressures on primary places
- higher primary rolls moving into the secondary phase
- inward migration and other demographic changes such as retention rates
- new free schools and/or academy expansion.

Approaches

The range of place planning techniques used to support school reorganisations varies significantly between local authorities. However, pupil projections should be an integral part of each local authority's approach to school reorganisation.

Using place planning to support school reorganisation

School reorganisation is an ongoing process that can range from the very simple to the extremely complex. For complex reorganisations in particular, it is good practice to:

- be clear about the purpose of the reorganisation
- be clear about the wider principles behind the school reorganisation

- look at long-term pupil forecasts as well as short- and medium-term forecasts.

2.2 Capital programmes

School place planning plays a crucial role in developing the local authority's strategy for capital programmes and allows you to make strategic decisions about investment.

Local authorities are responsible for providing school places and must ensure sufficient places are available for children of statutory school age. In planning for capital developments to create new school places, you need to meet the standards required by national capital programmes in relation to place planning. You should:

- incorporate new sources of data to complete your forecasts where necessary;
- ensure that all your forecasts have a consistent basis, and where there are differences in methodology to support different analyses, you are confident to explain why and how you use these; and
- look for opportunities to learn from experience, and from others, to improve your overall approach to place planning.

You may also need to look at particular aspects of place planning such as cross border flows.

Basic need funding

The DfE provides formula-based basic need funding to support you to plan and deliver new places in areas of population growth. If necessary, the Department expects you to prioritise your resources and supplement these allocations with funding from other sources.

You must be accurate in forecasting future pupil numbers when providing data to the Department that will be used for capital allocations, and we will ask questions to make sure that forecasts are robust and well-evidenced.

Section 3: Making your projections

3.1 Overview

The process of making projections can be divided into three basic steps which are summarised in sections 3.2 to 3.4.

In making your projections, especially those for the longer term, it is important to take account of housing developments and other significant changes in population.

The following diagram summarises the main issues you need to take account of in preparing your forecasts.

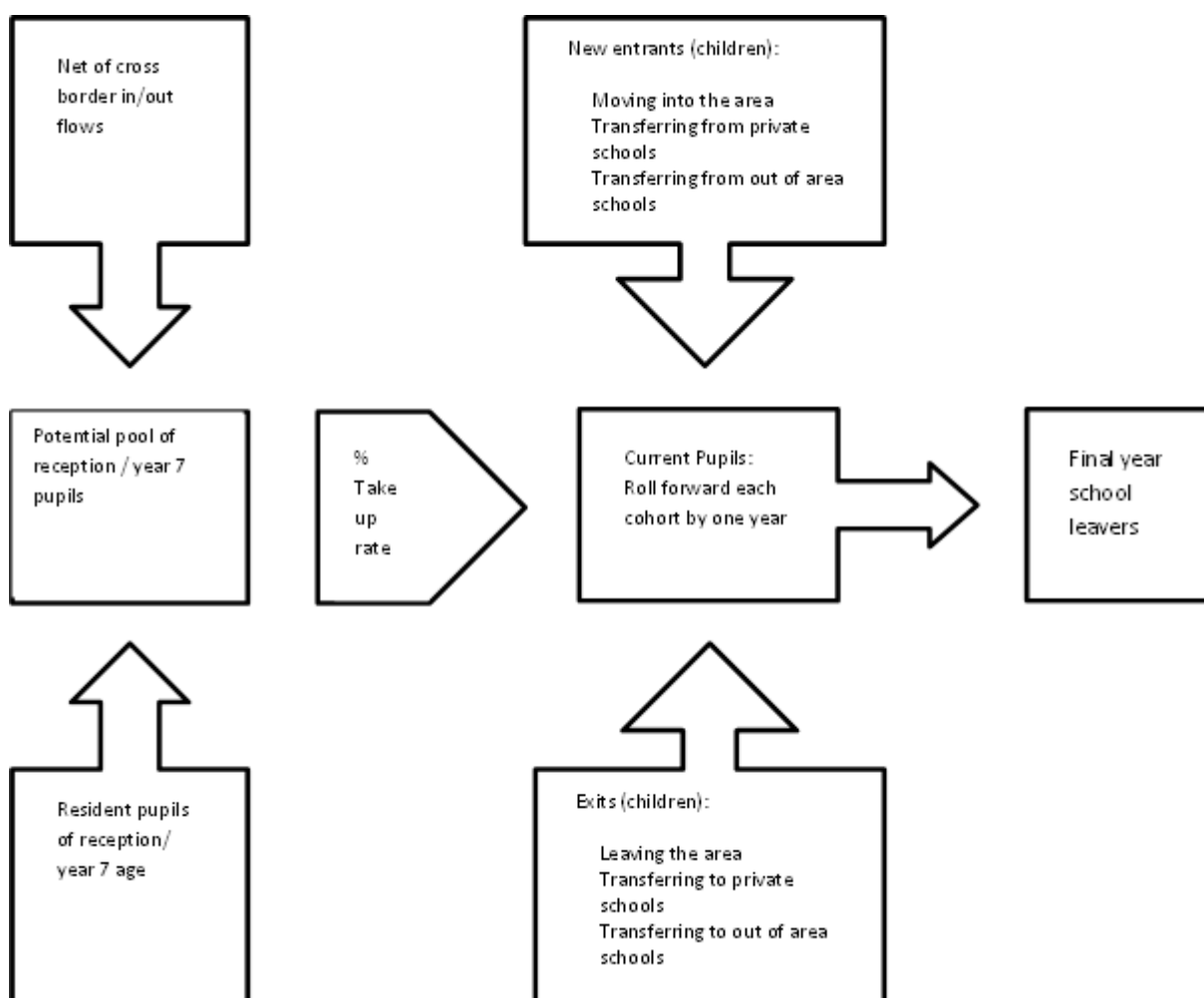


Figure 1: Main issues to take account of when preparing pupil forecasts

3.2 Step 1: check the accuracy of previous forecasts and consider the implications

In checking the accuracy of previous forecasts, you are essentially considering how well past trends in pupil numbers will predict future numbers of pupils in your local authority,

both across the whole area and within individual planning areas. Before producing a new set of forecasts you should check the accuracy of previous ones in order to identify and correct any inconsistencies or problems, for example:

- How accurate were your pupil forecasts last year - within +/- 1%, 1-2%. Accuracy in this context can be measured as the difference between the forecast and actual number of pupils, expressed as a proportion of the actual pupil count. Remember not to check just against the group of pupils applying through the normal admissions process, but against the total numbers – including late and in-year arrivals.
- How does accuracy change the further ahead you project, for example how accurate have your forecasts been for five years ahead?
- How accurate are your forecasts for particular year groups, especially reception and year 7 pupil numbers? This will help to ensure that any inaccuracy in year group forecasts is not masked and will help to identify whether there is sufficient capacity in the school system.
- Do your forecasts consistently over-estimate or under-estimate pupil numbers? This can establish confidence in forecasts or identifying possible inaccuracies in the methods that have been adopted.
- Have you had sufficient school places (or too many) based on previous pupil forecasts?
- Have decisions made on the basis of your forecasts been appropriate? For example:
 - Did yield from housing developments under or over estimate the number of pupils who actually came from those houses?
 - Were schools closed because forecasts suggested pupil numbers were falling and was this appropriate?
 - What happened that you were not expecting and had not included in forecasts?

After checking the accuracy of previous forecasts the next step is to consider the implications of your evaluation. Your evaluation of the accuracy of previous forecasts should help you to determine:

- the implications of local context for your forecasting process
- any risks associated with your forecasts, so that you can calculate best and worst case scenarios

- whether you need to adapt your projection methods to reflect changes in local context or consistent under or over-estimates of pupil numbers or run variant models to understand potential different scenarios
- how much historical data you should use in calculating your forecasts
- whether you need to take account of housing developments or other extraordinary population growth and how you should do this
- how your forecasts will support other work being undertaken by the school place planning team in your authority to support school re-organisation and strategic planning for school building programmes
- how to use your forecasts for asset management.

3.3 Step 2: forecasting the potential pool of reception age pupils

Primary: forecasting reception pupil numbers

This is arguably the most complex year group to forecast because it is the one where you cannot base your calculations on the number of pupils in the previous year. Instead, most local authorities use population-based forecasting. You will need to do these calculations separately for each of the five years of your forecast.

Population based forecasting

This approach is used mainly to forecast the number of pupils in reception or nursery classes but can also be used for other (particularly year 7) year groups. It works by comparing the total population with the number of pupils in schools in your authority. It involves three main steps.

1. Identify the pool of children in your authority

You will need population-based data for the number of children living in your authority and those who potentially could attend schools within your authority. You can refer to Annex 3 for data sources.

For a five-year forecast of the number of reception pupils you will need data on the population of children who will enter schools in the next five years – children who are currently aged 0+, 1+, 2+ and 3+ an estimate for the fifth year of the forecast (these children are not yet born) or equivalent data on births in respect of children who will enter schools in the next five years. You can obtain this from the [Office of National Statistics](#).

For a seven-year projection of secondary school entry classes at year 7, you will need current data on children aged 4+, 5+, 6+, 7+ 8+, 9+ and 10+ who will be transferring from primary to secondary schools in the next seven years.

2. Calculate the historical uptake factor

You will need data on the number of children living within your authority, for example from GP registration data the total number of children in the relevant year group, for example reception.

For each year of historical data, calculate the number of pupils in the year group you want to forecast (for example, the reception class) as a proportion of the total number of children of the appropriate age living in your authority. If the number of births is higher than the number of children in the year groups in authority schools five years later, the uptake factor will be less than 100%. From this data, calculate a historical uptake factor for your projections.

3. Apply the historical uptake factor

For each year of your forecast, calculate the projected number of children by multiplying the historical uptake factor by the number of children of the appropriate age in your authority.

It is good practice to produce a range of forecasts testing different uptake factors, particularly if there is a great deal of variation in the historic uptake rates for the preceding school years. This can give decision-makers confidence to act on your forecasts.

Secondary: forecasting year 7 pupil numbers

Unlike all the subsequent years, you cannot base your forecasts for year 7 on the numbers of pupils already at secondary school. You have three main options, and your choice will depend primarily on the data available to you:

1. Extrapolate forward from your primary school pupil population

This approach is based on cohort migration forecasting used for projecting the numbers of pupils in other year groups. You need data on the number of existing and future year 6 pupils to calculate the number of year 7 pupils who will enter the school system over the next seven years. These children will be the current primary school population.

You also need historical data to determine past trends, for example, to measure the pattern of how the number of year 6 children historically relates to the number of year 7 children in the following year. At school level you could do this by looking at trends of pupil transfer from primary schools or pupils within geographic areas.

With this data you can calculate the historical cohort survival factor that reflects the number of year 6 children who historically go on to enter year 7 in the following year. The factor is a percentage.

2. Use population forecasting to predict what proportion of children in your local authority is likely to attend your schools

The approach is similar to that outlined above when forecasting reception pupils.

3. Trend based forecasting

This method can be used for forecasting all year groups but is primarily used for entry class projections. It is based on the premise that the number of children historically entering the system is a reliable indicator of future pupil numbers.

You will find it particularly useful if you do not have access to reliable population data, or there is not a strong link between the number of pupils in year 6 and the number of pupils in year 7. The method uses only one source of data – historical counts of pupil numbers – and it involves just two steps.

First, calculate the historical number pupils in year 7. You have two options to choose from:

- Use current and historical school census data.
- Take an average of the current pupil counts for year 7, year 8 and year 9.

Next, project forward the historical number of pupils in year 7. For each year of your forecast, calculate the number of children in year 7 by extrapolating forward from the historical numbers of year 7 as:

- a straight or weighted average
- a fixed or rolling average
- a linear or other trend.

If you use historical trend models, it is good practice to:

- review your forecasts to ensure they reflect the overall trends in pupil numbers. There is a danger of over-estimating pupil numbers if rolls are falling.
- produce a range of forecasts testing different historical factors. You can also incorporate parental preference data in your range of forecasts.

You will need to do these calculations separately for each of the seven years of your forecast.

Validate pupil forecasts

Whatever data you use, it is good practice to validate your forecasts by looking at any other relevant information about appropriately aged children, particularly if there are problems with the original data sources you have used. Annex 1 goes through some key factors to bear in mind when validating your forecasts.

3.4 Step 3: forecast pupil numbers for other years

Once you have completed your forecasts of reception pupil numbers or year 7 pupil numbers, you can forecast all other year groups.

The most common way of doing this is to assume that past patterns will indicate what is most likely to happen in the future and use cohort migration forecasting to adjust your overall pupil population to take account of anticipated entries and exits.

You also need to take account of the impact of:

- one-off events such as school closures, mergers and other school reorganisations
- inward migration
- cross-boundary pupil flows
- housing developments
- number of pupils leaving the state system for private education and vice versa
- any changes in legislation eg raising the participation age.

Lastly, you need to calculate the decrease in your pupil population resulting from pupils leaving school at the end of year. Remember:

- The children who leave year 6 in each year of your forecast will form the pool of pupils who potentially enter year 7.
- If you are also forecasting sixth form pupil numbers, the children who leave year 11 in each year of your forecast will form the pool of pupils who potentially enter year 12 and so forth.

Cohort migration forecasting

A cohort migration rate (also known as a cohort survival rate) is a measure of the net effect of natural pupil turnover from one year to the next, as pupils transfer to or from your authority for a wide variety of reasons, for example:

- moving to another authority
- transferring to independent sector schools
- transferring to schools in neighbouring authorities.

In other words, it is a way of measuring the 'entrants' and 'exits' from your school system. It involves two main steps.

First, calculate the cohort migration rate for each year group.

Cohort migration/survival rates require current and historical data on the number of children in each year group at the school, for example from the School Census.

For each year group, calculate the number of pupils in the year group as a proportion of the total number of children in the same year group in the previous year. For example, calculate the cohort survival rate for year-2 pupils as the number of children in year 2, expressed as a proportion of the number of children in year 1 in the previous year.

A cohort survival rate of:

- less than 100% indicates that pupil numbers have fallen year on year
- equal to 100% indicates the number of children remains constant from one year to the next
- more than 100% indicates that pupil numbers have increased year on year.

Next, apply the cohort migration rate.

For each year of your forecast, calculate the number of children in each year group by multiplying the cohort migration rate for each year group by the number of children in the preceding year group in the previous year. In doing so, remember to:

- adjust for anticipated changes at transfer years
- take account of one-off events such as school closures, mergers, other school reorganisations, changes in cross-boundary flows and the impact of housing developments.

Then make your forecasts for each year group in turn, as the forecasts from one year inform those of the next. This involves:

- rolling forward each cohort taking anticipated 'in year' changes into account
- adjusting for anticipated changes at transfer years

- taking account of one-off events such as school closures, mergers, other school reorganisations, changes in cross-boundary flows and the impact of housing developments.

Cohort migration forecasting – good practice

Use cohort migration rates to determine whether pupil flows are changing.

The results may lead you to adapt your methodology for both authority-level and school-level projections accordingly. You should pay particular attention to cohort migration rates for transfer years if your authority and/or neighbouring authorities have made significant changes affecting transfer points, for example:

- replacing middle schools with primary schools
- opening a new secondary school
- closing an existing one.

Make sure that there have been no significant changes in cohort numbers.

To ignore them could result in an inaccurate overall projection. This is a danger particularly for:

- authorities with low levels of inward and outward migration
- authorities where few pupils move to attend schools in neighbouring authorities.

In these cases the cohort migration rate for one or more year groups may be approximately 100%. The authorities may have chosen to ignore the effect of changes from year to year and may have calculated their projections for the authority as a whole by rolling cohorts forward by 100%.

Use data on parental preferences for schools when making projections.

You can also compare the extent to which parents, across all year groups, have exercised choice. Such analysis may highlight significant changes, particularly those in cross-boundary flows.

3.5 Take account of inward migration

Inward migration affects local authorities in different ways in terms of overall pupil numbers and pupil numbers in particular schools. This has various implications for place planning methodologies, such as:

- authorities sometimes struggle to find hard (as opposed to anecdotal) evidence to support claims that inward migration is having a significant impact on pupil numbers across the authority and even in individual schools or clusters of schools

- some authorities have seen inward migration have an impact on particular types of schools, for example faith schools
- inward migration can impact on the accuracy of forecasts for small areas such as planning areas within an authority
- some authorities are just beginning to identify where adjustments need to be made to forecasting methods to respond to inward migration.

What you should do

If you have to deal with high levels of inward migration you should:

- analyse whether inward migration is having an impact on overall pupil numbers for your authority
- monitor whether migration is short-term or long-term – is there a wave of new children in particular schools that stay in the school system for several years? Or are new children only present for a very short time before leaving the area?
- collect evidence to support anecdotal reporting of the impact of inward migration at school and authority level
- make sure your forecasting methodologies are not double counting the impact of inward migration and leading to over-estimates of future pupil numbers – children counted in the baseline and in factors for cohort change
- look at schools, localities or areas of your authority impacted by inward migration in additional detail if necessary. Inward migration forecasts should be evidenced based.

3.6 Developing long term forecasts

To develop a comprehensive place-planning strategy you need to produce forecasts beyond the five to seven years required by the DfE. You should develop long-term forecasts to support planning for capital investment and managing the long-term supply of school places. Forecasts for capital development programmes need to look at least 10 years into the future.

In producing your long-term forecasts, be clear about the purpose. The purpose will define:

- the level of detail
- your choice of data

- your validation process.

For long-term projections, you may not need to include as much detail as for short and medium projections, for example:

- Do you need an annual forecast for the next 15 years or a single forecast for 15 years into the future?
- Do you need to look at individual schools or your authority as a whole?

Your answers will be linked to the purpose of your model. They may enable you to produce a simple long-term forecast separately – meaning that you can still use existing models for short and medium term forecasts.

There is unlikely to be a ‘right’ answer for long-term forecasts because pupil forecasts 10 to 15 years into the future inevitably involve a great deal of uncertainty. There could be variation in levels of population growth, housing development or inward migration, birth rates, take-up of school places or parental preference. It is important to:

- set out explicitly whatever set of assumptions you use to complete your model
- identify the impact of any variation
- state the degree of confidence you have in the data.

Once you understand the uncertainty in your forecasts, you should use the variation to show a range of possibilities or develop scenarios. For example, what would happen if birth rates follow the current trend over the next 15 years? What if they increase? What if they decrease?

You and others can then make decisions based on the likelihood of each of the scenarios bearing in mind:

- the validity of the data you have used
- the robustness of your assumptions
- the degree of variability in the forecasts.

To develop long-term forecasts you may need to use new data sources such as projections of births and population and household projections.

You should validate your long-term forecasts against the population and household projections produced by ONS and often, in the case of household projections, by others in your authority.

Section 4: Taking account of housing developments

Housing developments can have a big impact on the demand for places at individual schools and even across an entire local authority. So your place planning methodology needs to reflect new housing developments in general and major regeneration or house-building programmes in particular. It also needs to reflect expected contributions from these developments to the total number of places available. It is worth noting here that for the purposes of the DfE school capacity return, we ask that local authorities treat children for whom places will be funded via Section 106/Community Infrastructure Levy (CIL) separately, and do not include them in the planning area level forecasts they send to us (there is a separate section on the school capacity return that asks for these figures).

4.1 Why it is important

Alignment between housing developments and the provision of children's services and the supporting infrastructure is important because it helps to avoid:

- wasted investment, for example new schools opening before housing has been completed and children moved into the area
- reduced access to local facilities and service, for example places in new schools may not be available when children move into new housing if those places have been allocated to pupils from outside the area before housing developments are completed
- delays and blockages to housing supply, for example if provision of children's services has not been properly considered during the planning and service planning process
- other consequential impacts, for example on transport links and the environment if schools are not located in the right place at the right time.

The general process adopted by local authorities to deal with new housing developments is fairly consistent:

- Collect and evaluate data
- Calculate and apply pupil yield factors

These are covered in more detail in this section.

4.2 Collect and evaluate data

You need to collect data on new developments and decide which developments to include in your pupil projections. The data you collect is likely to come from a number of different sources and should be as detailed as possible, enabling you to identify:

- number of units
- housing size and mix
- location
- completion timescale.

Assess the likely impact of each housing development

To assess the impact of a housing development, you need to consider how different types affect particular schools or groups of schools. For these purposes, it is useful to group developments into three main categories:

1. Small developments

Small housing developments will have low numbers of new units in many locations across your authority and may replace existing housing. They may not lead to large numbers of additional pupils in any one time period. But small developments could bring about significant changes for one or two schools, for example if they cause a large number of families to relocate from one part of a town to another.

You may choose to exclude this type of development from your authority-wide forecasts on the basis that they result in the relocation of existing pupils rather than bringing new pupils into your authority.

2. Medium sized developments

Medium-sized developments in locations with existing schools may ultimately result in the relocation of some pupils within your authority and attract new pupils from outside it. This could lead to a requirement for additional school places at existing schools but rates of occupancy may be staggered and not all units of the completed development will yield pupils. In the medium to longer term, there could be a requirement for additional infrastructure, for example additional classrooms.

You should include this type of development in your authority-wide forecasts only if you assume that it will bring additional pupils to your authority rather than simply re-locate existing pupils.

3. New towns/large developments

New towns and large housing estates will almost certainly require new school infrastructure, which could take the form of new classes for existing schools, particularly at secondary level, or new schools. New towns in particular will have an infrastructure plan covering all types of services. So it is important you forecast school places consistently.

You should include this type of development in your authority-wide forecasts only if you assume that it will bring additional pupils to your authority rather than simply re-locate existing pupils. For example, do population projections suggest an overall increase in population of school-age children? You also need to consider whether other schools in your authority will have corresponding reductions in pupil numbers and no longer be viable.

Evaluate the accuracy of previous projections

You should also validate any information to check how accurate previous data on planned developments has been and make adjustments accordingly, for example:

- is the number of planned units regularly higher than the actual number of completed units?
- how does the planned housing mix compare with the actual housing mix?

4.3 Calculate and apply pupil yield factors

Pupil yield factors are ratios based on the number of children per dwelling, which are used to calculate the additional pupil numbers generated by new housing.

The basis for the ratios may be either internal or externally commissioned research. Authorities that undertake research locally use techniques that involve analysis of census data and residents' surveys.

In calculating pupil yield factors, it is good practice to:

- regularly review and update the factors you use, using survey or census data to check they are valid.
- carry out sensitivity analysis – what is the impact of using a slightly higher or lower factor in your calculations?
- work with neighbouring authorities as much as possible to validate any factors you use, particularly if there are developments that span authority boundaries or may result in changes to pupil flows across authority boundaries.

- ensure that there is a strong evidence base for all the factors you use – be aware of their source, how they have been calculated and what source data was used to calculate them.

The pupil yield factors for each development enable you to calculate the total number of new pupils across all year groups and include them in your overall and/or school-level forecasts.

4.4 Different approaches

While all local authorities follow a broadly similar process to take account of housing developments, there are some differences around the details such as sources of information, level of detail and application to school and overall projections.

Data collection

Local authorities collect data on new housing developments in as much detail as possible:

- most receive this information from planning teams within their authority, and the information includes the number and type of new dwellings in each locality
- some authorities map new dwellings to individual school catchment areas, others at locality or district level
- where possible, authorities identify whether new dwellings will be private or social housing and also the mix of housing, for example in terms of number of bedrooms
- local authorities are constrained by the quality of the information available to them from planning departments and contractors.

Pupil yield calculations

Local authorities generally adopt a set of rules to define whether to include some or all of the new dwellings in a particular development in any calculations of pupil yield. This includes:

- the number of dwellings in a particular development
- the nature of the development, for example apartments/flats rather than family homes (although patterns of occupation in flats have been changing in recent years in some LAs, meaning more pupils are yielded per dwelling than previously).

Authorities apply a range of pupil yield factors. These are often differentiated by:

- primary and secondary age children

- type of dwelling
- size of dwelling.

Impact and timing

Local authorities adopt different approaches for staggering the impact of new housing developments. This relates to:

- the phasing of developments
- completion rates
- the ongoing impact of new houses on pupil numbers.

Annex 1: Validation of Forecasts

Be sure to quality assure and validate your forecasts on an ongoing basis. It is important that your forecasts are transparent and subject to scrutiny, giving local decision-makers as well as the DfE confidence to act.

You should monitor your forecasting process rigorously to ensure it is fit for purpose and produces results that are accurate and based on sound evidence. The key factors to bear in mind are listed below.

Precision

It is essential that forecasts are completed as you intended. Make sure that:

- the appropriate formulas are used, for example to calculate weighted averages
- the correct data is included.

It is good practice to focus on one or two examples and work all the way through your formulae to make sure you can understand how each step is working in the way intended and that the outcome is logical.

Credibility

Forecasts must be credible and the underlying assumptions realistic. In addition, they should be based on sound and acceptable data. Vary your assumptions to find out what particular factors, such as survival rates and historical uptake rates, can affect the validity of your projections.

Comparability

It is important to compare current forecasts with those of previous years to identify significant changes that need to be investigated. For example, is an overall increase in primary pupil numbers a result of an increase in reception class pupils? You should also check your forecasts against data from other sources, for example data on parental preferences.

Collaboration

You should work with neighbouring authorities, particularly where there are significant cross-boundary flows. For example, your projections may need to take into account answers to the following questions:

- Are neighbouring authorities planning significant changes to school organisation? Do those authorities reflect such changes in their own forecasts of pupil numbers?
- Are neighbouring authorities reflecting significant inward or outward migration of pupils in their forecasts? Do you agree with their forecasts? Do those authorities have access to data on cross-boundary flows that they could share with you? Does this match your own understanding and information?
- Do neighbouring authorities show similar, or very different, trends in pupil forecasts? Can these differences be explained?

Monitoring local context

To be accurate, pupil forecasts must be set within the local context. You should monitor the local context appropriate to your area regularly so you can anticipate and respond to changes that affect your pupil forecasts. That involves asking the following questions in relation to the demand for school places:

- Are pupil numbers rising, stable or falling? Over how many years has this been the case? Is there a trend?
- Is there a significant difference between cohort sizes from your reception to year 11 (or year 13 if you are including sixth form pupil numbers in your projections)? What will be the impact on pupil numbers as the cohorts move through?
- Are birth rates rising, stable or falling? Over how many years has this been the case? Is there a trend?
- Do population or household projections suggest that there will be significant changes in pupil numbers in the short, medium and long term?
- Are pupil numbers rising in some areas and falling in others? Is the population mobile and are schools in the right places?
- Are there any plans for changes to local housing patterns in the short to medium term and also in the long term – developments/demolitions? What will be the impact on pupil numbers?
- Are cross-boundary flows rising, stable or falling? Over how many years has this been the case? Is there a trend?
- Are pupil numbers in the independent sector rising, stable or falling? Over how many years has this been the case? Is there a trend?

- Are there any plans to reorganise school provision in your authority or neighbouring authorities that will have an impact on cross-boundary flows and overall pupil numbers in your authority?
- Are pupil numbers volatile, for example because of a military base or traveller site in your area or because of migrant workers or changes in immigration?

Annex 2: Case Studies

Cambridgeshire

Case Study – Forecast methodology

Cambridgeshire produces forecasts twice a year using the October school rolls (published in November/December) and January school rolls (published in April/May). The January based forecasts are seen as the main ones as all the datasets they use are available by the time these are produced. The October based forecasts therefore act as a refresh. The key datasets used are:

- NHS GP registrations
- school rolls
- information from admissions team relating to allocations
- housing trajectories from district councils.

Schools are sent the forecasts for comment before the authority releases their final forecasts.

Cambridgeshire has developed their own model within Excel for forecasting. This has a three tier set-up 1) a county model containing data for Cambridgeshire and the five districts, 2) a secondary school model for each district, and 3) for each secondary catchment area a model containing data for each primary school in that catchment area. This set-up allows Cambridgeshire to transfer information from one tier to another and use it to control forecasts at one level to those of another.

Reception intake is forecast on the basis of the relationship between the number of children recorded as living in the catchment in the NHS GP registration data, and the actual intake over the last three years. Forecast intake is adjusted where applicable, for example in relation to the number of places allocated at a school during the admissions process.

Intake into year 7 is forecast on the basis of the relationship between the number of 10 year old pupils in the feeder primary schools and the actual intake at the secondary school over the previous three years. Some schools are continually full and adjustments are in place to account for the effect this has on surrounding schools.

Sixth form intake is forecast on the assumption that staying on rates will stabilise around the average of the rates experienced over the last three years. As some of their secondary schools' staying on rate at 16 is continually increasing, the authority uses the

current year's figure for projecting forward along with any information provided by the schools.

Year groups are then assumed to move through the school with the average net gains/losses experienced over the last three years. In some cases this has to be adjusted due to large losses, for example from barracks closures, or due to wide ranges in the cohort change.

Individual primary school forecasts are adjusted for expected major changes in house building within the catchment area, where the development(s) have full planning permission. Cambridgeshire authority tries to keep adjustments for house building to a minimum to ensure consistency. However, where they do need to be made then this usually effects intake calculations and cohort change. Adjustments are made based on evidence from new estate surveys. Experience has found that house building usually has little direct effect on numbers of secondary school pupils but may affect intake through changes in the number of catchment primary school pupils. As a general rule, changes of 50 dwellings or less to annual house building rates are assumed to have no predictable effect on school rolls except when major building is taking place in the catchment of a rural school or if it involves mainly 3 and/or 4 bedroom family properties. Where major house building has taken place within a catchment for some years, and is likely to continue, then it is assumed that the year-group trends already accounted for in the forecasts reflect this.

East Sussex

Case study - Utilising professional judgement and local knowledge in forecasting

East Sussex has developed its pupil forecasting model in-house. The model does all the usual number crunching associated with pupil forecasting models – taking account of historic, cohort survival factors, birth/GP registration to Year R uptake factors, sixth form staying-on rates, pupil yields from new housing and so on. However, the authority recognises that these are not the only vital components of accurate forecasting and that the expert judgement of professionals from various teams also has a key role to play in the process.

For example, when the primary and secondary school intake forecasts are set for the coming and subsequent academic years, the officer who produces the pupil forecasts sets up a series of meetings with colleagues responsible for school admissions and school place planning. The draft forecasts are then discussed and amended, taking account of factors such as the likely number of late admissions applications in each area, the relative popularity of individual schools and the emerging solutions (eg new schools, school extensions or temporary bulge classes) for tackling forecast shortfalls.

Meetings of this nature have the added advantage that they raise awareness of the pupil forecasts within different parts of the authority, thereby enabling the authority to take proper account of predicted pupil number pressures in its School Organisation Plan, capital programme, school revenue budgets and school admissions arrangements.

Essex

Accuracy checks

Essex recognises that it is good practice to review the accuracy of previous projections and to use these accuracy checks as a starting point for the production of each new series of projections. Four types of accuracy checks are applied:

- Accuracy error – the difference between the projection and the actual number of pupils, expressed as a percentage of the actual pupil count. This is calculated using the final sets of forecasts produced in each of the previous five academic years.
- Average accuracy error – the average accuracy error taken over all schools. This identifies whether school projections overall are under-projecting or over-projecting pupil numbers. Averages have been taken of the school accuracy error across all primary and secondary schools, for the whole local authority, and for each district and planning group.
- Absolute average accuracy error – the scale of the accuracy error across all schools, ignoring whether they were over-forecasts or under-forecasts.
- Degree of accuracy – the percentage of schools with an accuracy error within 3%, 5% or 10%.

This is a comprehensive approach to accuracy checking, that is vital in terms of validating the underlying methodology and the recalibration of future forecasts in response to any old forecasts that proved to have a high accuracy error. Small refinements to the methodology have been made over the years where the accuracy errors have signified any issues. For example, a “staggering” method for gradually introducing potential pupils from new housing over 5 years rather than all in the first year of housing completion was introduced in response to seeing consistent overestimates of forecasts including housing – particularly for secondary.

Tables reporting on accuracy of forecasts at local authority level and at school level summarised at local authority and district level are published each year in Commissioning School Places in Essex (a publication available on ECC’s website).

Sheffield

Case study - methods used to monitor in-year school admissions to Sheffield mainstream schools.

In recent years Sheffield has experienced increased numbers of in-year admissions. Initial monitoring based on the admissions process was found to be less reliable in showing a true picture of the scale of in-year change. A new way of accurately monitoring the extent of in-year admissions and their impact on the school system was developed internally based on running regular SQL data extracts (known as snapshots) from the pupil records system as detailed below. Then by comparing each snapshot, a picture of how the school system changes over time is developed and analysed.

The impact on families is monitored through indicators such as the number of families per catchment area or planning area travelling more than 1 or more than 2 miles, and the number of households with children attending more than one primary school.

NB: The pupil records management system used in Sheffield is Capita ONE. This is kept up-to-date on a weekly basis with the majority of schools using SIMS (Capita ONE) to export updates to the Management Information System (MIS) team.

Snapshots (SQL database query) - The snapshot is an SQL database query ran at half-termly intervals. 12 snapshots are run each academic year at the mid-way point of every half term and every half term holiday. Each snapshot captures pupil level data for all active pupils and brings together: pupil characteristics; current address; current base and latest preference data. Much of the process is automated, significantly reducing the amount of officer time spent in producing the reports.

In-year report (SQL procedure) - An SQL procedure was designed to compare each snapshot to produce an in-year school admissions report. This report is compiled in three steps:

- Step 1: change in number on role (NOR) – from each snapshot the NOR was aggregated to school level and broken down by national curriculum year group (NCY). The difference is then calculated to give the change in NOR by NCY for each school.
- Step 2: identify the type of pupil movement – the change in NOR calculated (Step 1) is translated into individual pupil moves to quantify the number of transfers in, out and internal to the maintained system. First, the procedure compares each snapshot and selects any student record where the current base changes to identify an in-year cohort of pupils. Next, each pupil is categorised by four distinct types of in-year movement:

- Step 3: aggregate pupil movement to school level – the final step works up the individual pupil in-year movements to school level. The procedure counts the number of starters and leavers for each school, distinguishing whether pupil is new to the maintained system, transferring internally, or leaving the maintained system.

From this a detailed picture of net movement in and out of the Sheffield maintained school system emerges. This is used to estimate the additional demand for places arising from in-year movements. The data shows the pattern of where in-year applicants attend school. Whilst there is a spread of in-year admissions across the city, there are clear pockets of high mobility. This is monitored at individual school level and updated very frequently.

Annex 3: Data sources

Data sources available fall into seven categories. Possible sources for these are listed below.

1. Actual pupil numbers

School Census

2. Actual birth data

Clinical Commissioning Groups (CCGs)

Register of Births, Deaths and Marriages

Office for National Statistics

3. Projections of births

Office for National Statistics

4. Actual population data

GP registrations

Child Benefit data

5. Population and household projections

Population Projections - Office for National Statistics

Household Projections - Department for Communities and Local Government

6. Other local data sources

Early Years: data on the number of children in early-years settings including those making use of the entitlement for free provision at age 3+ (and 2+ once the policy is introduced)

Finance: pupil numbers used to calculate education funding from DfE to local authorities and from local authorities to schools

Health Care: health visitor statistics on births

Health Care: data on immunisation rates for the pre-school population

Social Care: data on specific population groups such as looked-after children

DfE: nationally produced forecasts of pupil numbers.

7. Housing developments (see section 4)

You can use many of the above sources to check the accuracy of previous forecasts for pupils of all ages. Bear in mind that other departments in your authority may be using similar data to plan other children's services. So it is important to involve all stakeholders to find out what data they have already acquired and whether you can use it to produce or validate your pupil forecasts.



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