

SOCIAL RESEARCH NUMBER:

4/2017

PUBLICATION DATE:

08/02/2017

Flying Start Evaluation: Educational Outcomes

Evaluation of Flying Start using existing datasets

Mae'r ddogfen yma hefyd ar gael yn Gymraeg.
This document is also available in Welsh.

Flying Start Evaluation: Educational Outcomes

Evaluation of Flying Start using existing datasets

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Views expressed in this report are those of the researcher and not necessarily those of the Welsh Government

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Table of contents

List of tables.....	2
List of figures.....	3
Glossary.....	4
1. Summary.....	5
2. Introduction	7
3. Flying Start Areas.....	20
4. Attendance	25
5. Educational Attainment	40
6. Special Education Needs	49
7. Impact of Flying Start	59
8. Conclusion	62
Appendices	67

List of tables

Table 3.1. Proportions of demographic groups	22
Table 3.2. Deprivation indicators.....	23
Table 4.1. The average levels of attendance and absenteeism.	27
Table 4.2. Absenteeism regression outputs	35
Table 4.3. Pre expansion Propensity Score Matching absenteeism outputs	38
Table 4.4. Post expansion Propensity Score Matching absenteeism outputs	39
Table 4.5. Pre vs post expansion Propensity Score Matching absenteeism outputs	40
Table 5.1. The average levels of Core Skills attainment.....	43
Table 5.2. Attainment regression outputs	47
Table 5.3. Pre expansion Propensity Score Matching attainment outputs	48
Table 6.1. The average levels of special educational needs.....	51
Table 6.2. The specific needs that are included in each SEN group.....	51
Table 6.3. The average proportion any special educational needs by year group	54
Table 6.4. Special educational needs regression outputs.....	57
Table 6.5. Special educational needs regression outputs by year group	58
Table A.1 - 4. The differences in average attendance by individual characteristics	67
Table C.1. The differences in the average attainment by individual characterisitcs	71
Table E.1 - 4. The differences in average special educational needs by individual characteristics	73

List of figures

Figure 3.1. The total number of children	21
Figure 3.2. Income deprivation distribution	24
Figure 3.3. The proportion of children who are in income deprivation.....	24
Figure 3.4. The proportion of children who are eligible for free school meals	25
Figure 4.1a - d. The average levels of absenteeism	29
Figure 4.2a - d. The average levels of absenteeism by income deprivation.	32
Figure 5.1. The average levels of attainment.....	44
Figure 5.2. The average levels of attainment by Special Educational Needs	45
Figure 5.3. The average levels of attainment by income deprivation.	45
Figure 5.4. The average levels of attainment by Free School Meals	46
Figure 6.1a - d. The average levels of special educational needs	52
Figure 6.2. The average levels of special educational needs in the Reception year group..	55
Figure 6.3. The average levels of special educational needs in pre- expansion Flying Start areas only by income deprivation.....	56
Figure 7.1. Structural Equation Model (SEN).....	60
Figure B.1 - 4. The predicted vs actual absenteeism	69
Figure D.1. The predicted vs actual attainment.....	72

Glossary

Acronym/Key word	Definition
BESD	Behavioural, Emotional and/or Social Difficulties
CSI	Core Skills Indicator
DWP	Department of Work and Pensions
FP	Foundation Phase
FSM	Free School Meals
KS1	Key Stage 1
KUW	Knowledge and Understanding of the World
LD	Learning Difficulties
LLC	Language, Literacy and Communication
MD	Mathematical Development
NEET	Not in Education, Employment or Training
NPD	National Pupil Database
ONS	Office of National Statistics
PDG	Pupil Deprivation Grant
PSDWC	Personal and Social Development, Well-being and Cultural Diversity
PSM	Propensity Score Matching
SEM	Structural Equation Model
SEN	Special Educational Needs
SES	Socio-Economic Status
SLC	Speech, Language and Communication
SLCD	Speech, Language and Communication Difficulties
SoGS	Schedule of Growing Skills
WLD	Welsh Language Development

1. Summary

- 1.1. Flying Start is a Welsh Government programme which aims to improve the life chances of young children living in some of the most disadvantaged areas in Wales. Families with children up to the age of four are eligible for four entitlements:
- Free part time, high quality childcare for children aged two to three
 - Enhanced health visiting and support
 - Access to parenting support
 - Speech, language and communication support
- 1.2. The programme started in 2006/07 and was expanded from 2012. While the commitment was to provide services to 36,000 children, Flying Start now provides services to just over 38,000 children. Previous evaluations have highlighted some positive effects, but these have either been very weak effects or are the views of parents and staff, rather than objective measures. This evaluation aims build on these to use school data to determine if children living in Flying Start areas have different outcomes from other children and if this can be said to be a result of the programme.
- 1.3. The challenge with this approach is it is not possible to tell from the available data what, if any, support individual children have actually had from Flying Start; only if they were living in a Flying Start area while they were in school¹. It is assumed that they were living in the same area before they started school. Therefore, it is impossible to say what level of support each individual child has received from Flying Start. Also, because the research is solely using data that is routinely collected by schools and other government departments, there are many possible factors that could affect the outcomes that are not included in this analysis. Despite these issues, it is still possible to see whether any change in educational outcomes is related to the introduction of Flying Start.
- 1.4. The data used in this evaluation was taken primarily from the National Pupil Database (NPD), which is comprised of data collected by schools. The data from 2007 to 2015 was included, which means it was possible to compare the outcomes of children in Flying Start areas before the introduction of the programme against those after introduction. The results of this evaluation show that Flying Start areas are more deprived than other areas, with just over half of children up to the age of three living in a household where a parent is on means-tested benefits, compared to a quarter in other areas. This means the support provided by Flying Start is competing against the negative effects of a living in a household that may be less able to support the child's learning and development.

¹ While this data is currently unavailable, access to individual level data is being explored for future evaluations.

- 1.5. Deprivation has a strong relationship with attendance, so children living in more deprived areas have, on average, lower attendance than those in less deprived areas. However, the results show that once Flying Start was introduced, the attendance of children living in Flying Start areas improved. This improvement was greater than found in other areas that are not included in the Flying Start programme. Matching individual children in Flying Start areas against those in non Flying Start areas who were living in similarly deprived households suggests that being in a Flying Start area has a positive effect.
- 1.6. Being able to test the effect of Flying Start on educational attainment is difficult, as the curriculum changed in 2009, from Key Stage 1 (KS1) to the Foundation Phase (FP). This means children were assessed using a different measure from 2012 onwards. Comparing results between the two measures is not possible, so the results were split into before and after FP. This limitation makes it impossible to say if Flying Start has had any positive effect on outcomes. While attainment has been consistently improving in Flying Start areas at a faster rate than in non Flying Start areas, it cannot be assumed that this solely due to Flying Start. However, given the range of services and number of children included, there is a good likelihood that Flying Start is playing a role. More definitive conclusions about the role of Flying Start require data about the level to which individual children and families engage with Flying Start services.
- 1.7. This evaluation found that being identified as having special educational needs (SEN) is related to increased absenteeism and lower attainment. Children living in Flying Start areas are also more likely to be identified as having SEN. While it is possible that children in deprived areas are more likely to have learning or behaviour difficulties, it is also the case that Flying Start aims to identify these difficulties early. Children in Flying Start areas were found to be more likely to start school with SEN already identified. This is a positive finding, as it means these children can benefit from the support they need from a younger age.
- 1.8. This evaluation used data already collected to try to see if Flying Start has led to improved educational outcomes. Despite some limitations, the analysis shows that Flying Start is associated with better educational outcomes for children. Living in a Flying Start area after it was introduced is related to better attendance and an increased chance of children with SEN being identified early, which hopefully results in them getting the help they need. This in turn can lead to better results in the assessment at the end of Foundation Phase and better long term outcomes².

²
http://webarchive.nationalarchives.gov.uk/20160105160709/http://www.ons.gov.uk/ons/dcp171766_378097.pdf

2. Introduction

Description of Provision

2.1. Flying Start is the Welsh Government's flagship Early Years programme for families with children up to the age of four. It is aimed at improving the life chances of children living in some of Wales's most disadvantaged communities. The four key provisions of the programme are:

- Free quality, part-time childcare for two to three year olds
 - Flying Start provides quality childcare which is offered to parents of all eligible two to three year olds for two and a half hours a day, five days a week for 39 weeks a year. In addition, there should be at least 15 sessions of childcare for the family during the school holidays.
 - This should be linked to entry into schools to ensure a seamless transition between the two offers with no gaps in provision.
- An enhanced Health Visiting service
 - Key to programme delivery is the requirement that there must be one full time equivalent Health Visitor per 110 children up to the age of four in the target areas. This is to ensure delivery of intensive support to Flying Start children and their families.
 - The primary function of the Flying Start Health Visitor is to support the family in the home, assessing both the child and the family (in terms of risk to the child's health and development). Flying Start Health Visitors should continually assess those families identified as medium and high risk, and make appropriate referrals.
- Parenting support
 - Every family with an eligible Flying Start child must be offered parenting support at least once a year and be made aware of the different services available locally to support their parenting role³. A range of options should be provided for parents depending on their individual assessed needs and circumstances. This can be in groups or one to one in the home with a mix of informal support or a formal evidence-based parenting programme.
 - The parenting offer should be based on provision of perinatal and support in the early years to age four. This should be underpinned by the following cross-cutting themes:
 - Relationship support
 - Early intervention to support vulnerable families
 - Positive parenting
 - Evidence based theories of child development

³ This support includes the following: Evidence-based, group-based structured parenting programmes, One-to-One support, Informal Structured Group-based Parenting Support and Informal Drop-in Support

- Speech, Language and Communication support
 - Every family in a Flying Start area should have ongoing access to an appropriate language and play group. From this, a more targeted approach based on assessment and referral can be taken where there is evidence of additional need. In some local authorities, speech and language therapists are employed as part of the core Flying Start team.
 - Evidence-based key messages to support children's speech, language and communication have been developed which should be shared with all parents by Flying Start teams and embedded throughout all provisions of the programme.

2.2. The Flying Start programme was launched in 2006/07 and has expanded in its coverage over time. In 2012/13, some 23,500 children received support from Flying Start. Part of the 2012 expansion was a commitment from the Welsh Government to increase the number of children receiving Flying Start to 36,000 by 2016⁴. From 2012 an expansion of the programme into additional areas began, continuing through to 2015. The latest statistics (2015/16) indicate Flying Start is now being received by just over 38,000 children⁵, which exceeds the target.

2.3. In addition to the four core elements, local authorities are also able to apply a degree of flexibility within the Flying Start programme by offering support through outreach. Outreach enables a small number of families living outside Flying Start areas to access the support they need. Using local knowledge and an assessment of priority, local authorities can aim to ensure those most in need receive this service.

2.4. The evaluation of Flying Start is ongoing and has taken a mixed methods approach, including a large-scale survey, longitudinal case studies with Flying Start families and in depth qualitative research with 'high need' families⁶. The evaluation of the Flying Start programme has also formed the basis of a 'Data Linking Demonstration Project'. The study took Flying Start as an example of the issues and potential benefits associated with the use of administrative data for the purposes of research. Focussing predominantly on health based measures, the project demonstrated that the introduction of Flying Start was associated with improvements in a variety of outcomes for those eligible for Flying Start provisions, such as birth weight, hospital admissions and educational attainment at age 7⁷.

⁴ <http://www.assemblywales.org/RN14-005.pdf>

⁵ <http://gov.wales/docs/statistics/2016/160713-flying-start-summary-statistics-2015-16-en.pdf>

⁶ See <http://wales.gov.uk/statistics-and-research/national-evaluation-flying-start/?lang=en> for an overview of the evaluations of Flying Start.

⁷ <http://wales.gov.uk/statistics-and-research/data-linking-demonstration-projects/?lang=en>

2.5. Evaluation of the Flying Start programme to date has included surveys with families in both Flying Start areas and areas that were most similar in terms of area disadvantage, but which themselves were not Flying Start areas. The aim of this was to determine the impact of the programme, by using those in the similar areas as a comparison group. The problems with such an approach is that Flying Start was first introduced in the most disadvantaged areas of Wales, which inevitably means that comparisons made with children outside of the Flying Start areas will result in comparisons being made with children in relatively less disadvantaged areas. The map below shows the areas, as of 2015, which were in receipt of Flying Start provisions. It can be seen that a majority of Flying Start areas are located within the South Wales valleys, reflecting the relatively disadvantaged nature of these communities.

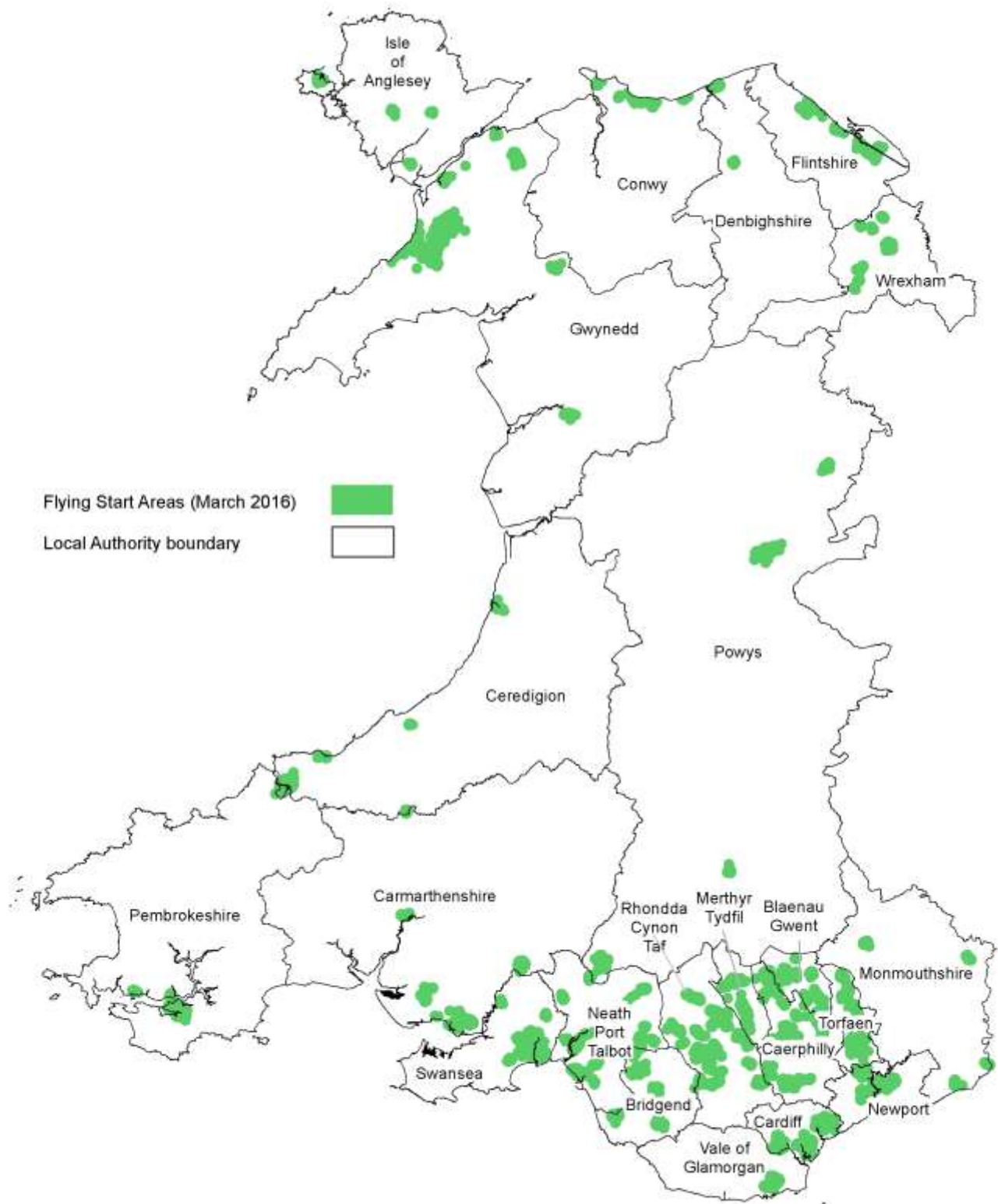
2.6. Recently, an evaluability assessment was conducted on the Flying Start programme⁸, which highlighted the challenges in evaluating Flying Start. This report summarised the evaluations of Flying Start to date, and sets out some options for future evaluations. One of the recommendations was to make better use of existing data sources, and to use statistical approaches to try to explore any potential effect of the programme. It also detailed several challenges and issues when evaluating Flying Start, which are described below.

Aim of the report

2.7. There are two main aims of this evaluation: a) to develop an analytical approach to evaluating Flying Start using existing datasets and b) to attempt to determine if living in a Flying Start area is related to educational outcomes.

2.8. The analysis in this report is based upon data from the National Pupil Database (NPD). The NPD contains administrative data for all school children in Wales. It includes some key information relating to the characteristics of school children and details relating to their educational progress, principally teacher assessments and attendance data. The focus of the analysis is therefore upon an examination of the relative attendance and educational outcomes of children located in Flying Start areas.

⁸ <http://gov.wales/docs/caecd/research/2016/161102-evaluability-assessment-flying-start-en.pdf>



Flying Start and Educational Outcomes

2.9. The stated aim of Flying Start is ‘*to make a decisive difference to the lives of children in the most disadvantaged communities*’⁹. This difference can come in many forms, including parental, whole family and service-level effects, with the aim of making a lasting positive impact. The national evaluation of Flying Start¹⁰ has suggested being in receipt of Flying Start provisions is associated with some positive outcomes for parents and children. These included increased immunisation rates, children’s cognitive development and parents’ mental health. However, these results failed to reach statistical significance, meaning it cannot be said that these outcomes are due to the programme. Despite this, parents interviewed were very positive about the provisions they have been receiving, and reported feeling less isolated and that the local areas have improved as a result of Flying Start. There were limitations to the approach used in this evaluation¹¹ and there was a recommendation that a longer-term evaluation of educational outcomes be undertaken.

2.10. There is a wealth of evidence suggesting that deprivation is linked to educational outcomes. Estyn reported that there are strong links between poverty and educational outcomes¹². Socio-economic factors, such as parental income and education can have significant negative effects on children’s language/literacy development and social-emotional behaviours in the early years¹³.

2.11. Parental income has been linked to children’s cognitive development¹⁴, and evidence suggests that the most important familial factors in children’s attainment are parents’ education and income. However, parents’ attitudes and well-being can play a large part in determining children’s outcomes. The negative effect of low income can be mitigated in part by positive parenting skills, such as warmth, appropriate discipline and at-home educational behaviours¹⁵. Figure 2.1 shows a theoretical route by which families’ can impact on children’s developmental outcomes. Flying Start is intended to influence the middle two sections, by improving parenting cognitions (i.e. attitudes and beliefs), providing support for parents’ well-being and resources to help improve the home learning environment. The impact evaluation of Flying Start¹⁶ suggested that parenting behaviours can be improved as a result of Flying Start provisions, which could lead to more positive parent-child interactions. These positive interactions then could theoretically lead to positive gains in the children’s cognitive development and school attendance, which should be reflected in improved educational outcomes.

⁹ <http://gov.wales/statistics-and-research/national-evaluation-flying-start/?lang=en>

¹⁰ <http://gov.wales/docs/caecd/research/2014/140131-flying-start-synthesis-report-en.pdf>

¹¹ This included the lack of data about the situations of families living in Flying Start areas prior to rollout of the intervention and that the Flying Start areas are systematically different to non Flying Start areas, so identifying a suitable comparison group is impossible.

¹² <https://www.estyn.gov.wales/sites/default/files/documents/Pupil%20deprivation%20-%20May%202014.pdf>

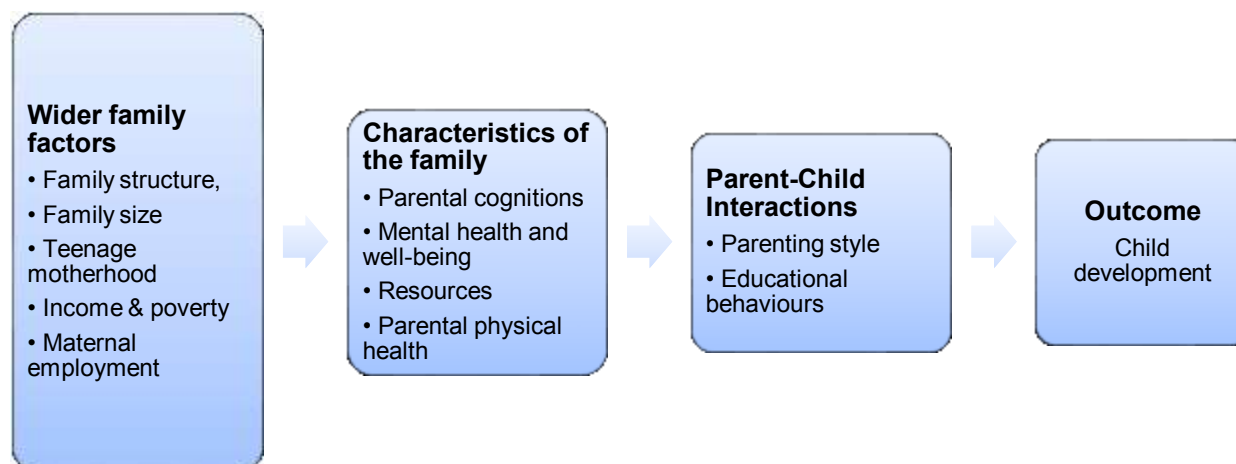
¹³ http://education.praguesummerschools.org/files/education/hatras_1.pdf

¹⁴ <http://www.cls.ioe.ac.uk/wp20122>

¹⁵ <http://eprints.ioe.ac.uk/5977/1/Feinstein2004amodel.pdf>

¹⁶ <http://gov.wales/docs/caecd/research/131205-national-evaluation-flying-start-impact-report-en.pdf>

Figure 2.1. Theoretical model describing the intergenerational transmission of educational success (L Feinstein, K Duckworth & R Sabates, 2004)



2.12. The Welsh Government has produced a strategy for using the various government programmes and policies to influence early years' development: Building a Brighter Future: Early Years and Childcare Plan¹⁷. This plan states that there are a number of critical factors that promote positive outcomes for children and can help overcome disadvantage. These factors deal with the following areas:

- children's health and well-being
- strong and positive a home learning environment that facilitates and supports learning
- attending high-quality childcare
- the relationships between schools, providers, support services and parents

2.13. Many of the Flying Start provisions incorporate these factors, which suggest that Flying Start is able to make a difference to the lives of children in disadvantaged areas. Given the strong link between deprivation and children's educational outcomes, it could be hypothesised that actions which help overcome the effects of deprivation may manifest as improvements in educational outcomes. However, the link between deprivation and children's educational outcomes may only be indirect, and is improved as a result of more positive parenting and higher school attendance.

¹⁷ <http://gov.wales/docs/dcells/publications/130716-building-brighter-future-en.pdf>

2.14. Improving educational outcomes has important implications for future development and potentially impact into adulthood. The Office for National Statistics (ONS) suggests that educational outcomes are one of the best predictors of being in poverty and material deprivation as an adult¹⁸. This is important for issues such as the inter-generational transfer of poverty, as children who grow up in households in poverty are more likely to be in poverty as adults¹⁹. Evidence suggests that both hard outcomes, such as educational attainment, and softer outcomes, such as home learning environment and early behavioural problems, can be important predictors of later success in education²⁰.

2.15. However, evidence suggests that most interventions aimed at improving educational outcomes have relatively small effects, with the most effective interventions likely to only lead to an improvement of one level or grade²¹ in each subject per pupil. Therefore, while the evidence suggests Flying Start is able to make an impact in children's educational attainment, it is likely this effect will be small.

Analytical Approach

2.16. The approach for the evaluation was to make use of anonymised pupil-level data from the National Pupil Database (NPD) for the period 2004/05 to 2014/15. Children within this dataset were flagged as living in a Flying Start area based on their recorded postcode in the NPD.

The Data

2.17. The NPD contains a variety of items about the children's individual characteristics that can help to determine their circumstances that may have an effect on their education. The main characteristics used in this evaluation are gender, ethnicity (White British or Other), free school meal (FSM) eligibility and special educational needs (SEN)²².

2.18. FSM eligibility is a useful indicator of deprivation as children whose parents receive the following support payments are eligible to receive free school meals in maintained schools in Wales:

- Income Support.
- Income Based Jobseekers Allowance Support under Part VI of the Immigration and Asylum Act 1999.
- Income-related Employment and Support Allowance.

¹⁸

http://webarchive.nationalarchives.gov.uk/20160105160709/http://www.ons.gov.uk/ons/dcp171766_378097.pdf

¹⁹ Ibid

²⁰ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/373286/RR352_-_Influences_on_Students_GCSE_Attainment_and_Progress_at_Age_16.pdf

²¹ <http://www.leeds.ac.uk/educol/documents/00002182.htm>

²² For key quality information about the data see: <http://gov.wales/docs/statistics/2015/150331-academic-achievement-pupil-characteristics-2014.pdf>

- Child Tax Credit, provided they are not entitled to Working Tax Credit and their annual income does not exceed £16,190.
- Guarantee element of State Pension Credit.
- Working Tax Credit 'run-on' - the payment someone may receive for a further four weeks after they stop qualifying for Working Tax Credit.
- Universal Credit.
- Children who receive income related employment and support allowance, Universal Credit, Income Support or Income Based Job Seekers Allowance in their own right are also eligible to receive Free School Meals.

2.19. Pupils should only be recorded as eligible if they have applied for free school meals to the local authority and (1) the relevant authority has confirmed their eligibility, or (2) final confirmation of eligibility is still awaited but the school has seen documents that strongly indicate eligibility. This creates issues with FSM eligibility as a measure of deprivation, as parents may choose to not apply for FSM, the relevant authority may not have confirmed their eligibility and/or the family may be deprived without being in receipt of the stated support payments. Evidence suggests that while FSM eligibility has a strong association with educational outcomes, it is not reliable as a proxy for the children's economic situation²³. However, in the absence of more reliable measures, FSM eligibility was used to help compare children based on household deprivation.

2.20. SEN is another useful characteristic for this evaluation as it indicates if the child has been identified as having additional learning needs or difficulties. These difficulties can take many forms, including learning difficulties, behavioural and/or emotional problems, sensory impairments and diagnosed developmental disorders. Pupils known to have special educational needs can be in one of the following categories:

- School Action: When a class or subject teacher identifies that a pupil has special educational needs they provide interventions that are additional to, or different from, those provided as part of the school's usual curriculum.
- School Action Plus: When the class or subject teacher and the SEN Co-ordinator are provided with advice or support from outside specialists, so that alternative interventions additional to, or different from, those provided for the pupil through 'School Action' can be put in place.
- Statement: Pupils for whom the local authority maintains a statement of special educational needs under Part IV of the Education Act 1996. A statement may be issued by the local authority after assessment of a child's needs.

2.21. School Action is the most common form of SEN, with 19.9 per cent of children in maintained schools having either Action or Action Plus, and 2.7 per cent having a Statement of Need²⁴. For this evaluation, all three of these categories were grouped together in order to indicate if the child has any form of SEN.

²³ [http://eprints.lse.ac.uk/19385/1/Is_Free_School_Meal_Status_a_Valid_Proxy_for_Socio-Economic_Status_\(in_Schools_Research\).pdf](http://eprints.lse.ac.uk/19385/1/Is_Free_School_Meal_Status_a_Valid_Proxy_for_Socio-Economic_Status_(in_Schools_Research).pdf)

²⁴ <http://gov.wales/docs/statistics/2015/150723-school-census-results-2015-en.pdf>

- 2.22. In addition to the individual characteristics included in the NPD dataset, several area-based measures were also matched onto the data. The purpose of this is to examine whether the environment within which children are living has a separate and additional effect on the educational outcomes of children. These measures included the Welsh Index of Multiple Deprivation (WIMD) and the proportion of children who are considered to be in income deprivation.
- 2.23. WIMD²⁵ is the official measure of relative deprivation for small areas in Wales. It is designed to identify those small areas where there are the highest concentrations of deprivation. Every LSOA²⁶ in Wales is assigned a score which indicates their level of deprivation relative to all the other LSOAs in Wales and then the LSOAs are ranked.
- 2.24. WIMD is comprised of eight separate deprivation domains: income, employment, health, education, access to services, community safety, physical environment and housing. Every LSOA has a score for each of these domains, which is then combined to produce the area's overall score. Each domain is produced by using data that is already available, such as the level of unemployment or crime.
- 2.25. The number of children up to the age of three in income deprived households has been calculated by HMRC and the DWP. The indicator is a count of unique individuals (i.e. duplicates removed), expressed as a percentage of the total population for the LSOA. Children are classified as living in an income deprived household if a member of that household is in receipt of Income Support (IS), Jobseekers Allowance (JSA), Pension Credit (PC) claimants and/or Employment and Support Allowance (ESA).

The Evaluation

- 2.26. There are two main options that are provided by the NPD for analysis of Flying Start outcomes. First is to compare outcomes of children living in each area before and after the introduction of Flying Start. Although this provides fairly straightforward analysis, the main limitation of this approach is that it does not compare children living in Flying Start areas with those living in non-Flying Start areas in the *same* academic year. This means that changes observed may be due to reasons other than Flying Start, for example, changes in the outcomes of children in Flying Start areas over time could simply reflect changes in educational outcomes generally across Wales.
- 2.27. The second approach is to compare outcomes for children living in Flying Start areas with outcomes for children from the *same* academic year who live elsewhere. The main limitation of this approach is that we have to rely on comparing outcomes of children from *different* areas. Therefore, any underlying differences in the areas, such as the levels of deprivation of the children, can undermine the extent to which we can associate differences in outcomes to Flying Start. To help overcome these issues, both approaches were adopted.

²⁵ <http://wimd.wales.gov.uk/>

²⁶ Lower Super Output Areas (LSOAs) are geographical areas which contain between 400 and 1,200 households. See <http://webarchive.nationalarchives.gov.uk/20160105160709/http://www.ons.gov.uk/ons/guide-method/geography/beginner-s-guide/census/super-output-areas--soas-/index.html>

- 2.28. The first stage to the analysis began with conceptualising the introduction of the Flying Start programme and identifying those cohorts of pupils who have potentially benefited from Flying Start interventions. The characteristics of these children were compared with those residing in non-Flying Start areas (Chapter 3). It is important that any differences in the characteristics of pupils within these schools are subsequently taken into account when examining outcome data.
- 2.29. Following an initial description of the characteristics of children living in Flying Start areas, the analysis then proceeds to examine available outcome data in relation to the implementation and possible impact of Flying Start. Three key areas of outcome data are considered, **attendance**, **educational attainment** and **special educational needs**.
- 2.30. **Attendance** data is used to examine changes in the participation of children in primary education. Changes in attendance may reflect changes in the attitudes and behaviours of parents towards education in the early years of their children's schooling. Changes in attendance may also reflect improvements in the health and wellbeing of children who were supported by Flying Start. However, recorded levels of attendance may also be due to changes in the way in which schools record and code absenteeism. The NPD data is therefore used to examine what (if any) association residing in a Flying Start Area has with attendance in schools (**Chapter 4**).
- 2.31. Similarly, **educational attainment** for children aged seven, based on teacher assessment data, is analysed (**Chapter 5**). Changes in educational outcomes are examined before and after the introduction of Flying Start in order to assess any impact the programme may have had on attainment in Flying Start areas.

2.32. There is also an examination of the levels of special educational needs (**SEN**), and how it relates to living in a Flying Start area (**Chapter 6**). While SEN is used as a way of explaining individual differences in attendance and attainment, Flying Start provisions may also influence the likelihood of a child being identified as having SEN. Children living in Flying Start areas have access to enhanced health visiting, which includes developmental assessments. This may result in earlier identification of developmental delays, which can lead to SEN. In addition to this, the free childcare increases opportunity for learning needs to be assessed and passed onto schools when the child turns three. Therefore this examination will explore if living in a Flying Start area increases likelihood of being identified as having SEN.

2.33. In order to try to produce some reliable conclusions about the effect of living in a Flying Start area, the phased roll-out of the programme will be exploited. The programme was first introduced in 2006/07, and then expanded from 2012. This phased rollout allows for a number of separate groups to be identified:

- a) Those who are not eligible for Flying Start
- b) Those children living in pre-expansion Flying Start areas, but were not eligible for any intervention due to the timing of the launch and the children's age. This would include any children who were four or older in 2007, and are living in pre-expansion Flying Start areas.
- c) Those children living in pre-expansion Flying Start areas and could have potentially received the intervention. This would include any children under the age of four in 2007, and are living in pre-expansion Flying Start areas.
- d) Those children living in post-expansion Flying Start areas, but were not eligible for any intervention due to the timing of the launch and the children's age. This would include any children who were four or older in 2012, and are living in post-expansion Flying Start areas.
- e) Those children living in post-expansion Flying Start areas and could have potentially received the intervention. This would include any children under the age of four in 2012, and are living in post-expansion Flying Start areas.

At all time points, regardless of potential eligibility, group a) is considered Non Flying Start, groups b) and c) are considered pre expansion Flying Start and groups d) and e) and post expansion areas.

2.34. Children in this evaluation are regarded as being potentially eligible for Flying Start provisions if their age and home postcode means they could have potentially received two or more years of Flying Start provisions. This cut-off has been decided as the childcare element of the Flying Start provisions is only available for children who are aged two to three. Also, it is mandatory for health visitors to undertake developmental assessments with children in Flying Start areas at the ages of two and three. In addition to this, evidence suggests that there are significant positive effects on cognitive development of receiving high quality childcare from the age of two²⁷.

²⁷ <http://eprints.ioe.ac.uk/5309/1/sylva2004EPPEfinal.pdf>

Issues and challenges

- 2.35. From the outset, it is important to acknowledge the limitations of the statistical analyses presented in this report. This report focuses on the use of school data in order to take full advantage of data already held. However, it is important to stress that Flying Start aims to lead to changes in a broad range of outcomes beyond narrowly defined 'bottom line' educational outcomes, such as achievement of the expected level at age seven. Also, by using existing data there are likely to be many factors that would influence the outcomes are not included in this data, such as home learning environment.
- 2.36. Secondly, just because a child lives in a Flying Start area at school age, it is impossible to know they were living in Flying Start area, continually or at all, the up to the age of four. Furthermore, even if they were living in a Flying Start area before school, we are not able to determine how much, if any, engagement they had with the programme. Further to this, each of the provisions has different aims, and so children engaging with one service and not others are likely to have different outcomes than those children that engage with other services. This would dilute and reduce the observed effect of the Flying Start programme.
- 2.37. Relatedly, the analysis covers a period when the Flying Start programme was still 'bedding-in'; the earliest cohorts of children supported by the Flying Start programme are unlikely to have received the same level of support as later cohorts. This is due to the guidance being finalised and a period of recruitment and training of the staff to deliver the Flying Start provisions.
- 2.38. Another limitation for this evaluation is that children living in disadvantaged areas are more likely to attend poorer quality schools. There are a range of factors which contribute to the difficulties of school in deprived areas, including additional learner needs, lack of resources for extra-curricular activities at home, increased incidence of disruptive or challenging behaviour and less willing participation, identified as failure to complete homework and bringing necessary books or materials to school²⁸. This can lead to more unpredictable and less effective learning environments for children and teachers. While only 14 per cent of variation in educational outcomes is associated with school quality²⁹, the combined effects of deprivation and school quality may act to mitigate the positive effects of Flying Start; it is beyond the scope of Flying Start to address all these challenges.

²⁸[http://eprints.lse.ac.uk/6321/1/Schools in Disadvantaged Areas Recognising context and raising quality.pdf](http://eprints.lse.ac.uk/6321/1/Schools_in_Disadvantaged_Areas_Recognising_context_and_raising_quality.pdf)

²⁹<https://www.jrf.org.uk/sites/default/files/jrf/migrated/files/2123.pdf>

2.39. Related to this, schools with high proportions of children who are eligible for free school meals have been targeted for receipt of the Pupil Deprivation Grant (PDG)³⁰. While there were previous grants for schools in deprived areas, the PDG was first introduced in 2012³¹; the same period as the expansion of Flying Start. The aim of this grant is to improve the educational attainment of deprived children, and the 2015 interim evaluation report suggests that it is having a positive effect on both attendance and attainment³². Therefore any improvements in Flying Start areas (or in any schools with high FSM eligibility levels) may be at least partially related to their receipt of this grant.

2.40. Lastly, it is unknown how frequently families move into, out of or between Flying Start areas. This means children may have been eligible for only a part of the Flying Start provision³³. Also, the outreach element of the programme allows for some children in non Flying Start areas who have received Flying Start provisions. In combination, this means the Flying Start and non Flying Start groups identified in this report may have received varying amounts of provision, and it is possible those in non Flying Start areas have actually received more support from the programme than those in Flying Start areas.

2.41. In addition to these limitations, there are also several evaluation challenges as a result of how Flying Start operates. These include:

- Flying Start provides services to children free of charge, but some of these provisions could be accessed at cost. For example, some settings that provide Flying Start childcare can also be accessed by paying non Flying Start eligible families. In addition to this, families can pay for childcare outside of Flying Start areas that is delivered in a similar format to that provided free by Flying Start. Also, many of the Flying Start provisions are additions to universal services which are available to all children, such as the improved health visitor provision. However, this enhanced provision may lead to improved take-up of these existing services in Flying Start areas, and so narrow the gap between Flying Start and non Flying Start areas.
- The programme itself has changed since its introduction in response to evaluations and recommendations. For example, the Speech, Language and Communication aspect of the programme underwent a large change in 2013/14 in response to the findings of the evaluation³⁴, which reported low provision and take-up of what was known as the Language and Play element of Flying Start. This may affect the evaluation as the effect of the programme has not been consistent over time, which reduces the likelihood that any differences observed can be related to Flying Start eligibility.

³⁰ See <http://gov.wales/topics/educationandskills/schoolshome/deprivation/pdg-and-early-years-pdg/?lang=en>

³¹ However, the amount given to schools for each FSM eligible child has increased over time.

³² <http://gov.wales/docs/caecd/research/2015/151203-evaluation-pupil-deprivation-grant-year-2-en.pdf>

³³ This issue has been attempted to be mitigated by removing any child identified to have moved into or out of a Flying Start area while they are in school.

³⁴ <http://gov.wales/docs/caecd/research/131205-national-evaluation-flying-start-impact-report-en.pdf>

- Flying Start is an area-based intervention, and even though it is targeted at small areas (LSOAs), these areas still contain a great deal of variation in terms of the situations of individual families. There are likely to be households in Flying Start areas that are relatively less disadvantaged, and potentially have a lower need for support than others. It is likely that the biggest impact from early interventions is to be found only when targeted at those with the highest levels of risk. Therefore any evaluation which looks at the impact of all eligible children is likely to show minimal effect.

2.42. A detailed Evaluability Assessment of Flying Start was conducted which provides the logic behind the programme and also described in more detail the challenges faced when attempting to evaluate the programme³⁵.

3. Flying Start Areas

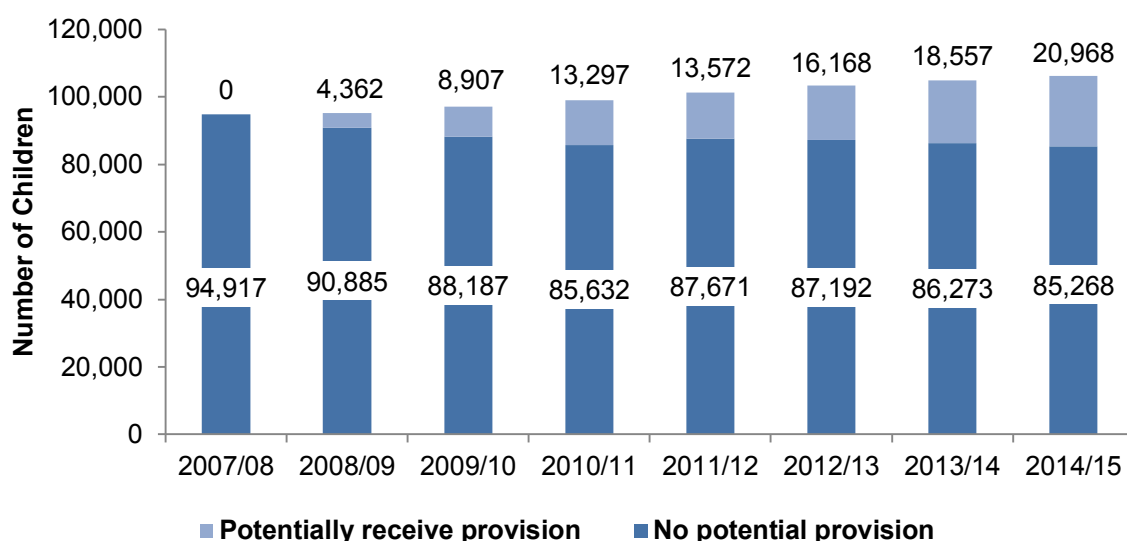
3.1. Flying Start was launched in 2006/07 and expanded from 2012, where 23,500 children received support from Flying Start after that time. Those areas receiving the provision from 2006/07 onwards are the pre expansion areas, and those who received it from 2012/13 onwards are the post expansion areas. These areas are defined as such at all time points, i.e. children living in post expansion areas are identified as living in these areas both before and after expansion.

3.2. Figure 3.1 shows how the number of children aged four to seven in school who could have potentially received any of the Flying Start provisions varies by year. Since Flying Start was rolled out in 2007, no children in school during the 2007/08 academic year had received any Flying Start intervention. The first group of children who could have potentially received any Flying Start intervention are those in reception (i.e. age four at the beginning of the academic year), who are living in a pre-expansion Flying Start area in 2008/09³⁶.

³⁵ <http://gov.wales/statistics-and-research/evaluability-assessment-flying-start/?lang=en>

³⁶ It should be noted that these figures do not correspond to the number of children eligible to receive Flying Start provisions in any year, as these are the number of children aged four to seven who could have potentially received any Flying Start support

Figure 3.1. The total number of children split by their potential to have received any Flying Start provision (2007-15)



3.3. In 2014/15, 13.8 per cent of children aged four to seven were living in in pre-expansion areas and 5.9 per cent in post-expansion areas. In 2010/11 all children living in pre-expansion Flying Start areas could have potentially received some intervention, but it would not be until 2011/12 where reception age children could have received the full intervention and 2013/14 where all primary school aged children living in pre-expansion Flying Start areas could have received the full intervention. Since the post expansion areas only started being eligible for Flying Start from 2012/13, no children living in post expansion areas were potentially eligible for two or more years of Flying Start for this analysis.

3.4. The demographics of the different areas highlight some of the key differences between Flying Start and non Flying Start areas. Table 3.1 shows how Flying Start areas have a higher proportion of children eligible for free school meals and with special educational needs. Approximately 41 per cent of children in pre-expansion areas are eligible for free school meals (FSM), which is 25 percentage points higher than those in non Flying Start areas, but only 2 percentage points higher than those in post-expansion areas, which suggests the level of deprivation is roughly similar between the pre and post expansion areas. Flying Start areas also have a higher proportion of children identified as having special educational needs (SEN), with approximately 28 per cent in pre expansion areas and only 17 per cent in non Flying Start areas being identified as having SEN. The post expansion areas again closely resemble the pre expansion areas, with roughly 26 per cent being identified as having SEN.

Table 3.1. The proportions of Females, White British, Free School Meal eligible and having Special Educational Needs for non Flying Start areas and both pre and post expansion areas (2007-15)

	Non Flying Start Areas	Pre Expansion Areas	Post Expansion Areas
% Female			
Reception	48.7%	48.7%	48.4%
Year 1	48.7%	48.5%	48.4%
Year 2	48.5%	48.4%	48.8%
Total	48.6%	48.5%	48.5%
% White British			
Reception	88.7%	85.2%	88.4%
Year 1	90.4%	87.2%	89.8%
Year 2	91.1%	87.9%	90.5%
Total	90.0%	86.7%	89.5%
% Eligible for Free School Meals			
Reception	15.6%	40.1%	38.2%
Year 1	16.0%	41.5%	40.0%
Year 2	15.8%	41.4%	39.2%
Total	15.8%	41.0%	39.1%
% Special Educational Needs			
Reception	10.4%	19.4%	16.6%
Year 1	16.6%	28.4%	26.0%
Year 2	23.2%	36.1%	35.1%
Total	16.7%	27.8%	25.7%

3.5. To further recognise the differences between areas, area level deprivation measures can be explored. It is also possible to examine the level of deprivation of the different areas using the data collected through the Census and the Department of Work and Pension (DWP) regarding the proportion of children, up to the age of three, living in households on means-tested benefits in each LSOA. The 2011 Census collected data on a range of topics which can be used as indicators of deprivation, including limiting illnesses, qualification levels, overcrowding (i.e. where there are insufficient bedrooms for the occupants³⁷) and central heating.

³⁷ <http://www.ons.gov.uk/ons/rel/census/2011-census-analysis/overcrowding-and-under-occupation-in-england-and-wales/rpt-overcrowding-and-under-occupation-in-england-and-wales.html#tab-background-notes>

3.6. Table 3.2 shows that the average percentage of children living in income deprivation is higher for Flying Start areas, with roughly 53 percent of children in pre expansion areas living in households on means tested benefits; compared to 25 percent in non Flying Start areas. This helps to demonstrate that Flying Start has effectively targeted the most disadvantaged areas in Wales. There is nearly twice the proportion of working age adults without qualifications living in Flying Start areas compared to non Flying Start areas. There is also a greater likelihood of children living in a home that is overcrowded, and also of the children having a long term limiting illness.

Table 3.2. Deprivation indicators for children up to the age of three living in non Flying Start and both pre and post expansion areas in Wales (2007-15)

	Non Flying Start Area	Pre Expansion Flying Start Area	Post Expansion Flying Start Area
% Income Deprivation	25.0%	53.0%	52.4%
% Limiting Illness	2.3%	3.6%	3.1%
% No Qualifications*	16.8%	31.1%	29.2%
% Overcrowding	8.4%	13.9%	13.5%
% No Central Heating	1.00%	0.75%	0.78%

* For adults aged 16 to 64

3.7. The income deprivation distribution is shown in Figure 3.2. This figure shows how the majority of children in non Flying Start areas live in postcodes where fewer than half of households receive means-tested benefits. However, both pre- and post-expansion areas typically have more than 40 per cent of household on means tested benefits. Therefore any differences between Flying Start and non Flying Start areas could be due to national changes to welfare and benefit entitlements that disproportionately effect disadvantaged areas.

3.8. Table 3.2 and Figure 3.2 show the levels of deprivation for the period 2007 to 2015. However, it is possible that the levels have changed over time, and that this could in turn have an impact on the outcomes in Flying Start areas. Figure 3.3 suggests that deprivation levels are declining in Flying Start areas as between 2007 and 2015 the average proportion of children in income deprivation has dropped by 4 percentage points in pre-expansion areas and by 5.7 percentage points in post-expansion areas. However, the levels of income deprivation in non Flying Start areas have remained relatively constant, with only a 0.1 percentage point difference over the same period.

Figure 3.2. The income deprivation distribution of children in non Flying Start and both pre and post expansion areas (2007-15)

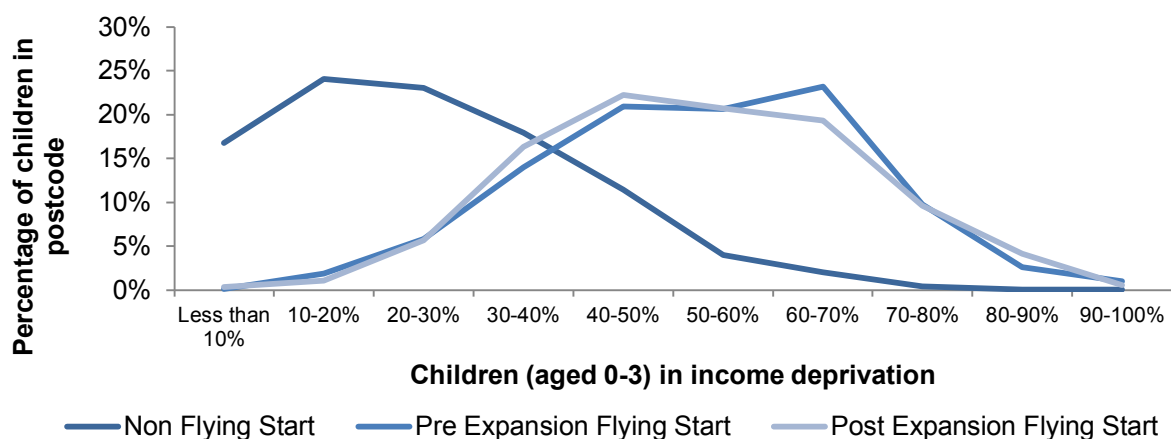
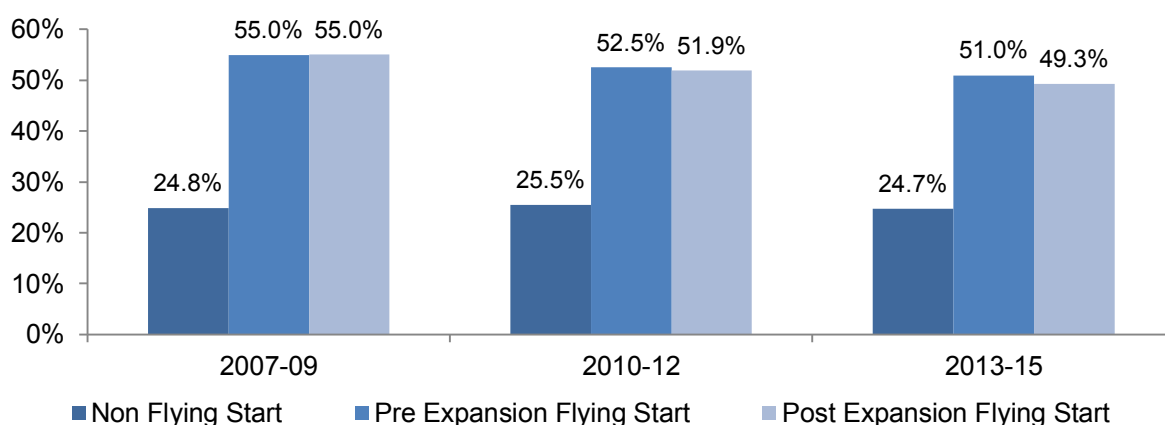
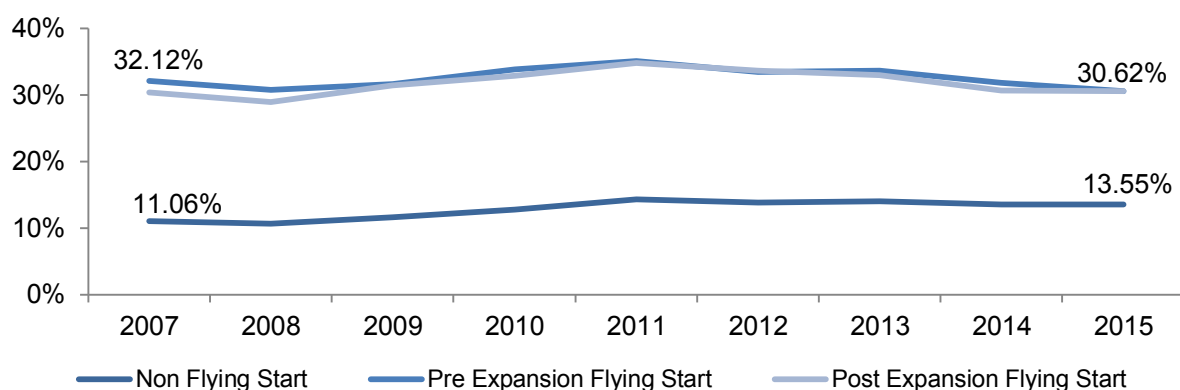


Figure 3.3. The proportion of children in non Flying Start and both pre and post expansion areas who are in income deprivation



3.9. Another way of estimating the level of deprivation change in the different areas is to see the proportion of children that are eligible for free school meals over time. Figure 3.4 shows the levels of FSM eligibility in the different areas over the period of 2007 to 2015. It suggests that levels of FSM eligibility are slowly declining in pre and post expansion Flying Start areas, and levels are increasing in non Flying Start areas. This could have an effect on the other outcome measures that are connected to levels of deprivation, e.g. levels of absenteeism. While the proportion differences in the over time are small, the rise from 11.06% to 13.55% in non Flying Start areas corresponds to an increase of roughly 1,000 children.

Figure 3.4. The proportion of children in non Flying Start and both pre and post expansion areas who are eligible for free school meals (2007-15)



3.10. Related to the levels of FSM eligibility is the allocation of the Pupil Deprivation Grant to schools in different areas. Children in Flying Start areas are more likely to be eligible for FSM, and therefore the schools they attend receive more grant funding. Schools attended by children living in Flying Start areas receive, on average, twice as much grant funding as those in non Flying Start areas³⁸. Pre expansion areas receive on average £137.29 per child in the school, compared to £66.17 in non Flying Start areas. Children in post expansion areas attend schools that receive on average £116.88 per child.

3.11. As the levels of deprivation change over time, any results which suggest an improvement in Flying Start areas relative to non Flying Start areas may be due to this change in deprivation (or another factor causing the change in deprivation), rather than any effect of the intervention. It is also worth noting that area level deprivation in post expansion areas has improved at a faster rate than the pre expansion areas, so it could be expected that the post expansion areas also improve in other areas (e.g. educational outcome) faster than the pre expansion areas, if the outcome is more related to the level of deprivation, rather than any impact of the Flying Start provision.

4. Attendance

4.1. One area in which the Flying Start Programme may have an important impact for children is in relation to attendance. Increases in attendance may reflect changes in the attitudes of parents towards primary education. This may be due to parenting support increasing the appreciation of education and/or willingness to encourage attendance. Also attending childcare may help families become used to regular attendance at an educational setting. Improvements in health outcomes as a result of interventions under the Flying Start Programme may also indirectly influence levels of attendance through fewer sick days. It is therefore important to assess whether the introduction of Flying Start has had an effect on levels of absenteeism.

³⁸ This is due to schools in Flying Start areas having roughly twice the proportion of children who are FSM eligible.

4.2. Absenteeism from school has been linked to a variety of longer-term outcomes.

Evidence suggests that as a child's absenteeism increases, so too does their likelihood of failing to reach expected levels of attainment later in school³⁹. This in turn has ramifications for their prospects in adulthood. High levels of absenteeism increases the likelihood of being Not in Education, Employment or Training (NEET) at the age of 18⁴⁰. Therefore absenteeism is a possible area in which Flying Start can improve the long-term prospects of children who engage with the programme.

4.3. All children receiving education at school during the normal school day must be placed on the attendance register. This records the attendance of all pupils during each half day session (morning and afternoon) during every day the school is open to pupils. Where a pupil is recorded as absent, the school records whether the absence was authorised or unauthorised. Definitions of authorised and unauthorised absences, as provided by the Welsh Government, are as follows⁴¹:

- Authorised absence - an absence with permission from a teacher or other authorised representative of the school. This includes instances of absence for which a satisfactory explanation has been provided (e.g. illness, family bereavement or religious observance).
- Unauthorised absence - an absence without permission from a teacher or other authorised representative of the school. This includes all unexplained or unjustified absences.

4.4. Pupil-level absence data was collected from maintained primary schools⁴² for the first time in 2007/08. It is therefore only possible to provide any information on levels of absenteeism from 2007/08 onwards. Furthermore, the following two years (2008 to 10) represent a transitional stage within pre expansion area schools in which younger cohorts of children may well have benefitted from interventions under the Flying Start programme whilst older cohorts would not have been eligible for the scheme. The same effect occurs within post-expansion areas in the years 2013 to 2015.

4.5. Absenteeism data only relates to children of compulsory school age (those aged five and above) and so the analysis that follows only relates to pupils within School Year 1 and School Year 2 of primary school (i.e. children in reception class are excluded from the analysis). For the purposes of making comparisons in attendance before and after the introduction and expansion of the Flying Start Programme, the results are grouped into three time periods: before Flying Start implementation (2007 to 2009), during implementation where children in pre-expansion areas could have had a partial provision (2010 to 2012) and after implementation where children in pre expansion areas could have had a full provision and children in post expansion areas could have had a partial provision (2013 to 2015). The analysis of absenteeism focuses upon four measures derived from the NPD.

³⁹ See https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/183445/DFE-RR171.pdf

⁴⁰ Ibid

⁴¹ See <http://wales.gov.uk/docs/statistics/2011/111214sdr2312011en.pdf>

⁴² A maintained school is a school that is funded by the Local Authority, as opposed to an independent (or non maintained) school which is usually paid for by the parents.

- Days present - the time that pupils are present in school, measured in terms of the proportion of half-day sessions that pupils were in attendance.
- Persistent absence - pupils who have been absent for at least 20 per cent of half-day sessions during the school year and is a measure used by the WG in the presentation of data on pupil absenteeism⁴³.
- Unauthorised absence – pupils having had at least one unauthorised absence during the school year.
- Unauthorised days - the actual number of unauthorised absences for children who have at least one unauthorised absence.

4.6. Schools determine if an absence is authorised or not, and it is expected that there will be systematic differences between levels of authorised and unauthorised absences between schools. Therefore the total proportion of days present may be more reliable an indicator of attendance than either of the unauthorised measures.

Attendance Levels

4.7. Table 4.1 shows how both pre and post expansion Flying Start areas have lower average attendance, higher levels of both persistent and unauthorised absence and a higher number of unauthorised absences in those children with any unauthorised absences. This is in line with evidence suggesting children in deprived areas are more likely to be absent from school⁴⁴.

Table 4.1. The average levels of attendance and absenteeism in non Flying Start areas and both pre and post expansion areas.

	Non Flying Start Area	Pre expansion Area	Post expansion Area
Percent Present	93.8%	92.0%	92.1%
Persistent Absence	2.5%	5.6%	5.4%
Any Unauthorised	29.5%	50.7%	46.7%
Unauthorised Days	9.17	13.02	12.46

4.8. However, the aim of this evaluation is to determine if Flying Start has had an impact on the outcomes of children. Therefore it is necessary to determine if these levels of absenteeism change over time. If Flying Start has an impact it would be expected that, after implementation of the programme, the levels of attendance in Flying Start areas would begin to converge with the levels in non Flying Start areas.

⁴³ See <http://gov.wales/docs/statistics/2013/130515-absenteeism-pupil-characteristics-2011-12-en.pdf>

⁴⁴ <https://www.estyn.gov.wales/sites/default/files/documents/Pupil%20deprivation%20-%20May%202014.pdf>

- 4.9. Figures 4.1a to 4.1d show the levels of all four measures of absenteeism. The first main feature to note is that attendance is improving in all areas for all four measures of absenteeism. The second is that Flying Start areas appear to be converging with non Flying Start areas. For example, the levels of persistent absenteeism fell from 7.6 and 3.2 per cent in Flying Start and non Flying Start areas in 2007/08, respectively, to 2.7 and 1.1 per cent in 2014/15. While this represents a reduction of 2.8 percentage points in the difference between pre-expansion and non Flying Start areas, the levels of persistent absenteeism still remain twice as high in pre expansion areas.
- 4.10. Levels of absenteeism in Flying Start areas are converging with non Flying Start areas. This provides tentative support for the suggestion that Flying Start is having an impact on attendance in primary school aged children. However, if this were the case, it may be expected that the levels in pre expansion areas would improve relative to post expansion areas. Flying Start was implemented five years earlier in the pre expansion areas, but the levels of absenteeism in post expansion areas almost perfectly match those in pre expansion areas. However, one possibility is that due to the 'bedding in' period, the provision to the pre expansion areas up until 2012 was not complete, and that also the post expansion areas are more responsive to the support provided due to their less disadvantages situations. Regardless, these results suggest that both pre and post expansion areas are improving due at least in part to reasons other than Flying Start.
- 4.11. It should also be noted that 'ceiling' and 'floor' effects may be acting on the percentage of days present and persistent absenteeism. There is more opportunity for improvement in children living in Flying Start areas, which may explain some of the convergence between absenteeism levels. However, this does not detract from the finding that attendance in Flying Start areas has improved over time. It could be argued that given the small scope for improvement overall, the improvement is proportionately greater in Flying Start areas than non Flying Start areas.

4.12. One of the notable differences between Flying Start and non Flying Start areas is that while overall attendance is improving over time in both areas, the proportion of children who have at least one unauthorised absence is increasing in non Flying Start areas only. This is likely related to the change in how Local Authorities enforce attendance introduced in 2012. These changes meant family holidays were less likely to be allowed as a reason for absence, and so children going on family holidays would be recorded as having an unauthorised absence. These results suggest that children in less deprived areas are more likely to go on family holidays, which could explain the increase in the proportion of children with at least one unauthorised absence in the non Flying Start areas.

Figure 4.1a. The average percentage of days attended in non Flying Start and both pre and post expansion Flying Start areas. (Data labels are for non Flying Start and pre expansion Flying Start areas)

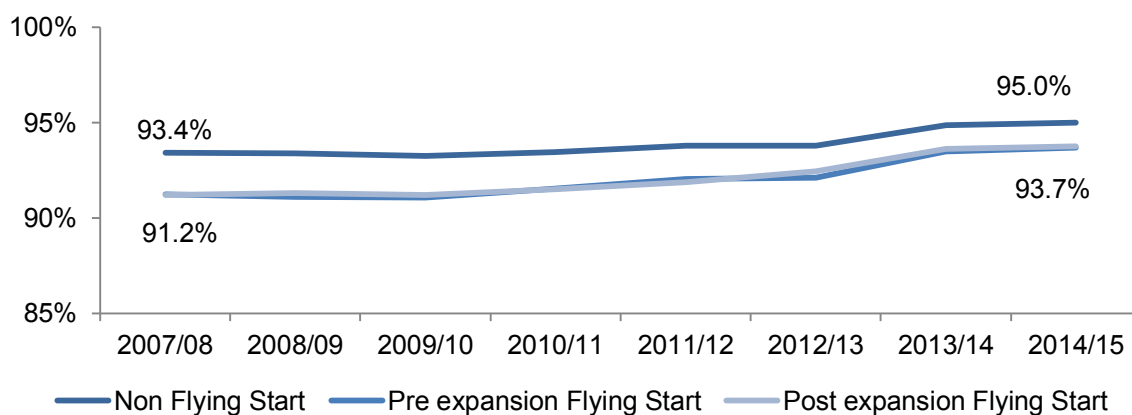


Figure 4.1b. The average proportion of children who are persistently absent in non Flying Start and both pre and post expansion areas.

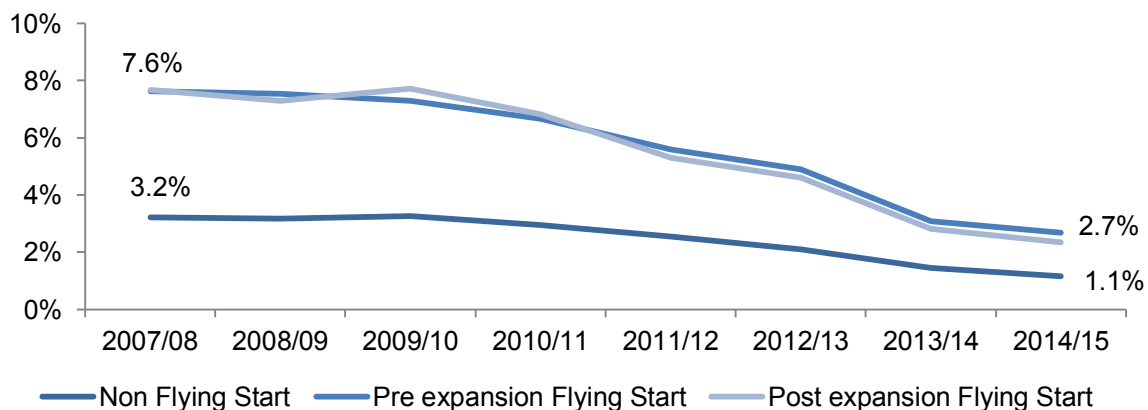


Figure 4.1c. The average proportion of children who have at least one unauthorised absence in non Flying Start and both pre and post expansion areas

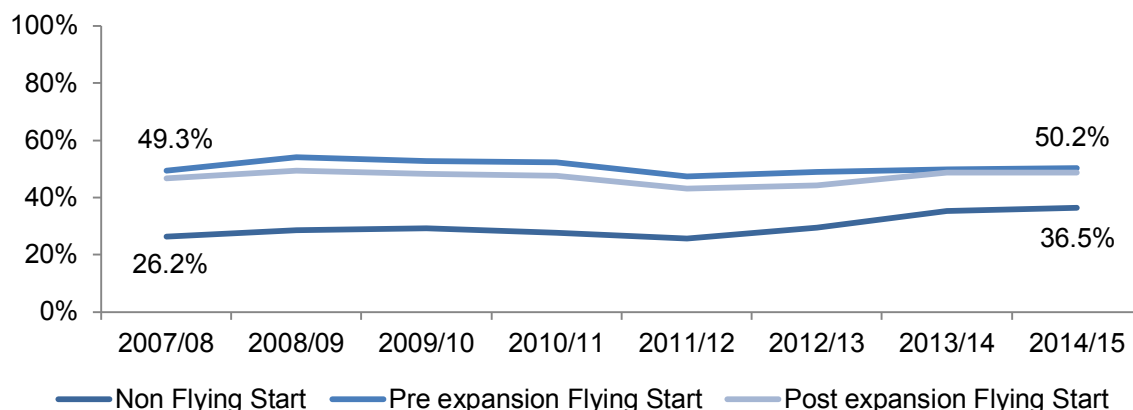
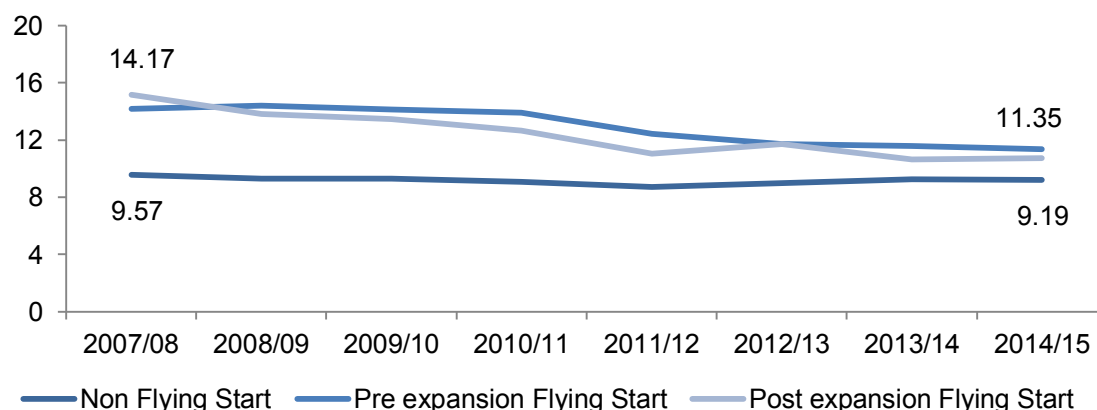


Figure 4.1d. The average number of unauthorised absences in children who have at least one unauthorised absence in non Flying Start and both pre and post expansion areas



Demographic Differences

- 4.13. There is little to no difference in attendance between the genders, but ethnicity, FSM eligibility, SEN status and income deprivation appears to have an effect on attendance. Of these characteristics, FSM eligibility produces the greatest differences. In non Flying Start areas, attendance is between 2.7 and 3.3 per cent higher in non FSM eligible children, and between 1.9 and 2.1 in pre expansion areas. The differences between these groups are smaller after the expansion of Flying Start in 2012. See Annex A for detailed breakdowns by area and characteristic.

- 4.14. The differences in attendance that are related to ethnicity and SEN are smaller than those for FSM eligibility. Prior to implementation, both resulted in a difference of just over two percentage points, with children who are White British and/or not identified as having SEN having better attendance. Similar to the results for FSM eligibility, the differences due to these characteristics decreases over time. This decrease is particularly pronounced in persistent absenteeism, with the differences due to SEN and ethnicity halving over the evaluation period.
- 4.15. Average attendance appears to be increasing at a faster rate for children who either live in deprived areas or who are FSM eligible, which is indicated by the reduction in differences in attendance due to FSM eligibility and income deprivation. However, this reduction is more pronounced in Flying Start areas, which suggests an interaction between deprivation and Flying Start, with the possibility that Flying Start is making more of difference to children who are more deprived.
- 4.16. In regards to number of unauthorised days in non Flying Start areas, the difference between those children who are and are not FSM eligible is 6.3 days (so that FSM eligible children have roughly 70 per cent more unauthorised days than not eligible children). However, by 2013 to 2015, the number of unauthorised days is the same in both groups of children. A similar pattern is also seen in both pre- and post-expansion areas.
- 4.17. Figures 4.2a to 4.2d show the levels of attendance only for children living in pre expansion Flying Start areas, but split by the level of deprivation. The split is based on the top and bottom quartiles of children in pre expansion areas living in income deprivation (i.e. where the area has below 40 per cent or above 63 per cent deprivation). Children who live in an area where less than 40 per cent are in income deprivation are considered in the less deprived Flying Start area for the purposes of this analysis. Those children who live in areas where more than 63 per cent are in income deprivation are considered living in the more deprived Flying Start areas.

Figure 4.2a. The average percentage of days attended in pre expansion areas only, split by those who are in the top or bottom quartiles of income deprivation.

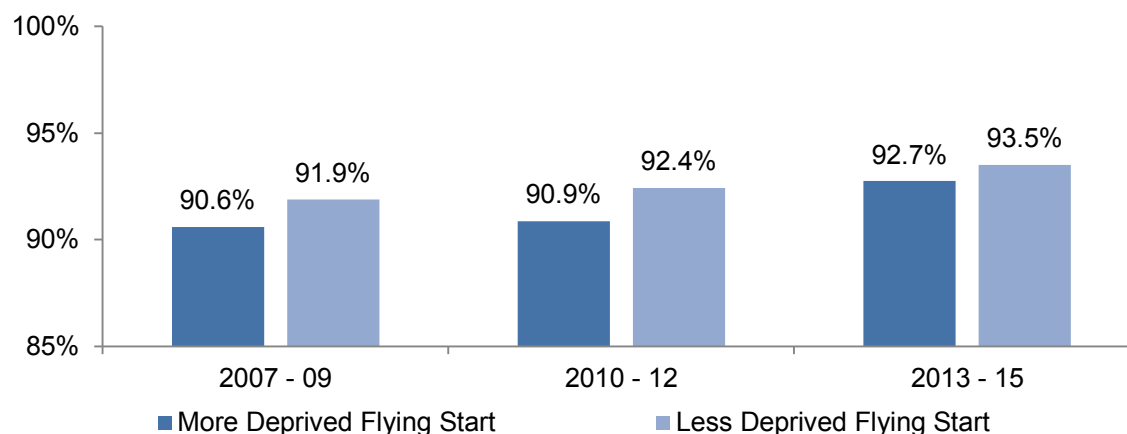


Figure 4.2b. The average proportion of children who are persistently absent in pre expansion areas only, split by those who are in the top or bottom quartiles of income deprivation.

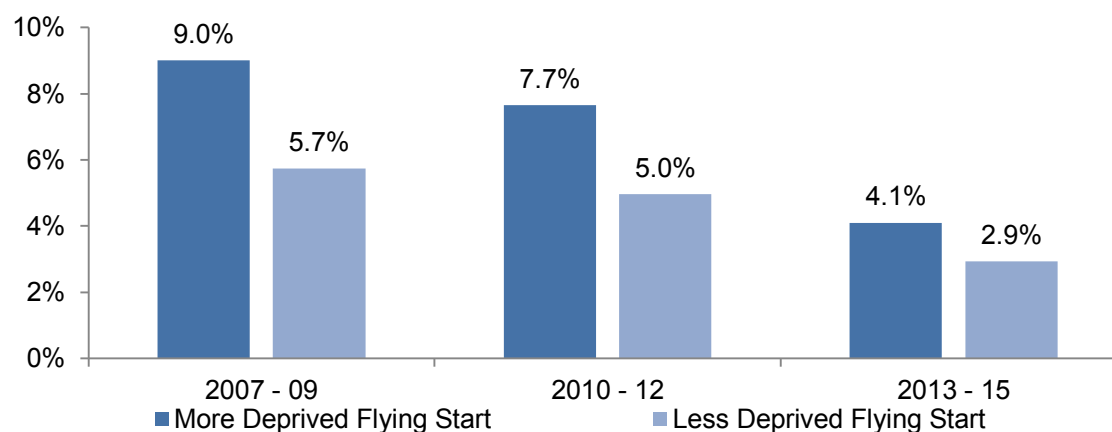


Figure 4.2c. The average proportion of children who have at least one unauthorised absence in pre expansion areas only, split by those who are in the top or bottom quartiles of income deprivation.

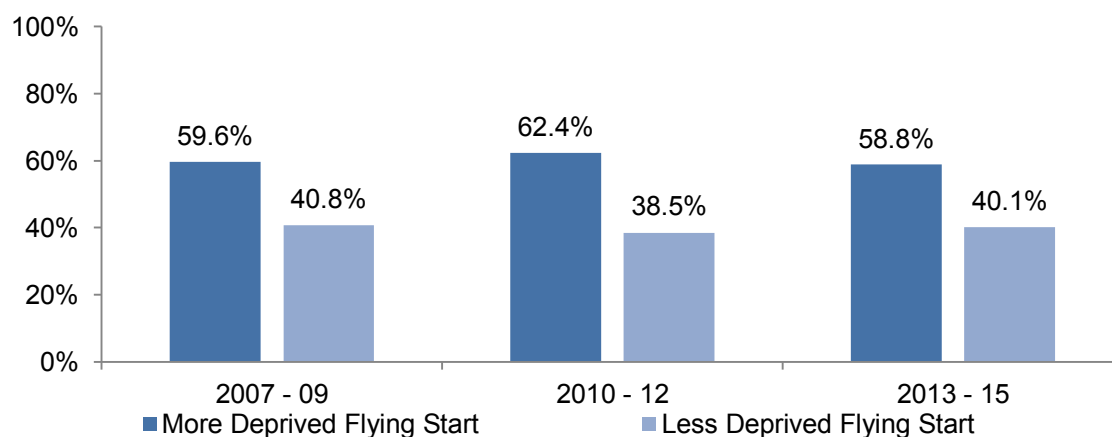
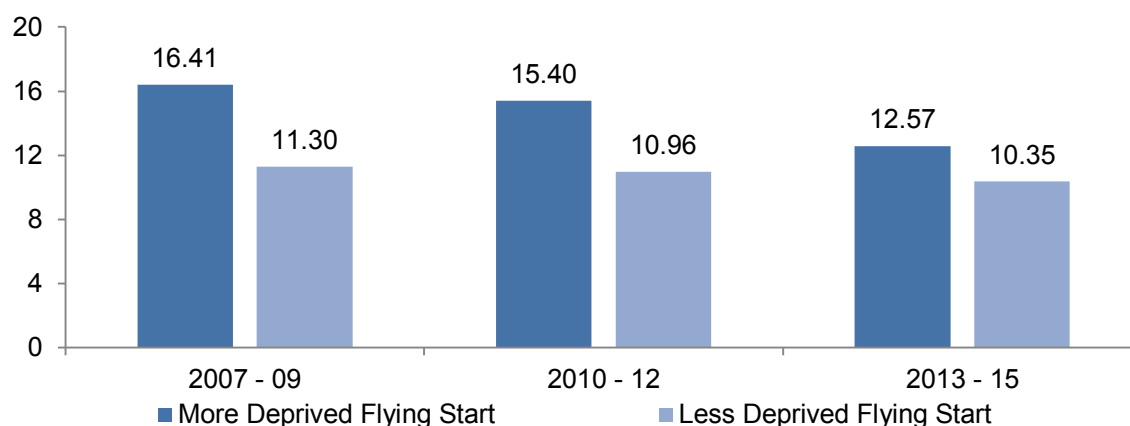


Figure 4.2d. The average number of unauthorised absences in children who have at least one unauthorised absence in pre expansion areas only, split by those who are in the top or bottom quartiles of income deprivation.



4.18. Before implementation, the average attendance of children living in the less deprived areas was 91.9 per cent and in the more deprived areas the average was 90.6 percent, see Figure 4.2a. After implementation, both areas have improved, and the difference between the areas has dropped by 0.5 percentage points, to 93.5 per cent in less deprived areas and 92.7 per cent in more deprived areas.

4.19. The same trend is seen in the other three measures of absenteeism, where the more deprived Flying Start areas improve at a more rapid rate than the less deprived areas, see Figures 4.2b and 4.2d. This suggests that the differences between the more and less deprived Flying Start areas are decreasing over time.

4.20. Another way to examine the effect of deprivation on absenteeism is to consider only those children who are eligible for free school meals. Since children are only eligible for free school meals if a parent is in receipt of means tested benefits, these children could be considered more deprived than those who do not receive free school meals. This is also important to consider, as children who are FSM eligible could potentially be receiving additional support through the Pupil Deprivation Grant (PDG) from 2013.

4.21. When only children who are FSM eligible are considered, the differences between Flying Start and non Flying Start areas almost completely disappear. Before implementation, the average attendance in non Flying Start areas was 90.5 per cent and in pre-expansion areas it was 90.0 per cent. After implementation the levels are the same, at 92.2 per cent.

4.22. A similar trend is seen for persistent absenteeism and the average number of unauthorised absences, with the differences between Flying Start and non Flying Start areas in only those eligible for free school means being considerably smaller than the levels found in the whole population. Before implementation, the difference in persistent absenteeism between non Flying Start areas and pre-expansion areas is 2 percentage points, but after implementation this difference has decreased to 0.8 percentage points. Before implementation, children in non Flying Start areas with at least one unauthorised absence had on average 14.3 recorded unauthorised absences, compared to 17.2 in pre expansion areas (i.e. difference of 2.9 days). After implementation, non Flying Start areas had on average 11.9 and pre expansion areas had 13.4, making a difference of 1.5 days.

Analysis

4.23. The results so far make it clear that deprivation has an important impact on absenteeism in both Flying Start and non Flying Start areas. However, it is unclear what the relative strength of the effect of deprivation, and other characteristics, have in producing the results. In order to determine the main drivers of absenteeism it is necessary to employ statistical techniques which can try to isolate the effects of different characteristics and make estimates of their effects.

4.24. The main approach will be to make use of multiple regression analysis. This technique attempts to find what proportion of the differences between children is caused by each characteristic. For example, is absenteeism more associated with gender or ethnicity? By including multiple characteristics it is possible to see the independent effects of each and so see which of them have a greater influence on absenteeism. All the characteristics that are likely to have an effect on absenteeism are included. Therefore the following have been included: all the children's individual characteristics (gender, ethnicity, FSM eligibility, SEN status), the year in which the child was in school and measures of deprivation (percentage of the area in income deprivation, WIMD score). The final model used attempts to take into account the differences in attendance between schools⁴⁵.

4.25. The outputs of these models can take different forms, depending on the kind of estimate they are trying to make. The percentage of days present is a continuous variable (i.e. can take any value between 0 and 100), so the outputs relate to what change in percentage would you expect if the characteristic is found. In both persistent absenteeism and unauthorised absenteeism, the outcome is binary (i.e. it can only be one of two possible outcomes, yes or no); the outputs are an indicator of how the probability of the outcome would change if the characteristic is found⁴⁶. Lastly, the number of unauthorised days is a count outcome (i.e. each child has a number of days). Similar to the binary outcomes, these outputs do not result in a direct estimate of days present, but suggest the change in the number of days. The results of this analysis are presented in Table 4.2.

⁴⁵ This is often referred to as a multi-level, or mixed, model.

⁴⁶ The value shown is not a direct change in outcome probability

4.26. While each of the models shows a different output, the main point of agreement is there is a small direct relationship between living in a Flying Start area and absenteeism. Living in a pre expansion area is associated with a lower level of attendance, and more unauthorised absence. However, if those children who were potentially eligible for Flying Start provisions are compared against those who were not, outcomes improve. Potentially eligible children have a higher level of overall attendance than the national average, persistent absenteeism is lower and unauthorised absenteeism is roughly the same, once all other characteristics are controlled for. However, the associations between Flying Start and absenteeism appear small in comparison to other factors, such as FSM eligibility and SEN.

Table 4.2. The outputs of the regression models for the four absenteeism measures in non Flying Start and both pre and post expansion areas

	Percent Present	Persistent Absenteeism	Unauthorised Absenteeism	Number of Unauthorised Days
Pre expansion not eligible	-0.33%	0.02	0.24	0.08
Pre expansion eligible	0.09%	-0.03	0.01	0.01
Post expansion	-0.11%	0.03	0.06	0.00
White British	1.09%	-0.59	-0.22	-0.11
FSM eligible	-2.14%	1.04	0.81	0.39
SEN	-1.38%	0.71	0.28	0.18
Income deprivation	-1.11%	0.67	0.46	0.16

4.27. It appears from these models that living in a Flying Start area or being eligible for Flying Start provisions⁴⁷ are not strong determinants of absenteeism, whereas characteristics such as being FSM eligible, having SEN, ethnicity and living in an income deprived area have a larger association. Despite this, living in a Flying Start area generally appears to have a negative association with attendance, while potentially having received the Flying Start intervention has a positive association.

⁴⁷ Living in a Flying Start area doesn't necessarily mean a child was eligible to for Flying Start provisions. If they were born in 2005 or earlier, they would have been too old to be eligible for two or more years of Flying Start provisions.

- 4.28. It is also important to understand how well the models fit the actual levels found in the data. The outputs of these models should match the real outcomes for these areas. One way of testing this is to compare the predicted levels of attendance against the actual levels. This comparison suggests that the regression models fit the actual results for all four measures well. The average difference between the predictions and the actual scores is 0.25 per cent for percentage of days present, 0.12 per cent for persistent absence, 1.42⁴⁸ per cent for unauthorised absence and 0.24 days for unauthorised days. See Annex B for the figures comparing the actual and the predicted attendance levels.
- 4.29. The accuracy of the predicted values suggests that the regression models are able to describe the changes in absenteeism, and that the outputs produced are reliable measures of the effects of each characteristic. However, with such a large population included in the analysis, even a weak model can produce relatively accurate results.
- 4.30. Another way to understand how well the model fits the data is to test the relationship between the predictions and the actual results, i.e. correlate the predictions with the actual outcome then square the result⁴⁹. This method can be applied across the different formats of outcome, such as binary (yes/no), count and continuous. The result of this is known as a pseudo R-squared, and provides an approximation for how much of the differences between children is accounted for by the model.
- 4.31. The values for the pseudo R-squared can be between 0 and 1, with values closer to 1 meaning more variance is accounted for, i.e. a better model. The values for each of the four absenteeism measures are 0.092 (percentage of days present), 0.046 (persistent absenteeism), 0.113 (any unauthorised absences) and 0.273 (number of unauthorised days). These values are not surprising given that the explanatory variables were included on the basis of availability, rather than proven associations with the outcomes. Also, regression models with a higher sample size are more likely to have lower values⁵⁰. However, while there is no pre-specified value for a pseudo R-squared, these low values suggest further analysis is required.
- 4.32. Therefore, in order to see if the positive effect suggested by the regression analysis is reliable and significant another statistical test can be employed; propensity score matching (PSM).

⁴⁸ The fit of the model to unauthorised absences is poorer due to the changes in the way in which absences were authorised changed in 2012.

⁴⁹ Zheng, B. and A. Agresti. 2000. Summarizing the predictive power of a generalized linear model. *Statistics in Medicine* 19: 1771–1781.

⁵⁰ <http://www.empgens.com/resources/ResearchDesignsR2.pdf>

4.33. It is possible to match children living in different areas based on their individual characteristics, and then compare the levels of absenteeism found in these matched children. For example, children who are male, white British and FSM eligible in both non Flying Start and Flying Start areas are compared against each other. PSM uses a technique of estimating the likelihood of being in each area based on their characteristics; this estimate is the propensity score⁵¹. Children are matched to their nearest neighbour in the other area (i.e. pre expansion Flying Start or non Flying Start) according to their propensity score⁵². It is also possible to require exact matches for some characteristics; FSM eligibility, SEN status and year were set as requiring exact matches.

4.34. Table 4.3 suggests that when comparing between pre expansion Flying Start areas and non Flying Start areas, differences decrease over time, but that at all time points children living in Flying Start areas have poorer outcomes than those in non Flying Start areas. These differences are significant for all measures of absenteeism prior to the intervention, but diminish to the point of non-significance after expansion.

⁵¹ This score is based on the levels of each characteristic found in each area. For example, since levels of FSM eligibility are higher in Flying Start areas, FSM eligibility can be used to predict the likelihood each child is in each group. Whereas gender is not a different between areas, so cannot be used to predict which area the child is living.

⁵² Characteristics used for matching were gender, ethnicity, FSM eligibility, SEN status and PDG allocation and income deprivation. An average-treatment-effect-on-the-treated approach was used, which means only those in Flying Start areas were required to be matched. It was possible for each child to be matched to more than one other child, and when comparing between areas the number of matches ranged from 1 to 4198. This occurs because each child in the Flying Start area is matched to their nearest neighbour, regardless of if that child has already been matched to another child.

Table 4.3. The outcomes of the Propensity Score Matching comparing children in pre expansion areas against those in non Flying Start areas for the periods before (07-09), during (10-12) and after (13-15) implementation

	Between Pre-Expansion Flying Start and Non Flying Start Areas		
	Before Implementation (2007 – 09)	After Implementation (2010 – 12)	After Expansion (2013 – 15)
Percent Present	-0.57%*	-0.27%*	-0.17%
Persistent Absence	0.79%*	0.78%*	0.27%
Any Unauthorised	12.39%*	9.52%*	0.87%
Unauthorised Days	2.32*	1.81*	0.05

*denotes statistical significance to the 0.01 level

4.35. While children living in Flying Start areas have poorer outcomes than those in non Flying Start areas, even after matching children based on their characteristics, it appears that those who were eligible to receive the Flying Start provisions are more likely to have outcomes that are close to those in non Flying Start areas. However, it is possible that this improvement could have been due to the greater scope for improvement for those in Flying Start areas, rather than any effect of Flying Start.

4.36. In order to test this suggestion, the same matching process was performed for post expansion areas. These areas also show the improvement over time seen in the other two areas, but would have received the Flying Start provision four years later than the pre expansion areas, and so no children in post expansion areas could have been potentially eligible for two or more years of Flying Start provisions. Therefore, if the improvements seen in the pre expansion matching exercise are replicated in the post expansion areas, then it is likely the improvements are not due to Flying Start. However, if the improvements occur later than in pre expansion areas, it is possible to suggest Flying Start has had an impact.

4.37. Table 4.4 shows the outcomes of the propensity score matching for the post-expansion areas. The differences between the post expansion areas and non Flying Start areas are similar to those found in pre expansion areas in the period 2007 to 2012, and the levels of absenteeism are significantly lower than children in non Flying Start areas in the period 2010 to 2012. However, there is a considerable closure of the gap in the period 2013 to 2015, so that there are no significant differences⁵³ between matched children in post expansion Flying Start and non Flying Start areas.

⁵³ Statistical significance testing is not appropriate for the regression analysis, as it includes the whole population of children in Wales. Therefore is not attempting to generalise further than those used in the sample. As the matching analysis only uses a sample of children, significance testing is appropriate.

Table 4.4. The outcomes of the Propensity Score Matching comparing children in post expansion areas against those in non Flying Start areas for the periods before (07-09), during (10-12) and after (13-15) implementation

	Between Post-Expansion Flying Start and Non Flying Start Areas		
	Before Implementation (2007 – 09)	After Implementation (2010 – 12)	After Expansion (2013 – 15)
Percent Present	-0.52%*	-0.49%*	-0.07%
Persistent Absence	0.46%	1.36%*	0.36%
Any Unauthorised	8.67%*	6.93%*	0.62%
Unauthorised Days	2.01*	1.04*	-0.29

*denotes statistical significance to the 0.01 level

4.38. One final test is to match children only in pre expansion areas based on if they were potentially eligible for the provision or not. If Flying Start is having a positive impact then those children who were potentially eligible should have significantly better outcomes than those who could not have received the provision. Again, these children were matched according to their individual characteristics.

4.39. Table 4.5 shows that children in pre expansion areas who were eligible to receive Flying Start provisions had significantly better outcomes than those who lived in the same areas but were not eligible. In all four measures of absenteeism, children who were potentially eligible had more positive outcomes, with an average of 1.15 percentage points higher overall attendance.

4.40. Table 4.5 also shows the result of when the same matching procedure is applied to children living in non Flying Start areas. These children were in the same school year groups as those in pre expansion Flying Start areas who are either potentially eligible for the provision or not. The results strongly suggest that children in pre expansion areas have more rapidly improving attendance than those in non Flying Start areas. Further to that, children in non Flying Start areas have significantly higher levels of unauthorised absence after the introduction of Flying Start, whereas children in pre expansion areas have significantly lower levels.

Table 4.5. The outcomes of the Propensity Score Matching comparing children who are potentially eligible for the Flying Start provision against those in pre expansion areas who could not have received the provision, and the difference in non Flying Start areas using the same time period comparisons

	Between potentially eligible and children in pre-expansion areas who were not eligible	Between those in non Flying Start areas who are the same year groups as those potentially eligible or not
Percent Present	1.15%*	0.47%*
Persistent Absence	-1.80%*	-0.59%*
Any Unauthorised	-4.10%*	4.85%*
Unauthorised Days	-1.51*	0.61*

*denotes statistical significance to the 0.01 level

4.41. The conclusion that can be drawn from this analysis is that there is a small but significant effect of living in a Flying Area on absenteeism. While children in Flying Start areas have poorer outcomes than those living in other areas, the regression analysis suggests that this difference in attendance is largely accounted for by the characteristics of the children living in those areas, i.e. deprivation, SEN and potentially other changes that have occurred that can influence attendance (such as the reclassification of unauthorised absences).

4.42. However, when children who were eligible for Flying Start provisions are compared against those who lived in the same areas before rollout, it appears that being eligible for the provision can have a significant positive effect on absenteeism. For all absenteeism measures, children who were eligible for Flying Start had more positive outcomes than those who lived in pre-expansion areas but could not have received the provision. This supports the results from the regression analysis that found being potentially Flying Start eligible has a small positive association. Therefore, while it is impossible to say what could have happened in the absence of Flying Start, the analysis in this report suggests that Flying Start has a potential positive effect on attendance.

5. Educational Attainment

5.1. While attendance is a useful measure of a child's engagement with school and education, their actual educational attainment is another important measure of their educational outcomes. Children receive Flying Start provisions between birth and the age of four. Therefore, it would be expected that any effect these activities have on the child's educational attainment would be most visible immediately after the age of four. Children's educational attainment is not assessed until the end of School Year 2, at the age of seven. This is the end of the Foundation Phase (FP), which begins when the child is three years old.

- 5.2. The Foundation Phase is Wales' early years education programme. Children are provided with 10 or more hours of state funded education from the September after their third birthday. When the child is four years old, they are then offered free full-time education. These hours are not compulsory until the child is aged five. Therefore, children can have different levels of education between the ages of three and five, with some children potentially receiving none. However, attendance of these first two years is very high, with 88 per cent of three/four year olds and 98 per cent of four/five year olds attending⁵⁴.
- 5.3. The Foundation Phase is a relatively new scheme. It was implemented in three stages: the Pilot Stage of 22 schools and 22 funded non-maintained (i.e. private) settings in 2004/05; the Early Start stage of a further 22 schools and 22 funded non-maintained settings in 2006/07; and all remaining schools and funded non-maintained settings during the final roll-out stage in 2009/10. This means the first assessments to be conducted using the Foundation Phase were in 2011/12. Before then, children were assessed using Key Stage 1 (KS1).
- 5.4. The pilot of the Foundation Phase is problematic for this evaluation as schools from relatively deprived areas were over-sampled for the selection of Pilot settings and all settings sampled to act as Early Start schools were selected from areas covered by the Flying Start programme. Therefore, these schools may have received additional support, and would have undertaken the Foundation Phase assessments prior to the final roll-out. For the purposes of this report, those children attending Pilot and Early Start settings were excluded from the analysis.
- 5.5. The introduction of the Foundation Phase was accompanied by change in the methods by which pupils were assessed at the end of School Year 2 (age seven). Those who were previously assessed according to the KS1 National Curriculum were graded to one of six levels, including working towards Level 1, Level 1 and so on up to Level 5. These grades were awarded for Maths, Science, English and Welsh. In practice, only a very small number of pupils achieved Level 4 or Level 5 by the end of School Year 2. A majority of pupils achieved Level 2 in each of these subject areas, Level 2 being the expected level of attainment of Year 2 pupils.

⁵⁴ Results produced through comparison of pupils present on census day (<https://statswales.wales.gov.uk/Catalogue/Education-and-Skills/Schools-and-Teachers/Schools-Census/Pupil-Level-Annual-School-Census/Pupils/pupilspresentcensusday-by-localauthorityregion-sector>) with ONS population estimates (<http://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/annualmidyearpopulationestimates/2015-06-25>)

5.6. At the end of Foundation Phase, pupils are graded to one of seven levels (including working towards Outcome 1, Outcome 1 and so on up to Outcome 6) for areas called Personal and Social Development, Well-being and Cultural Diversity Outcomes (PSDWC), Language, Literacy and Communication Skills (LLC), Knowledge and Understanding of the World (KUW) and Mathematical Development (MD). In English-medium schools, pupils are also assessed against the Welsh Language Development (WLD) area of learning⁵⁵. The expected level for School Year 2 children is Outcome 5. It is only a statutory requirement for schools to compile and report Foundation Phase assessments for PSDWC, LLC and MD but some also report on KUW.

5.7. With these changes it is difficult to compare the levels of attainment over time. However, LLC, MD and KUW can be considered roughly equivalent to English/Welsh, Maths and Science⁵⁶. In addition to this, both KS1 and FP included a 'core skills indicator' (CSI), which states if a child is meeting or exceeding the expected level in all of their core subjects. In KS1, the CSI included Maths, English/Welsh and Science. However, the CSI for the FP includes LLC, PSDWC and MD. Therefore, they are not assessing the same subjects, or making use of the same teaching or assessment methods.

5.8. With all these issues in mind, this chapter will attempt to assess the impact of living in a Flying Start area on educational attainment at age seven. It is expected that children living in Flying Start areas will have lower attainment at age seven than those in non Flying Start areas. However, it is possible that Flying Start areas have improved relative to non Flying Start areas since implementation, as evidence suggests that early year's education and childcare can have an effect on educational outcomes at the age of seven and beyond⁵⁷.

Attainment Levels

5.9. Table 5.1 shows the overall levels of attainment in the CSI. As expected, the Flying Start areas have lower proportions meeting their expected levels in all subjects. In addition to this, pre-expansion areas have lower proportions than post-expansion areas, which suggest the differences in deprivation between these areas are related to attainment. However, the proportion achieving the CSI increases after the introduction of the Foundation Phase, and this increase is considerably larger in pre expansion Flying Start areas.

⁵⁵ <http://gov.wales/docs/dcells/publications/150803-fp-framework-en.pdf>

⁵⁶ KUW includes a range of activities and topics which would not have been included in the traditional 'Science' subject. However, KUW is the only Foundation Phase subject includes what was included in the KS1 'Science' subject, so it is the only possible comparator. However, it is not topic that schools are required to report on to Welsh Government, therefore the numbers of children in the dataset with a KUW outcome are lower (14,804) than MDT (135,714) and LLC (105,519 English and 30,195 Welsh).

⁵⁷ http://www.ifs.org.uk/docs/ee_impact.pdf

Table 5.1. The average levels of CSI attainment in non Flying Start areas and both pre and post expansion areas.

	Non Flying Start Area	Pre-expansion Area	Post-expansion Area
Key Stage 1	84.5%	70.6%	76.1%
Foundation Phase	86.7%	77.4%	78.5%

5.10. Figure 5.1 shows the levels of attainment between 2007 and 2015 for the core skills. These figures suggest that the levels of attainment between KS1 and FP are not very different, but that there are noticeable changes. The main difference to note is in the CSI; attainment drops by roughly two percentage points over the change from KS1 to FP, but then improves at a more rapid pace compared to KS1⁵⁸.

5.11. There are several possible explanations for the relatively rapid improvement in attainment after the introduction of the Foundation Phase. One of these is that teachers become better at implementing the new curriculum and/or administering the assessments after the initial introduction. Therefore as teachers become more able, children are showing improved results. In addition to this, the introduction of the National Literacy and Numeracy Programmes⁵⁹ in 2012/13 may be driving up attainment in young children. There is also possibly an incentive for schools to show improvement after the introduction of both the FP and the National Literacy and Numeracy Programmes, to show that they are delivering the curriculum and performing well against set targets.

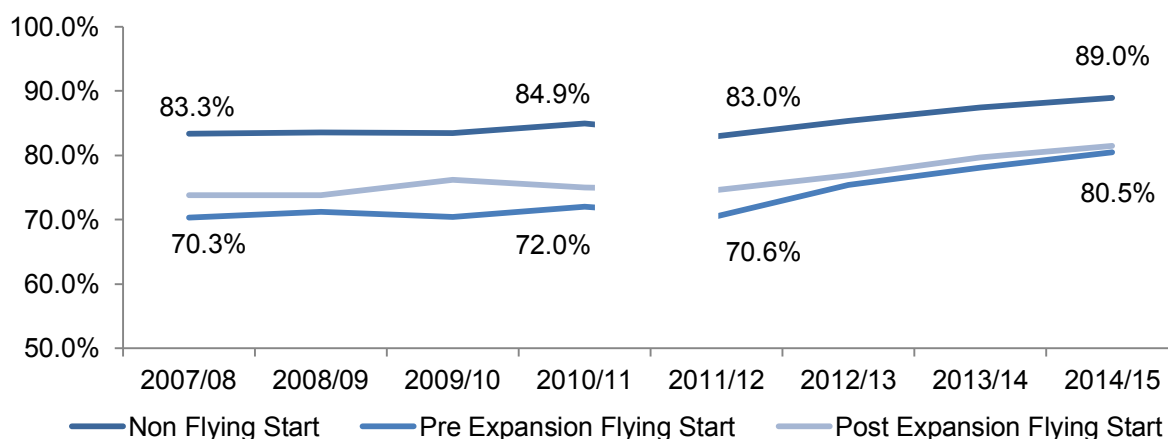
5.12. Another key point from Figure 5.1 is that Flying Start areas improved at a more rapid pace than non Flying Start areas once Foundation Phase had been implemented. This highlights one of the main challenges of evaluating Flying Start in terms of its effects on educational attainment: the 2007/08 rollout of Flying Start in the pre expansion areas means that the first cohort of children to have potentially received two or more years of Flying Start provisions would be assessed in 2011/12, i.e. the same cohort who were the first to be assessed under the new FP assessments. However, since children in all areas received FP, and only those in Flying Start areas have received Flying Start provisions, it may still be possible to distinguish the effects of living in Flying Start area from that of the FP⁶⁰.

⁵⁸ This pattern was also found in the evaluation of the Foundation Phase. Teachers took time to adjust to the new marking scheme when greater detail in the levels became available. Teachers 'caught up' with the new grading structure over time, contributing to more rapid increases in attainment. See <http://gov.wales/docs/caecd/research/2015/150514-foundation-phase-final-en.pdf>

⁵⁹ <http://learning.gov.wales/resources/browse-all/nlnf/?lang=en>

⁶⁰ This assumes that the effect of Foundation Phase on attainment is constant between Flying Start and non Flying Start areas. Schools in Flying Start areas are more likely to have received higher allocations of the Pupil Deprivation Grant, and this will need to be accounted for in the analysis

Figure 5.1. The average proportion meeting the expected level for Core Skills in non Flying Start and both pre and post expansion areas. (Data labels are for non Flying Start and pre expansion areas. The gap indicates the change from KS1 to FP)



5.13. As previously stated, the expected level for School Year 2 children was Level 2 in KS1 and Outcome 5 in the FP. The intention during the roll-out of FP was that Level 2 in KS1 would be equivalent to Outcome 5 in FP. However, the evaluation of FP suggests that there was little consistency across the two assessment regimes which mean it is difficult to compare levels of achievement in the FP against those in KS1⁶¹. With this in mind, it would be inappropriate to compare the attainment over time in the different areas. Instead, the analysis will focus on the difference between Flying Start and non Flying Start areas during either KS1 or FP assessments.

Demographic Differences

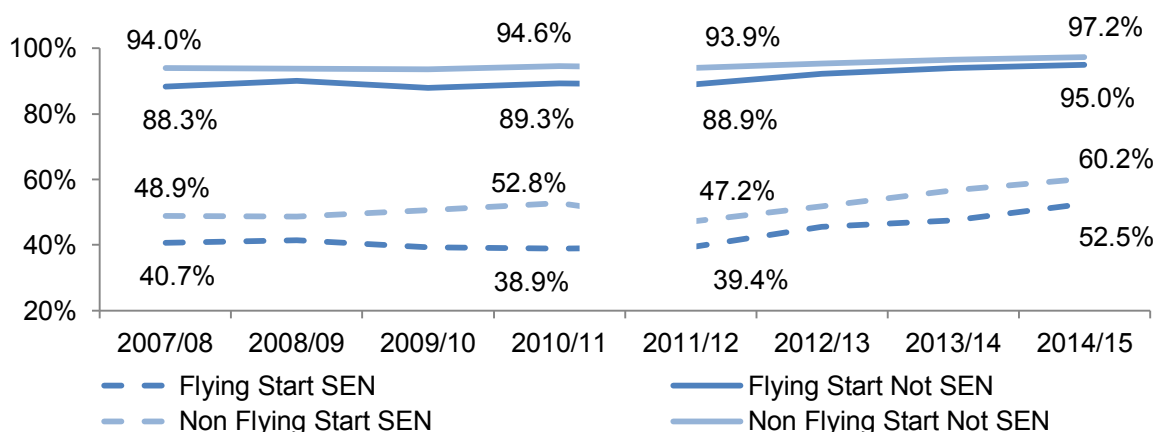
5.14. Results suggest that, females, white British, children who are not FSM eligible or are not on special educational needs generally had better attainment than their comparison groups. Also, children living in Flying Start areas had poorer attainment than non Flying Start areas both before and after the introduction of FP. Children living in more deprived areas were also more likely to have lower attainment than those in less deprived areas.

5.15. The greatest difference occurred between children identified as having SEN or not; children identified as having SEN were roughly half as likely to achieve the CSI as those without. The effect of SEN appeared to be even greater in Flying Start areas, where the average level of attainment after the introduction of FP is 92.7 per cent in children without SEN and 48.2 per cent in those that have SEN; nearly half as many children with SEN achieve the CSI in Flying Start areas compared to those without SEN. However, it should be noted that the difference between children with and without SEN is decreasing over time in all areas.

⁶¹ <http://gov.wales/docs/caecd/research/2015/150514-foundation-phase-final-en.pdf>

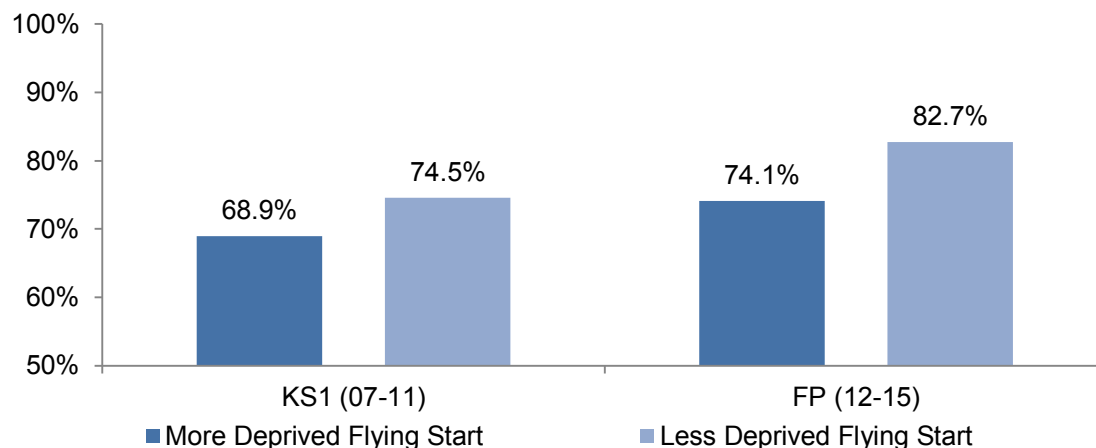
5.16. While the average attainment for those without SEN was relatively constant, those with SEN were improving, especially since the change to FP. However, a key thing to note is that levels of attainment for children without SEN in both non Flying Start and pre expansion Flying Start areas were very high, with close to 100 per cent for both areas in 2014/15.

Figure 5.2. The average proportion meeting the expected level for Core Skills in non Flying Start and pre expansion areas, split by those who are and are not identified as having Special Educational Needs



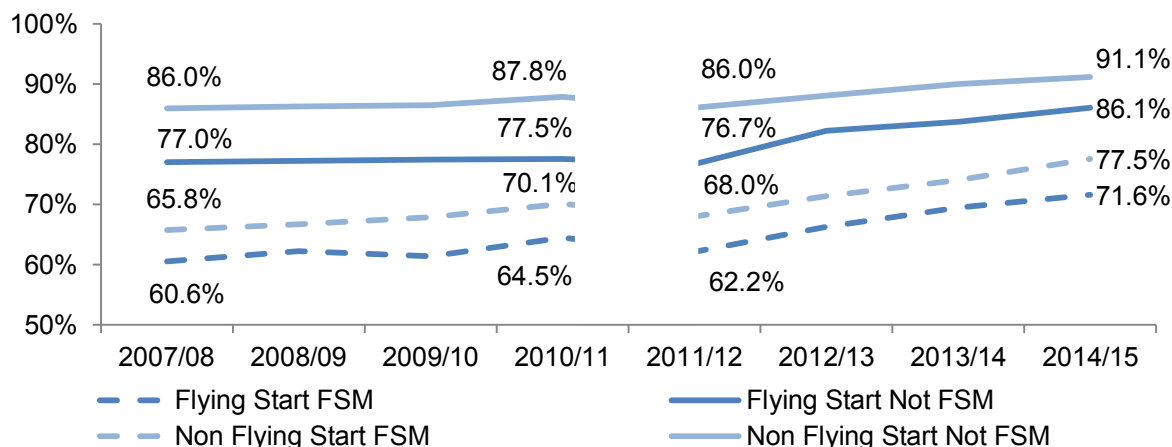
5.17. There also appears to be a difference in the effect of deprivation between Flying Start and non Flying Start areas, but in all areas the average attainment (as indicated by both FSM eligibility and area income deprivation) is lower for more deprived children. Figure 5.3 shows that while there is an improvement in attainment in the after the introduction of FP, the difference between the more and less deprived areas increases. Before introduction the difference between the more and less deprived Flying Start areas was 5.6 percentage points, after introduction the difference was 8.6 percentage points; this is an increase of over 50 per cent.

Figure 5.3. The average proportion meeting the expected level for Core Skills in pre expansion areas only, split by those who are in the top or bottom quartiles of income deprivation.



5.18. Figure 5.4 shows the rate of change in attainment for those who were and were not eligible for FSM in both non Flying Start and Flying Start areas. This shows that the children who were eligible for FSM in either area, or who were not eligible and in a Flying Start area, were improving at the same rate after the introduction of FP. Those children in non Flying Start areas and not eligible for FSM were improving at a slower pace.

Figure 5.4. The average proportion meeting the expected level for Core Skills in non Flying Start and pre expansion areas, split by those who are and are not eligible for Free School Meals



5.19. This suggests that the children in more disadvantaged households were improving at a faster pace than less disadvantaged households. These results may be due to any number of factors, including Flying Start, Foundation Phase or Pupil Deprivation Grant, or potentially that those in the less disadvantaged groups are already at a high level and so have less scope for improvement.

5.20. This is counter to the results shown in Figure 5.3, which suggests less deprived areas are improving at a faster rate than more deprived areas. However, this figure shows the average attainment either before or after the introduction of FP over a four year period, and so is not directly comparable. The difference between these figures may also highlight the household and area level effects. In Flying Start areas, those in deprived households are improving at the same rate as those in less deprived households, but it also appears that those in more deprived areas have lower attainment than those in less deprived areas.

Analysis

5.21. Due to the introduction of FP, the analysis was conducted in a different way to that used for absenteeism. The regression models were split to either include only KS1 or FP years and the models included attendance as an explanatory variable. Table 5.2 gives the outputs for the different models and suggests that living in a Flying Start area has little association with educational attainment that once levels of deprivation, attendance and individual characteristics are taken into account; factors such as attendance and SEN have a very strong association with attainment. These results also suggest that the association between living in a pre expansion area and educational attainment decreases over time and with the introduction of FP.

Table 5.2. The outputs of the regression models for the core skills attainment in non Flying Start and both pre and post expansion areas

	KS1 (07-11)	FP (12-15)
Pre expansion area	-0.15	-0.08
Post expansion area	0.02	0.02
Female	0.26	0.29
White British	0.00	-0.04
FSM eligible	-0.51	-0.52
SEN	-2.81	-2.85
Income deprivation	-0.26	-0.33
Days Present	4.69	4.52

5.22. A Flying Start eligibility variable has not been included in these models, as the first children to be assessed under FP occurred were also the first group of children in the pre expansion areas who could have been eligible for two or more years of Flying Start provisions. Therefore it should be assumed that all those in pre expansion areas were not eligible when assessed under KS1 and were potentially eligible when assessed under FP. Therefore it is impossible to separate the effects of the FP introduction from that of Flying Start.

5.23. Both models appear to predict the actual result accurately, and the average difference between the predicted results and the actual attainment is 1.34 per cent, see Annex D for comparisons between actual and predicted attainment. Also, the pseudo R-squared⁶² values are 0.356 for the KS1 model and 0.339 for the FP model, which is considerably higher than that found for any of the absenteeism measures, and so the regression models can be considered to be fitting the data well.

⁶² See absenteeism section

5.24. The regression analysis suggests that while there appears to be a very slight association between living in a Flying Start area and educational attainment, the use of propensity score matching allows for more thorough testing of the possible effect of living in a Flying Start area. Children in each of the three areas (non Flying Start and pre and post Flying Start areas) can be matched according to their individual and area characteristics to determine if children with the same characteristics, but in different areas, have different outcomes.

5.25. If Flying Start has a positive effect on educational attainment the expected results would be that pre expansion areas would have higher attainment, relative to non Flying Start areas, after the implementation of the programme. It would also be expected that attainment would be lower in Flying Start areas before implementation.

5.26. The results in Table 5.3 provide little support for the hypothesised results. The pre expansion areas have poorer scores than non Flying Start areas, but the differences are not significant. Also, the post expansion areas appear to have declining results relative to the non Flying Start areas, but again the results are not significant. This suggests that living in a Flying Start area does not significantly effect educational attainment by itself, and that the different levels of attainment in these areas is due to other factors.

Table 5.3. The outcomes of the Propensity Score Matching comparing children in pre-expansion Flying Start areas against those in non Flying Start areas for the periods before (07-09), during (10-12) and after (13-15) implementation and also comparing children who are potentially eligible for the Flying Start provision against those in pre-expansion Flying Start areas who could not have received the provision

	Between Pre-Expansion Flying Start and Non Flying Start Areas	
	KS1 (07-11)	FP (12-15)
Pre expansion vs Non Flying Start	-0.65%	-0.82%
Post expansion vs Non Flying Start	0.72%	-0.89%

*denotes statistical significance to the 0.01 level

5.27. The results from both the regression analysis and propensity score matching suggest that living in a Flying Start area does not have an effect on educational attainment, either positively or negatively. However, as previously stated, the change from KS1 to FP makes it very difficult to reach any conclusions about the effect of Flying Start and so this result should be viewed with caution.

6. Special Education Needs

- 6.1. Special educational needs (SEN) have been shown to be consistently associated with poorer educational outcomes and absenteeism. There is also a higher incidence of SEN in Flying Start areas, which is in line with evidence suggesting children in deprived areas are more likely to have language and communication difficulties⁶³. The analysis described so far in this report has used SEN as a way of explaining differences between children's outcomes. However, it is also possible to use SEN as an outcome measure, i.e. what is the effect of living in a Flying Start area on the likelihood of being identified as SEN in school?
- 6.2. SEN is identified through a variety of means, such as teachers, parents or health care professionals. Children identified to have SEN are then assessed to determine the severity of their needs. This can lead to a number of outcomes, depending on their level of support required. The lowest level of support is defined as Action, and this can then increase to Action Plus and Statement of Needs; the most intensive level of support⁶⁴. There is clear guidance on how this process should be implemented by schools, and so is consistent across Wales⁶⁵.
- 6.3. There is some evidence to suggest that early interventions can reduce the likelihood of children being identified as having SEN by means of improving social skills and confidence⁶⁶. High quality childcare (as is provided by Flying Start) can have positive effects on children's cognitive and social/behavioural development⁶⁷, which in turn could reduce the likelihood of children developing learning or behavioural difficulties in school. This suggestion is supported by use of early years interventions which have found to be effective in reducing conduct problems in children aged three to five⁶⁸.
- 6.4. Household deprivation has also been linked to children's behavioural and conduct disorders⁶⁹. Over the last 40 years, conduct and emotional problems have become more prevalent in children from low Socio-Economic Status (SES) backgrounds, relative to those from high-SES backgrounds. While the causes of this divergence is not well understood, the negative effects of these disorders can be long lasting and persist into adulthood. This means identifying these children and children from low-SES backgrounds and providing additional support could be particularly beneficial in reducing the prevalence of SEN.

⁶³ https://www.rcslt.org/governments/docs/all_party_parliamentary_group_on_slcn_inquiry_report

⁶⁴ See Paragraph 1.18

⁶⁵ <http://gov.wales/docs/dcells/publications/111221senbestpracen.pdf>

⁶⁶ https://www.nao.org.uk/wp-content/uploads/2004/02/268_literaturereview.pdf

⁶⁷ http://dera.ioe.ac.uk/18189/97/SSU-FR-2004-01_Redacted.pdf

⁶⁸ <http://www.bmj.com/content/bmj/334/7595/678.full.pdf>

⁶⁹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/528315/The_childhood_origins_of_social_mobility.pdf

- 6.5. The primary aims of Flying Start are early identification and early intervention. As suggested above, early intervention can help to reduce the likelihood of a child developing social, behavioural or cognitive difficulties and so reduce their need for additional support. Early identification of these difficulties may result in an increased likelihood of being identified as SEN and additional support in school.
- 6.6. As children living in Flying Start areas are receiving additional support to help them with their development and their development is being more closely monitored by health visitors, it is possible overall number of children receiving SEN in these areas increases. The speech, language and communication guidance⁷⁰ for health workers in Flying Start areas describes how the move into school requires careful planning and coordination for children identified as having a potential developmental delay. Children who have a developmental delay identified through the health assessments are likely to lead to the child starting school with a SEN plan in place⁷¹. Therefore, an increased incidence of SEN in Flying Start areas may either be interpreted as a higher proportion of children having developmental problems, or a greater chance that those with developmental problems are being identified as in need of support.
- 6.7. With this in mind, the following evaluation makes no predictions about what changes will occur as a result of Flying Start. Instead, will explore the factors which influence the identification of SEN, and if children in Flying Start area are more or less likely to have identified additional needs. It is important to stress that lower levels of SEN should not be considered positive outcomes; failure to identify children who have additional needs could be considered less desirable than an increased number of children with additional needs (and who are identified as such).
- 6.8. When SEN was used as an explanatory factor for either attendance or attainment, children were identified as either having any form of SEN or not. However, there are many types of SEN, some of which are more common than others. Table 6.1 shows the proportion of children in each area with different types of SEN. For ease of analysis, the specific needs have been grouped according to their features. Table 6.2 shows which needs have been included in each group.

⁷⁰ <http://gov.wales/docs/ds/lgl/publications/cyp/150529-guidance-on-speech-en.pdf>

⁷¹ This is likely to involve highlighting these children to the school's Special Needs Coordinator, and so each child will start school with an SEN plan already in place (rather than waiting to be identified later in their school life or possibly failing to be identified at all).

Table 6.1. The average special educational needs in Non Flying Start areas and both pre- and post-expansion Flying Start areas.

	Non Flying Start Area	Pre-expansion Area	Post-expansion Area
Any SEN	18.98%	31.65%	29.02%
Learning Difficulties	8.58%	14.42%	13.71%
Behavioural, Emotional and/or Social Difficulties	2.48%	4.79%	4.26%
Speech, Language and/or Communication Difficulties	5.34%	9.20%	8.20%
Sensory Impairments	0.66%	0.85%	0.68%
Medical and/or Physical Conditions	1.08%	1.46%	1.22%
Diagnosed Disorders	0.83%	0.91%	0.95%

Table 6.2. The specific needs that are included in each SEN group

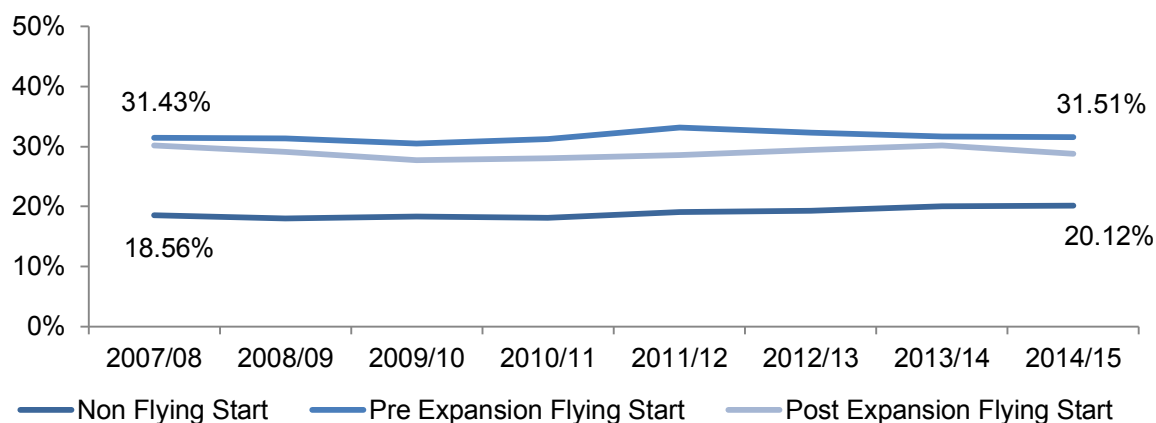
Learning Difficulties	General learning difficulties, Moderate learning difficulties, Profound & multiple learning difficulties, Severe learning difficulties, Specific learning difficulties, Dyscalculia, Dyslexia, Dyspraxia
Behavioural, Emotional and/or Social Difficulties	Behavioural, emotional and social difficulties, Emotional and behavioural difficulties
Speech, Language and/or Communication Difficulties	Speech, language and communication difficulties
Sensory Impairments	Hearing impairment, Multi-sensory impairment, Visual impairment
Medical and/or Physical Conditions	Medical difficulties, Physical disabilities, Physical and medical difficulties
Diagnosed Disorders	Attention Deficit Hyperactivity Disorder, Autistic Spectrum Disorders

6.9. Table 6.1 shows that the most common forms of SEN are learning difficulties (LD), behavioural, emotional and/or social difficulties (BESD) and speech, language and/or communication difficulties (SLCD). The table also shows that all three of these SEN groups are more common in Flying Start areas. The other three groups also show the same trend, but the proportion of children with those difficulties is considerably lower. Given the small numbers of children that would be found in these groups, the remainder of this chapter will exclude them from analysis. Instead, the analysis will focus on children with any form of SEN, and those with LD, BESD or SLCD.

SEN Levels

6.10. The levels of SEN have remained fairly stable over the last eight years, with only a 0.08 percentage point increase in pre expansion Flying Start areas, while non Flying Start areas have a slightly higher rise, with 1.56 percentage points or an 8.4 per cent increase (see Figure 6.1a). However, there is a different pattern of results when the different groups of SEN are explored. Figures 6.1b to 6.1d show that levels of LD have decreased, while levels of BESD and SLCD have increased. The trends in each of these groups appear to be similar between Flying Start and non Flying Start areas, with a slight convergence between areas for LD. However, it should be noted that the way in which SEN is recorded and coded has changed over the evaluation period⁷².

Figure 6.1a. The average proportion of children with any special educational needs in non Flying Start and both pre and post expansion areas. (Data labels are for non Flying Start and pre expansion Flying Start areas)



⁷² Between 2007 and 2015 the coding of learning difficulties has changed so that the category 'specific learning difficulties' was discontinued in 2011. It was instead broken down into the actual specific needs, i.e. dyslexia, dyscalculia, dyspraxia and ADHD. At the same time, the new category 'general learning difficulties' was introduced to describe when a child had a learning need, but the severity was not yet known. This led to the number of children being identified as having 'moderate learning difficulties' dropping sharply after 2011, with many now being coded as having general difficulties.

Figure 6.1b. The average proportion of children with learning difficulties in non Flying Start and both pre and post expansion areas

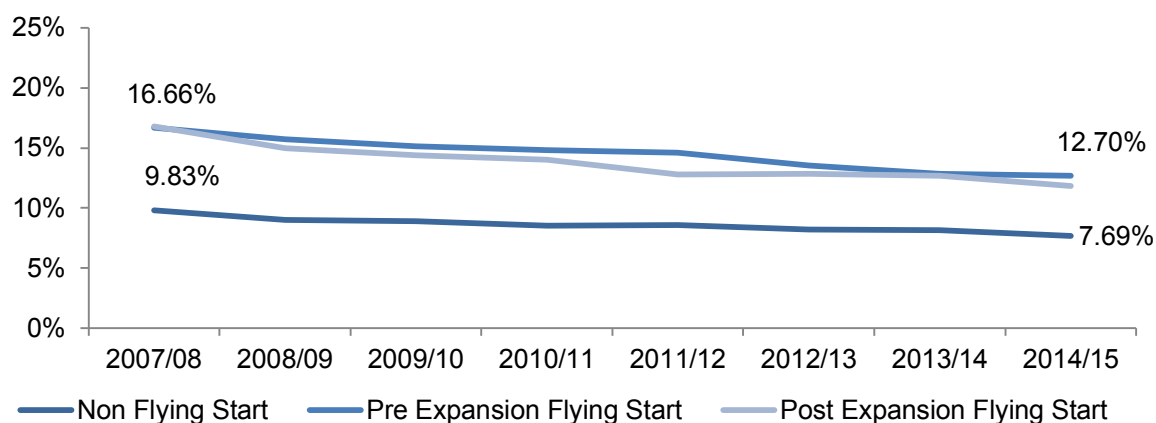


Figure 6.1c. The average proportion of children with behavioral, emotional and/or social difficulties in non Flying Start and both pre and post expansion areas

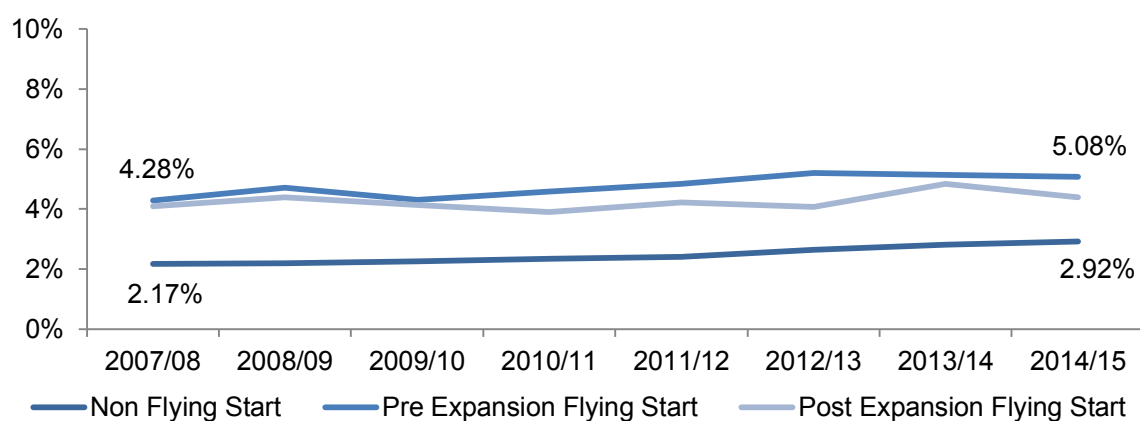
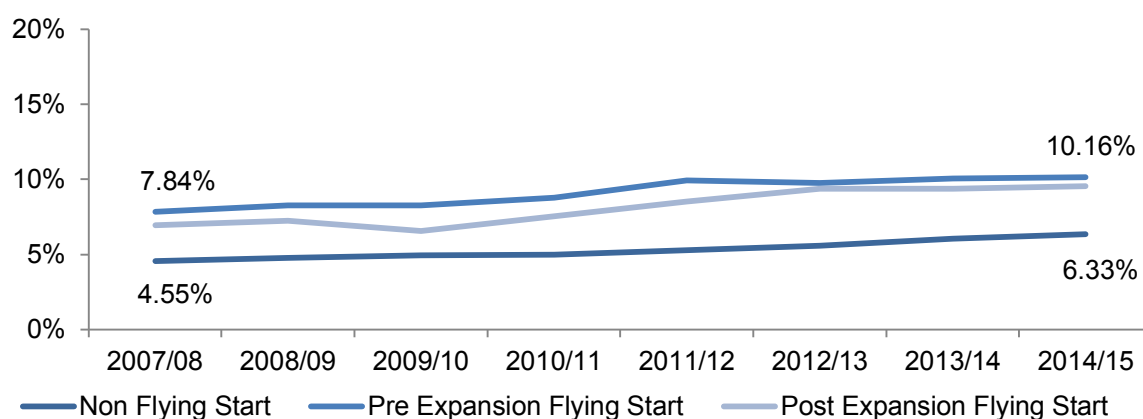


Figure 6.1d. The average proportion of children with speech, language and/or communication difficulties in non Flying Start and both pre and post expansion areas



Demographic Differences

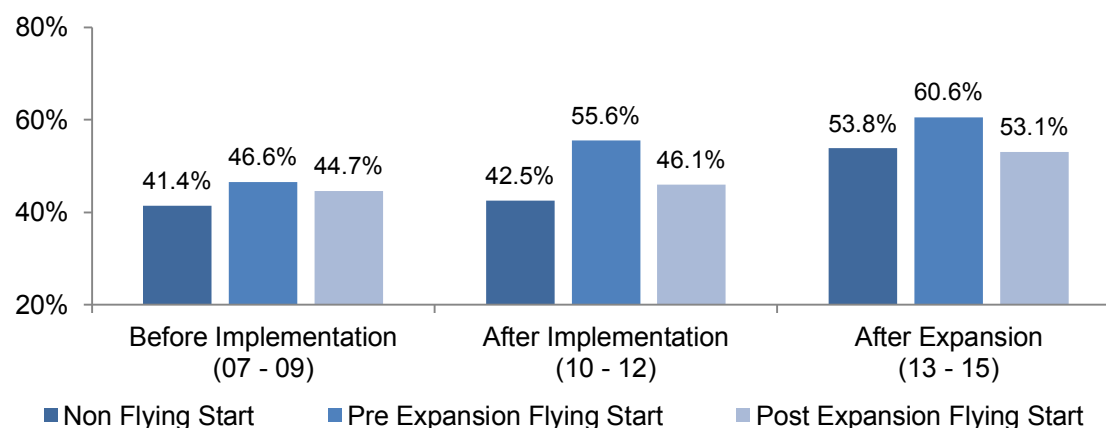
- 6.11. For all types of SEN included, gender appears to play an important role in determining if a child has SEN. In both Flying Start and non Flying Start areas, males are roughly twice as likely to have SEN, with that rising to nearly three times as likely for BESD. Deprivation also shows a similar effect, with children who are eligible for free school meals being over twice as likely to have some form of SEN. However, the difference between those who are FSM eligible and those who aren't appears to be smaller for Flying Start areas and larger for non Flying Start areas. This suggests an interaction between deprivation and Flying Start. See Annex E for detailed breakdowns of the differences according to different characteristics.
- 6.12. The effect of ethnicity appears to be relatively small, but slightly higher in Flying Start areas. This difference between areas is even greater for LD, but almost disappears for BESD. For SLCD, ethnicity appears to have little impact, but deprivation and gender are more influential.
- 6.13. An additional factor to consider is the school year in which the child is identified as having SEN. The additional developmental assessments and childcare provided to children in Flying Start areas may increase the likelihood that SEN is identified earlier in the child's schooling. Table 6.3 shows the proportion of children that are identified as having SEN in each school year group over time. In all areas the proportion being identified as having SEN in Reception increases over time. However, while the proportion of children in School Year 2 being identified as having SEN is remaining stable in non Flying Start areas, it is decreasing in both pre and post expansion areas.

Table 6.3. The average proportion of children with any special educational needs in non Flying Start and both pre and post expansion areas, split by year group

	Non Flying Start Area			Pre-expansion Area			Post-expansion Area		
	07-09	10-12	13-15	07-09	10-12	13-15	07-09	10-12	13-15
Reception	10.7	11.1	13.8	19.8	22.4	23.8	18.2	17.7	20.4
Year 1	18.4	18.4	19.9	32.1	32.6	32.3	30.3	28.7	29.6
Year 2	25.8	26.1	25.7	42.4	40.3	39.3	40.7	38.4	38.4

- 6.14. To further explore this, Figure 6.2 shows the proportion of children with SEN in School Year 2 who were identified in the Reception year group. As can be seen, before implementation of Flying Start, the proportions were very similar. However, after implementation children with SEN were more likely to be identified in the Reception year group if they were living in a pre expansion area.

Figure 6.2. The average proportion of children with any special educational needs who were identified in the Reception year group, in non Flying Start and both pre and post expansion Flying Start areas.



6.15. The results shown in Table 6.4 and Figure 6.2 suggest that the proportion of children being identified in the Reception year group is increasing relative to the total number of children being identified as having SEN. This is a positive finding, as the earlier children are identified, the more support they can receive. However, while the total proportion of children being identified as having any SEN in non Flying Start areas is increasing, the levels in both pre and post expansion areas have remained steady. This suggests that Flying Start is succeeding in identifying children early, and providing them with the necessary support to mitigate the effects of any identified needs.

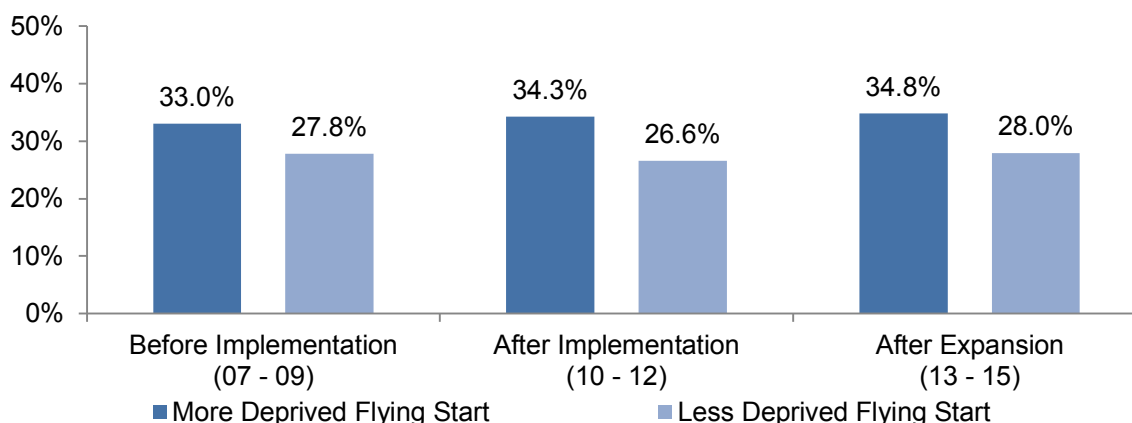
6.16. All children in Flying Start areas are provided with the same provisions, so it can be assumed that they are given equal access to the developmental assessments undertaken by health visitors at age two and three. It is these assessments that can lead to developmental delays being identified, and consequently affect the child's likelihood of being identified as having SEN in school. However, the Flying Start monitoring data collects the proportion of eligible children that undertake an assessment at the local authority level and while this data lacks the detail for making firm conclusions about individual assessment rates, the areas with higher prevalence of SEN identification also had a slightly higher assessment rate. This suggests that a higher assessment rate can lead to higher proportions of identified SEN.

6.17. However, it is also possible that less deprived children have a lower incidence of SEN, which is supported by the evidence, and that if less deprived children are identified as having additional needs, it is either less severe (and so can be intervened successfully) or receive better support (possibly due to higher household income making additional services available). This is supported by recent evidence that children from low-SES backgrounds have a higher risk of more, and more severe, conduct and hyperactivity symptoms⁷³.

⁷³https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/528315/The_childhood_origins_of_social_mobility.pdf

6.18. Figure 6.3 shows the comparison between children living in pre expansion areas that are either in the bottom or top quartiles of deprivation for those areas. At all time points, and for all SEN groups, less deprived areas had a lower prevalence of SEN.

Figure 6.3. The average proportion of children with any special educational needs in pre expansion areas only, split by those who are in the top or bottom quartiles of income deprivation.



6.19. Another means to explore the relationship between deprivation and SEN is to only look at the children who are eligible for free school meals. While it is expected that Flying Start areas are more deprived than non Flying Start areas, including only those children who are FSM eligible may reduce the effect of this difference. When this is done, the differences between Flying Start and non Flying Start areas remain, but are reduced. There is an average of 33.8 per cent of children in non Flying Start areas with any SEN, compared to 39.7 per cent in pre expansion areas. Therefore there is a difference of 12.7 percentage points between non Flying Start and pre expansion areas, and 5.9 percentage points when only FSM eligible children are included. This suggests that household deprivation is not the only factor that increases likelihood of having SEN in school (but it is a contributory factor).

Analysis

6.20. Regression analysis was again used to explore the relative importance of these additional factors, at both the individual and area level. In addition to the variables that were used in previous chapters, school year was included as an explanatory variable.

6.21. Table 6.4 shows the outputs from the regression models. These results suggest that Flying Start increases probability of being identified as SEN in primary school, as children living in Flying Start areas have a slightly higher likelihood of being identified as having SEN. However, this is the case both before and after children were potentially eligible for Flying Start provisions, which suggests it is the areas, not the provisions, that increase SEN prevalence. Also, the relation between SEN and Flying Start is relatively minor once deprivation is controlled for. Gender, FSM eligibility and income deprivation have a stronger association with SEN identification than living in a Flying Start area.

Table 6.4. The output coefficients of the regression models for the average proportion of children with special educational needs in Non Flying Start and both pre- and post-expansion Flying Start areas

	Any SEN	LD	BESD	SLCD
Pre expansion not eligible	0.15	0.10	0.16	0.14
Pre expansion eligible	0.17	0.10	0.16	0.15
Post expansion	0.05	0.05	0.06	0.05
Female	-0.86	-0.54	-1.21	-0.79
White British	0.15	0.12	0.19	0.17
FSM eligible	0.83	0.73	0.88	0.50
Income deprivation	0.78	0.64	0.72	0.75

6.22. The results from this analysis are unclear. While they suggest that Flying Start is associated with a higher prevalence of SEN, it is unknown if the services provided are either identifying children with additional needs or intervening and potentially prevent these additional needs from affecting the child's schooling. Both of these outcomes would be positive, as the earlier a child can be identified and receive support, the more effective that support is likely to be⁷⁴.

6.23. As was used in the previous sections, pseudo-R squared values were determined to assess how well the regression models can account for the observed results. The values for each of the models are 0.093, 0.060, 0.020 and 0.018 for any SEN, LD, BESD and SLCD respectively. These values suggest that the data available are not able to fit the actual results very accurately for each of the SEN measures. This could be due to the lack of available data, but means that there is a high degree of uncertainty in the results, and a lot of the factors that lead to a child having any SEN are not included in this model.

⁷⁴ <http://learning.gov.wales/docs/learningwales/publications/131016-sen-code-of-practice-for-wales-en.pdf>

6.24. As these models were not able to provide robust evidence of the association between Flying Start and SEN levels, further models were used. These models are related to the previous suggestion that children in Flying Start areas are more likely to be identified as having SEN earlier in school than those in non Flying Start areas. They attempt to determine the association between living in a Flying Start area and being identified as having SEN in Reception aged children only. Table 6.5 shows that before implementation there was little difference between areas. However, after implementation and expansion, children in pre expansion areas had a higher likelihood of being identified as having SEN in the Reception year group than those in non Flying Start and post expansion areas⁷⁵.

Table 6.5. The outputs of the regression models for the association between being in the Reception year group and being identified with special educational needs in non Flying Start and both pre and post expansion areas

	Before Implementation (07 - 09)	After Implementation (10 - 12)	After Expansion (13 - 15)
Non Flying Start	-0.90	-0.87	-0.64
Pre expansion area	-0.91	-0.71	-0.59
Post expansion area	-0.93	-0.89	-0.73

6.25. This chapter has attempted to explore the effect Flying Start has on SEN levels in children aged four to seven years old. There appear to be considerable differences in SEN levels according to both gender and deprivation, with males and children in deprived households being more likely to have some form of SEN. The direction of the effects of gender and deprivation appear consistent for all SEN types, with only the strength of the effect varying. Another finding was that children living in Flying Start areas have a higher likelihood than those in non Flying Start areas being identified as having SEN in the Reception year group.

6.26. The regression analysis suggests that living in a Flying Start area is associated with higher levels of SEN identification. This is supported by evidence that living in a pre expansion area increases likelihood that SEN is identified in the Reception year group, as opposed to later in school. These results suggest that children living in Flying Start areas with SEN are more likely to be identified early and so hopefully receive additional support.

⁷⁵ The negative coefficients represent that children in the Reception year group are less likely to be identified as having SEN than those in older year groups. As the coefficient approaches zero, the negative association between being in the Reception year group and being identified as having SEN decreases.

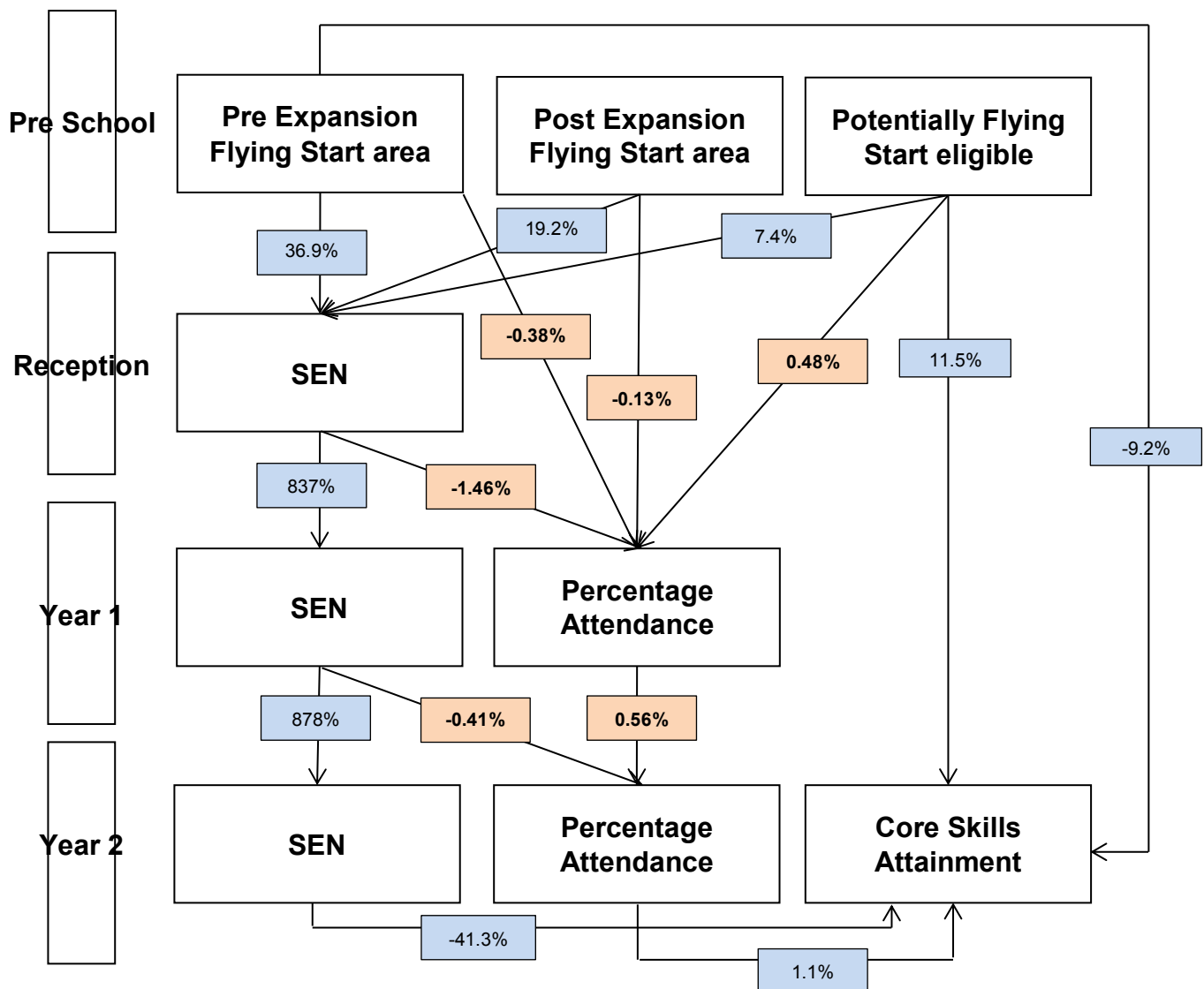
7. Impact of Flying Start

- 7.1. The results for the three previous sections present differing effects of Flying Start: a small direct positive effect on absenteeism, no effect on attainment and a mixed effect on SEN prevalence. However, it is important to remember that children living in Flying Start areas stop receiving any provision once they start in school, and so all the children included in these analyses were no longer receiving Flying Start provisions.
- 7.2. From the results presented in this evaluation, it could be suggested that the potential effect of Flying Start is to directly increase levels of attendance and the prevalence of SEN but lower the average age of SEN identification. This in turn can lead to an indirect effect on educational attainment, as both attendance and SEN are strong predictors of attainment. In order to test this hypothesis, additional analysis has been applied.
- 7.3. Children's outcomes through the first three years of school were estimated using a structural equation model (SEM), which uses regression methods to determine the pathways in which various characteristics can lead to the observed outcomes. This allows for an understanding of the range of factors which can effect outcomes, both directly and indirectly. Figure 7.1 shows the results of SEM applied at comparing the area and Flying Start eligibility effects on outcomes at the end of the children's school year 2.
- 7.4. Similar to the regression outputs, some of the SEM outputs represent a direct percentage change, but there are also those that indicate a relative likelihood of the outcome occurring (i.e. odds ratios)⁷⁶. For example, the 36.9 per cent from pre expansion area to SEN indicates a 40.5 per cent increase in the likelihood of being identified as having SEN, whereas the -0.38 per cent to attendance indicates attendance is 0.38 per cent lower in pre expansion areas.
- 7.5. Figure 7.1 suggests that living in a Flying Start area is associated with an increased probability of being identified as having SEN in the Reception year group and lower attendance in school year 1. However, being potentially eligible for Flying Start provisions is associated with increased attendance, and this increase is greater than the negative association of living in a Flying Start area. Therefore there is a net positive association on attendance for children living in Flying Start areas and have potentially been eligible for two or more years of provisions. This is in line with the results found in Chapter 4.

⁷⁶ Direct percentage changes are represented in the orange boxes with bold writing, the relative likelihoods are in blue.

7.6. The improved attendance in School Year 1 then corresponds to increased attendance in School Year 2, which in turn increases the likelihood of achieving the CSI at the end of School Year 2. The results indicate that a 1 per cent increase in attendance in School Year 1 is associated with a 0.56 per cent increase in School Year 2, and that a 1 per cent increase in attendance in School Year 2 increases the probability of achieving the core skills indicator by 1.1 per cent. Further to this, there appears to be a small direct positive association between being potentially eligible for Flying Start and CSI attainment. However, this small direct effect is almost entirely negated by the negative effect of living in a Flying Start area.

Figure 7.1. The Structural Equation Model (SEM) for children in Flying Start and non Flying Start areas, for the period 2007 to 2015



Blue boxes (not in bold) describe the relative likelihood of the outcome occurring, e.g. 36.9 per cent higher chance of the SEN identification in Reception for children in pre expansion areas
Orange boxes **in bold** show coefficients, which translate to a direct percentage change, e.g. a coefficient of 0.9 means an increase of one point in the input results in a 0.9 percentage point change in the output.

- 7.7. A result to note is the link between SEN identification for the different year groups. The results from the SEM analysis suggest that being identified as having SEN in the Reception year group increases the likelihood of being identified as having SEN in school year 1 by 837 per cent, relative to those who were not identified as having SEN. This suggests very few children are identified as having SEN and then are subsequently identified as no longer having SEN.
- 7.8. The links between SEN, attendance and attainment have been consistently found in this report, and both living in a Flying Start area and being potentially eligible for Flying Start provisions increases the likelihood of being identified as having SEN. While SEN prevalence is linked to living in more disadvantaged areas, it is unlikely that Flying Start eligibility is causing learning difficulties; rather it is more likely that Flying Start provisions result in increased SEN identification. However, it is impossible to say what proportion of children would be identified as having SEN in the absence of Flying Start. Similarly, it is impossible to know the effect of those who had difficulties in Flying Start areas but were not identified. It could be suggested that the increased and earlier identification of SEN in Flying Start areas leads to these children receiving additional support, but this hypothesis cannot be tested with currently available data.
- 7.9. While the association between SEN and educational attainment suggests children identified as having SEN are less likely to achieve the expected level at the end of School Year 2, it is unknown if the strength of this association would have been stronger or weaker in the absence of Flying Start. If the hypothesis that improved identification is resulting in better support for pupils, then it would be expected that the association between SEN and attainment has been weakened by Flying Start.
- 7.10. This can be tested by conducting separate regression models for non Flying Start and pre expansion areas to see if SEN has a weaker or stronger association. Table 7.1 shows the results of this analysis, and the results show that the associations between SEN and educational outcomes are weaker in pre expansion areas compared to non Flying Start areas. This means children who have been identified as having SEN in pre expansion areas are more likely to achieve the expected level at the end of Foundation Phase than those who were identified as having SEN in non Flying Start areas.

Table 7.1. The outputs of the regression models for the association between being identified with special educational needs and living in either non Flying Start and pre or post expansion areas

	Foundation Phase (2012-15)
Pre expansion area	-0.46
Post expansion area	-0.39
Pre expansion SEN	-2.95
Post expansion SEN	-2.98
Non Flying Start SEN	-3.22

8. Conclusion

8.1. As part of the ongoing evaluation of Flying Start, this report explored the educational outcomes for children living in Flying Start areas. The aim was to determine if the programme has had any effect on a range of educational outcome measures. Individual level data for children in primary school were analysed to see if there have been any changes in outcomes as a result of children becoming eligible for Flying Start provisions.

8.2. A limitation of this evaluation is that it only relates to the ‘intention to treat’ population. This means the children identified in this report as living in Flying Start areas are potentially eligible for Flying Start provisions, but how much of the programme they have engaged with is unknown. The analysis is also based on a very limited set of observed characteristics which are used as explanatory variables. It is possible that a lot of other unobserved characteristics haven’t been included, and so the conclusions that can be drawn are limited.

Flying Start

8.3. Flying Start has been in operation for about 8 years and has provided services to tens of thousands of children in that time. The cost of the provision is roughly £76m annually which is roughly £2,100 per eligible child every year. Therefore it is important to try to determine if this investment is having any significant impact on these children’s development and outcomes.

8.4. As of 2014/15, about a quarter of all children in primary school up to the age of seven were potentially⁷⁷ eligible for Flying Start provisions. This is defined as living in a Flying Start area after the implementation of the programme and being young enough to potentially have made use of Flying Start services.

⁷⁷ They are said to only be ‘potentially’ eligible, as it is unknown where they were living prior to school, and so could have moved to a Flying Start area at the age of 4 and so not been eligible for any of the Flying Start provisions.

- 8.5. While the gender and ethnicity distributions in Flying Start and non Flying Start areas are roughly the same, Flying Start areas have a considerably larger proportion of children who are eligible for Free School Meals (FSM) and/or who are identified as having Special Educational Needs (SEN). In non Flying Start areas, the levels of FSM and SEN are 16 and 17 per cent respectively, but in Flying Start areas these levels are up to 40 and 26 per cent.
- 8.6. The concentration of disadvantage is also higher in Flying Start areas, which is to be expected given the targeting of Flying Start to more disadvantaged areas. It was found that the average proportion of children living in income deprivation is 53 per cent in Flying Start areas, compared to 25 per cent in non Flying Start areas. There are also higher proportions of children living in households where no adult has any qualifications.
- 8.7. Deprivation has been found to be linked to educational outcomes, with children living in income deprived households, where the adults commonly have few qualifications, are more likely to have poorer outcomes. Therefore, considering the higher concentrations of deprivation in Flying Start areas it would be expected that overall educational outcomes would be lower in these areas. However, if Flying Start has been making an impact on educational outcomes, the differences between Flying Start and non Flying Start areas should be smaller than would have been found in the absence of the programme.

Absenteeism

- 8.8. Four outcome measures were used: percentage of days present, persistent absenteeism, any unauthorised absenteeism and number of unauthorised absent days in those who have at least one unauthorised absence. As predicted, levels of absenteeism are higher in Flying Start areas than non Flying Start areas. However, there has been an improvement in attendance in all areas over the last eight years and a convergence between the levels of absenteeism in Flying Start and non Flying Start areas. For example, the levels of persistent absenteeism fell from 7.6 and 3.2 per cent in Flying Start and in non Flying Start areas respectively in 2007/08, to 2.7 and 1.1 per cent in 2014/15.
- 8.9. The factors which appear to have the strongest association with absenteeism are FSM eligibility and SEN status, with those who are non FSM eligible and not identified as SEN having higher attendance. However, the relative importance of these factors differs between Flying Start and non Flying Start areas. The effect of deprivation (as identified by FSM eligibility and area deprivation) decreases more in Flying Start areas relative to non Flying Start areas over the time period included in the analysis.

- 8.10. Regression analysis was applied to each of the four absenteeism measures and found that living in a Flying Start area has a negative association, but that being potentially eligible for Flying Start provisions has a positive association. However, this positive association is very small when all other factors are taken into account, such as deprivation and SEN status. When tested using matching techniques, this small positive association does reach statistical significance, which suggests there is a potential direct positive impact of Flying Start on absenteeism.

Educational Attainment

- 8.11. Measuring changes in educational attainment over the last eight years has been complicated by the introduction of the Foundation Phase, which changed the way in which children aged four to seven are taught and assessed. This means that all children from 2012 onwards were assessed according to different outcomes from those used earlier at Key Stage 1. However, both Foundation Phase and Key Stage 1 provide a composite measure for children which indicate if they have achieved the expected level in each of the main subject areas. It is this Core Skills Indicator which is used in the analysis of educational attainment.
- 8.12. Children living in Flying Start areas had lower levels of attainment than those in non Flying Start areas. However, the difference between areas is considerably smaller than those between children who have been identified as having SEN and those that have not. There also appears to be an effect of deprivation (as identified by FSM eligibility and area deprivation), gender and ethnicity on attainment, but SEN has the largest effect.
- 8.13. The regression and matching analysis suggests that there is no significant direct impact of Flying Start on educational attainment. The main drivers of attainment appear to be deprivation, SEN and attendance. As would be expected, children with high levels of attendance were more likely to achieve the expected level at age seven.

Special Educational Needs

- 8.14. While the two primary aims of Flying Start are to provide early identification and early intervention, it is unclear how this would affect levels of SEN in children. One possibility is that the two aims will have opposing effect, with early identification increasing levels of SEN and early intervention reducing SEN. Children in Flying Start settings are flagged with schools if they have been identified as having a recognised developmental delay, which would mean they start school already being identified as having SEN, rather than waiting to be identified by the school. Conversely, Flying Start attempts to find ways to intervene with any recognised developmental delay, and if this is successful the child may never need to be identified as SEN in school.

- 8.15. The prevalence of SEN has remained relatively stable in Flying Start areas over the last eight years and has shown a slight increase in non Flying Start areas. However, when SEN is broken down into groups (Learning Difficulties, Behavioural, Emotional and Social Difficulties and Speech, Language and Communication Difficulties) a different trend is seen. In all areas Learning Difficulties (LD) have been declining, Behavioural, Emotional and Social Difficulties (BESD) have shown a marginal increase and Speech, Language and Communication Difficulties (SLCD) have had a more marked increase.
- 8.16. Unlike absenteeism and educational attainment, SEN appears to show a large gender difference. In all forms of SEN considered, in both Flying Start and non Flying Start areas and at all time points, males have higher prevalence than females. This difference can be as much as three times higher in males (found for BESD in non Flying Start areas). In addition to this, FSM eligibility and other indicators of deprivation are associated with higher levels of SEN.
- 8.17. Breakdowns of the different year groups suggest that children living in pre expansion Flying Start areas are more likely to be identified in the Reception year group, when compared to non Flying Start areas and prior to implementation of the programme. This suggests that children in Flying Start areas are being identified as having SEN at a younger age
- 8.18. The regression analysis provides some support for the hypothesis of early identification increasing SEN and intervention decreasing SEN. The regression results indicate that, for overall levels of SEN, being living in a Flying Start area and being potentially eligible for Flying Start increases likelihood of being identified as having SEN. However, the analysis also shows that children are being identified by schools as having SEN at a younger age in Flying Start areas.

Impact of Flying Start

- 8.19. Despite the unknowns, it is possible to make the tentative conclusion that the attendance of children, who were potentially eligible to receive at least two years of Flying Start provisions, is better than those who lived in the same areas prior to the implementation of the programme. Their attendance is also improving at a more rapid pace than children living in non Flying Start areas. It also appears that children who were potentially eligible for Flying Start provisions, who also have special educational needs, were more likely to identified early than those in other areas and before the implementation of Flying Start. Similarly, the differences in attendance and attainment between children living in Flying Start areas and those in non Flying Start areas appear to be diminishing.

8.20. Despite these positive results, the differences found over time can only be partially attributed to Flying Start. A wide range of changes and programmes have been introduced since the implementation of Flying Start, such as the Foundation Phase and the Pupil Deprivation Grant. In addition to this, there are a large number of unobserved factors which could influence educational outcomes, but which could not be included in this analysis. Therefore, with the currently available data, it is only possible to make these tentative conclusions on the impact of Flying Start, or each of the specific provisions, on children's educational outcomes. More definitive conclusions will require data about the actual recipients of Flying Start, linked to their educational outcomes, something which is under consideration at time of writing.

Appendices

Annex A: Tables showing demographic breakdowns for attendance

Table A.1. The differences in the average percentage of days attended in Non Flying Start and both pre- and post-expansion Flying Start areas, split by gender, ethnicity, free school meal eligibility, special educational need status and income deprivation

	Non Flying Start Area			Pre-expansion Area			Post-expansion Area		
	07-09	10-12	13-15	07-09	10-12	13-15	07-09	10-12	13-15
Gender (Male vs. Female)									
Male	0.0	0.0	0.0	-0.1	0.0	0.0	-0.1	-0.1	+0.1
Ethnicity (White British vs. Other)									
White British	+2.1	+2.2	+1.1	+2.0	+1.4	+0.8	+2.2	+0.8	+0.2
FSM Status (Non FSM vs. FSM Eligible)									
Non-FSM	+3.3	+3.3	+2.7	+2.0	+2.1	+1.9	+2.7	+2.3	+1.7
SEN Status (Non SEN vs. SEN Identified)									
Non SEN	+2.1	+2.0	+1.6	+1.7	+1.5	+1.4	+2.5	+1.9	+1.3
Income deprivation (less the 50% vs. more than 50%)									
Less than 50%	+1.9	+1.7	+1.3	+1.1	+1.0	+0.5	+1.1	+1.0	+0.5
Average	93.3	93.4	94.4	91.0	91.4	93.0	91.1	91.5	93.1

Table A.2. The differences in the average proportion of children who are persistently absent in Non Flying Start and both pre- and post-expansion Flying Start areas, split by gender, ethnicity, free school meal eligibility, special educational need status and income deprivation.

	Non Flying Start Area			Pre-expansion Area			Post-expansion Area		
	07-09	10-12	13-15	07-09	10-12	13-15	07-09	10-12	13-15
Gender (Male vs. Female)									
Male	-0.1	0.0	+0.1	+0.8	+0.2	+0.2	+1.4	+0.3	0.0
Ethnicity (White British vs. Other)									
White British	-3.5	-4.1	-1.6	-4.2	-3.2	-1.6	-5.6	-1.8	-0.9
FSM Status (Non FSM vs. FSM Eligible)									
Non-FSM	-6.8	-6.1	-4.2	-6.1	-5.0	-3.9	-6.6	-5.7	-3.3
SEN Status (Non SEN vs. SEN Identified)									
Non SEN	-4.0	-3.5	-2.2	-5.1	-3.7	-2.9	-7.3	-4.7	-2.6
Income deprivation (less the 50% vs. more than 50%)									
Less than 50%	-3.4	-2.7	-1.3	-2.7	-1.9	-0.8	-2.3	-2.7	-1.2
Average	3.3	3.0	1.7	7.9	6.6	3.7	7.6	6.7	3.5

Table A.3. The differences in the average proportion of children who have at least one unauthorised absence in Non Flying Start and both pre- and post-expansion Flying Start areas, split by gender, ethnicity, free school meal eligibility, special educational need status and income deprivation.

	Non Flying Start Area			Pre-expansion Area			Post-expansion Area		
	07-09	10-12	13-15	07-09	10-12	13-15	07-09	10-12	13-15
Gender (Male vs. Female)									
Male	-0.4	-0.2	-0.3	+1.4	-0.2	-0.4	-0.1	0.0	-0.7
Ethnicity (White British vs. Other)									
White British	-13.7	-14.7	-13.9	-9.1	-5.9	-3.8	-10.1	-10.6	-8.1
FSM Status (Non FSM vs. FSM Eligible)									
Non-FSM	-21.3	-23.4	-19.4	-18.5	-18.2	-14.8	-18.6	-17.8	-15.4
SEN Status (Non SEN vs. SEN Identified)									
Non SEN	-10.5	-8.6	-6.8	-8.7	-4.8	-6.1	-10.1	-7.3	-6.4
Income deprivation (less the 50% vs. more than 50%)									
Less than 50%	-14.4	-15.0	-14.3	-15.4	-16.5	-11.0	-17.7	-16.1	-16.7
Average	27.8	27.7	33.7	52.1	51.1	50.3	48.3	46.5	47.5

Table A.4. The differences in the average number of unauthorised absences in children who have at least one unauthorised absence in Non Flying Start and both pre- and post-expansion Flying Start areas, split by gender, ethnicity, free school meal eligibility, special educational need status and income deprivation.

	Non Flying Start Area			Pre-expansion Area			Post-expansion Area		
	07-09	10-12	13-15	07-09	10-12	13-15	07-09	10-12	13-15
Gender (Male vs. Female)									
Male	+0.09	-0.33	-0.35	+0.09	+0.24	-0.39	+0.52	-0.31	-0.32
Ethnicity (White British vs. Other)									
White British	-2.65	-2.74	-2.49	-1.20	-1.36	0.00	-0.73	-1.35	-1.05
FSM Status (Non FSM vs. FSM Eligible)									
Non-FSM	-6.30	-5.96	0.00	-5.76	-5.56	-3.40	-5.81	-5.57	-2.98
SEN Status (Non SEN vs. SEN Identified)									
Non SEN	-3.56	-2.56	-1.39	-3.17	-3.03	-1.30	-7.45	-3.22	-2.07
Income deprivation (less the 50% vs. more than 50%)									
Less than 50%	-3.30	-3.04	-2.55	-3.91	-2.75	-1.16	-3.27	-2.55	-2.44
Average	9.58	9.23	9.23	14.34	13.79	11.78	14.88	12.63	11.13

Annex B: Figures showing the actual attendance against the predicted probabilities supplied by the regression models

Figure B.1. The predicted average percentage of days attended in Non Flying Start and pre-expansion Flying Start areas compared to the actual proportion

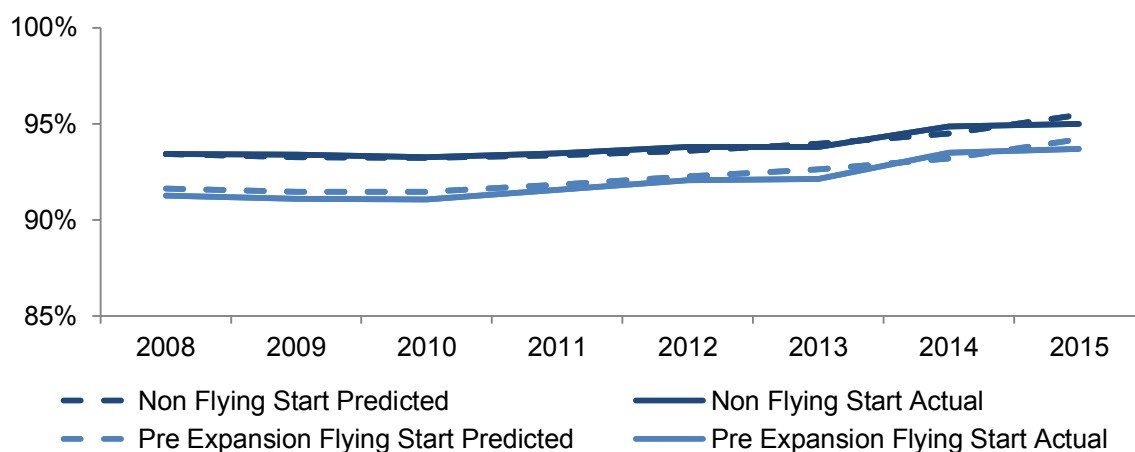


Figure B.2. The predicted average proportion of children who are persistently absent in Non Flying Start and pre-expansion Flying Start areas compared to the actual proportion

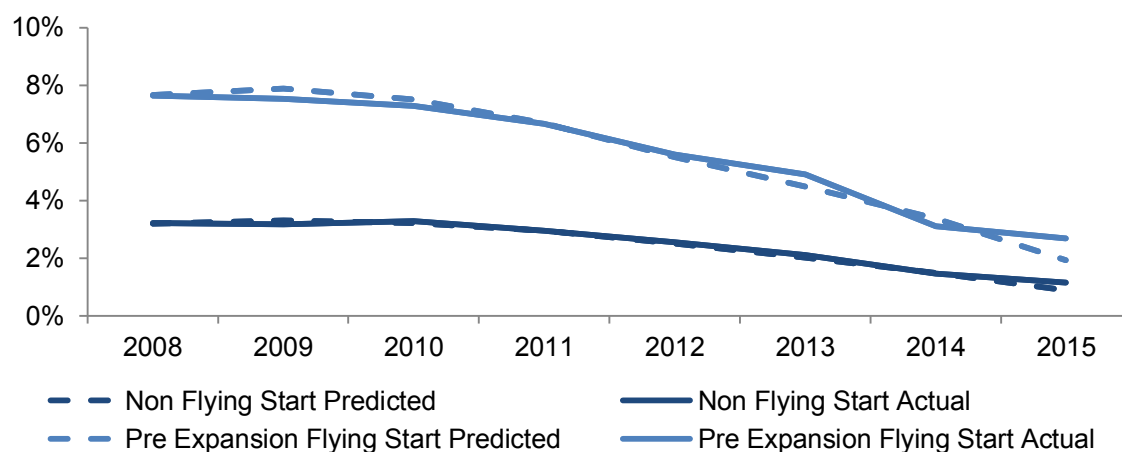


Figure B.3. The predicted average proportion of children who have at least one unauthorised absence in Non Flying Start and pre-expansion Flying Start areas compared to the actual proportion

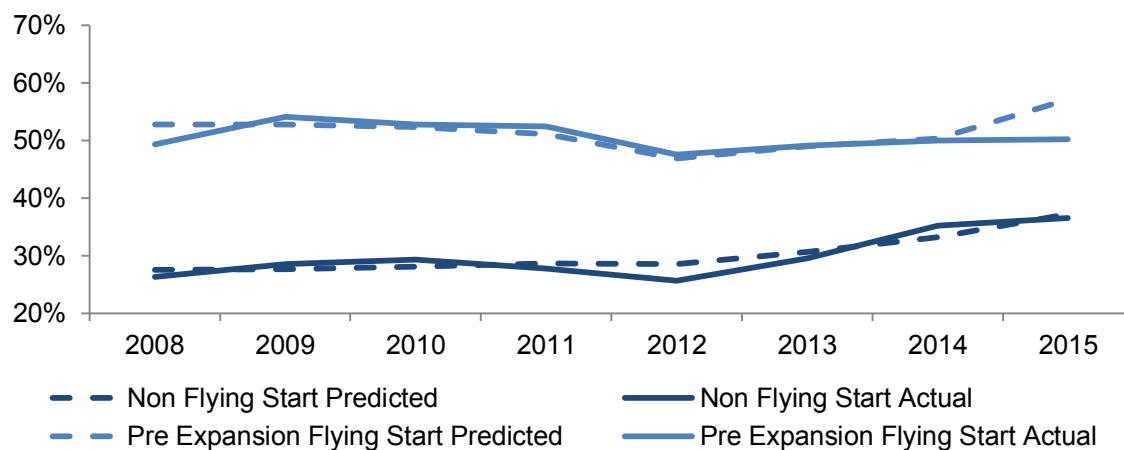
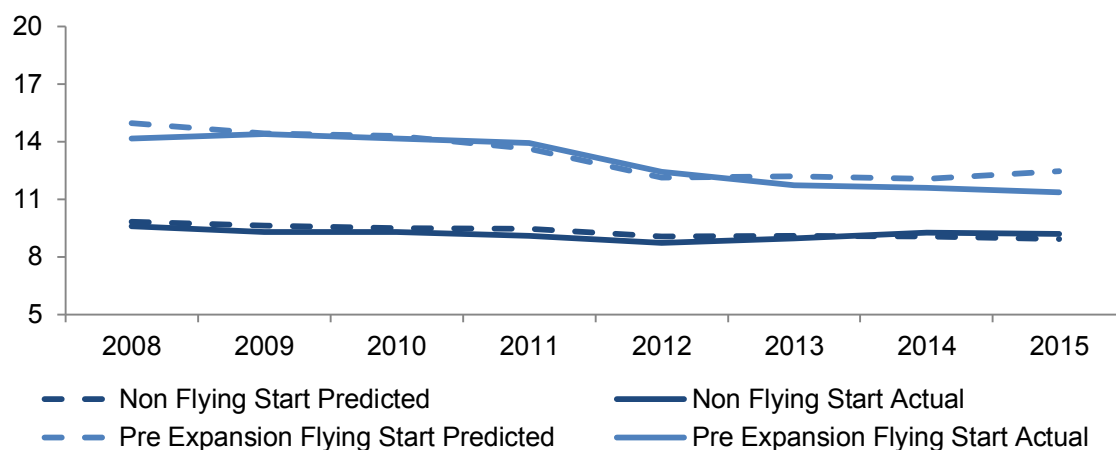


Figure B.4. The predicted average number of unauthorised absences in children who have at least one unauthorised absence in Non Flying Start and pre-expansion Flying Start areas compared to the actual proportion



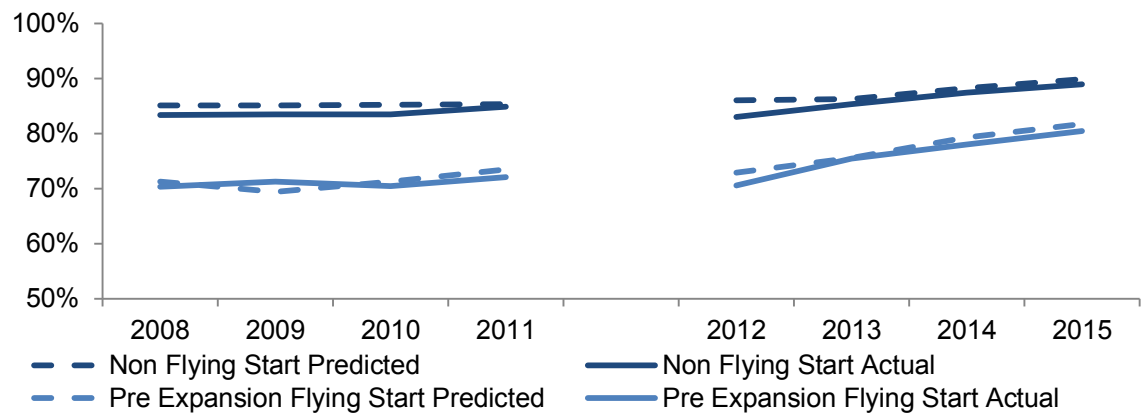
Annex C: Table showing demographic breakdowns for attainment

Table C.1. The differences in the average percentage attaining core skills in Non Flying Start and both pre- and post-expansion Flying Start areas, split by gender, ethnicity, free school meal eligibility, special educational need status and income deprivation

	Non Flying Start Area		Pre-expansion Area		Post-expansion Area	
	KS1 (07-11)	FP (12-15)	KS1 (07-11)	FP (12-15)	KS1 (07-11)	FP (12-15)
Gender (Male vs. Female)						
Male	-8.0	-7.2	-9.5	-8.8	-10.6	-12.7
Ethnicity (White British vs. Other)						
White British	+3.5	+2.5	+0.5	-1.9	-1.7	+5.1
FSM Status (Non FSM vs. FSM Eligible)						
Non-FSM	+19.1	+15.9	+13.6	+15.8	+15.1	+14.8
SEN Status (Non SEN vs. SEN Identified)						
Non SEN	+43.4	+41.2	+49.7	+44.5	+45.0	+43.0
Income deprivation (less than 50% vs. more than 50%)						
Less than 50%	+8.5	+6.8	+4.2	+7.8	+3.8	+3.6
Average	84.5	86.7	70.6	77.4	76.1	78.5

Annex D: Figure showing the actual attainment against the predicted probabilities supplied by the regression models

Figure D.1. The predicted average proportion meeting the expected level for Core Skills in Non Flying Start and pre-expansion Flying Start areas compared to the actual proportion for both the KS1 and FP models



Annex E: Tables showing demographic breakdowns for special educational needs

Table E.1. The differences in the average proportion of children with any special educational needs in Non Flying Start and both pre- and post-expansion Flying Start areas, split by gender, ethnicity, free school meal eligibility and income deprivation

	Non Flying Start Area			Pre-expansion Area			Post-expansion Area		
	07-09	10-12	13-15	07-09	10-12	13-15	07-09	10-12	13-15
Gender (Male vs. Female)									
Male	11.4	11.7	13.2	15.3	16.5	16.9	15.9	14.5	16.7
Ethnicity (White British vs. Other)									
White British	1.0	1.5	1.2	3.6	3.5	3.2	3.5	5.5	4.7
FSM Status (Non FSM vs. FSM Eligible)									
Non-FSM	-18.4	-17.3	-17.6	-14.1	-12.8	-15.0	-14.9	-14.1	-14.6
Income deprivation (less the 50% vs. more than 50%)									
Less than 50%	-7.1	-7.8	-6.9	-3.8	-5.2	-5.4	-2.4	-3.0	-2.8
Average	18.3	18.5	19.8	31.4	31.6	31.8	29.6	28.2	29.8

Table E.2. The differences in the average proportion of children with learning difficulties in Non Flying Start and both pre- and post-expansion Flying Start areas, split by gender, ethnicity, free school meal eligibility and income deprivation

	Non Flying Start Area			Pre-expansion Area			Post-expansion Area		
	07-09	10-12	13-15	07-09	10-12	13-15	07-09	10-12	13-15
Gender (Male vs. Female)									
Male	+4.5	+4.3	+4.2	+5.3	+5.2	+4.7	+5.6	+5.1	+4.2
Ethnicity (White British vs. Other)									
White British	+0.5	+0.7	+0.6	+3.3	+2.7	+1.7	+2.2	+3.4	+2.3
FSM Status (Non FSM vs. FSM Eligible)									
Non-FSM	-10.4	-9.2	-7.9	-8.3	-6.2	-6.7	-7.5	-7.0	-6.9
Income deprivation (less the 50% vs. more than 50%)									
Less than 50%	-4.6	-4.1	-3.1	-2.2	-2.3	-2.5	+0.1	-0.2	-0.9
Average	9.4	8.8	8.3	16.2	15.0	13.3	15.9	13.8	12.6

Table E.3. The differences in the average proportion of children with behavioral, emotional and/or social difficulties in Non Flying Start and both pre- and post-expansion Flying Start areas, split by gender, ethnicity, free school meal eligibility and income deprivation

	Non Flying Start Area			Pre-expansion Area			Post-expansion Area		
	07-09	10-12	13-15	07-09	10-12	13-15	07-09	10-12	13-15
Gender (Male vs. Female)									
Male	+2.5	+2.5	+3.0	+4.1	+4.3	+4.4	+4.3	+3.7	+4.6
Ethnicity (White British vs. Other)									
White British	+0.4	+0.4	+0.8	+0.4	+0.8	+2.0	+1.3	+2.1	+1.6
FSM Status (Non FSM vs. FSM Eligible)									
Non-FSM	-3.3	-3.3	-3.8	-2.5	-3.1	-3.6	-3.6	-2.7	-2.9
Income deprivation (less the 50% vs. more than 50%)									
Less than 50%	-1.1	-1.0	-1.1	-0.8	-0.6	-1.0	-0.7	-0.7	-0.1
Average	2.2	2.3	2.8	4.5	4.6	5.1	4.2	4.1	4.5

Table E.4. The differences in the average proportion of children with speech, language and/or communication difficulties in Non Flying Start and both pre- and post-expansion Flying Start areas, split by gender, ethnicity, free school meal eligibility and income deprivation

	Non Flying Start Area			Pre-expansion Area			Post-expansion Area		
	07-09	10-12	13-15	07-09	10-12	13-15	07-09	10-12	13-15
Gender (Male vs. Female)									
Male	+3.3	+3.7	+4.4	+4.8	+5.4	+6.1	+4.2	+4.4	+6.4
Ethnicity (White British vs. Other)									
White British	-0.1	0.0	-0.5	-0.4	-0.3	-1.1	+0.4	+0.2	-0.3
FSM Status (Non FSM vs. FSM Eligible)									
Non-FSM	-3.7	-3.8	-4.4	-2.7	-3.1	-3.9	-3.4	-3.1	-3.6
Income deprivation (less the 50% vs. more than 50%)									
Less than 50%	-1.2	-2.3	-2.4	-0.9	-1.8	-1.7	-1.4	-1.7	-1.9
Average	4.7	5.1	6.0	8.1	9.0	10.0	7.1	7.6	9.4