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A question of quality: Do children from disadvantaged backgrounds receive lower quality early childhood education and care?

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Abstract

This paper examines how the quality of early childhood education and care accessed by three and four year olds in England varies by children's background. Focusing on the free entitlement to early education, the analysis combines information from three administrative datasets for 2010-11, the Early Years Census, the Schools Census and the Ofsted inspections dataset, to obtain two main indicators of quality: staff qualification levels and Ofsted ratings. These data are combined with child-level indicators of area deprivation (IDACI scores) as a proxy measure of children's background.

The paper finds that children from more disadvantaged areas have access to better qualified staff, largely because they are more likely than children from richer areas to attend maintained nursery classes staffed by teachers, and less likely to attend services in the private, voluntary and independent (PVI) sectors. However, *within* both maintained and PVI sectors, services catering for more disadvantaged children receive poorer quality ratings from Ofsted, with a higher concentration of children from disadvantaged areas itself appearing to reduce the likelihood of top Ofsted grades. This may be in part because Ofsted ratings reflect levels of child development, and therefore reward settings where children enter at a more advanced starting point, but it may also be that it is genuinely harder to deliver an outstanding service to a more disadvantaged intake. The result points to the need for funding to support better qualified staff in PVI settings in disadvantaged areas. **Keywords:** Early education; Childcare; Quality; Disadvantaged families.

JEL Codes: I24, I38, J13

1. Introduction

A growing body of evidence points to the importance of early education for child development and children's later outcomes (see review in Ruhm and Waldfogel 2012; Authors 2014). Many of these studies underline two findings in particular. First, the effect of early education appears to be largest for children from disadvantaged backgrounds. Second, the *quality* of provision is of prime importance: children do better, and effects are longer lasting, if provision is warm, sensitive, stimulating and responsive (Ruhm and Waldfogel 2012; Sylva 2010).

Policy in the UK has been alert to these findings, and the expansion of early childhood education and care (ECEC) has been on the policy agenda since 1997. Since 2004, all three and four year olds in England have been entitled to a free part-time nursery place, and take-up rates are high (DFE 2011). However, children access the free places in a variety of different settings, a consequence both of historical variation in the development of state provision for young children, and of a deliberate government emphasis since 1997 on parental choice (HM Treasury et al 2004). Options include nursery classes in maintained primary schools; state or private nursery schools; playgroups run by volunteers; private, local authority and voluntary sector centres providing full-time childcare (where the free entitlement effectively operates as a discount on fees); and childminders.

There have been attempts to improve and equalise the quality of provision across settings, with the introduction of the Early Years Foundation Stage Curriculum in 2008, alongside some investment in staff qualifications. Nevertheless, very different statutory requirements regarding staff qualifications and staff-child ratios apply to these settings, and they have different historical contexts, so a child's experience in one setting may be very different to that in another. Questions therefore remain about the extent to which quality of provision is consistent across the sector.

Our focus in this paper is on the way in which variations in quality are associated with children's background. If early education is to play a role in ensuring a more equal starting point for children from different backgrounds, it is important that the highest quality provision is accessible for the children who need it most. We ask how far this appears to be the case in practice in England. Are children who experience disadvantage at home more or less likely than children from richer households to access the highest quality early education?

To address this question we combine information from three administrative datasets – the Early Years Census, the Schools Census and the Office for Standards in Education, Children's Services and Skills (Ofsted) dataset on inspections. A key strength of the datasets is that, unlike survey data, they cover almost the entire population of three and four year olds. In addition, combining them allows us to examine different indicators of quality and to explore how these measures vary in their relationship to children's background. A limitation is that for our measure of children's background we must rely on child-level indicators of area deprivation (IDACI scores). As explained below, these capture the level of child poverty in the area where the child lives, thus giving us a probability that an individual child is poor.

The paper is structured as follows. Section 2 discusses quality measures. Section 3 sets out the institutional background concerning the provision of ECEC in England. Section 4 looks at what is known so far about the relationship between quality of provision and children's background in England. Section 5 discusses the data used in this paper, and Section 6 presents and discusses the results. Section 7 concludes by reflecting on the policy implications of our findings.

2. Measuring “quality”

Our focus in this paper is on the role of ECEC in promoting child development, and in particular in improving the starting point of children from disadvantaged backgrounds, so we adopt an understanding of quality care as care which best advances children’s cognitive, social and behavioural development (see Katz 1993 for discussion of alternative conceptualisations). Two distinct dimensions of quality provision in this sense have been identified: structural indicators and process indicators (Munton et al 1995; Sylva 2010; Blau and Currie 2006). Some writers have also pointed to child outcomes as a third measure of quality, but using outcomes as a measure of provider quality is problematic in the absence of a baseline or control group, or at least rich controls.

Structural indicators cover stable characteristics of the childcare environment: child-staff ratios, group size, staff qualifications and training, material and space. These variables are relatively straightforward to measure and are often recorded in administrative data.

Process quality refers to the nature of activities and interactions between children and staff, the environment and other children. In particular, Love, Schochet and Meckstroth (1996, p.5) suggest that high quality, developmentally appropriate programmes are those where:

“...caregivers encourage children to be actively engaged in a variety of activities; have frequent, positive interactions with children that include smiling, touching, holding, and speaking at children’s eye level; promptly respond to children’s questions or requests; and encourage children to talk about their experience, feelings, and ideas. Care-givers in high-quality settings also listen attentively, ask open-ended questions and extend children’s actions and verbalizations with more complex ideas or materials.”

In contrast to structural variables, the measurement of process quality is complicated, as it requires the systematic observation of activities and interactions in settings. The most widely used process quality measures are the Early Childhood Environment Ratings Scales (ECERS) and the Infant Toddler Environment Rating Scale-Revised (ITERS-R) (Sylva et al. 2004; Harms et al. 2003).

What do we know about the relationship between these two types of measures and children's development? Evidence from the EPPE study in England points to process quality as a strong predictor of later child outcomes. The study followed 3000 children enrolled in a variety of settings between 1998 and 1999. Children who had attended settings with higher ECERS scores performed better on cognitive and social behavioural measures at age 5, 7 and 11 (e.g. Sylva et al, 2012). Melhuish et al (2010), examining childcare provision for three and four year olds in disadvantaged areas (areas with a Sure Start Local Programme), found that higher ECERS scores were associated with improved language development between ages three and five, and higher language and communication scores in the Foundation Stage Profile. These findings for England are consistent with those in the larger US literature (see Blau and Currie 2006 for a review), although more recent US studies have raised questions about the strength of the relationship (Sabol and Pianta 2012).

Less evidence exists on the relationship between structural measures and child outcomes, but several UK studies indicate an association between structural measures, in particular qualification levels, and process quality. For a sub-sample of Millennium Cohort Study (MCS) children, the Quality of Childcare Settings in the Millennium Cohort Study (QCSMCS) found that higher staff-child ratios, a higher proportion of trained staff (especially with teaching qualifications) and larger group sizes were predictors of higher observed quality, as measured by ECERS (Mathers, Sylva, and Joshi 2007). Focusing on younger children (under three-and-a-half) in disadvantaged areas, the evaluation of the Neighbourhood

Nurseries Initiative (NNI) found that higher staff qualification levels predicted higher quality measured by ITERS, in particular in relation to the structure of activities and the capacity of staff to stimulate children's communication. The presence of *teachers* did not emerge as a significant predictor of observed quality in this study, but only 2% of the nurseries investigated employed teachers, making any effect difficult to detect (NNI Research Team 2007). Research evaluating the new graduate qualification introduced in 2005, the Early Years Professional (EYP), found that employing an EYP significantly improved the quality of provision for children aged three and four (Mathers et al. 2011).

The EPPE study discussed earlier found that process quality was highest when qualified teachers interacted with children for a substantial amount of time and were responsible for the curriculum (Sylva et al 1999). Further, the higher the qualifications of the centre manager, the higher the measured process quality of the setting (Sylva 2010). The EPPE study also provides the only direct evidence of a link between structural aspects of quality and child outcomes, finding that children made more progress in settings where staff, and managers in particular, were highly qualified (Sylva et al 2004). Further evidence that structural features affect process quality comes from the National Evaluation of Sure Start: Melhuish et al (2010) found that both staff qualification levels and (especially) adult-child ratios influenced ECERS scores.

In sum, although the best way to measure quality may be through process measures, there is also good evidence that structural features, particularly staff qualifications, are an indication of high quality care. In the next section we set out the institutional context in England and discuss the possible structural and process measures available.

3. The institutional context: childcare and early education in England

Since April 2004, all three and four year olds in England have been entitled to free part-time early education; since 2010 this entitlement has covered 15 hours a week for 38 weeks a year. Children can access the entitlement in primary or nursery schools or in private, voluntary and independent (PVI) settings.

In schools, young children are catered for in nursery classes (or standalone nursery schools) and in reception classes, depending on the child's age. Importantly, however, not all areas have state nursery schools or primary schools with nursery classes: historically, it was Local Education Authorities in more deprived urban areas that developed nursery provision (Owen and Moss 1989). Some children in maintained settings access more than the entitlement hours.

In the PVI sectors, providers receive funding from local authorities to cover the cost of the free entitlement for any eligible children. The exact amount received depends on the design of the funding formula within each local authority, but it is generally on a per-capita basis, with little or no additional funding to reward providers who cater for more disadvantaged children or who invest in higher quality (NAO 2012; Authors 2014). Childminders can also offer the entitlement if they are members of a local Childminding Network and are at least working towards a minimum vocational qualification. In practice, only a tiny proportion of children receive the entitlement with a childminder (NAO 2012; see also below).

In many PVI settings parents are able to nest the entitlement within longer hours by paying for the additional provision; indeed in some settings, and despite government attempts to prevent this, the entitlement is only available within a longer day, and operates effectively as a reduction in fees. Some state subsidy is available for the additional hours but only for working households. In particular,

at the time of writing, low-income parents who qualify for Working Tax Credit can claim back up to 70% of registered childcare costs. This could enable working households on low wages to afford more expensive provision than better off households who do not qualify for the subsidy, although the requirement to contribute 30% means that access to provision outside the free entitlement is likely to remain closely linked to parents' ability to pay. Because in many PVI settings the entitlement can only be accessed within longer hours, it may also be that the quality of provision for the entitlement itself is affected by the level of charges for additional hours.

The structural characteristics of provision in different settings vary substantially. Most significantly, while schools are required to employ a teacher in nursery and reception classes, PVI settings are not. It was a stated policy intention to have one graduate – a teacher or an Early Years Professional – in each PVI setting by 2010, but this is guidance not a statutory requirement. Staff in the PVI sector with managerial responsibility must have a Level 3 vocational qualification (roughly equivalent to A level), and half of the remaining staff in the setting must have at least a Level 2. A recent independent review has suggested that the training and courses leading to early years qualifications at Levels 2 and 3 are particularly weak, both because they attract those with the poorest academic records and because they fail to prepare students for the job (Nutbrown 2012). Indeed, a Level 3 qualification can amount to one year of training on the job, with little exposure to different practice and little college-based learning.

On the other hand, child:staff ratios are higher in schools, with one teacher (plus one additional adult) to every 26 children in nursery classes, and one teacher to every 30 children in reception. PVI providers must employ one adult for every 8 children aged three or four, unless that adult is a teacher or Early Years Professional, in which case they can have a 1:13 ratio during school hours (9-4)

but must have a ratio of 1:8 at other times (Department for Children Schools and Families [DCSF] 2008, 49-51).

While institutional settings, staff qualifications and ratios differ, a common statutory curriculum and a centralised inspection system impose a certain degree of consistency across the ECEC sector. All providers must follow the Early Years Foundation Stage (EYFS) curriculum, which specifies learning and development objectives for children from birth to age five. All settings are also subject to a regime of inspections by Ofsted. Ofsted has inspected maintained schools in England since the early 1990s and since the early 2000s has also inspected all ECEC providers in the PVI sector. An inspection involves an assessment of a setting's performance based on academic and other measured outcomes, followed by a visit to the setting, during which inspectors talk to staff, children and parents and carry out direct observations (Ofsted, 2011). After the inspection, schools, PVI settings and childminders are given a headline judgement on a four point scale: inadequate, satisfactory, good and outstanding.

Within this varied institutional context, the association between background and quality could run either way. On the one hand, maintained nursery schools and classes are more common in inner city areas, which suggests that disadvantaged children may be more likely than average to be attending settings with more highly qualified staff. On the other hand, *within* both the maintained and the PVI sector, better-off families may be better placed to secure places at higher-performing settings – either through their understanding of quality measures, or because they are accessing the free hours at a full day setting which charges high rates for the additional hours.

The way ECEC services are regulated and delivered in England points to a number of possible indicators of quality. Given that statutory requirements about qualifications are low, the presence of graduates – whether teachers or EYPs –

stands out as an important structural indicator, and one which research has identified as being linked to higher process quality, as discussed earlier. A second possible indicator is Ofsted ratings. These could be thought of as directly reflecting process quality (since they are based on inspectors' observations of care and education practices). However, Ofsted ratings are clearly not the same as ECERS or ITERS ratings: a recent study which conducted a thorough examination of the correlation between Ofsted inspection judgements and quality assessed by ECERS (Mathers et al 2012), found that the two measures were broadly aligned but nonetheless only weakly correlated. This is not surprising: inspectors are present for much less time, and their main aim is to assess provision in relation to the learning and development goals contained in the EYFS, along with compliance to minimum requirements on staffing, ratios and health and safety standards. In addition, Ofsted judgements encompass not simply what a school or setting does, but also its resources and children's intermediate outcomes (Lupton, 2004). We use Ofsted ratings as our second main measure of quality, but consider the interpretation of our findings carefully.

4. Quality and children's background: previous studies

What do we already know about the quality of provision accessed by children from different backgrounds? First, studies have found that children not accessing the entitlement are more likely to be from disadvantaged backgrounds. Findings from the second wave of the MCS (2003-5), when children were three years old, found that only three quarters of children accessed any formal provision, and children with higher income and better-educated mothers were more likely to attend than less advantaged children (Mathers et al 2007). Evidence from the Childcare and Early Years Survey of Parents supports this finding: children not accessing the free entitlement at three and four years old were more likely to be from lower income or larger families and to have a mother who did not work and had low educational qualifications (Speight and Smith 2010).

On the other hand, in their analysis of the QCSMCS Mathers et al (2007) found that, for children who did attend, the quality of settings, measured using ECERS, tended to be higher for children from disadvantaged backgrounds than for those from richer backgrounds. This was because children from poorer families, if they attended, were more likely to access provision in the maintained sector, where the highest quality was observed.

In contrast to the QCSMCS results, the evaluation of the Neighbourhood Nurseries Initiative found no relationship between children's background and quality of provision (NNI Research Team, 2007). However, the sample of settings was rather different: in addition to being drawn exclusively from areas of disadvantage, the NNI sample also excluded by design forms of provision that did not cover children under the age of three, so nursery schools and classes were not included.

Comparing settings in disadvantaged areas in 2006-08 using the National Evaluation of Sure Start (NESS) with settings across the country using the QCSMCS, Melhuish et al (2010) suggest that quality in Sure Start areas was if anything slightly better than the average elsewhere, though they point to the need for caution given that data were collected by different teams at different times.

Finally, in its annual report, Ofsted provides a breakdown of assessments by the level of area deprivation of the setting, although only distinguishing the areas in the bottom 20% from the rest. This exercise has repeatedly shown that quality of all types of provision is lower in the most deprived areas (e.g. Ofsted 2011, Figure 8; Ofsted 2012, p. 17). This relationship holds for childminders, PVI centre-based provision and for schools too, although results on schools relate to the whole school and not specifically to the early years. The disparity between

the Ofsted findings and those in the QCSMCS and NESS may reflect the wider age range covered by Ofsted; the different quality measures used; and/or changes in the quality of different settings over time. Since 2005 the introduction of the Foundation Stage Curriculum and the EYP may plausibly have improved quality in non-school settings, which have a higher proportion of more advantaged children. Indeed, Mathers et al (2011) found that employing an EYP significantly improved the quality of provision in PVI settings.

This paper contributes to this literature in three ways. First, it examines the association between children's background and structural indicators using data for 2011. This exercise has not been carried out since the QCSMCS in 2005, and several policy changes have been put in place since then which may have affected the relationship. It has also not been done before for England as a whole. Second, the paper uses recent Ofsted assessment data of settings and links them to child-level data. This offers a more precise picture of the relationship between children's background and quality than is reported by Ofsted itself. Third, by bringing together structural indicators and Ofsted ratings the paper helps clarify how these different quality measures relate to each other as well as to children's background; a useful exercise given that no single measure of quality is likely to capture *all* the complexities and characteristics of ECEC provision.

5. The data

5.1 The Schools Census and Early Years Census

We use data from the School Census and Early Years Census for England collected in January 2011. The Schools Census covers all maintained schools and the Early Years Census all PVI providers (DfE 2010a, 2010b). PVI providers that have no children receiving the entitlement at the time of the Census are not included (DfE 2010a).

Both censuses collect both establishment-level data and child-level data. Information regarding individual children includes month and year of birth, sex, special educational needs, and ethnic background (although in the Early Years Census this question is not answered in 33% of cases). Importantly, both censuses use the same alphanumeric codes, constructed by the Department for Education, to uniquely identify children. Because children can be enrolled in more than one setting at any one time, there are a small number (fewer than 5%) of duplicate observations. For each child counted twice, we keep only the observation at the setting in which he/she spends more time.

The datasets do not include information on children's family background, but both censuses report the Lower Super Output Area (LSOA) in which children live. LSOAs are small geographical areas comprising, on average, 1500 residents, with boundaries drawn so to maximise social homogeneity within the area. For each LSOA a battery of statistics are periodically released, and here we make use of the 2010 Income Deprivation Affecting Children Index (IDACI). The IDACI indicates the proportion of children under 16 in each LSOA that live in families that are income deprived, i.e. in receipt of Income Support, income-based Jobseeker's Allowance, Pension Credit (Guarantee), or in receipt of Child Tax Credit and with equivalised income (excluding housing benefits) below 60% of the national median. The 2010 IDACI was constructed using administrative data on benefit recipients from August 2008 (McLennan et al 2011).

In essence then, the IDACI captures children's disadvantage in two senses. First, it provides a measure of the probability of a child living in income poverty, based on the child's address: an IDACI of 55% tells us that children living in that area have a 55% chance of being poor. As such it can be treated as a (very rough) proxy of the child's household circumstances. Second, it gives us a more direct measure of deprivation in the child's area: children living in an area with a 55% IDACI may not be poor themselves, but certainly live in an area with a higher rate

of child poverty than children in an area with an IDACI of 10%. The indicator is clearly far from being an ideal measure of either household or area disadvantage, but it is the best information available that covers all children accessing the entitlement.

The Early Years Census includes data on staffing numbers and qualification levels. We use this information to construct our first measure of quality -- presence of a teacher or EYP.

The Schools Census does not report information on staff. Although historically many nursery classes were run by nursery nurses (qualified at upper secondary level), new regulations introduced in 2008 require schools to employ teachers in every nursery class. We therefore assume that there is a qualified teacher in each nursery class, working alongside either nursery nurses or teaching assistants.

5.2 *Ofsted inspections*

Our second quality measure comes from Ofsted inspection results. While the censuses are snapshots of all children receiving the free entitlement in January 2011, inspections are carried out on an on-going basis. We use data on inspection outcomes from 1 September 2010 to 31 August 2011 in order to align the timing of inspections as far as possible to that of the censuses.

Three issues arise when using Ofsted data across different types of provision. First, school inspections differ slightly in their focus from early years providers' inspections. School inspections last two days and focus on the quality of provision across the school as a whole, although until January 2012 a separate judgement, with an overall scale and four subscales, was made regarding nursery classes and reception classes. By contrast, inspections of PVI providers, which last just half a day, are explicitly focused on the EYFS and break down the overall

judgement into 17 subscales. We only use the four subscales that correspond to those in school inspections (see Table 1).

[TABLE 1 ABOUT HERE]

Second, Ofsted has outsourced many of its inspection activities, and PVI settings and maintained schools are inspected by quite different organisations and teams. These differences seem to result in different grading conventions: for example, while both teams use the same grading scale, results on schools are more compressed than for PVI settings.

Third, there are differences in inspection-cycle and selection. During the period under analysis, schools were typically inspected every five years, but the frequency of inspections for each school depended on a risk assessment made by Ofsted, which took school performance into consideration. Thus 'underperforming' primary schools were more likely to receive an inspection. The inspection cycle for the PVI sector was shorter at three years, with the likelihood of an inspection not dependent on risk assessment. These differences mean that comparing results across sectors may be misleading, and in our results we concentrate on comparisons within sectors.

6. The results

6.1 Who receives the entitlement and where?

We begin by calculating enrolment rates for the free entitlement: do all children take up their places, and which types of setting do they attend?

By combining the Early Years Census and the School Census and comparing the numbers of children enrolled in January 2011 to the 2011 Census estimates (Office of National Statistics [ONS] 2012), which refer to 27th March 2011, we find

that 95% of four year olds and 90% of three year olds were receiving the entitlement. These figures are appreciably lower than those reported by the Department for Education (DfE 2011) (98% and 93%) and somewhat closer to the ones derived from the 2009 Childcare and Early Years Parents' survey (Smith et al. 2010). The difference appears due to our use of the more recent 2011 Census data.ⁱ Evidence from parents' surveys indicates that the children *not* accessing the entitlement are predominantly children from disadvantaged backgrounds (Speight and Smith 2010); our study cannot add anything about these children as they do not appear in our data.

When looking at *where* children access the entitlement, it becomes apparent that patterns of provision depend on children's age. Figure 1 shows that almost all children who have turned four by the end of August are in reception classes the following January. The picture is more mixed in relation to younger children. Nearly half of younger fours and older three year olds are in nursery classes in the maintained sector, with the other half in PVI settings. By contrast, children who turned three only a few months before the census are predominantly found in the PVI sector, with only 24 percent in nursery classes in maintained schools, suggesting that gaining access to the entitlement in January (rather than September) is easier in the PVI sector than at schools. Only 0.6 percent of children receive the entitlement with a childminder.

[FIGURE 1 ABOUT HERE]

Thus, by the September after their fourth birthday, children in England are almost invariably attending reception classes in school. This is in line with legislative changes to school admissions policy and follows the recommendations of the review of the primary curriculum (Rose 2009). Because of this uniformity, we exclude children who turned four by August 2010 from the rest of the analysis and focus on three year olds and younger four year olds.

6.2 Children's background and staff qualifications

Table 2 shows the percentage of children receiving the entitlement in different settings by the child's area deprivation level. Here and in further tables and figures we use deciles of the IDACI to distinguish between children with different probabilities of being poor, based on statistics for the Lower Super Output Area in which they live. The average IDACI score in the most deprived decile of LSOAs is 0.55 (meaning 55% of children are in income poverty) while in the least deprived decile it is just 0.02 (2%). The most deprived decile of LSOAs includes a large range of scores – from 0.46 to 0.99. There could therefore be a pattern of difference across LSOAs within the bottom decile. We checked for this, but found no variation within this decile.

The data show a clear correlation between the probability of being poor and that of receiving the entitlement in a nursery class as opposed to a PVI setting. Indeed, almost four fifths of children from the least deprived decile receive early education in a PVI setting. The pattern is almost reversed among children from the most deprived decile, with 69 percent enrolled in nursery classes. These differences and the ones described in the remainder of the paper are all statistically significant as the sample size in each decile is large.

[TABLE 2 ABOUT HERE]

Differences in the type of provision are reflected in staff qualifications. Figure 2 presents evidence on whether there is at least one teacher or EYP in the setting. Some 80 percent of children from the poorest areas have a graduate in their setting, compared to 53 percent among children in the least deprived decile. This pattern is driven predominantly by the greater concentration of nursery classes in more disadvantaged areas.

[FIGURE 2 ABOUT HERE]

When we limit the analysis to children in the PVI sector, the story is very different (Figure 3). Children living in the least deprived areas are more likely than other children to be in a setting staffed by a teacher or EYP, although differences across IDACI deciles are not large, and the relationship appears to be slightly U-shaped; children living in areas with no poverty and children living in the poorest areas are the most likely to be in contact with a graduate. The absence of a steeper social gradient within the PVI sector may be linked to the greater number of local authority settings in poorer areas. As Figure 4 shows, local authority centres are much more likely than PVI settings to employ a graduate, and local authority settings in the most deprived areas are more likely to do so than local authority settings in other areas. However, local authority provision remains a small share of the total, covering 1.5% of children accessing the entitlement overall and 3.1% in the most deprived areas, compared to 37% of children in PVI settings overall, and 18% even in the most deprived areas. The fact that within the voluntary sector graduates are more likely to be employed in the most deprived areas than in areas of average deprivation, as Figure 4 also illustrates, may also be part of the story.

[FIGURE 3]

[FIGURE 4]

Discussion so far has concentrated on the presence of a graduate (a teacher or EYP) in the setting. What about the ratio of children to each graduate? As discussed earlier, current rules allow for higher child:staff ratios in schools than in the PVI sector. When looking at actual ratios, this pattern is broadly confirmed, with one member of staff to every 6.3 children in the PVI sector and 11.8 in schools, with ratios fairly constant across deprivation deciles (see Table 3). As for ratios of children to *graduates*, the evidence suggests that, even where PVI

settings do employ graduates, they have higher child:graduate ratios than schools – 27 children per graduate compared to 21.9 in schools. As a result, children from the poorest areas have slightly more favourable ratios than other children. Within PVI settings only, ratios become slightly less favourable as deprivation increases, with the notable exception of children from the most deprived areas: there are 26 children per graduate in the least deprived decile, rising to 28.6 in the second most deprived, with 27 in the most deprived decile.

[TABLE 3 ABOUT HERE]

Overall, these results indicate that children living in higher poverty areas are more likely to receive early education from more qualified staff – teachers or EYPs – because they are more likely to be enrolled in nursery classes. This evidence is in line with the results from the 2003-05 MCS study of childcare quality, which found that children from less advantaged backgrounds tended to receive better quality of provision, a result driven by their greater likelihood of attending settings in the maintained sector. The introduction of EYP status has increased the number of graduates in PVI settings, but not by enough to bridge the gulf in qualification levels between the maintained and PVI sectors.

6.3 *Children's background and Ofsted ratings*

We now turn to our second quality measure, Ofsted judgements. As noted above, comparing Ofsted ratings between schools and PVI settings is problematic, both because of differences in the style of inspection and the makeup of the inspection team, and in the time scales on which the inspections operate. We therefore present Ofsted results separately for schools and PVI settings.

As discussed earlier, Ofsted rates both schools and PVI settings along four common dimensions – overall effectiveness, effectiveness of leadership and management, quality of provision, and children's outcomes, as shown in Table 1.

For simplicity, we report results related to “quality of provision” only, but the pattern of findings does not change with the dimension examined. Ratings are expressed using a four point scale: outstanding, good, satisfactory and inadequate. The four ratings are not evenly distributed across the scale, with about two thirds of settings (from the maintained and PVI sectors alike) awarded a “good”. The other one third of settings tend to be evenly split between “outstanding” on the one hand and “satisfactory” on the other. Very few settings are judged as “inadequate”. Such a distribution effectively means that a setting deemed as “satisfactory” is of relatively low quality, while “outstanding” indicates particularly high quality.

We match child-level data to Ofsted data to explore variations in ratings in relation to the IDACI deprivation level of the area where the child lives. The results, presented in Table 4, point to a clear poverty gradient both in schools and PVI settings: children from more deprived areas receive lower quality. While the percentage of children in “good” settings remains broadly constant along the IDACI distribution, variation emerges in relation to “outstanding” and “satisfactory” classifications. Among children accessing the entitlement in a school, 21% of those in the least deprived areas attend an outstanding setting, compared to 12% of children in the most deprived. Similarly, among PVI settings, 9% of settings are judged satisfactory or inadequate in the least deprived areas, rising to 16% in the most deprived.

[TABLE 4 ABOUT HERE]

The linear relationship within PVI settings does not reflect our earlier findings with regard to staff qualifications: we saw that children from the poorest decile were more likely than their peers from slightly less deprived areas to access a setting with a graduate. Thus these additional graduates do not appear to be

ensuring higher quality as measured by Ofsted ratings. We consider this apparent puzzle further here.

It seems likely that staff qualification levels are one factor affecting Ofsted judgements, and that settings' intakes might be another: the ability of staff to create a stimulating and caring environment is likely to be influenced both by their training and by the children attending the setting. Figure 5 shows the proportion of children in a setting who come from the most deprived decile of areas, ranked by the area deprivation level of each individual child. Children from the least deprived areas attend schools (or PVI settings) in which only 3% (or 1%) of all children are from the most deprived areas. By contrast, children from the most deprived areas are in settings with a much larger overall proportion of children from the most deprived areas – 36% in PVI settings and 53% in schools. The relationship between a child's area deprivation level and that of other children in her/his nursery presumably reflects patterns of residential segregation, but the difference between schools and PVI settings is striking: if a child from the most disadvantaged decile of areas accesses the entitlement in a school, more than 50% of her/his classmates will also be from the poorest areas, while if she/he attends a PVI setting only 36% will come from these areas. Even children from the least deprived areas in the country are likely to have more than twice as many children in their class from the most deprived areas if they attend a school rather than a PVI setting. A simple and plausible explanation for this difference in the concentration of deprivation between types of setting is that schools are free and in many cases only offer part-time hours, whereas children in PVI settings are likely to have working parents paying for additional childcare to cover a working day. Our focus here is on whether this difference itself affects the quality of provision a child receives.

[FIGURE 5 ABOUT HERE]

To test the hypothesis that both qualification levels and intake affect Ofsted ratings, we run a multivariate regression of the probability that a child in the PVI sector is in a setting judged as outstanding or good. As explanatory variables we include the decile of the LSOA where the child lives; the proportion of children in the setting who come from the most deprived areas; and a binary variable indicating whether the setting employs a graduate or not. The results (in Table 5) confirm that children in more deprived areas are less likely to be in an outstanding or good setting relative to children in the least disadvantaged areas. The table also highlights the correlation between settings' intakes and Ofsted results. The higher the proportion of children from the most disadvantaged areas, the less likely is a child's setting to be rated as good or outstanding. This relationship holds for both PVI settings and schools, although it is stronger for the former group. On the other hand, the presence of a graduate increases the probability of a setting being of good or outstanding quality.

[TABLE 5 ABOUT HERE]

7. Discussion and conclusions

The evidence we have presented shows that three and four year olds from more deprived areas are more likely than their peers to access free early education in a setting employing a graduate, because they are in schools with teachers; a reflection of the continuing legacy of local authority investment in nursery education in inner city areas in the 1960s and 1970s (Blackstone 1971; Owen and Moss 1989). Given that previous research has underlined the importance of graduate staff in creating a warm and stimulating environment which fosters child development, this is an encouraging result that highlights the key role of the state sector in ensuring high quality provision for children with most to gain. Outside school-based provision, we have found that children from the most deprived areas are more likely to access highly-trained staff when services are run directly by local authorities. These centres are more likely to employ

teachers or EYPs, probably reflecting the more generous funding they receive. However, the coverage rate of local authority services remains limited, catering for only 3% of children from the most deprived areas. Moreover, as public funds are rolled back the ability of these centres to hire graduate staff is likely to diminish.

Other types of providers appear to be less able (or willing) to hire teachers or EYPs: the majority of children receiving the entitlement in PVI settings are not in contact with a graduate. This is not surprising: current regulations do not require the presence of graduates and public subsidies are not related to providers' choice of staff. But our findings suggest that settings that attract higher income parents are better able to raise quality than others. Within the PVI sector, children from the least disadvantaged areas are more likely than others to attend a setting staffed by a teacher or an EYP (or both), with lower children to staff ratios. However, the social gradient is not linear but slightly U-shaped, with children from the most disadvantaged ten percent of areas relatively protected.

In contrast, results for our second quality measure, Ofsted ratings, point to a linear social gradient within both the maintained and PVI sectors, with quality growing consistently worse across the distribution as disadvantage increases. This finding appears on the surface to sit in conflict with the U shaped curve for graduate presence, so we investigated further. We found that the presence of a graduate significantly increases the likelihood of a setting being classified as outstanding. However, having a higher proportion of more disadvantaged children in the setting brings this likelihood down. This is true within both the PVI and the maintained sector.

This finding can be interpreted in two ways. First, it appears likely that Ofsted ratings are in part a judgement of child development outcomes themselves. Indeed, this is officially an aspect of what they capture and, unlike Ofsted ratings

for higher levels of schooling, no 'value added' measure is available. This means that lower Ofsted scores do not only reflect what happens in the classroom but also the resources that children bring with them. If so, great caution should be exercised in using Ofsted ratings; rewarding settings that do well in Ofsted with more resources, for example, would be unfair and damaging to settings with a less advantaged intake.

However, it is also plausible that it is genuinely more difficult to deliver outstanding provision in a setting where a higher percentage of children come from lower income homes, given the association of low income with parental stress, depression and perhaps other difficulties which affect children's behaviour and concentration. If this is the case, a number of policy implications follow. First, there is a strong argument for additional funding for PVI settings in disadvantaged areas. Our results suggest that compensatory funding of this nature could have a significant impact on quality, especially if it enables investment in staff qualifications. Second, policies that facilitate greater social integration within settings are likely to be beneficial. Last but not least, the findings underline the importance of a holistic approach that encompasses the broader circumstances of children's lives. Settings do not operate in a vacuum; investment in early education will be most effective if it takes place in a context of support for children's services more generally, and, crucially, against a backdrop of falling household poverty. .

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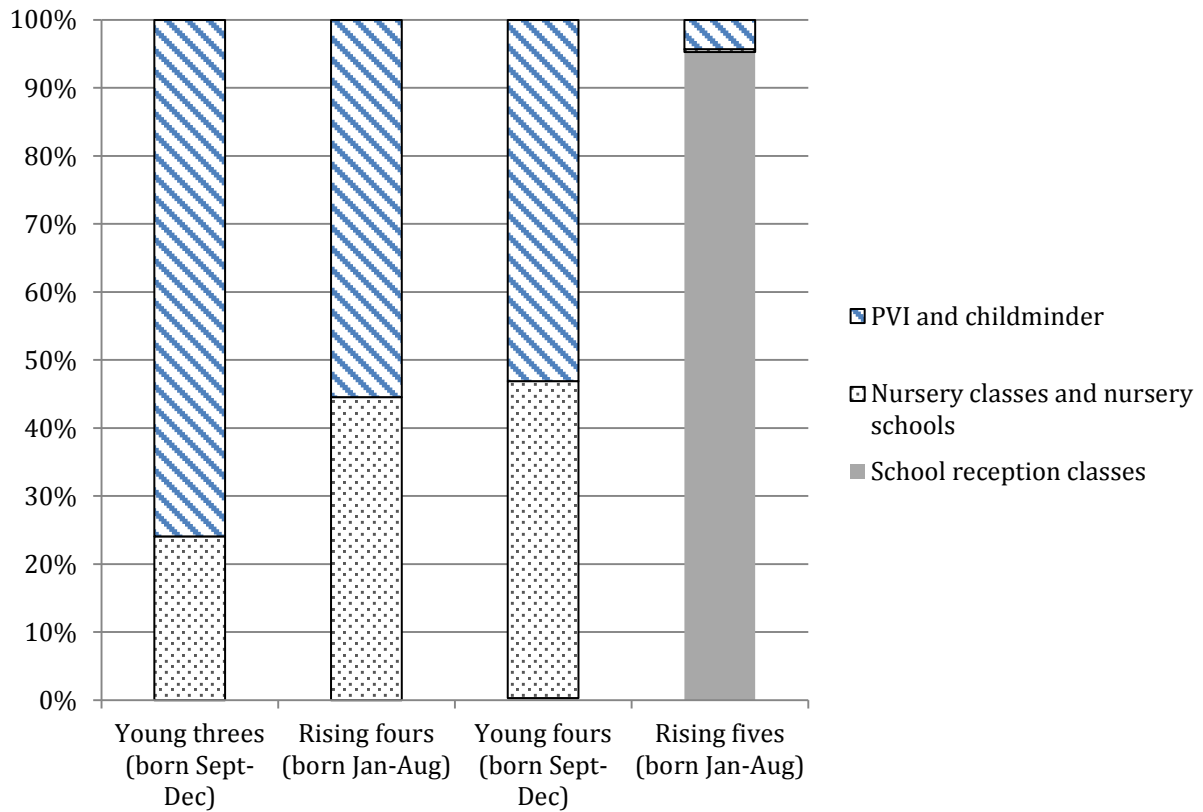
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ⁱ We appear to count only 99% of the four and three year olds counted by DfE which is equivalent to 11,911 fewer children. Of these, 3,402 are two year olds in schools, which are counted by DfE but which we exclude. The remaining discrepancy is probably due to different procedures in dealing with double observations. This difference cannot however explain the much lower take-up rate we report, which is due to differences in population estimates.

Figure 1: Where three and four year old access the entitlement

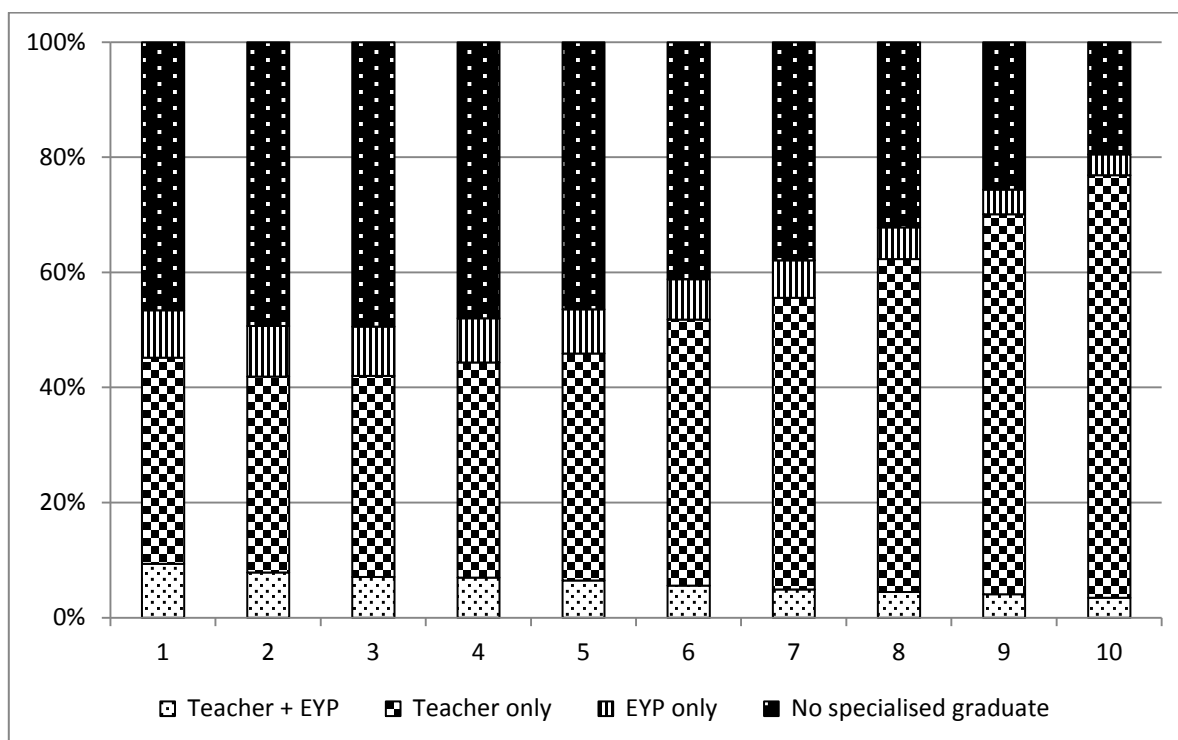


Source: Early Years Census 2011 and School Census 2011.

Notes: Table includes all children born between January 2006 and December 2007 who were receiving the free entitlement in January 2011, with the exception of children with special education needs (67,208 children) and children who were recorded as enrolled in year 1 (61 children).

PVI includes private, voluntary and independent settings and settings run directly by local authorities.

Figure 2: Presence of graduate staff, by level of deprivation



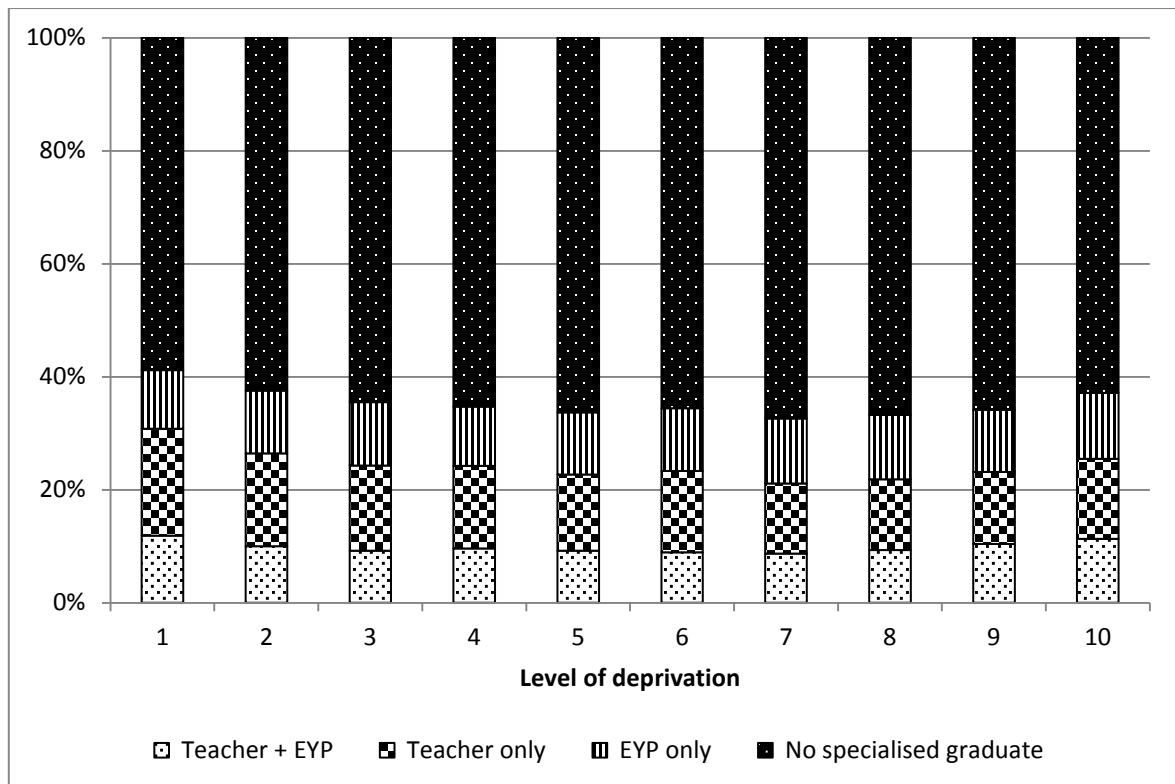
Source: Early Years Census 2011 and School Census 2011.

Notes: Figure refers to all children born between September 2006 and December 2007 who were receiving the free entitlement in all types of provision in January 2011.

Children with Special Education Needs (SEN), those in reception classes or year 1, and those could not be matched to an English Lower Super Output Area are not included. See notes to Table A3 for more details.

Children receiving the entitlement by a childminder are included; however information on staff qualification could refer to either the individual minder or the network coordinator.

Figure 3: Staff qualifications, by level of deprivation, excluding maintained nursery schools and classes

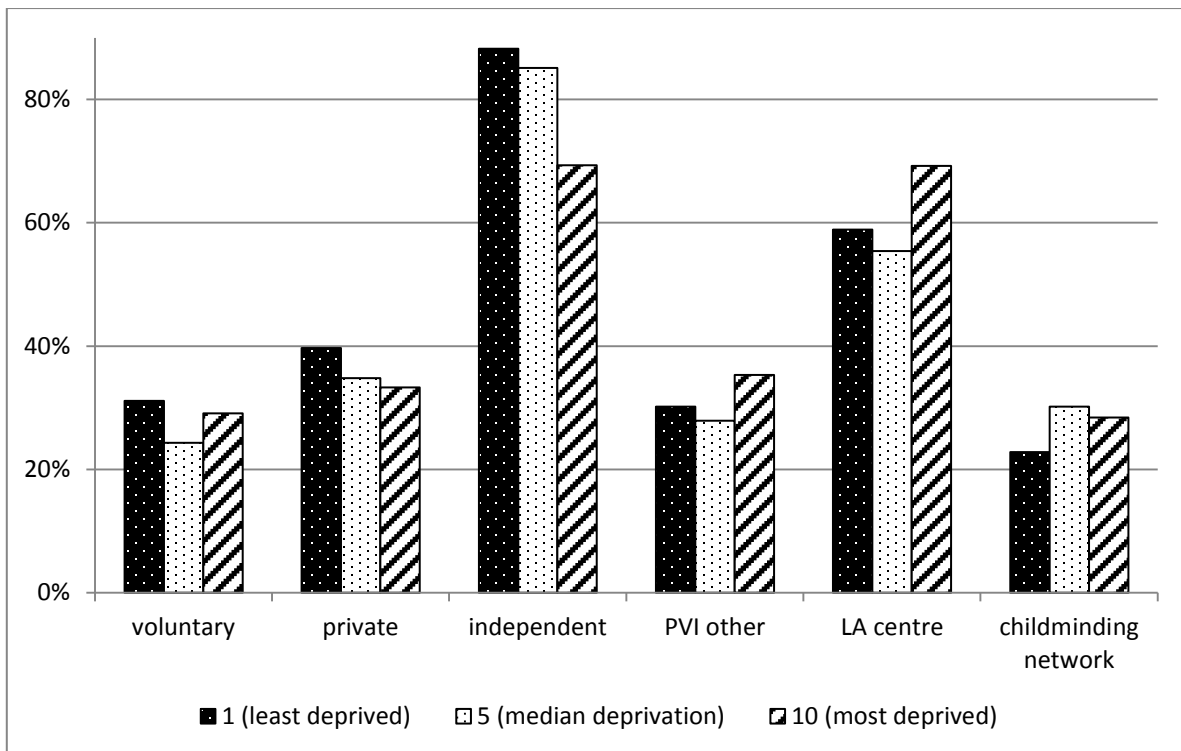


Source: Early Years Census 2011 and School Census 2011.

Notes: Figure refers to all children born between September 2006 and December 2007 who were receiving the free entitlement in all types of provision other than maintained schools in January 2011. Children with Special Education Needs (SEN) and those who could not be matched to an English Lower Super Output Area are not included.

Children receiving the entitlement by a childminder are included; however information on staff qualification could refer to either the individual minder or the network coordinator.

Figure 4: Presence of graduates in PVI settings, by type of setting and level of deprivation

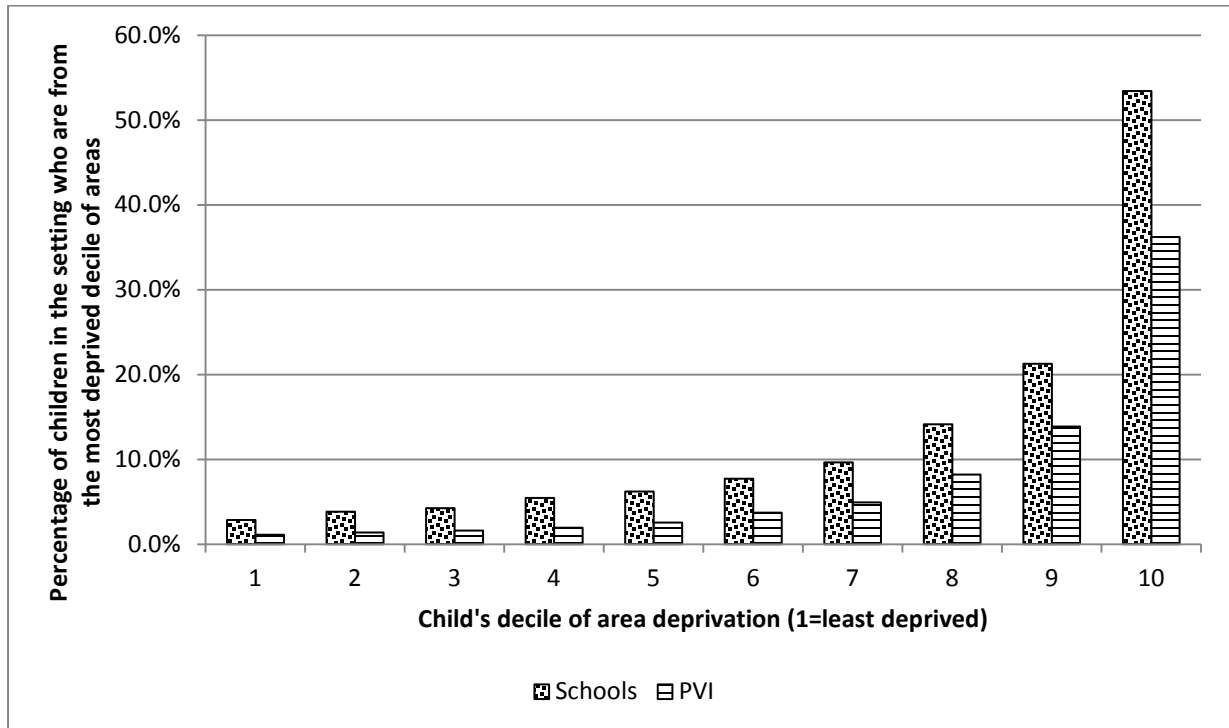


Source: Early Years Census 2011 and School Census 2011.

Notes: Figure reports data for children born between September 2006 and December 2006 living in an LSOA which belongs to the 1st decile of the IDACI score, the 5th and the 10th. All children receive the entitlement not in a maintained school. Children with Special Education Needs (SEN) and those who could not be matched to an English Lower Super Output Area are not included.

For children receiving the entitlement by a childminder, information on staff qualification could refer to either the individual minder or the network coordinator.

Figure 5: Concentration of children from disadvantaged areas, by type of setting: The percentage of children from the most deprived decile of areas, by the child's own area deprivation level



Source: Early Years Census 2011 and School Census 2011

Notes: percentages indicate the proportion of children in each setting who are from the top deprived area.

Figure includes all children born between September 2006 and December 2007 who were receiving the free entitlement in January 2011. Children with Special Education Needs (SEN), those in reception classes or year 1, and those could not be matched to an English Lower Super Output Area are not included. Children receiving the entitlement by a childminder are not included.

Table 1: Ofsted judgements subscales, by sector of provision

	Schools	PVI settings
OVERALL EFFECTIVENESS	✓	✓
How well does the setting meet the needs of children in the Early Years Foundation Stage?		✓
The capacity of the provision to maintain continuous improvement		✓
The effectiveness of leadership and management of the Early Years Foundation Stage	✓	✓
The effectiveness of leadership and management in embedding ambition and driving improvement		✓
The effectiveness with which the setting deploys resources		✓
The effectiveness with which the setting promotes equality and diversity		✓
The effectiveness of safeguarding		✓
The effectiveness of the settings' self-evaluation, including the steps taken to promote improvement		✓
How well does the setting work in partnership with others?		✓
The effectiveness of the settings' engagement with parents and carers		✓
The quality of provision in the Early Years Foundation Stage	✓	✓
Outcomes for children in the Early Years Foundation Stage	✓	✓
The extent to which children achieve and enjoy their learning		✓
The extent to which children feel safe		✓
The extent to which children adopt healthy lifestyles		✓
The extent to which children make a positive contribution		✓
The extent to which children develop skills for the future		✓

Table 2 Type of setting/provision by level of deprivation

IDACI	Nursery classes maintained school	Voluntary ^a	Private ^a	Independent ^b	Local Authority setting ^c	Other	Childminding network	TOTAL
1 (least deprived)	20.8%	19.3%	51.0%	6.2%	0.5%	1.3%	0.9%	81,315
2	21.0%	22.1%	49.0%	4.4%	0.6%	1.6%	1.3%	61,314
3	23.4%	22.5%	46.5%	3.7%	0.7%	1.7%	1.4%	84,957
4	26.6%	21.1%	44.9%	3.5%	0.9%	1.6%	1.3%	46,897
5	29.9%	20.7%	42.9%	2.8%	0.9%	1.7%	1.1%	73,480
6	37.2%	17.3%	39.3%	2.4%	1.3%	1.6%	0.9%	71,656
7	43.8%	14.7%	36.2%	2.0%	1.4%	1.2%	0.7%	73,677
8	51.8%	11.9%	30.7%	1.6%	1.9%	1.5%	0.7%	88,794
9	61.0%	9.9%	23.8%	1.4%	2.5%	1.1%	0.3%	84,182
10 (most deprived)	69.0%	7.7%	18.0%	1.1%	3.1%	1.0%	0.2%	98,518
Overall	40.30%	16.10%	37.10%	2.80%	1.50%	1.40%	0.80%	100%
TOTAL	308,377	123,198	283,511	21,352	11,190	10,690	6,472	764,790

Source: Early Years Census 2011 and School Census 2011.

Notes: Table includes all children born between September 2006 and December 2007 who were receiving the free entitlement in January 2011, with the exception of: 1. Children with Special Education Needs (SEN) – (33,673); 2. Children who were recorded as enrolled in year 1 – (4); 3. Children in reception classes – (781); 4. Children who could not be matched to an English Lower Super Output Area – (3,645)

a. Includes Children's Centres. b. Defined as registered independent schools. c. Includes day nurseries or Children's Centres run by local authorities.

Table 3 Children to staff ratios, by type of setting and level of deprivation

	PVI settings		Schools	
	All staff	Graduatest	All staff	Teachers
1 (least deprived)	6.1	26	11.7	21.8
2	6.4	26.7	11.7	21.6
3	6.1	26.4	11.7	21.6
4	5.9	26.2	11.7	21.6
5	5.9	26.9	11.7	21.8
6	6.2	28.4	11.8	21.9
7	6.2	28.4	11.8	22
8	6.6	28.7	11.9	22
9	6.8	28.6	11.9	22.1
10 (most deprived)	6.8	27	11.8	21.8
Total	6.3	27.1	11.8	21.9
N	449,844	161,317	308,123	308,123

Source: Early Years Census 2011 and School Census 2011.

Notes: Table reports data on all children born between September 2006 and December 2007 who were receiving the free entitlement in January 2011. Children with Special Education Needs (SEN), those in reception classes or year 1, and those could not be matched to an English Lower Super Output Area are not included. Children receiving the entitlement by a childminder are not included.

† Includes only children in a setting where there is a graduate.

Table 4 Ofsted judgements by child's area deprivation level

SCHOOLS					
IDACI decile	Outstanding	Good	Satisfactory	Inadequate	TOTAL
1 (least deprived)	20.8%	63.8%	15.4%	0.0%	2,944
2	15.1%	66.3%	18.5%	0.2%	2,494
3	16.0%	65.0%	18.9%	0.1%	4,143
4	14.3%	65.7%	19.4%	0.7%	2,907
5	15.6%	65.1%	19.3%	0.1%	5,387
6	12.5%	63.6%	23.5%	0.5%	7,081
7	13.1%	65.1%	21.4%	0.4%	8,561
8	11.2%	67.7%	20.7%	0.3%	12,509
9	13.3%	64.1%	22.0%	0.7%	14,193
10 (most deprived)	12.3%	63.8%	23.4%	0.5%	17,899
Overall	13.3%	64.9%	21.4%	0.4%	100%
Total	10,399	50,701	16,685	333	78,118
PVI SETTINGS					
IDACI decile	Outstanding	Good	Satisfactory	Inadequate	TOTAL
1 (least deprived)	27.4%	63.3%	8.1%	1.1%	16,993
2	23.1%	66.8%	8.9%	1.3%	12,851
3	23.9%	65.1%	10.2%	0.9%	17,625
4	23.1%	66.4%	9.5%	1.1%	9,178
5	22.2%	66.3%	10.2%	1.2%	13,765
6	23.1%	65.1%	10.6%	1.3%	12,341
7	20.5%	66.0%	11.7%	1.8%	11,298
8	19.0%	67.5%	11.5%	1.9%	11,694
9	17.8%	67.5%	13.2%	1.5%	8,895
10 (most deprived)	15.9%	67.8%	14.0%	2.3%	8,110
Overall	22.2%	65.9%	10.5%	1.4%	100%
Total	27,282	80,917	12,862	1,689	122,750

Source: School Census 2011, Early Years Census 2011 and Ofsted inspection data 2010-2011.

Notes: Table includes children born between September 2006 and December 2007 who were receiving the free entitlement in a maintained school in January 2011 and whose school was inspected between September 2010 and August 2011. Children with Special Education Needs (SEN), those in reception classes or year 1, and those could not be matched to an English Lower Super Output Area are not included.

Table 5: Probit regression: Probability of being in a setting rated good or outstanding

	PVI settings	Schools
Decile 2	-0.049* (0.02)	-0.126** (0.04)
Decile 3	-0.087*** (0.02)	-0.142*** (0.04)
Decile 4	-0.057* (0.02)	-0.176*** (0.04)
Decile 5	-0.101*** (0.02)	-0.150*** (0.03)
Decile 6	-0.116*** (0.02)	-0.303*** (0.03)
Decile 7	-0.190*** (0.02)	-0.230*** (0.03)
Decile 8	-0.168*** (0.02)	-0.196*** (0.03)
Decile 9	-0.192*** (0.02)	-0.236*** (0.03)
Decile 10	-0.151*** (0.03)	-0.213*** (0.03)
Proportion of children from decile 10	-0.512*** (0.04)	-0.188*** (0.03)
Graduate present	0.204*** (0.01)	
Pseudo R-Square	0.011	0.003
Wald chi2	983.70	259.20
Prob > chi2	0.000	0.000
Observations	122750	78118

Source: Early Years Census 2011 and School Census 2011, and Ofsted inspection data 2010-2011.

Notes: Coefficients reported are marginal effects.

Decile 1 (least deprived) is the omitted category.