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

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Abstract

This paper examines how the quality of formal early childhood education and care is associated with children's background. By using different indicators of quality, the research also explored how the relationship varies depending on the way quality is measured. The analysis combines 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 (2010-11). The results suggest that children from disadvantaged background have access to better qualified staff. However, services catering for more disadvantaged children are more segregated and receive poorer quality ratings from Ofsted, the national inspectorate.

Keywords: Early childhood; Pre-school; Child care; Quality; Disadvantaged families

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1. Introduction

There is a growing body of evidence which points to the importance of early years education for child development, and hence its potential impact on longer-term educational, employment and wider social outcomes. Initially, such evidence came from US evaluations of small-scale trials, including the Perry Preschool project, which provided high quality early childhood education to disadvantaged children (Karoly, Kilburn, and Cannon 2005; Heckman et al. 2009; Almond and Currie 2011). More recently, studies which have examined the expansion of universal pre-school programmes across a range of European and American countries find consistent evidence that children have benefited both in the short and longer term (see review in Ruhm and Waldfogel 2011). In England, the Effective Provision of Pre-School Education (EPPE) project observed children in a range of different pre-school settings in 1997 and has tracked their progress since: it found that children who had attended pre-school had higher levels of cognitive and social behavioural outcomes on entry to primary school than children who had not, with some lasting effects through Key Stages 1 and 2 (to age 11) (Sylva et al. 2010). Many studies, including EPPE, have found both that the quality of provision is of prime importance, and that the effect of exposure to formal early years education is largest for children from disadvantaged backgrounds.

Policy in the UK has been alert to these emerging findings, and the expansion of early childhood education and care (ECEC) has been high up the policy agenda since 1997. The Labour Government provided all three and four year olds with the entitlement to a part-time nursery place, with high rates of take-up and a narrowing gap in enrolment between children from more and less advantaged backgrounds (DfE 2010a; Speight and Smith 2010). Proposals to extend the free places to disadvantaged two year olds were taken up and extended by the current Coalition Government and should reach 40% of this age group by 2014-15. Under Labour, there was also substantial investment in ECEC provision for younger children, seen as potentially delivering a "double dividend" – enabling parents to work while giving even very young children access to early education (DfES et al. 2002, 29). Short-term supply side funding was made available through start-up loans and the Neighbourhood Nurseries Initiative and more extensive demand-side funding through childcare vouchers and the childcare element of Working Tax Credit (although the latter has been cut back somewhat by the Coalition).

However, while the research evidence emphasises that it is *high quality* care which is most effective in supporting children's development (e.g. Ruhm and Waldfogel 2011; Sylva et al. 2010), and the language of policy has repeatedly referred to "high quality care", questions remain about how far provision is indeed high quality, and the extent to which quality is consistent across the sector. Children may access their free part-time place in a nursery class in a maintained primary school; in a dedicated state or private nursery school; in a playgroup run by volunteers; within a setting providing full-time nursery care (where the entitlement effectively operates as a discount on

fees); or – though this is rare – with a childminder. Very different statutory requirements regarding staff qualifications and staff-child ratios apply to these different settings, and they have different historical contexts, so a child's experience in one setting may be very different to that in another. For younger children, almost all early education and care is provided in private and voluntary settings or by childminders, so minimum requirements are more similar, but this leaves room for considerable variation in provision over and above the minimum.

Our focus in this paper is on the way in which these variations in quality are associated with children's background. If early years 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 ECEC?

In this paper we provide new evidence for England on the relationship between children's background and the quality of care and education received, by combining 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.[1] This is the first time that these data are combined and used for this purpose. The main strength of these data over survey data is that they cover almost the entire population of three and four year olds. In addition, by bringing together both censuses and Ofsted data we are able to employ different indicators of quality and explore how these different measures vary in their relationship to children's background.

The paper is structured as follows. Section 2 discusses available measures of quality and considers what the literature says about which measures are most relevant for children's future outcomes. 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. What is "quality" in early childhood provision?

Katz (1993) points out that there may be several perspectives on what constitutes "quality" early years provision, with "insiders" (staff and children) potentially taking a

1 The paper covers only England and not the 15% of children who live in other parts of the UK. It would be interesting in the future to extend the analysis to children in Scotland, Wales and Northern Ireland, especially as policy differs slightly in each country, but data are not as easily available as for England.

very different view to ”outsiders” (researchers and inspectors). Children may assess the quality of care based on how much they enjoy the day, while inspectors want to see evidence of learning outcomes (see also discussion in Sylva 2010). As Sylva notes, what matters to one parent may also be very different to what matters to another parent. For instance, in one survey in which parents in England were asked to choose two or three factors which they felt were most important for high quality childcare provision, 54% chose staff quality, 43% a warm and caring atmosphere, 32% good quality buildings and facilities, and 26% a good report from the national inspectorate or a quality assurance agency (Butt et al. 2007). This suggests a certain amount of consensus about the characteristics of high quality care, but also some disagreement: high percentages of parents did *not* place these items in the top three, instead choosing parental involvement (19%), pleasant outdoor space (8%), or a mix of staff of both sexes or from a variety of ethnic backgrounds (8%).

This paper is interested in the role of ECEC in promoting child development, and in particular in improving the starting point of children from disadvantaged backgrounds, so it adopts an understanding of quality care as care which best advances children's cognitive, social and behavioural development. Two distinct dimensions of quality provision in this sense have been identified: structural indicators and process indicators (Munton, Mooney, and Rowland 1995; Sylva 2010; Blau and Currie 2006).[2]

Structural indicators cover stable characteristics of the childcare environment and in particular the resources available in a setting. Child-staff ratios, group size, staff qualifications and training, material and space are examples of structural quality measures. Structural variables are relatively straightforward to measure and are often recorded in administrative data. Notably, structural aspects of quality often vary across types of provision, children's age and countries – the following section will describe in detail such variations within the English context.

Process quality refers to the nature of activities and interactions between children and staff, the environment and other children. Love, Schochet and Meckstroth (1996) p.5, quoted in Blau and Currie (2006), define childcare as high quality when:

> "…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

2 Some writers have also pointed to child outcomes themselves 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. The Early Years Foundation Stage Profile, for example, is a valuable source of data on children's level of development at age 5, but does not contain enough background information on children for scores to be used as measures of quality in particular pre-school settings. Interpreting Foundation Stage Profile scores is further complicated by the fact that most children will have had a year in reception class on top of their experience of early years education by the time they are assessed: thus scores cannot be linked directly to settings in the way that Key Stage results can be linked to schools.

> 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, interact with children individually and in small groups instead of exclusively with the group as a whole, use positive guidance techniques, and encourage appropriate independence."

In contrast to structural variables, the measurement of process quality is complicated, as it requires the systematic observation of activities and interactions in settings and standard assessment procedures. 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)[3], which assess different aspects of the emotional and pedagogical environment children experience (Sylva et al. 2003; Harms et al. 2003).

How do these two sets of indicators relate to child development? Developmental psychologists argue that high process quality is likely to be predictive of later child outcomes and indeed there is a good deal of evidence that this is the case. In England, the EPPE study followed 3000 children enrolled in a variety of settings between 1998 and 1999, measuring process quality using ECERS scales. Children who had attended settings with higher ECERS scores performed better on cognitive and social behavioural measures at age 5, age 7 and even age 11, although development was influenced by the quality of the primary school. This is in keeping with the findings of studies in the US which also identify a positive effect of high process quality on child development (see Blau and Currie 2006, for a review), although more recent studies in the US have called into question how strong the links between process quality and later outcomes are. For example, a recent study by Sabol and Pianta finds little association between process quality measured at age four and children's development at age five (Sabol and Pianta 2012).

The relationship between structural indicators and later outcomes is less clear-cut in the US. Studies in general find at best a weak correlation between teacher qualifications and measures of process quality (Pianta et al. 2005) or between teacher qualifications and child outcomes (Blau and Currie 2006). However, evidence from random assignment studies in the US indicates positive effects on child outcomes of two types of structural quality – teacher education and staff to child ratios (see review in Waldfogel 2006). In the UK, the evidence more clearly indicates that structural measures are associated with process quality, and – where evidence exists – with child outcomes. The EPPE study found that process quality was highest when qualified

3 There are two versions of the Early Childhood Environment Rating Scale; the ECERS-Revised (ECERS-R) and the ECERS-Extended (ECERS-E). While the ECERS-R was developed in the USA, the ECERS-E was developed in the UK in order to reflect the notion of appropriate practice as contained in the curriculum. As a result, in comparison to the ECERS-R, the ECERS-E places a stronger emphasis on emerging academic skills, like literacy, numeracy and scientific understanding, which are central to the curriculum (Sylva et al. 2006).

teachers interacted with children for a substantial amount of time and were responsible for the curriculum (Sylva et al. 2004; Sylva, Siraj-Blatchford, and Melhuish 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 provided evidence on the 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.

Other UK studies provide further evidence on the relationship between structural and process quality (but not child outcomes). The Millennium Cohort Study (MCS) has followed 18000 children born between 2000 and 2001 by interviewing their families periodically. The Quality of Childcare Settings in the Millennium Cohort Study (QCSMCS) specifically investigated the quality of centre-based provision received by a subsample of MCS children, and 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 scales (Mathers, Sylva, and Joshi 2007).[4]

The link between centres' characteristics and quality of provision was also examined between 2004 and 2005 in relation to the Neighbourhood Nurseries Initiative (NNI). The NNI study focused on disadvantaged areas and on children under the age of three and a half and used the ITERS scale to assess quality of provision in 103 centres, almost all of which belonged to the PVI sector. The results showed that higher qualification levels among staff predicted higher quality, 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, but only 2% of the nurseries investigated employed teachers, making any effect difficult to detect (Neighbourhood Nurseries Initiatives [NNI] Research Team 2007).

Finally, research evaluating the effect of a new category of graduate staff specialising in early childhood, the Early Years Professional (introduced in 2005), found that employing an EYP significantly improved the quality of provision for children aged three and four (Mathers et al. 2011). In relation to provision for younger children, no effect was found; however, as very few EYPs were actually deployed in rooms with infants and toddlers, it was difficult to identify the impact of EYPs on quality for this age group.

Overall, the research on quality in early years education and care in the UK indicates that there is a relationship between structural aspects of quality – in particular staff qualifications – and process quality, with particularly strong evidence for children aged 3 and 4. There is less evidence from the UK on the effect of either type of quality

4 Group size was found to be positively correlated with process quality even when controlling for sector and staff qualifications. The authors offer the following explanation: "Larger rooms may be able to provide a more interesting range of activities for children, and may also offer a larger staff team with a broader range of experiences, interests and expertise" (Mathers, Sylva and Joshi, 2007, p.42).

on later child outcomes, with the notable exception of the EPPE study, which provides strong evidence that children make more progress in settings where staff are highly qualified.

In sum, although the best way to measure quality ECEC, understood as provision which advances children's cognitive and social development, may be through process measures, there is also evidence that structural features, particularly staff qualifications, are an indication of high quality care.

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

In England there are a variety of services providing early childhood education and care (ECEC) to children under five, with no core programme around which provision is structured. Children aged three and four are entitled to 15 hours a week of free early education for 38 weeks a year. They can access this entitlement in schools as well as in settings belonging to the private, voluntary and independent (PVI) sectors.

In schools, young children are catered for in nursery classes and reception classes, depending on the child's age.[5] Importantly, however, not all primary schools have nursery classes: historically, it was Local Education Authorities in more deprived urban areas that extended primary schools to include nursery provision (Owen and Moss 1989). There are also a small number of stand-alone nursery schools in the maintained sector, catering for children age three to five; again, these are concentrated in inner-city areas.

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 depend on the design of the funding formula within each local authority, but it is generally on a per-capita basis, with no or little additional funding to reward providers who cater for more disadvantaged children or who decide to invest in quality (NAO 2012; Gambaro et al. forthcoming 2014). Childminders are also able to offer the entitlement if they fulfil certain requirements: they must be members of a local Childminding Network and be at least working towards a minimum vocational qualification. In practice, only a very small proportion of children receive the entitlement with a childminder (NAO 2012; see also below).

Outside the free entitlement, formal provision is paid for by parents and is generally offered in PVI settings (including daycare centres, private nursery schools and pre-schools) or by childminders. This includes care and education for children under age three and additional hours for three and four year olds. For *working* households, there is some state subsidy for this provision. In particular, low-income parents who qualify for the Working Tax Credit can claim back a portion of registered childcare costs; as

5 Compulsory education begins in the term after a child turns five, but the norm is for children to enter reception in the September following their fourth birthday (as discussed later).

of April 2011, parents can claim up to 70% of the cost of registered childcare.[6] This scheme opens up the possibility that some working households on low wages will be able to afford more expensive childcare than better off households who do not qualify for Working Tax Credit. Nevertheless, as parents must still pay at least 30% of the cost of a childcare place, access to provision outside the free entitlement remains closely linked to parents' ability to pay.

The structural characteristics of provision in different settings vary substantially. Table 1 reports statutory requirements regarding group size, staff to child ratios and staff qualifications. 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, and half of the remaining staff in the setting must have at least a Level 2. Not only are these requirements low, but 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.

Staff to children ratios are lower 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 an 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 – schools, PVI settings and childminders – must follow the Early Years Foundation Stage (EYFS) curriculum, a statutory curriculum for the early education and care of children from birth to age five, which specifies learning and development objectives that all forms of provision must work towards. The curriculum was widely welcomed across the early years sector, suggesting that the goals it embodies are broadly shared by those working with children (Tickell 2011). Children are assessed on the curriculum at the end of the Foundation Stage (reception class), and 13 summary scores for each child are reported from schools and settings to Local Authorities, and from there to the Department for Education (the Early Years Foundation Stage Profile Return). Most children are in reception in the maintained sector at this point, but scores must also be returned for children continuing to receive the free entitlement in PVI settings.

6 Working Tax Credit and its childcare element are due to be eliminated and subsumed into a new Universal Credit system from October 2013.

All settings are also subject to a regime of inspections by the Office for Standards in Education, Children's Services and Skills (Ofsted). Ofsted has inspected maintained schools in England since the early 1990s, and since the early 2000s has also been responsible for regulating and inspecting all childcare and early years providers belonging to the PVI sector, including both centre-based providers and childminders. An inspection involves an assessment of a setting's performance based on academic and other measured outcomes held by Ofsted, followed by a visit to the setting. During the visit 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, made on a four point scale: inadequate, satisfactory, good and outstanding.

Although all settings are inspected according to this regime, it is important to point out that inspections are carried out somewhat differently across settings. School inspections last two days and regard the entire school. The inspection team produces four judgements specifically on the provision in reception and nursery classes.[7] By contrast, in PVI settings inspections are unannounced, last usually half a day, produce 17 judgments exclusively on the Early Years Foundation Stage and also cover aspects of provision which relate to health and safety. More importantly perhaps, Ofsted has outsourced many of its inspection activities, and early years PVI settings and maintained schools are inspected by different organisations and teams.

To summarise, the ECEC sector in England is characterised by a range of different providers from the maintained and PVI sectors delivering the free entitlement for three and four year olds, with the PVI sector also providing additional hours and services for younger children. Staff requirements are very different in different settings, but a common curriculum and system of inspections seek to impose a standard quality framework.

Within this institutional context, the association between background and quality could run either way. On the one hand, we know that 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 private and voluntary sector (PVI), 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. Beyond the free entitlement, when care is provided for additional hours and for children below three, there are more reasons to expect a relationship between children's background and quality of care, because of the direct mediation of income; higher quality care is likely to cost more. However, the

7 The framework for school inspection changed in January 2012. Among the changes, inspectors are no longer required to provide a separate judgement on the provision in nursery and reception classes. As will become clear later in the paper, this change means that the analysis performed by the present study will not be possible for future years.

operation of the childcare element of Working Tax Credit may muddle any simple correlation, as some working households on the lowest incomes may be able to access more expensive care than other families just above the cut-off for the tax credit.

The way ECEC services are regulated and delivered in England highlights a number of rather different possible indicators of quality, including staff qualifications and ratios and Ofsted ratings. Given that statutory requirements about qualifications are low, the presence of graduates – whether teachers or Early Years Professionals – stands out as an important difference in structural characteristics of services. A second possible indicator is Ofsted rankings, which could be thought of as a measure of process quality as 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 scales (Mathers, Singler, and Karemaker 2012), found that the two measures were broadly aligned but were 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, while also seeking to ensure compliance to minimum statutory requirements on staffing, ratios and health and safety standards. Thus, the Ofsted inspection system seeks to capture a wider range of factors and characteristics of a setting than process quality alone. As suggested by Lupton (2004), Ofsted judgments cover not simply what a school or an early years setting does, but also its resources and children's intermediate outcomes. We return to this point in the analysis.

4. Quality and children's background: previous studies

In this section we review the current evidence base for the UK on the relationship between children's background and the quality of care and early education they receive.

First, we know that children not receiving any formal care at all are more likely to be from disadvantaged backgrounds. Findings from the first wave of the Millennium Cohort Study, when children were nine months old, suggest that only 20% of children had experienced some form of formal childcare, with children from poorer homes less likely to have done so than children from more advantaged families (Mathers, Sylva, and Joshi 2007). In the second wave, when children were age three, use of formal services was much more widespread, with three quarters of children receiving formal provision, but children with higher income and better-educated mothers were still more likely to attend centre-based provision relative to less advantaged children. Evidence from the Childcare and Early Years Survey of Parents supports this finding, indicating that 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, however, the Quality of Childcare Settings in the Millennium Cohort Study (QCSMCS) found that the quality of settings attended by children from disadvantaged backgrounds tended to be higher than in settings attended by children from richer backgrounds, with quality measured using ECERS scores (Mathers, Sylva, and Joshi 2007). This was because children from poorer families, if they were attending an ECEC setting, were more likely to access provision in the maintained sector, where the highest quality was observed.

In contrast to the results from the QCSMCS, the evaluation of the Neighbourhood Nurseries Initiative found no relationship between children's background and quality of provision. However, the sample of settings was rather different. Not only was the NNI sample drawn exclusively from areas of disadvantage, but it also excluded by design forms of provision that did not cover children under the age of three, so provision in nursery classes was not covered.

Finally, in its annual report, Ofsted provides a breakdown of its assessments by the level of deprivation of the area where the provider is, although only distinguishing the areas in the bottom 20% when ranked on local deprivation 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 to the early years.

In sum, the MCS data indicate that between 2003-05 three year olds from more deprived backgrounds who attended centre-based care were more likely to go to higher quality centres, in particular schools, which are staffed by teachers. More recent Ofsted reports looking at children age 0-5 suggest that provision in areas of disadvantage tends to be of lower quality. This disparity 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 a new category of staff, the Early Years Professional, 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 for children aged three and four.

This paper contributes to this literature in three ways. First, it examines more recent data on structural indicators than was done in the QCSMCS study to explore the relationship between quality and background in 2011. In doing so it offers new evidence which takes into account the several policy changes that have intervened since 2005, when that study was carried out. Second, the paper uses recent Ofsted assessment data of settings and links them to child-level data. This way it offers a more precise picture on the relationship between *children*'s background and quality than what Ofsted reports. Third, by examining different indicators of quality – qualifications, ratios and Ofsted results – the paper complements and extends the evidence currently available. More specifically, using different quality indicators

helps clarify how they relate to each other and how they relate to children's background. This exercise is valuable because no single measure of quality is likely to capture *all* the complexities and characteristics of ECEC provision. By using data on different measures and comparing them, we highlight the limits and advantages of each of them and explore how they vary in their correlation with children's disadvantage. The next section describes the data used and presents our measures of quality in more detail.

5. The data

5.1 The Schools Census and Early Years Census

This study uses data from the School Census and Early Years Census collected in January 2011. Both datasets refer to England only, and cover, respectively, all maintained schools and all providers of funded early years education in the private, voluntary and independent sectors (DfE 2010*b*, 2010*c*). However, it is important to note that the Early Years Census collects information only from those PVI providers receiving public funding for the free entitlement. A provider that has no funded children at the time of the Census would not be included (DfE 2010*b*). This means that while the School Census is a census both of all maintained schools and all pupils enrolled in state schools, the Early Years Census is a census of all children receiving publicly funded early years education and not necessarily of all early years providers.

Both censuses collect two sets of data: establishment-level data and child-level data. Information regarding individual children includes month and year of birth, sex, and special educational needs.[8] 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 observations that are duplicated either within the Early Years Census or between the Early Years Census and the School Census. For each child counted twice, we keep the observation at the setting in which he/she spends more time and drop the other.

The datasets do not include information on children's family background. Therefore, in order to assess children's family background, we use geographical information. Both censuses report the Lower Super Output Area (LSOA) where children live. LSOAs are small geographical areas comprising, on average, 1500 residents and whose boundaries are drawn so to maximise social homogeneity within the area.[9] For each LSOA a battery of statistics are periodically released. We use the 2010 Income Deprivation Affecting Children Index (IDACI) to measure the probability that a child living in a specific LSOA is poor. The IDACI indicates the proportion of children in

8 Both Censuses also collect information on children's ethnic background, but in the Early Years Census this question is not answered in 33% of cases.

9 There are 32,482 in England. In a densely populated urban area, an LSOA would usually consist of five or six streets of semidetached houses approximately 500 metres long, while in rural areas with lower population density LSOAs can be fairly large.

each LSOA that live in families that are income deprived. For example, an IDACI score of 0.67 indicates that 67 percent of children aged less than 16 living in that LSOA are in families which are income deprived. A family is defined as income deprived if in receipt of Income Support, income-based Jobseeker's Allowance, Pension Credit (Guarantee) or in receipt of Child Tax Credit and whose equivalised income (excluding housing benefits) is below 60% of the national median. The 2010 IDACI was constructed using administrative data on benefit recipients as for August 2008 (for more details see McLennan et al 2011).

There are of course limitations in using the IDACI as a measure of children's background. First, the IDACI is a measure of income deprivation at small area level, not at family level. Not all children living in a highly income deprived area will be deprived. Second, the IDACI measures *deprivation*, not affluence. LSOAs with similarly low IDACI scores can have populations with different levels of income, for example families with median income or families with income in the top quartile. On the other hand, despite being an area-based measure, the IDACI captures the actual number of income-deprived children in a given LSOA, and therefore measures the *probability* that a child in that LSOA would be poor. Further, as a measure of poverty, the IDACI allows us to focus on the most disadvantaged children, for whom high quality early education has been found to have the greatest impact. So, although it would be interesting to explore variations in early education along the entire income distribution, this study explores variations related to poverty levels only.

Throughout the study we use the deciles of the IDACI to distinguish between children with different probabilities of being poor. The average IDACI score in the most deprived decile of LSOAs is 0.55 while in the least deprived decile it is just 0.02.[10]

The Early Years Census and the Schools Census also record information about each provider and school and in particular its name and address. We use this information to assess the level of child poverty of the LSOA where the setting is located. Because providers within the PVI sector are very different from one another, the Early Years Census reports a number of further characteristics, namely the type of provision offered (full-time or sessional), the sector and the category the provider belongs to (e.g. private day nursery or voluntary pre-school).

In relation to staffing, settings in the PVI sectors are required to answer the following two questions:

- How many teaching staff, both paid and unpaid, do you have who are directly involved with the care of 3 and 4 year old children and have Qualified Teacher Status (QTS)?

10 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 LSOA within the bottom decile. We checked for this, and the pattern of results did not vary.

- How many teaching staff, both paid and unpaid, do you have who are directly involved with the care of 3 and 4 year old children and have Early Years Professional Status (EYPS)?

In contrast, the School Census does not report information on staff, as schools are required to staff their nursery classes with a qualified teacher. Although historically many nursery classes were run by nursery nurses (who are qualified at upper secondary level), new regulations introduced in 2008 require schools to employ teachers in every nursery class, thus bringing more uniformity to the staffing practices across schools. It is therefore possible to assume that children enrolled in nursery classes are catered for by qualified teachers and, working alongside teachers, either nursery nurses or teaching assistants.

We use this information on staffing as our first measure of quality of provision. As discussed in the previous section, the presence of teachers has been found to be highly correlated with observational measures of quality in England. Likewise, workers with EYP status were found to improve the quality of provision.

5.2 Ofsted inspections

The second source of information we use to measure quality are Ofsted inspection results. As explained, Ofsted inspects both schools and early years providers, whether centre-based or childminders. While the censuses are snapshots of the entire pupil population and of all children receiving the free entitlement in January 2011, inspections are carried out on an on-going basis. We use data on inspections 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.

Two issues arise when using Ofsted data across different types of provision. First, school inspections differ slightly in their focus from early years providers' inspections. Second, the sample of schools which are inspected is different from that of early years providers. We examine these two issues in turn.

Schools' inspections differ in scope from inspections of early years settings. School inspections regard the entire education provision made by a school and do not have a specific focus on early years. Nevertheless, a separate judgement is made regarding nursery classes and reception classes – "The overall effectiveness of Early Years Provision". This judgement is broken down into four subscales. By contrast, inspections of PVI early years providers are explicitly focused on the EYFS and break down the overall judgement into 17 subscales.

The second issue regards the difference in inspection-cycle and selection between the two groups of providers. Schools are typically inspected every five years, although, for each school, the exact frequency of inspections depends on a risk assessment made by Ofsted, which takes into consideration the school performance. Thus 'underperforming' primary schools are more likely to receive an inspection. The inspection cycle for the PVI sector is, instead, shorter at three years. It is however

important to note that Ofsted plans its early years inspections on the basis of the lists of providers registered – childminders and centre-based providers alike – irrespective of whether these providers offer the free entitlement or not. Thus, the probability of each child observed in the Early Years Census being in a setting inspected in 2010-2011 depends not only on the frequency of inspections but also on the distribution of settings offering the entitlement in relation to the total number of settings registered. We explore the implications of these differences between schools and PVI providers when presenting the results.

6. The results

6.1 Who receives the entitlement and where?

We begin by examining the free entitlement for three and four year olds. Are all children receiving the entitlement, and which type of provision do they attend?

In order to measure the coverage rate of the free entitlement, we combine the Early Years Census and the School Census, look at the number of children who were three and four year olds in January 2011 and compare these figures to the 2011 Census estimates (Office of National Statistics [ONS] 2012), which refer to 27th March 2011, thus only two months later than the Early Years and School censuses. Table 3 shows that 95% of four year olds receive the entitlement, while only 90% of three year olds do so. These figures are appreciably lower than the ones reported by the Department for Education (DfE) and somewhat closer to the ones derived from the 2009 Childcare and Early Years Parents' survey (Smith et al. 2010). The Early Years and School Census figures reported by DfE indicate a take-up rate of 93% among three year olds and 98% among four year olds (DfE 2011). Such difference is mainly due to our using ONS population estimates based on the 2011 Census, which are higher than the estimates based on the 2001 Census and used by DfE.[11] When using old population estimates we obtain a take-up rate similar to the one reported by DfE – 93% and 99% for three and four year olds respectively.

With take-up rates of 95% and 90%, access to free early education appears to be almost universal for children aged four and very common among children aged three. However, a failry large share of three year olds is not accessing the entitlement and evidence from surveys of parents indicates that those children not accessing the entitlement are more likely to be from more disadvantaged backgrounds (Speight and Smith 2010); in this study we are not able to say anything more about these children as they do not appear in our data.

11 The numbers of three and four year olds receiving the entitlement we report are slightly lower than the ones reported by DfE as we appear to count only 99% of the four and three year olds counted by the Department, 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. DfE will publish revised figures in June 2013.

When looking more closely at where children access the entitlement, it becomes apparent that patterns of provision depend on children's age.[12] Figure 1 (Table A1 in the Appendix) reports where children receive the entitlement by age. 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. Half of the children who turned four after the start of the school year and half of the children whose fourth birthday is between September and August 2011 are in nursery classes in the maintained sector, while the other half are in PVI settings. By contrast, children who turned three only a few months before the census (between September and December) are predominantly found in the PVI sector, with only 24 percent in nursery classes in maintained schools. A more detailed description of the type of provision attended by children of different ages is presented in the Appendix (Table A2). One other point worth noting is that only 0.6 percent of children receive the entitlement by a childminder; in effect, the entitlement is delivered exclusively in centre-based settings.

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). Reception classes are therefore universal and integrated into compulsory schooling, with children attending for 25 hours a week, as in the rest of compulsory education. For these reasons, we exclude children who turned four by August 2010 from the rest of the analysis.[13] Nursery classes, in contrast, cater for less than half of children between three and four, with the majority instead enrolled in PVI settings. The pattern of enrolment of children who turned three in the Autumn months confirms that access to the entitlement in January (rather than September) is easier in the PVI sector relative to schools.

Differences in patterns of provision result in variations in the number of hours per week children spend at the setting where they receive the entitlement, as shown in Figure 2. Almost all children in nursery classes attend for 15 hours only, with a small proportion spending a full school day (25 hours). By contrast, a sizeable proportion of children enrolled in the PVI spend more than 15 hours at their setting. Although the majority of children spend only 15 hours at their centre, it is clear that it is the PVI sector, rather than schools, that gives parents the flexibility to increase number of hours of early education and care.

12 Here and for the rest of the analysis we exclude children with special education needs (SEN) – 76,219 observations or 6% of all three and four year olds. Children with SEN are much more likely to be found in the maintained sector (85%), but it is not clear whether that is because children with SEN sort into the maintained sector or because schools have better procedures/are more likely to identify SEN.

13 An analysis of how school quality varies with children's background would clearly be interesting, but this is a topic for a different paper.

6.2 Children's background and staff qualifications

So far we have seen that children attend different types of provision/setting depending on their age. But what about variations related to family background? Children who are still three at the beginning of the school year are almost evenly split between attending a nursery class or a PVI setting. Does this pattern vary depending on children's background? We use the IDACI score of the area where the child lives to examine this question.[14]

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 the PVI setting (Figure 3, Table A3). Indeed, almost four fifths of children from the least deprived decile (with the lowest level of income poverty) receive early education in a PVI setting. The pattern is almost reversed among children from the most deprived decile (with the highest level of poverty), with 69 percent enrolled in nursery classes.[15]

Differences in type of provision are reflected in staff qualifications. Figure 4 (Table A4) presents evidence on whether there is at least one teacher or Early Years Professional in the setting in order to examine children's access to highly qualified staff. Children from the most deprived decile are much more likely than children from the least deprived decile to be in a setting employing a teacher or EYP. Indeed, 80 percent of children from the poorest areas have a graduate in their setting, while the proportion drops to 53 percent among children in the least deprived decile. Variations along the IDACI distribution are almost monotonic, with the proportion of children catered for by a graduate increasing with the risk of poverty. This pattern is driven predominantly by the presence of teachers in nursery classes: as children from poorest areas are more likely to be enrolled in schools, they are more likely to be in contact with teachers. However, a different result emerges in relation to EYP, the new category of graduate staff specialised in early years. Children from the *least* deprived areas are more likely to be in a setting deploying an EYP, relative to children from other areas. Thus, the higher the risk of poverty, the smaller the chance of being catered for by an EYP.

When we limit the analysis to children in the PVI sector, the story is somewhat different (Figure 5, Table A5). Children living in the least deprived areas are more likely than any other child to be in a setting staffed by a graduate and, more specifically, by a teacher. Yet the differences across IDACI deciles are not large,

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14 A small proportion of observations have missing values on the IDACI (3,645 observations, equivalent to 0.46% of the sample of all three year olds and young four year olds receiving the entitlement). These are mainly children who attend provision in England, but live in Wales. As the IDACI score is calculated for English LSOA only, children who live in Wales have no IDACI attached.

15 These differences and the ones described in the remainder of the paper are all statistically significant, as we have a large number of children per decile, as reported in the appendix tables. We will report on the statistical significance of our results in the last section, when results are based on a relatively small sample of settings rather than on census data of children.

ranging from 41 percent of children with access to a graduate to 33 percent. Furthermore, the relationship between presence of a graduate and level of poverty 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. These results suggest that within the PVI sector it remains difficult to employ graduate staff, either because of the cost or the availability of graduates: across all areas, a clear majority of children in the PVI sector attend settings with no teacher or EYP.

Nonetheless, the fact that children from the most disadvantaged areas are not penalised is indicative of the role played by public provision in poorer areas. Figure 6 reports the incidence of graduate staff by type of setting in relation to children from areas with three different levels of child poverty – lowest poverty, median poverty and highest poverty. Private and independent settings vary by employment practices, with children from the most deprived areas less likely to be in contact with a graduate than their peers from less disadvantaged areas. The opposite pattern emerges in relation to centres run by local authorities – those catering for children from the most deprived areas are more likely to employ a graduate. Figure 6 also shows that independent schools and local authorities settings are much more likely than any other type of setting to employ a graduate. Yet one has to bear in mind that only 2.8% and 1.5% of children are catered for in independent schools and local authorities settings respectively (Table A3), while 37% of all children are in private settings.

As discussed above, current rules allow for lower staff to children ratios in schools than in the PVI sector. When looking at actual ratios (Table 4), this pattern is broadly confirmed, with one member of staff to every 6.3 children in the PVI sector and 11.8 in schools (column 1 and 3). Ratios are fairly constant across deprivation deciles, especially in schools, although there is a social gradient in the PVI sector. As for ratios of children to *graduates*, it is not clear from the regulations alone whether they are likely to be more favourable in schools or in the PVI, because of the interaction between overall staff numbers and qualifications. For example, in order to cater for 26 children in a nursery class, a school must employ *one* teacher and *one* assistant. In contrast, a PVI provider has a choice of employing two graduates; one graduate and two other staff; or four non-graduates.[16] Columns 2 and 4 in Table 4 report the average number of children per graduate for schools and PVI settings separately, but include only children in PVI settings where a graduate is employed (i.e. between 33% and 41% of children in PVI settings across the deciles). The evidence suggests that, even where PVI settings do employ graduates, they have lower graduate to children 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, as they are more likely to be enrolled in schools. However, within PVI settings, ratios become less favourable as deprivation increases, with the notable exception of children from the most deprived areas. This is in line with the higher

16 In schools a 1:13 ratio applies to both teachers and nursery nurses, while in the PVI sector the ratios are 1:13 for graduates and 1:8 for other staff.

presence of graduates in public sector provision, which caters mainly for the most deprived children.

Overall, these results suggest that children living in higher poverty areas are more likely to receive early education from more qualified staff – teachers – because they are more likely to be enrolled in nursery classes. The majority of children enrolled in a PVI setting are not catered for by a graduate, whether a teacher or an EYP. Moreover, within the PVI sector, quality appears highest for children from the least deprived areas, who are more likely to be taught and cared for by a graduate and enjoy more favourable ratios than all other children. But the relationship between children's background and quality of provision is not linear: as deprivation rises quality falls, but this relationship holds only up to the ninth decile. Children from the most deprived areas fare better than most other children, although not enough to catch up with children from the least deprived areas.

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 tend to receive better quality of provision, and that this result was 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

The first part of our analysis focused on staff qualifications and ratios and highlighted important differences between PVI settings and schools. We now turn to our second measure of quality: Ofsted judgements. As explained earlier, Ofsted inspects both schools and PVI settings. However, comparisons between schools and PVI are fraught with difficulties and the first part of this section briefly explains why. We then move on to present the results, for schools and PVI settings separately.

In order to explore the relationship between children's background and the quality of the provision they receive, we link child-level data from the School Census and the Early Years Census to Ofsted data on inspections. As explained above, Ofsted inspect only a proportion of settings and schools every year and therefore we can match only a subset of children. Among children receiving the entitlement in the PVI sector only 27 percent of children are linked to Ofsted data (Table 5). As settings are inspected every three years, approximately 33 percent of children in PVI settings should have been matched. By contrast, 25 percent of children in schools are matched to Ofsted data. Given that schools are inspected every five years, we appear to be oversampling children from nursery classes. The matching procedure highlights an important difference between PVI settings and schools in relation to inspection. Among children in PVI settings, children from different areas are equally likely to be in an inspected setting. By contrast, children from the most deprived areas are much more likely to be in an inspected school than children from the least deprived ones (Table 6).

This divergence is likely to be related to differences in the way Ofsted select schools and PVI settings to inspect. As discussed earlier, schools are typically inspected every five years, but for each school, the exact frequency of inspections depends on a risk assessment made by Ofsted, which takes into consideration the school performance. Thus 'underperforming' primary schools are more likely to receive an inspection than better performing ones. This procedure does not apply to PVI settings. Finally, given that early years and schools are inspected by different organisations and teams, it is possible therefore that even though inspectors use the same rating scale, grading conventions across the two sectors vary, with results on schools more compressed than is the case for PVI settings. For all these reasons we examine Ofsted ratings for schools and PVI settings separately.

Ofsted rates both schools and PVI settings along four dimensions – overall effectiveness, the effectiveness of leadership and management, quality of provision in the Early Years Foundation Stage, and children's outcomes. For simplicity, we report results related to one judgement only: "quality of provision", which appears to capture the aspect of quality we are most interested in, 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.

By matching child-level data to Ofsted data, we can explore variations in quality in relation to the level of child poverty in the area where the child lives. The results point to a clear poverty gradient both in schools and PVI settings: children from more deprived areas receive lower quality provision (Figure 7 and 8; Table A6 and A7). While the percentage of children in "good" settings remains broadly constant along the IDACI distribution, variation emerges in relation to "outstanding" and "satisfactory" classifications.

In both schools and PVI settings, there is a clear pattern whereby the proportion of children in outstanding settings diminishes markedly from the least deprived areas to the most deprived ones, although the gradient is more linear within the PVI sector than within schools. Symmetrically, the proportion of children in satisfactory settings increases from the least deprived decile to the top one. Overall, children from the least deprived areas have a much higher chance – indeed twice as high – of attending an outstanding setting than children from the poorest areas (Figure 7 and 8; Table A6 and A7).

Ofsted judgements are likely to be affected by both staff qualifications and settings' intake. Indeed the ability of staff to create a stimulating and caring environment is likely to be influenced by their training and by the children attending the setting. We

complete this section by presenting some evidence on the concentration of poor children in different settings and by measuring the correlation between Ofsted judgments, staff qualifications and settings' intake. Figure 9 reports the proportion of children in each setting that is from the most deprived areas. Children from the least deprived areas attend schools (or PVI setting) 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 each child's level of deprivation and that of other children in her nursery is clear in both schools and PVI and presumably reflects patterns of residential segregation. However 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 classmates will also be from the poorest areas. If she attends a PVI setting only 36% will come from these areas. This difference is potentially important if peer effects do affect the quality of provision. This points to a possible trade-off across sectors between staff qualifications and the background of children in the classroom.

We also run a multivariate regression of the probability that a child in the PVI sector is in a setting judged as outstanding or good. As right-hand variables we use binary variables indicating the decile of the LSOA where the child lives, the proportion of children from the most deprived areas and a binary variable indicating whether the setting employs a graduate (=1) or not (=0). The results are presented in Table 7 and 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. But beside this effect, 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.

6.4 Quality and children's background outside the entitlement: Younger children and additional hours

So far we have concentrated on children receiving the entitlement and the quality of the provision they receive. But what can we say about the quality of provision for children under age three or outside the entitlement hours?

We start by looking at three and four year old children who stay for more than 15 hours a week at the setting where they received the entitlement. Because provision outside the entitlement is generally paid for by parents, we expect more children from the least deprived areas to access these extra hours. Figure 10 (Table A8) shows that is the case, with 33% of children from the least deprived areas receiving more than 15 hours while 24% of those from the most deprived areas do so. However the relationship is slightly U-shaped, with a higher proportion of children from the most deprived areas receiving additional hours relative to children from the less deprived

areas. Two things are going on here. First, schools – where many children from the most deprived areas access the entitlement – generally offer only 15 hours a week as they run two separate sessions, one in the morning and one in the afternoon. This means that for many children accessing the entitlement in schools it is not possible to stay on for additional hours. They may receive additional early education and care somewhere else (by a childminder for example), but we cannot see that because it is not recorded by the census. Second, schools catering for the most deprived children do sometimes organise full-day sessions: among children from the most deprived areas receiving the entitlement in a school, almost one in five is there for 25 hours.

When we look at staff qualifications, the proportion of children in contact with a teacher or an EYP varies across areas from 44% to 73% (Figure 11, Table A9). Compared to all children receiving the entitlement, irrespective of hours, (Figure 4), children who stay longer are less likely to be in a setting with a graduate. This difference is driven by the limited availability of longer hours in schools. The lack of full-day provision in schools is especially detrimental to children from areas with medium-high levels of deprivation, a large proportion of whom rely on schools to access the entitlement but to whom schools rarely make full-day provision available. On the other hand, compared to all other children attending their setting for more than 15 hours, children from the most deprived areas (top decile) are far more likely to be in contact with a teacher or an EYP. This is the combined result of most deprived children being more likely to attend either PVI settings staffed with a graduate or schools which allow for full-day attendance.

It remains the case that the great majority of children receiving early education and care for more than 15 hours do so in a PVI setting. When restricting the analysis to this type of setting, the results presented in Figure 12 (Table A10) indicate that children attending for longer hours are more likely to be in contact with a graduate relative to those children who receive only the 15 free hours. Likewise, results based on Ofsted judgements suggest that children attending for more than 15 hours in PVI settings are slightly more likely to be in a good or outstanding setting than children enrolled for 15 hours or less (Figure 13, Table A11). On the one hand, this is encouraging, as it points to the fact that children attending for longer hours are in the best settings – with graduates and more likely to be judged by Ofsted as good or outstanding. On the other hand, those attending for 15 hours or less may be the children who have most to gain from excellent provision, as they may be more likely to come from workless or low income households.

What about children under the age of three? Here Ofsted judgements of *settings* are the only evidence we have, as no child-level data for children under three is available. What we can do is to examine the correlation between the level of deprivation of the area where the setting is located and the Ofsted rating received. This is reported in Figure 14 (Table A12). The difference across deciles is substantial and indicates a steep gradient along levels of deprivation, which are statistically significant. While almost one in four settings in the least deprived areas is ‘outstanding’, that is true for only one in ten settings in the most deprived areas. In addition, and perhaps more

importantly, the incidence of satisfactory or inadequate settings is much higher in the most deprived areas (26,8%) than in the least deprived ones (16.3%).

The proportion of inadequate and satisfactory settings is much higher than the proportion of children receiving the entitlement in inadequate or satisfactory settings, as was reported in Figure 8. Why is this the case? There are two explanations. First, not all registered early years settings offer the entitlement, and, in fact, only 74% do so. When using data on Ofsted inspections we look at all registered providers which have been inspected in 2010/11, irrespective of whether they offer the entitlement or not. On the other hand, when linking data from the early years census to Ofsted judgements, we examine only those settings that offer the entitlement. But, and this is the key, settings offering the entitlement are rated as systematically better than settings not offering it (Figure 15, Table A13).

The second explanation for the diverging results between setting level data and child-level data has to do with size: if settings with better Ofsted ratings are larger than average, setting-level data may underestimate the proportion of children enrolled in high-quality settings. To examine how important this factor might be, we use data from the Early Years Census and we look at the distribution of PVI settings offering the entitlement and of children receiving the entitlement in PVI settings (Table A14). The bottom line of the table indicates that there is a 'size effect'. Whereas only 18% of PVI settings are considered outstanding, 22% of children are in 'outstanding' settings. This pattern is visible across all deciles, but is perhaps more marked in the least deprived areas. Thus it would seem that settings rated as 'outstanding' are larger, especially those in areas with low levels of deprivation.

We complete the analysis by examining childminders. Because childminders rarely offer the entitlement the only source of information on them are Ofsted inspections. Figure 16 (Table A15) shows that childminders located in the most deprived areas are rated worse than childminders in all other areas. While 23% of childminders in the least deprived areas offer inadequate or satisfactory provision, the proportion rises to 35% in the ninth decile and to 44% per cent in the most deprived areas. The differences between the most deprived areas and all others are not only large but also statistically significant despite the relatively smaller number of childminders in the most deprived areas.

One question that arises when using setting-level data is whether the location of a setting or of a childminder is a good proxy of where children attending that provider live. Children could be in nurseries or by childminders located close to one of their parent's workplace, for example. Evidence about settings (rather than children) can therefore be misleading. If outstanding settings in the most deprived areas are attended by children from less deprived areas, their role in offsetting disadvantage may be overestimated when looking at setting-level data only. We use the data from the Census to get a sense of the size of this bias. Specifically, we check whether children attend PVI settings in areas as deprived as the ones where they live (Table A16). We find that the modal choice for children from each decile of the IDACI score is to

attend a setting in a similarly deprived area. Thus, for each decile, between 28% and 43% of children receive the entitlement in an area that has an IDACI score falling into the same decile. This proportion is larger at the bottom and top decile, thus suggesting that patterns of segregation may be stronger at the extremes of the IDACI distribution. Overall, this suggests that looking at settings rather than children does not give a misleading picture, but an incomplete and perhaps too pessimistic one. While it is true that settings in the most deprived areas cater prevalently for children who also live in the most deprived areas, the majority of children from the most deprived areas are in PVI settings somewhere else. Still, it remains the case that families in more deprived areas are at a disadvantage if they want to rely on the provision available at their doorstep.

7. Discussion and policy implications

In this paper we examined the relationship between children's background and the quality of ECEC provision children receive, using several different quality indicators. We first capture quality with an indicator related to the presence of teachers and EYPs in the setting, since previous studies had pointed to the role of both groups of staff in creating a warm and stimulating environment. The evidence we presented suggests that three year olds from more deprived areas are more likely than their peers to receive free early education in a setting employing a graduate, because they are in schools with teachers. In this respect, the evidence offered here confirms previous results, from both the EPPE and the MCS studies. Moreover, this result is related to the architecture of the English system of services: schools are required to employ a teacher and because they are located in the most disadvantaged areas they tend to cater for the poorest children.

But the evidence presented went beyond the role of schools, and offered some important insights into developments over the last few years. In particular, we have shown that outside school-based provision, children from the most deprived areas can access highly-trained staff when services are run directly by local authorities. This type of centre is much more likely to employ teachers or EYPs, and this probably reflects the more generous funding they have enjoyed. 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 EYP: the majority of children receiving the entitlement in private or voluntary 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 which attract higher income parents are better able to raise quality than others, meaning that children from disadvantaged areas are more likely to lose out. Children from the least disadvantaged areas are most likely to be in a PVI setting staffed by a teacher or an EYP (or both), with lower children to

staff ratios, and rated as outstanding or good by Ofsted. Children from the least disadvantaged areas are also more likely than other children to attend their setting for more than 15 hours, thus supplementing the public funding of the entitlement with private money. This pattern of findings suggests that *within* the private and voluntary sector (PVI), 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. By contrast, the picture for children from the most deprived areas is more nuanced. We know that 18% of all children from the most deprived area receiving the entitlement, do so in a *private* setting. These children are less likely to be with a graduate than children in private settings from less deprived areas. On the other hand, for those children from the most poorest area who receive the entitlement in voluntary or LA run settings, the chances of having a graduate are actually higher than for children in from less deprived areas. However, voluntary and LA centres together cater for only 11% of children from most deprived areas.

In relation to the second measure of quality used – Ofsted ratings – our results broadly confirm previous evidence that children from more disadvantaged areas receive lower quality provision. Yet important details have emerged in relation to this association. First of all, results on school inspections and other setting inspections are not easily comparable, as poor performing schools appear more likely to be inspected than is the case for low performing PVI settings. Second, the concentration of children from the most deprived areas varies substantially between schools and PVI settings, with the latter group of settings much more likely to have a relatively small proportion of children from the most deprived areas. This finding points to the need for caution in assuming that additional places for disadvantaged children can be created within the PVI sector. Creating incentives for PVI settings to take on more disadvantaged children (for instance, as is happening with the new two-year-old offer) may affect quality in these settings if it is not compensated by increases in the quality of staff.

One important message of the evidence presented regards the importance of public provision to children from more deprived areas. At the most immediate level, this is evident in the role of schools in offering the entitlement. But it emerges also when looking at provision outside schools: centres run directly by local authorities appear to target children from most deprived areas, are more likely to employ a graduate and to receive good or outstanding Ofsted ratings than other types of settings are. However direct public provision – whether in schools or local authority centres – remains problematic in relation to coverage. Schools offer predominantly part-time provision – 15 hours a week. While this is effective at ensuring nearly all three and four year olds have access to some early education, it is arguably less good at promoting a social mix within settings. The majority of children who need or want to stay in a setting for longer than three hours a day need to be in a PVI setting. In addition, part-time provision does little to support an easy transition to work, as it remains logistically complicated for a working parent, and most probably means non-working mothers postponing looking for work until a child starts full-time school. This in turn means school places are not doing a good job at supporting poverty reduction via maternal

employment during a child's early childhood. As for centres run directly by local authorities, their number is too small in comparison to other types of settings – only 1% of three year olds receive the entitlement in one of such settings, and this proportion goes up to only 3% among children from the most deprived areas. These data reflect the entitlement only. Local authority settings could have a larger role in catering for younger children or outside the entitlement, if, for example, they worked in partnership with local schools. But we would need better setting-level data to examine whether this is the case.

The paper has provided additional insights into data from Ofsted inspections, and in particular on the usage of setting-level data as opposed to child-level ones. The good news is that settings judged as good or outstanding tend to be larger than those with poorer ratings. But, and this is another notable finding, settings offering the entitlement receive better Ofsted judgements than those which do not. While this is reassuring as far as three year olds are concerned, it raises the question as to what type of provision is available for younger children, if those settings *not* offering the entitlement specialise in the care and education of children below age 3. Evidence from Ofsted inspections of childminders raises similar concerns. In particular, childminders located in the most deprived areas appear far more likely than other childminders to receive negative Ofsted ratings. This finding is particularly concerning in light of proposals to have childminders deliver the new entitlement for disadvantaged two year olds.

Overall, the two main indicators of quality used in this paper – presence of graduates and Ofsted ratings – give two different but complementary pictures. The two measures are not contradicting each other, as the positive correlation between presence of graduates and positive Ofsted ratings suggests. By looking at staff qualifications we are measuring an input into the "quality production" process. Ofsted ratings, on the other hand, capture the resulting output, which is likely to reflect not only current regulatory framework but also settings' resources and their intake. So it remains important to use both measures and this calls into question recent policy developments regarding quality monitoring. In particular, the decision to scrap Ofsted ratings of early years provision in schools will hamper the monitoring of the quality of nursery (and reception) classes within schools and, arguably, may deepen the divide between early years provision in schools on the one hand and in PVI settings on the other. Second, the Coalition government's plan to use Ofsted ratings as the *only* indicator of quality (DfE 2013) within the PVI sector is likely to be misleading and to further penalise settings that cater for the most disadvantaged children. Such a move would be especially dangerous if funding to providers become linked to their Ofsted result. PVI providers differ in the staff they hire and the children they cater for. Reliance only on a measure that poorly takes into account both these factors risks penalising settings that cater for the most disadvantaged children.

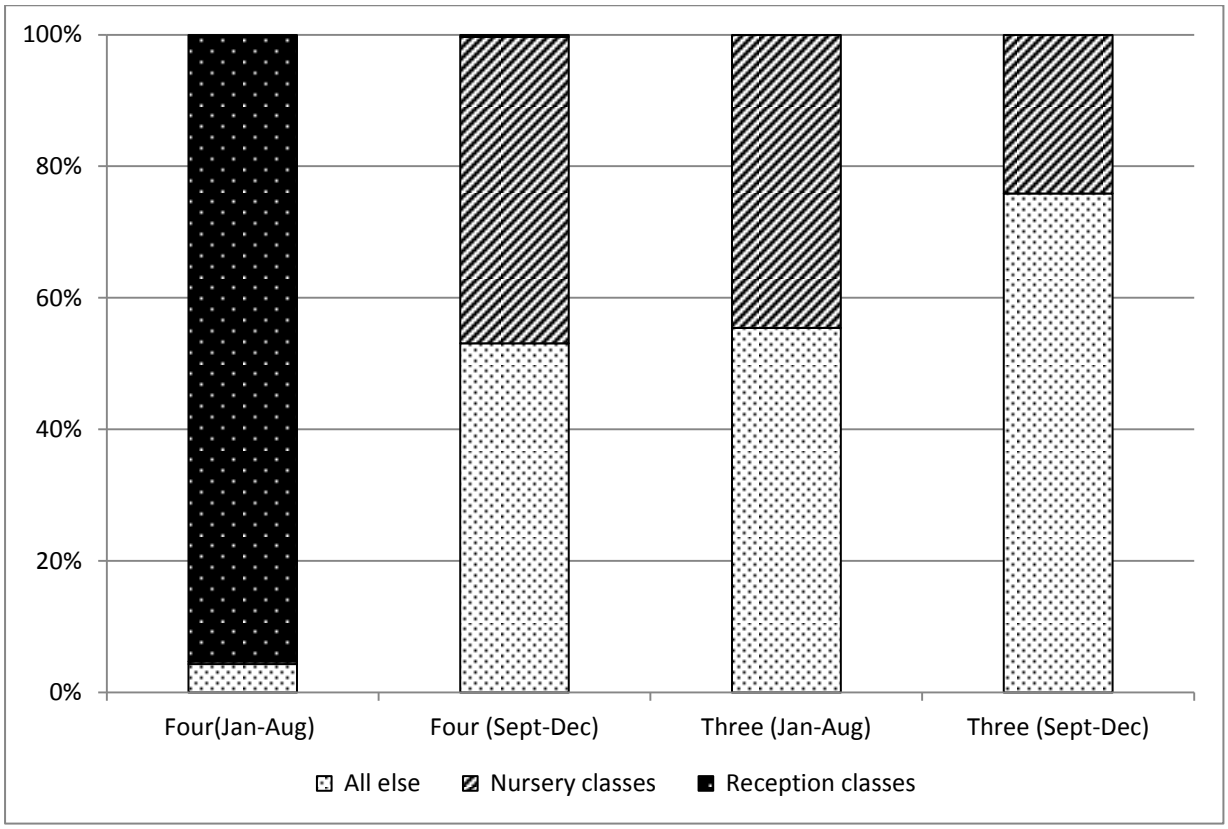
All together, these findings have two main implications for policy. First, school-based provision ensures that three year olds from more disadvantaged areas have access to graduate staff, even if on a part-time basis only. The role of schools could be

developed, for example by allowing nursery classes to deliver the entitlement on both a part-time and full-time basis, as it already happens for many children from the most deprived areas. Another option worth considering and which is being taken up by the Coalition's government (DfE 2013), includes the expansion of school-based provision to deliver the entitlement to two year olds. This ideas is promising, but would require that the presence of graduates remains a statutory requirement of school-based provision for children under three as it is at the moment for children aged three and four. In addition, the number of staff per children will have to be higher in order to make provision appropriate for two year olds.

Second, the fact that the greatest shortfall in staff qualifications tends to be in PVI settings, and private settings serving disadvantaged children in particular, underscores the lack of incentives or funding designed to promote highly qualified staff. Indeed, parents do not receive higher tax credit if they chose a setting with graduates nor do local authorities receive extra funding from central government if they reward providers for hiring graduate staff. A better-designed funding scheme would incorporate quality supplements, to improve incentives to providers to invest in quality and allow parents with less ability to top-up state support to opt for higher quality care. In particular, it is crucial that funding to providers is significantly supplemented for settings who cater for more disadvantaged children and who decide to hire graduates. This would help create a more mixed intake in PVI settings, promote the presence of graduates and favour children from more disadvantaged families.

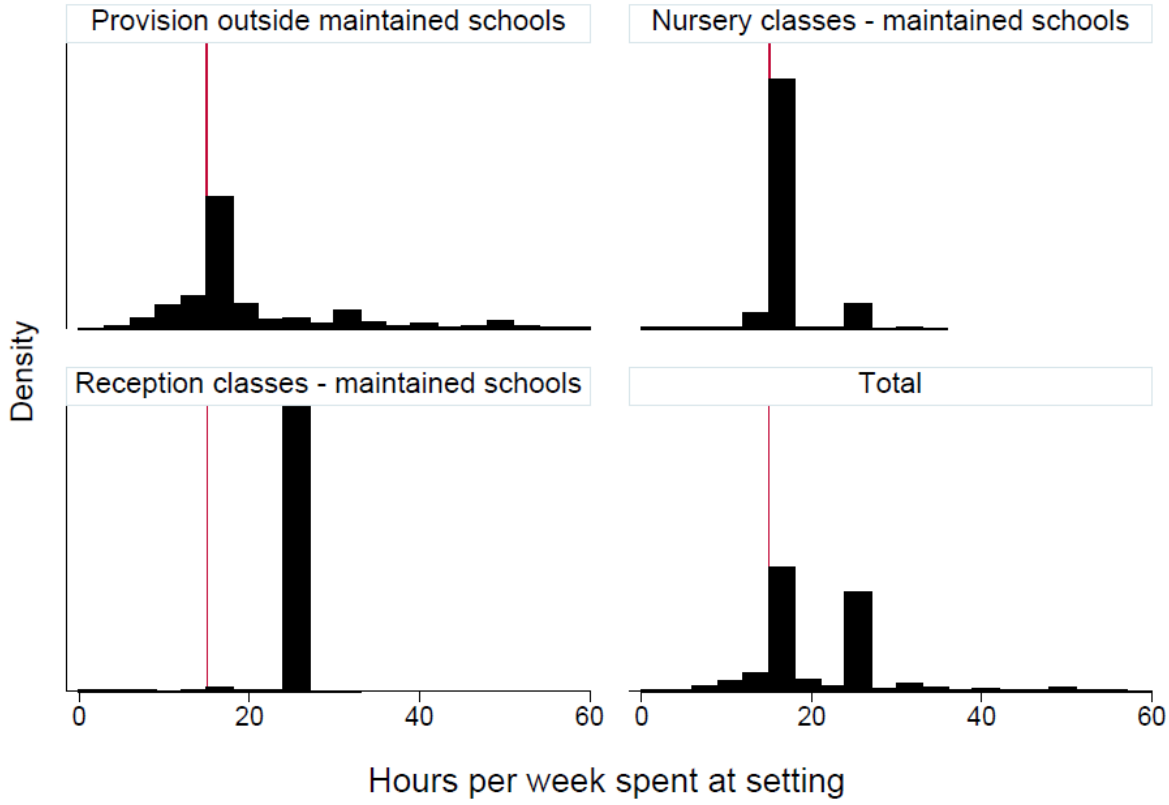
Figures and Tables

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



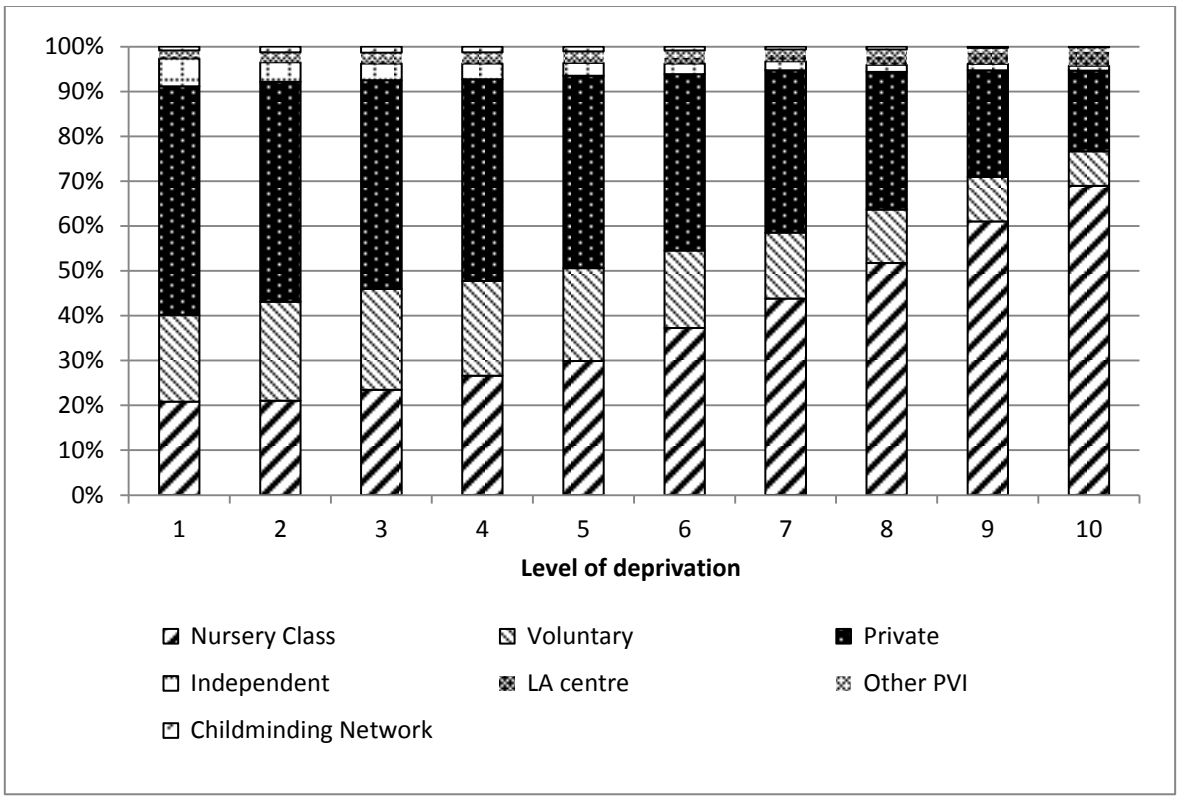
Source: Early Years Census 2011 and School Census 2011.
Notes: Table includes all children born between January 2006 and December 2007 who were receiving the free entitlement in January 2011, with the exception of children with special education needs. See Table A1 for more details.
"All else" includes: private, voluntary and independent settings; settings directly run by local authorities; and childminders.

Figure 2 Hours per week attended, by type of setting



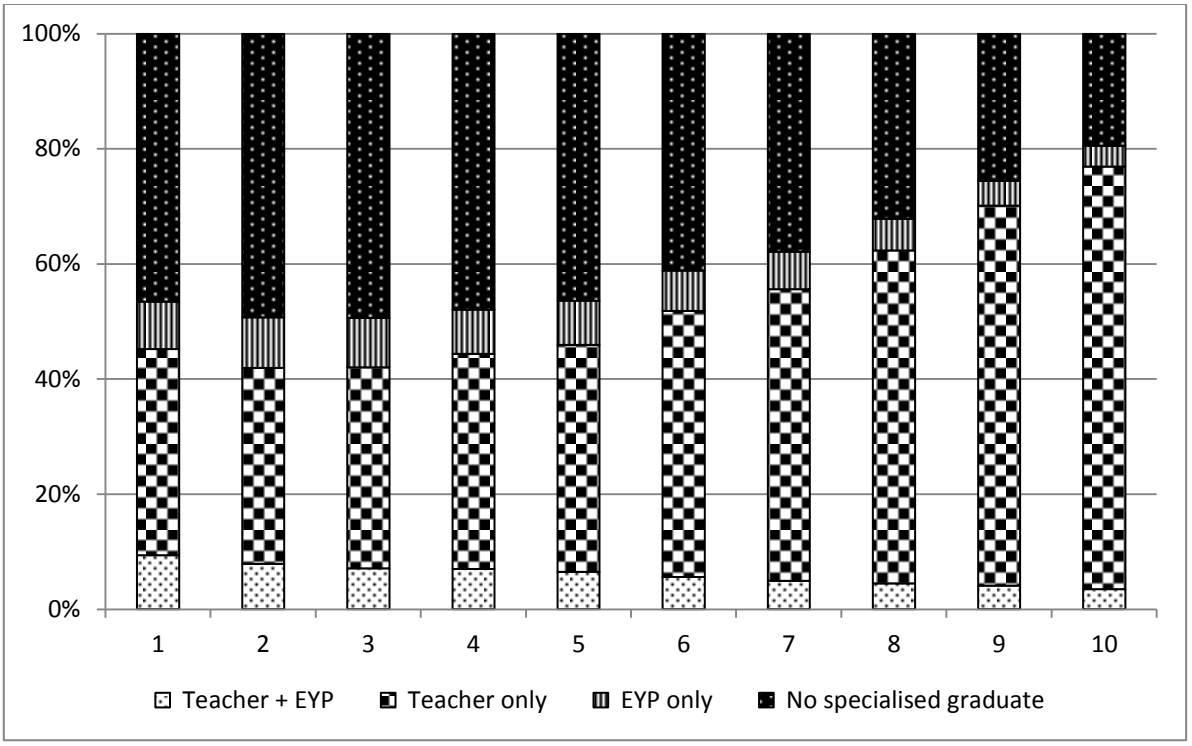
Source: Early Years Census 2011 and School Census 2011.
Notes: Table includes all children born between January 2006 and December 2007 who were receiving the free entitlement in January 2011, with the exception of:
1. Children with Special Education Needs (SEN) – (67,208 children)
2. Children who were recorded as enrolled in year 1 – (61 children)
3. Children for whom information on the number of hours spent at the setting is not recorded (6987)

Figure 3: Type of provision, by level of deprivation



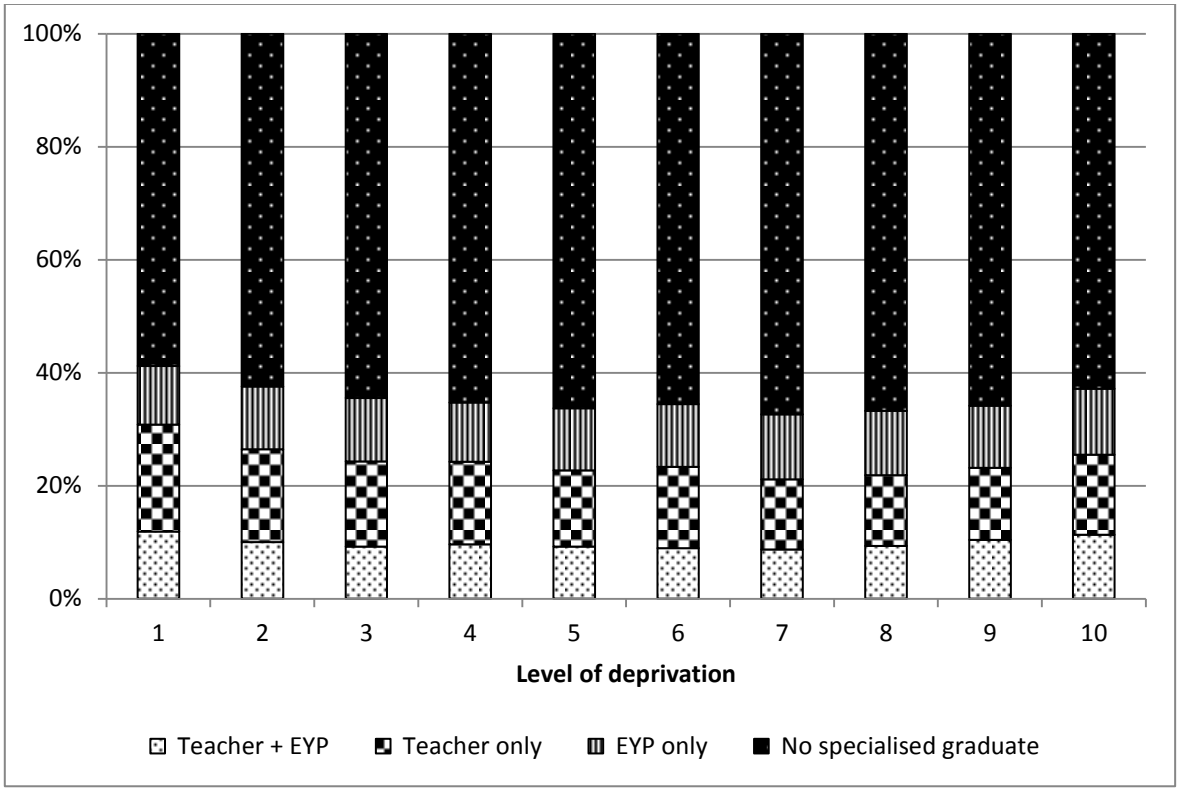
Source: Early Years Census 2011 and School Census 2011.
Notes: Figure reports data for all children born between September 2006 and December 2007 receiving the free entitlement In January 2011. Children with Special Education Needs (SEN), those in reception classes or year 1, and those who could not be matched to an English Lower Super Output Area are not included. See notes to Table A3 for more details.

Figure 4: Staff qualifications, 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 5: Staff qualifications, by level of deprivation – Excluding schools

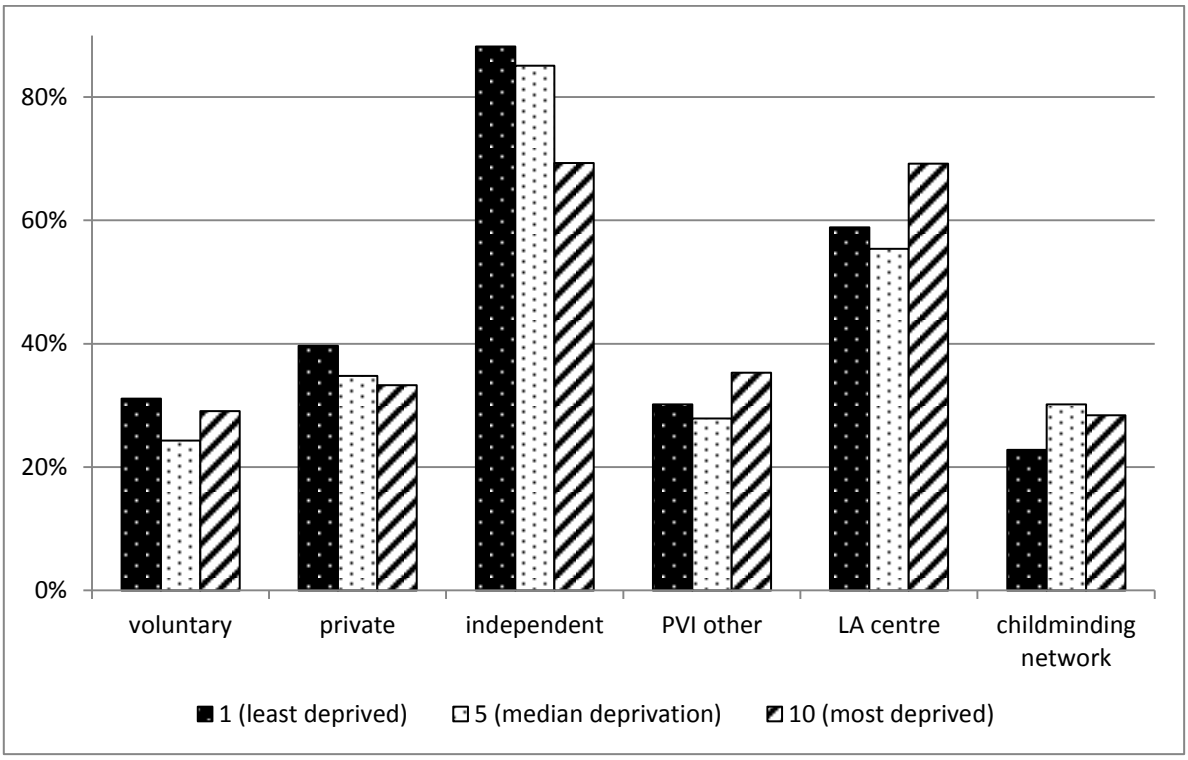


Source: Early Years Census 2011 and School Census 2011.

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.

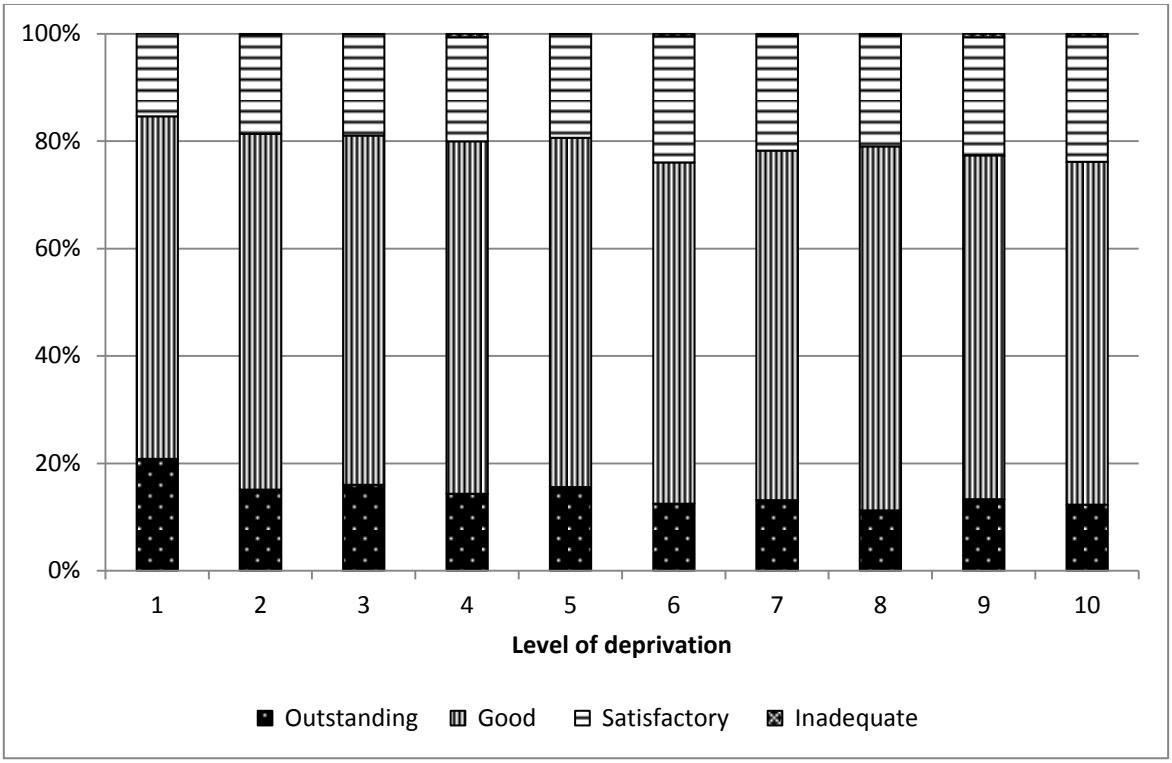
Children receiving the entitlement by a childminder are included; however information on staff qualification could refer to either the individual minder or the network coordinator.

Figure 6: Presence of graduates in PVI settings, by type of setting and level of deprivation



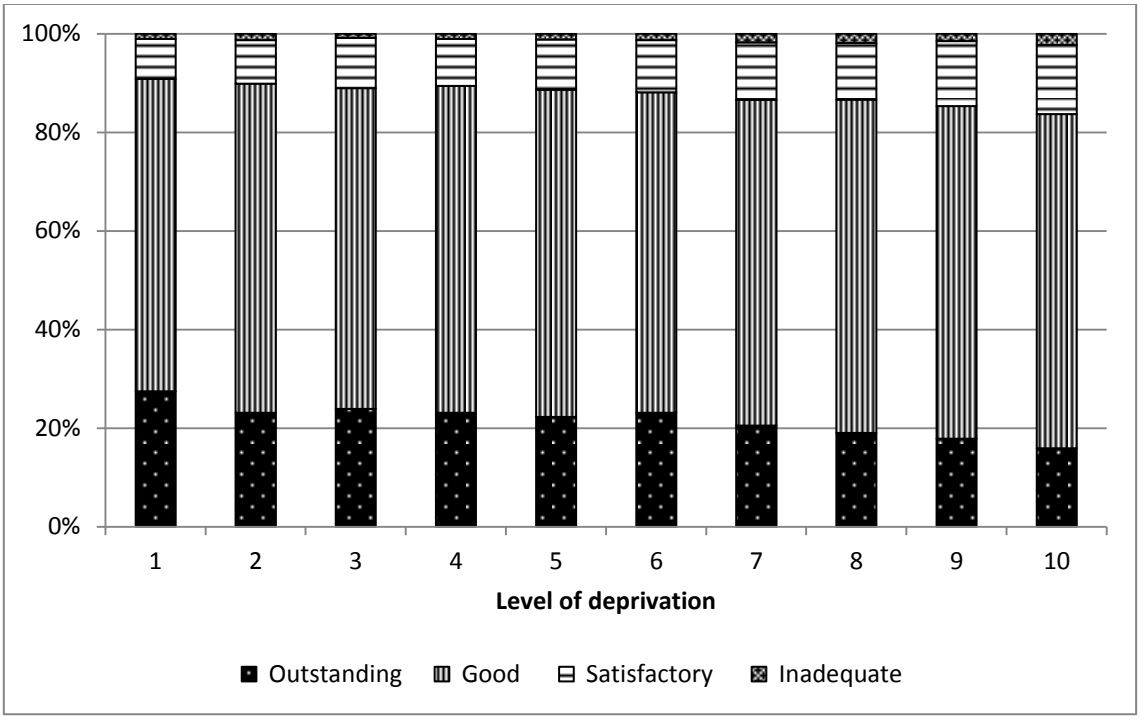
Source: Early Years Census 2011 and School Census 2011.
Notes: Figure reports data for children born between September 2006 and December 2006 living in an LSOA which belongs to the 1st decile of the IDACI score, the 5th and the 10th. All children receive the entitlement not in a maintained school. Children 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 7: Ofsted judgements by level of deprivation: Schools



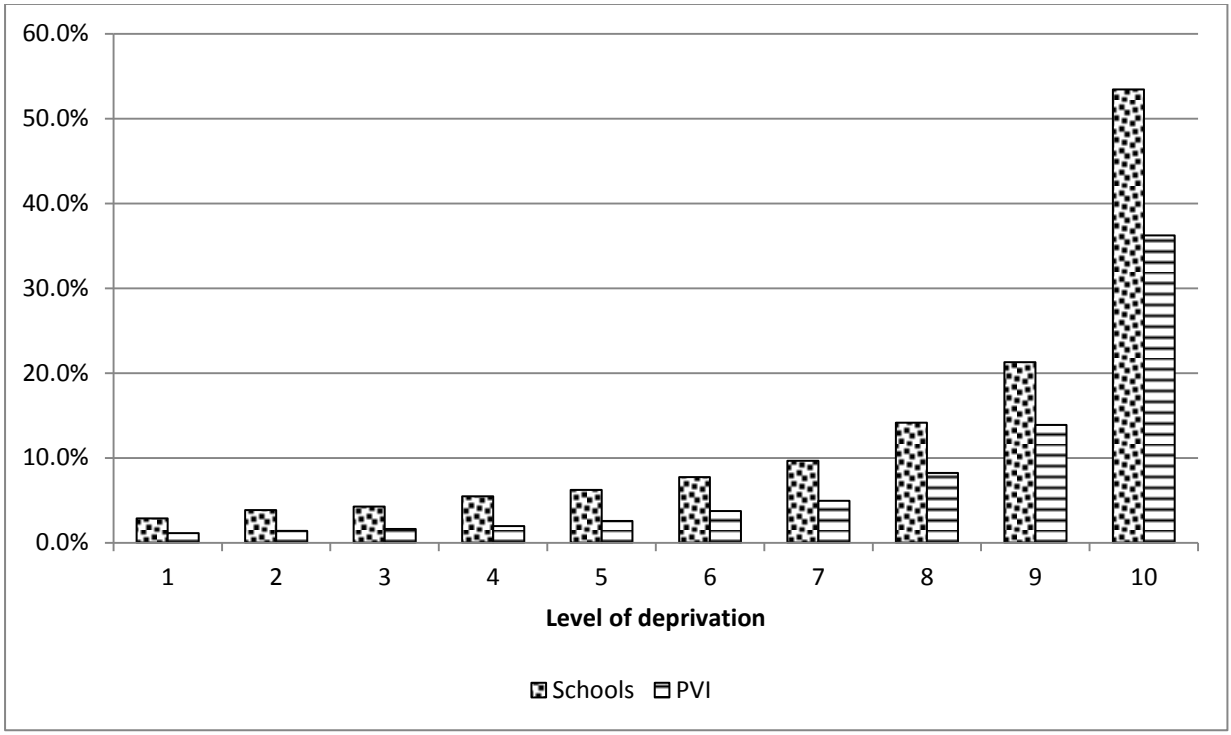
Source: School census 2011 and Ofsted inspection data September 2010 – August 2011.
Notes: Figure includes all children born between September 2006 and December 2007 who were receiving the free entitlement in a maintained school in January 2011 and whose school was inspected between September 2010 and 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.

Figure 8: Ofsted judgements by level of deprivation: PVI settings



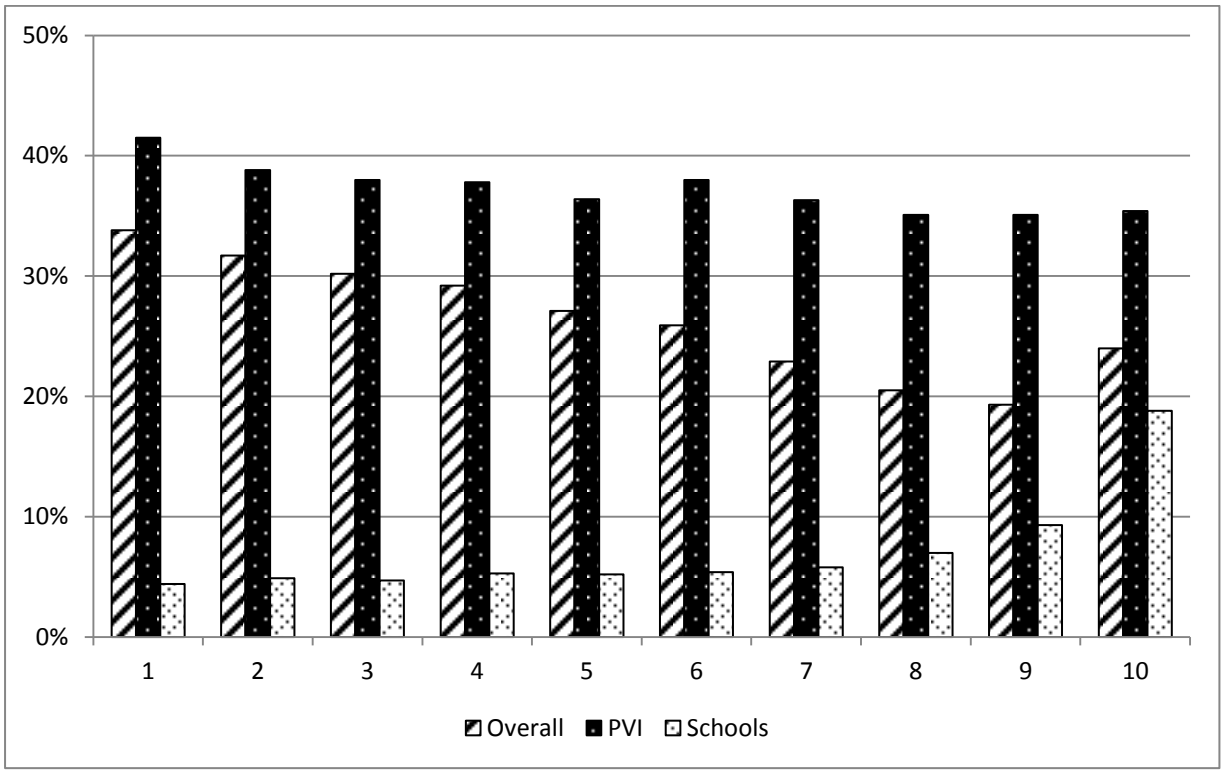
Source: Early Years Census 2011 and Ofsted inspection data September 2010 – August 2011.
Notes: Figure includes all children born between September 2006 and December 2007 who were receiving the free entitlement in a setting other than maintained schools in January 2011 and whose setting was inspected between September 2010 and August 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 not included.

Figure 9: Concentration of children from disadvantaged areas, by type of setting



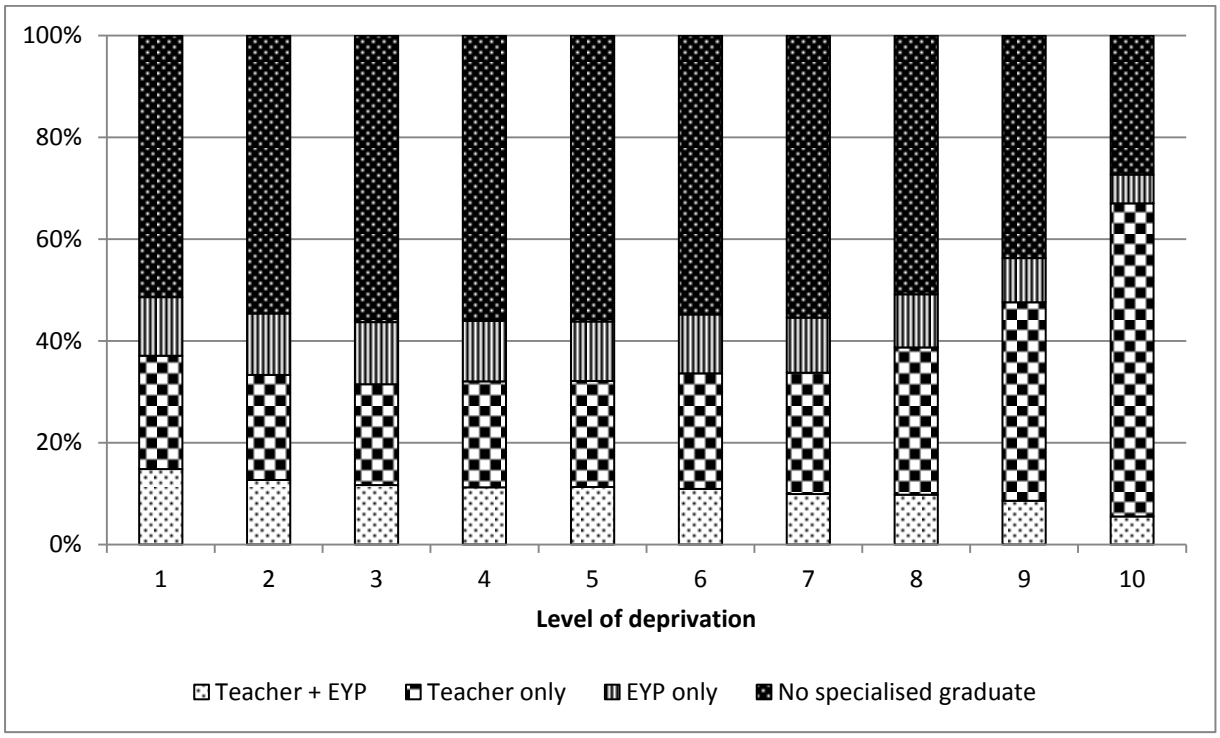
Source: Early Years Census 2011 and School Census 2011
Notes: percentages indicate the proportion of children in each setting who are from the top deprived area.
Figure includes all children born between September 2006 and December 2007 who were receiving the free entitlement in in January 2011. Children 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.

Figure 10: Proportion of children attending for more than 15 hours, by deprivation and type of setting



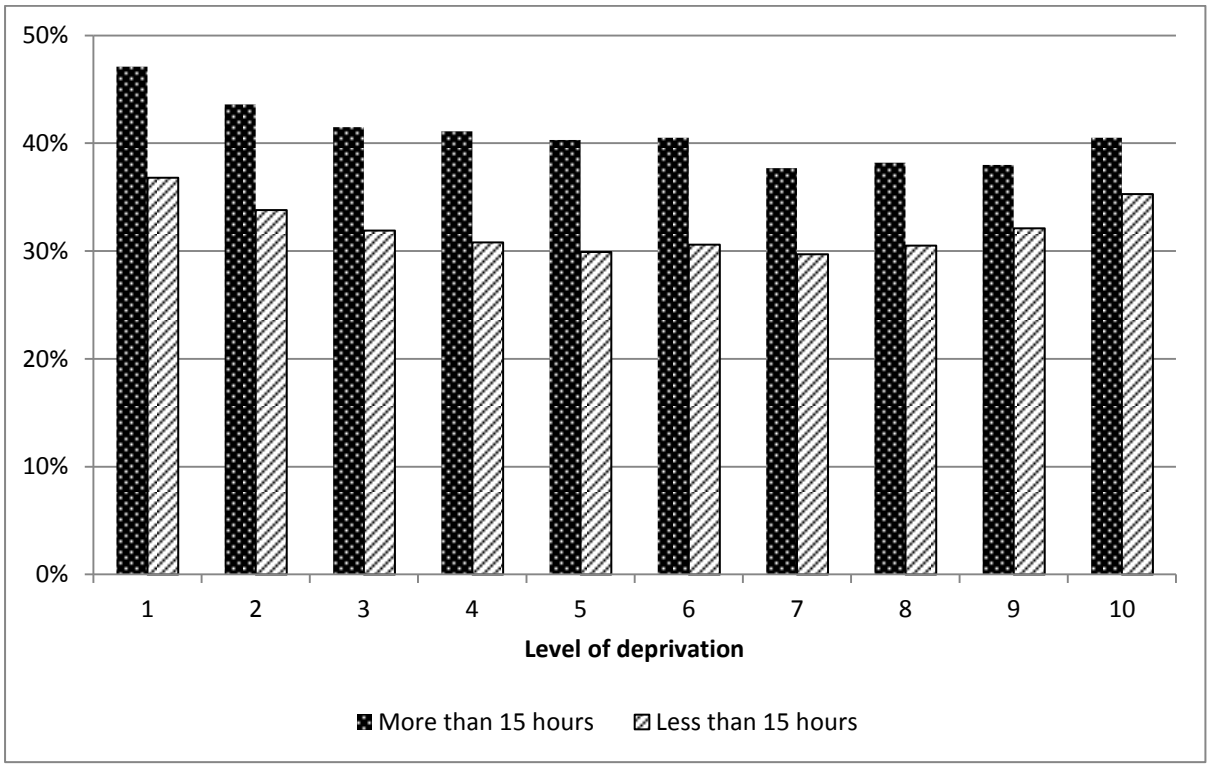
Source: Early Years Census 2011 and School Census 2011.
Notes: Figure includes all children born between September 2006 and December 2006 who were spending more than 15 hours at the setting where they receive the entitlement (January 2011). Children with Special Education Needs (SEN), those in reception classes or year 1, and those could not be matched to an English Lower Super Output Area are not included.

Figure 11: Staff qualifications, for children attending more than 15 hours, by 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 who spend more than 15 hours at the setting where they receive the free entitlement (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.

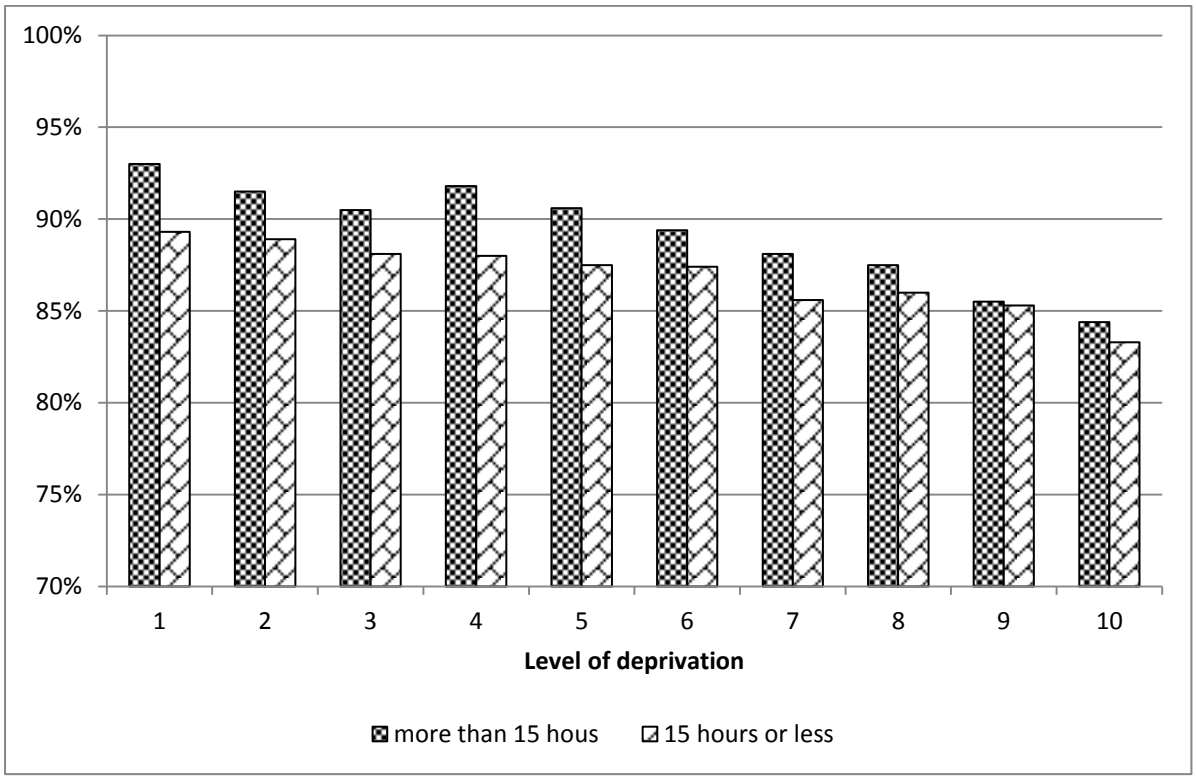
Figure 12: Presence of graduates by level of deprivation and hours of attendance: PVI settings only



Source: Early Years Census 2011

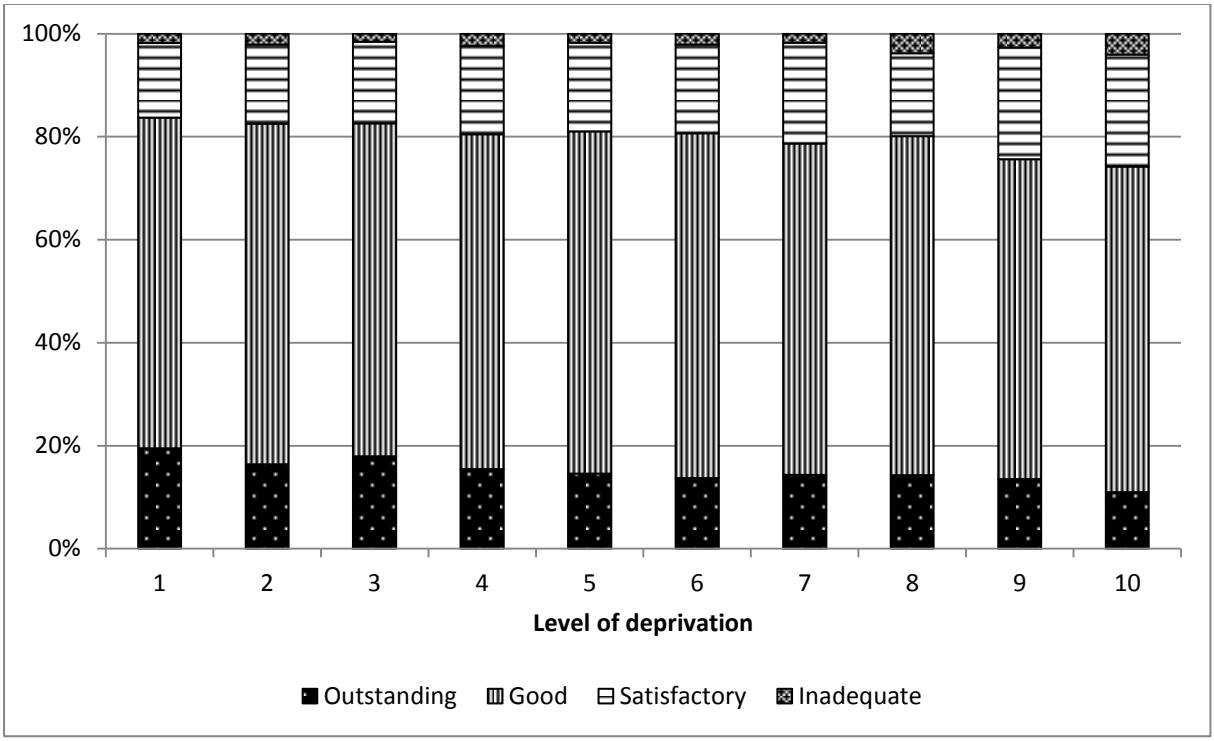
Notes: Figure reports data for children born between September 2006 and December 2006 who receive the entitlement in any type of setting other than maintained schools. Children with Special Education Needs (SEN) and those who could not be matched to an English Lower Super Output Area are not included.

Figure 13: Good or outstanding Ofsted judgement, by level of deprivation and hours of attendance: PVI settings only



Source: Early Years Census 2011 and Ofsted inspection data September 2010 – August 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 and whose setting was inspected between September 2010 and August 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 not included.

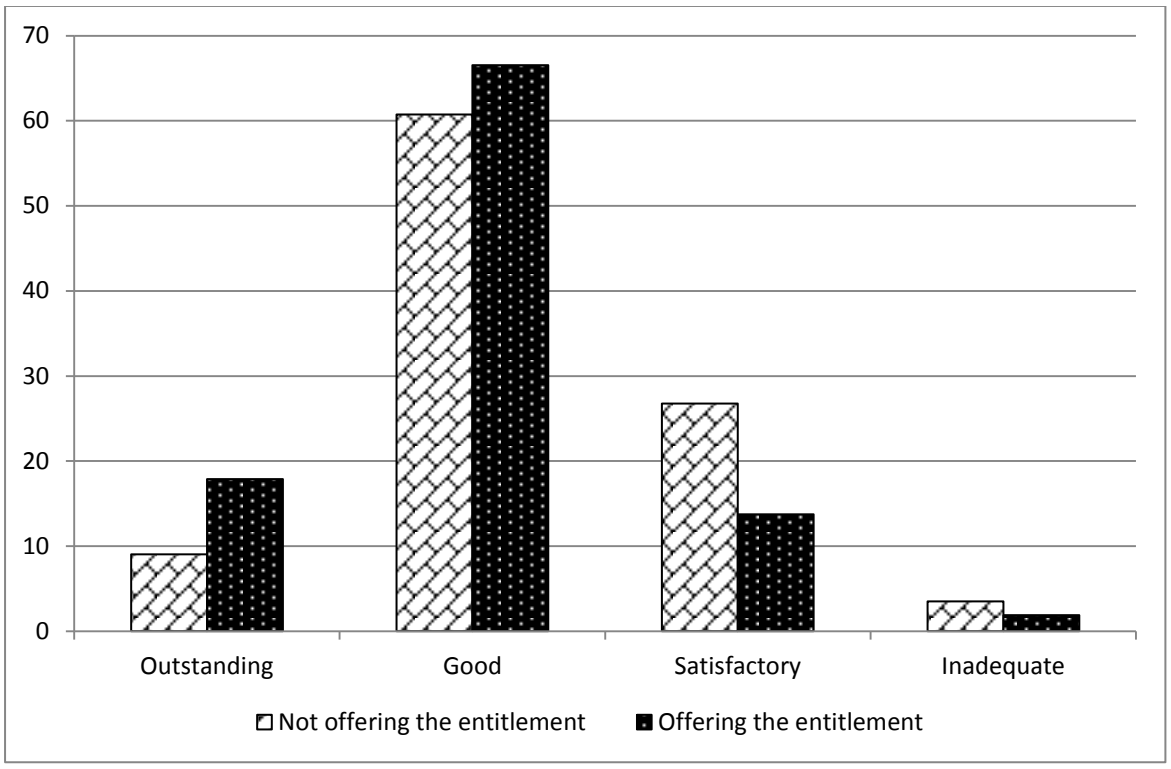
Figure 14: Ofsted judgement of PVI settings, by level of deprivation



Source: Ofsted inspection data September 2010 – August 2011.

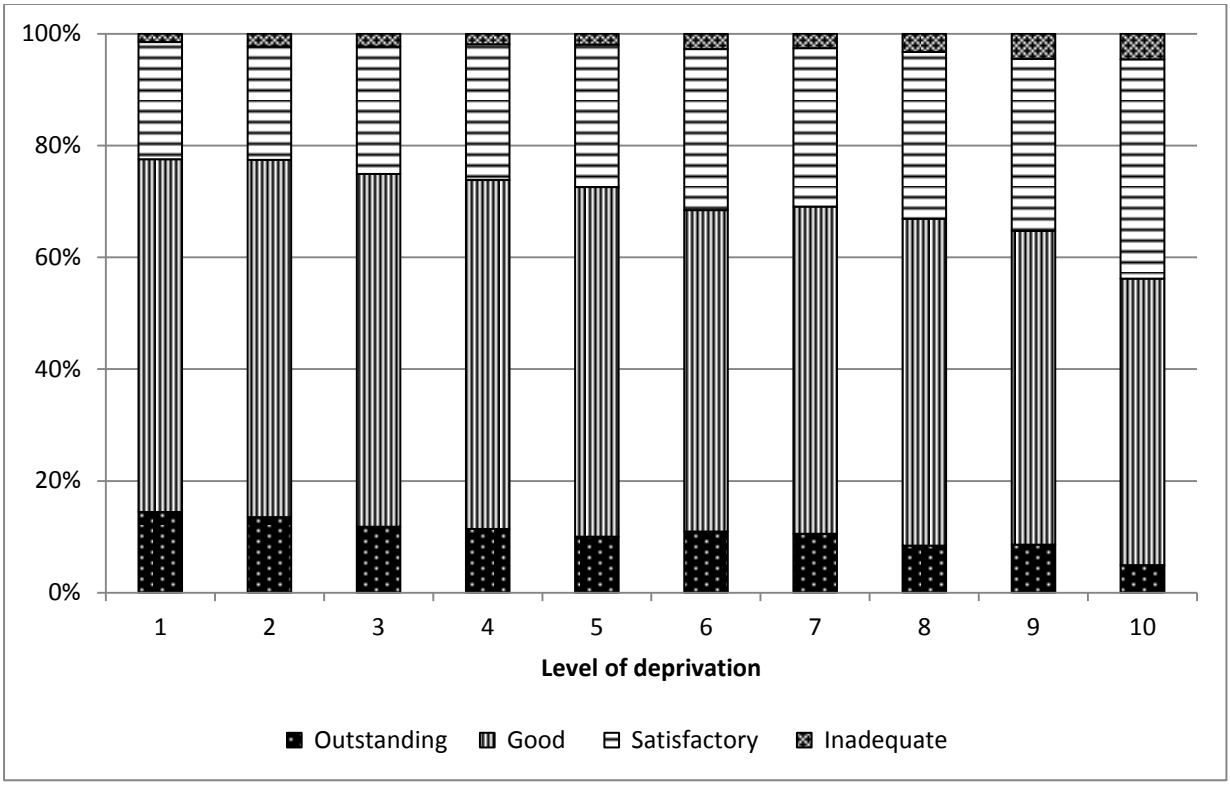
Notes: Figure relates to all settings inspected between September 2010 and August 2011, with the exception of 19 settings which did not have postcode information or cannot be matched to an English LSOA.

Figure 15: Ofsted judgements: PVI settings offering the entitlement or not



Source: Early Year Census 2011 and Ofsted inspection data September 2010 – August 2011.
Figure refers to all settings inspected between September 2010 and August 2011.
Childminders are not included.

Figure 16 Ofsted judgements: childminders



Source: Ofsted inspection data September 2010 – August 2011.

Table 1: Statutory requirements for different types of provider

CENTRE-BASED PROVISION

Age of child	*Type of provider*	*Staff:children ratio*	*Staff qualification requirements*
Under two	Any	1:3	At individual level: no requirement.
Two	Any	1:4	At setting level:
Three	PVI	1:8	- 50% staff holding relevant level 2 qualification - 100% supervisory and management staff holding relevant level 3 qualification
		1:13	Qualified teacher or Early years professional
	Nursery class	1:13 max class size: 26	One qualified teacher per class
Four	PVI	1:8	Relevant secondary school education (level 3)
		1:13†	Qualified teacher or Early years professional
	Nursery class	1:13 max class size: 26	One qualified teacher per class
	Reception class	max class size: 30	One qualified teacher per class
Five	Reception class	max class size: 30	One qualified teacher per class

CHILDMINDERS

Age of child	*Group size*	*Qualification requirements*
Under eight	max 6 children	Completion of introductory course in home-based childcare
Of whom:		
Under five	max 3†	
Under one	max 1	

Notes: † The ratio applies during school hours only (i.e. 8am-4pm). Outside those hours, PVI settings need to comply with the 1:8 ratio, whereas childminders can look after more than 3 children aged four outside school hours.

Table 2: 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 3 Children receiving the entitlement

AGE	2011 Population Census	2011 Early Years Census and School Census†	% receiving the entitlement
Three	663,574	595,423	89.73
Four	648,029	617,121	95.23

Source: 2011 Census, ONS (2012) and 2011 Early Years Census and School Census.
† Numbers refer to all children recorded in the Early Years Census and School Census. Duplicate records are counted only once.

Table 4 Children to staff ratios, by type of setting and level of deprivation

	PVI settings		Schools	
	All staff	Graduates†	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 5: Matching Early Years Census and School Census Data with Ofsted Data

Matched to Ofsted data?	No	Yes	Total
PVI settings	328,972	123,235	452,207
	72.7%	27.3%	100%
	58.7%	61.1%	59.4%
Nursery classes	231,100	78,619	309,719
	74.6%	25.4%	100%
	41.3%	38.9%	40.6%
Total	560,072	201,854	761,926
	73.5%	26.5%	100%
	100%	100%	100%

Source: Early Years Census 2011 and School Census 2011, and Ofsted inspection data September 2010 – August 2011.

Table 6: Proportion of observations from the Early Years Census and School Census Data matched with Ofsted Data

	PVI settings		Schools	
IDACI decile	%	N	%	N
1 (least deprived)	26.70%	16,993	17.40%	2,956
2	27.00%	12,851	19.40%	2,501
3	27.60%	17,625	20.90%	4,148
4	27.20%	9,178	23.30%	2,908
5	27.20%	13,765	24.60%	5,421
6	27.80%	12,341	26.60%	7,089
7	27.60%	11,298	26.70%	8,610
8	27.70%	11,694	27.30%	12,535
9	27.30%	8,895	27.60%	14,193
10 (most deprived)	26.70%	8,110	26.30%	17,904
Overall/Total	27.30%	122,750	25.40%	78,265

Source: Early Years Census 2011 and School Census 2011, and Ofsted inspection data September 2010 – August 2011.

Table 7: Probit regression: Probability of being in a setting rated good or outstanding

	PVI settings	Schools
Decile 2	-0.049*	-0.126**
	(0.02)	(0.04)
Decile 3	-0.087***	-0.142***
	(0.02)	(0.04)
Decile 4	-0.057*	-0.176***
	(0.02)	(0.04)
Decile 5	-0.101***	-0.150***
	(0.02)	(0.03)
Decile 6	-0.116***	-0.303***
	(0.02)	(0.03)
Decile 7	-0.190***	-0.230***
	(0.02)	(0.03)
Decile 8	-0.168***	-0.196***
	(0.02)	(0.03)
Decile 9	-0.192***	-0.236***
	(0.02)	(0.03)
Decile 10	-0.151***	-0.213***
	(0.03)	(0.03)
Proportion of children from decile 10	-0.512***	-0.188***
	(0.04)	(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.

Appendix: Additional tables

Table A1: Where three and four year olds receive the entitlement

AGE	Type of provision			Total
	All else †	Maintained Schools		
		nursery class	Reception class	
Four(Jan-Aug)	15,898	1,429	349,728	367,055
percentage	4.3%	0.4%	95.3%	100%
Four (Sept-Dec)	104,561	91,634	550	196,745
percentage	53.1%	46.6%	0.3%	100%
Three (Jan-Aug)	217,470	174,781	177	392,428
percentage	55.4%	44.5%	0%	100%
Three (Sept-Dec)	136,686	43,302	54	180,042
percentage	75.9%	24.1%	0%	100%
Total	474,615	311,146	350,509	1,136,270

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:

1. Children with Special Education Needs (SEN) – (67,208 children)
2. Children who were recorded as enrolled in year 1 (61 children)

† includes: private, voluntary and independent settings; settings directly run by local authorities; and childminders.

Table A2 : Where children access the entitlement, by age and type of provider

Age in January 2011 (month of birth)	Type of provision & sector								TOTAL
	Centre-based							Home-based	
	School-based (Maintained)		PVI			Local Authority setting [c]	Other	Childminding network	
	Reception class	Nursery class	Voluntary [a]	Private [a]	Independent [b]				
Four(Jan-Aug)	95.3%	0.4%	0.1%	0.9%	3.2%	0.0%	0.0%	0.0%	367,055
Four (Sept-Dec)	0.3%	46.6%	14.4%	32.4%	3.2%	1.3%	1.1%	0.8%	196,745
Three (Jan-Aug)	0.0%	44.5%	15.3%	34.0%	2.8%	1.3%	1.3%	0.8%	392,428
Three (Sept-Dec)	0.0%	24.1%	19.7%	48.9%	2.4%	1.7%	2.2%	1.1%	180,042
TOTAL	350,509	311,146	124,197	288,411	33,261	10,851	11,333	6,562	1,136,270

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:

1. Children with Special Education Needs (SEN) – (67,208 children)
2. Children who were recorded as enrolled in year 1 – (61 children)

a. Includes Children's Centres.

b. Defined as registered independent schools.

c. Includes day nurseries or Children's Centres run by local authorities.

Table A3 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 A4 Staff qualifications

IDACI decile	Presence of qualified staff: No specialised graduate	EYP only	Teacher only†	Teacher + EYP	TOTAL
1 (least deprived)	46.6%	8.2%	35.8%	9.4%	81,315
2	49.3%	8.8%	34.0%	7.9%	61,314
3	49.4%	8.6%	34.9%	7.1%	84,957
4	47.9%	7.7%	37.3%	7.0%	46,897
5	46.4%	7.7%	39.4%	6.5%	73,480
6	41.2%	7.0%	46.2%	5.6%	71,656
7	37.9%	6.5%	50.7%	4.9%	73,677
8	32.2%	5.5%	57.8%	4.5%	88,794
9	25.6%	4.3%	66.0%	4.1%	84,182
10 (most deprived)	19.5%	3.6%	73.4%	3.5%	98,518
Overall	38.40%	6.60%	49.10%	5.90%	100.%
Total	293,506	50,485	375,739	45,060	764,790

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 included; however information on staff qualification could refer to either the individual minder or the network coordinator.

† Children in nursery classes are assigned to this category as the School Census does not collect information on Early Years Professionals.

Table A5 Staff qualifications – Excluding schools

IDACI decile	Presence of qualified staff				TOTAL
	No specialised graduate	**EYP only**	**Teacher only**	**Teacher + EYP**	
1 (least deprived)	58.9%	10.4%	18.9%	11.9%	64,368
2	62.4%	11.1%	16.4%	10.0%	48,425
3	64.5%	11.2%	15.1%	9.2%	65,125
4	65.3%	10.5%	14.6%	9.6%	34,409
5	66.3%	11.0%	13.5%	9.2%	51,488
6	65.6%	11.1%	14.4%	8.9%	44,999
7	67.4%	11.5%	12.4%	8.7%	41,439
8	66.7%	11.4%	12.5%	9.3%	42,810
9	65.8%	11.0%	12.7%	10.4%	32,802
10 (most	62.9%	11.7%	14.2%	11.3%	30,535
Overall	64.3%	11.1%	14.8%	9.9%	100%
Total	293,502	50,485	67,362	45,051	456,400

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 all types of provision other than schools in January 2011.

Children with Special Education Needs (SEN), and those 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.

Table A6 Ofsted judgements – 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

Source: School 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 A7 Ofsted judgements – PVI

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: 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 all types of provision other than schools and childminders in January 2011 and whose setting 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 A8 Proportion of children attending their setting for more than 15 hours

	All settings		PVI[†]		Schools	
IDACI decile	%	N	%	N	%	N
1 (least deprived)	33.8%	27,477	41.5%	26,724	4.4%	753
2	31.7%	19,429	38.8%	18,792	4.9%	637
3	30.2%	25,676	38.0%	24,746	4.7%	930
4	29.2%	13,685	37.8%	13,022	5.3%	663
5	27.1%	19,896	36.4%	18,754	5.2%	1,142
6	25.9%	18,530	38.0%	17,082	5.4%	1,448
7	22.9%	16,901	36.3%	15,042	5.8%	1,859
8	20.5%	18,225	35.1%	15,010	7.0%	3,215
9	19.3%	16,276	35.1%	11,516	9.3%	4,760
10 (most deprived)	24.0%	23,608	35.4%	10,820	18.8%	12,788
Overall/Total	26.1%	199,703	37.6%	171,508	9.1%	28,195

Source: Early Years Census 2011 and School Census 2011.
Notes: Figure includes all children born between September 2006 and December 2006 who were spending more than 15 hours at the setting where they receive the entitlement (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.

Table A9 Staff qualification for children attending more than 15 hours, by level of deprivation

	none	EYP only	QTS only	QTS + EYP	Total
1	51.40%	11.50%	22.30%	14.80%	27,477
2	54.60%	12.10%	20.60%	12.70%	19,429
3	56.30%	12.20%	19.80%	11.70%	25,676
4	56.00%	11.90%	20.80%	11.20%	13,685
5	56.20%	11.70%	20.80%	11.30%	19,896
6	54.80%	11.60%	22.70%	10.90%	18,530
7	55.40%	10.80%	23.80%	9.90%	16,901
8	50.80%	10.40%	28.90%	9.80%	18,225
9	43.80%	8.70%	39.00%	8.60%	16,276
10	27.30%	5.70%	61.50%	5.50%	23,608
Overall	50.30%	10.60%	28.30%	10.80%	100%
Total	100,393	21,233	56,587	21,490	199,703

Source: Early Years Census 2011 and School Census 2011

Note: Table includes children born between September 2006 and December 2007 who were receiving the free entitlement in all types of provision in January 2011 and who attended for more than 15 hours a week. Children with Special Education Needs (SEN) and those who could not be matched to an English Lower Super Output Area are excluded.

Table A10 Proportion of children in a setting with a graduate, by hours of attendance and level of deprivation: PVI settings

	15 hours or less		More than 15 hours	
	%	N	%	N
1 (least deprived)	36.8%	13,877	47.1%	12,611
2	33.8%	10,022	43.6%	8,192
3	31.9%	12,851	41.5%	10,281
4	30.8%	6,579	41.1%	5,352
5	29.9%	9,801	40.3%	7,572
6	30.6%	8,557	40.5%	6,919
7	29.7%	7,835	37.7%	5,673
8	30.5%	8,490	38.2%	5,747
9	32.1%	6,836	38.0%	4,385
10 (most deprived)	35.3%	6,941	40.5%	4,383
	32.30%	91,789	41.50%	71,115

Source: Early Years Census 2011

Notes: Table includes children born between September 2006 and December 2007 who were receiving the free entitlement in all types of provision other than 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 childminder are included.

Table A11 Proportion of children in outstanding or good setting by hours of attendance and deprivation: PVI settings

	15 hours or less		More than 15 hours	
	%	N	%	N
1 (least deprived)	89.30%	9,333	93.00%	6,087
2	88.90%	7,354	91.50%	4,190
3	88.10%	10,043	90.50%	5,638
4	88.00%	5,060	91.80%	3,149
5	87.50%	7,817	90.60%	4,373
6	87.40%	6,672	89.40%	4,210
7	85.60%	6,246	88.10%	3,527
8	86.00%	6,356	87.50%	3,766
9	85.30%	4,817	85.50%	2,774
10 (most deprived)	83.30%	4,380	84.40%	2,407
Overall/Total	87.30%	68,078	89.70%	40,121

Source: Early Years Census 2011 and Ofsted inspection data September 2010 – August 2011.
Notes: Table 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 and whose setting was inspected between September 2010 and August 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 not included.

Table A12: Ofsted judgements of PVI settings, by level of deprivation

IDACI decile	**Oustanding**	**Good**	**Satisfactory**	**Inadequate**	TOTAL
1 (least deprived)	19.48%	64.20%	14.49%	1.82%	1,042
2	16.40%	66.08%	15.39%	2.13%	799
3	17.95%	64.60%	15.88%	1.58%	1,014
4	15.41%	65.07%	17.12%	2.40%	584
5	14.56%	66.46%	17.22%	1.77%	790
6	13.70%	66.95%	17.23%	2.12%	708
7	14.33%	64.33%	19.55%	1.79%	670
8	14.26%	65.80%	16.10%	3.83%	652
9	13.54%	62.09%	21.66%	2.71%	517
10 (most deprived)	10.95%	63.24%	21.73%	4.08%	612
Overall	15.48%	64.96%	17.24%	2.31%	100
Total	1,144	4,799	1,274	171	7,388

Source: Ofsted inspection data September 2010 – August 2011.
Notes: Figure relates to all settings inspected between September 2010 and August 2011, with the exception of 19 settings which did not have postcode information or cannot be matched to an English LSOA.

Table A13: PVI settings offering the entitlement

Offers the entitlement?	Ofsted judgement				Total
	Outstanding	Good	Satisfactory	Inadequate	
No	178	1,196	527	69	1,970
	9.04%	60.71%	26.75%	3.5%	100
	15.45%	24.80%	41.30%	40.35%	26.55%
Yes	974	3,626	749	102	5,451
	17.87%	66.525	13.74%	1.87%	100
	84.55%	75.20%	58.70%	59.65%	73.45%
Total	1,152	4,822	1,276	171	7,421
	15.52%	64.98%	17.19%	2.30%	100
	100	100	100	100	100

Source: Early Year Census 2011 and Ofsted inspection data September 2010 – August 2011.
Figure refers to all settings inspected between September 2010 and August 2011.
Childminders are not included.

Table A14: Ofsted judgements: patterns in setting level data and child level data

	Setting-level data					Child-level data				
	Outstanding	Good	Satisfactory	Inadequate	TOTAL	Outstanding	Good	Satisfactory	Inadequate	TOTAL
1 (least deprived)	23%	64.4%	11.2%	1.4%	775	27.4%	63.3%	8.1%	1.1%	16,993
2	18.1%	69.6%	10.7%	1.7%	599	23.1%	66.8%	8.9%	1.3%	12,851
3	20%	65.1%	13.7%	1.3%	776	23.9%	65.1%	10.2%	0.9%	17,625
4	17.7%	64.8%	15.5%	2%	451	23.1%	66.4%	9.5%	1.1%	9,178
5	16.2%	67.8%	14.1%	2%	605	22.2%	66.3%	10.2%	1.2%	13,765
6	16.7%	69.7%	12.1%	1.5%	522	23.1%	65.1%	10.6%	1.3%	12,341
7	16%%	67.5%	15.5%	1.1%	464	20.5%	66.0%	11.7%	1.8%	11,298
8	16.1%	67.5%	13.6%	2.9%	486	19.0%	67.5%	11.5%	1.9%	11,694
9	15.8%	62.5%	18.4%	3.4%	355	17.8%	67.5%	13.2%	1.5%	8,895
10 (most deprived)	13%	67.4%	16.8%	2.8%	393	15.9%	67.8%	14.0%	2.3%	8,110
Overall	17.8%	66.6%	13.7%	1.9%	100%	22.2%	65.9%	10.5%	1.4%	100%
Total	965	3615	744	102	*5426*	27282	80917	12862	1689	122,750

Source: Early Year Census 2011 and Ofsted inspection data September 2010 – August 2011.
Notes: Figures in the left panel of the table refer to all settings inspected between September 2010 and August 2011 which also offered the entitlement. Figures in the right panel of the table refer to children receiving the entitlement in 2011 and whose PVI setting was inspected.

Table A15 Ofsted judgements: childminders

	Outstanding	Good	Satisfactory	Inadequate	TOTAL
1 (least deprived)	14.40%	63.10%	21.00%	1.50%	1,849
2	13.50%	64.00%	20.30%	2.30%	1,328
3	11.80%	63.10%	22.80%	2.30%	1,231
4	11.40%	62.40%	24.30%	1.90%	1,504
5	10.00%	62.60%	25.50%	2.00%	1,122
6	10.90%	57.50%	28.80%	2.80%	1,373
7	10.50%	58.50%	28.30%	2.60%	1,408
8	8.40%	58.40%	29.80%	3.30%	1,079
9	8.60%	56.10%	30.80%	4.50%	736
10 (most deprived)	4.90%	51.30%	39.30%	4.60%	718
Overall	11.00%	60.40%	26.00%	2.50%	100.00%
Total	1,361	7,459	3,214	314	12,348

Source: Ofsted inspection data September 2010 – August 2011.

Table A16: Do children attend settings located in a similarly deprived area as the one where they live?

		Setting's IDACI decile										
		1	2	3	4	5	6	7	8	9	10	total
Child's IDACI decile	1	7,358	2,245	2,332	1,238	1,338	1,043	620	432	247	130	16,983
		43.33	13.22	13.73	7.29	7.88	6.14	3.65	2.54	1.45	0.77	100.00
		41.12	17.18	13.45	12.25	9.99	8.61	5.49	3.77	2.98	1.70	13.85
	2	2,264	4,476	1,732	930	1,158	846	599	493	204	139	12,841
		17.63	34.86	13.49	7.24	9.02	6.59	4.66	3.84	1.59	1.08	100.00
		12.65	34.25	9.99	9.20	8.64	6.99	5.31	4.30	2.46	1.82	10.47
	3	2,637	1,730	6,290	1,401	1,808	1,337	981	823	375	225	17,607
		14.98	9.83	35.72	7.96	10.27	7.59	5.57	4.67	2.13	1.28	100.00
		14.74	13.24	36.27	13.86	13.49	11.04	8.69	7.18	4.52	2.94	14.36
	4	1,159	974	1,174	2,606	890	842	616	492	230	166	9,149
		12.67	10.65	12.83	28.48	9.73	9.20	6.73	5.38	2.51	1.81	100.00
		6.48	7.45	6.77	25.78	6.64	6.95	5.46	4.29	2.77	2.17	7.46
	5	1,545	1,174	1,759	1,082	4,095	1,238	1,191	948	442	285	13,759
		11.23	8.53	12.78	7.86	29.76	9.00	8.66	6.89	3.21	2.07	100.00
		8.63	8.98	10.14	10.70	30.56	10.22	10.55	8.27	5.33	3.73	11.22
	6	1,064	817	1,370	925	1,245	3,498	1,180	1,061	702	461	12,323
		8.63	6.63	11.12	7.51	10.10	28.39	9.58	8.61	5.70	3.74	100.00
		5.95	6.25	7.90	9.15	9.29	28.89	10.46	9.25	8.46	6.03	10.05
	7	807	702	1,060	771	1,047	1,186	3,110	1,262	853	487	11,285
		7.15	6.22	9.39	6.83	9.28	10.51	27.56	11.18	7.56	4.32	100.00
		4.51	5.37	6.11	7.63	7.81	9.80	27.56	11.00	10.28	6.37	9.20
	8	590	523	967	623	972	1,025	1,353	3,348	1,296	989	11,686
		5.05	4.48	8.27	5.33	8.32	8.77	11.58	28.65	11.09	8.46	100.00
		3.30	4.00	5.58	6.16	7.25	8.47	11.99	29.19	15.62	12.94	9.53
	9	315	296	437	357	528	651	925	1,440	2,639	1,298	8,886
		3.54	3.33	4.92	4.02	5.94	7.33	10.41	16.21	29.70	14.61	100.00
		1.76	2.27	2.52	3.53	3.94	5.38	8.20	12.55	31.81	16.99	7.25
	10	157	131	221	175	319	442	709	1,171	1,307	3,461	8,093
		1.94	1.62	2.73	2.16	3.94	5.46	8.76	14.47	16.15	42.77	100.00
		0.88	1.00	1.27	1.73	2.38	3.65	6.28	10.21	15.76	45.30	6.60
	Tota	17,89	13,06	17,34	10,10	13,40	12,10	11,28	11,47	8,295	7,641	122,61
		14.60	10.66	14.14	8.24	10.93	9.88	9.20	9.35	6.77	6.23	100.00
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.00

Source: Early Year Census 2011 and Ofsted inspection data September 2010 – August 2011.

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