Research Report DFE-RR017

Month of Birth and Education

Schools Analysis and Research Division

Department for Education

This research report was written before the new UK Government took office on 11 May 2010. As a result the content may not reflect current Government policy and may make reference to the Department for Children, Schools and Families (DCSF) which has now been replaced by the Department for Education (DFE).

Executive Summary

The principle aim of this evidence topic note is to draw together all the available statistical and research evidence on the month of birth effect in education and present a complete and coherent account of what we know about it, and how this links to various areas of school policy. The following key findings summarise the evidence that is presented in detail within the body of the paper.

See section 8.3 for a more detailed 6-page summary of findings; references to published material which has been drawn upon appear alongside the main body of the paper.

Month of Birth Effects

Attainment During Compulsory Education

In England, children born in August are the youngest within each school year group, and have lower average attainment than their older peers throughout schooling. The size of the month of birth gap in reaching the expected level of attainment decreases as children progress through the Key Stages, beginning at an odds ratio for autumn-born children compared with summer-born children of 2.6 at age five, and shrinking to 1.5 by age eleven, then 1.3 by age sixteen.

These odds ratios are derived from the percentages of pupils achieving a good level of development in the Early Years Foundation Stage Profile (24 percentage points difference), the expected level in both English and maths at Key Stage 2 (8 percentage points difference), and five or more grades A*-C at GCSE including English and maths (6 percentage points difference). To put this in context, 10,000 summer-born children per year fail to achieve this standard at GCSE, which influences their chances of progressing to A-levels and beyond, purely because they are the youngest pupils sitting the GCSE examinations due to the timing of their birth and the school year (approximately 90,000 autumn-born pupils fail to achieve the standard compared with 100,000 summer-born pupils).

In some other countries, the school year starts at a different point in the year (and in different climatic seasons), but across countries, it is consistently the youngest children in each year group who perform less well in school tests, and the eldest who perform better.

The August-September gap at Key Stage 4 is slightly larger than the gender gap, but the FSM gap is twice as large and the SEN gap is 4 times as large. At Key Stage 2, the August-September gap is a little larger than the gender gap and a little smaller than the FSM gap, but the SEN gap is 7 times as large. Whilst the FSM gap widens over the course of compulsory education, and the SEN gap widens then begins to narrow again, both the gender and month of birth gaps narrow as pupils progress through school.

Higher performing schools have significantly smaller percentage point month of birth gaps than lower performing schools. However, the month of birth effect sizes indicated by odds ratios are more ambiguous; this is because the percentage point gaps are an artefact of the performance level of the schools rather than of month of birth itself. Nevertheless, school improvement generally would be expected to shrink the *percentage point* gaps over time, and at Key Stage 4 and beyond, this could improve educational progression and life chances for summer-born children.

Post-Compulsory Attainment

By Key Stage 5, the gap between summer and autumn-born students is 3 percentage points for entry to traditional academic A-levels; amongst those who sit A-levels there is an additional 1 percentage point difference in achieving 2 or more passes. Considering all routes to Level 3 attainment (including applied or vocational qualifications) shows a smaller month of birth effect of 0.7 percentage points between summer and autumn-born students by age 19 (allowing for a gap or resit year).

Opposing differences in Higher Education participation and course completion balance out to a 0.8 percentage point gap in the resulting likelihood of qualifying, for August compared with September-born young people.

Wider Outcomes

In contrast to their lower attainment, summer-born children have better behavioural outcomes, with lower rates of overall and persistent absence, fewer fixed period exclusions, and slightly fewer permanent exclusions.

Two national surveys suggest that being summer-born is linked to a slightly greater risk of being bullied. TellUs data suggest that August-born young people are 6 percentage points more likely to be bullied than those born in September in years 6 and 8, falling to 5 percentage points in year 10. LSYPE data indicate that summer-born pupils have a higher incidence of suffering extreme (and rare) levels of bullying.

Summer-born pupils are also significantly more likely to be identified as having a special educational need than their older classmates. At the end of Key Stage 1, August-born pupils are nearly 90% more likely to be identified with SEN than September-born pupils; at Key Stage 2, this reduces to 60% more likely, and further to 25% more likely by Key Stage 4. The types of special educational need most disproportionate in summer-born pupils are moderate learning difficulties, specific learning difficulties, speech, language and communications needs, and other (unclassified) needs.

New analysis for this paper reveals that month of birth also shows consistent effects on attitudes to school and higher education, with younger children and their parents reporting less satisfaction and tending to rate their outcomes as average rather than good.

Policy and Month of Birth Effects

Provision and Month of Birth

Summer-born children are slightly less likely to be in nursery provision at the January of the school year in which they turn 4 (age 3-4), but are more likely to be in types of provision associated with higher Early Years Foundation Stage scores if they do attend.

89% of 4-5 year old admissions to maintained school reception classes take place in September, 10% in January, and 1% in April. A small number of children postpone starting school until year 1, which is permissible where their birthday falls after the start of the summer term. More than half of deferred reception entrants (starting in the spring or summer terms) are summer-born.

September entrants to reception perform better across the Early Years Foundation Stage Profile than those who enter in January, who in turn do better than summer-term entrants; this is the case regardless of month of birth. The strongest association with term of entry is for the Communication, Language and Literacy scales. This effect is likely to include a component of selection with less able children more likely to enter in the spring or summer terms.

A minority of children enrol part-time when they first start school, usually just for whole or part of their first term. Summer-born children are more likely to begin part-time, but there is no disadvantage to this in Early Years Foundation Stage Profile scores above that associated with month of birth and/or term of entry.

Research has demonstrated that absolute age is the dominant reason for month of birth gaps in educational attainment, and *not* the age at which children start school; it is simply the fact of being younger when tested which accounts for most of the differences observed. There are additional statistically significant, but very small, effects attributed to age at starting school or length of schooling; these last as far as Key Stage 2 for girls (but not boys), but have disappeared by Key Stage 4.

International comparisons of age starting school tend to be reported in terms of a lack of evidenced advantage to starting school early, and in terms of later starters catching up on initial gains by the end of primary education; however, these studies do not demonstrate any disadvantage to starting school at 4-5 either, and overall there is no evidence of a causal relationship between school entry age and attainment.

Curriculum and Pedagogy Strategies

The research literature has identified a dilemma between play-based learning during the early years of education, and pressures to begin formal instruction, which stems from the co-location of reception classes and Key Stage 1 and 2 classes within primary schools. Play-based learning and emphases on choice,

independence and child-initiated activities are effective and age-appropriate pedagogies for the early years of education.

There are constraints to the delivery of an ideal curriculum for four year-olds in some settings which vary by type of provision; staffing ratios and staff qualification profiles differ between primary school reception classes and nursery schools or non-maintained provision. Another constraint is the inherent variation in children's readiness for formal instruction whatever the starting age or type of provision attended.

Holding back children who are ready to begin formal learning would not eliminate differences in development based on month of birth or other factors due to the role of the Home Learning Environment in generating relative (dis/)advantages.

Research backs a strategy of personalised development focused on individual readiness, plus bridging the gap between formal and informal learning using techniques such as responsive guided play and varied problem-solving activities.

Provision and Assessment Strategies

Policy options for tackling the month of birth effect on SEN identification include revising systems for SEN referral with the use of standardised assessments, increasing awareness among teachers, and personalisation of expectations and the curriculum; however there is a shortage of detail and evaluation of effectiveness for these approaches in the literature.

In England, children who begin pre-school before 3 years of age (and as young as 2) show better cognitive scores at Key Stage 1 than those who start later. However, the total entitlement to free part-time nursery provision is less for summer-born children (by up to two terms) as it begins at the start of the term after a child turns three.

Strategies focusing on equalising assessment outcomes without addressing development (standardised assessment) would require the existence of some additional process whereby positive early feedback is converted to better subsequent performance; currently there is no evidence of such a feedback effect.

Grade retention of summer-born children who are struggling to progress academically is not recommended. It is associated with negative progression, behaviour, mental health and social impacts and there is no advantage in terms of increased school readiness.

Contents

Introduction

Background

In 2002, DfE[1] began collecting individual pupil-level data on the characteristics of pupils in maintained schools through the Schools Census. This information has been linked to attainment data from Key Stage tests to create the National Pupil Database, which has become a resource enabling detailed longitudinal analysis of pupil, school and national performance and the factors which are associated with it. Through the modelling of progress and attainment, one of the individual factors identified as affecting attainment outcomes is month of birth, or age-within-year.

In England, children born in August are the youngest within each school year group, and are almost one year younger than children born in the preceding September who they share school classes with. In some other countries, the school year starts at a different point in the year (and in different climatic seasons), but it is consistently the youngest children in each year group who perform less well in school tests, and the eldest who perform better. Both government and independent research have investigated the causes for the month of birth effect and attempted to find solutions for mitigating the inequality that is created by the timing of the school year.

Aims

The principle aim of this evidence topic note is to draw together all the available statistical and research evidence on the month of birth effect in education and present a complete and coherent account of what we know about it, and how this links to various areas of school policy. Some of the content has been previously published through various routes and is referenced throughout; some is based on new analysis that aims to widen the evidence about outcomes affected by month of birth and delve into the structure of the English maintained schooling system to look for possible sources of intervention and further understanding.

The approach of this paper is to begin by detailing the effects of month of birth on educational outcomes; firstly attainment through the compulsory Key Stages, and secondly post-compulsory attainment, thirdly looking at wider school outcomes. These form the content of Part I of the paper; Part II shifts the focus to the early years and maintained schooling systems, looking at variations in the experience of educational provision and how these relate to the month of birth effect. Further chapters investigate early pedagogy and curriculum, policy for the identification of special educational needs, and policy themes in the international evidence. The paper concludes with a chapter summarising conclusions from the evidence presented.

The scope of the paper covers early years provision through to higher education, or ages 3 through to early 20s. Wherever possible, analysis is

[1] DfE = Department for Education, which was then the Department for Education and Skills (DfES).

presented by both month of birth (showing the extremities of the effects by comparing August and September-born children) and term of birth (splitting the cohort into three equally-sized terms and comparing Autumn, Spring and Summer-born children to give a more general impression of the typical size of the effects). Some of the analyses based on surveys are limited to term of birth comparisons in order to obtain large enough groups for robust analysis. The seasonal effects are also presented for important attainment policy subgroups – by gender and separately for pupils eligible / not eligible for free school meals (a deprivation indicator) where the data will support this.

This paper is not intended to provide figures which will be regularly updated. It aims to provide in-depth insight into the month of birth effect based on evidence available at this point in time.

Glossary of Terms

Compulsory Education
Compulsory education begins at the start of the school term immediately after a child turns 5, and ends on the school leaving date on or immediately after the date they turn 16 (or if they turn 16 after that date but before the beginning of the next school year).

Employed With Training
In work and has done some kind of training in the last 4 weeks preceding the interview, either at a college, an employer-owned training centre, or on the employer's premises.

Employed Without Training
In work and has not participated in any of the above forms of training in the last 4 weeks preceding the interview.

EYFS
Early Years Foundation Stage – the statutory framework introduced in September 2008 providing one set of standards for all childcare settings, encompassing education and care of 0 – 5 year olds.

EYFSP
Early Years Foundation Stage Profile - children's outcomes in the academic year that they turn 5, based on 13 EYFSP assessment scales.

FPE
Fixed Period Exclusion - a pupil is excluded from a school but remains on the register of that school because they are expected to return when the exclusion period is completed.

FSM
Free School Meals - are offered to children of families who are in receipt of Employment and Support Allowance (Income Related), Income Support, Income Based Job Seekers Allowance or Guaranteed Element of State Pension Credit. Pupils are recorded as eligible only if a claim for free school meals has been made by them or on their behalf by parents and either (a) the relevant authority has confirmed their eligibility and a free school meal is currently being provided for them, or (b) the school or the LEA have seen the necessary documentation (for example, an Income Support order book) that supports their eligibility, and the administration of the free meal is to follow as a matter of process.

FTED
Full Time Education - The definition of full-time education varies according to institution type:
Schools - a full-time pupil is someone studying 10 sessions a week, where a session is ½ day. Prior to 2002, all pupils were recorded as full-time;
Further Education Institutions - full-time full-year learners are defined as those enrolled on programmes of at least 450 guided learning hours per year, or for at least 150 guided learning hours per tri-annual period or more than 16 guided learning hours per week for shorter courses. Full-time learners who are not classified as full-time full-year are classified as other full-time. See www.lsc.gov.uk for more information;
Higher Education Institutions - full-time full-year students are defined as those studying 21 hours a week for 24 weeks. Full-time students who are not classified as full-time full-year are classified as other full-time.
See www.hesa.ac.uk for more information.

GST
Government Supported Training - this consists mainly of Apprenticeships, but also Entry to Employment and other training courses.

HE
Higher Education.

LSYPE
Longitudinal Study of Young People in England.
http://www.esds.ac.uk/longitudinal/access/lsype/L5545.asp

MOB
Month of Birth – the calendar month in which a child was born.

NEET
Not in Education, Employment or Training.

NPD
National Pupil Database - a longitudinal database for all children in maintained schools in England, linking pupil/student characteristics to school and college learning aims and attainment. It also holds individual pupil level attainment data for pupils in non-maintained and independent schools who partake in the tests/exams.

The NPD holds pupil/student and school characteristics e.g. age, gender, ethnicity, attendance and exclusions (sourced from the School Census for maintained schools only), matched to pupil level attainment data (Early Years Foundation Stage Profile (EYFSP), Key Stage (KS) assessments and external examinations), collected from schools and Local Authorities (LAs) by the Department for Education, the National Assessment Agency (NAA) and awarding bodies. Other data on further education (sourced from the Learning and Skills Council's (LSC) Individualised Learner Record (ILR) and awards of key skills and vocational qualifications (NISVQ)), higher education (sourced from HESA) and looked after children has also been matched in to the NPD.

http://www.bris.ac.uk/Depts/CMPO/PLUG

OA
Overall Absence – is defined as the number of half day sessions missed due to absence, expressed as a percentage of the total number of possible half day sessions. Overall Absence includes absences for all reasons, both authorised and unauthorised.

PA
Persistent Absence – Pupils are deemed Persistently Absent if they exceed a threshold number of absences within the year of around 20% of the national typical school year, typically 64 half-day sessions. The rate of Persistent Absence is defined as the number of persistently absent pupil enrolments, expressed as a percentage of all enrolments.

PE
Permanent Exclusion - a pupil is excluded and their name removed from the school register. Such a pupil would then be educated at another school or via some other form of provision.

SEN
Special Educational Needs - there are three types of SEN:
School Action - a teacher identifies a child with SEN and provides interventions.
School Action Plus - as with school action, but with help from external services.
Statemented - the Local Authority provides written statement of SEN needs of the child.

TOB
Term of Birth – births are divided into three terms based on the school year:
Summer-born is defined as births during May-August inclusive; Spring-born as births during January-April; and Autumn-born as births during September-December.

Part I: Month of Birth Effects

Chapter 1: Attainment

Notes on interpreting the analysis

Percentage Point Gaps

The Key Stage measures (% of pupils achieving various levels) are used to present the month of birth effect as the most familiar measures available. However, certain characteristics of the measures mean that they should be interpreted with care when making comparisons across Key Stages or between different groups of pupils or schools; this is because the current average attainment for these different groups / Key Stages varies, meaning that smaller or larger percentage point gaps may be influenced by the choice of measure rather than the size of the effect.

To explain why this is the case, the Key Stage measures can be viewed as cumulative normal distributions, with the result that percentage point gaps for those measures or groups where the average attainment is currently below 45-50% would be expected to widen over time, simply as a result of rising overall standards pushing the attainment for different groups along the cumulative curves; for measures or groups where the average attainment is currently above 50-55%, the percentage point gaps would be expected to narrow over time, simply as a result of rising standards. For an illustrated example of this effect, see section 1.4 on school performance and month of birth gaps.

Odds Ratios

Odds Ratios are used in some of the analyses as an alternative way of quantifying the month of birth attainment gaps – they provide a like-for-like comparison of groups with different underlying levels of attainment, and for different Key Stages where the national attainment level is currently at a higher or lower percentage.

An odds ratio of greater than 1, for autumn compared with summer, suggests that being born in the autumn has a greater association with the outcome (e.g. achieving a Key Stage level) than being summer-born; similarly an odds ratio of less than 1 would imply a lesser association with the outcome.

These odds ratios are calculated from the odds for autumn and the odds for summer, which are in turn calculated from the percentages of pupils achieving the outcome.[2]

Worked Example:
If: 80% of autumn-born children achieve X
And: 60% of summer-born children achieve X

Then: Odds (achieving X) for autumn-born children = 0.8 / (1-0.8) = 4
And: Odds (achieving X) for summer-born children = 0.6 / (1-0.6) = 1.5
And: Odds Ratio (achieving X),
for autumn compared with summer = 4 / 1.5 = 2.7

[2] in this analysis – sometimes odds ratios are generated from regression models rather than straightforward percentage cross-tabulations as here.

Which to use?

Odds ratios can be said to capture the month of birth effect net of any impact of the choice of measure used, whereas percentage point gaps are influenced by the measure in question as well as month of birth. Whilst the odds ratios are generally more decisive in sizing up the effect, there is an important exception to this at Key Stage 4 and beyond. At this point, pupils exchange their qualifications as a form of currency for opportunities for further study or employment. Therefore the percentage achievement measures and their associated percentage point gaps become significant to the life chances and educational progression of individual young people and are important regardless of whether they primarily represent month of birth effects or the qualification measures used.

Below Key Stage 4, the odds ratios are the decisive measures; for Key Stage 4 and beyond, the percentages and points gaps should be taken as decisive.

1.1 Key Stages

1.1.1 Early Years Foundation Stage Profile

The Early Years Foundation Stage (EYFS) Profile provides information about each child's level of development as they reach the end of the academic year in which they turn five (year 1). The profile comprises six areas of learning covering children's physical, intellectual, emotional and social development measured by 13 assessment scales, each of which has nine points. Children who achieve a score of 78 points or more across the 13 assessment scales score an average of 6 points per scale. When a child achieves this overall score, and also achieves a score of 6 or more in each of the 7 scales in the Personal, Social and Emotional development (PSE) and Communication, Language and Literacy areas of learning (CLL), they are deemed to be reaching a good level of development.

National maintained schools data for the EYFS profile are available from the National Pupil Database, and enable analysis of differences in educational achievement for children at the end of the Reception year. In 2009, the difference in EYFS profile achievement between autumn and summer-born children[3] was represented by an odds ratio of 2.6, derived from a 24 percentage point gap (fig. 1.1a).[4]

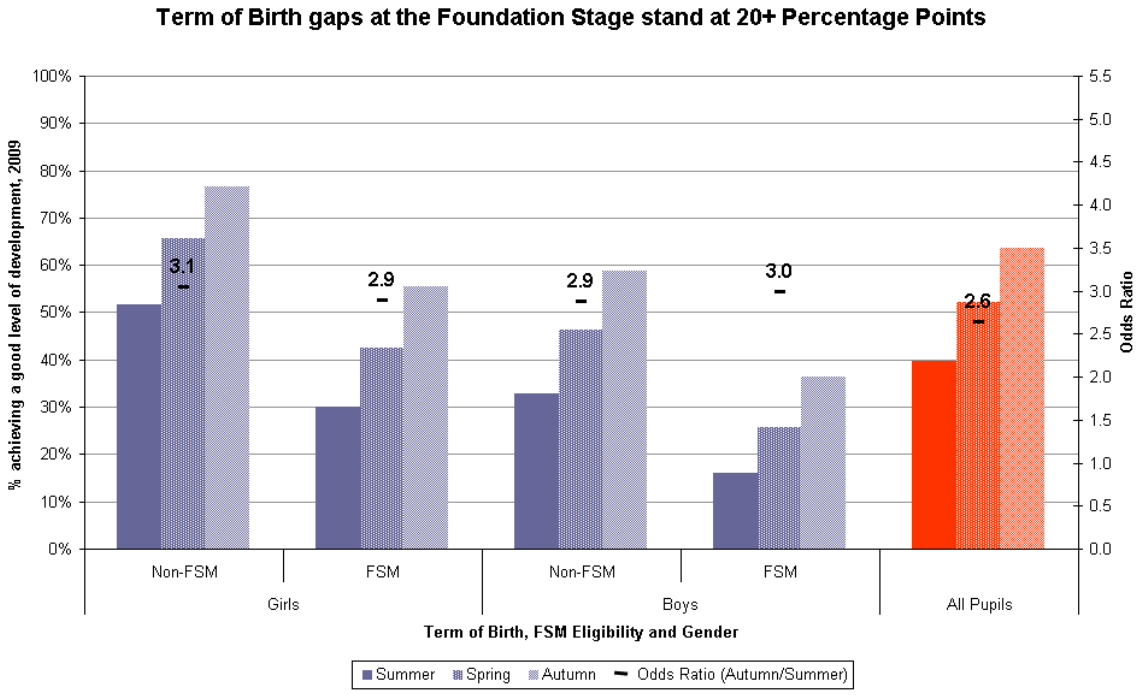
Girls were more likely than boys to achieve a good level of development, and pupils who were not eligible for free school meals were more likely than those who were eligible. The term of birth effect was larger for pupils *not* eligible for free schools meals amongst girls, but larger for those who *were* eligible amongst boys.

[3] Summer-born is defined as births during May-August inclusive; Spring-born as births during January-April; and Autumn-born as births during September-December.

[4] The "good level of development" measure does not take account of children's maturity when assessed even though this takes place at a very young age; it is a straightforward threshold measure determined as described in the preceding paragraph.

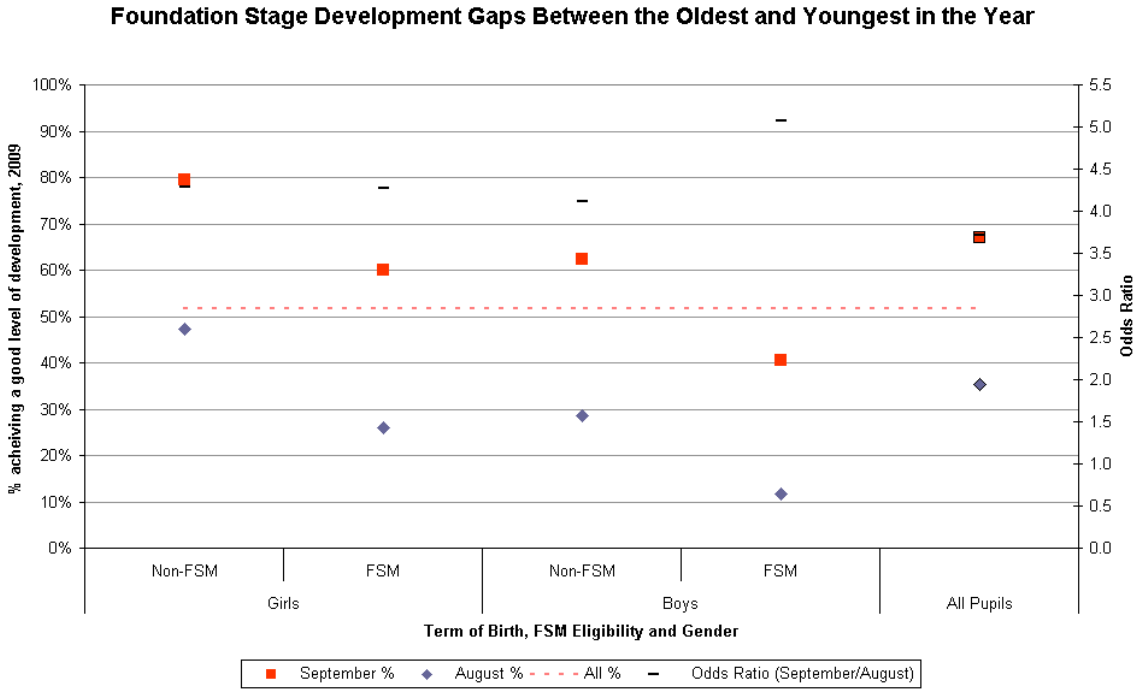
Viewing Figure 1.1a, the red bars show the percentage point gap in attainment for all pupils, hence the 24 ppt gap is from the autumn bar value (64%) minus the summer bar value (40%). The blue sets of bars show the equivalent gaps for subgroups of pupils according to gender and eligibility for free school meals. The dashes and their value labels show the odds ratios for autumn compared with summer-born pupils' attainment.

Fig. 1.1a



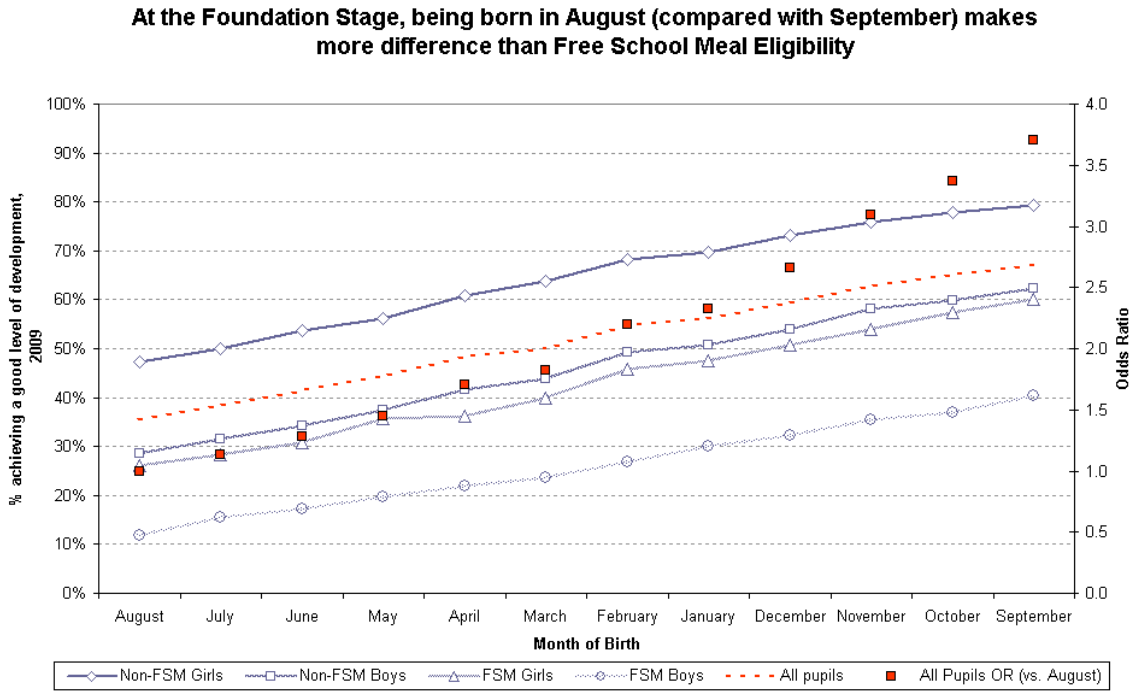
Considering the youngest (August-born) and oldest (September-born) pupils shows an even starker difference in development (Fig.1.1b). September-born pupils were almost twice as likely to achieve a good level of development (67%) as August-born pupils (35%), resulting in a month of birth gap of 32 percentage points.

Fig. 1.1b



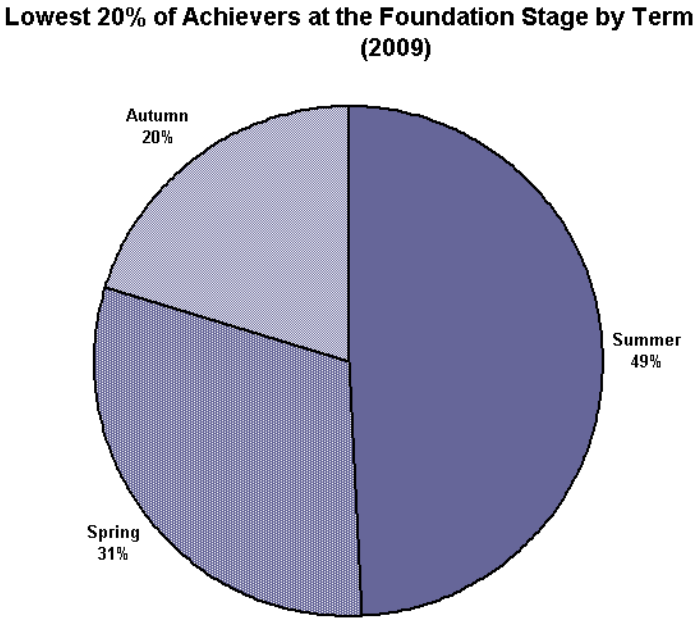
Month-by-month analysis shows a steady increase in achievement for each month of additional age the pupil has attained by the time of the EYFS profile assessment (Fig. 1.1c). Being born in August rather than September makes more difference than Free School Meal Eligibility at this age.

Fig. 1.1c



Shifting the focus from those achieving a good level of development to the lowest achieving pupils nationally, the bottom fifth of pupils was disproportionately made up of Summer-born children. Fig. 1.1d shows that nearly half (49%) of the lowest achieving 20% were born in the summer (May-August), whereas only 20% of this group were born in the autumn (September-December).

Fig. 1.1d

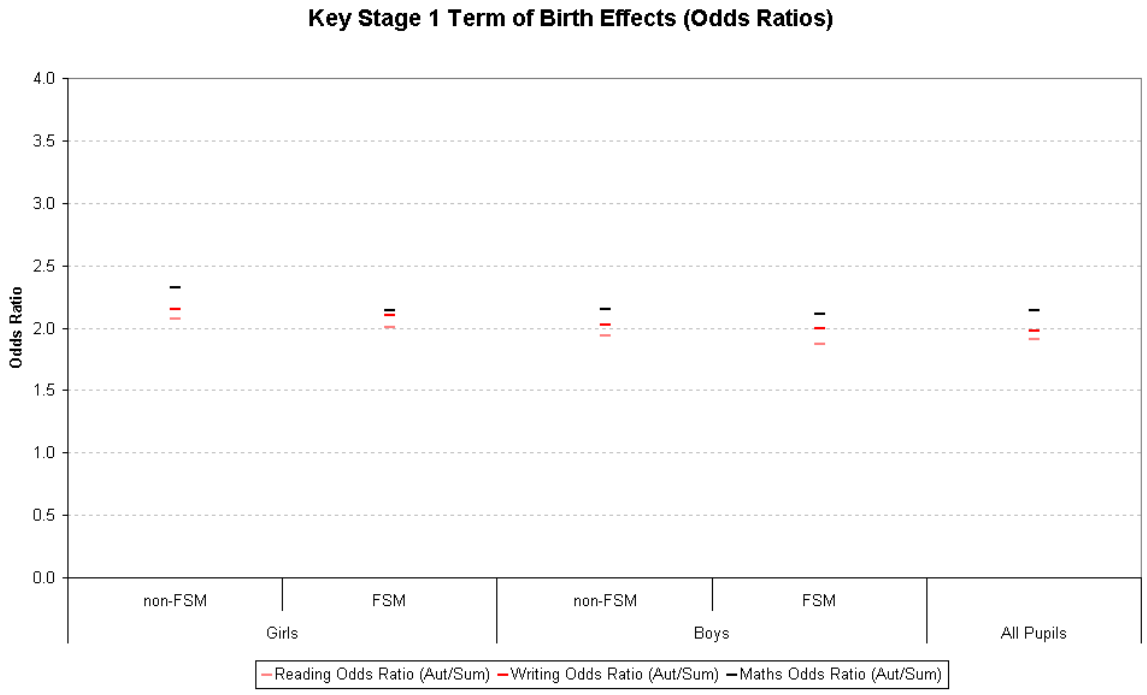


1.1.2 Key Stage 1 Teacher Assessments

Key Stage 1 teacher assessments measure pupils' attainment against the levels set by the National Curriculum. They measure the extent to which pupils have the specific knowledge, skills and understanding which the National Curriculum expects pupils to have mastered by the end of Key Stage 1 (typically age 7).

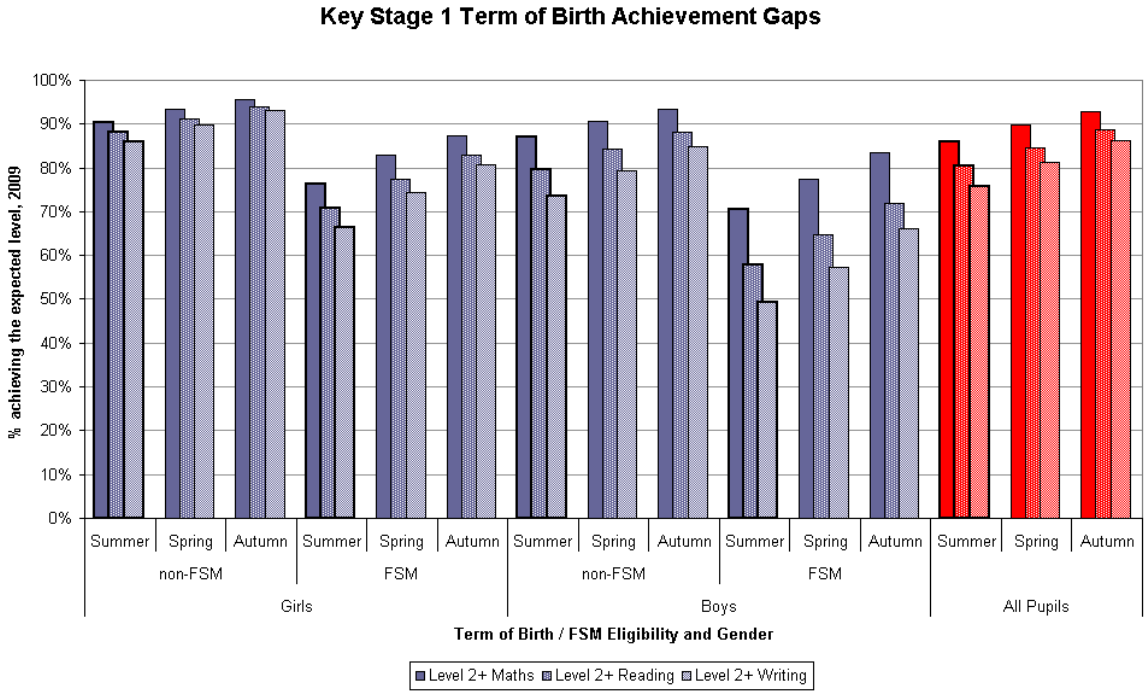
By Key Stage 1, the spread of attainment by age within year has narrowed considerably from that seen in the EYFS profile. At Key Stage 1 in 2009, the odds ratios on achieving the expected level for summer compared with autumn-born pupils stood at 2.0 for writing, 1.9 for reading, and 2.1 for maths (Fig. 1.1e), down from 2.6 at EYFSP. These odds ratios were largest for girls who were not eligible for free school meals, the highest achieving group depicted in Fig. 1e.

Fig. 1.1e



At Key Stage 1 in 2009, the gap in the percentage of pupils achieving the expected level between summer and Autumn-born pupils stood at 10 percentage points for writing, 8 percentage points for reading, and 7 percentage points for maths (Fig. 1.1f).

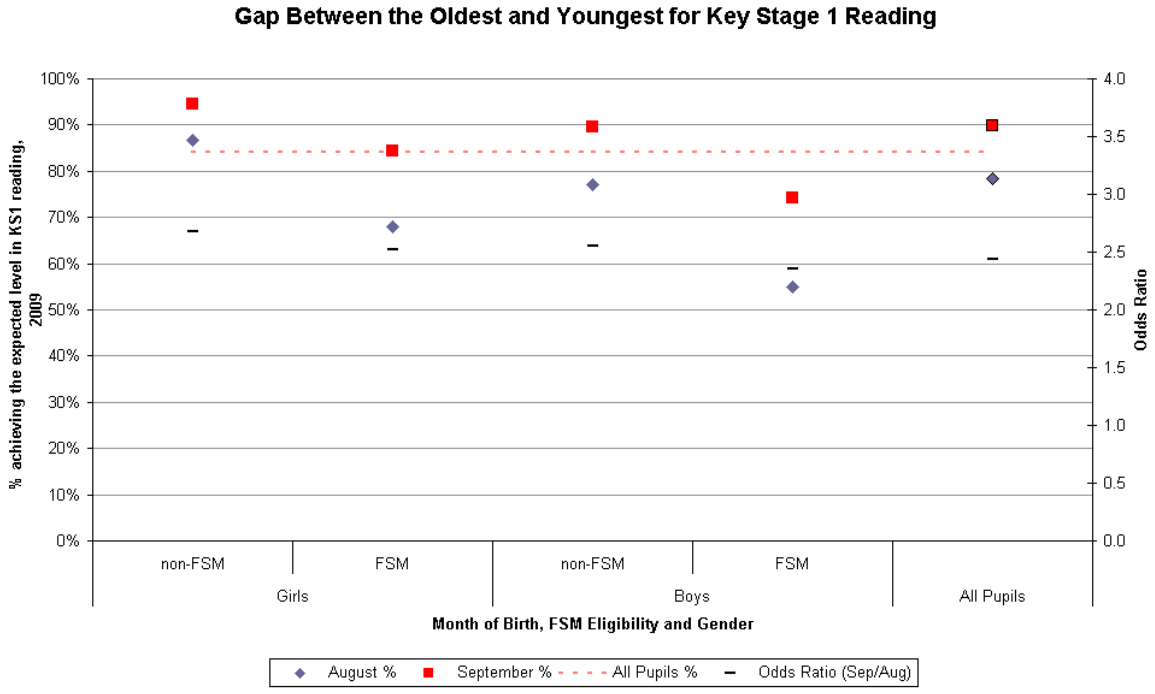
Fig. 1.1f



The odds ratio on Key Stage 1 Reading at the expected level for the oldest (September-born) compared with the youngest (August-born) pupils was 2.4 (Fig. 1.1g).

August-born boys who were eligible for free school meals had an achievement rate for Reading of 55%, some 40 percentage points behind September-born girls who were not eligible for free school meals, and an extra 19 percentage points behind their September-born (male FSM) counterparts. This illustrates how membership of multiple disadvantaged groups can combine to produce very low percentage chances of attainment at the expected level.

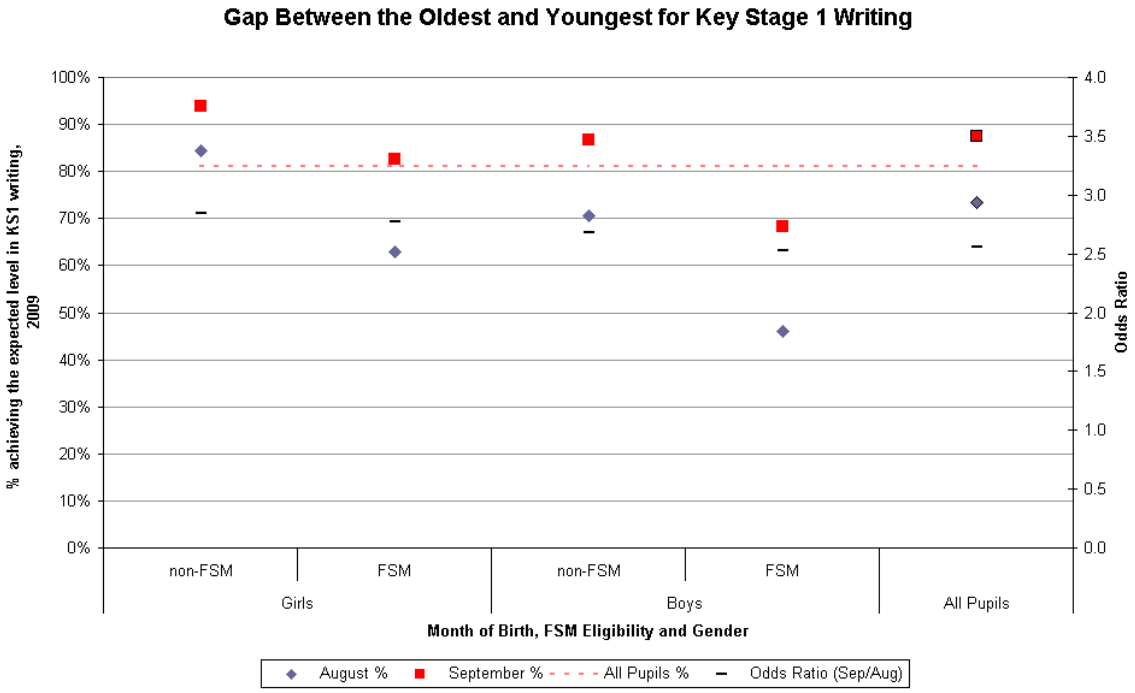
Fig. 1.1g



The odds ratio on Key Stage 1 Writing at the expected level (September compared with August) was larger than for Reading, at 2.6 (Fig. 1.1h).

August-born boys who were eligible for free school meals were less than half as likely to achieve the expected level in Writing (46%) as September-born girls who were not eligible for free school meals (94%).

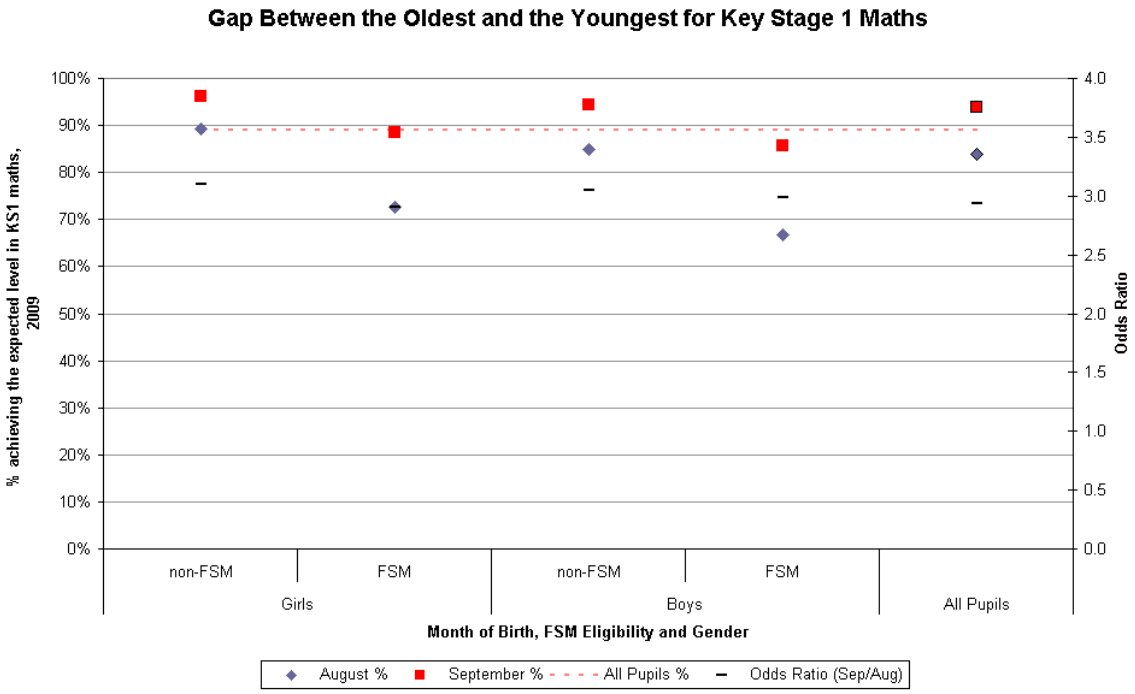
Fig. 1.1h



The odds ratio on Key Stage 1 Writing at the expected level (September compared with August) was 2.9, larger than those for Reading and Writing (Fig. 1.1i).

August-born boys who were eligible for free school meals had an achievement rate for maths of 67%, 29 percentage points lower than September-born girls who were not eligible for free school meals (96%). There was also a smaller percentage point disadvantage for boys compared with girls and for pupils eligible for free school meals compared with those who were not eligible.

Fig. 1.1i



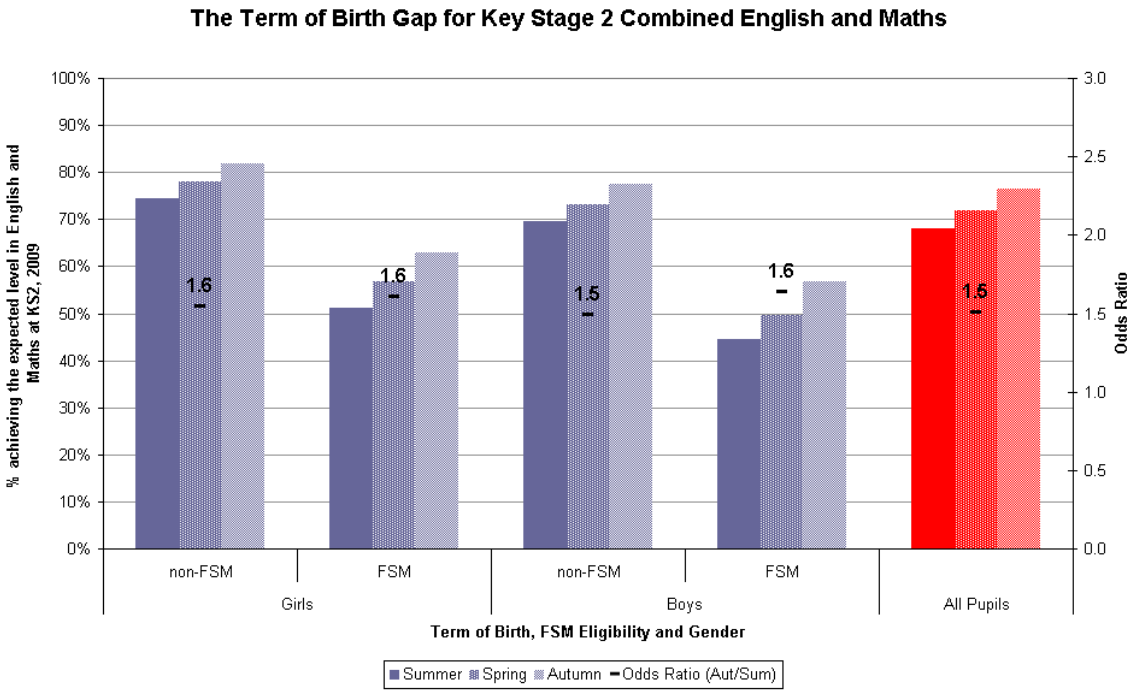
1.1.3 Key Stage 2

Key Stage National Curriculum assessments are reported at the end of Key Stage 2 by tests in English and maths. The tests at Key Stage 2 measure pupils' attainment against the levels set by the National Curriculum, which have been designed so that most pupils will progress by approximately one level every two years. This means that by the end of KS2 (typically age 11) pupils are expected to achieve level 4.

The following analysis considers the odds ratios on attaining the specified level in both English and maths. At the expected level (L4+), the odds ratio for autumn compared with summer-born pupils is 1.5 (Fig. 1.1j), down from 1.9 - 2.1 at Key Stage 1.

The gap between summer and autumn-born pupils in achieving the expected level for English and maths is 8 percentage points.

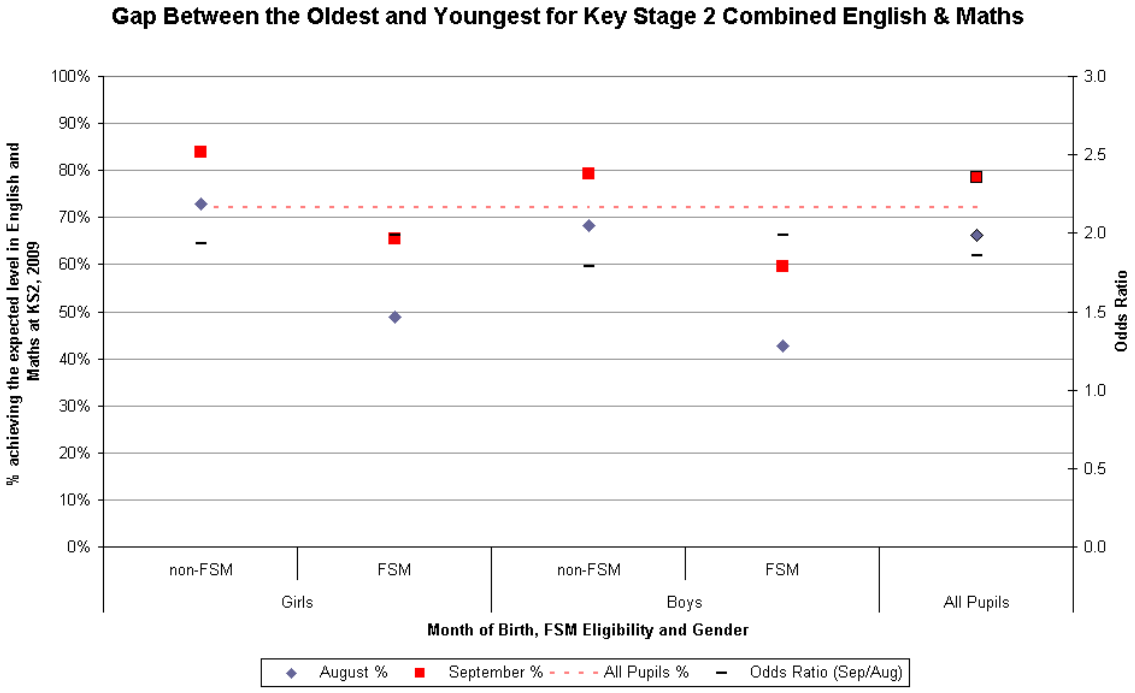
Fig. 1.1j



The odds ratio on Key Stage 2 English and maths combined at the expected level for September compared with August-born pupils was 1.9 (Fig. 1.1k).

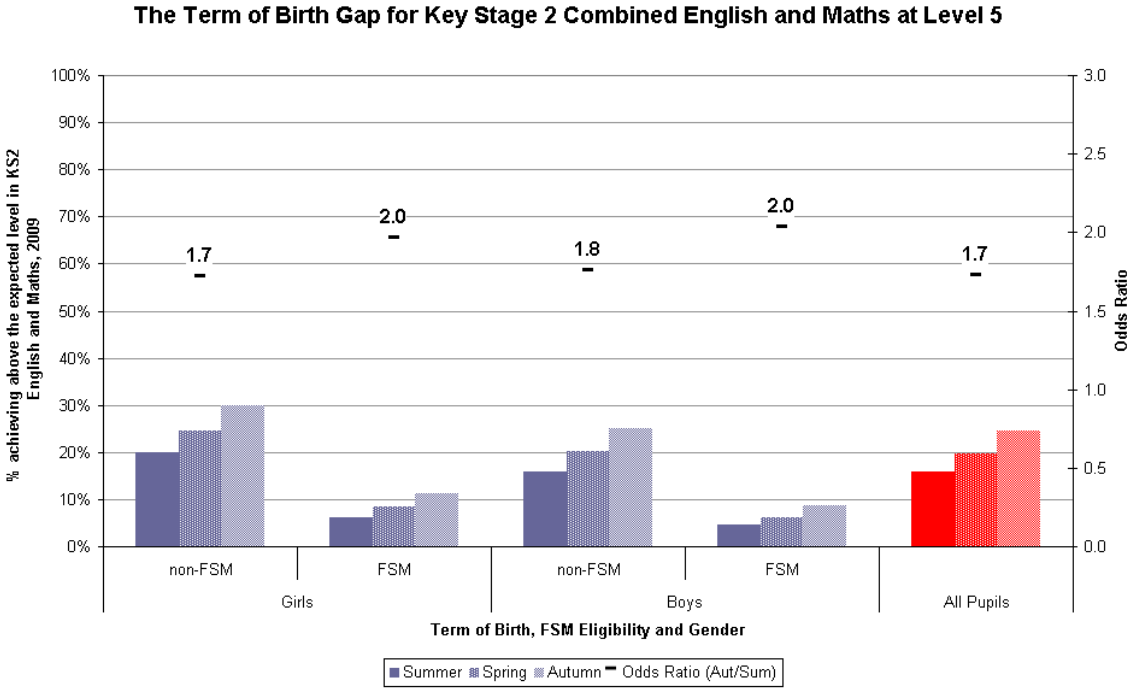
Just 43% of August-born FSM boys achieve level 4 in English and maths compared with 84% of September-born non-FSM girls.

Fig. 1.1k



Turning the focus to high-performing pupils at Key Stage 2, the following chart shows the term of birth gaps for pupils attaining level 5 in both English and maths (i.e. above the expected level). The odds ratio for autumn compared with summer-born pupils is slightly larger than for level 4 attainment at 1.7 (Fig. 1.1l).

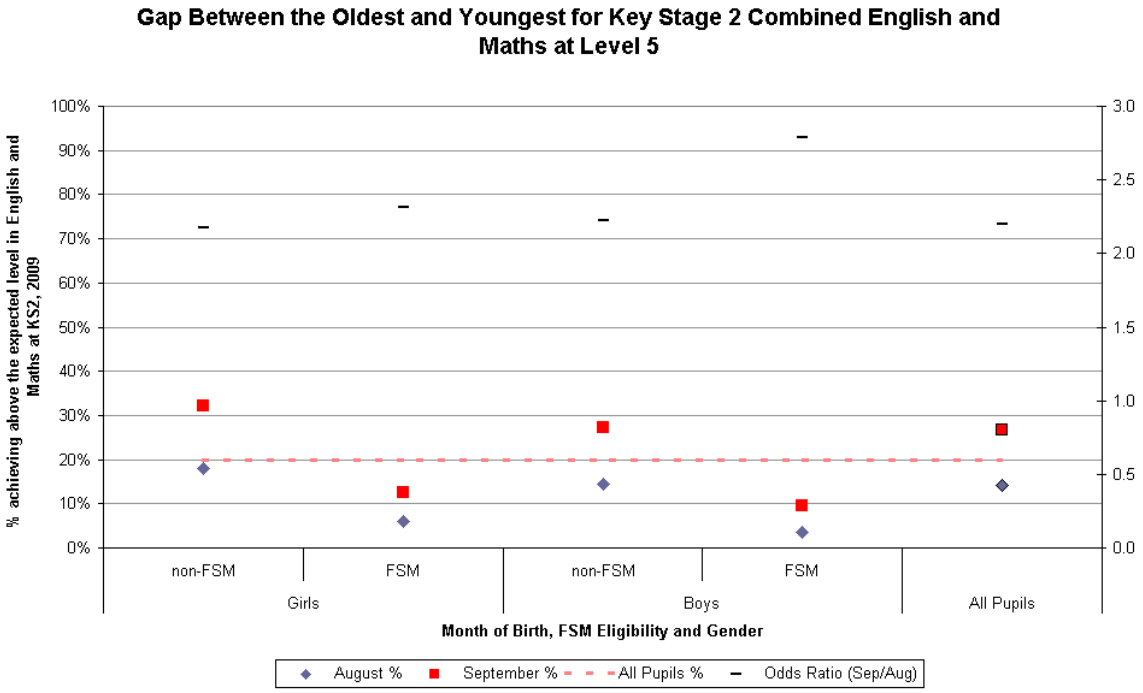
Fig. 1.1l



The odds ratio on Key Stage 2 English and maths combined at above the expected level (L5) for September compared with August-born pupils was 2.2, larger than for expected (L4+) attainment (Fig. 1.1m).

Just 4% of August-born FSM boys achieve level 5 in English and maths compared with 32% of September-born non-FSM girls.

Fig. 1.1m



1.1.4 Key Stage 4

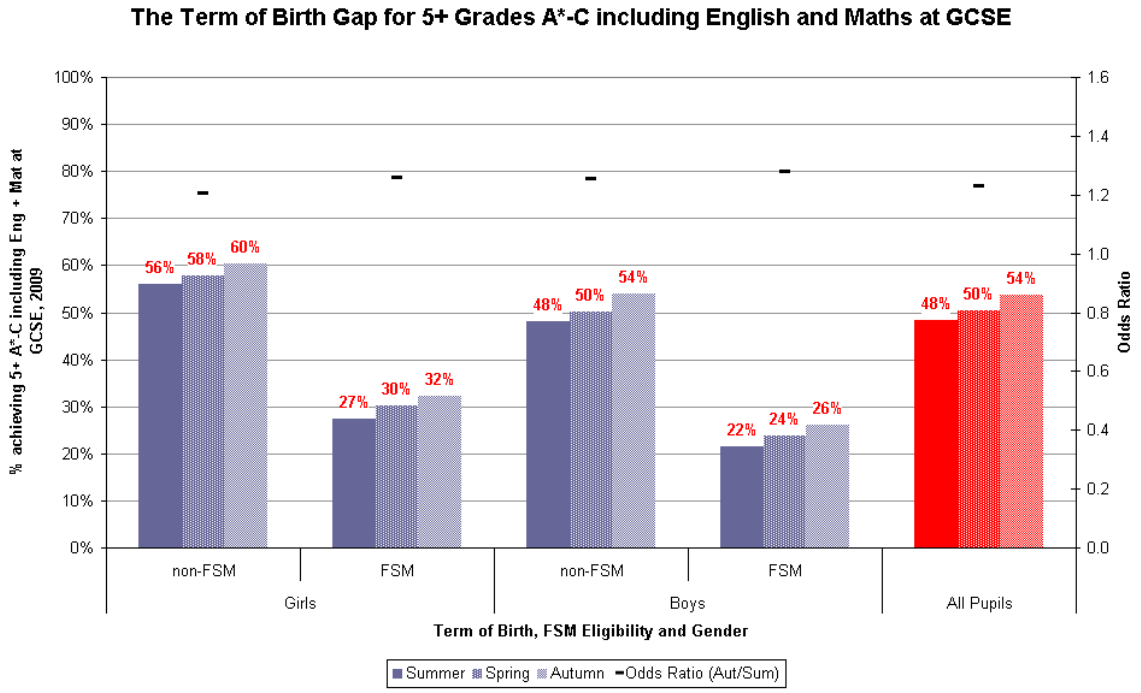
As detailed at the beginning of the Chapter, below Key Stage 4, the odds ratios are the decisive measures; for Key Stage 4 and beyond, the percentages and points gaps should be taken as decisive due to the impact of achieving threshold measures on subsequent study and work options.

GCSE attainment is used to assess the overall achievement of pupils at the end of Key Stage 4 (typically age 15). The following analysis presents the term of birth and month of birth gaps in achieving 5 or more grades A*-C at GCSE ("five good GCSEs") including English and maths. The gap between summer-born and autumn-born pupils stands at 6 percentage points. The gaps are of similar size (4-6 percentage points) for the FSM and gender subgroups (Fig. 1.1n).

To put this in context, 10,000 summer-born children per year fail to achieve this standard at GCSE, which influences their chances of progressing to A-levels and beyond, purely because they are the youngest pupils sitting the GCSE examinations due to the timing of their birth and the school year (approximately

90,000 autumn-born pupils fail to achieve the standard compared with 100,000 summer-born pupils).[5]

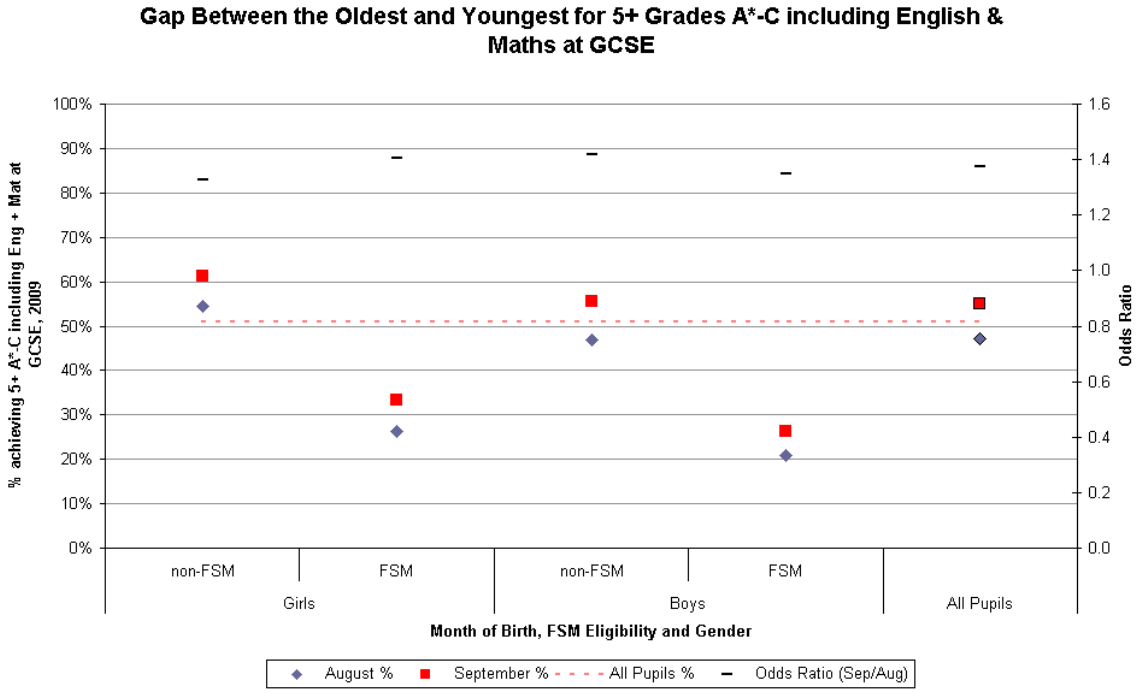
Fig. 1.1n



[5] Calculated by raising summer-born GCSE attainment to autumn-born levels; this counterfactual implies that all summer-born pupils would sit their GCSEs at the same age in months as is currently the case for autumn-born pupils.

The gap between the oldest (September-born) and youngest (August-born) pupils for 5 or more grades A*-C at GCSE including English and maths is 8 percentage points (Fig. 1.1o). Just 21% of August-born FSM boys achieve level 4 in English and maths compared with 61% of September-born non-FSM girls.

Fig. 1.1o

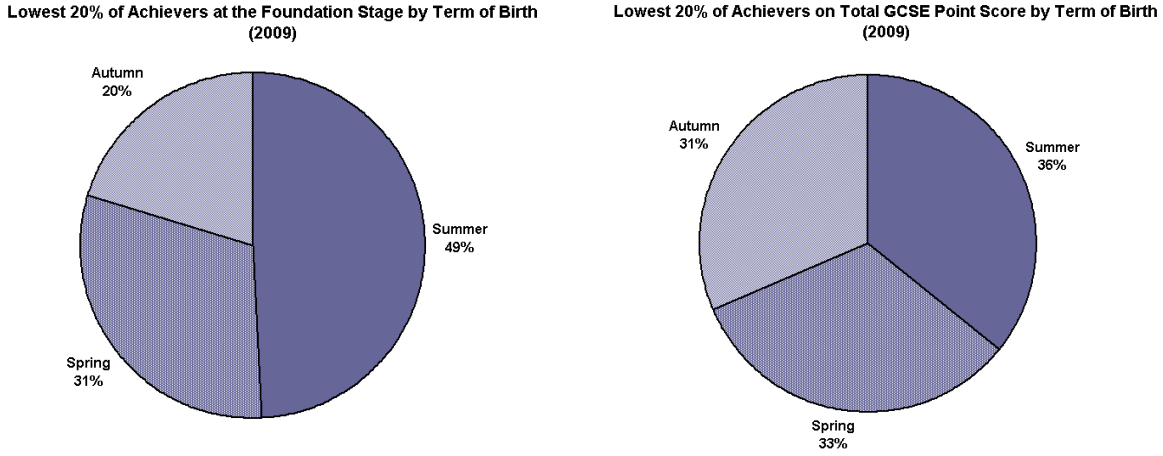


GCSE Month-by-Month Breakdown

Month of Birth	% Achieving 5 or More Grades A*-C Including English & Maths at GCSE, 2009
Aug	47%
Jul	48%
Jun	49%
May	50%
Apr	50%
Mar	51%
Feb	51%
Jan	50%
Dec	52%
Nov	53%
Oct	54%
Sep	55%
All Pupils	**51%**

Figure 1.1p illustrates how the proportion of low achieving pupils accounted for by the summer-born group shrinks between the Early Years Foundation Stage (49%) and Key Stage 4 (36%).

Fig. 1.1p



1.2 Points, Levels and Thresholds

The month of birth effect on attainment outcomes is magnified by the use of threshold measures to determine expected levels of performance against the National Curriculum. Crawford, Dearden & Meghir (2007)[6] compared points with thresholds in their modelling of August birth penalties (compared with September birth), and found that at Key Stage 1, the gap stood at 2.2 Key Stage points for girls (2.4 points for boys) representing just over one sub-level of attainment[7]. This translated to a substantial gap in the achievement of the expected level of attainment at 27 percentage points for girls (23 ppts for boys). A range of background characteristics were controlled, for example, to isolate any effects due to differential identification of special educational needs in summer born children. See Chapter 3 for further information on SEN and month of birth.

By Key Stage 4, the gap after controlling for characteristics stood at 1.7 GCSE points for girls (2.0 points for boys), where 6 points equal one GCSE grade per subject, using capped average point scores.[8] Again, this translates to a gap in the achievement of the expected level (5+ grades A*-C) of 6 percentage points between August and September born pupils. Whilst considerable narrowing of the gap takes place between KS1 and KS4, it remains statistically and educationally significant, particularly in the light of the use of thresholds to determine eligibility for progression to Key Stage 5.

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[6] Crawford, Dearden & Meghir (2007), When you are born matters: the impact of date of birth on child cognitive outcomes in England, IFS.

[7] Level 2C attracts 13 points, Level 2B attracts 15 points and Level 2A attracts 17 points.

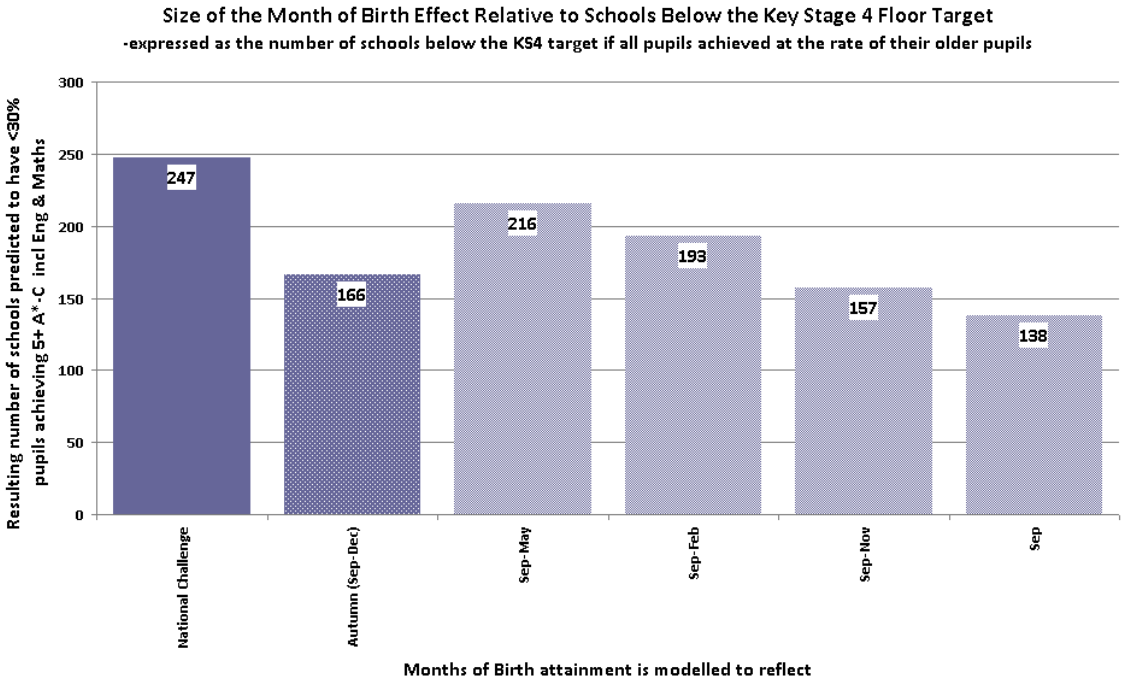
[8] The average of the best 8 GCSEs or equivalent qualifications.

1.3 How big is the Month of Birth Effect compared with other gaps?

1.3.1 School Performance

This section aims to assist the reader in assessing the scale of the month of birth effect by sizing it up against the Key Stage 4 floor target. [9] The modelling below is intended as an illustrative device to show how much the month of birth effect contributes to underperformance in struggling schools in order to help assess the relative policy importance of the effect. If all pupils within the 247 secondary schools that are below the Key Stage 4 floor target had their attainment raised to the level of those born in the autumn, the number of schools still below the floor target would fall to 166 (Fig. 1.3a). If all pupils in schools below the floor target could have their attainment raised to the level of the oldest (September-born) pupils, the number of schools still failing the floor target would be lower still at 138.

Fig. 1.3a

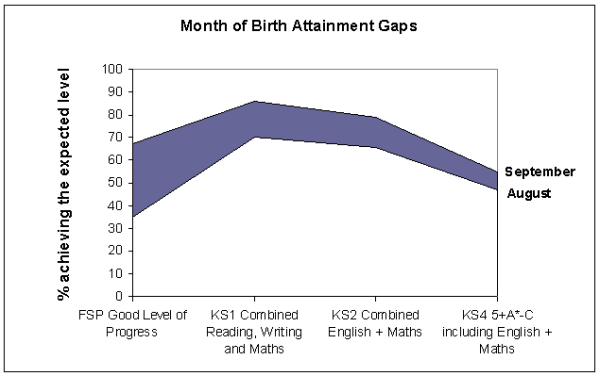


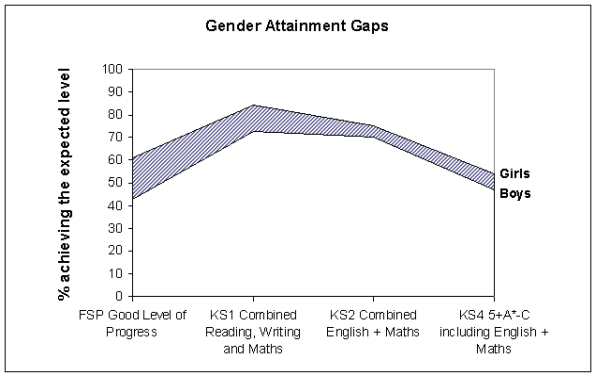
[9] The Key Stage 4 Floor Target for schools is a minimum of 30% of pupils achieving five or more grades A*-C at GCSE including English and Maths.

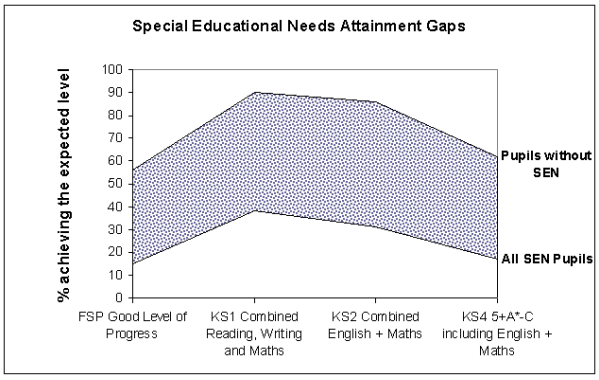
1.3.2 Deprivation, Special Educational Needs, & Gender

Another way of assessing the relative size of the month of birth effect is to compare it with other measurable attainment gaps. The charts in Figure 1.3b illustrate the percentage point gap over the Early Years Foundation Stage Profile to Key Stage 4 period, for gender, special educational needs and free school meals gaps.

Fig. 1.3b







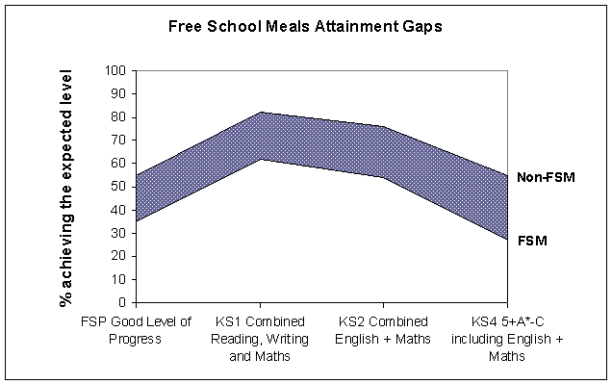
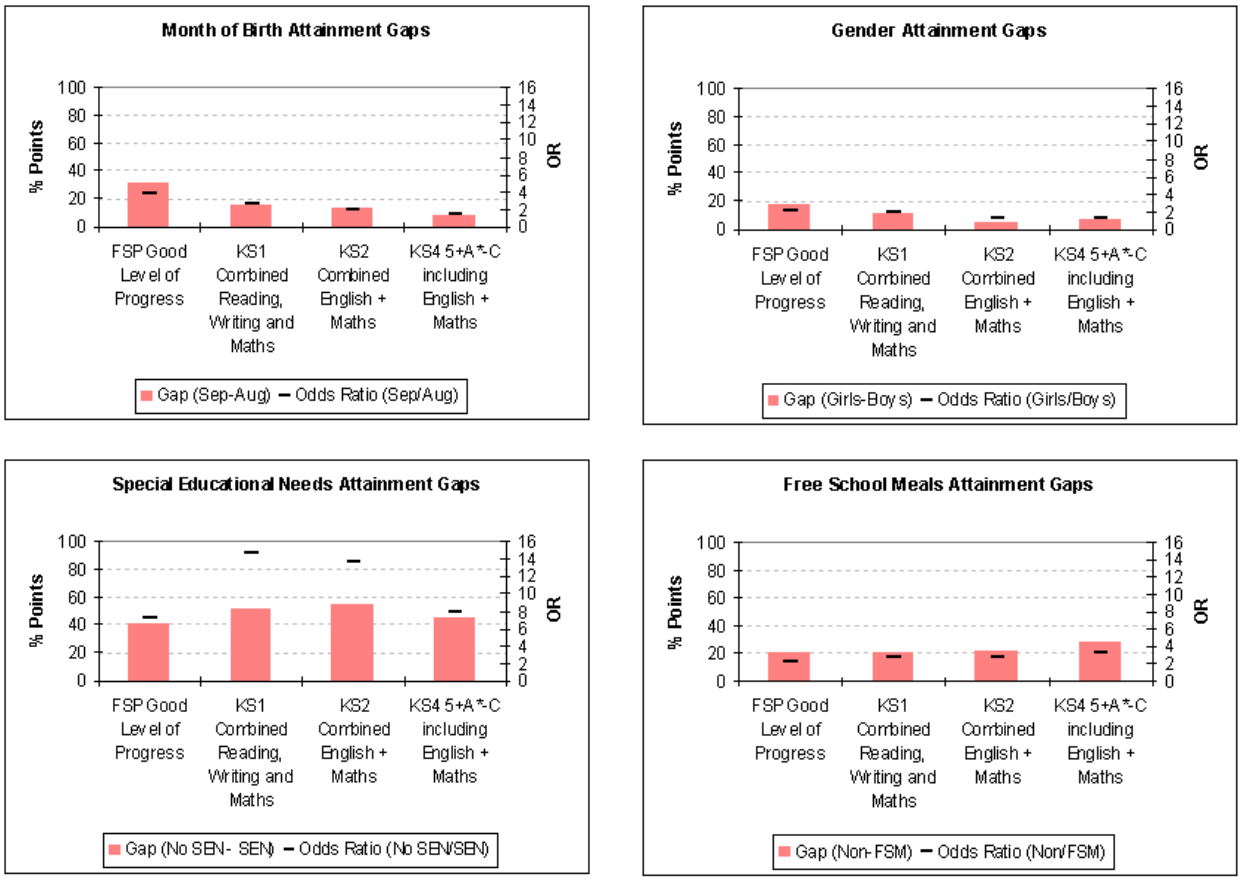


Figure 1.3c shows the same percentage point gaps (this time represented as pink bars) against a standardised version (the odds ratios shown as black dashes). This enables us to look at the comparisons over the Key Stages on a like-for-like basis.[10] The August-September gap at Key Stage 4 is slightly larger than the gender gap, but the FSM gap is twice as large and the SEN gap is 4 times as large. At Key Stage 2, the August-September gap is a little larger than the gender gap and a little smaller than the FSM gap, but the SEN gap is 7 times as large. Whilst the FSM gap widens over the course of compulsory education, and the SEN gap widens then begins to narrow again, both the gender and month of birth gaps narrow as pupils progress through school.

Fig. 1.3c



[10] Not affected by the measures used at each Key Stage or where on the scale of 0-100% the national average currently lies.

1.4 School Structures & Diversity

The following sections consider the month of birth composition and effect in different types of school within the maintained sector, to explore whether transition ages, school performance, governance, admission arrangements or school size are related to the magnitude of the attainment gaps between older and younger pupils.

1.4.1 Transitions

For the following analysis, primary schools have been grouped into categories according to the age range of pupils they serve. Figure 1.4a looks at whether there is any sorting by term of birth of pupils into schools with different age ranges, or whether older and younger pupils are represented equally in each school type. There is no evidence of sorting of pupils by their age within-year into schools with different transition ages at the end of Key Stage 2 (Fig. 1.4a).

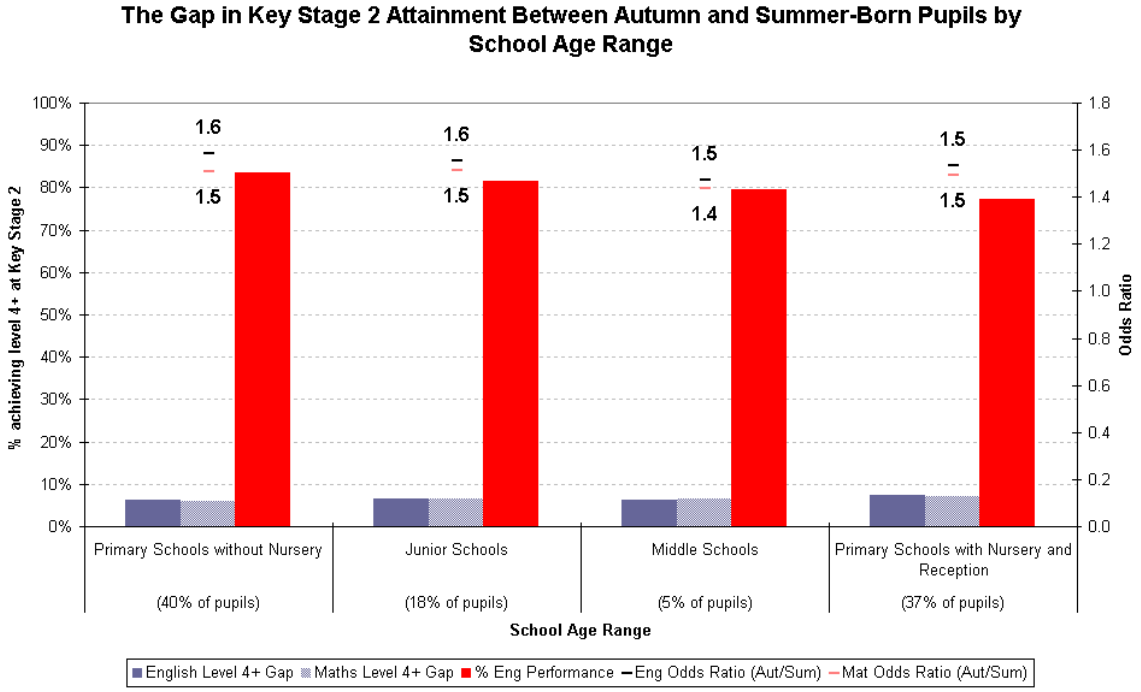
Fig. 1.4a: Placement of KS2 Pupils in Schools with Different Age Ranges

	Term of Birth		
	Summer	**Spring**	**Autumn**
Primary Schools with Nursery *lower age <4, upper age 11*	37%	37%	37%
Junior Schools *lower age 7 or 8, upper age 11*	18%	17%	18%
Primary Schools without Nursery *ages 4-11*	40%	40%	40%
Middle Schools *lower age 8-10, upper age 12-14*	5%	5%	5%
Other	0%	1%	0%
Total	**100%**	**100%**	**100%**

Having established that summer-born pupils are equally likely to attend a school with a particular age range as their older peers, Figure 1.4b looks at their Key Stage 2 outcomes; each blue bar represents the percentage point gap in achieving Level 4+ at Key Stage 2 between autumn-born and summer-born pupils within schools of each age range; red bars show the average % achievement; dashes represent the odds ratios for autumn-born compared with summer-born pupils.

Middle schools have the smallest month of birth gaps, followed closely by schools with no transition before age 11 (with nursery classes). Transitions appear to make only a limited difference and it is unclear whether they are positive or negative factors for the month of birth effect at Key Stage 2.

Fig. 1.4b



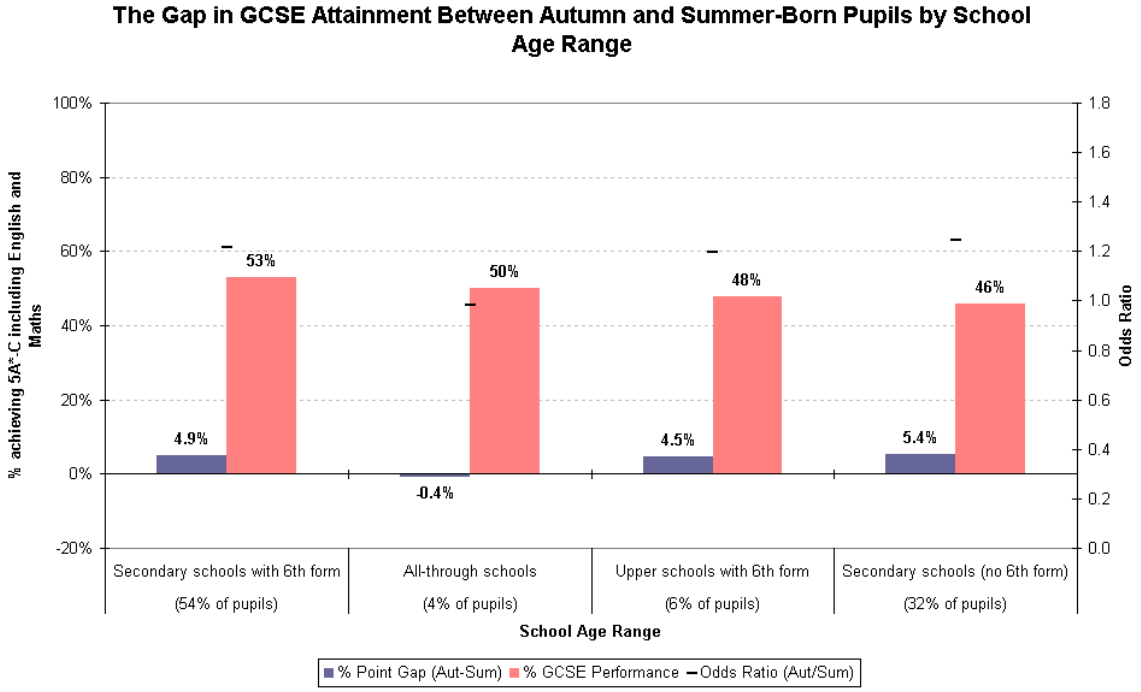
Moving to Key Stage 4, the distribution of summer-born pupils is identical to spring and autumn-born pupils across schools serving different age ranges. As at Key Stage 2, there is no evidence of sorting by month of birth to different types of school (Fig. 1.4c).

Fig. 1.4c: Placement of KS4 Pupils in Schools with Different Age Ranges

	Term of Birth		
	Summer	**Spring**	**Autumn**
Secondary schools (no 6th form) *ages 11-16*	32%	32%	32%
Secondary schools with 6th form *ages 11-18 or 11-19*	54%	54%	54%
Upper schools with 6th form *lower age > 11, upper age 18 or 19*	6%	6%	6%
All-through schools *lower age < 5, upper age 18 or 19*	4%	4%	4%
Other	3%	3%	3%
Total	**100%**	**100%**	**100%**

Looking at GCSE attainment in schools with different age ranges, there is a slightly clearer pattern of term of birth gaps as schools with sixth forms have gaps that are around 0.5 – 1 percentage points smaller than those without sixth forms (Fig. 1.4d). Upper schools with a transition between ages 11-15 have relatively smaller gaps at around 4.5 percentage points. Interestingly, the minority of pupils (4%) attending all-through schools do not have a term of birth gap (ppts = -0.4; odds ratio =1) in their GCSE attainment, although this may be linked to other distinctive characteristics of these schools than their lack of transitions.

Fig. 1.4d



1.4.2 School Performance

In this section, schools are grouped according to their performance at Key Stage 2 (English) or Key Stage 4 in order to look at how summer-born pupils perform in schools with different attainment profiles. At Key Stage 2, again there is no evidence of sorting of pupils into higher or lower performing schools by month of birth (Fig. 1.4e).

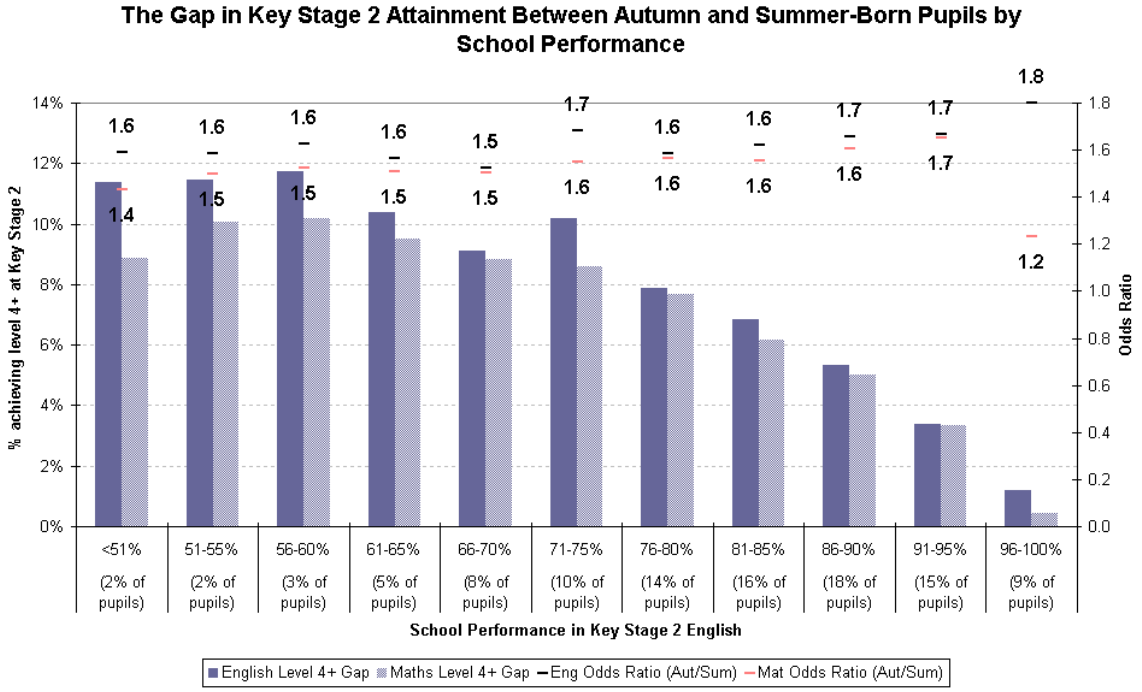
Fig. 1.4e: Placement of KS2 Pupils by School Performance

	Term of Birth		
School Performance *Overall Achievement of School at Key Stage 2 English Level 4+*	**Summer**	**Spring**	**Autumn**
<51%	2%	2%	2%
51-55%	2%	2%	2%
56-60%	3%	3%	3%
61-65%	5%	5%	5%
66-70%	8%	8%	7%
71-75%	10%	10%	10%
76-80%	14%	14%	14%
81-85%	16%	16%	16%
86-90%	18%	18%	18%
91-95%	15%	15%	15%
96-100%	9%	9%	9%
Total	**100%**	**100%**	**100%**

There is a small increase in the odds ratios on Key Stage 2 attainment in English and maths for autumn compared with summer-born pupils as the school performance level increases. The effect is a little stronger for maths despite the schools being grouped according to their English (rather than maths) performance in this case[11]. The reverse pattern (an increase with higher school performance) appears in the percentage point gaps, which are reflecting the underlying performance levels of the schools rather than the month of birth effect itself (Fig. 1.4f).

Given these findings, school improvement generally might be expected to help to reduce the *percentage point* month of birth gap at Key Stage 2, but not the odds ratio effect which could increase slightly.[12]

Fig. 1.4f



[11] Caution should be used in interpreting the odds ratios for the 96-100% school performance category as odds ratios can become unreliable when calculated on very high percentages.

[12] As the measure of performance at KS2 is a threshold measure for which current national performance is above the midway point for pupils with all months of birth, assuming a cumulative normal distribution of performance results in the rate of improvement being higher for the younger pupils (as their performance lags behind older pupils), and a resultant gradual narrowing of the gap over time. This effect is illustrated in the percentage point gaps for the higher performing schools in this analysis, which are effectively ahead in time of the national performance as it improves each year.

Moving to Key Stage 4, figure 1.4g shows that there is no evidence of sorting of pupils into secondary schools of varying performance according to month of birth.

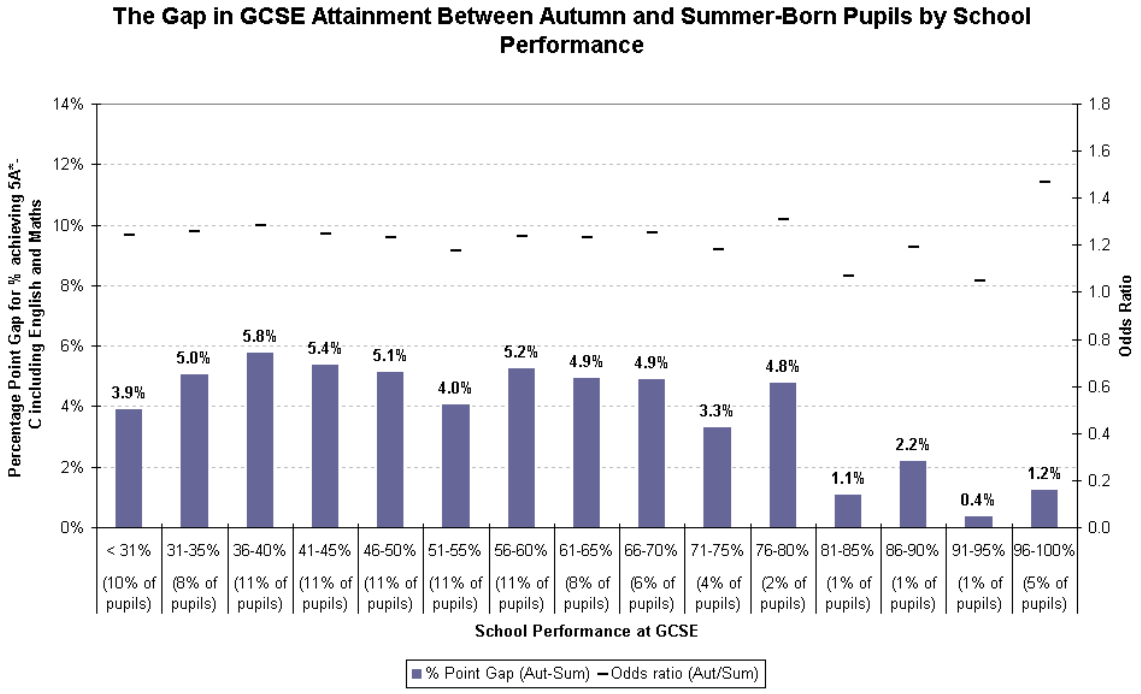
Fig. 1.4g: Placement of KS4 Pupils in Schools by School Performance

School Performance *Overall Achievement of School at GCSE 5+A*-C including English & Maths*	**Term of Birth**		
	Summer	**Spring**	**Autumn**
<31%	10%	10%	10%
31-35%	8%	8%	8%
36-40%	9%	9%	9%
41-45%	11%	11%	11%
46-50%	11%	11%	11%
51-55%	11%	11%	11%
56-60%	11%	11%	11%
61-65%	8%	8%	8%
66-70%	7%	6%	7%
71-75%	4%	4%	4%
76-80%	2%	2%	2%
81-85%	1%	1%	1%
86-90%	1%	1%	1%
91-95%	1%	1%	1%
96-100%	5%	5%	5%
Total	**100%**	**100%**	**100%**

Looking at GCSE attainment of schools with different levels of performance, there is a fairly clear pattern of smaller term of birth percentage point gaps as school performance increases among schools with around 55% achieving the 5 A*-C including English and maths or higher. Below this point, there is a more uncertain pattern, with gaps peaking at school performance of around 40% (Fig. 1.4h).

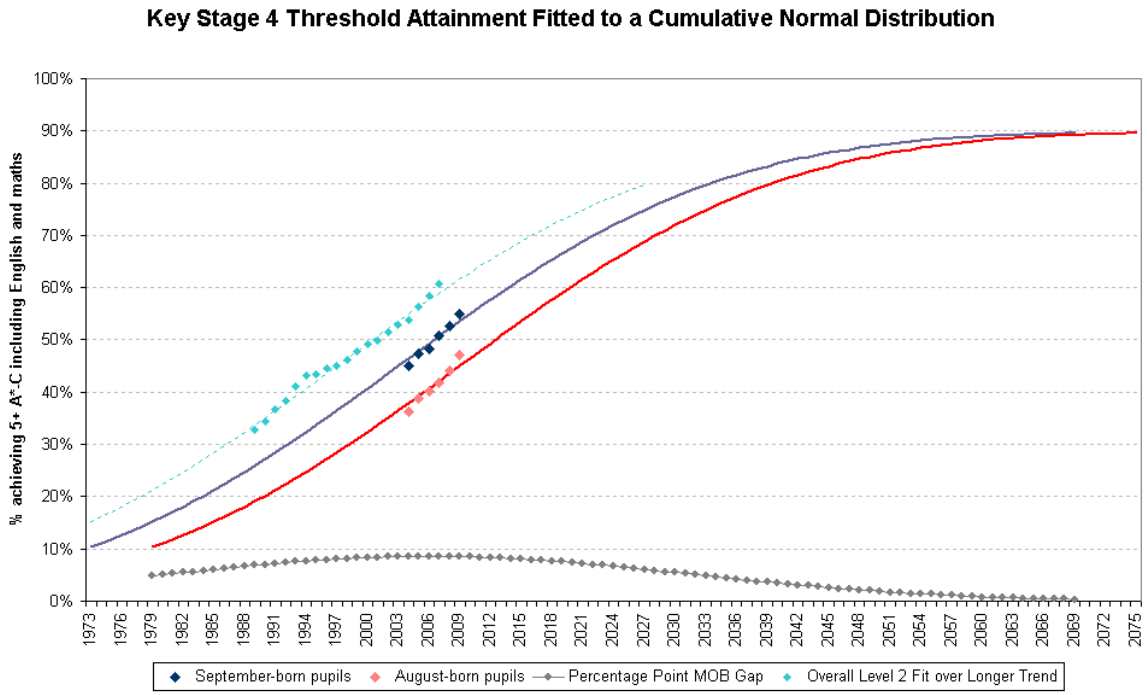
The odds ratios pattern is more uncertain, suggesting an inconclusive month of birth effect of school performance at this Key Stage. However, the percentage point gaps are educationally significant in themselves at Key Stage 4 and beyond as discussed at the beginning of the Chapter.

Fig. 1.4h



From a dynamic school improvement perspective, this pattern of percentage point gaps may reflect a cumulative normal distribution of attainment for pupils, with older pupils performing on a curve that is ahead of that followed by younger pupils (see Fig. 1.4i). As the GCSE measure (including English and maths) is a threshold measure, we might expect the performance of schools below the midway point to generate larger attainment gaps because the rate of improvement over time for the successive cohorts of older pupils (with higher performance) is still increasing; for schools past the midway point of the distribution, the rate of improvement for older pupils slows down allowing the younger pupils to begin catching up.

Fig. 1.4i



Current national performance for older and younger pupils is around the midway point, meaning that school improvement generally should begin moving onto the part of the cumulative normal curve where the performance of older and younger pupils converges, reducing the month of birth percentage point gap.

1.4.3 School Governance, Admissions and Gender

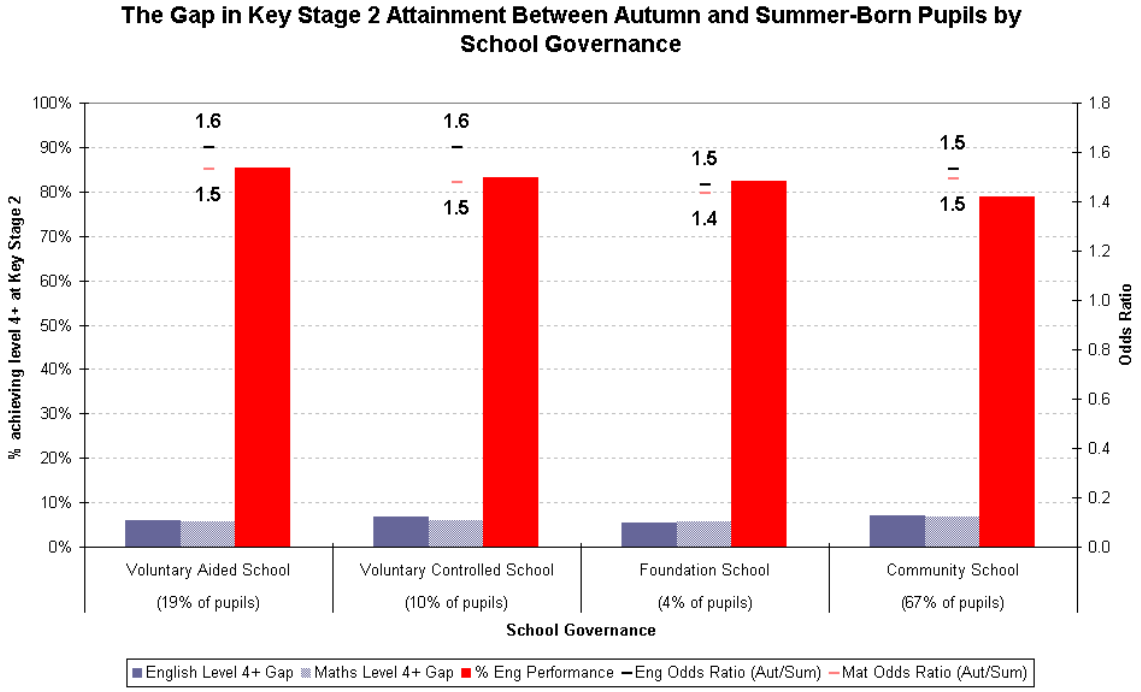
In this section, schools are grouped according to governance, and for Key Stage 4 additionally by admissions and intake gender. Figure 1.4j shows that there is no evidence of sorting by month of birth into schools with different governance arrangements at Key Stage 2.

Fig. 1.4j: Placement of KS2 Pupils in Different Types of School

	Term of Birth		
	Summer	**Spring**	**Autumn**
Governance			
Academy	<1%	<1%	<1%
Community School	66%	66%	67%
Voluntary Controlled School	10%	11%	10%
Voluntary Aided School	19%	19%	19%
Foundation School	4%	4%	4%
Total	**100%**	**100%**	**100%**

Looking at Key Stage 2 attainment, there is some difference in the term of birth effect between schools with different governance arrangements. Gaps in foundation schools are a little smaller than in other schools, both for English and maths, and for both odds ratios and percentage points (Fig. 1.4k). Foundation schools have an English odds ratio for autumn compared with summer-born pupils of 1.5, compared with 1.6 in voluntary schools; for maths, the odds ratio is 1.4 compared with 1.5 in all other governance types.[13]

Fig. 1.4k



[13] See the annex to Chapter 1 for details of the organisational differences between the school governance types.

Moving to Key Stage 4, again there is no evidence of substantial sorting of pupils according to month of birth into schools with different governance types, or into single-sex schools, and only a slightly lower representation of summer-born pupils in selective schools (Fig. 1.4l).

Fig. 1.4l: Placement of KS4 Pupils In Different Types of School

	Term of Birth		
	Summer	**Spring**	**Autumn**
Admissions			
Comprehensive	77%	77%	76%
Modern	4%	4%	4%
Selective	3%	4%	4%
Other	16%	16%	16%
Total	**100%**	**100%**	**100%**
Gender			
Mixed School	87%	87%	86%
Boys' School	5%	5%	5%
Girls' School	7%	8%	8%
Unknown	0%	1%	1%
Total	**100%**	**100%**	**100%**
Governance			
Academy	3%	3%	3%
Foundation School	23%	23%	23%
Community School	49%	49%	48%
City Technology College	0%	0%	0%
Voluntary Aided School	13%	13%	13%
Voluntary Controlled School	3%	3%	3%
Other	10%	10%	10%
Total	**100%**	**100%**	**100%**

There are noticeable percentage point differences in the GCSE attainment gaps between autumn and summer-born pupils for schools with different admissions policies, and smaller differences by gender of intake and governance type (Fig. 1.4m). As might be expected given the findings in section 1.4.2, in selective schools the gap is just 0.5 percentage points, compared with 3 percentage points in modern schools and 5 percentage points in comprehensive schools.

Also mirroring section 1.4.2, the odds ratio is a little higher for selective schools than comprehensive or modern schools, which suggests that the smaller percentage point gaps are due to the large underlying performance advantage of selective schools rather than month of birth effect sizes; they may nevertheless impact on pupils' educational progression in a negative way for lower performing schools.

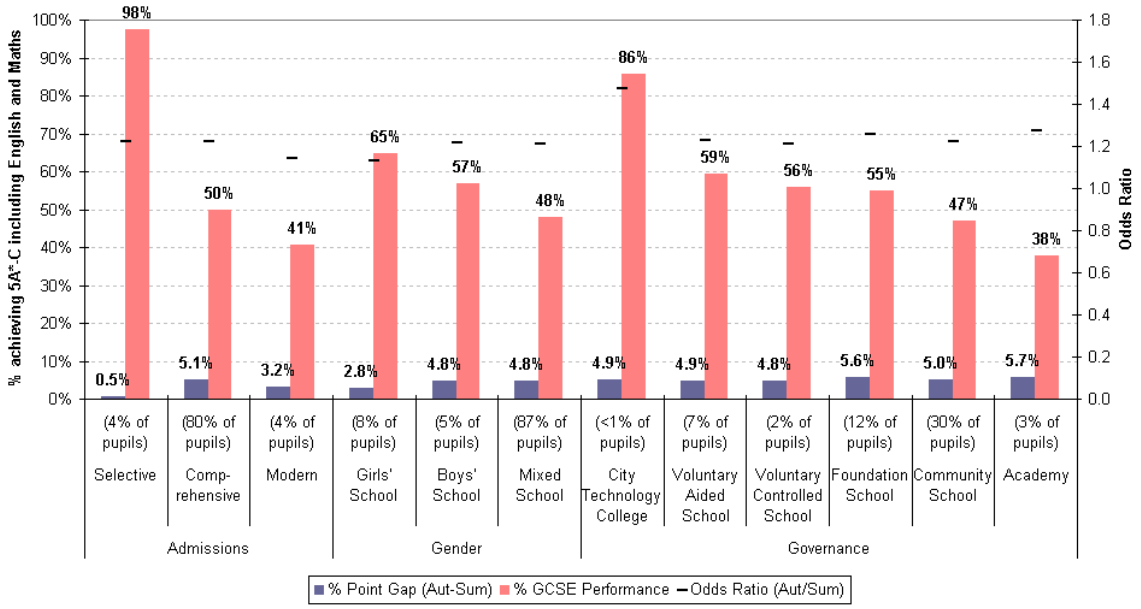
Boys' schools and mixed-gender schools have similar sized gaps of almost 5 percentage points, compared with a smaller gap of almost 3 percentage points in girls' schools. The pattern of term of birth GCSE gaps by school governance is different from that seen at Key Stage 2; academies and foundation schools

have the largest percentage point gaps between autumn and summer-born pupils at around 5.5 percentage points, around half a percentage point higher than the other governance types.

Once underlying performance differences are accounted for (as shown by the odds ratios), City Technology Colleges have a noticeably larger month of birth effect than the other governance types. Greater independence from Local Authority control is not associated with smaller month of birth effects here as it was at Key Stage 2.

Fig. 1.4m

The Gap in GCSE Attainment Between Autumn and Summer-Born Pupils by School Admissions, Gender and Governance



1.4.4 School Size

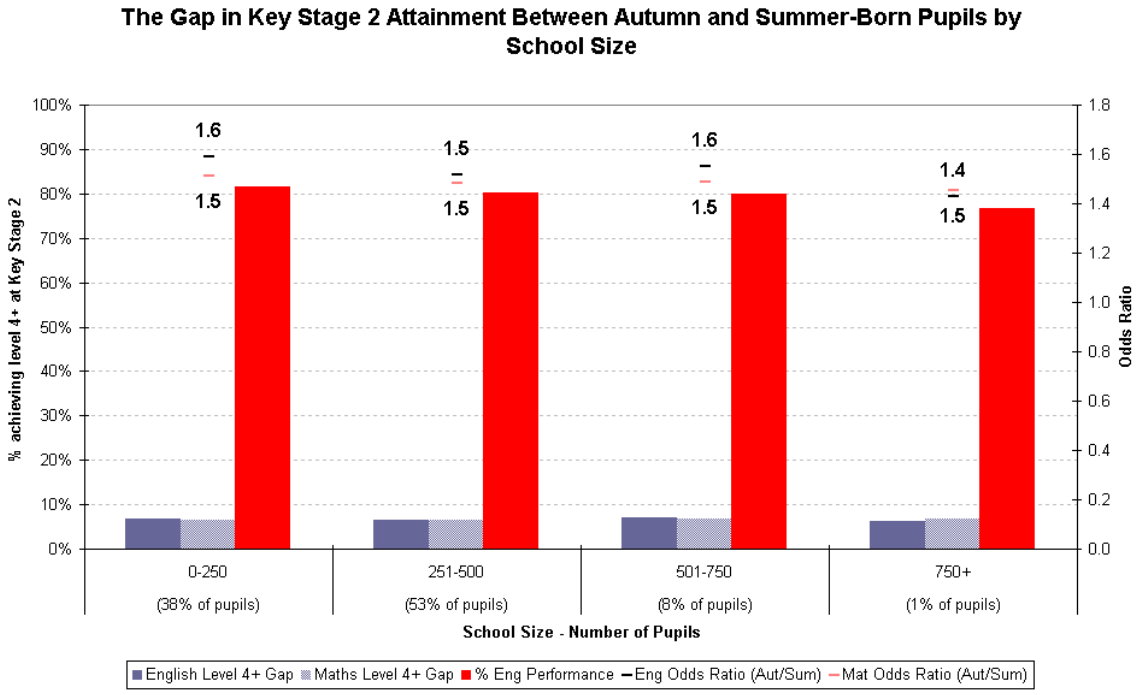
This section groups schools according to the total number of pupils. Figure 1.4n shows that there is no evidence of sorting according to month of birth into schools of different sizes at Key Stage 2.

Fig. 1.4n: Placement of KS2 Pupils in Schools of Different Sizes

Size of School *Number of Pupils*	**Term of Birth**		
	Summer	**Spring**	**Autumn**
0-250	38%	38%	38%
251-500	53%	52%	53%
501-750	8%	8%	8%
751-1000	1%	1%	1%
1000+	0%	0%	0%
Total	**100%**	**100%**	**100%**

Looking at Key Stage 2 attainment in schools of different sizes, there is no association between the number of pupils and English or maths gaps between autumn and summer-born pupils on the percentage point measures, which stand at around 6.5 for all sizes of school and both subjects (Fig. 1.4o). The odds ratios reveal very slightly larger month of birth effects for smaller schools when the underlying difference in performance is accounted for.

Fig. 1.4o



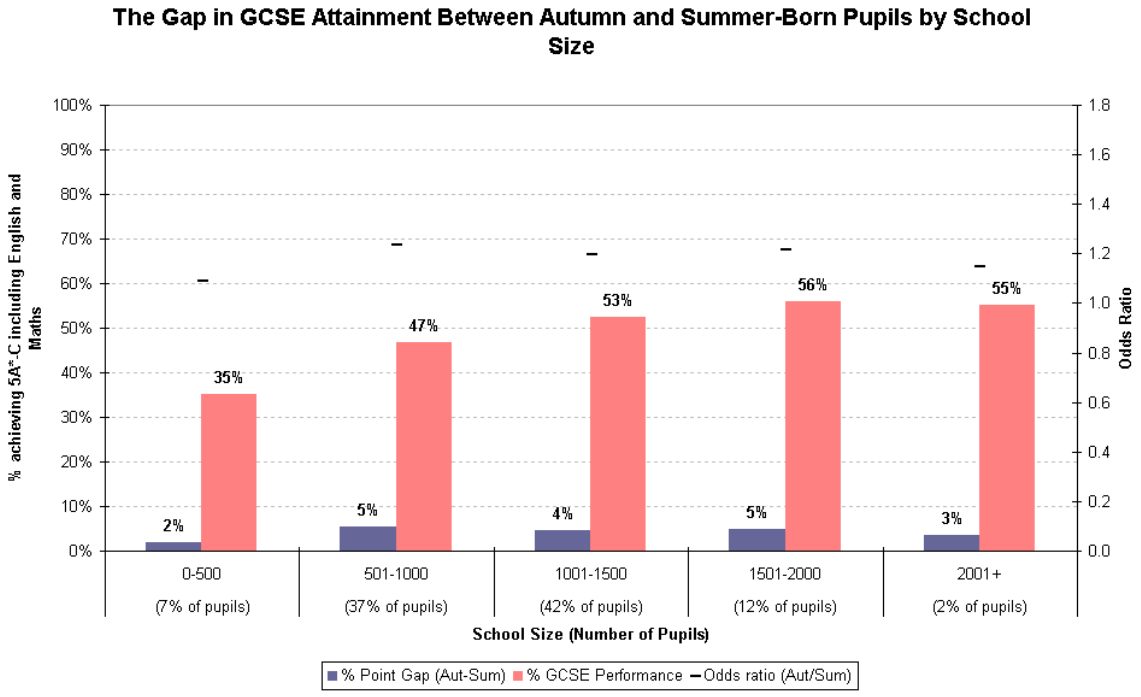
Moving to Key Stage 4, there is no evidence of sorting of pupils by month of birth into schools of different sizes (Fig. 1.4p).

Fig. 1.4p: Placement of KS4 Pupils in Schools of Different Sizes

Size of School *Number of Pupils*	Term of Birth Summer	Spring	Autumn
0-500	7%	7%	6%
501-1000	37%	37%	38%
1001-1500	42%	43%	42%
1501-2000	12%	12%	12%
2001+	2%	2%	2%
Total	**100%**	**100%**	**100%**

There are some differences in the size of the GCSE term of birth gaps according to school size (Fig. 1.4q).[14] The smallest and largest schools have the smallest attainment gaps between autumn and summer-born pupils, at around 2 percentage points for schools of up to 500 pupils, and around 3.5 percentage points for schools with over 2000 pupils. These account for a minority of Key Stage 4 pupils, with over 90% attending schools with between 500 and 2000 pupils; gaps for these schools range from around 4.5 to just over 5 percentage points.

Fig. 1.4q



[14] The number of pupils used for the school size includes sixth form pupils where applicable.

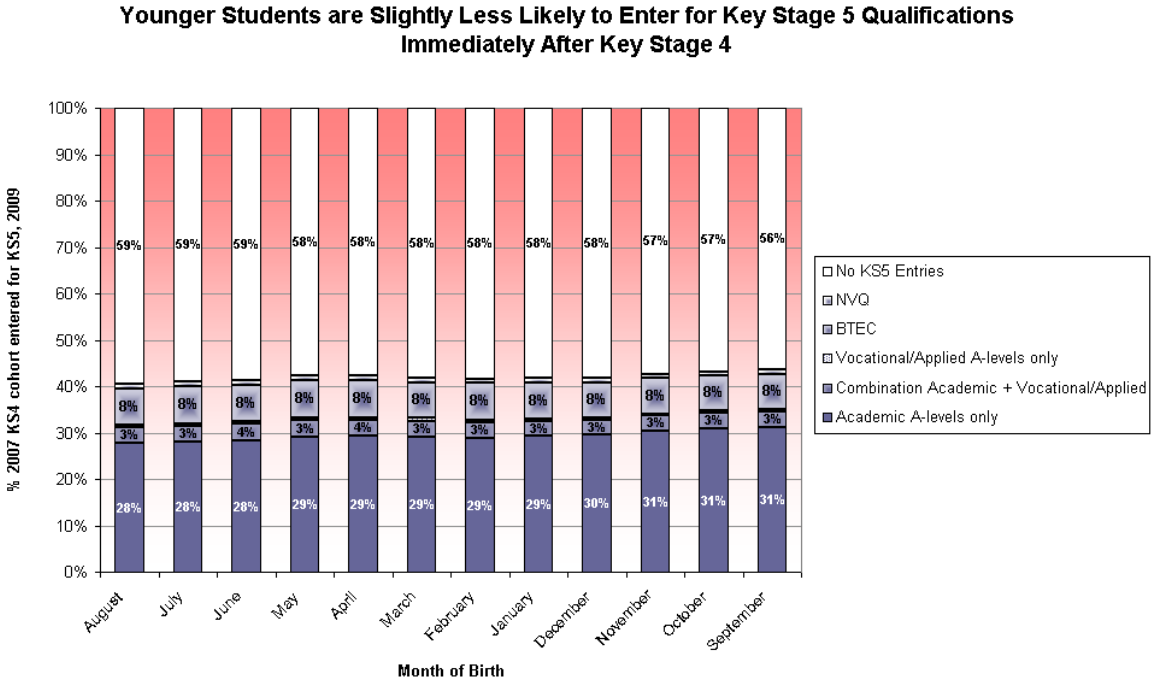
Chapter 2: Post-Compulsory Education

2.1 Post-16 Activities

2.1.1 Key Stage 5 Routes

Although the likelihood of proceeding to Key Stage 5 qualifications directly after GCSEs is of broadly the same order for the youngest and the oldest in the year, there is a three percentage point deficit for summer-born students compared with autumn-born students (fig. 2.1a). This difference is found in entries for "traditional" academic A-levels rather than alternative routes to Key Stage 5.

Fig. 2.1a



Of those students from the maintained sector KS4 cohort of 2007 who entered for Key Stage 5 qualifications (by any route) by 2009, September-born students averaged 21 QCA points more than those born in August, where 30 points = 1 A-Level Grade (not depicted).

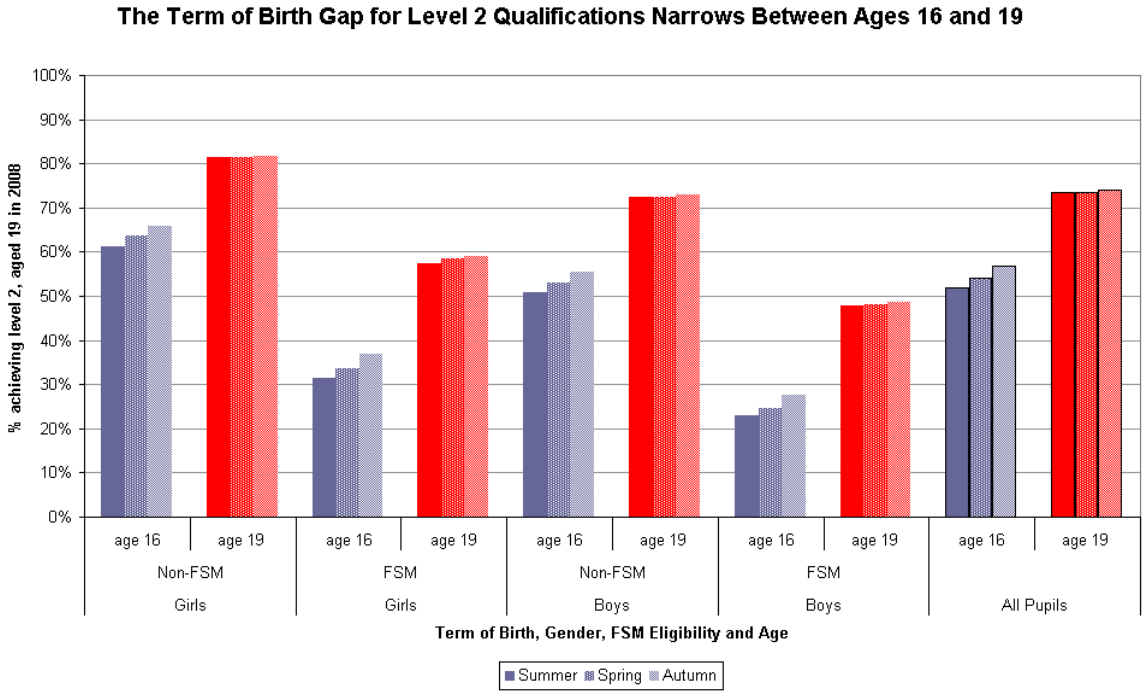
A-level entries and outcomes are examined in more detail in sections 2.2 below. Section 2.3 examines how qualifications by age 19 pick up those pupils not following directly from Key Stage 4 to 5, either taking a gap year or re-sitting some of their qualifications, and the impact on the position of younger students.

2.1.2 Level 2 Attainment by Age 19

Month of birth makes more of a difference to initial GCSE attainment at age 16, than it does to eventual level 2 attainment (Fig. 2.1b). This is demonstrated through a comparison of rates of level 2 attainment by ages 16 and 19, as seen below.

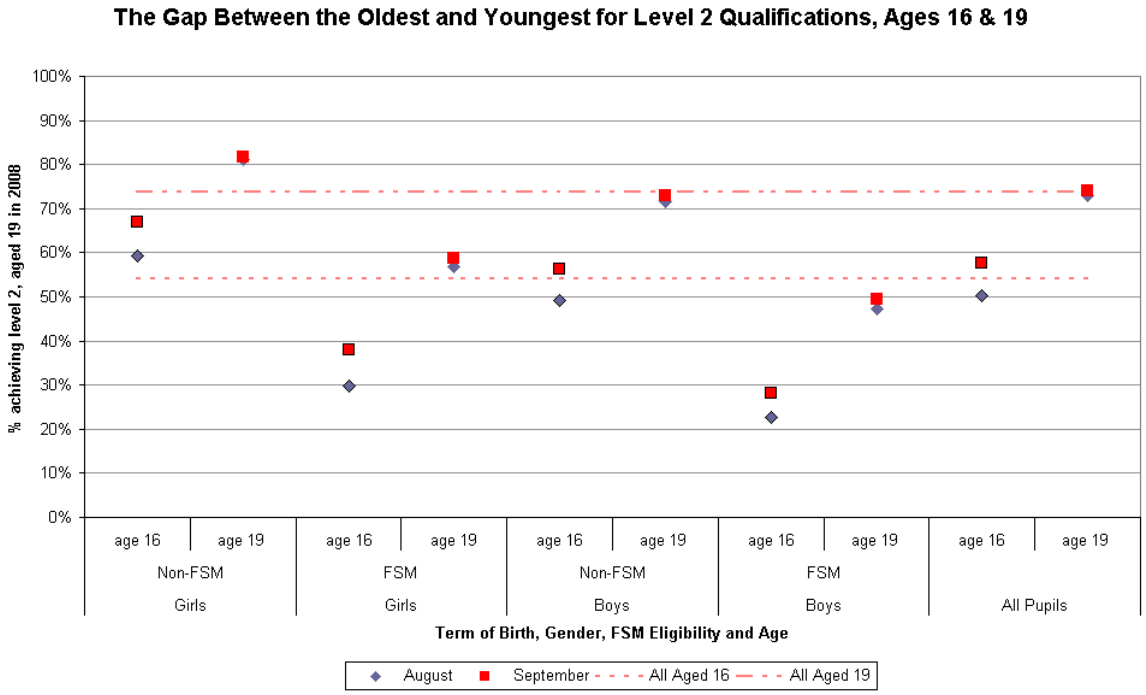
The distinctions between girls and boys, and between those eligible for free school meals and their non-eligible peers, remain intact to age 19 with boys and FSM pupils failing to catch up post-16 (Fig. 2.1b).

Fig. 2.1b



There is a noticeable narrowing of the gap between the eldest and the youngest (August vs. September-born) pupils for level 2 qualifications between the ages of 16 and 19, especially for those not eligible for free school meals, demonstrating that younger pupils in the GCSE cohort often "catch-up" as part of the general increase in the rate of level 2 qualification that takes place in the years immediately after compulsory education has finished. Figure 2.1c shows that 23% of August-born young people had not achieved level 2 by age 16, but had by age 19; for September-born pupils this was 16%.

Fig. 2.1c



However, Crawford, Dearden & Meghir (2007)[6] modelled both "academic" GCSE route qualifications, and all level 2 equivalent routes in order to demonstrate a distinction between the initial level 2 holders, and younger pupils who catch up later (using age 18 as the later measurement point). They found that the gap between August and September-born pupils remained as large as 4.5 percentage points when only level 2 via an academic route was included in age 18 attainment. Further to this, they argued that non-academic qualifications at level 2 cannot be considered to be truly equivalent to GCSEs when assessing educational disadvantage: "Given that Level 2 non-academic qualifications have been found to be more poorly rewarded in the labour market than Level 2 academic qualifications (see, for example, Dearden, McGranahan and Sianesi (2004)), these disparities remain concerning..."

2.1.3 Not in Education, Employment, or Training

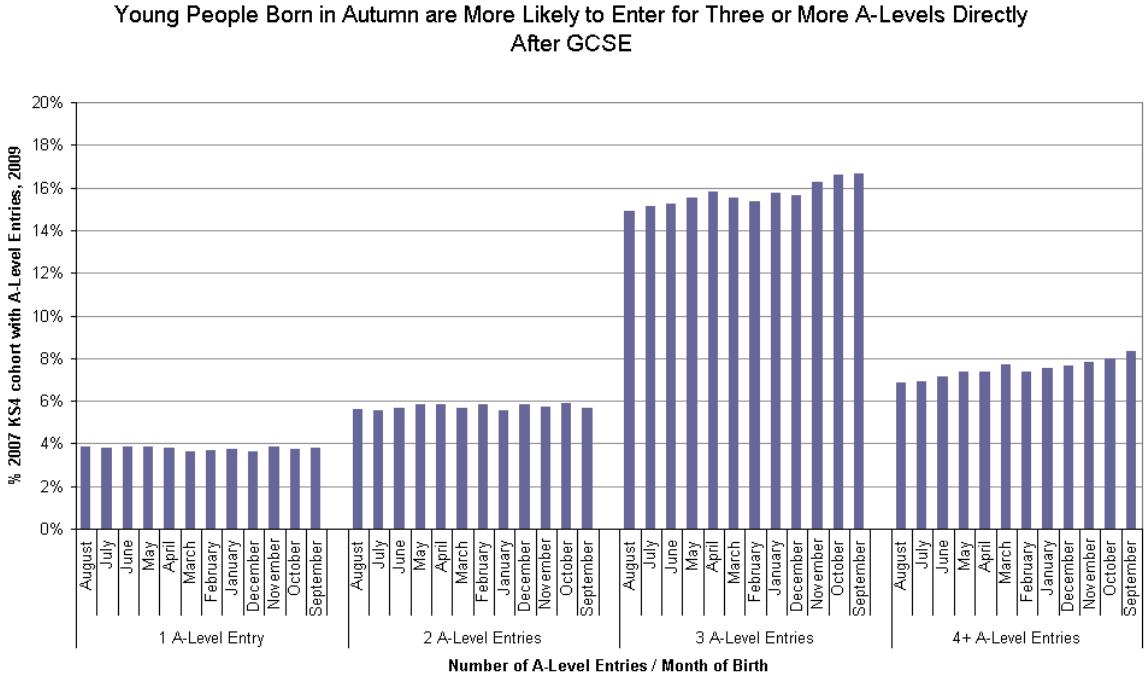
Young people's main activity at ages 16-17 and 17-18 were analysed by month of birth. No significant differences were found in the proportion of young people Not in Education, Employment or Training (NEET), or other main activities according to relative age.

2.2 A-level Participation and Attainment

2.2.1 A-level Entries, Passes and Points

Autumn-born young people are more likely to enter for three or more A-levels than those born in summer (Fig. 2.2a). This feeds through into a 4 percentage point gap in the proportion entering for two or more A-levels (giving them access to Higher Education) between those born in August and September.

Fig. 2.2a

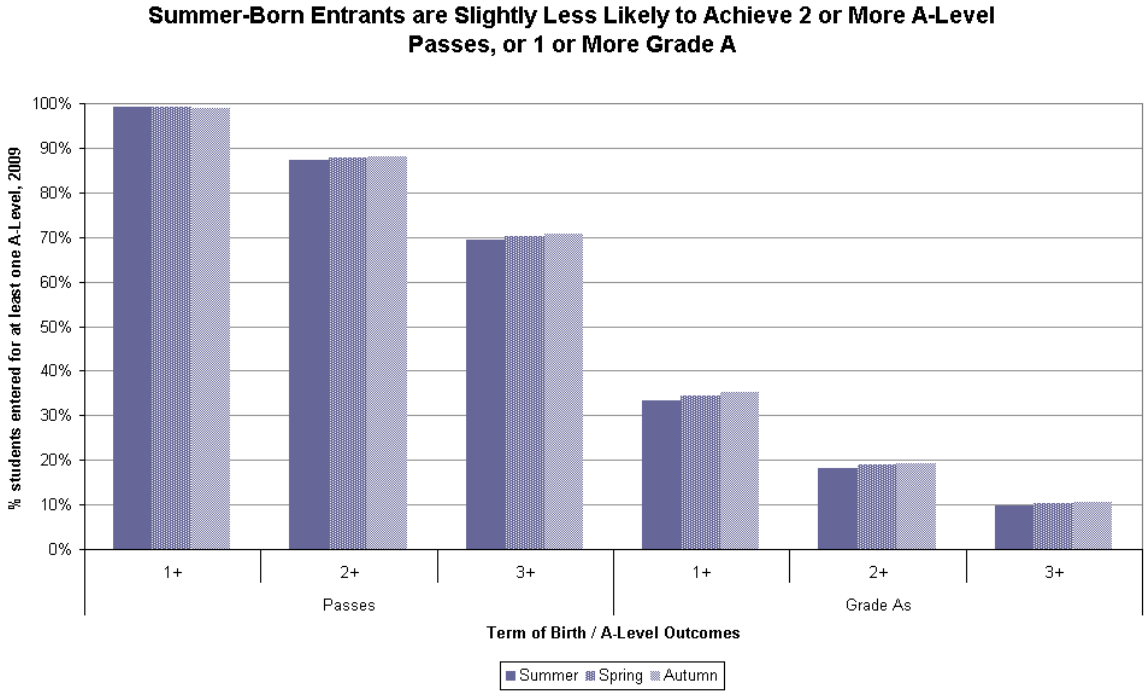


Of those students from the maintained sector KS4 cohort of 2007 who entered for A-Levels by 2009, September-born students averaged 15 A-Level QCA points more than those born in August, equivalent to half of one grade (not depicted).

In addition to the 4 percentage point gap in level 3 *entries* via the A-level route, there is also a 1 percentage point gap for achieving 2 or more passes amongst those who enter for A-levels, between August and September-born students (Fig. 2.2b).

Applied / vocational A-Levels, alternative qualification routes, and "catching up" by age 19 are considered under section 2.3 below.

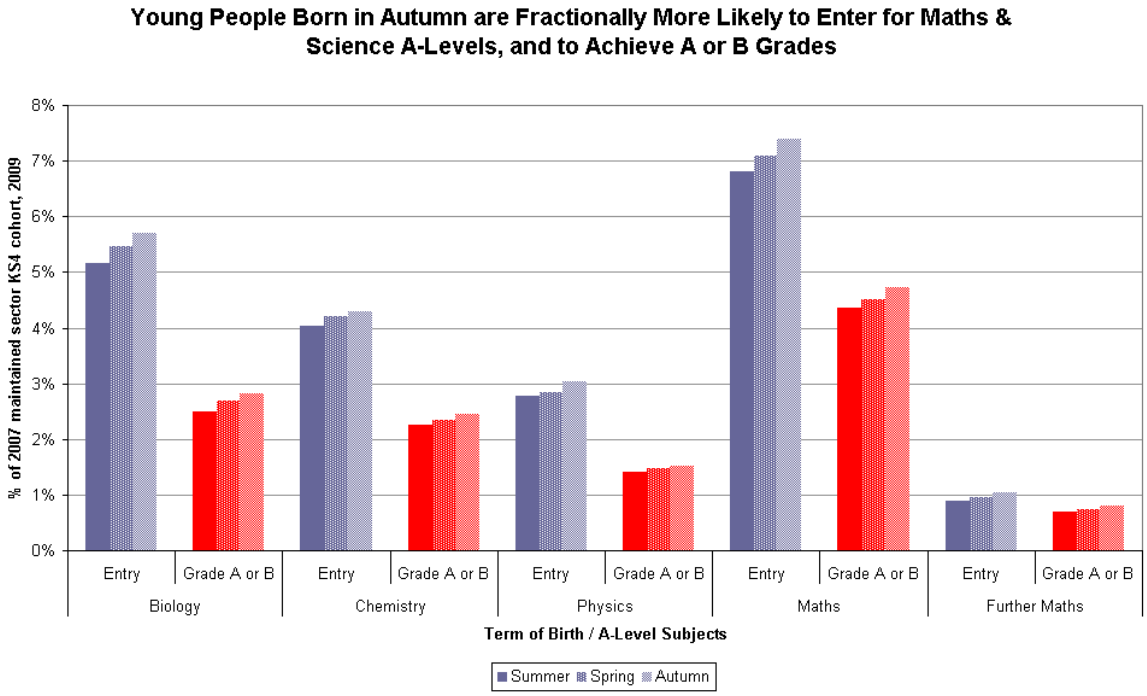
Fig. 2.2b



2.2.2 A-level Subject Choices and Transition

Effects of term of birth on achievement for A-Level maths are minimal. This is because although fewer Summer-born pupils obtain A* / A Grades at GCSE, a slightly higher proportion of these "maths elite" Summer-born pupils choose to enter for A-Level maths, and their transition rate from GCSE A* / A Grades to Grade A at A-level is actually a little better than that of spring or Autumn-born pupils. The result is that the term of birth gap for top grades in maths is narrowed to a fraction between Key Stages 4 and 5 (Fig. 2.2c). This pattern is mirrored in Physics, Chemistry and Biology but with lower A-level take-up than maths, and fewer GCSE entrants in separate sciences. GCSE Double Science entrants also have the same pattern of entry and transition to A-level sciences, except with lower transition rates than GCSE separate science entrants, irrespective of term of birth.

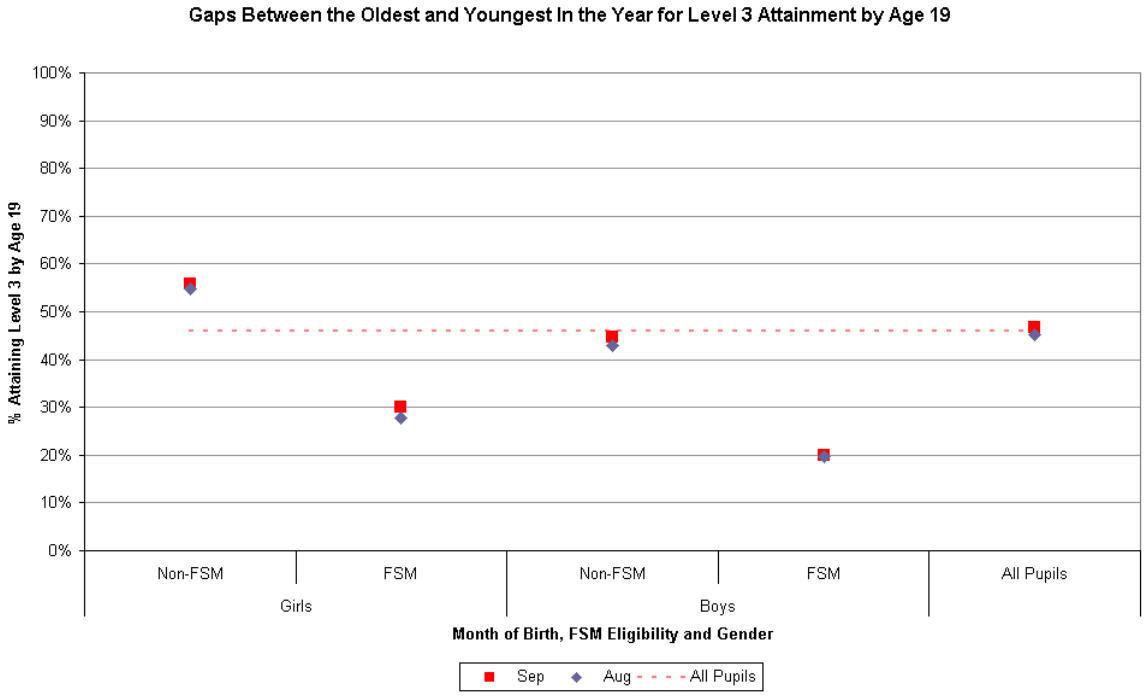
Fig. 2.2c



2.3 Key Stage 5 Overview – All Level 3 Qualifications by Age 19

Considering the full range of level 3 qualifications, by age 19 there is a remaining gap of 1.6 percentage points in attainment between August and September-born young people (Fig. 2.3a). This includes applied / vocational qualifications and a potential gap (or resit) year during Key Stage 5.

Fig. 2.3a



2.4 Higher Education

2.4.1 Progression to HE

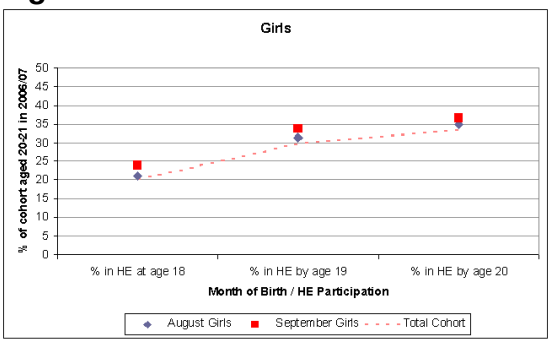
Analysis of the maintained schools 2002 GCSE cohort shows that the 1.6 percentage point gap in level 3 attainment at age 19 is not narrowed any further during young participation in Higher Education (Fig. 2.4a). Taking the earliest HE entry point, the age 18 participation shows a gap of 2.5 percentage points between August and September-born young people. The gap narrows to 2.1 percentage points by age 19, and to 1.7 percentage points by age 20.

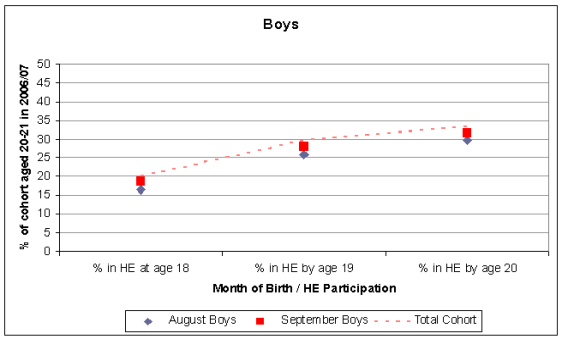
The percentage in HE at 18 is 18.8% for August-born young people compared with 21.3% of September-born young people. By age 19, the percentages have risen to 28.7% for August-born and 30.9% for September-born; by age 20 they have reached 32.4% for August-born and 34.1% for September-born.

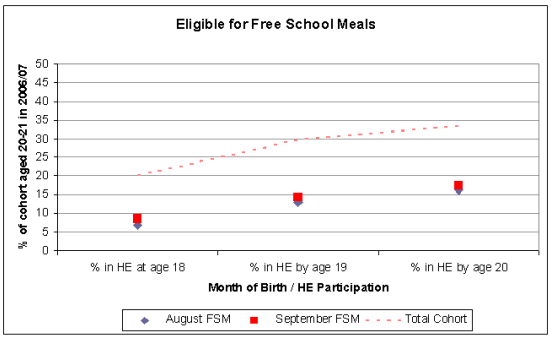
Fig. 2.4a

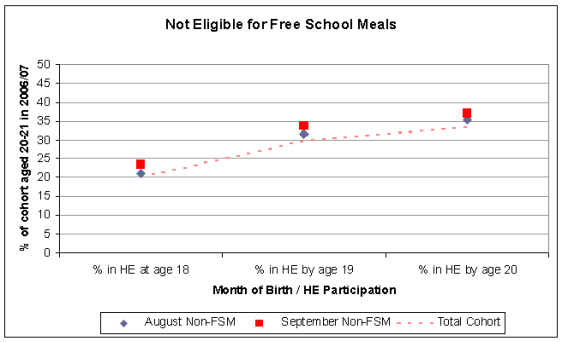
The month of birth gap is larger for girls than for boys at age 18 (3.0 percentage points / 2.1 percentage points), but closes to 1.7 percentage points by age 20 for girls, while the boys' gap has only narrowed to 1.8 percentage points (Fig. 2.4b). The gap between August and September-born young people who were eligible for free school meals at GCSE is smaller than that for non-eligible young people (1.7 / 2.5 percentage points at age 18; 1.1 / 1.7 percentage points by age 20), reflecting a much lower HE participation rate overall for young people who were eligible for free school meals.

Fig. 2.4b









2.4.2 Completion, Degree Class and Graduate Employment

Analysis of the subset of Higher Education participants from the cohort who were registered on a full-time 3 year first degree[15] at age 18 suggests that the youngest in the year are slightly more likely to complete their degree in the expected timeframe than the eldest in the year. They are also fractionally more likely to be known to be in full-time employment 6 months after graduating.[16, 17]

[15] The subset of HE entrants registered for three-year degrees excludes four-year sandwich courses which are common for languages, engineering and sciences. Shorter courses such as foundation degrees are also excluded.

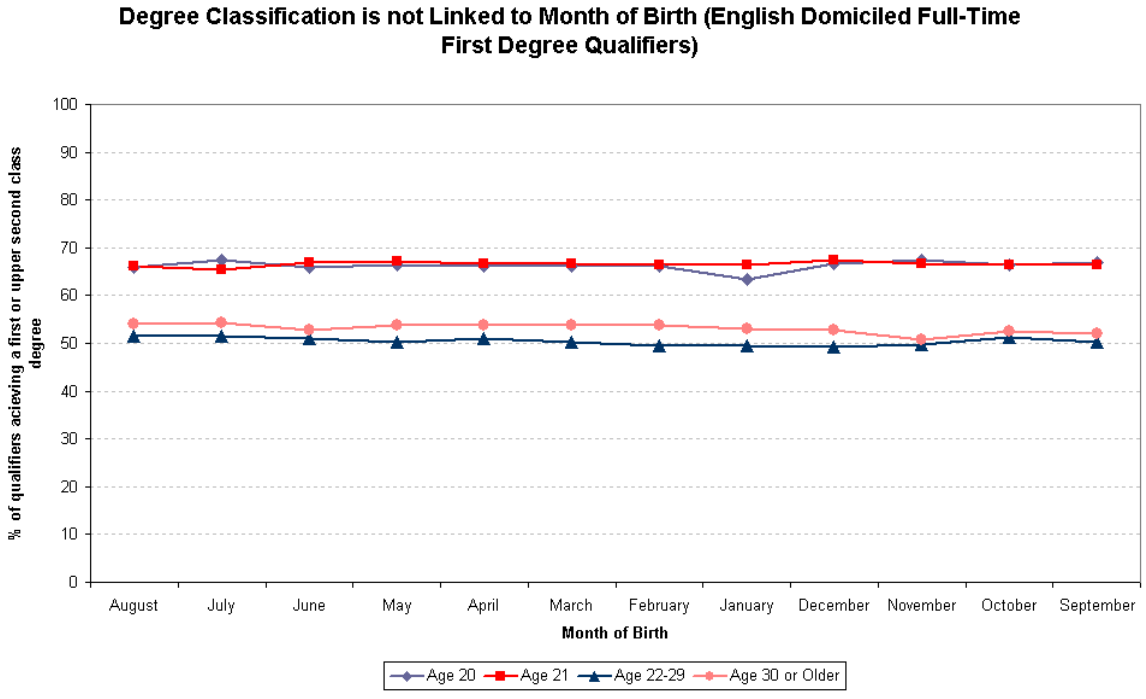
[16] Some of the HE entrants in the analysis may have transferred to another 3 year programme or opted into a fourth or sandwich year, in which case they are counted as not having completed in the expected time even though they did not drop-out or fail.

[17] This difference is not statistically significant, but the figures are reported to show that there is no indication of a disadvantage to August-born graduates on this measure.

Eleven percent of the cohort were registered on a full-time three-year degree course at age 18. The participation gap for young people was visible for this subset, with 11.7% of September-born young people in the subset, compared with 10.4% of August-born young people. The completion rates at the end of the three years were 68.2% for August-born young people compared with 67.1% for those born in September. Of those who graduated on-time in this group, 53.2% of August-born graduates were known to be in full-time employment 6 months after graduating, compared with 52.4% of September-born graduates.[17] Combining the participation disadvantage with the completion advantage for August-born young people results in an overall rate of qualification at age 20 years of 7.1%, compared with 7.9% of September-born young people. The participation gap has been reduced, but not closed by the higher completion rate for August-born students.

There is no Month of Birth Effect on the proportion of degree qualifiers obtaining first or upper second class degrees (Fig. 2.4c). There is also no significant difference in salary levels six months after graduation for those whose destinations are known; this analysis applies only to those completing Higher Education, and does not shed any light on salaries for those not progressing to HE.

Fig. 2.4c



Chapter 3: Other Schooling Outcomes

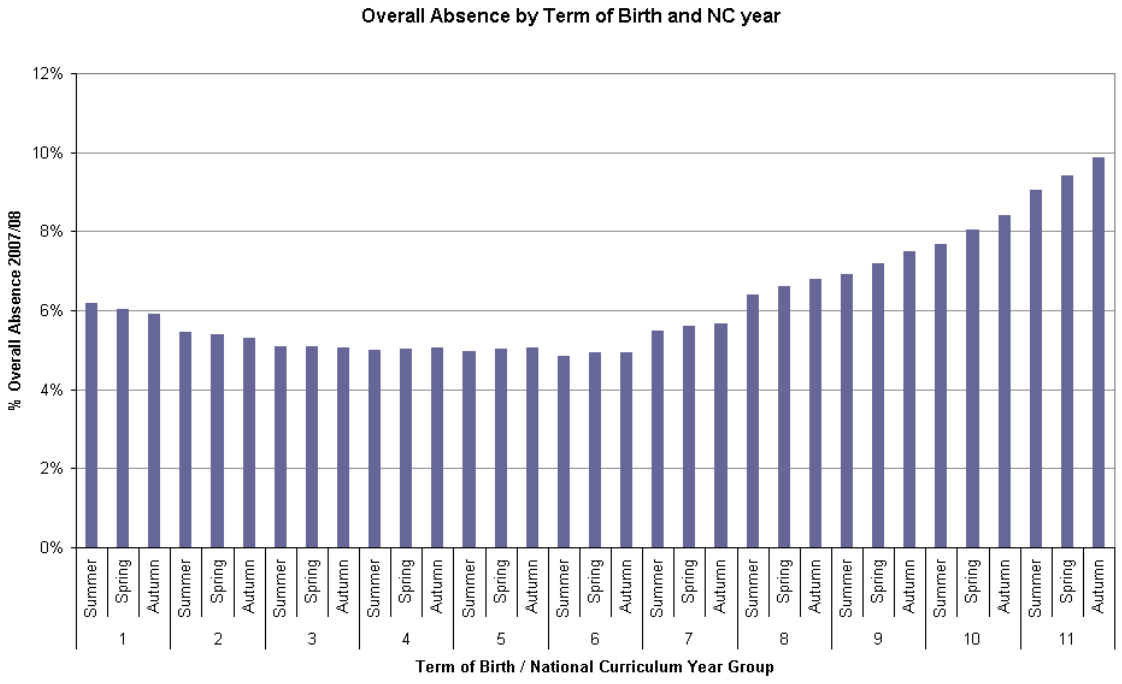
3.1 School Attendance

Month of birth has the potential to affect attendance at school through two possible routes – health and behaviour. Overall Absence is slightly higher for pupils of any month of birth during the first year of compulsory schooling, possibly due to increased exposure of young pupils to infectious diseases and transition issues as children and their parents get used to the routine of formal schooling. It then remains fairly static for the remainder of primary school, but increases steadily with age during secondary schooling as independent travel to school, social peer groups and individual behaviour choices increase in importance. National individual-level absence data for maintained schools enables absence patterns to be examined by month of birth.

3.1.1 Overall Absence

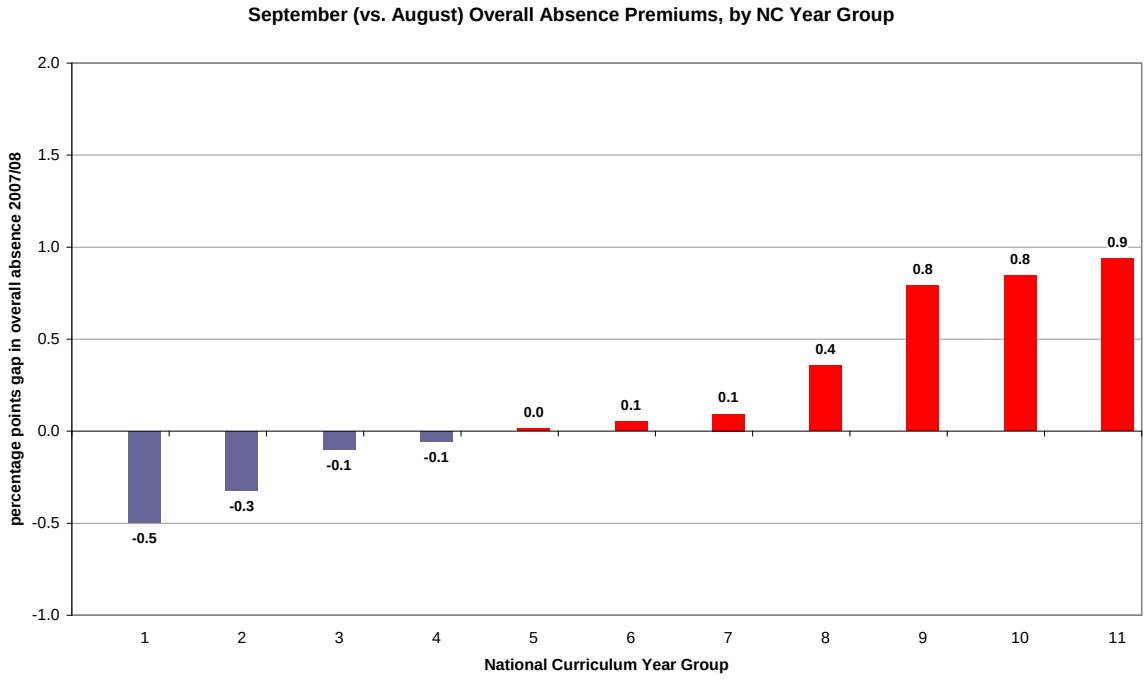
Overall absence includes all absences whether authorised or unauthorised by the school, and whether isolated or repeated. The proportion of half-days missed due to absence increases not only between year groups during secondary schooling, but also according to age within the year group; for example, autumn born pupils have 0.8 percentage points higher overall absence than summer-born pupils during year 11 (Fig. 3.1a).

Fig. 3.1a



Looking at the oldest (September-born) and youngest (August-born) pupils in each year group, absence premiums can be seen for the oldest pupils from year 6 onwards; for example, September-born pupils have 0.9 percentage points higher overall absence than August-born pupils in year 11 (Fig. 3.1b).

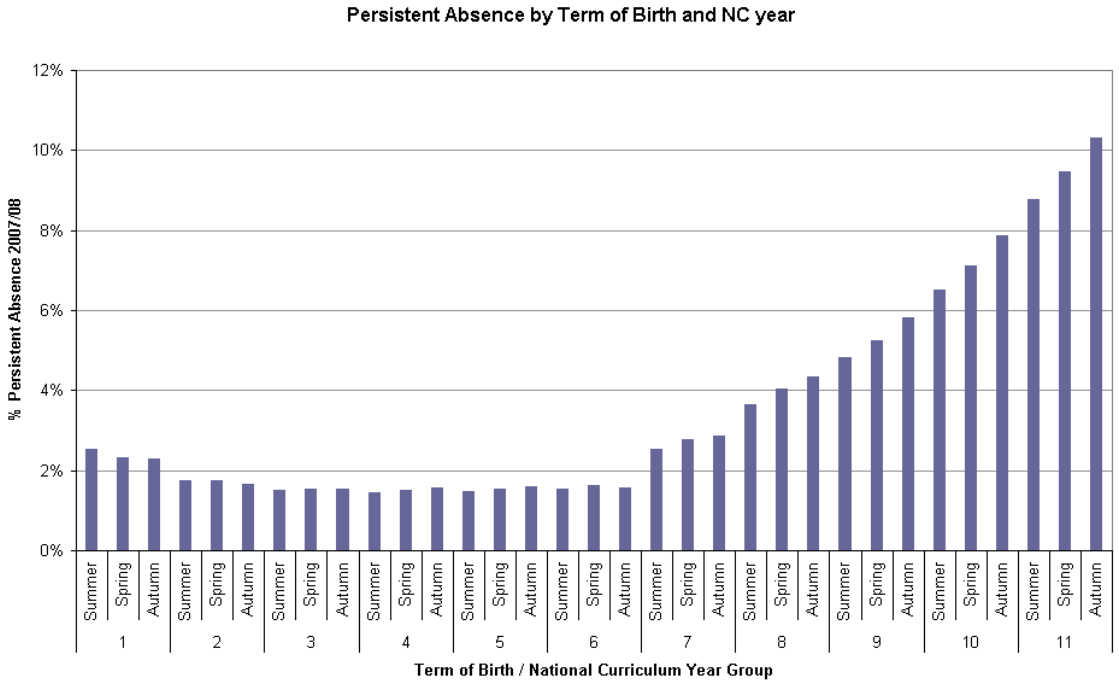
Fig. 3.1b



3.1.2 Persistent Absence

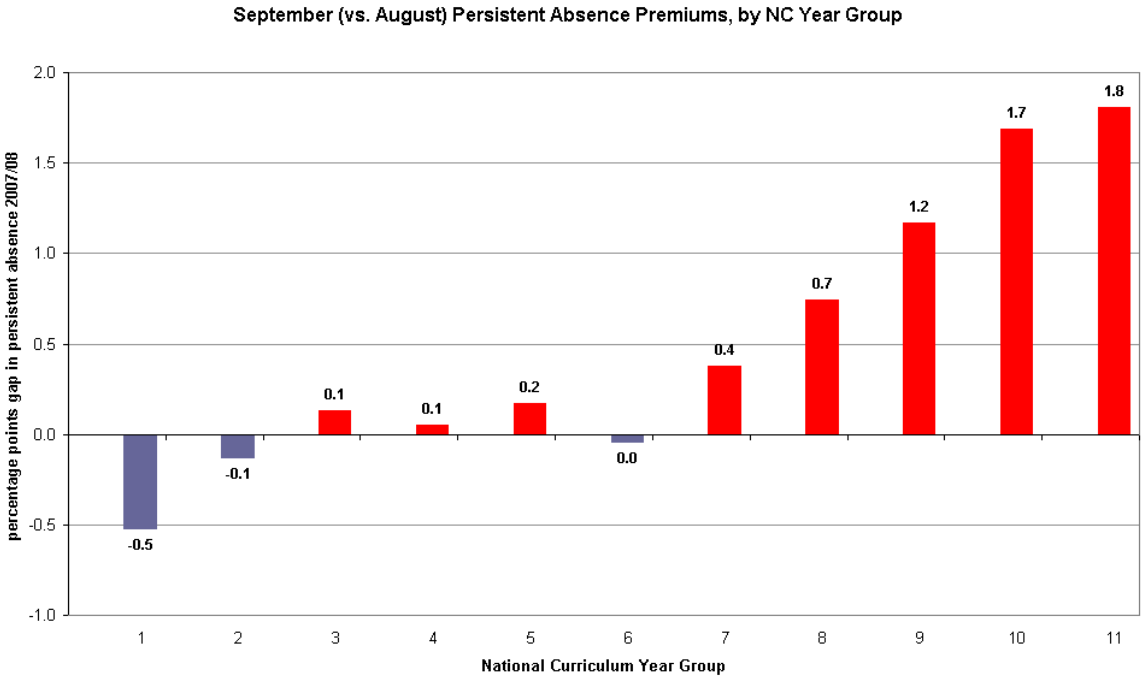
Persistent absence also includes both authorised and unauthorised absence, but measures the percentage of pupils with high levels of absence over the year. Pupils exceeding a threshold number of absences within the year of around 20% of the national typical school year, typically 64 half-day sessions, are deemed to be persistently absent. The percentage of pupils with persistent absence was analysed by month of birth within school year groups, and can be seen to have a stronger relation to age (both within and between years) than overall absence (Fig. 3.1c). Although a minority of persistently absent pupils are explained by chronic illness or serious injury, typically, this strong relationship between persistent absence and month of birth is likely to be related to individual pupil behaviour in the form of unauthorised or unjustified absences.

Fig. 3.1c



The persistent absence premium for older September-born pupils compared with younger August-born pupils peaks in year 11 at 1.8 percentage points (Fig. 3.1d). Only in years 1 and 2 are the youngest children more likely to be persistently absent than the eldest.

Fig. 3.1d

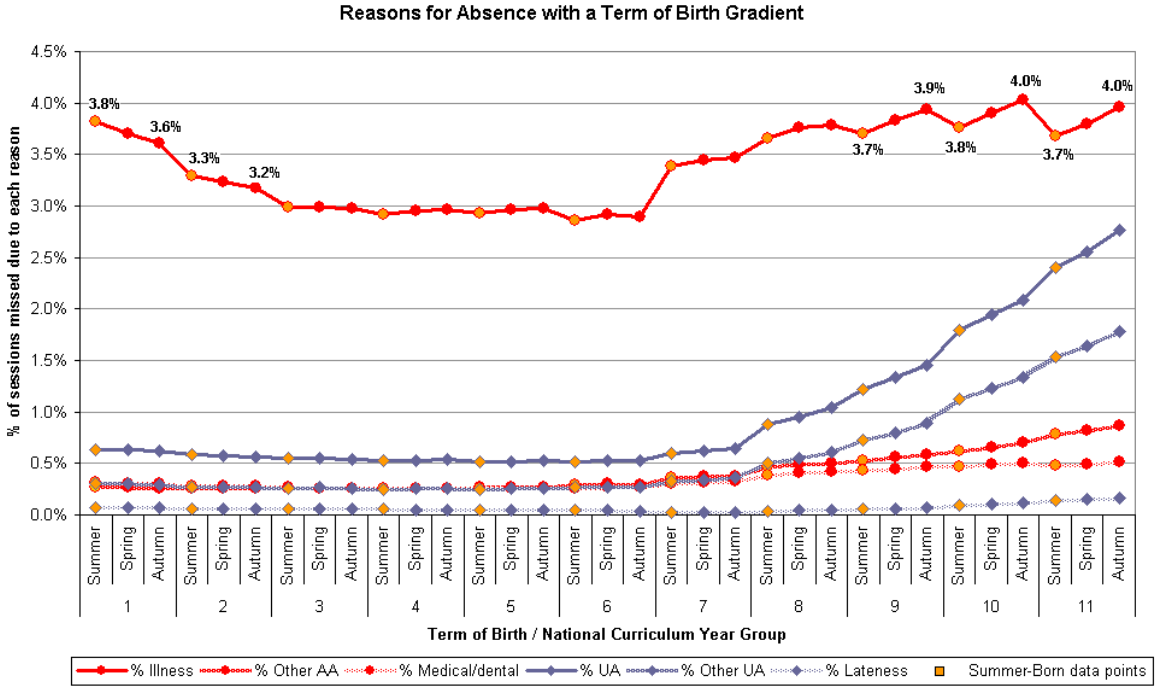


3.1.3 Reasons for Absence

It is possible to analyse the month of birth effect on absence levels by individual reasons for absence. Those reasons with a month of birth effect are displayed in Figure 3.1e below; the red lines are authorised absences, and the blue lines are unauthorised absences[18].

It is interesting to note that illness, (and to a lesser extent medical/dental appointments and other authorised absences) develop a link with month of birth during the latter years of secondary schooling. Behavioural differences could explain why older children are more likely to have unauthorised absences, but it is difficult to postulate a reason for why older children would begin to be more likely to suffer from illness at ages 13-15. This may indicate some possible misrecording of the reasons for absences, where sickness absence notes are supplied by parents although illness is not the genuine reason.

Fig. 3.1e



[18] **Total Authorised Absence (AA)** includes: Illness, Medical/Dental Appointments, Religious Observance, Study Leave, Traveller Absence, Agreed Family Holiday, Agreed Extended Holiday, Excluded without Alternative Provision, Other Authorised Circumstances.

Total Unauthorised Absence (UA) includes: Family Holiday not Agreed, Lateness, Other Unauthorised Circumstances, No Reason yet.

Reasons which do not appear above do not have month of birth effects, and are excluded to simplify Figure 3.1e.

3.2 Exclusions from School

The link between school behaviour and month of birth evident in the absence analysis above could also potentially manifest itself in exclusions from school. This question is examined using individual level permanent exclusions and fixed period exclusions data in the following sections.

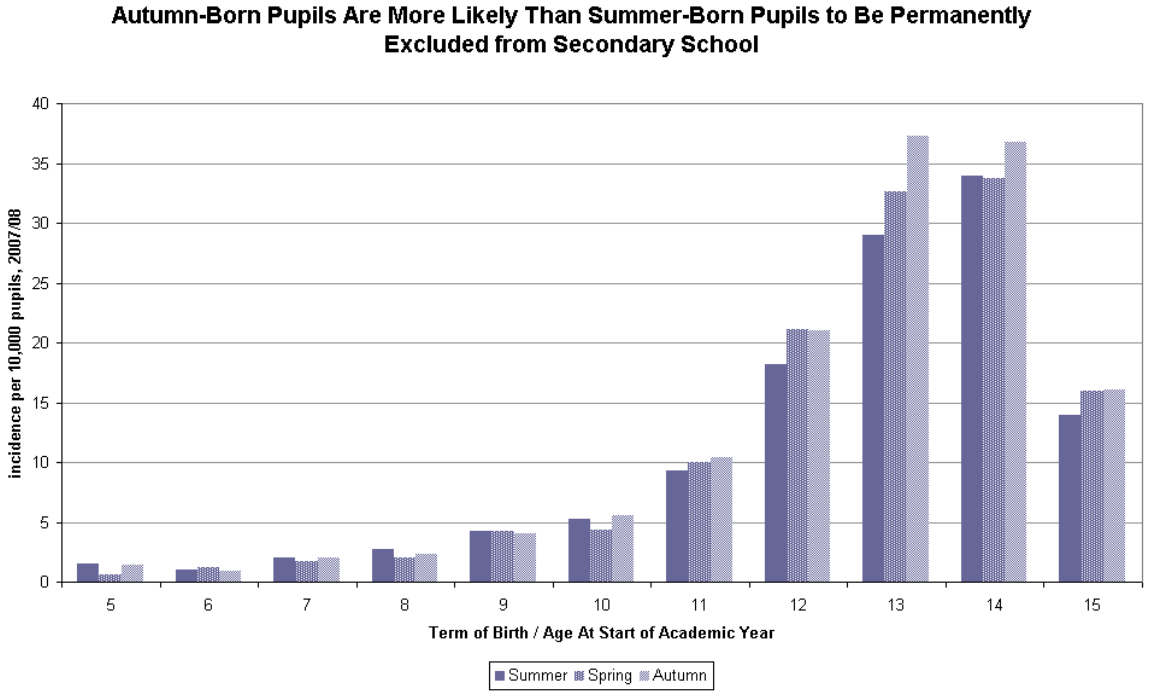
3.2.1 Permanent Exclusions

Permanent exclusions are a last resort for head teachers and occur rarely at 0.02% of primary pupils and 0.21% of secondary pupils. The incidence peaks at age 14, and is positively related with age during secondary school up until this age. Figure 3.2a shows that there is some association between term of birth and incidence of permanent exclusions.

Although the pattern is imperfect, older autumn-born pupils have the highest incidence of exclusion in most secondary year groups, and younger summer-born pupils generally have lower incidence. The strongest difference appears during the year in which pupils turn 14 (age 13 in Fig. 3.2a), where an extra 8 autumn-born pupils *per ten thousand* were excluded compared with a base of 29 summer-born pupils per ten thousand.

These differences cannot be explained by any ethnicity or gender differences in the percentage of children that were born in autumn[19], but may be related to the disproportionate incidence of identified special educational needs in summer-born children[20]. See Section 3.2.2.

Fig. 3.2a



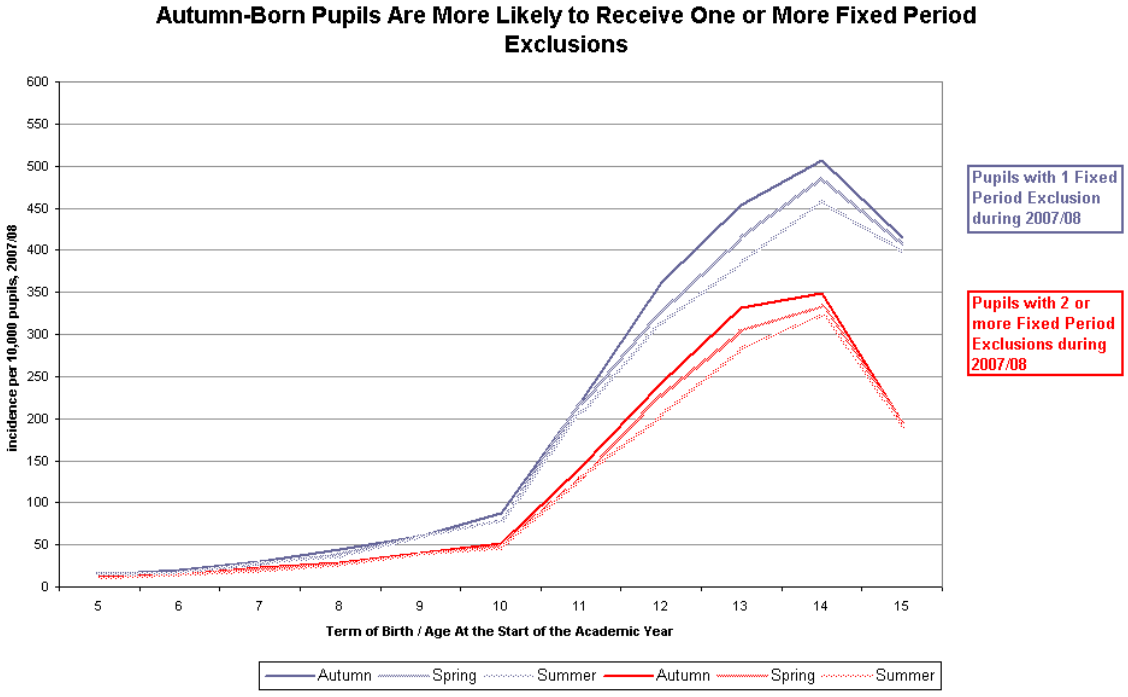
[19] There are very slightly increased rates of autumn birth for Chinese boys and girls, but not for any gender/ethnicity groups with high rates of exclusion; Bangladeshi boys and girls are slightly more likely than all pupils to be spring-born and Roma Traveller boys and girls are slightly more likely than all pupils to be summer-born.

[20] The hypothesis would be that as autumn-born pupils are less likely to be identified with Special Educational Needs, they may end up being excluded in cases where a summer-born child might have been identified with SEN and therefore not excluded due to this mitigating circumstance, or due to support being put in place and leading to improved behaviour. See section 3.4 for analysis of SEN and month of birth.

3.2.2 Fixed Period Exclusions

Rates of fixed period exclusion are considerably higher than permanent exclusions, this being one of the measures used by schools to manage behaviour before a permanent exclusion becomes necessary. Pupils who are excluded commonly receive more than one fixed period exclusion within a given school year (this is extremely rare for permanent exclusions), so incidence percentages are indicative, but fixed period exclusions expressed as a percentage of pupils run at 1% for primary schools and 10% for secondary schools. A clearer pattern by month of birth can be seen in Figure 3.2b below due to the higher numbers of fixed period exclusions. At age 13, an extra 68 autumn-born pupils *per ten thousand* receive one fixed period exclusion over a school year compared with a base of 385 summer-born pupils; an extra 49 autumn-born pupils per ten thousand receive 2 or more (on a base of 282 summer-born pupils).

Fig. 3.2b



Exploratory further analysis of these data suggests that at ages 13-14, when fixed period exclusions reach their peak, having SEN is a little more related to exclusion for summer-born pupils than for autumn-born pupils (it is strongly related for both). This may suggest that lower SEN identification rates in autumn-born children are linked to their likelihood of exclusion. However, the opposite is the case for pupils younger than age 13.[21] Further analysis of the

[21] The odds ratio (SEN/no SEN) for one or more fixed period exclusion at age 13 is 4.4 for summer-born pupils compared with 4.3 for autumn-born pupils; conversely at age 11, it is 4.5 for summer-born pupils compared with 5.0 for autumn-born pupils – but there are many fewer fixed period exclusions at age 11 than age 13. SEN status is taken at the January of the school year in which the exclusion took place.

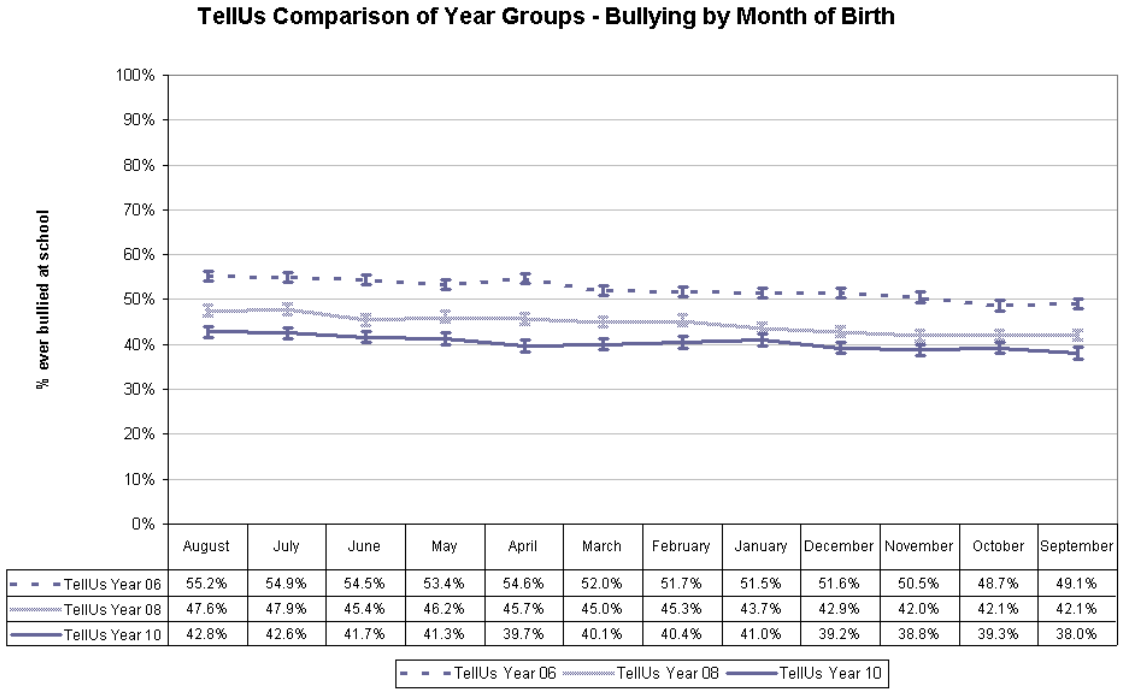
odds ratios (SEN/no SEN) for exclusion is recommended, including breaking these down according to the type of SEN to examine the link between Behavioural, Emotional and Social Difficulties and SEN / exclusion, and how this might change with age.

3.3 Experience of Bullying

Data from two different surveys were analysed to examine whether there is a link between month of birth and bullying - the Longitudinal Study of Young People in England (LSYPE, for which the data presented here were collected in early 2004) and TellUs 4 (a pupil perception survey giving a snapshot of bullying in late 2009[22]). The definitions of bullying used by the surveys differ, including the location and timing of the bullying, as do the survey formats and ages at which young people are questioned about their experiences; TellUs also has a much larger sample size than LSYPE.

Both surveys reveal some evidence of month of birth differences in the percentage of children being bullied, although the larger TellUs survey gives the strongest indication that this is the case, partly because its sample size enables smaller differences to be detected with statistical significance than the LSYPE data can. There is also an age difference (between years) which partly accounts for the stronger findings in the TellUs data, as bullying decreases with age between year 6 and year 10 (TellUs, Fig. 3.3a) resulting in smaller expected differences for the older year group covered by the LSYPE analysis (year 9).

Fig. 3.3a

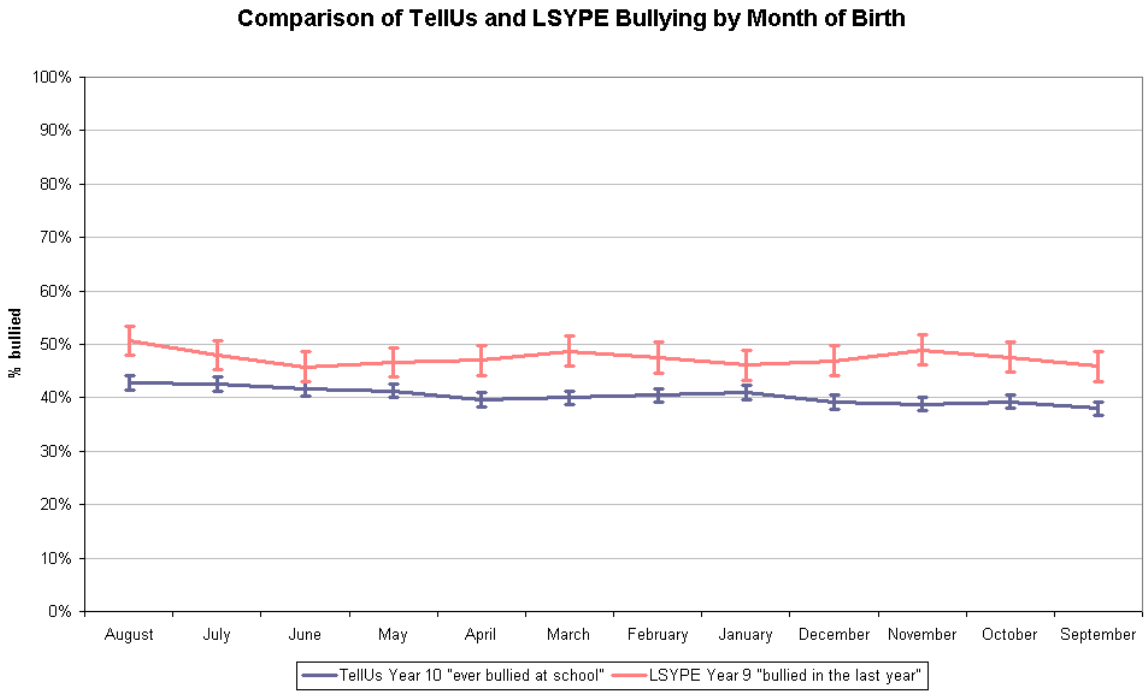


	August	July	June	May	April	March	February	January	December	November	October	September
TellUs Year 06	55.2%	54.9%	54.5%	53.4%	54.6%	52.0%	51.7%	51.5%	51.6%	50.5%	48.7%	49.1%
TellUs Year 08	47.6%	47.9%	45.4%	46.2%	45.7%	45.0%	45.3%	43.7%	42.9%	42.0%	42.1%	42.1%
TellUs Year 10	42.8%	42.6%	41.7%	41.3%	39.7%	40.1%	40.4%	41.0%	39.2%	38.8%	39.3%	38.0%

[22] Previous TellUs surveys did not collect month of birth data, so it is not possible to look at the stability over time of these findings.

TellUs data suggest that August-born young people are 6 percentage points more likely to be bullied than those born in September in years 6 and 8, falling to 5 percentage points in year 10 (Fig. 3.3a above). The month of birth differences for overall bullying in the LSYPE data are not statistically significant, whereas for the TellUs data they are (Fig. 3.3b below). However, see Figures 3.3c and 3.3d where differences, albeit small, in extreme bullying experiences from LSYPE *are* significant.

Fig. 3.3b



Some slight differences emerged looking at very extreme bullying experiences in the LSYPE data which were statistically significant (p=0.05), although small in size. For example, summer-born pupils were more likely to report having been violently bullied more than twice per week, but the incidence remained low at 3% compared with 2% (Fig. 3.3c). Similarly, parents of summer-born children were a little more likely to report their child having been bullied more than twice per week (Fig. 3.3d).

Fig. 3.3c

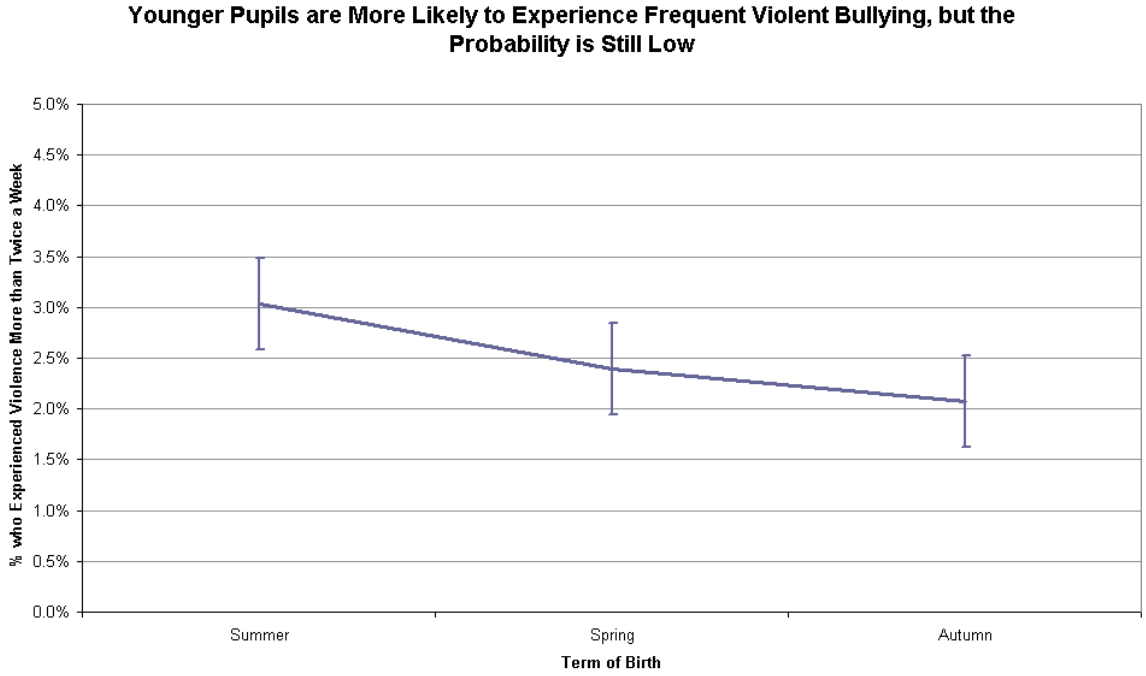
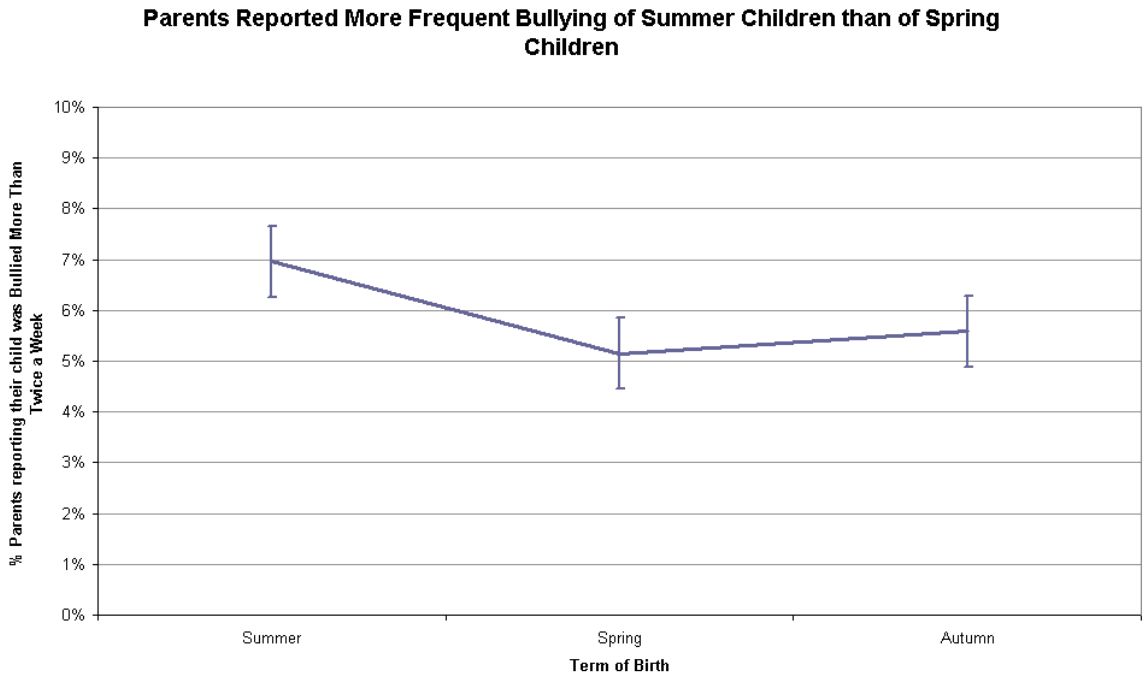


Fig. 3.3d

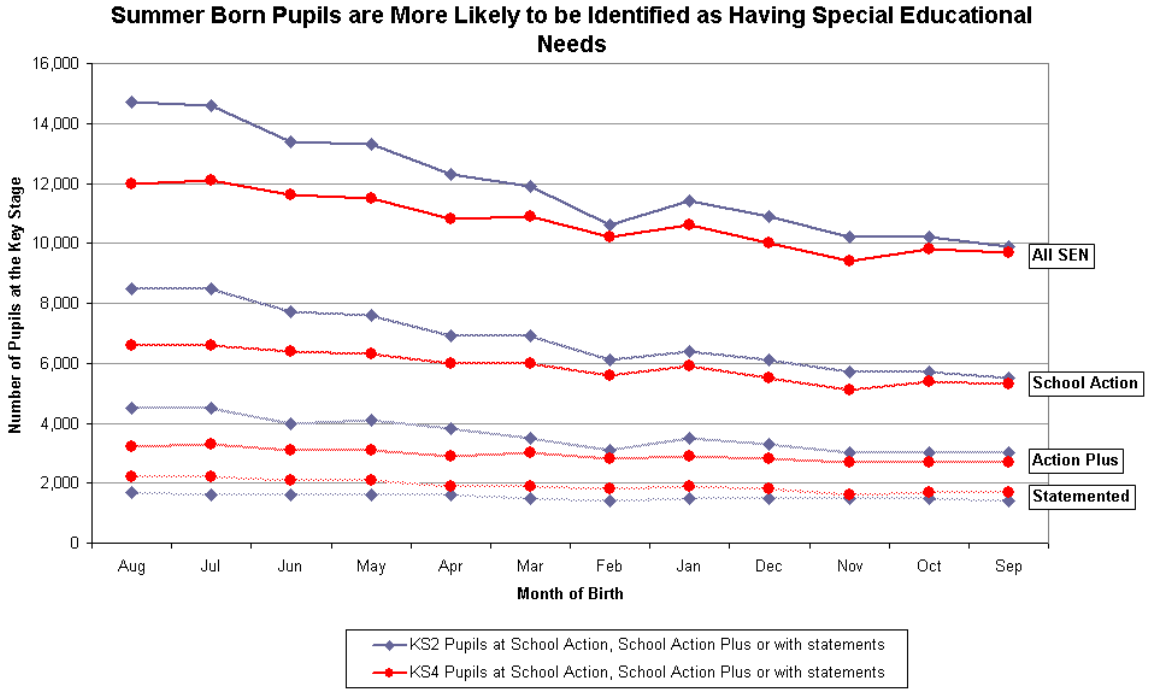


3.4 Identification of Special Educational Needs

There is a clear gradient in the numbers of children identified as having special educational needs by month of birth, which is stronger at the earlier stages of education. At the end of Key Stage 1, August-born pupils are nearly 90% more likely to be identified with SEN than September-born pupils (not shown in chart). At the end of Key Stage 2, August-born pupils are 60% more likely to be identified with SEN than September-born pupils; this reduces to 25% more likely by the end of Key Stage 4 (Fig. 3.4a).[23]

Focusing on pupils with Statements of SEN (those with the greatest need), August-born pupils are almost 30% more likely than September-born pupils to have a statement at the end of Key Stage 2, *rising* to 40% more likely at the end of Key Stage 4 (Fig. 3.4a).[23]

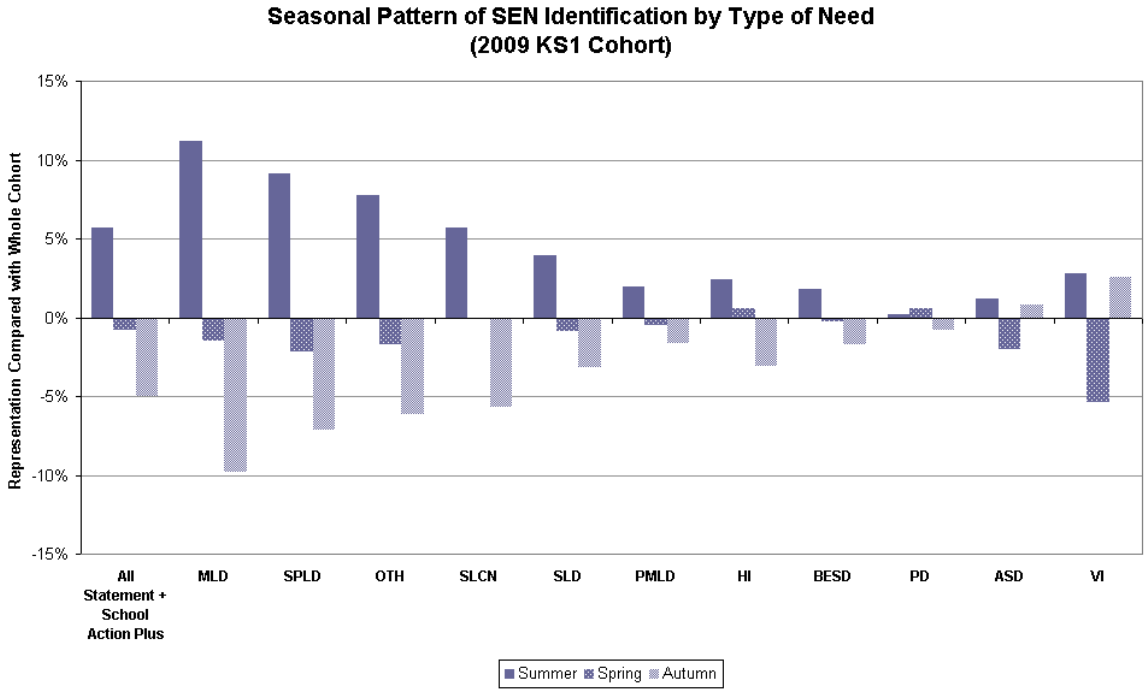
Fig. 3.4a



[23] These percentages are derived from the numbers of pupils identified with SEN displayed in Fig. 3.4a – August as % increase on September.

Some types of SEN are associated with month of birth to a greater degree than others. At Key Stages 1 and 2, Moderate Learning Difficulties, Specific Learning Difficulties, Speech, Language and Communication Needs and other SEN have the highest overrepresentation of summer-born pupils compared with the whole cohort (Fig.s 3.4b and 3.4c).[24]

Fig. 3.4b



[24] SEN Types…

Cognition and Learning Needs:

- SPLD – Specific Learning Difficulty
- MLD - Moderate Learning Difficulty
- SLD – Severe Learning Difficulty
- PMLD – Profound and Multiple Learning Difficulty

Behaviour, Emotional and Social Development Needs:

- BESD - Behaviour, Emotional and Social Development Needs

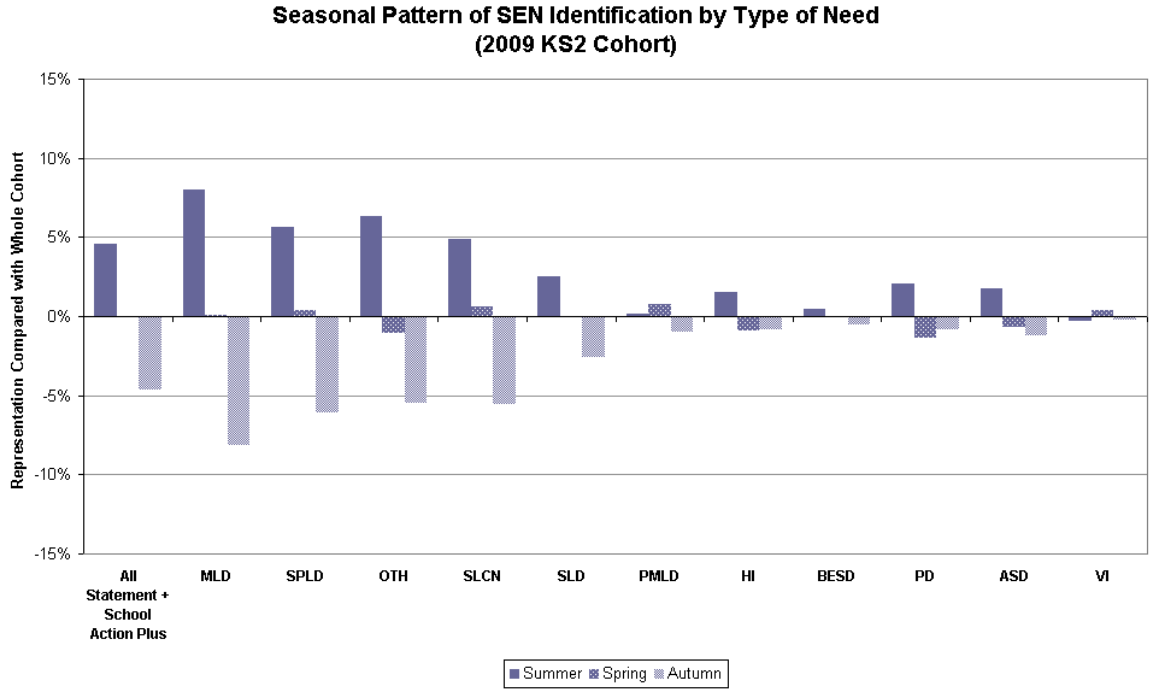
Communication and Interaction Needs:

- SLCN - Speech, Language and Communication Needs
- ASD - Autistic Spectrum Disorder

Sensory and/or Physical Needs:

- VI – Visual Impairment
- HI – Hearing Impairment
- MSI – Multi-Sensory Impairment
- PD – Physical Disability

Fig. 3.4c


Seasonal Pattern of SEN Identification by Type of Need
(2009 KS2 Cohort)
Representation Compared with Whole Cohort
15%
10%
5%
0%
-5%
-10%
-15%
All Statement + School Action Plus
MLD
SPLD
OTH
SLCN
SLD
PMLD
HI
BESD
PD
ASD
VI
Summer
Spring
Autumn

By Key Stage 3, the size of the month of birth effect has started to shrink for Moderate Learning Difficulty, Specific Learning Difficulty and Other SEN, but Speech, Language and Communication Needs remains at a similar level of disproportionality (Fig. 3.4d). By Key Stage 4, the overrepresentation of summer-born children continues to shrink but still stands at over 5% for Moderate and Specific Learning Difficulties (Fig. 3.4e). The seasonal disproportionality of Autistic Spectrum Disorder has increased with age.

Fig. 3.4d

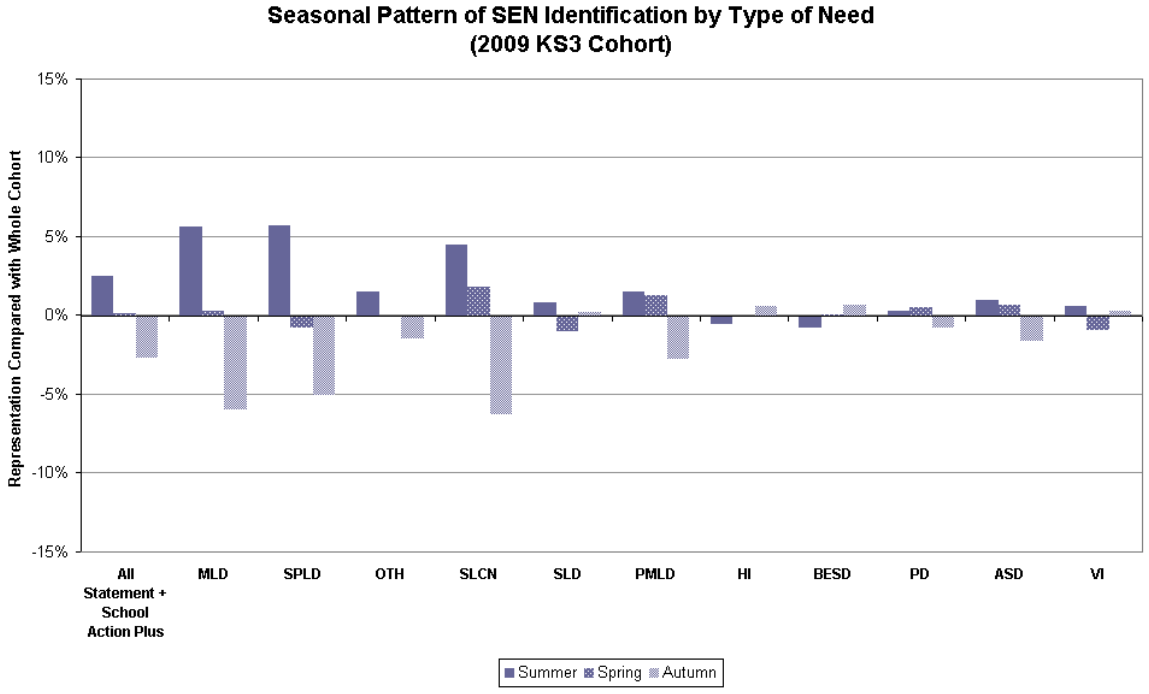
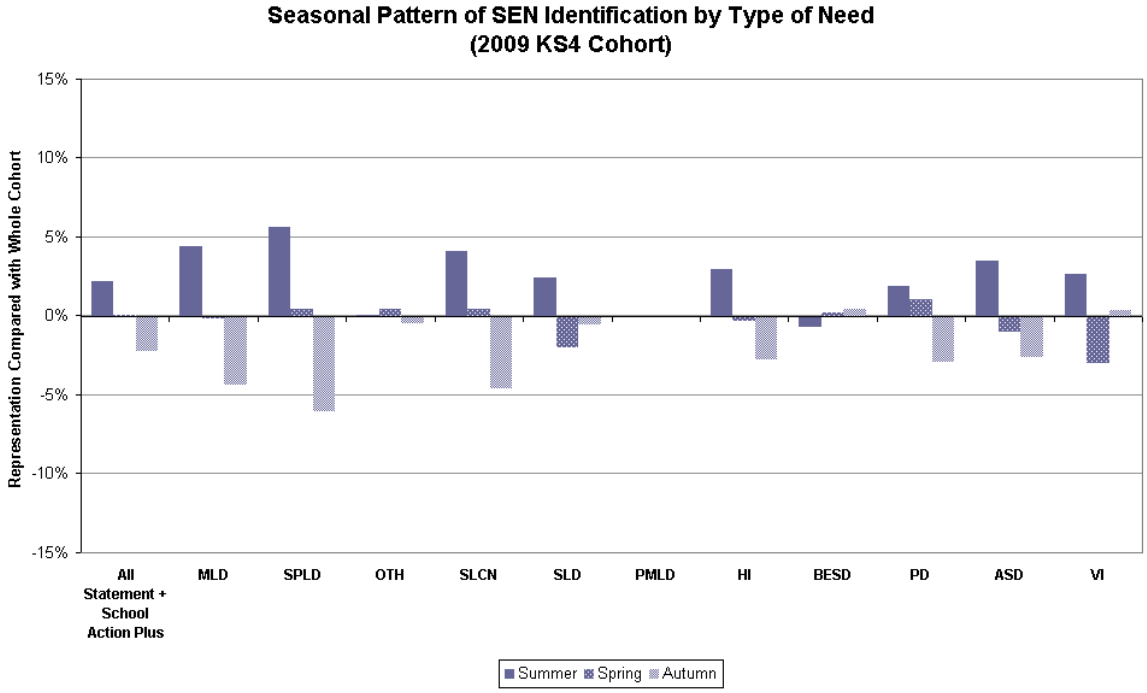


Fig. 3.4e


Seasonal Pattern of SEN Identification by Type of Need
(2009 KS4 Cohort)
Representation Compared with Whole Cohort
15%
10%
5%
0%
-5%
-10%
-15%
All Statement + School Action Plus
MLD
SPLD
OTH
SLCN
SLD
PMLD
HI
BESD
PD
ASD
VI
Summer
Spring
Autumn

At Key Stage 1, summer-born girls have a larger proportionate increase in identification of special educational needs than summer-born boys (Fig. 3.4f); however SEN boys outnumber SEN girls in absolute terms at every month of birth and all Key Stages. The larger female disproportionality is still evident at Key Stage 2 (Fig. 3.4g), but by Key Stage 4, the size of the seasonal disproportionality has shrunk and the genders have switched places with younger boys more likely to be overrepresented compared with older boys to a greater degree than is the case for girls (Fig. 3.4h).

Fig. 3.4f

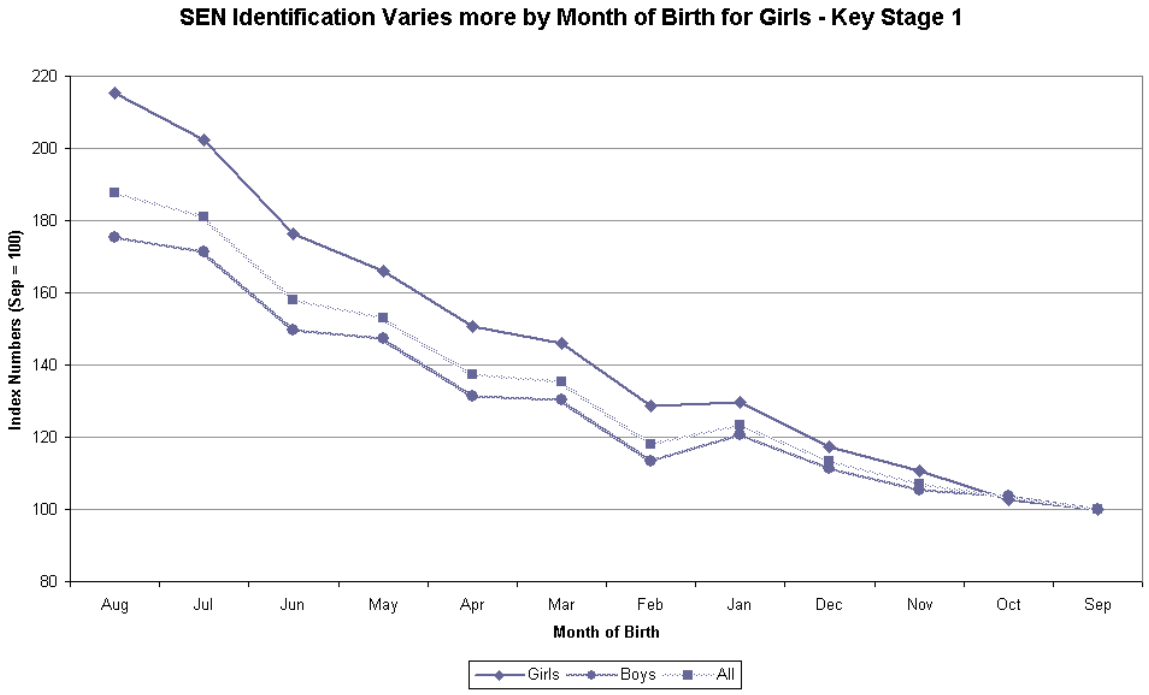


Fig. 3.4g

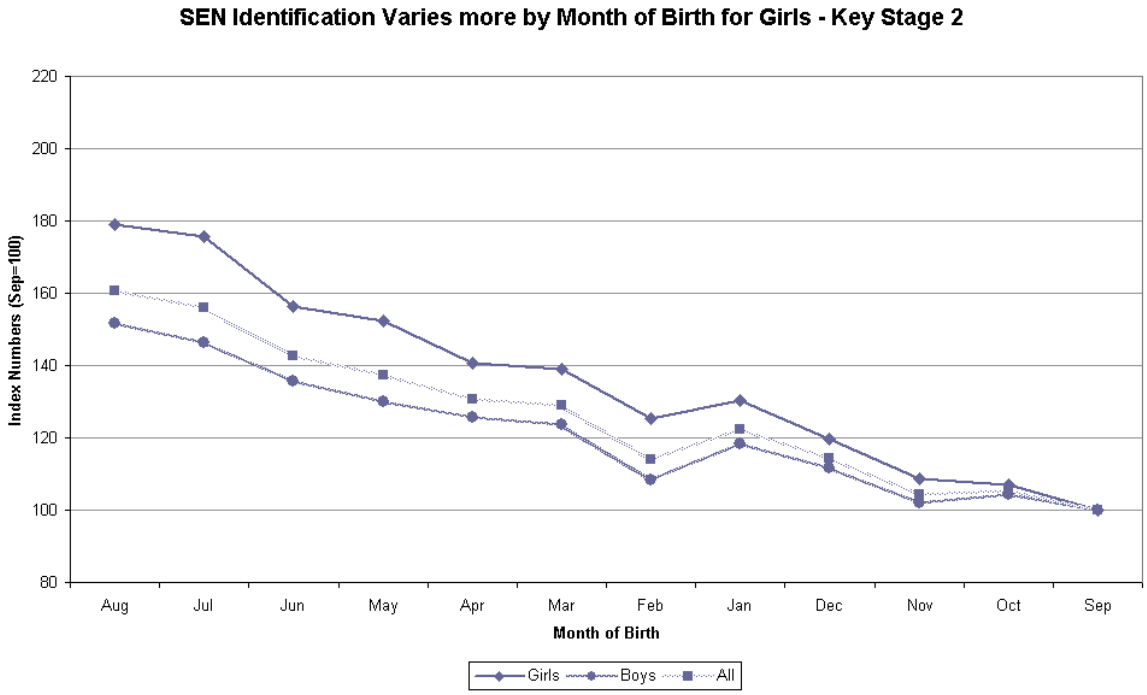
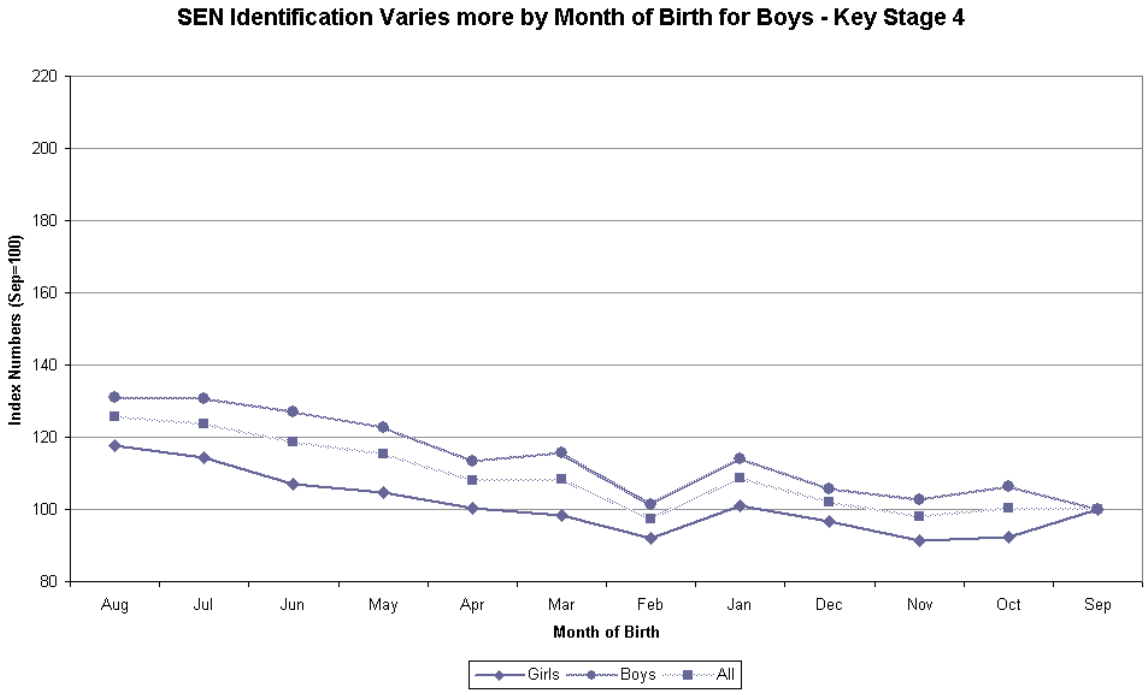


Fig. 3.4h



3.5 Attitudes to school

Survey data from the Longitudinal Study of Young People in England were used to analyse the attitudes to school of young people aged 14 and their parents. Reported differences were statistically significant at the 5% level, with error bars in the line charts below showing the associated confidence intervals.

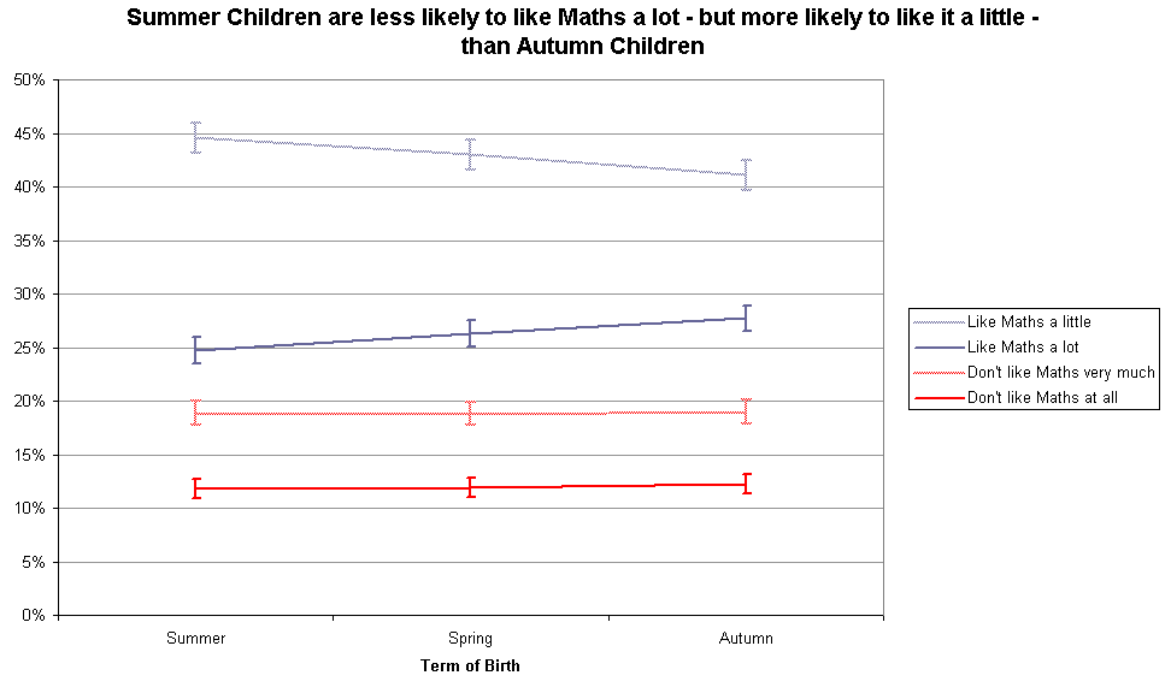
There were some differences in subject preferences between autumn and summer-born pupils, with maths being slightly less popular for summer-born pupils, English being more popular, and science ranking three places lower than for autumn-born pupils (Fig. 3.5a).

Fig. 3.5a

Top 10 Favourite Subjects (ranked by % young people who reported the subject as their favourite)			
	Summer Born	**Spring Born**	**Autumn Born**
1	Physical Education, games, sport	Physical Education, games, sport	Physical Education, games, sport
2	Art	Art	Art
3	Drama / Media / Communication	**Mathematics**	**Mathematics**
4	**Mathematics**	Drama / Media / Communication	Drama / Media / Communication
5	**English**	**Science**	History
6	History	**English**	**Science**
7	Design and Technology	ICT, computing	**English**
8	ICT, computing	History	ICT, computing
9	**Science**	Design and Technology	Design and Technology
10	Music	Music	Music

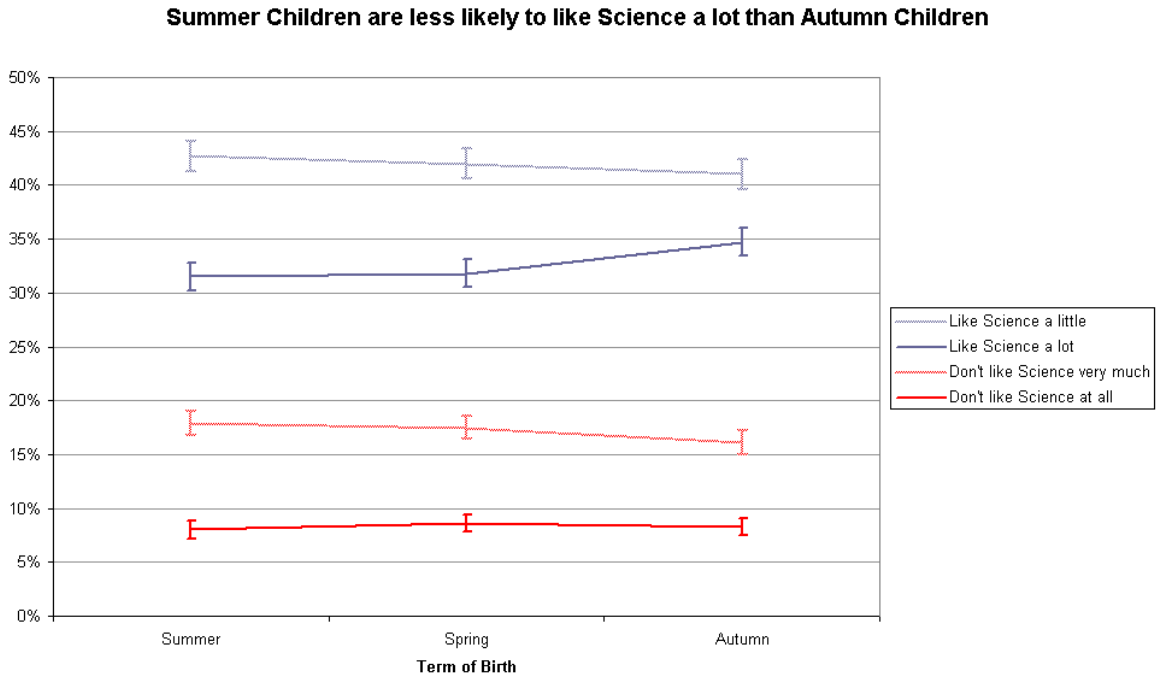
Looking more closely at attitudes to maths, summer-born children are as likely as their older peers to have a positive attitude to maths, but it is more likely to be a weaker positive attitude ("like maths a little") and less likely to be a strong positive attitude ("like maths a lot") than for autumn-born pupils (Fig. 3.5b).

Fig. 3.5b



Summer-born pupils are less likely to have a strong positive attitude to science than autumn-born pupils (Fig. 3.5c). The differences in attitudes to maths and science are not large (within 5 percentage points), but suggest that pupils' attitudes do vary depending on their term of birth.

Fig. 3.5c



As well as looking at how much pupils like key subjects, the survey data also enable analysis of how they assess their ability in each subject. There were small but significant differences in how good the older pupils judged themselves to be at maths (Fig. 3.5d) and English (Fig. 3.5e). For both subjects, autumn-born pupils were more likely to assess their ability as being “very good” than summer-born pupils.

Fig. 3.5d

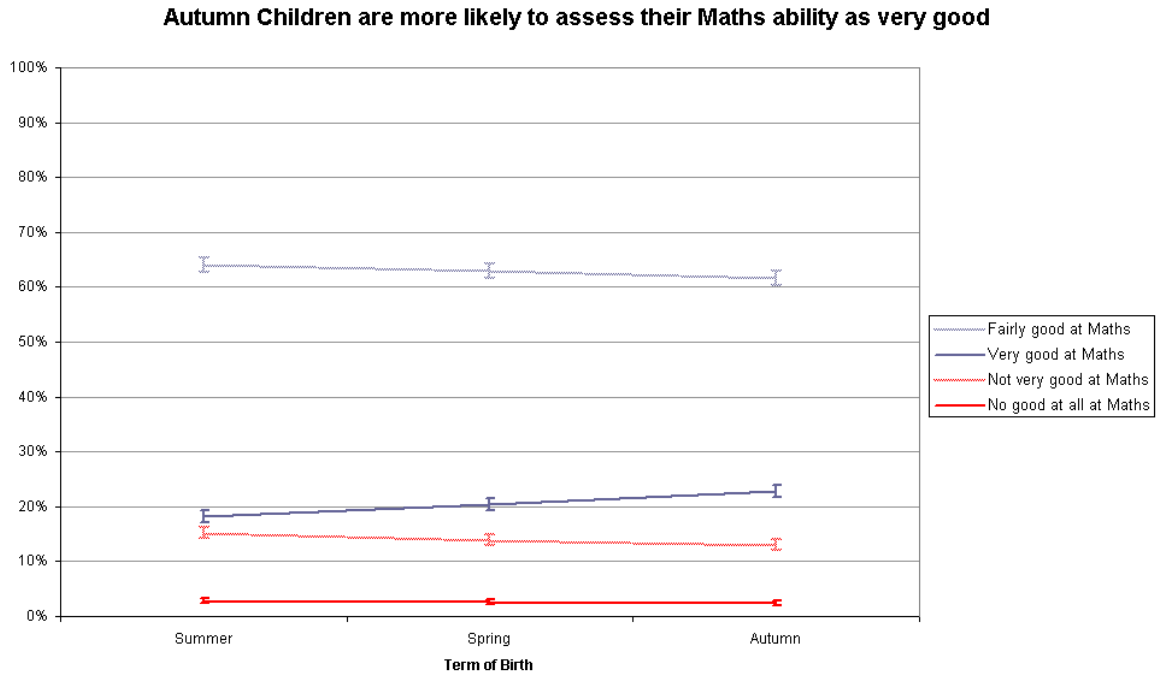
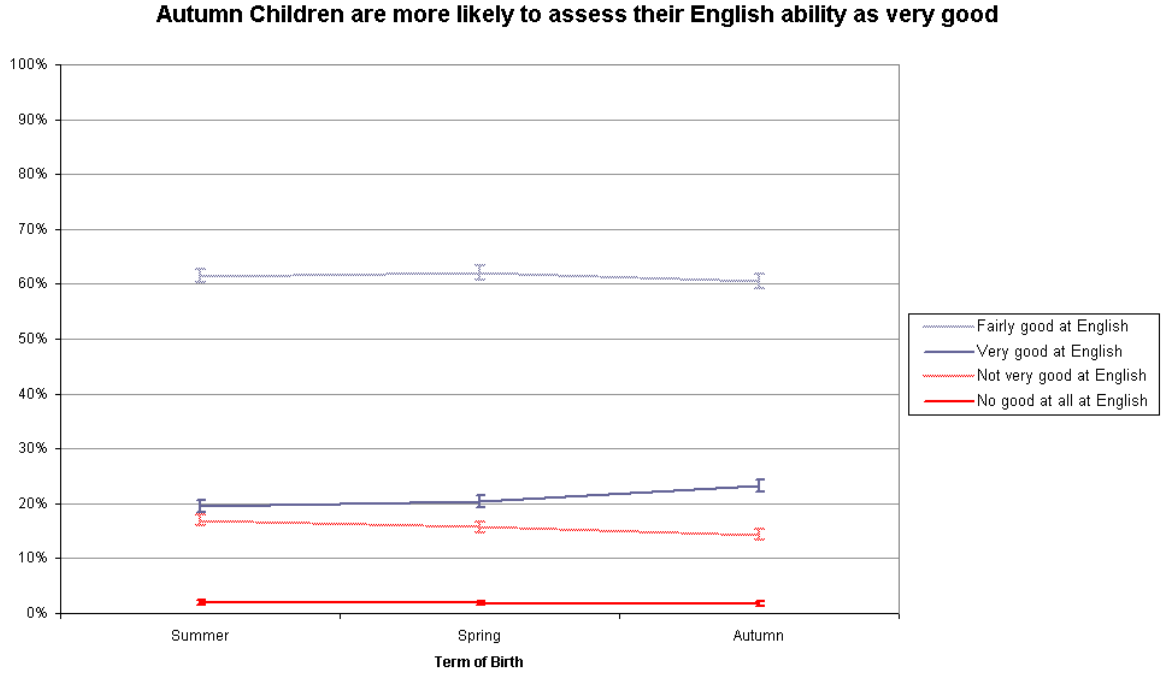
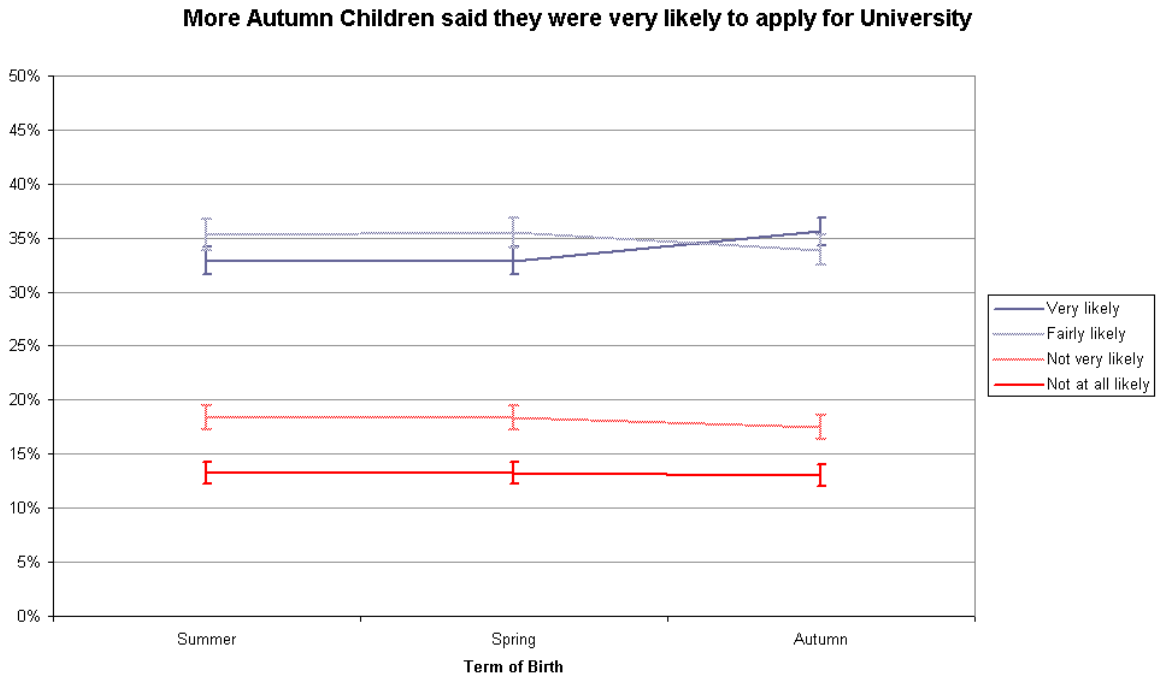


Fig. 3.5e



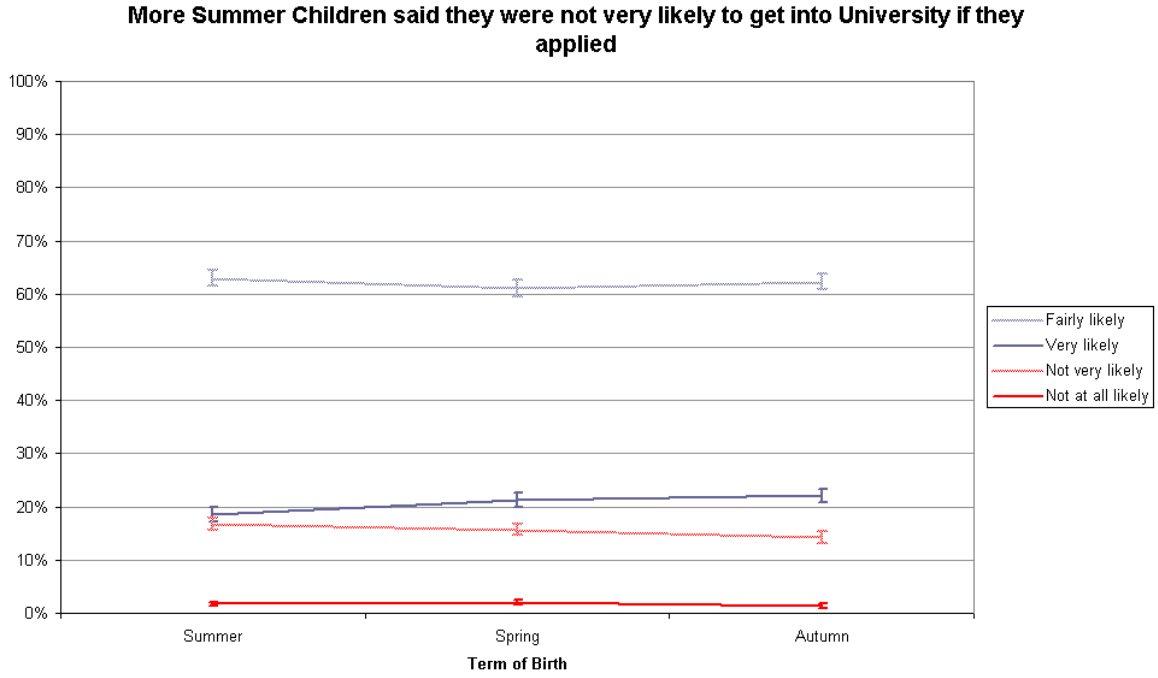
At age 14, autumn-born pupils were also slightly more likely to say that they were “very likely” to apply for university than their younger peers (Fig. 3.5f).

Fig. 3.5f



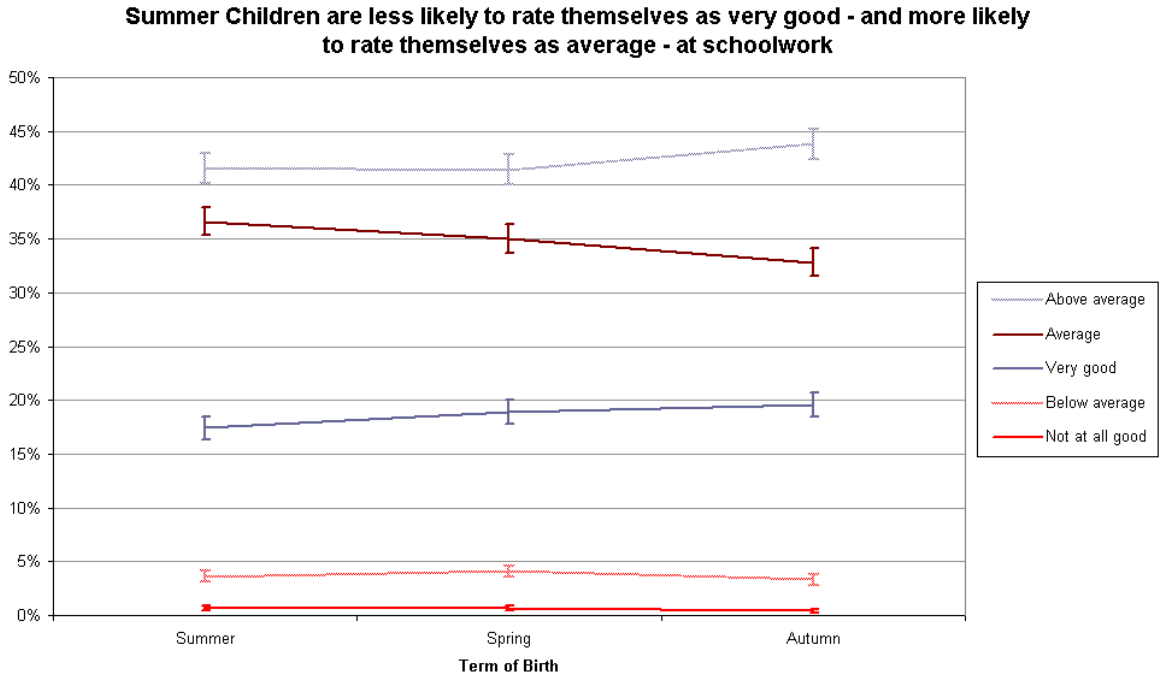
Probing the reasons for how pupils assessed their likelihood of applying to university, summer-born pupils were more likely to say that they were not very likely to get into university if they applied (Fig. 3.5g). This may suggest that younger pupils are aware of their lower attainment during school, and are more likely to select themselves out of higher education because they are less confident about securing a place at university. These differences remain small in magnitude although the fact that they exist at all is of concern.

Fig. 3.5g



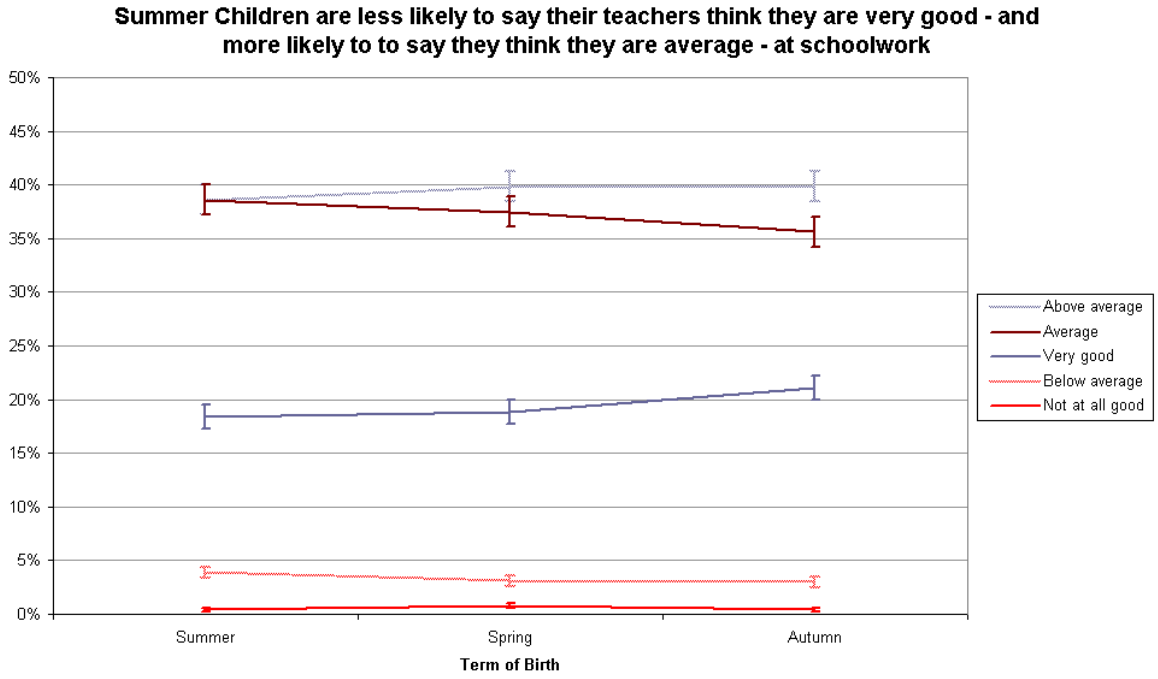
Looking at a general assessment of how pupils rate their ability at schoolwork, summer-born pupils have a greater tendency to rate themselves as “average” (the middle category of five), whereas autumn-born pupils were more likely to rate themselves as “very good” (the top category) than their younger peers (Fig. 3.5h).

Fig. 3.5h



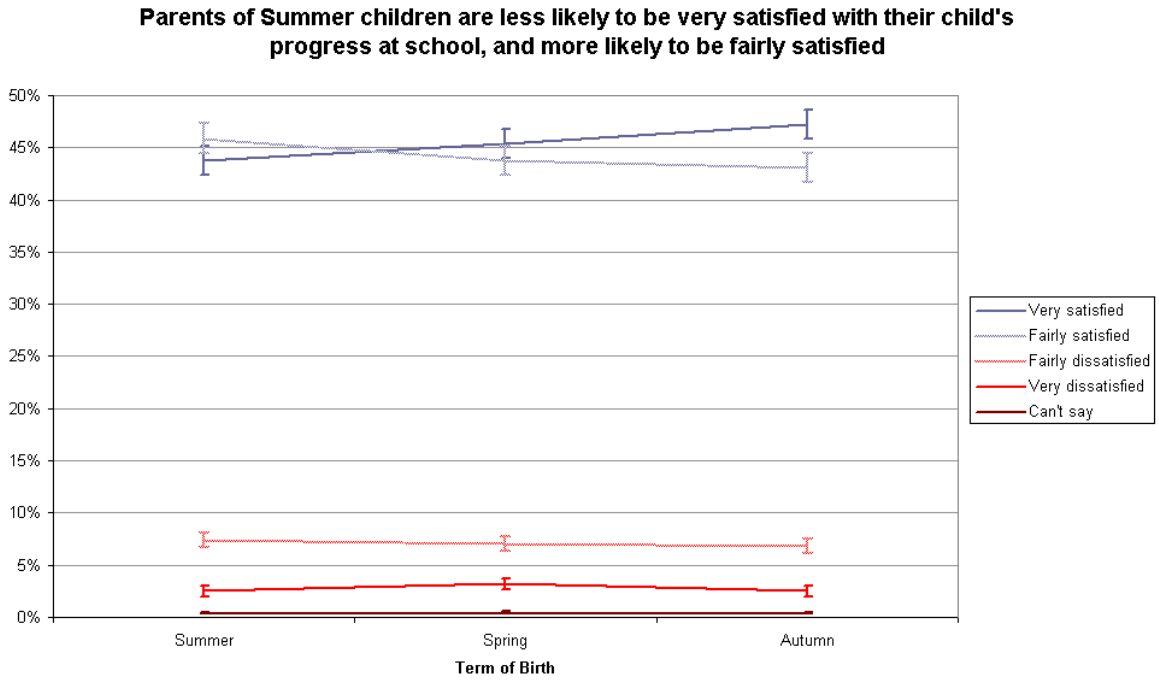
The greater perception of “average” rather than “very good” ability of the younger pupils appears to be affected by interactions with teachers. Summer-born pupils were less likely to judge that their teachers think they are “very good” and more likely to say that their teachers think they are “average” than autumn-born pupils (Fig. 3.5i).

Fig. 3.5i



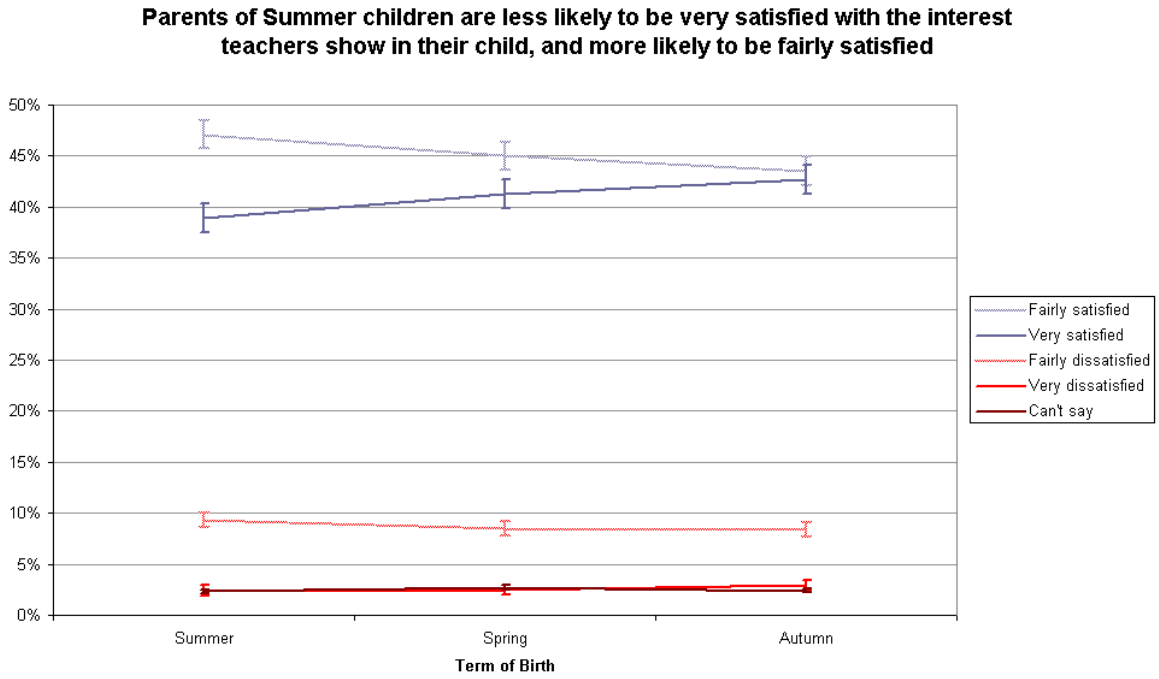
The differential attitudes to school according to term of birth also feed through to parents of summer-born pupils, who are more likely to be “fairly satisfied” rather than “very satisfied” with their child’s progress at school than parents of autumn-born pupils (Fig. 3.5j).

Fig. 3.5j



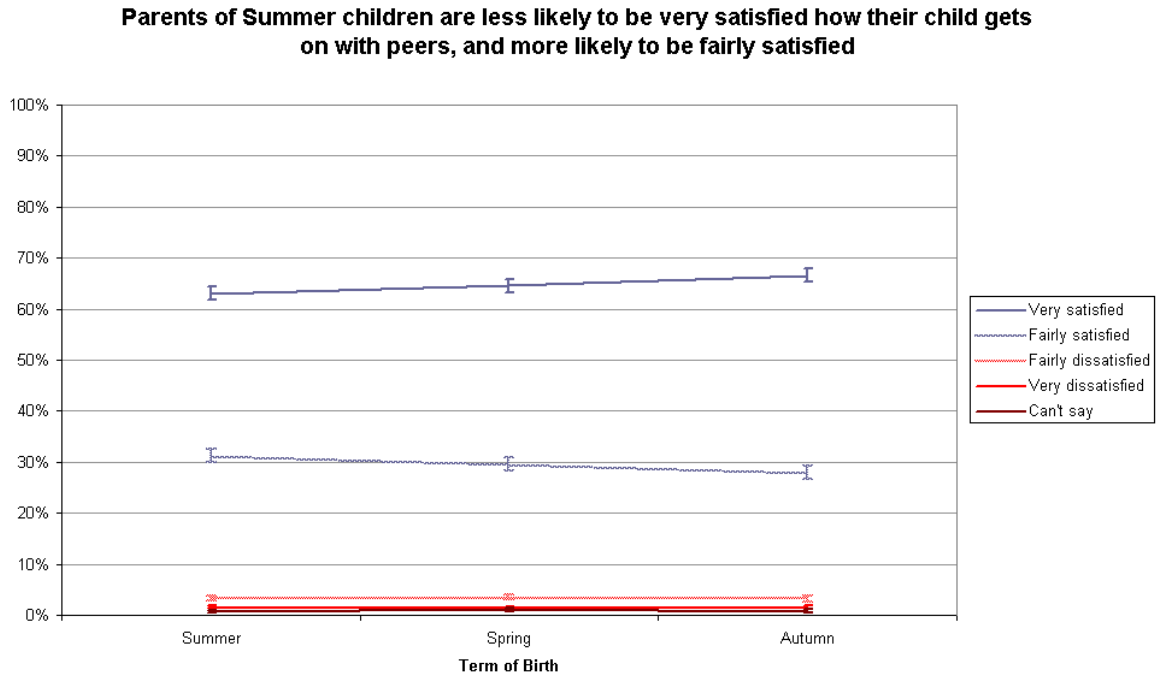
Parents of summer-born pupils are also less likely to be “very satisfied” and more likely to be only “fairly satisfied” with the interest teachers show in their child, compared with parents of autumn-born pupils (Fig. 3.5k).

Fig. 3.5k



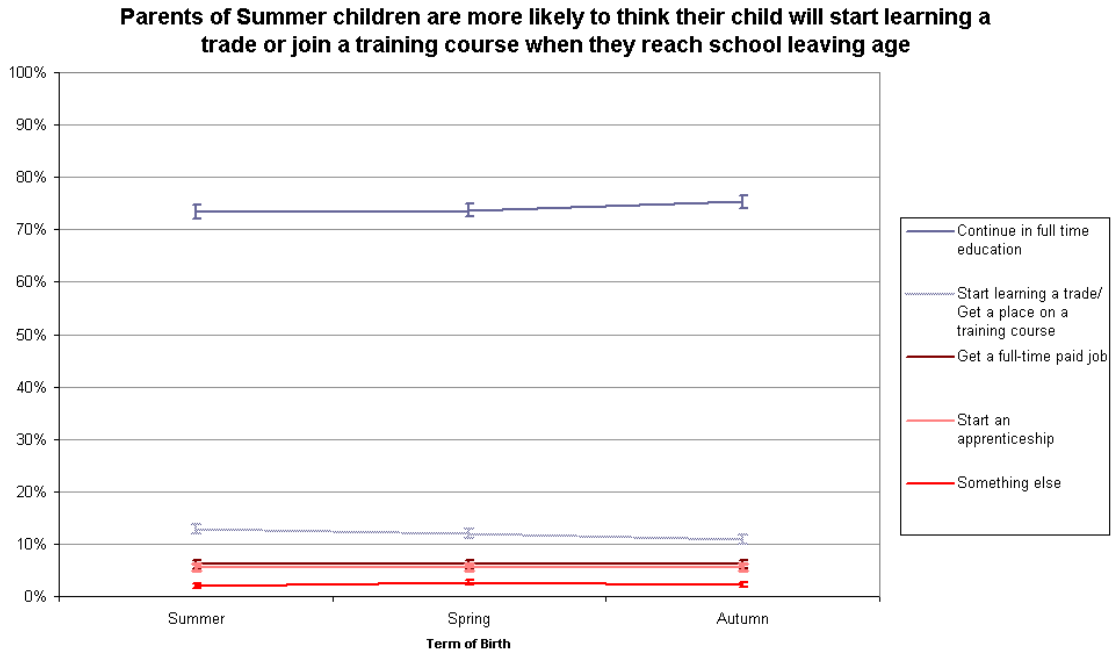
There is also a small similar effect on perceptions of how children get on with their peers, with parents of summer-born children again less likely to be “very satisfied” and more likely to be only “fairly satisfied” (Fig. 3.5l).

Fig. 3.5l



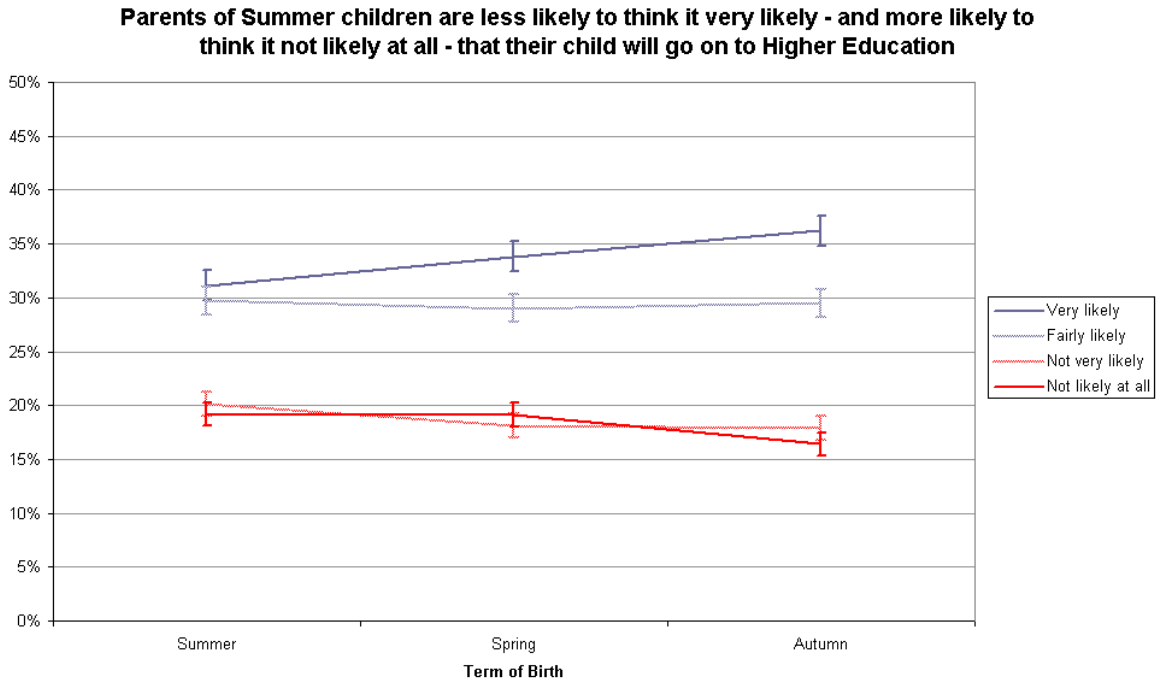
When asked what they think their child will do when they reach 16, parents of summer-born children are more likely to think their child will start learning a trade or join a training course than parents of autumn-born children (Fig. 3.5m).

Fig. 3.5m



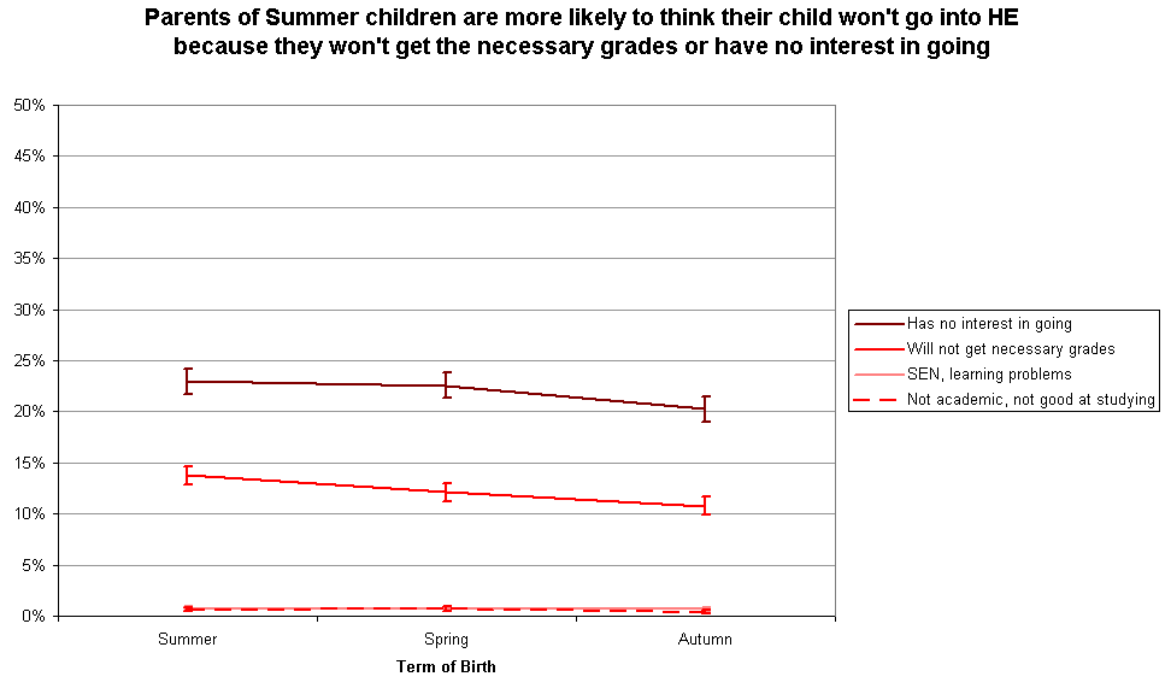
When asked about the chances of their child going on to university, parents of summer-born children were more likely to say that this was “not likely at all” than parents of autumn-born children, and less likely to say that it was “very likely” (Fig. 3.5n).

Fig. 3.5n



Probing the reasons for thinking that university was unlikely, parents of summer-born children were more likely to attribute this to “will not get the necessary grades” or to “has no interest in going” than parents of autumn-born children (Fig. 3.5o).

Fig. 3.5o

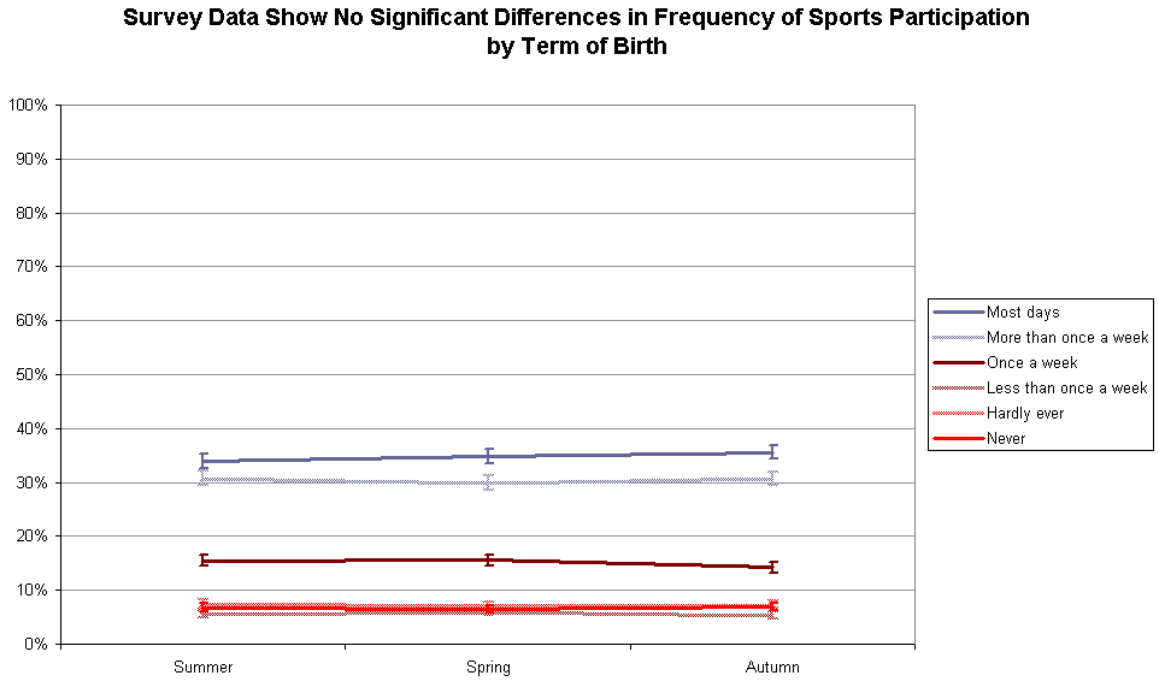


Overall, there is a small but consistent pattern of attitudes to school and Higher Education being less positive for summer-born children and their parents, with more doubt about abilities, less satisfaction, and more of a tendency to rate outcomes as average rather than good.

3.6 Sports Participation

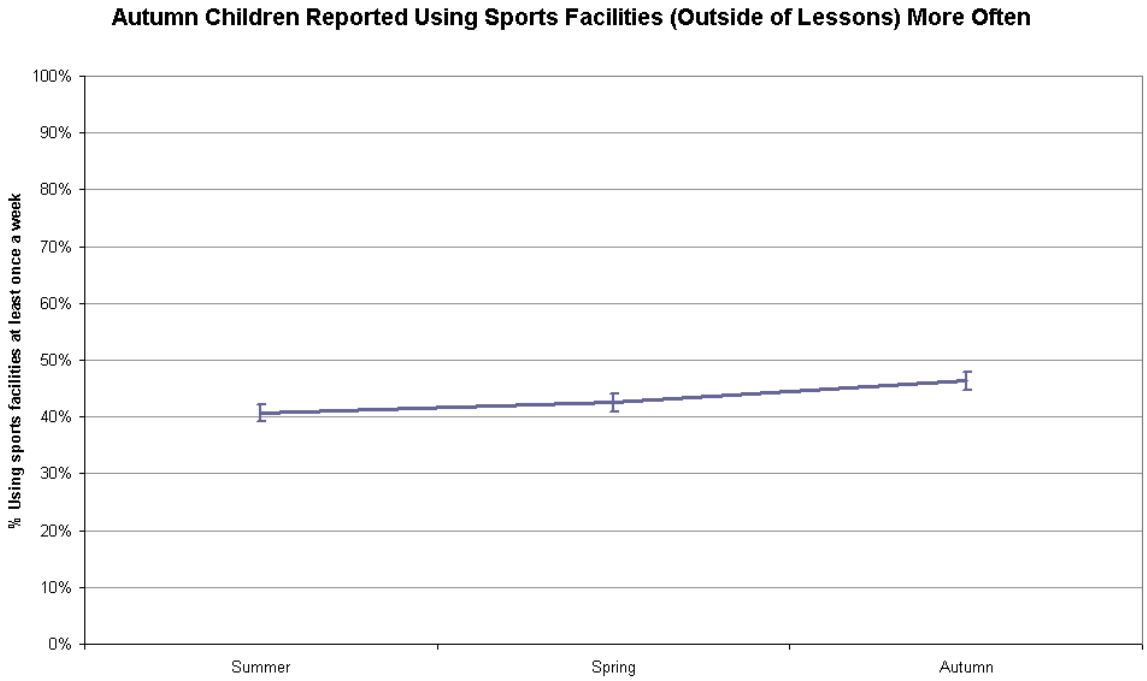
Survey data from the Longitudinal Study of Young People in England were used to analyse the sports participation of young people aged 14. When asked how frequently they took part in sports, there was no statistically significant difference between summer-born and autumn-born pupils (Fig. 3.6a). This may be because participation is dominated by compulsory PE lessons at school rather than voluntary activities.

Fig. 3.6a



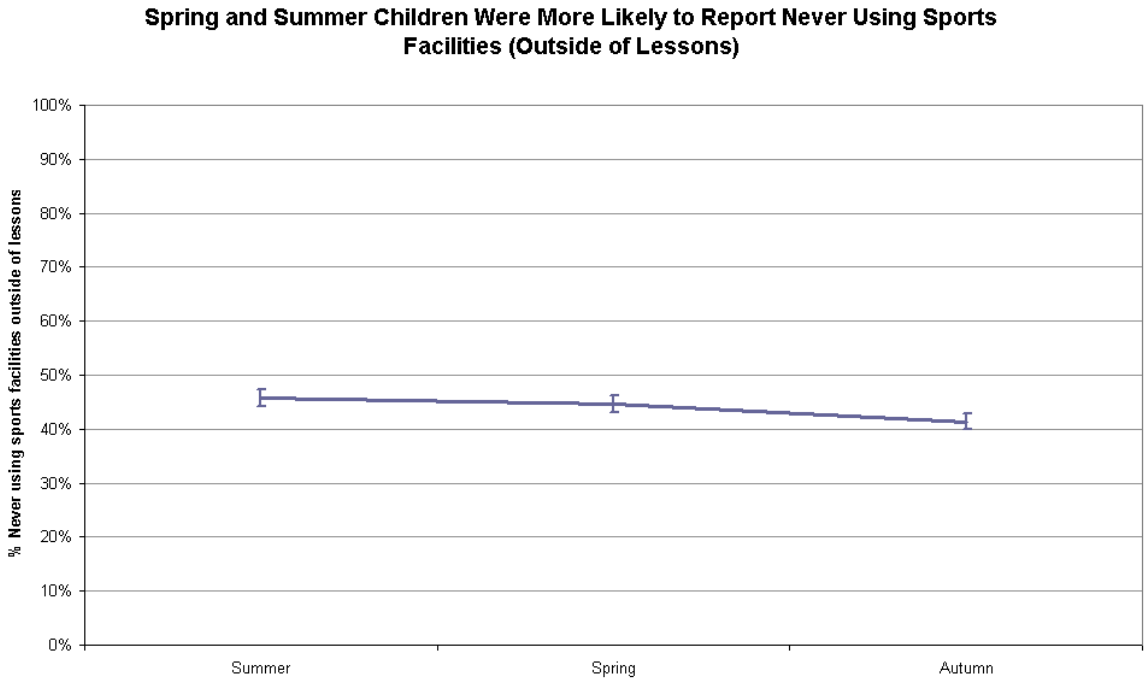
When asked about their use of sports facilities outside of school lessons, there was a small difference, with summer-born pupils less likely to report using facilities at least once a week than their older peers (Fig. 3.6b).

Fig. 3.6b



Similarly, spring-born and summer-born pupils were more likely to report never having used sports facilities outside of school lessons than autumn-born pupils (Fig. 3.6c).

Fig. 3.6c



This concludes part one of the evidence paper; complete summary findings for part one (Chapters 1-3) appear at section 8.3.1.

Part II: Policy and Month of Birth Effects

Chapter 4: Early Years Provision

4.1 Early Years Participation

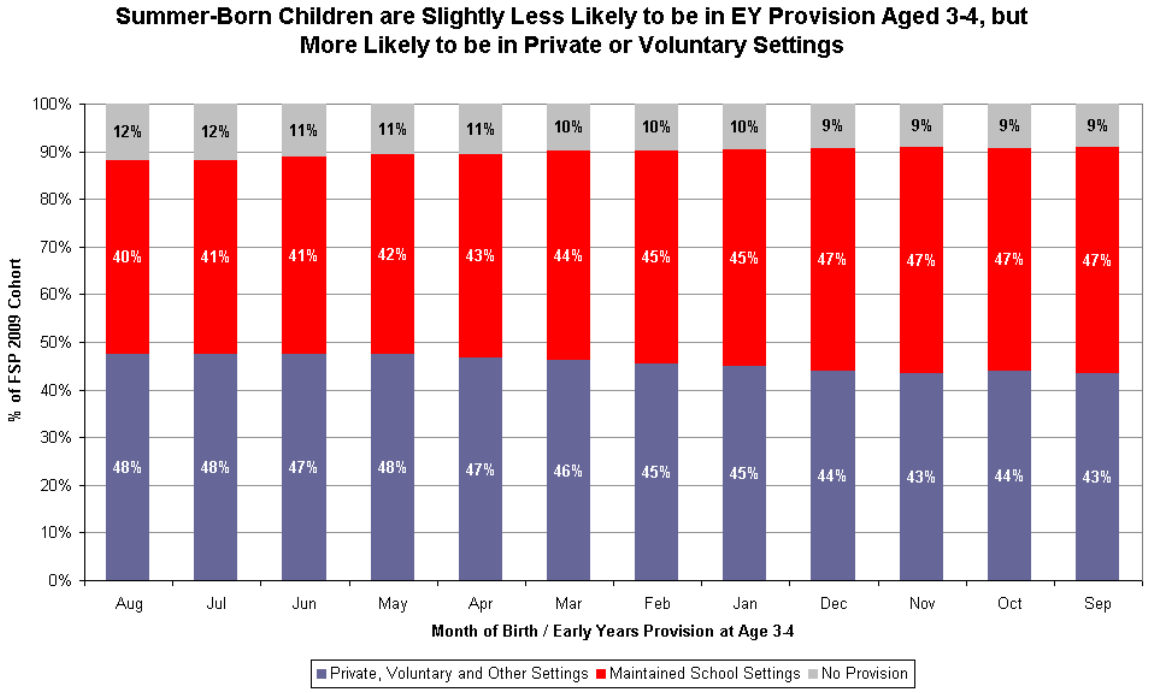
All children are eligible for a free part-time funded place from 1 September, 1 January or 1 April following their third birthday for up to two years before they reach statutory school age. Free places can be accessed in a variety of settings in the maintained and non-maintained sectors. Local Authorities (LAs) make funding available to providers to enable them to provide free places. A funded place consists of a minimum of 12.5 hours of early education per week for thirty-eight weeks of the year. From September 2010, the entitlement is planned to increase to 15 hours per week.

Analysis of the 2009 Early Years Foundation Stage cohort linked backwards to early years participation data from age 3-4[25] shows the provision patterns for those children who subsequently became the maintained schools cohort whose attainment was examined in section 1.1.1. By going back even further than the start of formal schooling to the beginnings of education outside the home and looking at pre-school provision alongside early attainment, we can see whether early participation choices might contribute to differences in attainment and the month of birth effect. The current age 3-4 participation pattern by month of birth can be seen in Figure 4.1a, which shows participation by provision ownership.

[25] Measured at the January of the school year in which the child turns 4 years old, when autumn-born children will be 4 and spring or summer-born children will still be 3.

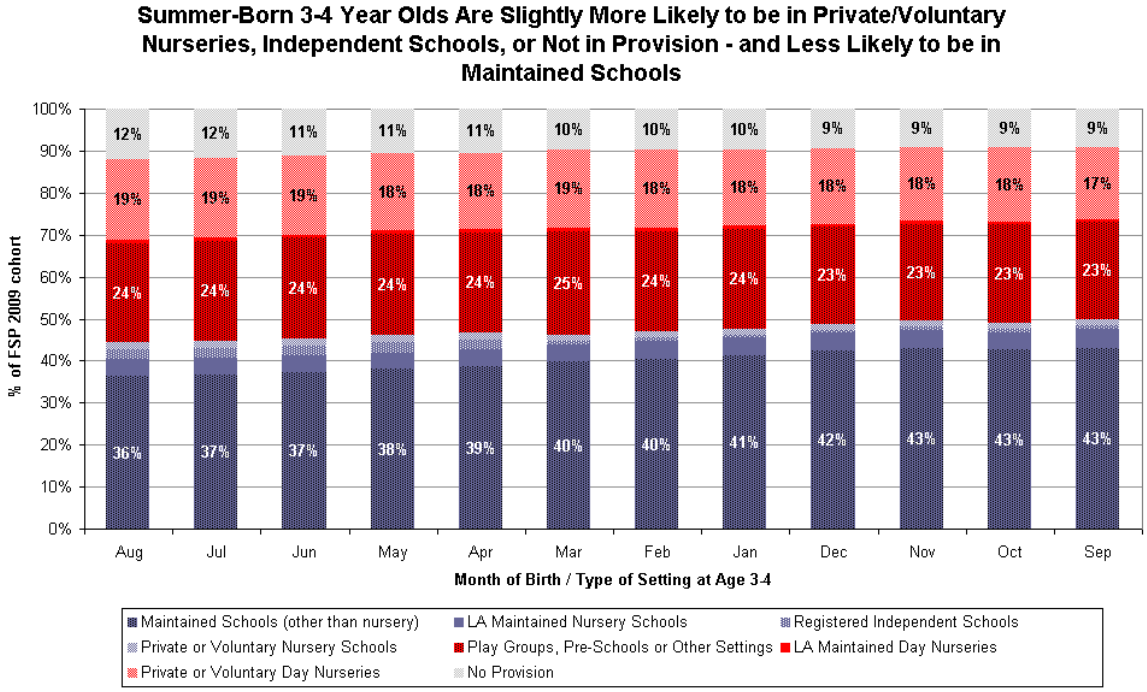
The 2009 Early Years Foundation Stage cohort varied in their age 3-4 participation and in the type of setting they were most likely to attend. Summer-born children were a little more likely to stay at home than their older peers, and were more likely to be in private or voluntary settings rather than maintained provision (Fig. 4.1a).

Fig. 4.1a



A more detailed breakdown of participation reveals that private/voluntary nurseries and independent schools were more commonly attended by the youngest children in the year. September-born children were the most likely to be in maintained school settings at this age (Fig. 4.1b). Overall, participation in school settings contributes to the gap in early years participation between August and September-born children, whereas participation in non-school settings reduces it.

Fig. 4.1b



4.2 Month of Birth, EY Provision and EYFSP

For children within each month of birth, those who had attended maintained early years provision at age 3-4 scored 5 points more on average than those who had stayed at home on the Early Years Foundation Stage Profile; those who attended private or voluntary provision scored 9 points more than those who stayed at home. The difference between maintained and private or voluntary provision was slightly larger for younger summer-born children than their older peers (Fig. 4.2a). At least some of the difference may be accounted for by levels of deprivation among the children attending provision of different ownership types. Maintained settings generally served a higher proportion of children living in deprived areas who would be expected to score lower on the Early Years Foundation Stage Profile than their non-deprived counterparts. Private and voluntary settings had intakes with lower rates of deprivation.

Fig. 4.2a

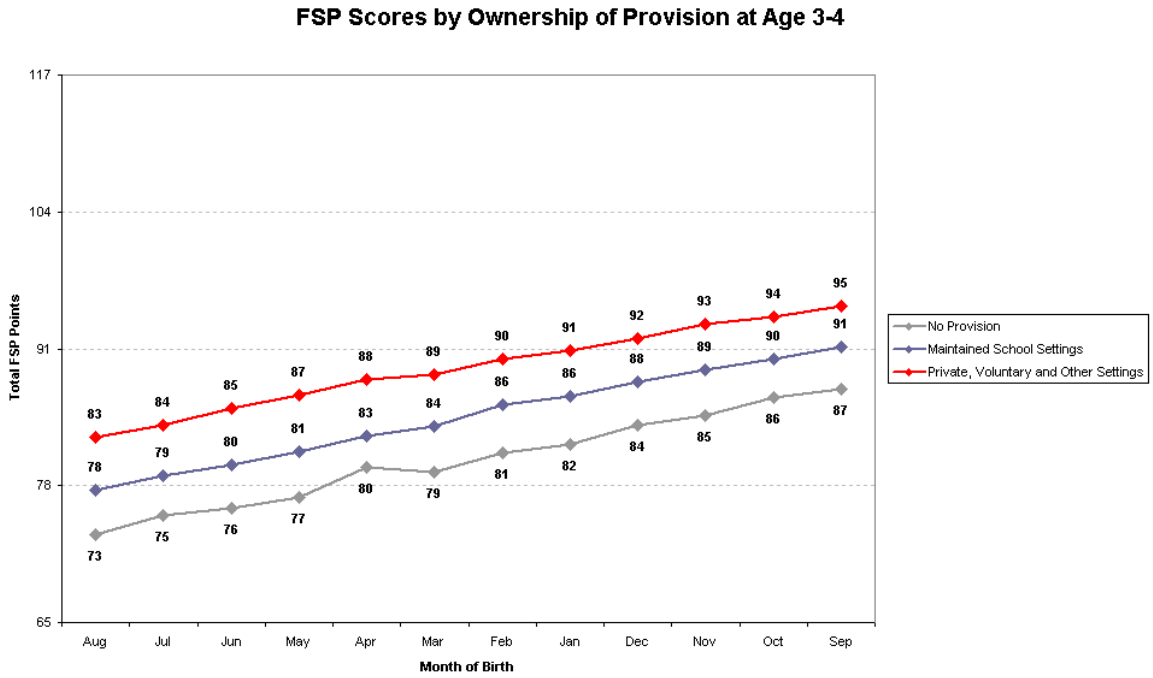
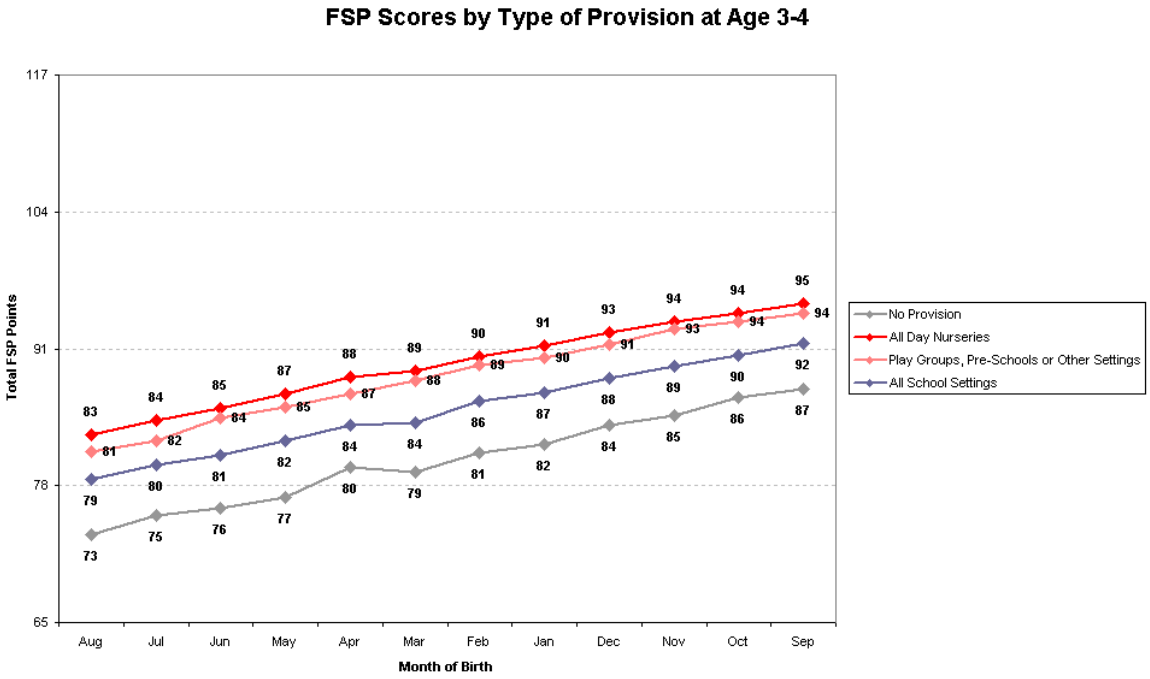


Figure 4.2b looks at the same institutions, but splits them into categories in a different way, focusing on the character rather than the ownership of provision. Children who attended nurseries, playgroups and pre-schools generally scored higher on the Early Years Foundation Stage Profile than those who attended school settings. Again this is extremely likely to be related to the deprivation profile of the intakes for each type of provision. The size of the benefits of attending either school or other types of provision did not differ substantially by month of birth.

Fig. 4.2b



Considering the above analyses of participation and Early Years Foundation Stage Profile scores, summer-born children are slightly less likely to be in provision at age 3-4 (dampening their average performance at EYFSP), but are more likely to attend types of provision associated with higher Early Years Foundation Stage scores if they do attend early years provision.

Chapter 5: Starting School

5.1 Starting School – Entry to Maintained Sector Reception Classes

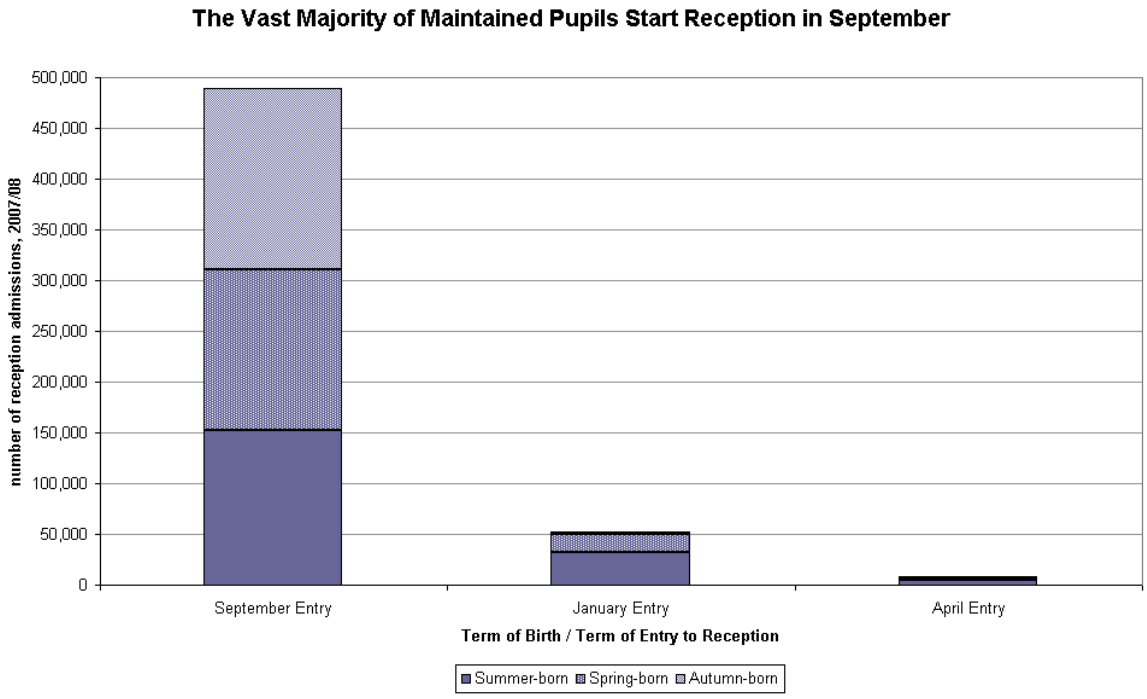
Currently, children reach compulsory school age at the start of the academic term immediately following their fifth birthday; although parents do not have to send their children to school until this point, policy on the encouraged entry point during the year varies by Local Authority. However, The School Admissions Code which came into force in February 2010 requires all admission authorities to provide for the admission of all children in the September following their fourth birthday in time for the school year starting in September 2011, in effect making provision from September universally available.

Analysis of 4-5 year old[26] admissions to reception classes for 2007/08[27] shows that 89% started in September, 10% in January, and 1% in April. A small number of children postpone starting school until year 1, which is permissible where their fifth birthday falls after the start of the summer term. Determining how many children postpone until year 1 is complex because some new admissions into year 1 may have transferred from reception classes in the independent sector or outside of England, rather than being new to school. Taking account of the independent sector and maintained schools, an estimated 1-3.5% of children postpone until year 1. These children may have attended nursery provision during their Reception year.

[26] Children aged 4 at the start of the academic year, - children reach compulsory school age at the start of the term after which they attain their 5th birthday – so these children are due to enter reception during 2008/09, or at the latest, for those with birth dates after the start of the summer term, to enter directly into year 1 at the start of Autumn term 2009/10.
[27] All maintained schools.

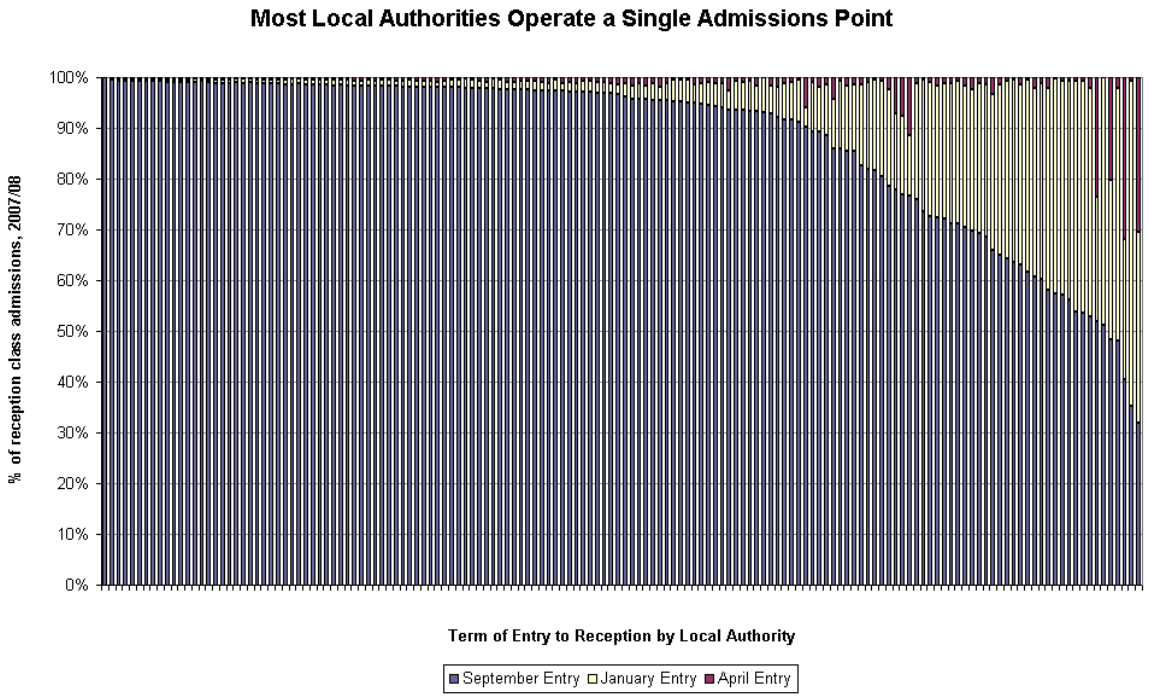
Figure 5.1a shows that the vast majority of maintained pupils start Reception class in the September of the school year in which they turn 5.

Fig. 5.1a



Bearing in mind that Local Authorities do not act as admissions authorities for Foundation and Voluntary Aided schools[28] within their boundaries, and that some parents choose to defer entry for their children against the general policy in their LA, most authorities have some degree of deferred entry, although this represents a small proportion of admissions for most LAs (Fig. 5.1b). A minority of LAs operate a second entry point in January, and only a handful of authorities have a substantial third entry point in the summer term.

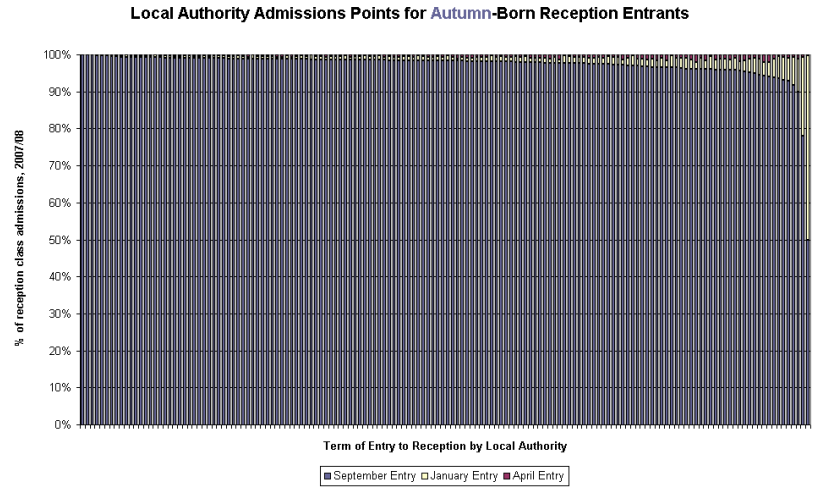
Fig. 5.1b

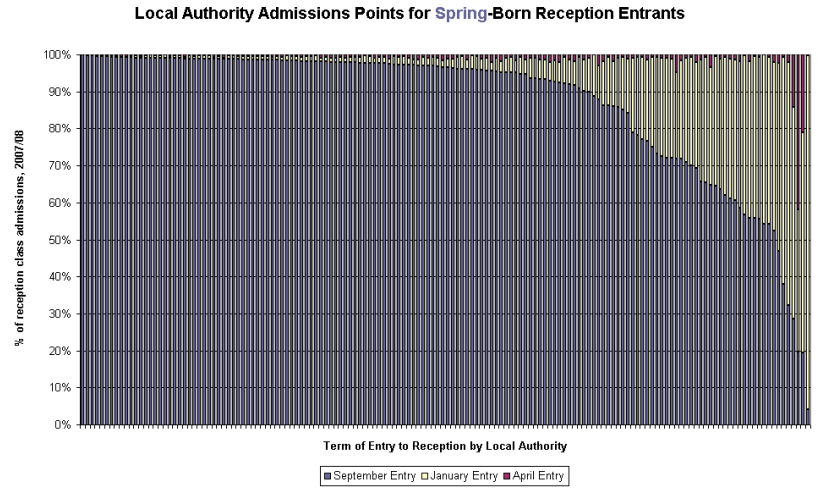


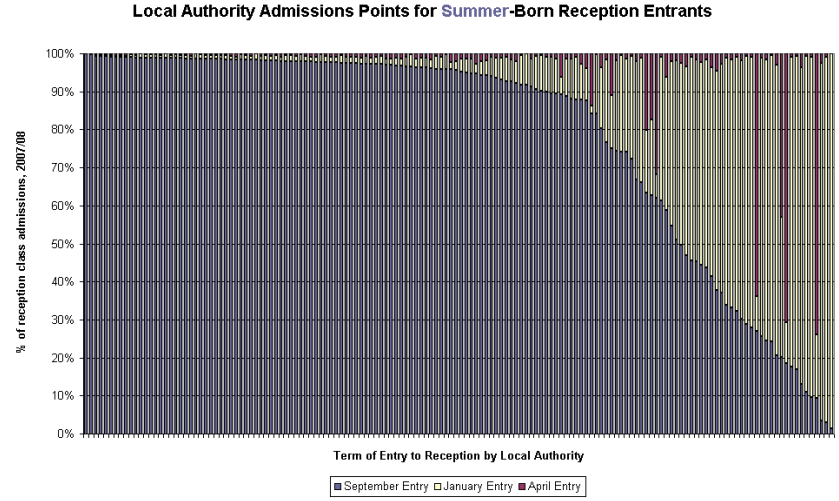
[28] Local Authorities act as the admissions authority for Community and Voluntary Controlled Schools; Foundation and Voluntary Aided Schools are their own admissions authority, but represent one quarter of primary schools.

Figure 5.1c shows how the Local Authority entry point distribution is strongly related to month of birth.

Fig. 5.1c

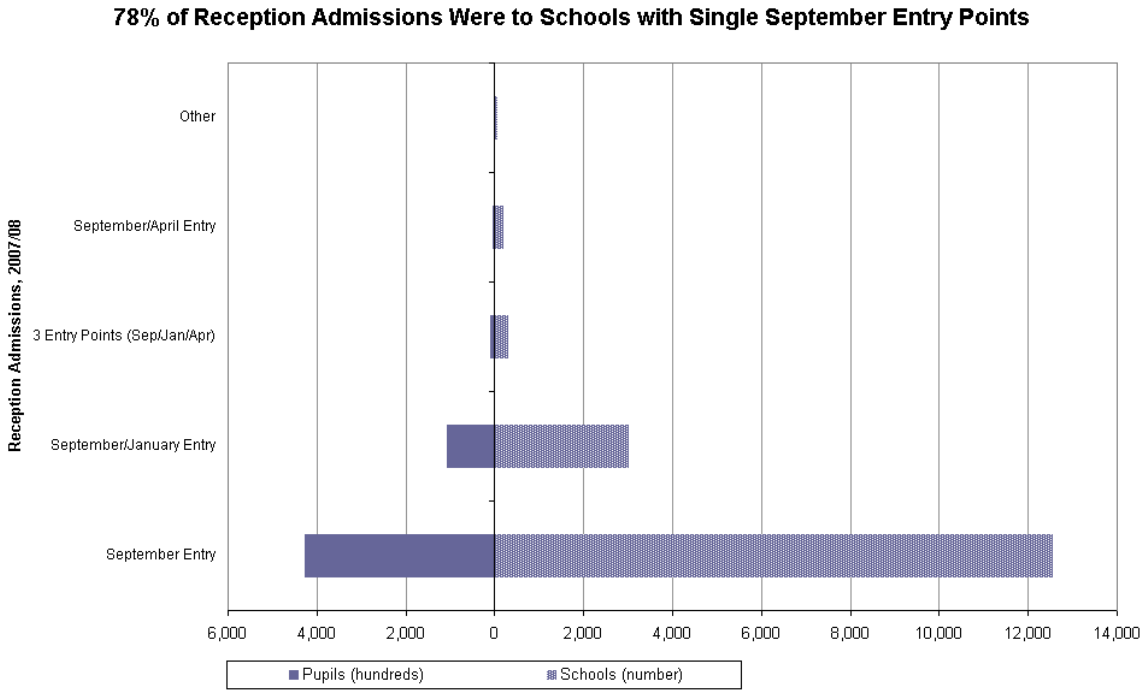






Analysis of entry systems at school level, assuming a planned entry point exists where more than 10% of admissions occurred during the term under consideration, confirms the dominance of the single September entry system at this level in addition to the LA level (Fig. 5.1d).

Fig. 5.1d



Findings from The Parents Omnibus Survey (2009) suggest a stronger preference for deferral than is apparent from the actual admissions analysis above. This may suggest some compliance with LA and school policies where parents would rather follow an alternative arrangement for starting school.

- 60% of parents felt that parents should have a choice on when their child started school (30% no, 10% unsure).
- 58% agreed that summer born children should start school in the September following their 4th birthday (25% no, 17% unsure).
- 55% said that they would choose for their child to start school in the September after their 4th birthday. 32% would prefer to wait until their child was 5 and 12% wanted another point between the two.

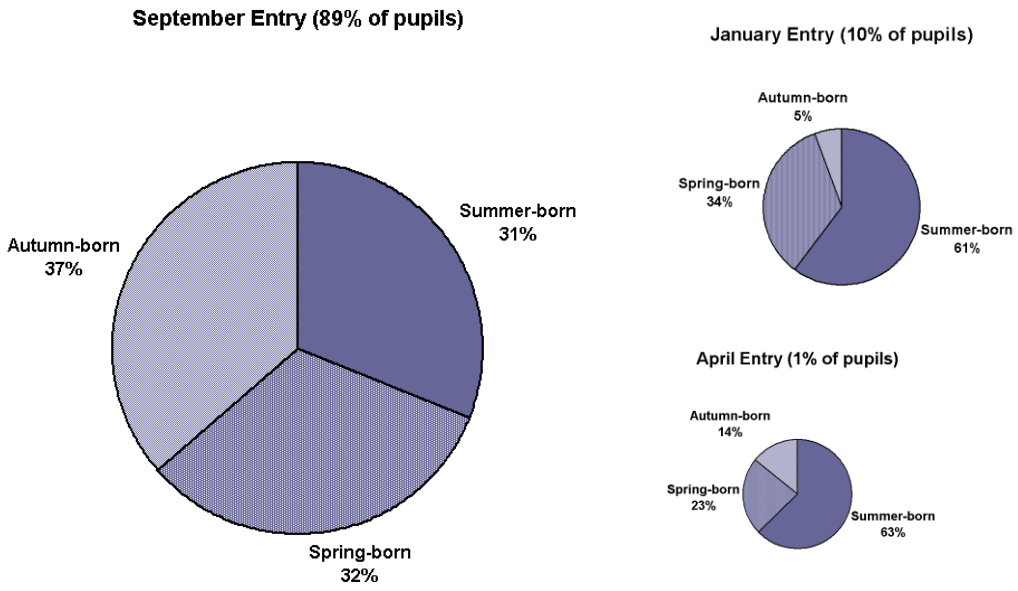
Of those who wanted to delay their child's start, 57% would take up the offer of full-time childcare instead (15% no, 16% unsure, 13% would prefer part-time).

5.2 Month of Birth, Starting School and the Early Years Foundation Stage Profile

Data for 2007/08 4-5 year old[26] admissions, linked to attainment records for the Early Years Foundation Stage Profile, were analysed to explore the

relationships between entry to reception, term of birth and subsequent early attainment. More than half of Reception class entrants during the spring and summer terms were born during the summer months (Fig. 5.2a).

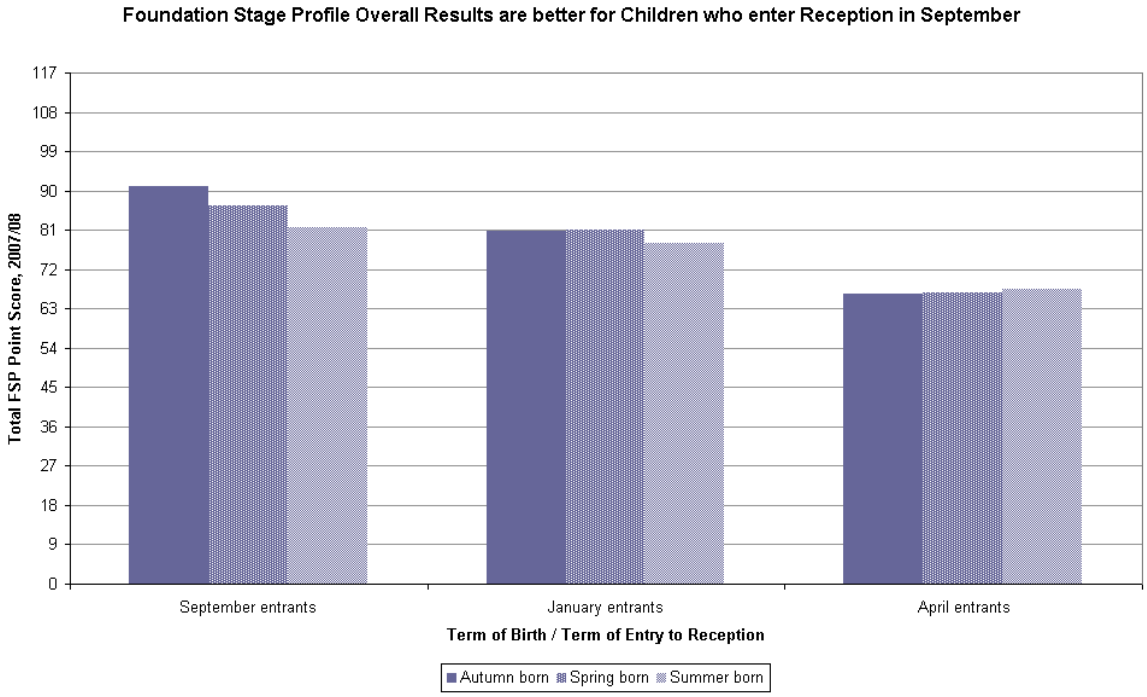
Fig. 5.2a: The Majority of Reception Admissions During Spring and Summer Terms are Summer-Born Children



A separate analysis (not depicted) of initial entry to maintained primary schools (including entrants to nursery classes attached to maintained primary schools) confirmed that older 4-5 year olds joining reception in January or April were more likely to have already attended a nursery class attached to a maintained primary school, having made the transition into the sector although they had not yet joined a Reception class, whereas a higher proportion of younger 4-5 year olds were joining straight from non-school settings or home.

Returning to Reception class admissions, pupils who joined in September performed better across the Early Years Foundation Stage Profile than those who deferred until January, and January entrants in turn did better than summer term entrants (Fig. 5.2b). This was the case regardless of term of birth, with summer-born September-entrants outperforming those who deferred until later during the year.

Fig. 5.2b

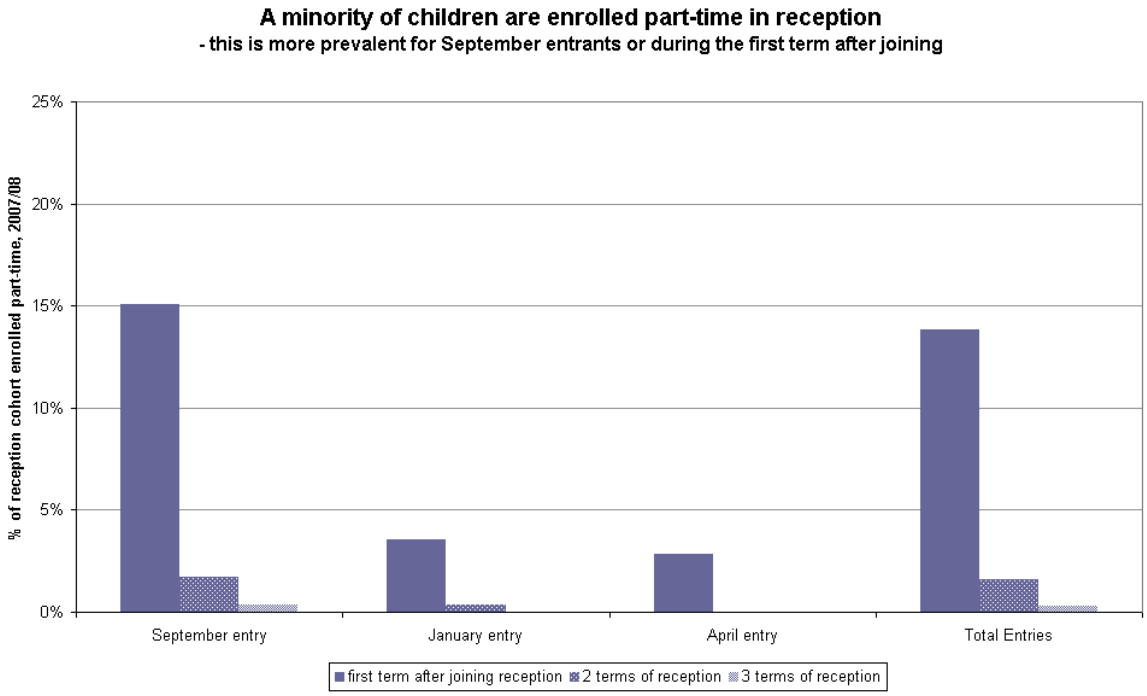


All nine areas of learning were found to show a point score association with term of entry to school, with the Communication, Language and Literacy scales having the strongest association. The term of birth effect was also present for January entrants for all nine areas of learning. The slight reversal of the effect for April entrants may reflect selection based on unmeasured underlying reasons for deferral in the case of those children who started in April despite being older in their cohort. As the deferrals captured in this analysis reflect a range of unmeasured characteristics of September vs. deferred entrants, it is necessary to consider an analysis which controls for individual background variables to identify how much variation in performance is associated with entry policy. See section 8.1 which reviews research evidence on this question.

5.3 Full vs. Part-Time Entry

Fewer than 15% of children are enrolled part-time when they start school;[29] this is most common for September entrants (Fig. 5.3a), and it is rare for children to remain part-time for more than one term although a small proportion continue on a part-time basis into their second term (2%), and a handful into a third (<0.5%).

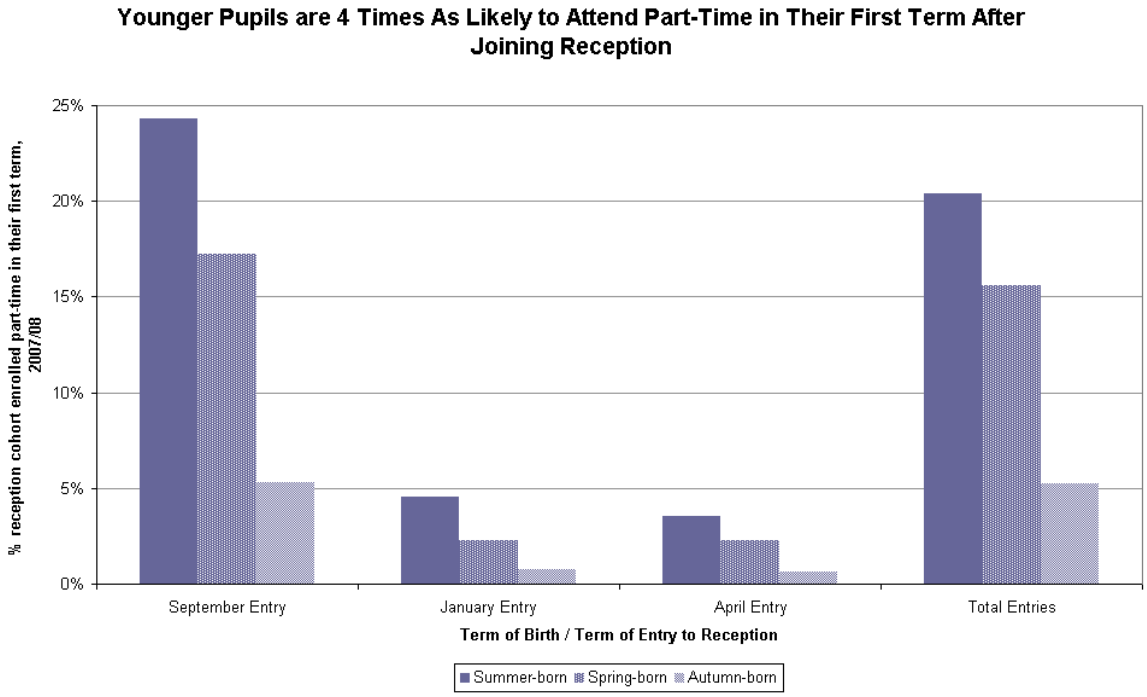
Fig.5.3a



[29] It is not possible to determine from the available data whether part-time attendance is for the whole first term, or just a few weeks at the beginning; the census dates for the autumn term are in the first week of October, so most pupils' first term part-time status was captured at this point.

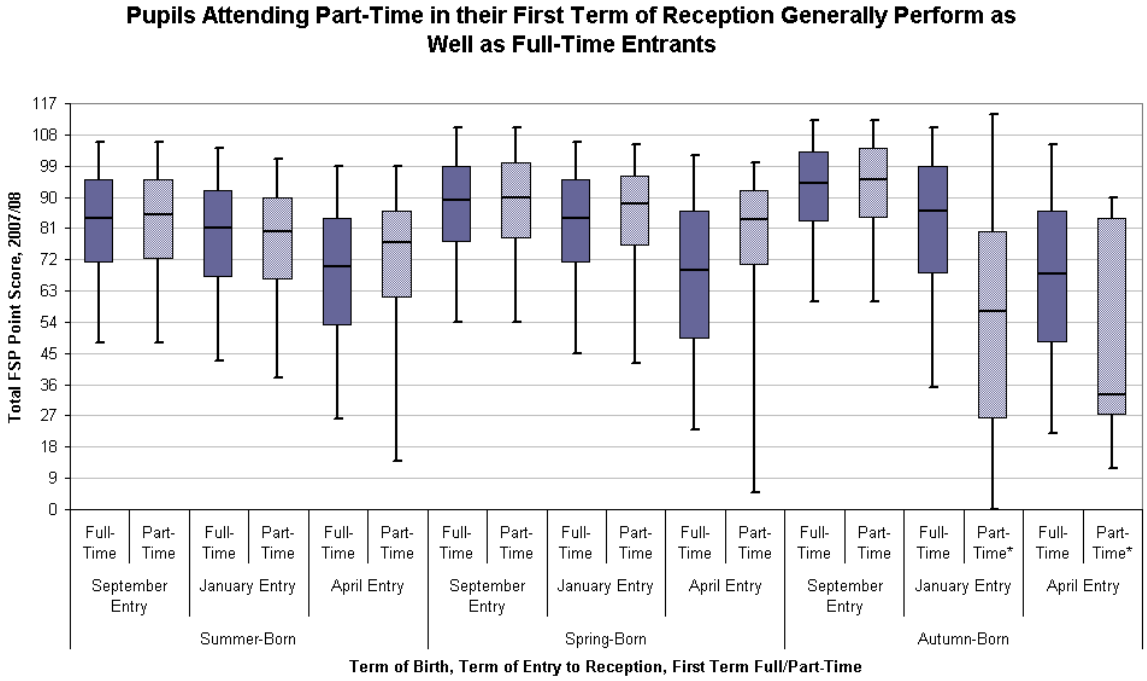
Examining the rate of part-time entry (for at least part of the *first* term after joining) by term of birth reveals that autumn-born children are only one quarter as likely to start part-time as summer-born children, and one third as likely as spring-born children (Fig. 5.3b). A difference is observed regardless of the term of entry to school, although part-time entry is much rarer among children who defer entry to January or April for all three terms of birth.

Fig. 5.3b



Analysis of the Early Years Foundation Stage Profile scores of children according to whether they started on a part-time or full-time basis shows no disadvantage for part-time entrants when term of birth and timing of entry are taken into account (Fig. 5.3c). The distribution of scores amongst children who defer starting school until April (or even January in the case of autumn-born children) is much wider than for those starting earlier in the year. This indicates a mixture of reasons for deferral – some cases are the "least-ready" children who struggle at the Early Years Foundation Stage assessments, whereas others may have been attending high-quality non-maintained provision before starting school.

Fig. 5.3c



Box edges mark the 25th and 75th percentiles; whiskers mark the 5th and 95th percentiles.

Autumn-Born Pupils Entering on a Part-Time basis in January and April (after compulsory school age) are very small groups with a disproportionate rate of special educational needs (around one third of these groups have SEN). Pupils starting part-time perform comparably on the Early Years Foundation Stage Profile with their full-time starting counterparts for all other birth/entry groups (Fig. 5.3c).

Chapter 6: Curriculum and Pedagogy in Reception and Year 1

6.1 Enabling Contexts of Development

A 2009 literature review of early years learning and development[30] identified the following factors among the "enabling contexts of development":

- Warm and contingent relationships with care-giving adults
- Personalised decision-making about when the time is right to begin literacy instruction (such as phonics) with the individual child
- Time and space for children to discuss their feelings
- A balance between self-initiated and guided learning
- Emphases on narratives, problem-solving and building vocabulary
- Play opportunities, and facilities for outdoor play

Earlier studies have emphasised themes of play, choice and independence as critical to children's early education. For example, Sharp (1998)[31] examined research evidence looking at the types of experience offered in early childhood settings, and concluded that "Young children (aged five and under) seem to do best when they have opportunities to socialise, make their own choices and take responsibility for their own learning. It appears possible for pre-schools to instil resilience and a 'can do' attitude, which serves children (especially those from disadvantaged backgrounds) well all their lives. Emphasis on spoken language and understanding of basic concepts, such as time and number, are recommended, as are access to books and to people who read to them, but not 'formal', academic teaching."

Similarly, the POST (2000) report[32] concludes that research within developmental psychology states that "children's main sensory, cognitive and linguistic growth is developed through play, exploration, talk and interaction with others and not systematic instruction." (Stephen, 2006)[33].

In England, two small-scale studies (Jowett and Sylva, 1986[34]; McInnes,

[30] Evangelou, M., Sylva, K., Kyriacou, M., Wild, M., Glenny, G. (2009) *Early Years Learning and Development Literature Review*. DCSF

[31] Sharp, C. (1998). Age of Starting School and the Early Years Curriculum. Paper prepared for the NFER's Annual Conference, One Great George Street Conference Centre, London, 6th October 1998.

[32] POST (Parliamentary Office of Science and Technology) (2000). *POST Report 140, Early Years Learning.* London: www.parliament.ukj/post/pn140.pdf

[33] Stephen, C. (2006). *Early Years Education: Perspectives from a Review of the International Literature.* Scottish Executive.

[34] Jowett, S. and Sylva, K. (1986). Does kind of pre-school matter? *Educational Research,* 28, 1, 21-31.

2002[35]) have looked at the effects of different types of pre-school on children. They compared nursery and playgroup (Jowett and Sylva, 1986) and nursery and reception classes (McInnes, 2002) and concluded that across these settings, "child-initiated activities may be important in contributing to children's greater task-involvement, independence and persistence." (Sharp, 2002)[36].

Schweinhart and Weikart (1997[37], 1998[38]) in the USA, examined the effect of three different pre-school programmes on the long-term outcomes for children. The three schemes included: High/Scope, which was initially developed by Weikart and colleagues over 40 years ago, and encourages children to follow a plan-do-review strategy; Direct Instruction, consisting of teacher-led academic lessons; and nursery school, where teachers used themes and children had free choice of activities relating to those themes. Schweinhart and Weikart (1997, 1998) looked at the long-term effects by comparing children from similar backgrounds that attended the three pre-school programmes, at the age of 23. They found that those who attended the High/Scope and nursery settings were doing better on a range of 'real-life' measures, including emotional problems, rate of arrest, and suspension from work (Schweinhart and Weikart, 1998). In addition, Schweinhart and Weikart (1997) found that those who attended the High/Scope programme had completed more years of education, had higher earnings, and were more likely to own their home. They concluded that the emphasis on child-initiated activities in the High/Scope and nursery programmes helped to develop children's sense of social responsibility and interpersonal skills, which had a positive impact in later life.

6.2 Delivering the Early Years Foundation Stage Curriculum

Aubrey et al. (2002)[39] surveyed primary school head teachers and reception class teachers to quantify barriers to successful implementation of the Early Years Foundation Stage in reception classes. Amongst the issues identified were mixed age classes (covering Foundation Stage and KS1 curricula in the same classroom), and a perceived training gap specifically for Foundation Stage / Early Years practice. Nineteen percent of head teachers and 14% of reception class teachers surveyed had not been trained in the Early Years

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[35] McInnes, K. (2002). What are the educational experiences of 4-year-olds? A comparative study of 4-year-olds in nursery and reception settings. *Early Years,* 22, 2, 119-127.

[36] Sharp, C. (2002). *School starting age: European Policy and Recent Research.* Paper presented at LGA Seminar: When should our children start school? London, 1st November 2002.

[37] Schweinhart, L. J. and Weikart, D. P. (1997). *Lasting differences: The High/Scope Preschool Curriculum Comparison Study through age 23.* Monographs of the High/Scope Educational Research Foundation. Ypsilanti, MI: High/Scope Press.

[38] Schweinhart, L. J. and Weikart, D. P. (1998). Why curriculum matters in early childhood education. *Educational Leadership,* **55**, 6, 57-60.

[39] Aubrey, C., Quick, S., Lambley, C., Newcombe, E. (2002) *Implementing the Foundation Stage in Reception Classes*. DCSF

Foundation Stage (rather than primary teaching generally or teaching children aged 7+). Head Teachers identified the contribution of Early Years Foundation Stage trained specialists to planning delivery of the curriculum as key to successful implementation.

Phillips et al. (2009)[40] found variations in staffing ratios, qualification types and levels, and staff salaries in their 2008 survey of early years providers. Maintained primary schools with reception and nursery classes reported an average of 9.8 Ofsted registered early years places per member of paid staff, compared with 7.3 in maintained primary schools with reception but no nursery classes, and 5.7 in maintained nursery schools. Staff ratios ranging from 3.5 places per member of paid staff to 4.9 were reported for full and sessional day care providers, with fractionally higher ratios for maintained settings than private, voluntary or independent settings.

It is clear that the staffing ratios are not directly comparable between provision types as they are strongly influenced by regulated minimum staffing levels for different ages of children. However, this distinction forms part of the transition that children make when they progress into maintained nursery and/or reception classes, and is likely to have an impact on the feasibility of providing an enabling environment for the Early Years Foundation Stage curriculum.

The proportion of staff qualified as either nursery nurses or early years teachers also varies by provider type[40], with maintained nursery schools reporting 62% of their staff belonging to these categories (42% nursery nurses, 20% early years teachers). Maintained primary schools with nursery and reception classes reported 46% of their early years staff belonging to these groups (25% nursery nurses, 21% early years teachers), and for maintained primary schools with reception but no nursery classes, 29% of their early years staff (12% nursery nurses, 17% early years teachers), with the shortfall made up mainly of early years support staff and volunteers, but also a higher proportion of staff being head teachers / early years coordinators.

Maintained nursery schools also paid the highest salaries (in the maintained schools early years sector) to qualified early years teachers, nursery nurses and head teachers / early years coordinators, averaging 15-30% higher annually than the same groups in maintained primary schools with reception but no nursery classes.

[40] Phillips, R., Norden, O., McGinigal, S., Cooper, J. (2009) *Childcare and Early Years Providers Survey 2008*. DCSF

6.3 Tensions and Transition

Sharp and White (2005)[41] presented research looking at the transition that takes place between Early Years Foundation Stage and Year 1 for children in England. They summarised the changes that children experienced as follows:

Early Years Foundation Stage (Ages 3-5)	**Key Stage 1 (Ages 5-7)**
Play based	Work based
Active	Static
Led by adult/child	Directed by adults
Thematic	Subject-based
Emphasis on a range of skills	Emphasis on listening and writing

They also stated that most children coped well with the move from Early Years Foundation Stage to Year 1, and that school transition strategies were important in this.

Sanders et al. (2005)[42] identified some issues for the transition to Key Stage 1, based on the same underlying research, although the prevalence of these issues was not quantified due to the research methodology used. Issues identified by practitioners included some difficulties in getting children to sit still and listen for a full hour in order to deliver literacy hours in year 1, and less available support from teaching assistants. Case study interviews with children revealed that some regretted the reduction in learning through play in year 1.

Ofsted (2003)[43] also reported on the transition from Early Years Foundation Stage to Key Stage 1, in their examination of the education of six year olds in England, Denmark and Finland. The report highlighted that this transition can be seen as "an abrupt shift in terms of the structure and content of the curriculum." (Ofsted, 2003). Furthermore, some teachers and head teachers felt that the Early Years Foundation Stage curriculum and the National Curriculum for Key Stage 1 were not entirely compatible and there was concern about the coherence and continuity between the two curricula (Ofsted 2003; Sammons et al., 2004[44]; Sylva et al, 2004[45]; TNS, 2002[46]). Teachers of mixed-age classes

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[41] Sharp, C. and White, G. (2005). How children make sense of the transition to Year 1. Paper presented at the 2005 EECERA Annual Conference, Dublin, 31st Aug – 3rd Sept 2005.

[42] Sanders, D., White, G., Burge, B., Sharp, C., Eames, A., McEune, R., Grayson, H. (2005) *A Study of the Transition from the Foundation Stage to Key Stage 1.* DfES.

[43] Ofsted (2003). *The education of six year olds in England, Denmark and Finland: An international comparative study.* HMI 1660. London: Ofsted.

[44] Sammons, P., Elliot, K., Sylva, K., Melhuish, E., Siraj-Blatchford, I. and Taggart, B. (2004). The impact of pre-school on young children's cognitive attainments at entry to reception. *British Educational Research Journal,* 30, 5, 691-712.

[45] Sylva, K., Melhuish, E., Sammons, P., Siraj-Blatchford, I. and Taggart, B. (2004). *The Effective Provision of Pre-school Education (EPPE) Project: findings from pre-school to end of Key Stage 1.* DfES.

also stated that there were “difficulties reconciling” the two within a “single, coherent programme for the whole class”, and that they were caught in the middle of play-based learning and curriculum focused learning (Ofsted, 2003).

Other research has also highlighted the tension experienced by reception class teachers who encompass the play-based learning emphasis of the Early Years Foundation Stage, whilst also facing pressures from teachers in Key Stage 1, head teachers and governors to prioritise academic skills such as reading, writing and numeracy, in order to maximise attainment statistics (e.g. Adams et al., 2004[47]; Keating et al., 2002[48]).

6.4 Introducing Formal Literacy and Numeracy Skills

Elkind and Whitehurst (2001)[49] provide opposing views on the teaching of reading skills in pre-school, from the age of about four. On the one hand, Whitehurst argues *for* teaching reading skills to four year olds, citing his own research on 600 low-income children. He found that children’s ability to demonstrate simple skills such as writing their own name, identifying letters and rhyming by the end of pre-school was a good predictor for reading ability at age six, the end of first grade. On the other hand, Elkind argues *against* teaching literacy to four year olds, stating that it is developmentally inappropriate, and that “math and reading are complex skills acquired in stages related to age” (Elkind and Whitehurst, p14). Elkind uses evidence from two studies examining different pre-school programmes to argue his point of view: these studies found that children who are introduced to formal learning at the age of four or five do not benefit from a long-lasting advantage. In addition, earlier exposure to formal learning suggested higher anxiety levels, lower-self esteem and less motivation to learn.

Other research has also identified an association between formal teaching and higher anxiety and lower self-esteem in children (e.g. Sylva and Nabuco, 1996[50]). In addition, Riggall and Sharp (2008)[51] state that “It has been suggested that starting school at such a young age [4] may be stressful for

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[46] TNS (2002). *Implementing the Foundation Stage in Reception Class.* DfES RB350.

[47] Adams, S., Alexander, E., Drummond, M. J. and Moyles, J. (2004). *Inside the Foundation Stage: Recreating the Reception Year. Final Report.* London: Association of Teachers and Lecturers.

[48] Keating, I. et al (2002). Reception Teacher Responses to the Foundation Stage. *International Journal of Early Years Education,* 10 (3), 193-203.

[49] Elkind, D. and Whitehurst, G. J. (2002). Young Einsteins. Much too early: much too late. *Education Matters,* **1**, 2, 8-21.

[50] Sylva, K. and Nabuco, M. (1996). Research on Quality in the Curriculum. *International Journal of Early Childhood,* 28, 2, 1-6.

[51] Riggall, A. and Sharp, C. (2008). *The Structure of Primary Education: England and other Countries.* Primary Review Research Survey 9/1. University of Cambridge.

children (see Sharp 1988[52]; Clark, 1989[53]; Woodhead, 1989[54]; Sharp and Hutchison, 1997[55])."

Evangelou at al. (2009)[56] review the debate on when best to start phonics instruction and how small-scale experimental findings play out when implemented in the national system, and conclude that variation in the Home Learning Environment, as well as the ages of children when they join Reception point to personalisation as the only sound policy on phonics readiness. They argue that oral language skills such as vocabulary and letter knowledge are a necessary pre-requisite of phonic skills, and that practitioners must ensure that this earlier skill stage is in place before introducing phonics. Using evidence given to the Select Committee on Children, Schools and Families in 2009, Evangelou et al. suggest that in practice, "phonics are being 'instructed' to almost all children in the Reception, with few practitioners using their 'professional judgement' to withhold phonics from children not yet ready."

Turning to numeracy, Evangelou advocates better links between informal early maths and formal "school" maths. Diaz (2008)[57] found a need for staff development to encourage recognising and responding to maths in play situations; also cited is Gilmore et al.'s (2007)[58] finding that the use of mathematical problem-solving across a range of activities is more effective than the early introduction of symbolic representation of number to the curriculum.

6.5 Discussion

The research literature reviewed above highlights a dilemma between play-based learning and formal instruction which stems from the co-location of reception classes following the Early Years Foundation Stage curriculum and Key Stage 1-2 Primary school classes within the same institutions. The curriculum guidance for the Early Years Foundation Stage emphasises play-based learning, which is backed by clear evidence from the research literature about the effectiveness and age-appropriateness of this type of pedagogy.

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[52] Sharp, C. (1988). Starting school at four. *Research Papers in Education,* 3(1), 64-90.

[53] Clark, M. M. (1989). Continuity, discontinuity and conflict in the education of under fives. *Education 3-13,* 17(2), 44-48.

[54] Woodhead, M. (1989). "School starts at five…or four years old?": the rationale for changing admission policies in England and Wales. *Journal of Education Policy,* **4**, 1, 1-21.

[55] Sharp, C. and Hutchison, D. (1997). *How do season of birth and length of schooling affect children's attainment at Key Stage 1? A Question Revisited.* Slough: NFER.

[56] Evangelou, M., Sylva, K., Kyriacou, M., Wild, M., Glenny, G. (2009) *Early Years Learning and Development Literature Review*. DCSF

[57] Diaz, R. M. (2008). The role of language in early childhood mathematics. *Dissertation Abstracts International Section A: Humanities and Social Sciences*, 69(6-A), 21-33.

[58] Gilmore, C.K., McCarthy, S.E., & Spelke, E.S. (2007). Symbolic arithmetic knowledge without instruction. *Nature,* 447(7144), 589-591.

Closely allied to the focus on play-based learning are concerns with choice, independence and child-initiated activities.

Other strands in the research literature have identified constraints to the delivery of an “ideal” curriculum for four year olds. Staffing ratios and qualification profiles differ between primary school reception classes and nursery schools or non-maintained provision, and there is inherent variation in children’s readiness for the introduction of formal instruction, whatever the starting age and provision setting.

The best age to introduce formal instruction is debated in the literature without producing any clear conclusion backed by the weight of evidence. While some studies show academic advantages to early instruction, others emphasise catching-up by later starters as schooling progresses, and/or suggest that starting school early may be a stressful experience for children. There is no convincing evidence to show that starting early is either beneficial or detrimental to academic attainment in a systematic way.

Although the dominant mode of provision for 4-5 year olds (of Reception classes located in maintained primary schools) serves to heighten the incentives to skew the curriculum towards preparing for Key Stage 1 requirements, the underlying issue of children reaching readiness for formal reading and maths lessons at different ages means that there can be no structural solution to the tensions.

Holding back children who are ready to begin the next stage of learning would not eliminate the differences in development due to the role of the Home Learning Environment in generating relative (dis/)advantages. A recent review of the research on development has recommended a strategy of personalised development focused on individual readiness, and bridging the gap between formal and informal learning through strategies such as responsive guided play and varied problem-solving activities.

Chapter 7: SEN Policy and Month of Birth

Section 3.4 presented analysis demonstrating that children with summer birthdays are more frequently identified as having a special educational need (SEN). The relationship is very strong at KS2. It is less strong at KS4 but still noticeable. At both Key Stages, seasonal variation is most marked for children at School Action, then School Action Plus. There is minimal seasonal variation amongst children with statements. In relation to the need types (at School Action Plus and for statements) the following categories are particularly over-represented with summer born pupils: moderate learning difficulties; specific learning difficulties; speech, language & communication needs; and 'other'.

These findings are backed by other research. In a rapid review of evidence looking at the influence of relative age on learner attainment and development, Sharp et al (2009)[59] identified seven studies that specifically addressed SEN identification. All seven found evidence of statistically significant relative age effects, with the youngest children in the year group more frequently identified as having SEN.

7.1 Explanations for the SEN / Month of Birth Effect

A number of explanations for the seasonal variation in SEN have been identified. One theory is based on 'pre-natal effects', which suggests that children born in the summer are affected by seasonal conditions and illnesses that are more prevalent in the winter months, when they are in the early stages of pre-natal development. And that this is more likely to result in brain damage or developmental delay. However, Gledhill et al (2000)[60] cite research from Sweden, where autumn born children are the youngest in the year and perform the worst, as evidence to discredit this. Sharp et al (2009)[59] also state that the pre-natal hypothesis is not supported by evidence, although there are some psychology oriented studies that suggest it could be investigated further (e.g. Polizzi et al, 2007).[61]

Other explanations for higher prevalence of SEN in summer born children include:

- *Length of schooling* – summer born children may start infant school a term or two later than their peers (Gledhill et al, 2000)[60].
- *Relative immaturity of younger children when starting school* – if younger

[59] Sharp, C., George, N., Sargent, C., O'Donnell, S., Heron, M. (2009). *International thematic probe: attainment and development.* NfER

[60] Gledhill, J. Ford, T. And Goodman, R. (2002). 'Does season of birth matter? The relationship between age within the school year (season of birth) and educational difficulties among a representative general population sample of children and adolescents (age 5-15) in Great Britain', *Research in Education,* **68,** 41-47

[61] Polizzi, N., Martin, R.P. and Dombrowski, S.C. (2007) 'Season of birth of students receiving special education services under a diagnosis of emotional and behavioural disorder', *School Psychology Quarterly,* **22**, 1, 44-57

children are not developmentally ready, they may struggle to fully access the curriculum. Early failure and stress experienced as a result of this may lower self-esteem and expectations, causing the pupil to struggle further (Gledhill et al, 2000)[60] (Wilson 2000)[62]. This is also supported by theories from the psychopathology literature that discusses a 'maturity hypothesis', based on neurological maturation (Martin et al, 2007)[63].

- *Expectations of teachers* – namely that teachers do not make allowances for relative age in making assessments of educational needs (Gledhill et al, 2000)[60] (Wilson, 2000)[62].

Sharp et al (2009)[59] conclude that the evidence points most strongly to the third of the reasons listed above – essentially that seasonal variation in SEN is most likely to be due to mis-identification amongst the relatively younger pupils by teachers and other professionals. For instance, in their analysis of a representative sample of children and young people aged five to fifteen, Gledhill et al (2000)[60] found that summer born children were significantly more likely to be described by teachers as having officially recognised learning difficulties. This was despite research finding no seasonal difference on objective intelligence measures – such as IQ. The authors conclude that teachers do not make adequate allowances for the range in ages when making assessments. Linking this to the second explanation above, they state that if summer born children are given a curriculum that does not allow for their relative immaturity, they may be more disruptive in class and this in turn may influence teachers' assessment of educational needs.

Moreover, Gledhill et al state that mislabelling as SEN at an early age may increase the risk of summer born children developing secondary problems, such as a failure to fulfil their academic potential, lower-self esteem or emotional and behavioural problems. This hypothesis may help explain the continuing link between SEN and month of birth into secondary school, when one might expect the age effect to diminish with absolute age.

Wilson (2000)[62] describe a study by Peagam (1992)[64] in the US looking at teachers' perceptions of pupils' ability and maturity that appears to support Gledhill et al's findings. Findings from Peagam's work suggested that teachers make a strong connection between emotional / behavioural difficulties and 'immaturity', with the relatively younger children more likely to be considered less able and immature. Overall, this study supports the conclusion that teachers perceive younger pupils in general as less able and do not take age

[62] Wilson, G. (2000). 'The effects of season of birth, sex and cognitive abilities on the assessment of special educational needs', *Educational Psychology,* **20**, 2 153-166

[63] Martin, R.P., Foels, P., Clanton, G. and Moon, K. (2004). 'Season of birth is related to child retention rates, achievement and rate of diagnosis of specific LD', *Journal of Learning Disabilities,* **37,** 4, 307-317

[64] Peagam, E. (1992) 'From May to December: the birth month factor in referrals for special education for children with emotional and behavioural difficulties, *Therapeutic Care and Education,* **1**, 101-111

into account when assessing maturity.

The increased likelihood of summer born children being identified as SEN therefore appears to be inextricably linked to the general trend of their lower performance and attainment compared to their older peers. In their study of standardised achievement levels and rates of specific learning disability (SLD) diagnosis in the state of Georgia, US, Martin et al (2007)[63] find that children born in June to October were more likely to have to repeat school years, achieve poorly and be diagnosed as having a SLD. They conclude that it is at least a distinct possibility that similar processes are affecting all three outcomes.

7.2 Recommendations

Some policy recommendations identified in the literature for mitigating relative age effect are summarised below. There is considerable cross-over between policy proposals to tackle SEN misidentification and under attainment generally for summer-born children. The first sub-section specifically relates to processes for identifying SEN. The subsequent sub-sections are recommendations that have been raised in relation to identification of SEN or attainment (or both).

7.2.1 Systems for SEN identification and referral

Sharp et al (2009)[59] provide the following recommendations for improving systems related to SEN and mental health identification to take account of relative age effects.

- Monitor referral rates for relative age effects.
- Review the identification process to ensure that a normal rate of development among younger children is not mistakenly identified as indicating a learning difficulty or psychiatric condition, including encouraging teachers to exercise caution when referring young children for special education;
- Pre-referral intervention strategies.
- Use standardised assessments for identifying SEN rather than relying on referrals from teachers.

However, they do not discuss any in great detail, and also state that there is no evidence to date on their potential effectiveness.

7.2.2 Increasing teacher awareness and practice

A number of researchers have recommended increasing awareness amongst teachers of the potential influence of age effects (Sharp et al, 2009)[59] (Crawford et al, 2007)[65]. If teachers are aware of the issues, they may take them in to greater account in assessing educational needs. In addition, teachers could be supported in adopting a developmentally appropriate pedagogy for younger children, especially in the early stages of education. For instance, younger children could be encouraged to have leadership opportunities and to value

[65] Crawford, C., Dearden, L. and Meghir, C. (2007). *When You Are Born Matters: the Impact of Date of Birth on Child Cognitive Outcomes in England.* London: The Institute for Fiscal Studies

their own achievements rather than to compare their own progress with that of older classmates (Sharp et al, 2009)[59]. This should help with the some of the issues around self-esteem and perceived failure potentially contributing to SEN identification as discussed above.

For the suggestions above to work, teachers will need to be aware of which children in the class are the youngest. Fairly straightforward techniques suggested for achieving this include: taking the register in birth order; and grouping within class by season of birth (Polizzi et al, 2007)[61] (Gledhill et al, 2000)[60].

In their review of evidence, Sharp et al (2009)[59] suggest that these suggestions around raising teacher awareness are widely recommended but that there is no actual evidence of effectiveness for either that or grouping by age within classes.

7.2.3 Curriculum

Sharp et al (2009)[59] recommend that the curriculum should be appropriate for relatively younger children, especially in the early years of primary school. This could include personalisation and differentiation to enable younger children to access the curriculum. As with the points related to pedagogy above, this will help ensure that relative age is built in to assessments of educational need and reduce potential sources of failure or stress for relatively younger children. See Chapter 6 for detailed evidence on curriculum and pedagogy in relation to general attainment.

7.3 Discussion

The greater identification of SEN amongst summer-born children than autumn-born children means that *within pupils identified with SEN*, those born in the autumn are more vulnerable to lower progress because they constitute a subset with more extreme needs. (This follows from the findings that assessment is responsible for the difference in identification, rather than any real underlying difference in the incidence of SEN). There must be either over-identification of summer-born children, or under-identification of autumn-born children as having SEN, or some combination of the two, resulting in this difference in rates of identification.

This leads to questions about what is the "right" level of SEN, as an identification of children who require additional learning support, and how would we tell whether the level was right given a particular context or a change in the rate of identification? It's also ambiguous whether a potential mis-identification of summer-born children is a good thing or a bad thing for their prospects – this could be viewed as a benefit - receiving support to help catch up with older children, or a disadvantage - suffering from labelling that might lead to low self-esteem and ultimately compound the disadvantage. The current research literature does not directly address these issues, although Gledhill's suggestion of secondary problems associated with over-identification appears inconsistent with a positive "support" effect. However, from the analysis in Part 1 of this

paper, it remains possible that month of birth effects on attainment could be even larger if some of the younger children were not receiving additional support via SEN status.

Chapter 8: Research Evidence, Policy Themes & Conclusions

8.1 Explanations for the Month of Birth Effect

Crawford, Dearden & Meghir (2007)[65] investigated the question of which factors drive the observed attainment disadvantage for summer-born children, considering variation in absolute age, age of starting school, length of schooling, and age position within the year group as possible factors. Their analysis provides strong evidence that the main reason for month of birth gaps "in the Key Stage tests is simply that they are almost a year younger when they sit them". There were additional very small effects (lasting as far as Key Stage 2 for girls [but not boys], but disappearing by Key Stage 4) which could be attributed to age of starting school or length of schooling, but these were dwarfed by the effect of absolute age of children when they sat the tests. This finding is complimented by Sharp et al.'s 2009 review of the literature[59], which concluded that age at testing appears to be a likely explanation of relative age effects, with mixed or weak evidence for the other three effects.

8.2 Policy Options in the Research Literature

The findings above have strong implications for the effectiveness of suggested policies to address the month of birth effect, which are discussed alongside further evidence in the following sections. Detailed evidence on effective curriculum and pedagogy in early schooling is presented in Chapter 6 above.

8.2.1 Admissions Policy

In most of Europe, children start compulsory schooling at the age of six, as can be seen in the table below. However, the majority of children will actually start school before they reach compulsory age.

Compulsory age of starting school in 34 European countries, June 2009.[66]

Age	Country
Four	Northern Ireland
Five	England, Malta, Netherlands, Scotland, Wales
Six	Austria, Belgium, Cyprus, Czech Republic, Denmark, France, Germany, Greece, Hungary, Iceland, Republic of Ireland, Italy, Liechtenstein, Luxembourg, Norway, Portugal, Romania, Slovakia, Slovenia, Spain, Turkey
Seven	Bulgaria, Estonia, Finland, Latvia, Lithuania, Poland, Sweden

In England, the age of starting school was set out in the 1870 Education Act as the term after the child's fifth birthday, which is low by European standards. Woodhead (1989)[67] has argued that this was not decided on the basis of any

[66] Eurydice (2009). Accessible at: http://www.nfer.ac.uk/eurydice/briefingseurope/school-starting-ages.cfm

[67] Woodhead, M. (1989). "School starts at five…or four years old?": the rationale for changing

developmental or educational criteria: the decision related to child protection issues and appeasement of employers, because by starting school earlier, children would leave earlier and thus enter the workforce.

Several research studies have attempted to use international comparative data to draw conclusions about a relationship between school starting age and attainment differences. [69, 70, 36] The findings have tended to be reported in terms of a lack of evidenced advantage to starting school earlier (as in England), and in terms of "catching up" over the course of schooling by pupils in countries with later school starting ages. Neither do these studies supply any evidence of a *disadvantage* to starting school earlier; they are objectively viewed as providing "no strong evidence to support a causal relationship between school starting age and attainment levels." (Riggall and Sharp (2008)[68], examining research by Elley (1992)[69] and Mullis et al. (2003)[70].)

The analysis in Chapter 5 of this paper (Section 5.2) indicates differences in attainment at the Early Years Foundation Stage (age 5) according to pupils' term of entry to school. Irrespective of the month of birth, children who started school in the September of the school year in which they turned 5 performed better than those who started in January, and children who started in January outperformed the small minority who started in April. In terms of the gaps between older and younger children, the true effect is likely to be masked by selection effects with children deferring until later in the year being different to those starting in September in other ways than their month of birth profile.

Returning to Crawford, Dearden & Meghir (2007)[65] provides findings based on an analysis which controlled for a range of pupil characteristics which suggest that these differences may be short-lived: "Whilst … August-born children do benefit from starting school earlier rather than later (for example, in the September, rather than the January or the April, of their reception year), this makes only a modest positive contribution to test scores and only at early Key Stages." This analysis used Local Authority espoused admissions policy as a proxy for individual school entry data, which is an imperfect strategy given the different admissions authority arrangements for Voluntary Aided and Foundation schools, and the degree of non-compliance to the espoused policy observed across LAs; ideally, this question should be revisited using individual data for the Termly Schools Census and later Key Stages when sufficient years have elapsed to allow this. The best evidence available now suggests that

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admission policies in England and Wales. *Journal of Education Policy,* **4**, 1, 1-21.

[68] Riggall, A. and Sharp, C. (2008). *The Structure of Primary Education: England and other Countries.* Primary Review Research Survey 9/1. University of Cambridge.

[69] Elley, W. B. (1992). *How in the world do students read?* IEA study of reading literacy. The International Association for the Evaluation of Educational Achievement. The Hague.

[70] Mullis, I. V. S., Martin, M. O., Gonzalez, E. J. and Kennedy, A. M. (2003). *PIRLS 2001 International Report: IEA's third international mathematics and science study.* Chestnut Hill, MA: International Study Center, Lynch School of Education, Boston College.

starting school in September is associated with higher Early Years Foundation Stage Profile scores, but that this is likely to be a small and transient effect.

8.2.2 Early Years Provision

Entitlement to free part-time nursery provision in England begins at the start of the term after a child turns 3. Crawford, Dearden & Meghir (2007)[65] point out that this results in up to two fewer terms of entitlement for younger children within the year group. The national analysis in Chapter 4 considers only whether nursery provision at the January of the year in which the child turns 4 is associated with better Early Years Foundation Stage Profile Performance, but research evidence supports the intellectual development benefits of early pre-school provision, especially where that provision is deemed to be of high quality. Sylva et al. (2004)[45] reported age-standardised findings up to Key Stage 1 from a detailed longitudinal study of pre-school provision, including that "children who started at their pre-school centre before 3 years of age showed better cognitive scores. This effect was apparent for children starting as young as 2 years of age. However, when children started below 2 years of age there was no additional effect of the time before 2 years of age." Taken together, this funding inequality and the evidence on effectiveness of attending pre-school suggest that the existing arrangements may contribute to the month of birth gap. Crawford advocates access to free provision from the start of the school year in which children turn 3 to equalise the duration of nursery entitlement.

8.2.3 Standardised Assessment

Sharp et al (2009)[59] assert that the recommendation most strongly supported by evidence for mitigating relative age effects on outcomes generally is to use age standardised tests, or to encourage use of age conversion calculations for non-age standardised tests. They point to studies – such as Gledhill et al (2000)[60] – that find no relative age differences when using age standardised tests. In addition, in Northern Ireland, results of the Transfer Procedure Test (used to select pupils for grammar school entrance) are age-adjusted to remove relative age differences in performances. And an evaluation of the test results shows a fairly even distribution of birth month across successful candidates. (Gardner and Cowan, 2000 [71] cited in Sharp et al, 2009)

Crawford et al (2007)[65] agree that age standardisation of test results may be the easiest and most effective solution to explicitly recognise impact of relative age on attainment. However, they discuss that age standardisation can't continue throughout whole schooling careers since there needs at some point – such as entry to the labour market – to be a measure of actual human capital, rather than some age standardised version. They propose age standardisation up to the age of 14, although suggest that criteria for progression to post compulsory education could also take relative age in to account. A salient disadvantage of using age standardisation up until a certain point in schooling is that it would have the potential to confuse pupils and parents or create false expectations;

[71] Gardner. J. and Cowan, P. (2000) *Testing the Test: A Study of the Reliability and Validity of the Northern Ireland Transfer Procedure Test in Enabling the Selection of Pupils for Grammar School Places.* GTCNI.

there would inevitably be cases where younger pupils receive feedback placing them at a high standardised level of performance throughout schooling, but then are told their performance is relatively low once age standardisation is disapplied for entry to the labour market.

In addition, both Sharp et al and Crawford et al suggest that – in the early Key Stages at least – children could be tested when they are ready, rather than all at the same time. Crawford et al suggest that the age at which a child sat (and passed) the Key Stage test could be the outcome. This could also be used in school league tables, by averaging the age at which all children in a particular cohort passed the test. Again this strategy would become less practicable as pupils reach Key Stage 4 because deferring GCSE testing until ready could imply taking a gap year for many younger pupils due to HE applications fitting around the existing academic year. For age standardisation approaches to alter the eventual outcomes for summer-born children would require the existence of an additional process amongst that group of children, such as improved performance triggered by early performance messages giving more positive feedback. The evidence does not tell us whether such an effect would take place.

8.2.4 Grade Retention

Evidence from Australia (McGrath, 2006[72]), the USA (Hong et al, 2005[73]) and Canada (Pagani et al, 2001[74]) where grade retention is common concur that repeating a year does not improve academic outcomes for children who are falling behind. Furthermore, McGrath found negative progression, behaviour, mental health and social impacts on children who repeated, and that there is no advantage of delaying initial entry to school for a year in order to increase "readiness". The evidence forms a clear rejection of this policy, which would be likely to lead to even worse outcomes for summer-born children.

8.3 Concluding Summary of Findings

The following summary draws together the key findings from throughout this paper to present a concise view of the month of birth effect and possible policy responses, followed by concluding remarks on the evidence presented.

[72] McGrath, H. (2006) *To Repeat or Not to Repeat?* WORDS: Journal of the Western Australian Primary Principals' Association.
[73] Hong, G. & Raudenbush, S. (2005) *Effects of Kindergarten Retention policy on Children's Cognitive Growth in Reading and Mathematics*, Educational Evaluation and policy Analysis, v27 n3 Fall 2005.
[74] Pagani, L., Tremblay, R.E., Viataro, F., Boulerice, B. & McDuff, P. (2001) *Effects of Grade Retention on Academic Performance and Behavioural Development*, Development and Psychopathology 13, Cambridge University Press.

8.3.1 Month of Birth Effect Findings

Educational Attainment

- In England, children born in August are the **youngest within each school year group**; in some other countries, the school year starts at a different point in the year (and in different climatic seasons), but across countries, it is consistently the youngest children in each year group who perform less well in school tests, and the eldest who perform better.
- In England, the **size of the month of birth gap** in reaching the expected level of attainment **decreases** as children progress through the Key Stages, beginning at an **odds ratio** for autumn-born children compared with summer-born children of 2.6 at age five, and shrinking to 1.5 by age eleven, then 1.3 by age sixteen.
- These odds ratios are derived from the percentages achieving a **good level of development** in the Early Years Foundation Stage Profile (24 percentage points difference), the **expected level in both English and maths** at Key Stage 2 (8 percentage points difference), and **five or more grades A*-C at GCSE including English and maths** (6 percentage points difference).
- To put this in context, **10,000 summer-born children per year fail to achieve this standard at GCSE**, which influences their chances of progressing to A-levels and beyond, purely because they are the youngest pupils sitting the GCSE examinations **due to the timing of the school year** (approximately 90,000 autumn-born pupils fail to achieve the standard compared with 100,000 summer-born pupils).
- The **threshold measures of attainment** which dominate the education system, and control access to post-compulsory education, **magnify gaps in point scores** resulting in month of birth differences which remain educationally significant throughout schooling.
- The gap between the **oldest** (September-born) and the **youngest** (August-born) children narrows from an odds ratio of 3.8 at age five to 1.9 at age eleven, and 1.4 at age sixteen.
- Membership of **multiple disadvantaged groups** combines to produce very low chances of attaining at the expected level. For example, at the Early Years Foundation Stage, just 12% of August-born boys who were eligible for free school meals achieved a good level of development, compared with 79% of September-born girls who were not eligible for free school meals.
- The August-September gap at Key Stage 4 is slightly **larger than the gender gap**, but the **FSM gap is twice as large** and the **SEN gap is 4 times as large**. At Key Stage 2, the August-September gap is a little larger than the gender gap and a little smaller than the FSM gap, but the **SEN gap is 7 times as large**. Whilst the FSM gap widens over the course of compulsory education, and the SEN gap widens then begins to narrow again, both the gender and **month of birth gaps narrow** as pupils progress through school.
- There is **no evidence of sorting** (selection) of pupils by month of birth into different types of mainstream maintained school, but there are some

differences in the size of month of birth attainment gaps between school types.

- **Higher performing schools** have significantly smaller month of birth gaps (in % points) than lower performing schools at Key Stage 4, due to a cumulative normal distribution of attainment over time, suggesting **general school improvement strategies** for tackling the percentage point month of birth gap, and associated educational progression disadvantages for summer-born children.
- At Key Stage 2, the percentage point gap is also lower in higher performing schools, but **the odds ratios reveal that** this is an artefact of the measure used, and that **the month of birth effect is slightly larger in higher performing schools**.
- **Girls' schools** and **selective schools** also have significantly smaller month of birth gaps than mixed and comprehensive schools at Key Stage 4; Gaps in foundation schools are a little smaller than in other schools both for English and maths at Key Stage 2, but foundation schools and Academies have larger gaps at Key Stage 4. Local Authority control is not associated with smaller month of birth effects at Key Stage 4 as it is at Key Stage 2.
- There is **no clear pattern** of whether **school transitions** are associated with larger or smaller month of birth gaps; transition at age 7-8 is linked to smaller gaps, whereas transition at age 16 is linked to larger gaps.
- **Larger schools have slightly smaller month of birth gaps** at Key Stage 2, and both the smallest and largest schools have smaller gaps than medium-sized schools at Key Stage 4.
- There is a noticeable narrowing of the Level 2 (GCSE) qualifications month of birth gap between the ages of 16 and 19 demonstrating that **younger pupils often catch up** after compulsory education has finished; however, much of this is accounted for by **non-academic vocational qualifications** which are less well rewarded in the labour market.
- By Key Stage 5, the gap between summer and autumn-born students is 3 percentage points for entry to **traditional academic A-levels**, and of those who enter for A-levels, an additional 1 percentage point for achieving 2 or more passes; September-born students averaged 15 A-Level QCA points more than those born in August, **equivalent to half of one grade**.
- Considering all routes to Level 3 attainment (including applied or vocational qualifications) results in a smaller month of birth effect of 0.7 percentage points between summer and autumn-born students by age 19 (**allowing for a gap or resit year**).
- There is a 2.5 percentage point gap between the proportion of August-born 18 year olds **participating in Higher Education** (HE), and those born in September; the gap narrows to 2.1 percentage points by age 19, and 1.7 percentage points by age 20.
- Of those who registered on a full-time 3-year degree at age 18, August-born students are **slightly more likely to complete** their degree on time than September-born students; there is no evidence of a disadvantage to

summer-born individuals in the proportion known to be in **full-time employment** 6 months after graduating.

- Competing differences in HE participation and completion balance out to a 0.8 percentage point gap in the resulting rate of qualification between August and September-born young people; the participation **gap has been reduced, but not closed**, by the higher completion rate for August-born students.

Other Outcomes

- Absence from school increases by year group during secondary schooling, and also according to age within each cohort; for example, autumn-born pupils have 0.8 percentage points higher **Overall Absence** than summer-born pupils during year 11 (0.9 percentage points Aug-Sep).
- **Persistent Absence** has a stronger association with age (both within and between school years) than Overall Absence, peaking in year 11 at 1.5 percentage points between autumn and summer-born pupils (1.8 percentage points Aug-Sep); typically, this strong relationship is likely to be related to individual pupil behaviour in the form of unauthorised or unjustified absences.
- There isn't a clear and consistent pattern of **Permanent Exclusions** by month of birth, but at age 13 when exclusions peak, an extra 8 autumn-born pupils per ten thousand are excluded (on a base of 29 summer-born pupils).
- **Fixed Period Exclusions** (FPEs) are more common and show a clearer month of birth effect; at age 13, an extra 68 per ten thousand autumn-born pupils (on a base of 385 summer-born pupils) received one FPE during the year, and an extra 49 per ten thousand autumn-born pupils (on a base of 282 summer-born pupils) received 2 or more during the year.
- Two national surveys suggest that **being summer-born is linked to a slightly greater risk of being bullied**. TellUs data suggest that August-born young people are 6 percentage points more likely to be bullied than those born in September in years 6 and 8, falling to 5 percentage points in year 10. LSYPE data indicate that summer-born pupils have a higher incidence of suffering extreme (and rare) levels of bullying.
- There is a clear month of birth effect on **identification of Special Educational Needs** (SEN), which is stronger at the earlier stages of education. At the end of Key Stage 1, August-born pupils are **nearly 90% more likely to be identified with SEN** than September-born pupils; at Key Stage 2, this reduces to 60% more likely, and further to 25% more likely by Key Stage 4.
- Looking at the incidence of **Statements of SEN** (those with the greatest need), August-born pupils are almost 30% more likely than September-born pupils to have a statement at Key Stage 2, **rising** to almost 40% more likely at Key Stage 4.
- **Moderate Learning Difficulties**, **Specific Learning Difficulties**, **Speech, language and Communication Needs**, and **Other Needs**

have the highest levels of overrepresentation of summer-born pupils compared with the whole cohort.

- There were some **differences in subject preferences** between autumn and summer-born 14 year-olds, with maths being slightly less popular for summer-born pupils, English being more popular, and science ranking three places lower than for autumn-born pupils.
- There is a small but consistent pattern of differences in **attitudes to school and Higher Education**, being less positive for summer-born 14 year-olds and their parents, with more doubt about abilities, less satisfaction, and more of a **tendency to rate outcomes as average rather than good**.
- There is no **significant difference in the frequency of sports participation** between summer and autumn-born 14 year-olds; however, spring and summer-born pupils were a little more likely to say they never use sports facilities outside of school lessons than their autumn-born peers.

8.3.2 Policy-Related Findings

Structure of Provision

- At age 3-4, 12% of August-born children **stay at home** compared with 9% of September-born children; the youngest in the year are 5 percentage points **more likely to attend private or voluntary nursery provision** rather than a maintained early years setting. A detailed breakdown of participation reveals that nurseries (other than LA) and independent schools are more commonly attended by August-born children.
- Overall at age 3-4, participation in **school settings contributes to the gap** in early years participation between August and September-born children, whereas participation in **non-school settings reduces it**.
- Children who attend maintained nursery provision at age 3-4 score **5 extra points on the Early Years Foundation Stage Profile** than those who stay at home; those who attend private or voluntary provision score an extra 9 points. The difference is **slightly larger for summer-born children**, but is at least partly explained by differences in levels of deprivation.
- Summer-born children are slightly less likely to be in nursery provision at age 3-4, but are **more likely to attend types of provision associated with higher Early Years Foundation Stage Profile scores** if they do attend early years provision.
- **89% of 4-5 year old admissions to maintained school reception classes take place in September**, 10% in January, and 1% in April. A small number of children postpone starting school until year 1, which is permissible where their birthday falls after the start of the summer term. More than half of deferred reception entrants (starting in the spring or summer terms) are summer-born.
- Older 4-5 year-olds joining reception in January or April (deferred entry) are **more likely to have already attended a nursery class** in a

maintained primary school, whereas a higher proportion of younger 4-5 year-olds **join straight from non-school nursery settings or home**.

- Survey results indicate that more parents would prefer to wait until their child is 5 years old to start them at school (32%) than actually do so, suggesting that there is **some compliance with Local Authority or school admissions policies** by parents who would rather follow other arrangements.
- **September entrants to reception perform better** across the Early Years Foundation Stage Profile than those who defer until January, who in turn do better than summer-term entrants; this is the case regardless of month of birth. The strongest association with term of entry is for the **Communication, Language and Literacy scales**. This effect is likely to include a component of selection with less able children more likely to be deferred.
- Fewer than 15% of children are **enrolled part-time** for at least part of one term when they start school; it is most common for September entrants, and it is **even rarer for children to remain part-time for more than one term**, although 2% continue for a second term and <0.5% for a third.
- Autumn-born children are one quarter as likely to attend school part-time for their first term as summer-born children, and one third as likely as spring-born children; analysis of Early Years Foundation Stage Profile scores shows **no disadvantage for part-time entrants** once term of birth and term of entry are taken into account.

Curriculum and Pedagogy

- The research literature has identified a **dilemma** between play-based learning during the early years of education, and pressures to begin formal instruction, which stems from the **co-location of reception classes and Key Stage 1 and 2 classes** within primary schools.
- **Play-based learning** and emphases on **choice, independence and child-initiated activities** are effective and age-appropriate pedagogies for the early years of education.
- There are **constraints to the delivery of an ideal curriculum** for four year-olds in some settings which vary by type of provision; **staffing ratios and staff qualification profiles** differ between primary school reception classes and nursery schools or non-maintained provision. Another constraint is the **inherent variation in children's readiness for formal instruction** whatever the starting age or type of provision attended.
- **Holding back** children who are ready to begin formal learning would **not eliminate differences** in development based on month of birth or other factors due to the role of the **Home Learning Environment** in generating relative (dis/)advantages.
- Research backs a strategy of **personalised development** focused on **individual readiness**, plus bridging the gap between formal and informal learning using techniques such as **responsive guided play** and **varied problem-solving activities**.

Policy Approaches to Month of Birth Effects

- Explanations for the **higher prevalence of Special Educational Needs** (SEN) in summer-born children include stress experienced as a result of **early failure generating lower self-esteem** and expectations for younger pupils, and **failure of teachers to make sufficient allowance** for relative age in their assessments of educational need; these reasons are **inextricably linked to the general trend** of lower attainment compared with older peers.
- Policy options for tackling the month of birth effect on SEN identification include revising systems for SEN referral with the use of **standardised assessments**, **increasing awareness** among teachers, and **personalisation of expectations and the curriculum**; however there is a shortage of detail and evaluation of effectiveness for these approaches in the literature.
- **A question remains** at the heart of the issue of SEN identification – is over-identification of summer-born children a **good thing or a bad thing?** Does the **additional support** provided to younger children identified with SEN outweigh **any negative effects** on self-esteem and expectations / aspiration? This is not addressed in the existing research literature.
- **Absolute age** is the **dominant reason** for month of birth gaps in attainment; it is simply the fact of **being younger when tested** which accounts for most of the differences between August and September-born pupils. There are additional statistically significant, but very small, effects attributed to age at starting school or length of schooling; these last as far as Key Stage 2 for girls (but not boys), but have disappeared by Key Stage 4.
- **International comparisons** of age starting school tend to be reported in terms of a lack of evidenced advantage to starting school at age 5 (as in England), and **of later school starters catching up on initial gains** by the end of primary education; however, these studies do not demonstrate any disadvantage to starting at 5 either, and **overall there is "no strong evidence to support a causal relationship** between schools starting age and attainment".
- In England, children who **begin pre-school before 3** years of age (and as young as 2) show **better cognitive scores** at Key Stage 1 than those who start later. However, the total **entitlement to free part-time nursery** provision is **less for summer-born children** (by up to two terms) as it begins at the start of the term after a child turns three.
- **Age-standardised attainment assessments** could not eliminate the month of birth effect because there needs to be an **absolute measure of human capital** on entry to the labour market; reversion to absolute measures late in education would have the **potential to confuse** pupils and parents due to inconsistency with earlier standardised assessments.
- **Testing when ready** up to Key Stage 4 would also carry a disadvantage because it **could imply a forced gap year** for many younger pupils in order to fit with the Higher Education applications cycle.
- Strategies focusing on **equalising assessment** outcomes without addressing development require the existence of **some additional**

process whereby positive early feedback is converted to better subsequent performance; currently there is no evidence of such a feedback effect.

- **Grade retention** of summer-born children who are struggling to progress academically is **not recommended**. It is associated with **negative progression, behaviour, mental health and social impacts** and there is no advantage in terms of increased school readiness.

8.3.3 Conclusion

This paper has examined in detail the available evidence on month of birth effects and policy strategies for reducing the disadvantages suffered by younger children within school year groups. Unfortunately, based on the current evidence base, there appears to be no single policy which will eliminate the attainment gaps and equalise children's' educational chances. It is more a case of bringing together several policy strands which have been suggested by the research and analysis, and building them into a package to ameliorate the effects of relative age.

Annexes

Annex to Chapter 1

Community school:-

- The local education authority owns the land and buildings, but the governing body is responsible for running the school.
- The local education authority funds the school.
- The local education authority employs the staff.
- The local education authority provides support services, for example, psychological services and special educational needs services.
- The pupils have to follow the National Curriculum.
- The admissions policy is usually determined and administered by the local education authority.

Voluntary Controlled schools:-

- The land and buildings are owned by a charity, often a religious organisation such as a church.
- The charity appoints some of the members of the governing body, but the local education authority is responsible for running the school.
- The school is funded by the local education authority.
- The local education authority employs the staff.
- The local education authority provides support services.
- The pupils have to follow the National Curriculum.
- The admissions policy is usually determined and administered by the local education authority.

Voluntary Aided schools:-

- The land and buildings are normally owned by a charity, often a religious organisation such as a church, but the governing body is responsible for running the school.
- The school is funded partly by the local education authority, partly by the governing body and partly by the charity.
- The governing body employs the staff.
- The local education authority provides support services.
- The pupils have to follow the National Curriculum.
- The admissions policy is determined and administered by the governors in consultation with the local education authority and other relevant schools in the area.

Foundation schools:-

- The land and buildings are owned by a governing body, who are also responsible for running the school.
- The local education authority funds the school.
- The governing body employs the staff.
- The governing body buys in and administers most of the support services.
- The pupils have to follow the national curriculum.
- The admissions policy is determined and administered by the governing body, in consultation with the local education authority and other relevant schools in the area.

Academies:-

- Academies are all-ability, state-funded schools established and managed by sponsors from a wide range of backgrounds, including high performing schools and colleges, universities, individual philanthropists, businesses, the voluntary sector, and the faith communities.
- Sponsors and the Department for Education (DfE) provide the capital costs for the academy. Running costs are met in full by the DFE.
- Each academy will be set up as a company limited by guarantee with charitable status and will have a board of governors responsible for the governance and strategic leadership of the school.
- Most academies replace existing underperforming schools, others provide extra places (either as entirely new schools or as successful independent schools wishing to better serve their local community and broaden their intake), and a small number are high-performing schools federating with weak schools as a school improvement strategy.

Annex to Chapter 2

Key Stage 5 Conversion Table

Qualification	Size	Grade	Points
General/Vocational/Applied A level	1	A	270
		B	240
		C	210
		D	180
		E	150
General/Vocational/Applied AS	1/2	A	135
		B	120
		C	105
		D	90
		E	75
Vocational/Applied Double Award	2	AA	540
		AB	510
		BB	480
		BC	450
		CC	420
		CD	390
		DD	360
		DE	330
		EE	300
BTEC national award	1	D	270
		M	225
		P	165
BTEC national certificate	2	DD	540
		DM	480
		MM	420
		MP	360
		PP	300
BTEC national diploma	3	DDD	810
		DDM	757.5
		DMM	705
		MMM	652.5
		MMP	600
		MPP	547.5
		PPP	495

Annex to Chapters 4 & 5

Background notes on the Early Years Foundation Stage Profile Assessment Scales

Practitioners can make professional judgements about children's achievements and decide on the next steps in learning through observing children at play, and by making notes when necessary about what has been achieved. They can also provide information for parents and carers about how children are progressing.

The assessments are made on the basis of practitioners' accumulating observations and knowledge of the whole child. By the end of the Early Years Foundation Stage, the profile provides a way of summing up that knowledge. Whether or not the profile is used throughout the year, assessments against the scales should be finalised in the summer term, summarising each child's development at that point.

The Areas of learning
The EYFS framework covers six areas of learning covering children's physical, intellectual, emotional and social development;
• Personal, Social and Emotional Development (3 assessment scales),
• Communication, Language and Literacy (4 assessment scales),
• Problem Solving, Reasoning and Numeracy (3 assessment scales)[1]
• Knowledge and Understanding of the World (1 assessment scale),
• Physical Development (1 assessment scale), and
• Creative Development (1 assessment scale).

The Assessment scales
EYFSP captures the Early Learning Goals as a set of 13 assessment scales, each of which has nine points:

Outcomes for individual scales

a. The **first three points (1-3**), the 'stepping stones', describe a child who is still progressing towards the achievements described in the Early Learning Goals, and are based mainly on the 'stepping stones' in the curriculum guidance. Most children will achieve all of these three points before they achieve any of the Early Learning Goals, but there may be some exceptions to this pattern. A child who fails to score on any of these stepping stones is suffering from significant developmental delay.

b. The **next five points (4-8)** are drawn from the Early Learning Goals themselves. These are presented in approximate order of difficulty, according to evidence from trials. However, the points are not necessarily hierarchical and a child may achieve a later point without having achieved some or all of the earlier points.

c. The **final point (9)** in each scale describes a child who has achieved all the points from 1-8 on that scale, has developed further both in breadth and depth, and is *working consistently beyond* the level of the Early Learning Goals.

d. Children who achieve a scale score of **six points or more** are classified as *working securely* within the Early Learning Goals.

e. The **point (0)** in each scale describes a child for whom it has not been possible to record an assessment. Whilst the Early Years Foundation Stage Profile has been developed to be as inclusive as possible so that as many children can be assessed

against the scales it contains, there may be some items in the scales that some children are unable to achieve because of the nature of their individual needs. For example, there may be items within the Personal, Social and Emotional development scales (such as those involving interactions with others) that cannot be achieved, at this stage of their development. Similarly, there may be items within the scale for Physical Development that cannot be achieved by some children. Teachers will be using the assessments recommended by the health professionals with whom they liaise closely, and will be using these specialist assessments to discuss progress with the families of these children.

Measuring achievement across scales

Children who achieve a score of 78 points or more across the 13 assessment scales score an average of 6 points per scale. When a child who achieves this overall score also achieves a score of 6 or more in each of the PSE and CLL scales, that child is deemed to be reaching a **good level of development**. This measure is used to assess the progress made by Local Authorities in improving outcomes, a duty placed on Local Authorities by the Childcare Act of 2006.

Early Years Provision Technical Notes

Further information on eligibility for free early education places can be found in 'A Code of Practice on the Provision of Free Nursery Education Places', which is available at
Code of Practice on the Provision of Free Nursery Education Places - Every Child Matters.

The main sources of data for this SFR are the annual Early Years Census (EYC), the School Census (SC) (formerly known as the Annual School Census), and the School Level Annual School Census (SLASC). For EYC, this is the second year that Local Authorities have been under a statutory obligation to send individual child-level information for every funded three and four year old child in a private, voluntary or independent provider. The return provides child-level information about the number of three and four year olds benefiting from some free early education in private, voluntary and independent providers. Also, the return records the aggregate numbers of three and four year olds taking up early education places in those private and voluntary providers and independent schools that are registered with LAs and receive some government funding for delivery of the free entitlement.

In 2008 and 2009 the EYC collected child level information on the number of hours a child claims free entitlement within a setting.

In 2006 and 2007 the EYC consisted of two returns, both made in January. The provider return recorded the numbers of three and four year olds taking up early education places in those private and voluntary providers and independent schools that are registered with LAs and receive some government funding for delivery of the free entitlement. The funding return from LAs provided information about the number of three and four year olds benefiting from some free early education in private, voluntary and independent providers.

For 2004 and 2005, a single EYC return provided information on the number of children taking up early education places, the headcount of those benefiting from some free early years education, and the Part Time Equivalent (PTE) number of funded places filled.

The SC collects data on the number of three and four year olds benefiting from some early years education in maintained schools, at January of each year. SLASC collects information on the number of three and four year olds benefiting from some early years education in independent schools. Because three and four year olds in maintained nursery and primary schools are counted as one PTE funded place, there is no distinction between the numbers benefiting from some early education and the PTE number of funded places filled and these terms are used interchangeably. All maintained school provision is termed 'free'.

Since 2002, SC has collected individual pupil level information from maintained primary schools; prior to 2004, maintained nursery schools returned school level data only but in 2004 and 2005 some of them provided pupil level data instead; in 2006 all maintained nursery schools moved to pupil level returns. The change from school level to pupil level data in maintained nursery schools may have had a small effect upon the year on year trends in pupil numbers.

The 2009 child-level information collected directly from Local Authorities as part of the Early Years Census (EYC) data collection exercise is based on 20,187 returns, reflecting data as at 15 January 2009. Information on three and four year olds taking up early education places in maintained schools was taken from the School Census (SC), and information on three and four year olds taking up early education places in independent schools was taken from the School Level Annual School Census (SLASC). The information is not expected to change.

The population estimates are derived from mid-year estimates and projections provided by the Office for National Statistics. They are subject to a margin of error and should be considered to be approximations.

Numbers of three and four year olds taking up or benefiting from early education places are expressed as percentages of the relevant population.

Participation rates exceed 100% in some instances and may be overstated or understated in others because children may be counted more than once (if they take up their entitlement at more than one provider) and because the counts of children taking up or benefiting from free places do not correspond exactly to the counts of children in the population. Children not resident in England are included in the counts of children taking up places.

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