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Inequalities in the experience of early education in England: Access, peer groups and transitions

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CONTENTS

1. Introduction.....	1
2. Policy background.....	4
3. Methodology	5
4. Results: Access to and take-up of the full duration of the free entitlement by autumn-born children	8
5. Results: Peer group clustering in early education – patterns, drivers, outcomes.....	16
5.1 Patterns of clustering by low-income	16
5.2 Patterns of clustering by EAL.....	18
5.3 What drives differences in clustering between local authorities?.....	20
5.4 Outcomes: is pre-school peer group associated with teacher-assessed performance in early primary school?.....	22
6. Results: Inequalities in the transition to reception class	28
6.1 Continuity of setting.....	28
6.2 Continuity of peers.....	32
7. Implications for policy, practice and future research.....	35
7.1 Access to and take-up of the free entitlement.....	35
7.2 Peer clustering and peer effects	36
7.3 Transitions to reception class	37
7.4 Limitations.....	38
8. References.....	39

TABLES

Table 1: Non-take-up of the free entitlement in January 2010 among autumn-born three-year-olds (descriptive statistics) ..	9
Table 2: Percentage difference in the odds of not taking up the full duration of the free entitlement associated with the size of the sector in the local authority.....	13
Table 3: Percentage of reception peers who also attended a child’s pre-school	34

FIGURES

Figure 1: Non-take-up of the free entitlement among autumn-born three-year-olds in January 2010 by FSM status and English as an Additional Language	11
Figure 2: Non-take-up of the free entitlement among autumn-born three-year-olds in January 2010 by FSM status and ethnicity (selected groups)	12
Figure 3: Predicted probability of non-attendance by the share of provision in the local authority in particular sectors.....	15
Figure 4: Number of sample children (n=551,713) with each level of peers low-income, across ECEC settings in 2011 and primary schools at Year 1, in 2013	17
Figure 5: Number of sample children (n=551,173) with each level of peers EAL, across ECEC settings in 2011 and primary schools at Year 1, in 2013	19
Figure 6: Distribution of sample children across ECEC and Year 1 settings with each level of EAL peers, by child’s own language background	19
Figure 7: Distribution of sample children across ECEC settings with each level of low-income peers, by child’s own income level, split by setting type.....	20
Figure 8: Distribution of sample children across ECEC settings with each level of EAL peers, by child’s own language background, split by setting type.....	20
Figure 9: Model estimated mean Foundation Stage Profile total scores, for children who are themselves low-income, according to proportion of low-income peers in their early education centre.....	25
Figure 10: Percentage of all cohort children following each transition pathway	29
Figure 11: Percentage of cohort children following each transition pathway by income group	30
Figure 12: Percentage of cohort children who attended a school nursery who go on to follow each transition pathway	32

GLOSSARY OF ABBREVIATIONS

DfE	Department for Education
EAL	English as an Additional Language
ECEC	Early Childhood Education and Care
EPPE	Effective Provision of Pre-School Education
EYFS	Early Years Foundation Stage Curriculum
FSM	Free School Meals
FSP	Foundation Stage Profile
GLD	Good Level of Development
IDACI	Index of Deprivation Affecting Children
LA	Local Authority
LSOA	Lower Super Outer Area
NPD	National Pupil Database
PVI	Private, Voluntary and Independent sectors
SEED	Study of Early Education and Development
SEN	Special Educational Needs
SEND	Special Educational Needs and Disabilities

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Some of the analysis presented has already been published elsewhere. See (1) T. Campbell, L. Gambaro and K. Stewart (2018) "'Universal" early education: Who benefits? Patterns in take-up of the entitlement to free early education among three-year-olds in England,' *British Educational Research Journal*, 44(3), pp 515-538, <https://onlinelibrary.wiley.com/doi/abs/10.1002/berj.3445>; and (2) K. Stewart, T. Campbell and L. Gambaro (2019) 'The peer composition of pre-school settings in England and early recorded attainment among low-income children,' *British Journal of Sociology of Education*, online first, <https://www.tandfonline.com/doi/full/10.1080/01425692.2019.1583549>

Editorial note

Kitty Stewart was the Principal Investigator on this project and the main author of this report. Ludovica Gambaro was the Co-Investigator, and Tammy Campbell contributed to the project as Research Officer / Research Fellow. All analysis of the National Pupil Database was carried out by Tammy Campbell. All three members of the team contributed throughout to conception, planning, interpretation and writing.

Abstract

This paper summarises the output of a Nuffield-funded research project exploring inequalities in three aspects of children’s experience in early education in England. The main focus of the project was on ‘peer effects’ in pre-school settings: we examine the extent of clustering by income and language background and explore associations between pre-school peer group and children’s outcomes in early primary school. The report also presents findings on access to the full duration of the free entitlement to early education, and on variation in children’s experience of the transition onward to reception class.

We find much lower levels of clustering in pre-schools in England than have been identified in studies for the US, particularly by income, and little evidence that pre-school peer group is related to early school attainment as assessed by teachers in reception and Year 2. But we identify significant levels of non-take-up of the full entitlement, particularly among disadvantaged groups. A higher prevalence in the local authority of some types of pre-school appears to make a difference: more voluntary sector or Sure Start provision is associated with higher take-up, while more Sure Start provision is further associated with lower inequalities in access between different groups. We also find disparities in the stability of transitions to reception class. In the cohort we examine, children from low-income backgrounds and some minority ethnic groups are much more likely to experience the most secure transition – from a school nursery class to a reception class in the same school, with high numbers of known peers – because they are more likely to be in school nurseries to begin with. But among those attending school nurseries, some groups, including Black Caribbean children and those with a statement of special educational needs, are significantly less likely than others to continue to reception in that school. The disparity is of potential concern given wider disadvantages facing these groups of children.

Key words: early education, childcare, ECEC, inequality, access, take-up, peer effects

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1. Introduction

In the last twenty years, early childhood education and care (ECEC) has risen up the policy agenda in England. In part the aim has been to promote maternal employment in order to reduce child poverty and improve gender equality, but there has also been a strong focus on the importance of ECEC services in narrowing social class gaps in child development (Hillman and Williams, 2015). The guarantee of a free part-time nursery place for all three- and four- year olds, and the later extension of free places to two-year-olds from low-income households or with some special educational needs and disabilities (SEND), were central aspects of policy aimed at ensuring a more level playing field for children as they start school.

Initially, policy around the free places concentrated on increasing availability, but as enrolment rose policy makers began to pay more attention to the quality and effectiveness of the places provided, for example with the introduction of a statutory curriculum (the Early Years Foundation Stage Curriculum, or EYFS) in England in 2008, and greater investment in improving the qualification levels of staff (Tickell, 2011; Stewart and Obolenskaya, 2016; Gambaro, 2017). Government data show a steady narrowing over time of gaps in child development for children from disadvantaged areas or low-income households compared to others, as measured by teacher assessments at age five (Stewart and Waldfogel, 2017). However, progress is slow and gaps on this measure remain wide, particularly between children from different income backgrounds. Among children eligible for Free School Meals (FSM) 57% were recorded as achieving a 'good level of development' (GLD) in 2018, compared to 74% of other children (DfE, 2018a). There are also gaps between children from different language groups and ethnic backgrounds but these are notably smaller. Among children with English as an additional language, 66% were denoted as achieving the GLD benchmark compared to 72% of English-speaking children; while among minority ethnic groups, only Gypsy/Roma and Irish traveller children stand out as having very low rates on this measure, with just one third of children attributed a GLD. This contrasts to 65% of Pakistani and 68% of Bangladeshi children, alongside higher percentages from all other minority groups. The FSM gap is also particularly concerning because it persists throughout children's time in compulsory schooling, while many of the gaps by ethnicity close and even reverse (Equality and Human Rights Commission, 2015; Kirby and Cullinane, 2016).

There are likely to be a variety of reasons for this continued gap in measures of early child development between low-income children and others. Part-time attendance at pre-school for a year or two may simply be inadequate to compensate for the scale of inequalities in the home environment. In recent evidence for England from the ongoing longitudinal Study of Early Education and

Development (SEED), outcomes at age four were found to be more strongly associated with demographics and home learning environment than with time spent in ECEC (Melhuish and Gardiner, 2018).

In addition, the quality of ECEC is known both to vary widely and to matter, although exactly what features ensure high quality provision remains disputed. We know that on some quality measures, such as Ofsted ratings, children from disadvantaged areas appear to get a worse deal than other children (e.g. Mathers and Smees, 2014; Blanden et al, 2017), although they are also more likely to attend state maintained nursery settings headed by a qualified teacher (Gambaro et al, 2015). Variations in quality may help to explain why only modest effects of the roll-out of free places on children's recorded attainment have been identified, with effects that are generally greater though still substantively small for children from low-income households (George et al, 2012; Blanden et al, 2016; 2017).

This report examines three further aspects of children's experience of early education which have been relatively overlooked to date but might be contributing to persistent gaps. Funded by the Nuffield Foundation and using administrative data from the National Pupil Database, the project's central objective was to examine the role of **peer group composition**. Evidence from the Effective Provision of Pre-School Education (EPPE) study in England in 2004 suggested that children from disadvantaged backgrounds benefit from attending pre-school with a mixture of children from different social backgrounds (Sylva et al, 2004). Since then peer group has received little attention as an aspect of children's experience in nursery, yet children in early education spend a large proportion of their time interacting with each other; indeed, recommended practices (and the EYFS) emphasise the importance of providing opportunities for children in this age-group to play together and collaborate. Peer group make-up may also affect adult-child interactions; for example, staff may pitch activities and discussion to the perceived abilities or interests of a group. Existing research, largely from the US, finds some evidence that children make more progress in language development if they attend nursery alongside peers with higher language competence (e.g. DeLay et al, 2016; Henry and Rickman, 2007; Justice et al, 2011; Mashburn et al, 2009; Schechter and Bye, 2007). Given strong evidence that disparities by income background in language and other aspects of development have already opened up by the time children attend pre-school, peer group make-up in the setting could thus itself be a factor shaping children's progress.

Examining clustering by income background seems particularly important in the English context, because the design of early education provision might be expected to push towards greater clustering of children by income in pre-school than in compulsory schooling: a wider variety of different types of funded

provision is available, with settings operating a range of different opening hours and able to charge fees (at a rate they choose) for additional hours beyond the part-time free places. Despite this, while there is a considerable literature on clustering (or segregation) of older children by social and ethnic background (for a review, see Sacerdote, 2011; for analysis of England, see Burgess et al, 2004, Johnston et al, 2006), there has been very little focus on this topic for young children. Our analysis begins by mapping the extent of clustering of children from low-income households in early education compared to patterns in the first years of primary school. We go on to explore how far differences in the nature of local provision seems to be a relevant factor behind patterns of clustering. Finally, to the extent that we can measure this, we ask how far peer group in early education is associated with children's outcomes in early primary school. We also conduct some of this analysis for children with English as an Additional Language.

Our second area of focus is **access and take-up**. While we started with a prior assumption that take-up of the free places is now near universal – Department for Education statistics report take-up rates of 95-98% (DfE, 2018a) – we identified quite significant levels of non-take-up in the *full duration* of the entitlement, as not all children take up their place in the first month that they become eligible. Clearly if children attend for fewer months they will receive less potential benefit from the places. We explore the extent to which patterns of access to the full entitlement differ by children's background, and examine whether the pattern of local provision appeared to make a difference.

Third, in the course of the project we identified differences in **transition patterns** from early education to reception class, and in particular differences in the likelihood of moving from one institution to another. Transition to primary school is increasingly believed to be a crucial stage in children's trajectories, with both short- and long-term consequences for children's wellbeing and progress through school (OECD, 2017). It may have additional significance in England given children are very young when the move takes place; formal education begins, for most, at just four years old. We conduct some provisional analysis on the different likelihoods by income, ethnicity, language background, birth month and SEND of a more or less stable transition (for example the likelihood of moving from a nursery class in one school to another school for reception).

Thus this overview report covers three distinct aspects of children's experience in early education. Our main focus is on peer group composition but we also look at access to the full duration of the free entitlement and onward movement to reception class. We begin by briefly setting out the relevant policy background. We then describe the data and methods used throughout the project, and go on to present the main findings in the three areas we cover, in the order

experienced by the child – take-up, peer groups, and onward transitions. To conclude, we set our findings in the context of ongoing policy developments in this field, and reflect on the implications for future research and for policy and practice.

2. Policy background

Our project is focused on the ‘free entitlement’ to early education – the free part-time places for which all children aged three and four in England have been eligible since April 2004. Initially 12.5 hours a week for 33 weeks a year, in 2010 the entitlement was extended to 15 hours a week for 38 weeks a year. Children become eligible for the places at the start of the term after their third birthday: January 1 for children born in the autumn, April 1 for those born in spring, and September 1 for the summer-born. The places can be taken up in any setting registered to deliver the EYFS curriculum, which includes maintained nursery schools and primary school nursery classes (referred to collectively in the paper as the maintained sector), day nurseries run by the private, local authority or voluntary sector (some of them within Sure Start children’s centres), childminders, and sessional (part-day) providers, including independent nursery schools and private and voluntary sector playgroups.

There are a number of reasons why children might attend one setting rather than another, and these are relevant in considering both variations in take-up, and the extent to which children might end up attending settings together with children from similar income backgrounds. First, some settings are open for a longer day (e.g. 8am to 6pm), charging fees for additional wraparound hours. These settings are likely to be more attractive to working parents than those open for mornings or a school-day (9am to 3.30pm) only. In fact, a child with parents in paid work may already be attending a day nursery when she turns three, in which case the entitlement will operate in effect as a reduction in fees. Conversely, children whose parents do not need and/or cannot afford to pay for additional hours may find it hard to access these full-day settings; there is evidence that some providers prioritise children who attend all day and pay fees which top-up government funding for free hours.¹ Second, parents may simply have a preference for one type of provision over another, with some evidence, for example, that state nursery schools and classes are more trusted by low-income parents than other providers (Bell et al, 2005; Roberts, 2007). Particularly for non-working parents, school may seem like provision aimed at the child, while day nursery may be perceived as ‘childcare’ and not necessary. Third, some providers may be more effective than others at communicating the existence of free places and their potential benefits, particularly to low-income

¹ <http://www.nurseryworld.co.uk/nursery-world/news/1157484/underfunding-chain-restricts-funded-only-15-hour-places>

families. Sure Start children's centres, for example, offer wider services for young children and parents from birth onwards, which mean they have long-term contact with families, and they also have a specific remit of outreach to disadvantaged groups (Mitchell and Meagher-Lundberg, 2017).

Another factor, particularly relevant in thinking about transitions between nursery and reception, is that some parents may be thinking only of the best pre-school option when choosing a place, while others may also be looking ahead to compulsory schooling – for example, opting for a nursery class in a school where their child has a good chance of gaining a place in the main school. A better understanding of the way school admission systems work could reduce the chances of a child needing to move between institutions at this point.

Finally there are substantial differences in the make-up of provision across local authority areas. Almost all new places created since 1997 were in private and voluntary sector settings (Stewart, 2013; Blanden et al, 2016), which means that maintained settings form a significant share of the total only in local authorities that invested in state nursery provision in previous decades; these are largely concentrated in inner cities (Owen and Moss, 1989). The prevalence of both voluntary sector and Sure Start children's centre provision also varies widely across local authorities. These differences are useful in our analysis, as they allow us to investigate whether differences in what is available to parents can make a difference to take-up or to levels of peer clustering.

There have been two significant recent policy developments which post-date the data used in our analysis. Since 2013 some two-year-olds have been eligible for free places, on a targeted rather than universal basis (children from low income households, looked after children, and some children with special educational needs and disabilities are included). And since 2017 three- and four-year-olds have been entitled to a longer free day – 30 hours per week instead of 15 – if their parent(s) is/are in paid work. Both policies have the potential to affect our findings in interesting ways. We reflect on their implications in our concluding section.

3. Methodology

Throughout the project, we use records from the National Pupil Database (NPD), a census of all children in England who access state-funded education. The NPD begins following children once they receive funding for education in the pre-school years and continues to the end of secondary school. Information can be linked longitudinally at the pupil level, and includes detail on each institution attended, on children's recorded personal characteristics (free-school meals receipt, birth month, gender, ethnicity, English as an additional language, special educational needs and disability (SEND) and area of residence), and on their attainment in national tests and assessments. For some of the analysis we also

link in data on each centre's results from their most recent Ofsted inspection, as well as area-level measures of child poverty using the 2011 Index of Deprivation Affecting Children (IDACI).

We examine children born into the 2006-07 academic year cohort, who became eligible for free early education in the term after they turned three, that is between January 2010 and September 2010. The NPD Early Years Census is conducted in January of each year, so we focus for most of our analysis on children in attendance in January 2011, when the full cohort are eligible for a free place, and on their peer groups at that point. When children are recorded in the data as attending two settings (0.04% of the sample), we denote the setting of attendance as that where they spend most time (or, at random, when the hours recorded are equal). However, we retain the duplicate children when constructing each child's peer group, on the basis that the 'target' children of interest in each setting are likely to come into contact with the dual-attending children, and that these dual-attenders are part of the peer group.

We track children forward into early primary school to gather data on their outcomes in formal teacher-recorded assessments at the end of reception year (EYFS profile) and Year 2 (Key Stage 1 results), and to construct a measure of low-income, as explained below. For the take-up analysis we also track the older children in the cohort (those born in Autumn 2006) back to January 2010 to see whether they took up their place when they first became eligible. For the transitions analysis we make use of information on each institution: we can see whether children moved from one setting to another to attend reception, and also whether the setting they moved to had a nursery class option.

We chose the cohort born in 2006-07 for one key reason. The NPD includes no direct measure of children's household economic circumstances, other than whether or not a child claims Free School Meals (FSM). For the majority of families, the possibility of claiming FSM only arises in reception year onwards, and it is only from this point that there is a reasonably consistent and comprehensive record of whether children are in receipt or not. So to construct a measure of low income we track children forwards in the data to see whether they received free meals in one, two or all three of their years in early primary school (reception, Year 1 and Year 2). This allows us to identify children who we group as 'Always FSM'; children who are 'Never FSM'; and those in between (once or twice FSM). The reason we focus on the 2006-07 cohort is that from September 2014 the UK Government made school meals free for all children up to the end of Year 2, complicating this route for identifying children from low income households. Our cohort is the last for whom this policy did not apply.

FSM receipt is clearly far from a perfect measure of low-income status, but it is widely used and has been judged to be reasonably reliable and valid, though not entirely comprehensive (Taylor, 2018; Ilie et al, 2017). Our analysis has the

additional limitation that we do not have a measure of FSM *in pre-school*. We make the assumption that families of children who claim FSM through the first three years in early primary are highly likely to have also had low incomes in the year before this. This assumption is supported by analyses of the persistence of low income in the Millennium Cohort Study (see Dickerson and Popli, 2012). However, while we are confident that the 'Always FSM' group identifies persistently poor families, we know that those classified as 'Never FSM' will be a heterogeneous group, including children entitled to FSM but not claiming, children just above the threshold, and children from families ranging from middle income to highly affluent. We keep this in mind throughout.

The other central variable used in our analysis of peer effects is the measure of children's outcomes in early primary school. As the NPD does not record children's progress or attainment in nursery, our main measures are teacher-assessed Foundation Stage Profile (FSP) scores from the end of reception year (age five). In 2011, reception teachers judged children using thirteen sub-scales across six domains of the FSP (personal, social and emotional development; communication, language and literacy; problem solving, reasoning and numeracy; knowledge and understanding of the world; physical development; creative development). The sub-scales are highly correlated with each other, so although we perform sensitivity checks on each sub-scale, we focus on the summed total score which runs from 0-117 and also the binary measure which captures whether the child has been reported as reaching the benchmark combination of scores denoted by the Department for Education as indicating a 'good level of development'. We also look at later Key Stage One scores, which are teacher assessed against standardised criteria two years on, at the end of year 2 (age seven).

The constraints of the available measures – both the income measure and the outcomes measure – present obvious limitations to our analysis. The advantage of administrative data like the NPD, though, is its large size: it includes *all* children in funded pre-school places in this year. In total, we have 553,327 children in our main sample for analysis of peer effects, nested in 24,727 early education centres. This is nearly 90% of the 617,645 children who are recorded as attending funded early education in January 2011. We exclude children who: i) were enrolled in centres with fewer than five cohort peers or in home-based provision (N=9,377 or 1.5%); or ii) had missing information on outcome measures (Foundation Stage Profile and Key Stage One test scores) (N=54,941 or 8.9%). The majority with missing information on outcomes (around 6-7% of the sample) will be children attending independent schools (who are only recorded in the NPD during funded pre-school); many of the rest will continue to attend state-funded provision, but have missing data for other reasons which we cannot ascertain from the data.

The sample for our analysis of take-up is restricted to the sub-set of autumn-born children, 205,865 children in total.

The sample for the analysis of transitions is largest, 611,816. We include all children in funded state reception class places in September 2011 and do not need data on cohort peers or outcome measures. Children who attend reception in this year who did not attend pre-school are also included in these analyses as a group of interest.

4. Results: Access to and take-up of the full duration of the free entitlement by autumn-born children

Results in this section were first published in Campbell, Gambaro & Stewart (2018).

The Department for Education estimates that 92% of three-year-olds and 95% of four-year-olds took up their funded early education place in January 2018, very similar to our study year, January 2011 (92% of threes and 96% of fours) (DfE, 2018a). But our analysis identifies much higher rates of non-take-up of *the full duration* of the entitlement: not all children are accessing the places when they first become eligible, meaning they do not receive the full potential benefit. Further, we find substantial differences in take-up by income group, ethnicity and English as an Additional Language (EAL). We also find that the nature of local provision makes a difference, with evidence suggesting a particularly effective role is played by Sure Start children's centres in increasing access and reducing inequality between children from different backgrounds. This is a particularly notable finding given the subsequent closure of many Sure Start settings (Smith et al, 2018).

We focus on children who were born in the autumn, between September and December 2006, and who were attending funded early education in January 2011, aged four (this is how we identify children eligible for a funded place one year earlier, aged three). The timing of this group's birth entitled them to five full terms of early education, from January 2010 until they started school in September 2011. Children born later in the year are entitled to fewer terms in pre-school settings before entering reception at the same point – four terms for spring-born children and three terms for summer-borns. Our autumn born children can therefore feasibly be seen to be doubly advantaged: they are older in the year, which wider research has found gives them a lasting advantage in school (Crawford et al, 2013), and they are also funded to have additional time in early education before entering reception class with their younger peers. So the first question we investigated is this: among these 'lucky' autumn borns, is the advantage evenly spread across income and ethnic groups? Or are autumn-born children who are disadvantaged in other ways least likely to enjoy this benefit? (It would be interesting to conduct similar analysis for younger children

in the cohort but the way the data are collected make this impossible: we can only observe children in early education in January of each year, so we cannot see whether spring and summer born children entered when first eligible, in April and September respectively, or later.)

Table 1 presents our initial descriptive results. Overall, we find that almost one in five autumn-born children (18%) who were in early education aged four (January 2011) did not take up their free hours when they first became eligible, in January 2010. The likelihood of being in early education in January is no different for girls than boys, but does vary by birth month, suggesting that it takes parents some time to identify and access a place after a child’s birthday, and/or that some parents feel very young three-year-olds are not yet ready for group provision: 15% of September-born children did not take up their place in January, rising to 22% of the December-born.

However, the sharpest differences are by income group, EAL and ethnicity. Among children who go on to claim FSM in all three of the first three years in primary school, 29% do not access their place from the beginning, compared to 15% of children who claim in none of these years. Among children with EAL, 39% did not take up the places, compared to 14% of those who speak English as a first language at home. And among some minority ethnic groups, non-take-up of the full duration is extremely high, including 51% of children from Bangladeshi households and 44% of children from Gypsy, Roma or Irish Traveller backgrounds.

Because families with EAL and some minority ethnic households have much higher rates of poverty, it is possible that these characteristics explain low take-up among low income households. In fact, while this is part of the story, there are also steep gradients by income group among English-speaking and White British households. Figure 1 shows that children from EAL households have a relatively high likelihood of non-attendance whatever their income status, while income is much more clearly associated with non-attendance among English-only households: that is, having English as an additional language, or being English-speaking and persistently poor, are both strong predictors of non-take-up. Figure 2 shows patterns by selected ethnic groups. For most groups, children are more likely to access the full entitlement if they are in the never-FSM group than if they are ever or always in receipt of free

Table 1: Non-take-up of the free entitlement in January 2010 among autumn-born three-year-olds (descriptive statistics)

	Proportion of sample	N	Non-attendance rate (%)
<i>Number of times FSM claimed</i>			
Never	76.9	158,222	15.7
Once	5.5	11,360	24.5
Twice	5.9	12,225	27.4

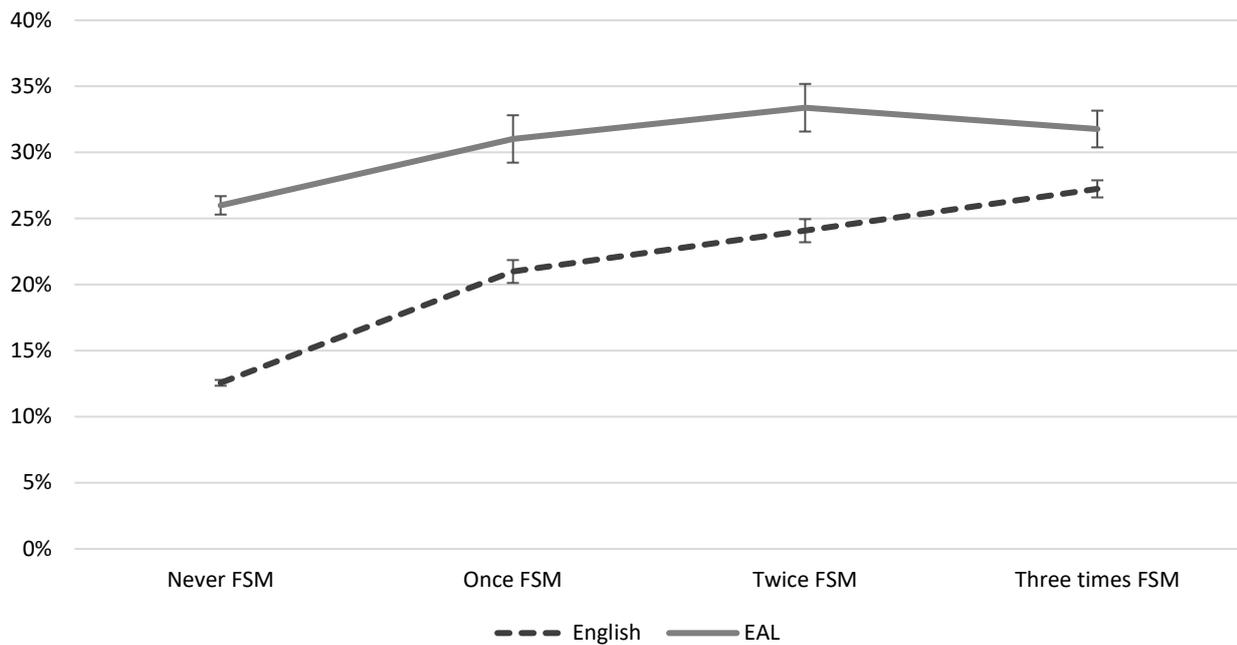
Thrice	11.7	24,058	29.0
Ever (once, twice, or thrice)	23.2	47,643	27.5
Language			
English	77.5	159,560	13.8
Primary home language other than English (EAL)	17.3	35,629	38.5
Missing information	5.2	10,676	19.4
Ethnicity			
Bangladeshi	1.6	3,281	50.8
Gypsy / Roma / Irish Traveller	0.2	400	44.3
Any other ethnic group	1.7	3,482	39.4
Black African	3.6	7,349	37.4
Pakistani	4.2	8,561	36.5
Any other White group	4.6	9,412	34.1
Any other Asian	1.9	3,888	30.6
Any other Black	0.8	1,540	29.6
Chinese	0.4	796	27.1
Indian	2.8	5,747	26.9
Black Caribbean	1.1	2,315	26.1
Any other mixed	1.9	3,830	22.5
White and Black Caribbean	1.4	2,866	22.4
White and Black African	0.7	1,419	22.2
Missing information	2.0	4,061	21.7
White Irish	0.3	541	20.3
White and Asian	1.3	2,584	19.7
White British	69.9	143,793	12.7
Month of birth			
September	25.9	53,294	15.4
October	25.7	52,808	17.0
November	24.4	50,160	19.3
December	24.1	49,603	22.1
Gender			
Girl	48.9	100,665	18.3
Boy	51.1	105,200	18.5
<i>Whole sample</i>	100	205,865	18.4

Notes: sample includes children born in autumn 2006 who were attending early education in January 2011. Non-attendance refers to January 2010. Source: National Pupil Database.

school meals. Only for Bangladeshi children and Chinese and Gypsy/Roma/Traveller children (not shown in the figure) does FSM make little difference. For these groups, ethnicity rather than income status seems the key predictor of non-attendance, though it could be that FSM is simply a worse proxy for low income for these groups. This would be the case if families from these ethnic groups were less likely than others to apply for free school meals even if eligible, or if non-eligible families were more heavily concentrated just above the income cut-off point, or both.

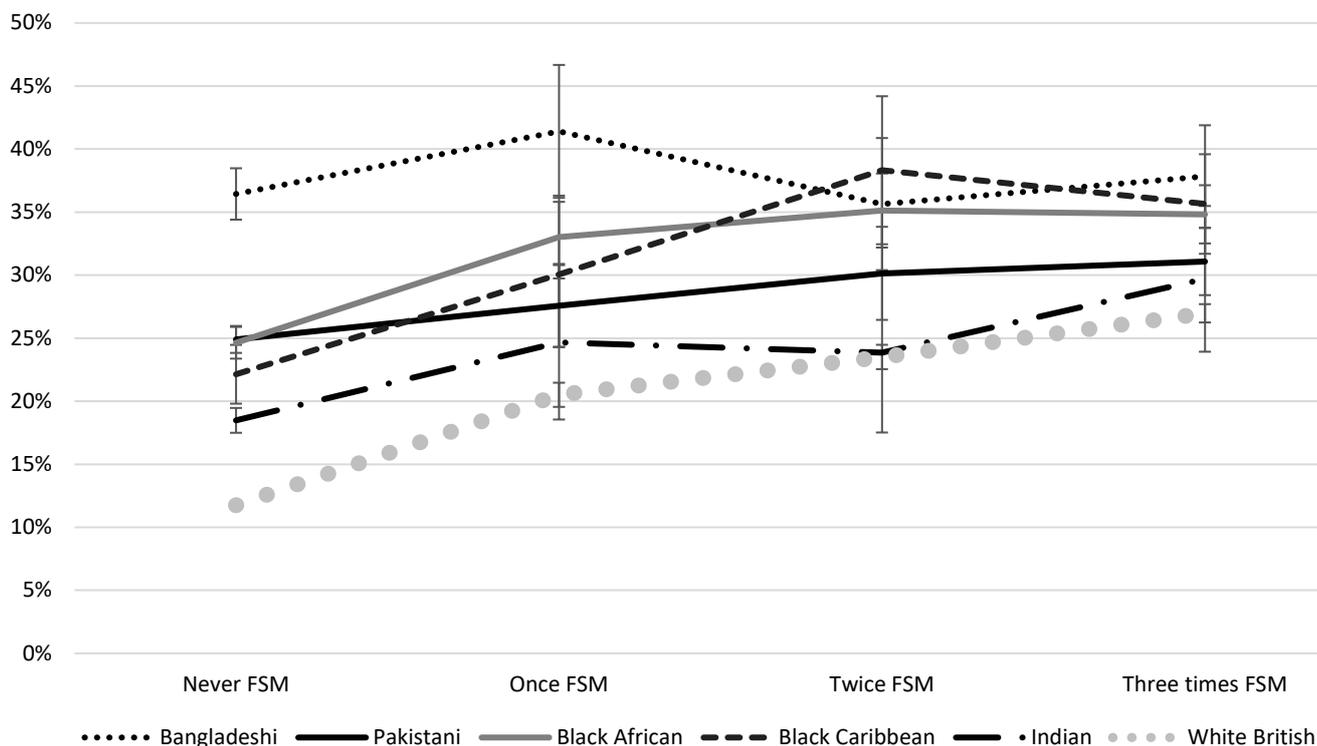
Finally, we explore whether local factors, including the level of poverty in the area, and the make-up of local provision, appear to have a role in explaining lower attendance among low-income children. If these factors are related, it might point to potential policy levers to improve access, provided that differences do not simply reflect the characteristics of local demand.

Figure 1: Non-take-up of the free entitlement among autumn-born three-year-olds in January 2010 by FSM status and English as an Additional Language



Notes: sample N=205,865 and includes children born in autumn 2006 who were attending early education in January 2011. Non-attendance refers to January 2010. Error bars = 95 CI for marginal mean. Figure shows marginal means from logistic regression estimating relationships between FSM*EAL and non-attendance, controlling for month of birth, gender and ethnic group.

Figure 2: Non-take-up of the free entitlement among autumn-born three-year-olds in January 2010 by FSM status and ethnicity (selected groups)



Notes: sample N=205,865 and includes children born in autumn 2006 who were attending early education in January 2011. Non-attendance refers to January 2010. Error bars = 95 CI for marginal mean. Figure shows selected marginal means from logistic regression estimating relationships between FSM*ethnicity and non-attendance, controlling for month of birth and gender.

We find that children living in higher poverty areas (those with a higher IDACI) are less likely to access a place, even after controlling for their own household characteristics. This could indicate something about the availability of places in these areas, or about the relevance of local norms of nursery attendance. We also find that while there is less provision overall in higher poverty areas, these areas display less inequality between children from different income groups. Possibly providers in high-poverty areas are better at outreach to more disadvantaged families, or it could be that in these areas there is more limited private sector provision, reducing options and therefore take up among higher income families. The result could also reflect differences in the make-up of the large 'Never FSM' group: for example, in lower poverty (wealthier) areas, two-parent families may be more likely to have both parents in work, and therefore more likely to use the free entitlement.

There are limits to how far we can untangle these factors using our data, but we are able to say something interesting about the way the nature of local provision appears to make a difference. Distinguishing between maintained, private, voluntary and Sure Start providers, we explore the relationship between the

share of pre-school places in different sectors in a local authority and the levels of take-up in that authority. We find that where there is a higher percentage of maintained sector provision in the local area, children are less likely to take up the full entitlement on average, but there is also less inequality between children from different income groups. A maintained sector that is 5 percentage points larger is associated with a 5% increase in non-take-up for children who never claim free school meals, but just a 2% increase for children who are always FSM (see Table 2). This suggests that the maintained sector offers less flexibility in providing January places, but is relatively successful at reaching children from low-income backgrounds, reducing inequalities.

In contrast, take-up is higher overall in local authorities where a larger share of children attend private provision. This makes sense: many children attending private nurseries would be using childcare before age three, as their parents are working, and would automatically receive the free hours as a reduction in fees as soon as they became eligible. Further, our analysis shows

Table 2: Percentage difference in the odds of not taking up the full duration of the free entitlement associated with the size of the sector in the local authority

Percentage points differences:	Never FSM	Once FSM	Twice FSM	Always FSM
<i>Maintained sector</i>				
One ppt	1.0%	0.5%	0.5%	0.4%
Five ppt	4.9%	2.4%	2.3%	2.0%
Ten ppt	10.0%	4.9%	4.6%	4.0%
<i>Private sector</i>				
One ppt	-1.0%	-0.4%	-0.1%	0.0%
Five ppt	-4.9%	-2.1%	-0.4%	-0.1%
Ten ppt	-9.5%	-4.2%	-0.8%	-0.3%
<i>Voluntary sector</i>				
One ppt	-1.7%	-1.0%	-1.3%	-1.2%
Five ppt	-8.1%	-4.8%	-6.4%	-5.6%
Ten ppt	-15.6%	-9.4%	-12.5%	-11.0%
<i>Sure Start</i>				
One ppt	-1.4%	-1.7%	-2.9%	-3.6%
Five ppt	-6.8%	-8.1%	-13.5%	-16.9%
Ten ppt	-13.1%	-15.6%	-25.2%	-30.9%

Note: Results calculated from regressions in which each sector is the focus of a separate set of models. Italics indicate differences derived from coefficients denoted non-significant at the 10% level.

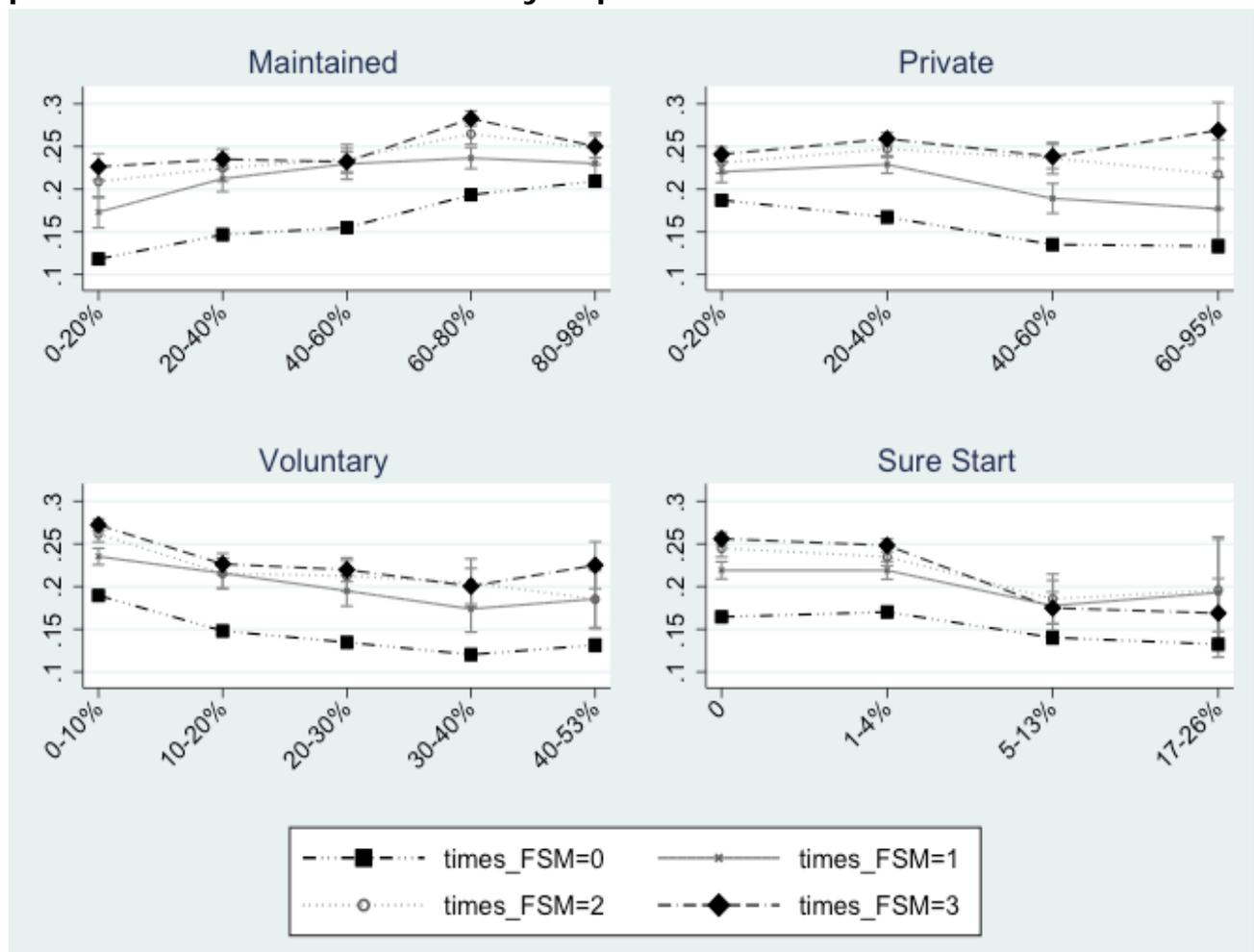
that children benefiting from more private sector provision come overwhelmingly from non-low-income families, meaning a larger private sector widens inequality: 5 percentage points more provision in the private sector is associated with 5% lower non-attendance for children who never claim free school meals, but only 2% for children who claim FSM once in early primary school, and just 0.1% for children who are three times FSM.

Where there is a larger voluntary sector, we find higher take-up overall, and the effects are felt much more evenly across our different groups. Having 5 percentage points more provision in the voluntary sector is associated with 8% lower non-attendance for non-FSM children (itself a larger effect than an equivalent change in the private sector for this group), and 6% lower non-attendance for three times FSM children. This may reflect the greater flexibility of the voluntary sector to offer January places compared to the maintained sector, along with higher accessibility to low-income families compared to the private sector.

Finally, we find that having a higher proportion of provision in Sure Start children's centres is related to higher take-up overall *and* considerably less inequality. Having a 5 percentage point higher share of provision in Sure Start is associated with a 7% reduction in non-take-up for never FSM children, and with a striking 17% reduction for children who will go on to claim free school meals in every year of early primary school. Sure Start children's centres offering early education and care in this period were located in the most disadvantaged areas of a local authority, had a remit to reach more vulnerable children, and offered the additional advantage of having their doors open to families from pregnancy onwards. We cannot say which (if any) of these factors contributed to higher levels of access to free early education for children from low-income households in local authorities with more Sure Start provision, but our results suggest there was a significant Sure Start effect.

Our analysis also explores the point at which differences in the size of the sectors is most strongly related to take-up. Results are represented visually in Figure 3. We find that most of the increase in non-take-up associated with the maintained sector takes place when that sector increases from 60% to 80% of provision: that is, when the maintained sector is highly dominant and there are limited alternatives. A higher proportion of private sector provision, meanwhile, has positive associations for non-low-income children until the sector reaches 60% of the total, beyond which there is little gain. In relation to the voluntary sector, the lowest non-attendance is associated with having at least a tenth of provision in this sector: having up to 20% of places in the sector is related to lower non-attendance, compared to less than 10%, and there are also smaller apparent effects as the sector grows beyond this, up to 40%. And for Sure

Figure 3: Predicted probability of non-attendance by the share of provision in the local authority in particular sectors



Note: Each panel is based on a separate logistic regression, controlling for individual characteristics (EAL, ethnicity, birth month and gender) and for local IDACI. In each panel, local authorities are split into either quartiles or quintiles according to the prevalence of provision in each sector. Error bars = 95% confidence intervals for the marginal means.

Start, the largest differences – especially for the poorest children – are seen where Sure Start reaches 13% of provision.

Overall, our analysis shows that access to the full entitlement is still far from universal, with substantial gaps by children’s background. The children most likely to be benefiting from five terms of free early education are those already doubly advantaged in the education system, by birth month (because of the structure of the policy) and by income (because of higher take-up rates). Barriers to take-up are likely to be complex, and we identify considerable unexplained variation across local authorities, indicating that there is more to do to understand why some authorities appear better at providing for more disadvantaged groups than others. But our results also highlight that the make-up of local provision is one part of the story. They point to the value of having a

mix of different types of provision in promoting take-up, and particularly the importance of having even a small share of places in the voluntary sector and in Sure Start children's centres.

5. Results: Peer group clustering in early education – patterns, drivers, outcomes

Some of the results in this section were first published in Stewart, Campbell and Gambaro (2019).

We examine the extent to which children are clustered in early education along two distinct dimensions: living in a low-income household (using our 'always FSM' measure) and speaking English as an Additional Language (EAL). Our main focus is on clustering by low income. As discussed in the introduction, as a group, children who claim FSM do substantially worse in assessments at age five than other children, and these gaps persist through formal schooling. We also look at EAL children, in part as a point of comparison, and because of the possible implications of high levels of EAL clustering, in particular in relation to children's early (English) language development, which has an impact on access to the curriculum once they enter primary school.²

To document the extent of clustering at pre-school, we compare clustering in early education to clustering in Year 1. We do so at local authority level -- that is, for each local authority in England, we see if children are more or less clustered by low income/EAL in pre-school than they are two years later in Year 1. We choose local authority as the relevant geographical level because local authorities are the administrative area responsible for ECEC, and have historically shaped the nature of supply. This is also standard practice in many papers on later schooling, making results comparable.

5.1 Patterns of clustering by low-income

We explore the extent of clustering using different approaches. First we calculate the "dissimilarity index", which is a measure of segregation which captures the extent to which children from low income families are evenly distributed across ECEC settings and primary schools given their prevalence in the local authority (Massey & Denton, 1988). Results show two points: first, in almost all local authorities, segregation is higher at pre-school level than in primary schools;

² We do not look at clustering by ethnicity, in part because it poses methodological challenges given the large number of minority ethnic groups and their concentration in particular areas, and also because there is no substantial reason to expect high levels of ethnic segregation (while of intrinsic interest) to affect measures of early child development, other than via the overlap with EAL.

second, there is much more variation between local authorities in their pre-school clustering than in their primary school clustering.

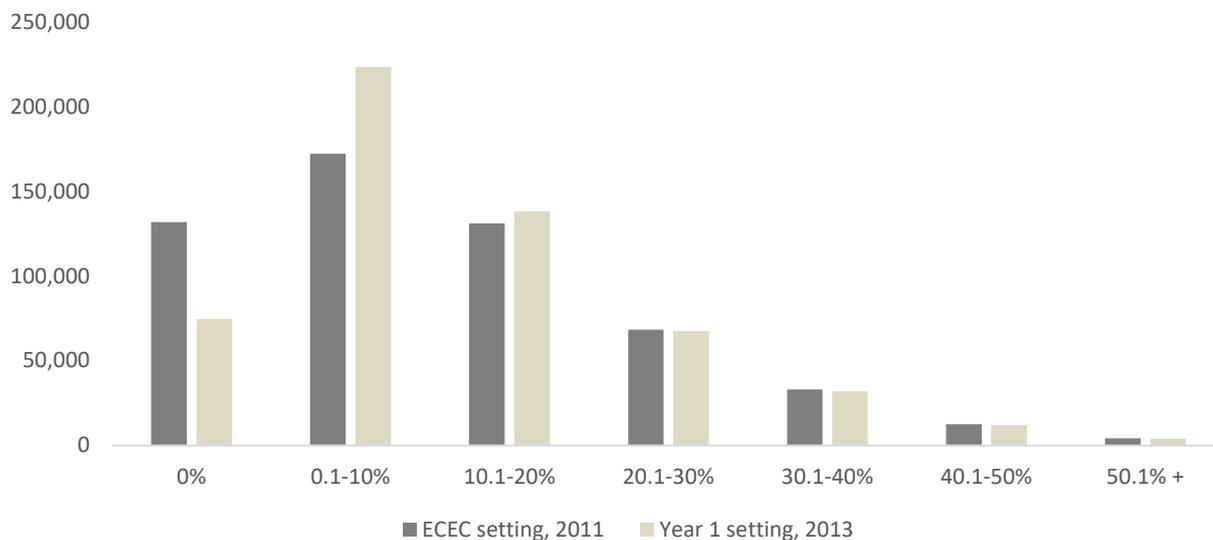
The first result (higher level of segregation at pre-school level than at primary school level) is to be expected given that there are more pre-school settings than primary schools. It mirrors the previous finding by Johnston et al (2006) that segregation is higher in primary schools than in secondary. Note however that the difference in segregation patterns between pre-school and primary school cannot be fully attributed to the greater number of ECEC settings compared to schools. For example, segregation is higher at pre-school level even in local authorities where numbers of pre-school settings and primary schools are very similar.

The second result, that there is more variation between local authorities in their pre-school clustering than in their primary school clustering, is especially interesting, as it suggests that differences across local authorities may matter to patterns of segregation. It is this point that we investigate further below in examining the drivers of clustering.

Before doing so, however, we present a last piece of evidence on the extent of segregation in pre-school compared to Year 1, by dividing pre-school children and children in Year 1 into groups defined by the proportion of always FSM (AFSM) peers they have – less than 0%, between 0 and 10%, 10-20%, and so on up to 50%+. The histogram (Figure 4) reveals that most of the difference between pre-school and Year 1 stems from the children who do not have any AFSM peer in their pre-school year and who move on to a more mixed school setting; at pre-school, 27% of children have no low-income peers, while only 13% of children have no such peer in Year 1. On the other hand, very few children (0.8% in total) have more than 50% of peers who are AFSM. 'Segregation', to the extent that it exists, is related to an absence of low-income children in some settings, rather than to a high concentration in others.

Not shown here, we know that children who are never FSM themselves are much more likely to have no AFSM peers in their setting, while low-income children are more likely to have higher proportions of similar peers. Nonetheless, even among low-income children, only 2.9% attend centres with a majority of children who are also from low-income families.

Figure 4: Number of sample children (n=551,713) with each level of peers low-income, across ECEC settings in 2011 and primary schools at Year 1, in 2013



5.2 Patterns of clustering by EAL

Patterns of clustering by EAL look similar in some ways and different in others.

Figure 5 presents the comparison between the language background of children’s peers in early education and Year 1. The main difference between the two distributions is a much higher number of children with no EAL peer in their early education setting than in Year 1, when some children appear to move from ECEC settings where all children speak English only into schools with some EAL children, though in most cases still fewer than 10%. At ECEC level, 30% of children have no EAL peer, falling to 20% in Year 1. This broadly echoes the story for FSM peers presented in Figure 4. What is different here is a much larger number of children with very high numbers of EAL peers compared to the share with very high numbers of FSM peers. At ECEC level 12% of children attend settings where a majority of children speak English as an Additional Language (13% at Year 1), and there are some settings where virtually all children attending have EAL – 2% of children attend ECEC settings where more than 90% of children have EAL. Because these higher concentration patterns are very similar to those at Year 1, it is likely that they reflect residential concentration of EAL families.

Figure 5: Number of sample children (n=551,173) with each level of peers EAL, across ECEC settings in 2011 and primary schools at Year 1, in 2013

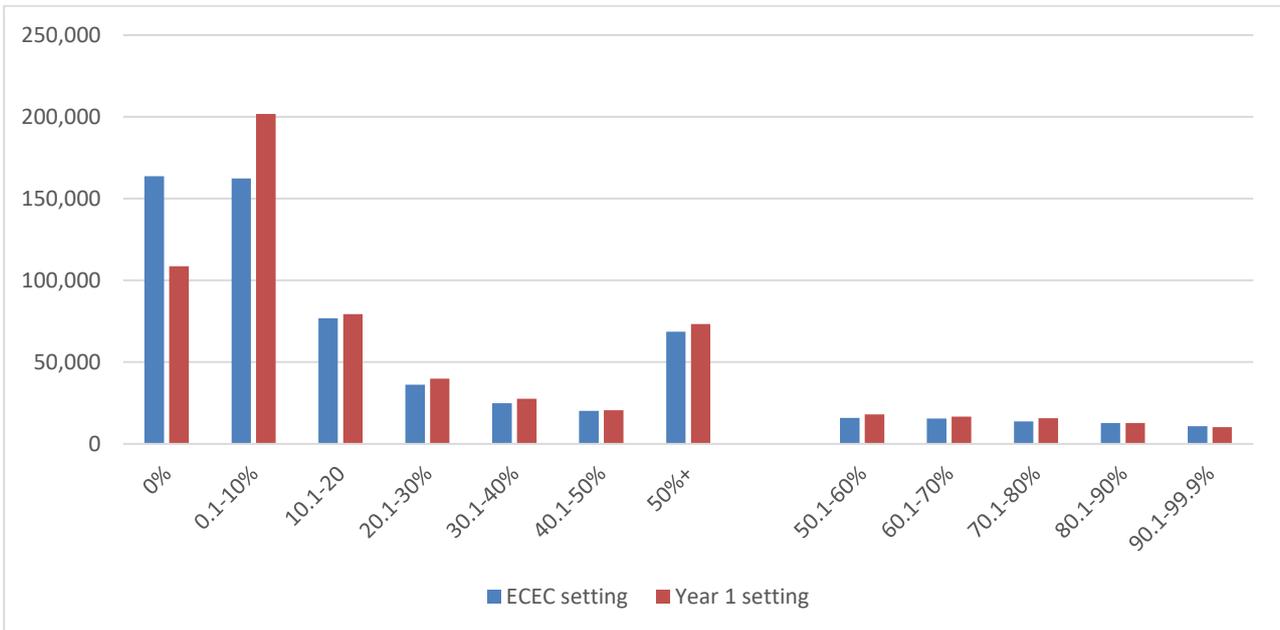


Figure 6: Distribution of sample children across ECEC and Year 1 settings with each level of EAL peers, by child's own language background

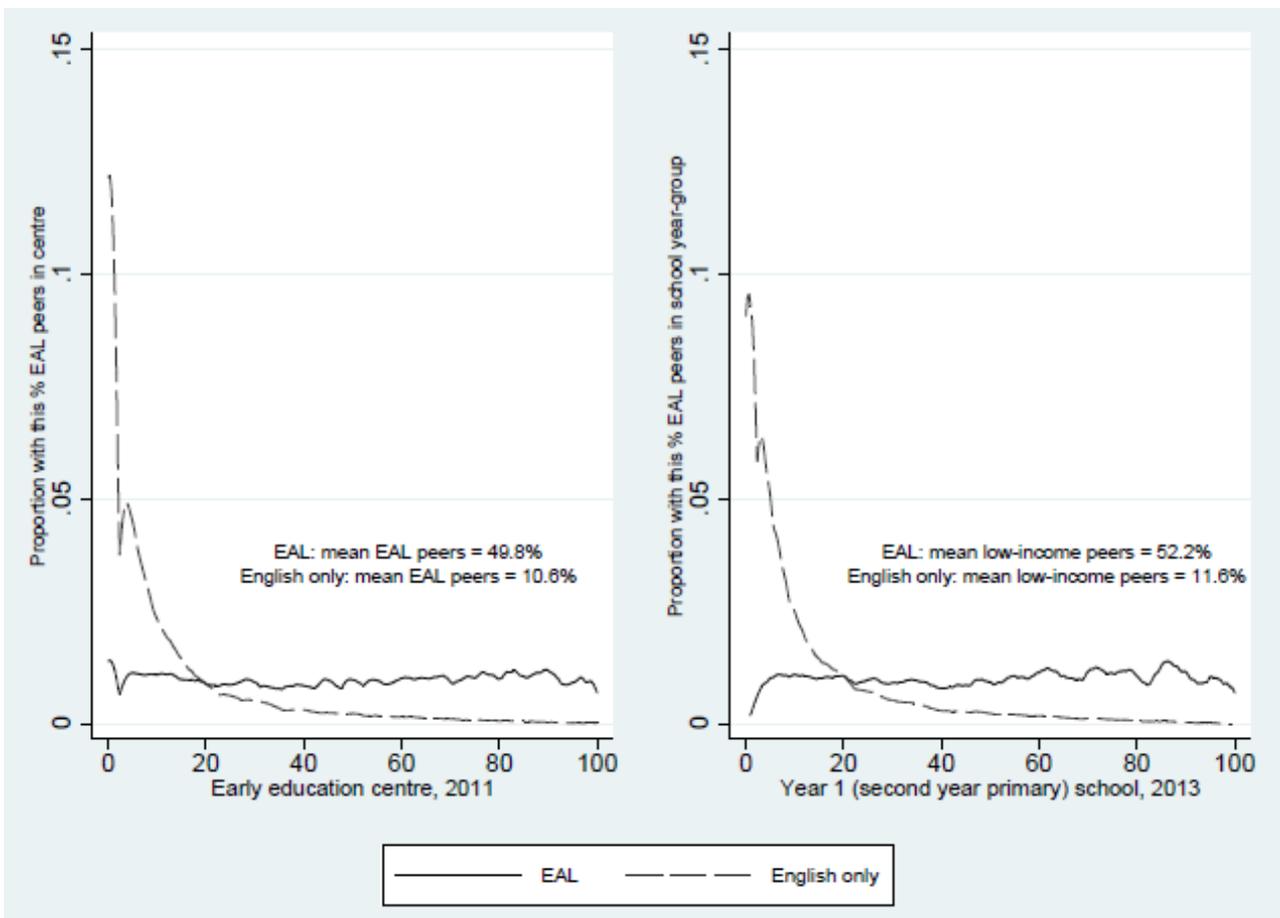
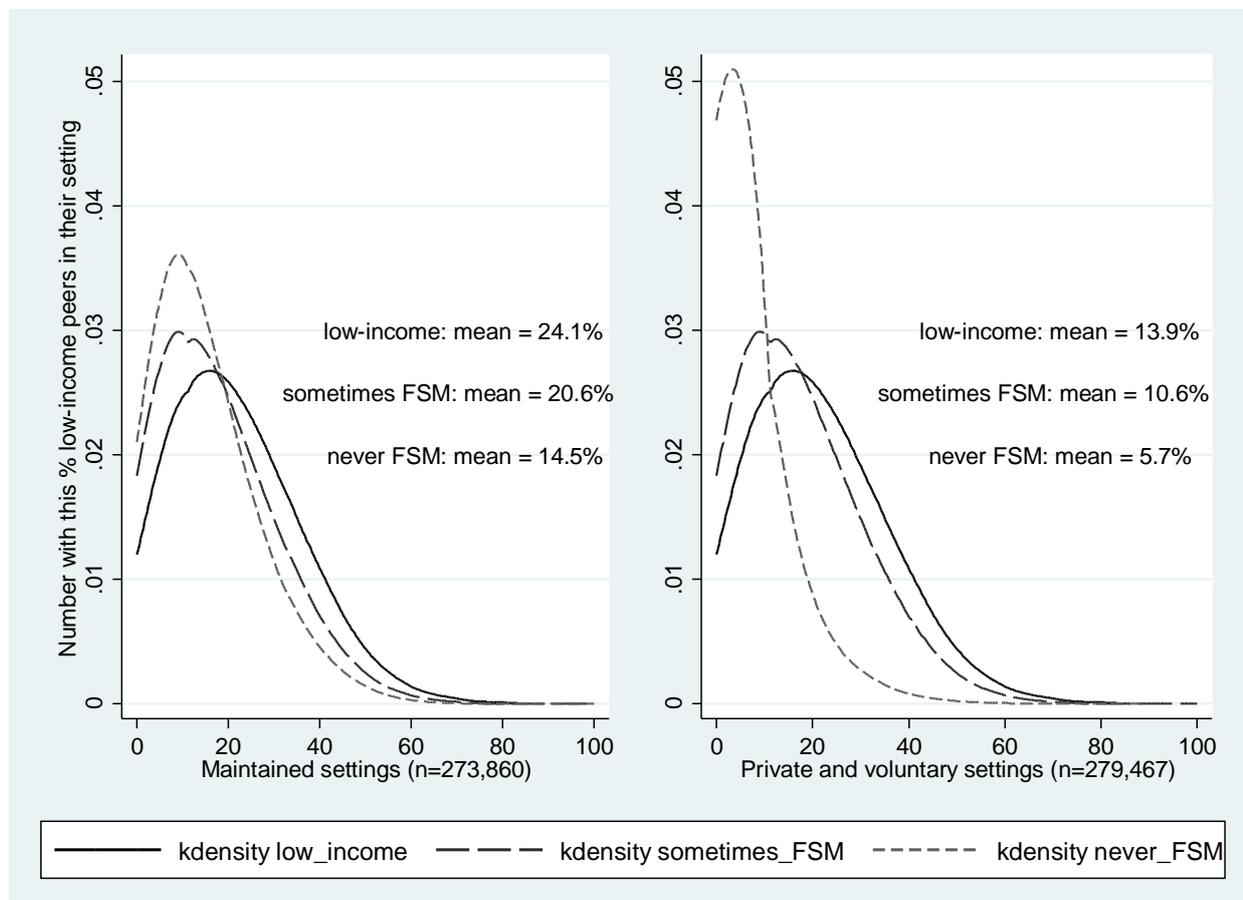


Figure 6 splits the sample into EAL and English language-only children, and shows, as expected, that children are far more likely to have no EAL peers if they speak English as a main language themselves. In contrast, EAL children are very evenly spread across ECEC (and school) settings with all proportions of EAL peers, from close to zero to close to 100%.

5.3 What drives differences in clustering between local authorities?

As might be expected, different types of setting have very different clustering patterns. Particularly for children who never claim FSM themselves, the likelihood of being in a setting with no AFSM peers is much higher if a child attends a setting in the PVI sectors than if they attend a maintained nursery school or class (Figure 7). The same is true for EAL peers: English-only speaking children are much less likely to meet EAL peers in a PVI than in a maintained setting (Figure 8). Similarly, for children who are EAL themselves, attending the maintained sector raises the mean number of EAL peers from 28% to 57%.

Figure 7: Distribution of sample children across ECEC settings with each level of low-income peers, by child's own income level, split by setting type

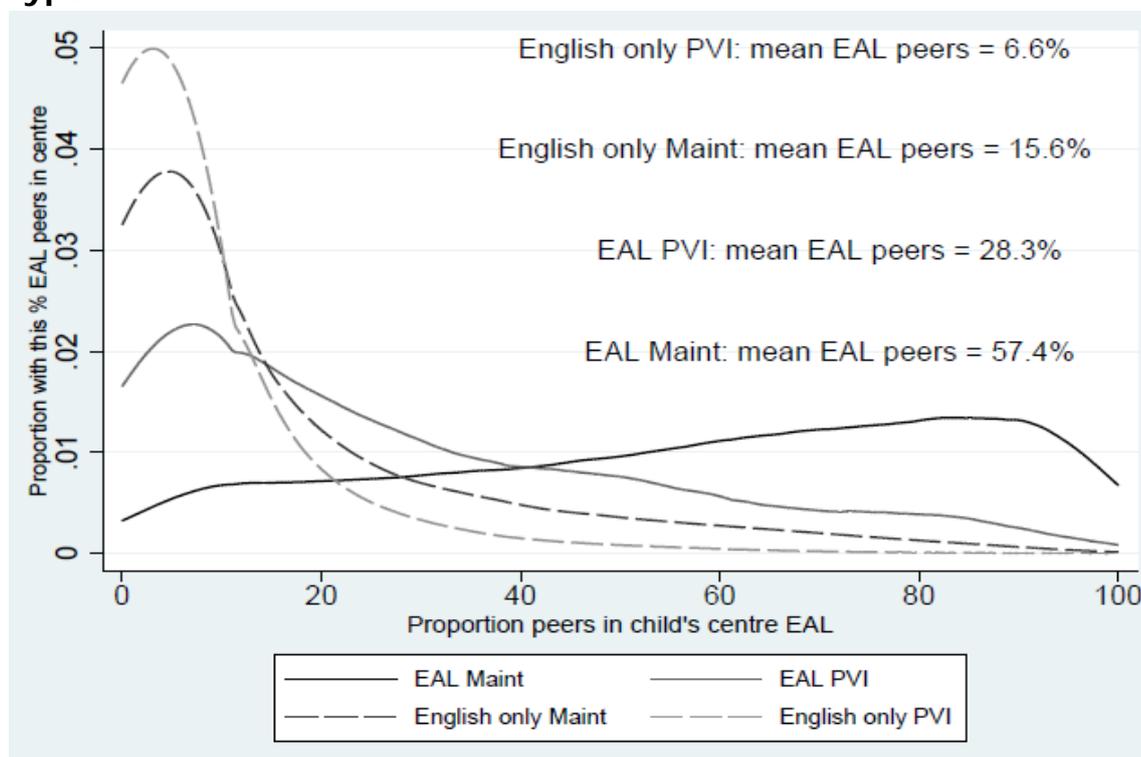


These patterns make considerable intuitive sense. In part, they simply reflect differences in the concentration of low-income and EAL children across the

country: maintained settings are much more prevalent in inner city local authorities, which also have higher numbers of low-income and EAL families. They may also indicate a preference for school-based provision among some minority ethnic groups, as well as the generally greater barriers to entry in PVI settings relative to maintained ones.

To further explore the factors associated with greater or lesser levels of clustering, we divide the sample into two, one including 'always FSM' children only, and the other including 'never FSM' children only. For both groups, we focus on explaining the percentage of a child's peers who are 'always FSM'. We employ multi-level regression modelling with children nested in local authorities, and examine the role of two sets of area variables, controlling for children's own characteristics. The first set of variables relate to the demographic make-up of the local authority: the percentage of children in receipt of Free School Meals; the standard deviation of the IDACI score among lower super output areas (LSOA) in the local authority as a measure of income inequality within the area; and the degree of rurality. The second are related to the makeup of pre-school provision within each local authority: the percentage of pre-school places provided variously by the maintained, private, and voluntary sectors, and in Sure Start centres. The models show the extent to

Figure 8: Distribution of sample children across ECEC settings with each level of EAL peers, by child's own language background, split by setting type



which similar children attending pre-school in different contexts differ in their peer composition. Models on the AFMS subsample show us whether AFMS

children in different local authorities are more or less clustered with other children from low-income households (segregation); models on the never FSM (NFSM) subsample show us whether NFSM children in different local authorities are more or less separated from low-income peers (exposure).

Our preliminary results indicate that children's peer groups are strongly associated with the demographic characteristics of the local authority where they live. In local authorities with a high proportion of AFSM children, AFSM and NFSM children alike are (as would be expected) more likely to have a higher share of AFSM peers than children in authorities with a smaller proportion of AFSM children. Controlling for the number of AFSM peers in the LA, segregation is higher and exposure is lower in authorities in which the level of child poverty between LSOAs varies more markedly – that is, local authorities characterised by a greater level of internal geographical inequality. This makes sense if children are likely to attend a pre-school in their local neighbourhood, in that it may simply reflect residential clustering. Finally, in relation to the make-up of pre-school provision, we find evidence that a larger maintained sector in the local authority reduces segregation for AFSM children, meaning they have a lower percentage on average of AFSM peers. The proportion of other types of providers – private, voluntary or Sure Start settings – did not show up as significant once the demographic composition of the LA was accounted for. These results are not mirrored for the NFSM sample, for whom the make-up of pre-school provision in the local authority seems to make little difference to peer composition once child and other area characteristics are taken into account. Pre-school provision has historically developed differently across England to meet local demand and the resources of the local population. This appears to contribute to clustering, but not in a way that can be clearly distinguished from local and individual characteristics.

5.4 Outcomes: is pre-school peer group associated with teacher-assessed performance in early primary school?

Social mix between children from different income and language backgrounds might be desirable for many important reasons – exposing children to difference from an early age and allowing children from different backgrounds to become friends and classmates may encourage empathy and reduce prejudice and intolerance (Gorard and Siddiqui, 2018). In our study we are not able to measure these wider potential benefits, but only to investigate whether peer group make-up is associated with the aspects of child development captured in school assessments – the FSP, teacher-assessed at age five, and Key Stage 1 results at age seven. We concentrate on results for children who are AFSM (and then EAL) themselves, because the greater heterogeneity among children who are never FSM makes it much more likely that any associations reflect selection rather than true effects.

Looking at raw associations, we find there are small negative associations for AFSM children between the percentage of peers in ECEC who are also AFSM and a child's FSP score at the end of reception. But the size of these associations becomes negligible once individual, centre and area characteristics are included in regressions, as shown in Figure 9. In particular, controlling for the level of child poverty in the family's residential area substantially reduces the association between peer make-up and outcomes. Similar children score less well if they come from areas with higher levels of poverty, but peer make-up in ECEC does not seem to be the mechanism.

With this type of analysis, there is always a risk that unobserved characteristics, things we do not see in the data, may be driving results. For example, parents who have a low income but place a high value on education (which we cannot observe) may seek out high performing nurseries which are also attended by wealthier children. If these low-income children then do relatively well in the FSP, we may think we see a peer group effect, when pre-school peer group is really proxying other advantages the child receives at home. However, such effects would be expected to lead to our *over-estimating*, rather than *under-estimating* peer effects, so we do not think they are driving the near absence of an association between peer group and outcomes.

As an additional way of controlling for unobserved characteristics that may be associated with both peer group and children's FSP scores, we also run school fixed-effect regressions. These control for the school a child attends for reception, and therefore focus in on variation in scores (and any association with pre-school peer group) between children attending the same reception class. These regressions too indicate only very small associations. Indeed, in the fixed effect model, AFSM children with higher shares of AFSM peers, up to 40-50%, do slightly better than children with fewer such peers – a U-shape / ski-jump association which has also been found in later years of education (Shaw et al, 2017; Sutton Trust, 2009). This could potentially be attributed to higher resources, and/or better understanding and orientation towards the needs of this group, and/or positive in-group social processes.

We run sensitivity analyses using the FSP 'Good level of Development' measure, sub-scales of the FSP, and also using Key Stage 1 results. Results are not shown here but are very similar across these different measures.

The finding of little association between peer constitution and later attainment stands out as different from patterns identified in previous (international) literature which suggest that attending more mixed pre-schools can be beneficial to low-income children. The lack of relationship in our data may plausibly be the result of rather low levels of clustering by income level: as seen above, in our focus year, low-income children were not highly concentrated in ECEC settings, with very few low-income children (just 3%) attending settings with a majority

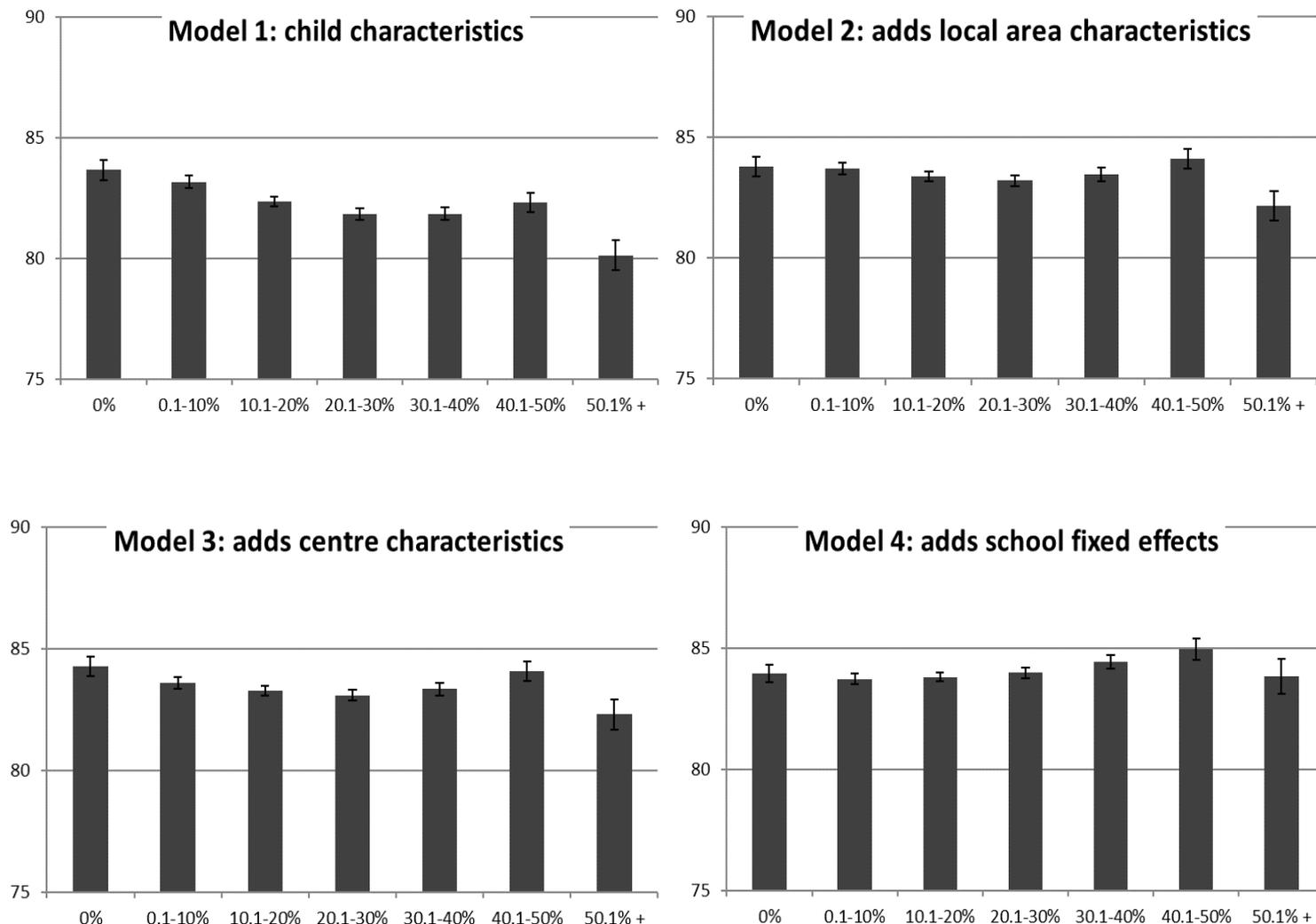
of AFSM peers. Despite the mechanisms we believed might push towards segregation, such as differing opening hours and the ability to charge fees for additional hours, the universal entitlement to a free early education place, along with quality enforcement mechanisms such as the EYFS curriculum and Ofsted inspection, might explain the relatively high level of mixing by income, compared to other contexts in which peer effects have been studied.

On the other hand, our findings could be affected by the limitations of measurement in our study. FSM proxies low household income but does not capture all low-income families, while our initial observation of FSM take-up is a year after the ECEC year, and the binary nature of the variable is likely to mask nuanced variations at individual and peer group level which may relate to children's attainment. Our peer group measure is also imperfect, as we can only observe peer group within the cohort at the setting level, and not actual interactions between children in smaller groups. And finally, the FSP attainment measure itself is an inexact representation of children's capacities, and one which is influenced by surrounding structural and institutional processes and pressures (Bradbury and Roberts-Holmes, 2017). Nonetheless, on the basis of the measures available to us, it does not appear that clustering by income group in ECEC is a significant factor contributing to disparities in FSP attainment by children from different income backgrounds.

We also investigate the associations between the extent of clustering by language background and outcomes for EAL children in early primary school. As noted above (see Figure 7), EAL children are very evenly spread in both early education and primary school in terms of the English language background of their peer group, from those with fewer than 10% of peers also speaking English as an additional language up to those with more than 90% EAL peers. Just over half have a majority of EAL peers; in contrast, less than 3% of AFSM children have a majority of AFSM peers.

Yet here we find even less evidence of any association between the percentage of similar peers and outcomes in early primary. Results are not shown here but are flatter than those shown for low income peers in Figure 9, with very few significant differences and no consistent patterns. The same is true of the different FSP subscales, including the scale for communication, language and literacy – the outcome plausibly most likely to be affected by children's language background.

Figure 9: Model estimated mean Foundation Stage Profile total scores, for children who are themselves low-income, according to proportion of low-income peers in their early education centre



All Models: N= 553,327. Outcome is FSP total score (range 0-117, mean = 89.2, SD: 15.8). Error bars = 95% CI. Model 1 includes child gender, ethnicity, special educational needs in 2011, home language, month of birth and hours attending early education. Model 2 adds region, IDACI of child's home address and proportion of provision in the local authority which is in the maintained sector. Model 3 adds setting characteristics: staff qualifications, weeks open per year, most recent Ofsted judgement, centre size, centre type, proportion of peers EAL and proportion of peers of each ethnicity. Model 4 adds fixed effects for school attended in 2013.

6. Results: Inequalities in the transition to reception class

The final strand of our work explores differences in the experiences of transition from pre-school to primary school. Transition to primary school is a crucial stage in children's trajectories: particularly in England, where it takes place, for most, at just four. Research indicates that this initial transition period can have both short- and long-term consequences for children's wellbeing and progress through school (Margetts, 2002; OECD, 2017). Correspondingly, the Department for Education lists 'the transition from early years to school' as one of its current key areas of research interest (2018b, p.4).

In this section, we use the NPD to explore two aspects of children's transitions. We examine **continuity of setting**: whether a child attends a reception class in the same school within which she attended nursery, or takes a different path. We also examine **continuity of peers**: the proportion of children in an individual's reception year group who also attended her pre-school. Both have been evidenced as important factors that can facilitate a successful transition (Entwistle and Alexander, 1998; Fabien, 2000; Fabien and Dunlop, 2007).

6.1 Continuity of setting

In all, 41% of the children in our cohort (N=611,816) attended a school nursery class in the pre-school year immediately prior to beginning reception (2010-11), while 53% attend a non-school setting: in the private or voluntary sector (including childminders), or a local authority-run nursery or nursery school.³⁴ The remaining 6% are not recorded as attending any state-funded provision until reception. In 2011-12, the children attend 16,094 schools, compared to 26,896 pre-schools settings in 2010-11. The number of different pre-schools attended by children within each school ranges from 0⁵ (i.e. no children in this school are recorded as attending at all before reception in 2011-12) to 67, with a mean average of 13.

³ Roughly two-thirds of children are three years old in January of their pre-school year, while one-third have already turned four. Hence the take-up figure of 94% falls between take-up of 92% for three-year-olds and 96% for four-year-olds, as reported on page 11.

⁴ Children taking up their free early education place with a childminder are a very small minority – 0.7%.

⁵ Only 92 children attended schools where no child is recorded as receiving funded pre-schooling. Over half (55) of these children are clustered in 3 settings. Others attend specialist provision. There are 26 settings in total recorded as having no children in the reception year-group who attended pre-school. It is not possible to ascertain more precisely from the data why particular settings have this characteristic, and it is possible that in some cases data error underlies this estimate (e.g. if children did attend pre-school, but mistakes in data entry and collection meant they were not recorded).

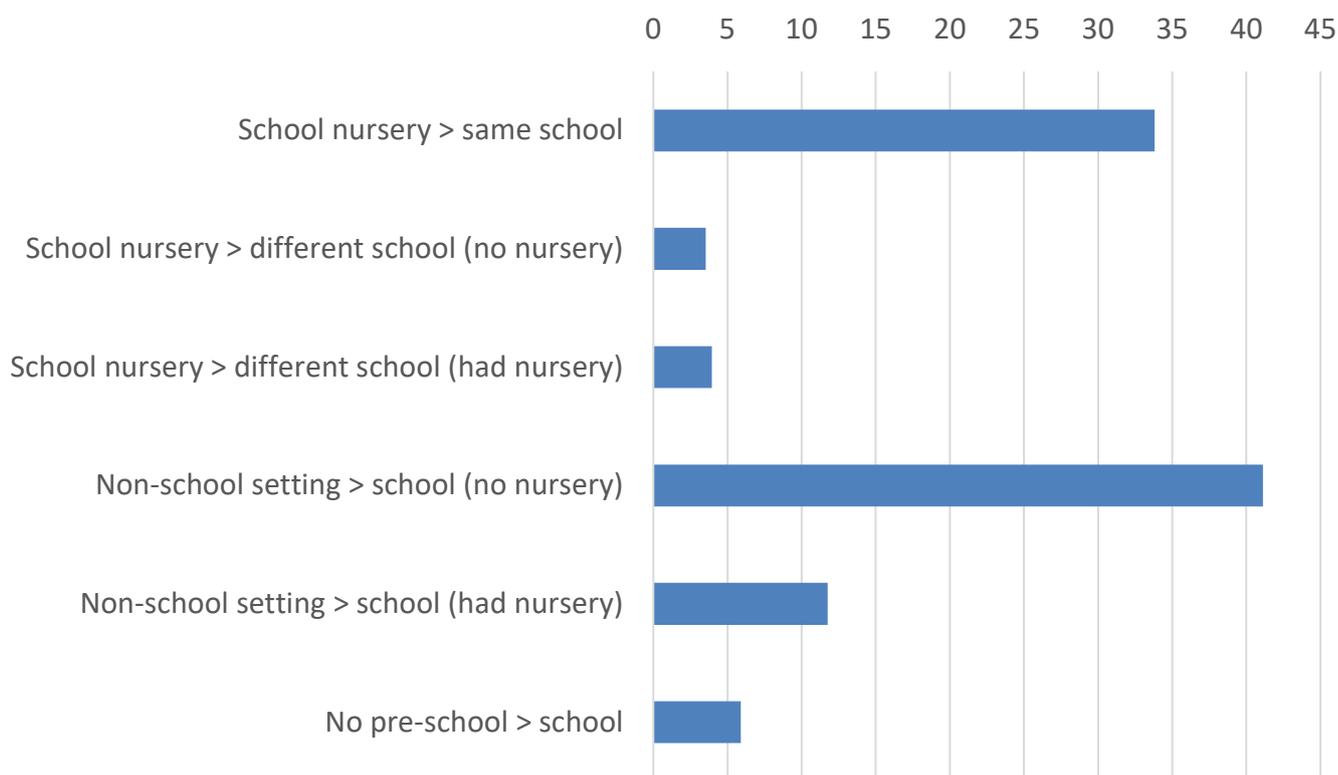
We define the children as having followed one of six transition pathways from their pre-schooling to their first year of primary school:

- a. School nursery > reception in same school
- b. School nursery > reception in different school (where reception school had no nursery that could have been attended)
- c. School nursery > reception in different school (where reception school DID have a nursery that could have been attended)
- d. Non-school setting > school (where reception school had no nursery that could have been attended)
- e. Non-school setting > school (where reception school DID have a nursery that could have been attended)
- f. No pre-school > school

We distinguish between schools with nurseries and those without as destinations because, for families who choose school nursery for the pre-school year, a move to reception in a school which had no nursery class looks different to a move to a school with a nursery that potentially could have been attended for pre-school. There might be both 'good' and 'bad' reasons why the latter transitions take place. Parents may actively choose a nursery class in a different school than the one they are aiming at for reception, perhaps for the nursery's reputation or for practical reasons; for example, the nursery in their preferred school may not offer wraparound care. Alternatively, the transition may reflect a lack of understanding or information about how the school admissions system works which results in an unwanted or unanticipated move. There is also a difference in experience for children moving from either a school nursery or a non-school setting to a school where some children may have attended nursery together in the previous year, forming friendship groups and becoming familiar with the environment, compared to a child moving into a school with no nursery, where all classmates are making the transition to a new setting together.

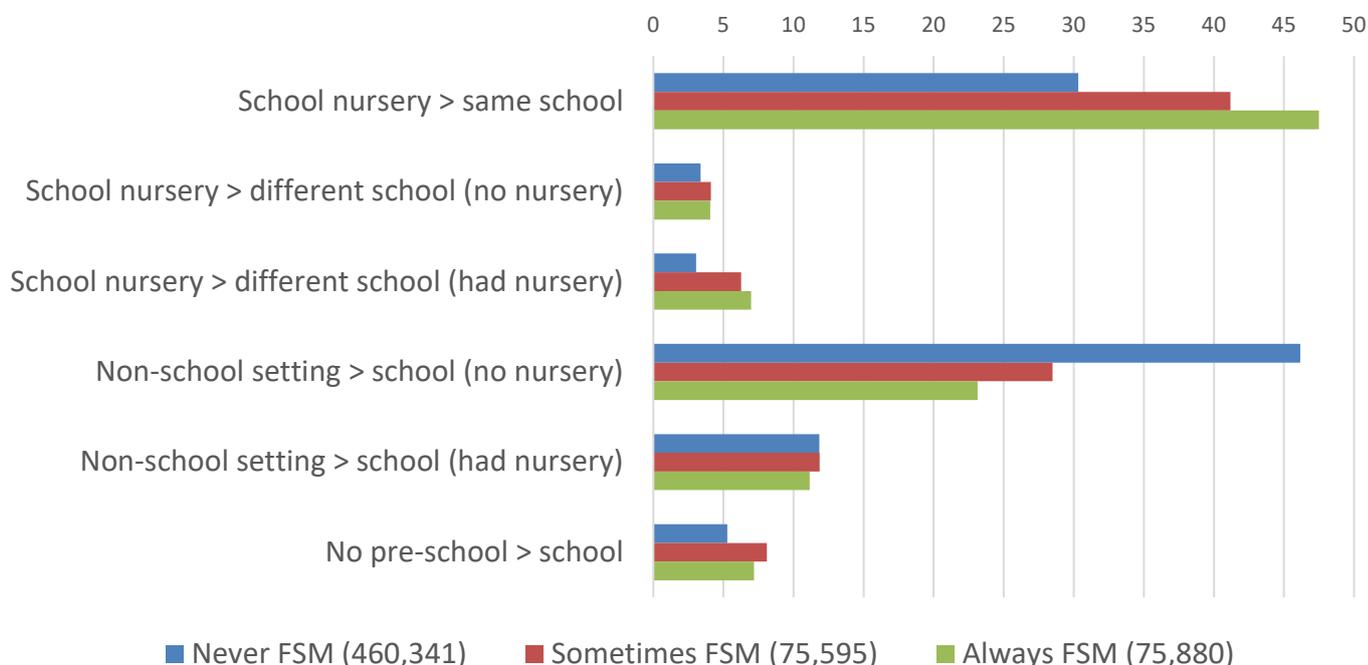
Figure 10 shows the proportion of all children who follow each route. The most common pathways are from school nursery to reception in the same school (34% of all children) and from other types of setting to a school that had no nursery (41% of children). As shown in Figure 11, the prevalence of these pathways differs markedly for groups of children who are 'never FSM', 'sometimes FSM' and 'always FSM', reflecting – at least in part – their different likelihood of attending the maintained or private, voluntary and independent (PVI) sector for their pre-school year. Children who are 'never FSM' are much more likely than other children to move from a non-school setting to a school with no nursery, while children who are 'always FSM' are more likely than

Figure 10: Percentage of all cohort children following each transition pathway



(N=611,816; children born 2006-07 who attended reception in the 2011-12 school year)

Figure 11: Percentage of cohort children following each transition pathway by income group



(Never FSM N = 460,341; Sometimes FSM N = 75,595; Always FSM N = 75,880. Children born 2006-07 who attended reception in the 2011-12 school year)

others to remain in the same school for reception that they attended for nursery. This last trajectory is arguably the one entailing the greatest stability and

familiarity of setting (though of course some of these children will already have experienced a transition from PVI). In contrast, a disruptive and possibly unnecessary transition is the one from school nursery to reception in a different school that did itself have a nursery attached. This pathway is not as common, but affects children who are 'always FSM' more than others: 7% of 'always FSM' children follow this trajectory, compared to 3% of 'never FSM' children.

These patterns to some extent simply reflect differences in the likelihood of attending school nursery in the first place, but they are nonetheless significant if institutional stability is accepted to be important in children's transitions to formal education. On the one hand, the continuity enjoyed by many low-income children can be considered an added benefit of their greater likelihood of attending pre-school in nursery classes. On the other hand, our analysis also picks up ways in which the system may inadvertently result in some more disadvantaged groups experiencing a greater likelihood of disruption. Notably, children born later in the academic year are slightly less likely to attend pre-school in a school nursery than those with autumn birthdays, and hence less likely to follow the most stable pathway: 32% of August-borns move from school nursery to reception in the same school compared to 35% of September-borns, and the absolute gap is slightly bigger among children claiming Free School Meals (45% of low-income August babies compared to 49% of low-income September babies). Something about the way nursery entry operates, which leads to fewer summer-borns in school nurseries, has the knock-on effect of higher disruption in the later move to reception for a group of children who already face a more challenging transition to formal schooling: they have received fewer terms of free pre-school than their older peers, and are making the move at an earlier age, when some have only just turned four.

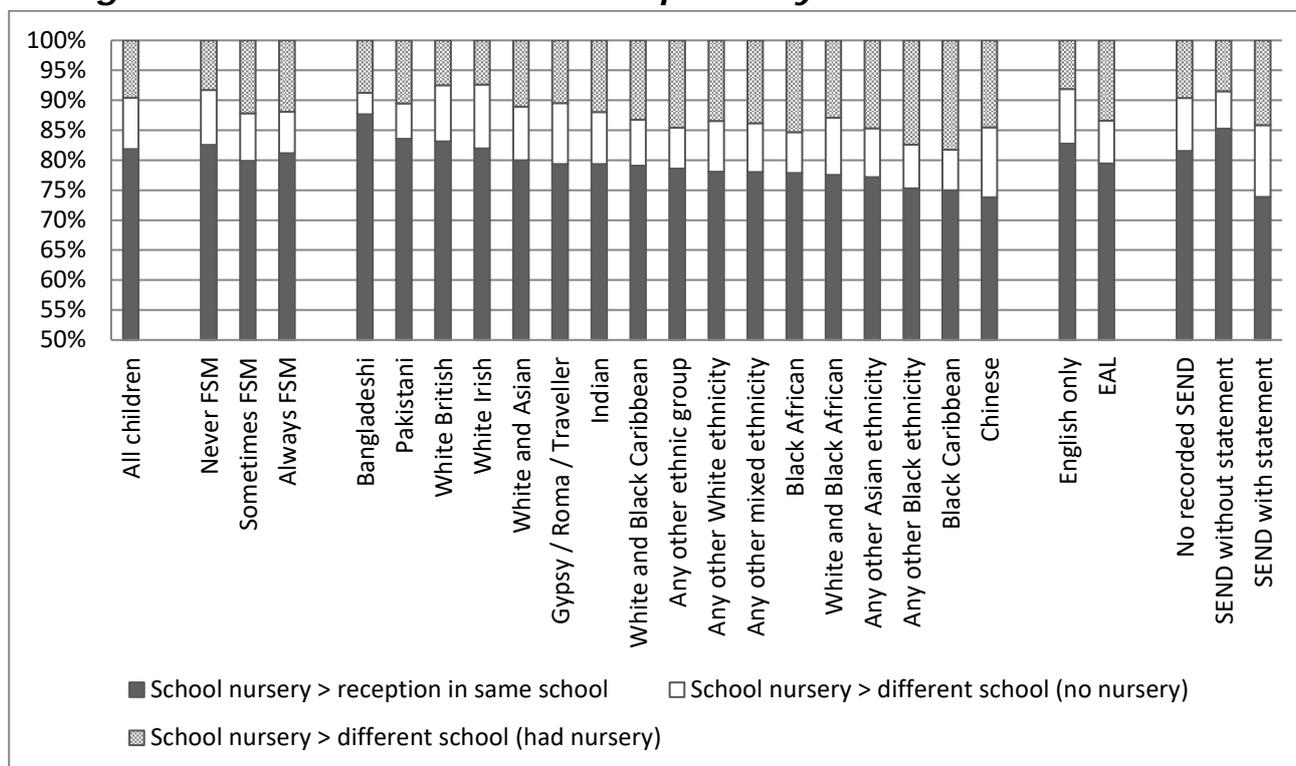
Do different trajectories entirely reflect the pre-school starting point, or are there differences in the pathways followed by children from different backgrounds, conditioning on school nursery attendance? Figure 12 shows the pathways followed by children who attend school nursery. There turns out to be very little difference in the likelihood of staying on in the same school between children who are always FSM (81%) and those who are never FSM (83%), though among movers, more 'always FSM' children move to a setting that did have a nursery, meaning that in principle they could have avoided a move, and that they are likely to enter a reception class in which some children have already formed social groups (12% against 8%).

Differences by ethnic group are more substantial: 75% of Black Caribbean children who attend a school nursery stay in the same school for reception, compared to 83% of White British children and 88% of Bangladeshi children. Black Caribbean children are also much more likely than White British children to move to a school that offered nursery provision: this is true of around three-

quarters of Black Caribbean movers (18% in all), compared to under half of White British movers (7% in all). Given the disadvantage experienced by Black Caribbean children through their educational careers (Maylor et al, 2009), this disparity in stability raises concerns and is worthy of further investigation. Are these children moving for 'good' or 'bad' reasons, and are there steps that could increase rates of stability and ensure less disruptive transitions? These are questions our analysis cannot answer.

We note also the much higher rate of movement for children attending school nurseries who have a Statement of Special Educational Needs (26% compared to 18% of children with no recorded SEND). One potentially positive reason for this is if children are moving to access better provision for their formal schooling. But disruption can be particularly difficult for some children in this group - and there is also evidence that some schools discourage (more or less explicitly) the attendance and admission to reception of children with complex needs, resulting in them moving to alternative institutions (Children's Commissioner, 2014). Sub-optimal transitions for children with Statements may also result from delays and errors due to inefficient processes in local bureaucracy (Local Government Ombudsman, 2014).

Figure 12: Percentage of cohort children who attended a school nursery who go on to follow each transition pathway



6.2 Continuity of peers

Continuing in the same setting increases the likelihood of having a high continuity of peers. Table 3 shows the proportion of all children and of children with each different characteristic who have each level of familiar peers (defined

as those who attended the same pre-school), in their reception year group. In all, 23% of children make the transition with no peers who are known from their pre-school setting, while 15% of children have already attended pre-school with at least 75% of the children in their reception year.

In line with the greater tendency for 'always FSM' children to attend school nurseries, and hence to stay in the same setting for reception, this group is more likely to know more than half of their reception class in-take. Children with EAL are also more likely than only English-speaking children to know high proportions of their peers – though at the same time a higher share of this group have *no* familiar peer, which may correspond to higher rates of non-attendance at pre-school among these children. And children from many ethnic groups are also much more likely to know no-one compared to White British children: this is true of half of the Gypsy/Roma/Traveller children in our data, and nearly two in five Black Caribbean children. Pakistani and Bangladeshi children, however, tend to start school with higher proportions of familiar peers. Summer-borns (24%) are slightly more likely than September-borns (22%) to enter reception knowing no-one from pre-school, and children with a statement of SEN have almost twice the chances of children with no denoted SEND. In large part, these findings echo those for continuity of setting, and highlight one of the ways in which moving from one setting to another may potentially make the start of reception more difficult.

Table 3: Percentage of reception peers who also attended a child's pre-school

	0 same children	1-24% same children	25-49% same children	50-74% same children	75-100% same children
All children (611,816)	22.5	25.9	12.4	23.8	15.4
Never FSM (460,341)	22.2	28.3	12.9	22.5	14.2
Sometimes FSM (75,595)	24.9	19.8	11.1	26.7	17.5
Always FSM (75,880)	22.3	17.3	10.8	29.2	20.5
English only (492,982)	21.5	27.5	12.9	22.5	15.6
EAL (117,354)	26.5	19.4	10.3	29.5	14.3
Gypsy/Roma/Travlr (1,909)	51.8	10.1	8.0	21.3	8.8
Black Caribbean (7,083)	38.3	22.7	9.5	22.8	6.8
Any other Black (4,636)	35.1	21.2	9.8	24.8	9.1
Any other White (31,110)	35.0	22.8	10.0	22.6	9.7
Any other ethnicity (11,038)	30.1	19.4	9.5	29.8	11.3
Any other mixed (11,715)	29.7	25.2	10.6	23.2	11.4
Chinese (2,510)	29.5	23.3	11.3	24.6	11.3
White & Black Africn (4,484)	29.3	25.0	10.8	24.5	10.4
Black African (22,830)	28.7	18.8	10.8	30.9	10.8
White Irish (1,597)	28.2	27.1	9.5	22.9	12.3
Any other Asian (12,017)	28.1	22.7	12.8	26.3	10.2
White & Black Caribb (8,768)	27.8	25.3	10.8	24.6	11.6
White and Asian (7,587)	26.5	28.2	11.9	22.4	11.1
Indian (17,031)	23.9	25.3	9.8	27.8	13.2
White British (429,384)	20.3	27.8	13.3	22.3	16.3
Pakistani (25,841)	16.9	18.2	9.2	34.2	21.5
Bangladeshi (9,765)	15.6	12.1	11.3	33.7	27.3
September (53,052)	21.7	25.6	13.0	24.2	15.5
October (52,596)	21.8	25.6	12.7	24.3	15.7
November (50,010)	22.1	25.7	12.4	24.2	15.7
December (49,477)	22.3	25.7	12.4	24.0	15.7
January (50,640)	22.2	25.8	12.5	24.3	15.3
February (46,110)	22.1	25.9	12.7	23.9	15.4
March (50,245)	22.4	26.1	12.3	23.7	15.5
April (48,244)	22.5	25.9	12.4	23.8	15.4
May (52,448)	22.5	26.1	12.3	23.7	15.3
June (50,291)	22.6	26.2	12.1	23.8	15.3
July (54,383)	23.7	26.3	12.0	23.1	15.0
August (54,320)	24.1	26.1	12.1	22.9	14.8
No recorded SEND (548,888)	22.5	26.6	12.5	23.4	15.0
SEND (Sch Action)* (55,193)	20.0	20.4	11.7	28.5	19.5
Statement of SEN* (7,735)	40.8	19.2	10.3	17.1	12.6
Girls (298,255)	22.2	25.8	12.5	24.0	15.5
Boys (313,561)	22.8	26.0	12.3	23.7	15.2

*Children are denoted as SEND (School Action) where the school has recognised that a child is not making progress and that action is needed at school level to help address learning difficulties. Children with a Statement of SEN have been assessed by the local authority and have a formal document that details learning difficulties and the help they will be given.

7. Implications for policy, practice and future research

7.1 Access to and take-up of the free entitlement

Our project identified **sharp differences in take-up of the full duration of the free entitlement by income group, EAL and ethnicity**. Autumn-born children from households in persistent poverty are roughly twice as likely not to access their place for the full five terms as children who did not claim free school meals in their first three years of primary school. The findings underline that, while the entitlement to free early education is a universal policy, the funded places in practice offer the greatest subsidy to children who are already doubly advantaged – by their birth month (which gives them access to more terms in pre-school, because of the way the policy is designed) and by their income. This inequality will have been further exacerbated by the 30 hours policy, which offers children from families where all parents are in paid work 30 rather than 15 funded hours.

Recommendation: If ensuring a more equal starting point is one of the goals of early childhood policy, more attention needs to be paid to where the benefits are falling. The Department of Education should review the operation of the free entitlement policy to ensure that children from low-income families have equal access to provision.

We also found differences between local authorities in the rate of take-up, and identified the make-up of provision in the authority as one factor associated with these differences. In particular, **areas with a higher share of provision in Sure Start children's centres or the voluntary sector had significantly higher levels of access among children from low-income homes**. This may reflect more effective outreach and lower barriers to entry such as registration or lunch fees in these settings compared to the private sector, alongside more flexibility to offer January entry than the maintained sector. In the case of Sure Start, the fact that families may have attended health services or toddler groups at the children's centre from pregnancy onwards could also improve both information and trust. Our findings on the role played by Sure Start and the voluntary sector are particularly important given the context of cuts to local government budgets, changes to funding formulae and the introduction of the 30 hours policy, all of which have taken effect since our cohort of children were in early education. These changes have respectively resulted in the closure of and limited the activities of Sure Start provision, limited the control that local authorities have to shape provision in their area, and challenged the viability of some voluntary sector providers (Stewart and Obolenskaya, 2016; Smith et al, 2018).

Recommendation: Local authorities should be supported to ensure that a minimum share of provision can be offered in Sure Start children's centres and

voluntary sector settings. This would involve reversing cuts to funding to local authorities and reviewing funding formulae changes which are known to have led to the closure of a significant amount of Sure Start provision and challenged the viability of some voluntary sector providers.

7.2 Peer clustering and peer effects

Our results suggest that **the composition of children's peer group in early education is not a significant factor contributing to gaps in measured attainment in early primary school**. This was true both when examining associations between the share of low-income peers and low-income children's attainment, and the associations between the share of EAL peers and EAL children's attainment, and held even when focusing in on the sub-scale for communication, language and literacy.

Recommendation: We recommend that researchers continue to explore peer effects, ideally using alternative, multi-dimensional measures of development. One explanation of our null findings could be that the Foundation Stage Profile is not a perfect or comprehensive measure of attainment or child development. We note that another recent Nuffield-funded study focusing on a different aspect of provision – staff qualifications in pre-school – also found few significant associations with the FSP (Blanden et al, 2017).⁶ One explanation for why studies repeatedly find little of interest could be that the outcome measure itself is lacking in meaning. The FSP score may not be sufficiently nuanced or fine-grained to allow peer effects to be picked up, especially given that these effects are likely to be fairly small. There are also likely to be many ways in which peer groups matter for children's experience and broad social, academic and psychological development which cannot be effectively captured by attainment scores. That peer composition does not appear to affect FSP scores does not tell us that it does not matter at all.

For low-income children, the very limited associations we found could also be in part because **we identified relatively low levels of clustering by income group**. Despite the many factors that may be expected to push children from different backgrounds into different pre-school settings, such as differential opening hours and fees for additional hours, in fact there seems to be quite a high degree of mixing in funded early education. While there are more children who attend a pre-school than a year 1 class with *no* 'always FSM' peers, the number of AFMSM children with a majority of AFMSM peers is similar at pre-school and reception, and in both cases is very low at just 3%. In other words, the

⁶ Blanden et al (2017) focus on variation in staff qualifications within PVI settings, because all maintained sector nurseries have qualified teachers in place. So their results cannot be read as telling us about the differences between qualified teacher status and other qualifications.

system (at least as it was in 2010-11) seems to have been functioning pretty well from the perspective of ensuring a reasonable mix of children from different income levels. **Clustering by EAL is more common:** just over half of EAL children have a majority of peers who are also EAL.

Recommendation: Our results in relation to clustering by income group are encouraging, but policymakers should continue to monitor the extent of peer-group clustering. Changes in the funding context since our data were collected may plausibly have affected intake patterns.

7.3 Transitions to reception class

We find that children from low-income households are considerably more likely than other children to enjoy the most apparently stable transition, from a nursery class to a reception class in the same school. This reflects their greater likelihood of attending school nurseries in the first place, and as such as is an added benefit of the fact that school nurseries are largely concentrated in more deprived inner city areas.

On the other hand, we find that **children who are younger in the year are slightly less likely to be in a school nursery and hence more likely to need to make a transition to a new environment**, and, correspondingly, more likely to have no familiar peers when they arrive. It is not entirely clear to us why younger children are less likely to be in school nurseries: the fact that these settings tend to have a large September intake would seem to position them well to cater for children who turn three over the summer. It is a question that merits further investigation. The differences are small but important given that (unlike greater continuity for low-income children) they work to exacerbate inequality: younger children as a group have had less time in pre-school and are younger when they move; some will have turned four just days earlier.

Recommendation: The Department for Education and Local Authorities should consider reasons for lower numbers of summer-born children in school nurseries, and how this might be addressed. This may include more active and earlier information and signposting, and reviewing admissions processes with a specific focus on ensuring equal access for all.

We also find differences in the likelihood of continuity among those who start in a school nursery. In particular, **children from some minority ethnic groups, especially Black Caribbean children, have a higher likelihood of moving to another setting, and children with a statement of special educational needs are also more likely to move.** This is one disparity in experience which potentially makes a crucial transition point more difficult for these children, compounding rather than offsetting other sources of inequality.

Recommendation: Particularly given the disadvantage experienced by both groups in later stages of education, we suggest a need for more research into the factors driving these differences. Local Authorities should be empowered to investigate and address such issues locally, and central government should ensure they are adequately funded to do so. Recent funding cuts and reforms have reduced authorities' capacity to take action to understand and address inequalities in early years provision.

7.4 Limitations

Finally, we note that, for methodological reasons, the analyses reported throughout this brief use data for a cohort of children who entered reception some years ago, in September 2011. Our findings raise obvious questions about whether disparities have widened (or narrowed) in the policy and funding context of recent years, under the Coalition and Conservative governments. In future work, we plan to track and compare successive cohorts over time.

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