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Evaluation of the Free School Meals Pilot

Impact Report

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Government policy and may make reference to the Department for Children, Schools and Families (DCSF) which has now been replaced by the Department for Education (DfE).

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Executive Summary

This report presents evidence on the impact of the Free School Meals pilot on a range of pupil outcomes. It has been prepared on behalf of the Department for Education (DfE) and the Department of Health (DH) by a consortium consisting of the National Centre for Social Research (NatCen), the Institute for Fiscal Studies (IFS) and Susan Purdon of Bryson Purdon Social Research (BPSR).

The Free School Meals (FSM) pilot was a two-year programme operating in three local authorities between the autumn of 2009 and summer of 2011, to extend entitlement to free school meals. Under the current rules, pupils are entitled to free school meals if their parents claim means-tested out-of-work benefits (such as Income Support) or Child Tax Credit (and not Working Tax Credit) with an annual income of no more than £16,190. Children who receive a qualifying benefit in their own right are also entitled to receive FSM.¹ Around 80%² of children currently eligible for FSM live in out-of work households or with earned income of less than £1,000.

Two different approaches to extending FSM provision were tested as part of the pilot. In the local authorities piloting a 'universal' offer (Newham and Durham), all primary school children were offered free school meals. In the third area (Wolverhampton), entitlement was extended to cover pupils in primary and secondary schools whose families were on Working Tax Credit whose annual income did not exceed £16,040 in 2009-10 (uprated to £16,190 in 2010-11)..

The pilot also included a range of supporting activities in each area to encourage take-up of school meals and to make parents aware of the pilot such as holding talks and taster sessions. The findings of the evaluation should therefore be considered in relation to the whole pilot approach rather than just the provision of free school meals.

Key findings

- Most pupils in the universal pilot areas took up the offer of free school meals. Around nine in ten primary school pupils were taking at least one school meal per week by the end of the pilot compared with around six in ten similar pupils in matched comparison areas.

¹ For full details of the FSM entitlement criteria, see <http://www.education.gov.uk/schools/pupilsupport/pastoralcare/a00202841/fsmcriteria>.

² DWP Policy Simulation Model (based on FRS 2008/9)

- Take-up increased in the universal pilot areas for pupils who were not previously eligible for FSM and also for pupils who were already eligible³ for FSM.
- The extended entitlement pilot did not significantly increase take-up of school meals among secondary school pupils.
- Take-up of school meals was lower for newly entitled pupils in the extended entitlement area than for pupils in the universal entitlement areas who would have been newly entitled to free school meals under the extended entitlement criteria.
- In the universal pilot areas, the increased take-up of school meals led to a shift in the types of food that pupils ate at lunchtime, away from foods typically associated with packed lunches towards those associated with hot meals.
- Despite the changes in lunchtime food consumption, the universal pilot had few significant impacts on the reported overall consumption of different types of food, although children in the universal pilot areas were less likely to report eating crisps at least once a day than children in comparison areas. This suggests that the reduction in crisp consumption at lunchtime did not lead children to eat crisps in the afternoon

³ Entitled and registered with the local authority.

⁴ ‘Pupils from less affluent families’ here refers to both those who are eligible for FSM under the old criteria and those who are newly entitled under the extended entitlement criteria introduced in Wolverhampton.

⁵ Evans, Greenwood and Cade, 2010.

⁶ See, for example, Golley et al. (2010) and Storey et al. (2011).

⁷ Although the FSM pilot ran in both primary and secondary schools in Wolverhampton, the collection of data for the evaluation focused on secondary school pupils only, due to budgetary constraints. As such, it was not possible to identify the impact of the extended entitlement pilot on the diet, eating habits, behaviour or health of primary school pupils. It was, however, possible to identify the impact of the extended entitlement pilot on the attainment and absence from school of primary school pupils using administrative data.

⁸ <https://www.education.gov.uk/publications/RSG/AllRsgPublications/Page1/DFE-RR228>

⁹ Findings on food consumption are based on consumption reported by pupils (if aged 11 or over) or parents (if pupil is under 11).

¹⁰ ‘Pupils from less affluent families’ here refers to both those who are eligible for FSM under the old criteria and those who are newly entitled under the extended entitlement criteria introduced in pilot area C.

¹¹ For example, it is possible that the universal entitlement pilot may reduce the attainment gap between pupils from different socio-economic backgrounds because its impact is larger amongst pupils who were eligible for FSM before the pilot and amongst those who are predicted to be entitled to FSM under the extended entitlement criteria introduced in Wolverhampton than it is amongst pupils who were not eligible for FSM before the pilot. The evidence is regarded as suggestive rather than conclusive because the differences are not generally significantly different from zero.

and/or evening instead.

- The extended entitlement pilot had little impact on children's diet and eating habits.
- The universal pilot had a significant positive impact on attainment for primary school pupils at Key Stages 1 and 2, with pupils in the pilot areas making between four and eight weeks' more progress than similar pupils in comparison areas.
- The improvements in attainment tend to be strongest amongst pupils from less affluent families⁴ and amongst those with lower prior attainment, although it should be noted that the effects for different types of pupils are not always significantly different from one another.
- By contrast, the extended entitlement pilot did not significantly affect attainment for either primary or secondary school pupils.
- The improvements in attainment found in the universal pilot areas do not appear to have been driven by an increase in the amount of time children spend in school, as neither pilot approach led to a significant reduction in absence rates from school. This suggests that the increases in attainment evident in the universal pilot areas must arise as a result of improvements in productivity whilst at school.
- The source of these improvements in productivity is not clear, as the evaluation did not provide any evidence that the universal or extended entitlement pilot positively affected parents' perceptions of children's behaviour. The evaluation did not include a quantitative assessment of classroom behaviour though.
- There was no evidence that the FSM pilot led to significant health benefits during the two year pilot period. For example, there was no evidence of any change in children's Body Mass Index.

The Free School Meals pilot

In September 2008, the Government announced a plan to pilot extended entitlement to free school meals in England. There was evidence that the nutritional content of school lunches was better than that of packed lunches,⁵ and other research⁶ had suggested that eating school lunches had benefits for children's behaviour, concentration and health. The aim of the Free School Meals pilot was to provide evidence of how extending entitlement to FSM affected:

- take-up of school meals;
- pupils' eating habits at school and at home;
- pupils' Body Mass Index (BMI) and general health and well-being;
- pupils' behaviour, attendance and academic performance.

The FSM pilot ran from September 2009 to July 2011. Two local authorities made free school meals available to all primary school children and the third made them more available to both primary and secondary school children by increasing the number of families entitled to them. The pilot also included supporting activities in each area to encourage take-up of school meals, raise awareness of the pilot and encourage parents to engage with the pilot, such as holding school food taster sessions and talks.

Area	Description	
A: Newham	Free school meals made available to all primary school children	Universal entitlement
B: Durham	Free school meals made available to all primary school children	Universal entitlement
C: Wolverhampton⁷	Free school meals made available to more primary and secondary school children by extending entitlement to include families on Working Tax Credit with an income of no more than £16,040 in 2009-10 (£16,190 in 2010-11)	Extended entitlement

The evaluation

The objectives of the evaluation were to investigate and report on:

- how and to what extent each pilot affects take-up of school lunches and whether this varies amongst different family backgrounds;
- the impact of the changes in take-up on children's outcomes including diet (at school and at home), health, behaviour, engagement with school and attainment;
- the process of implementing the pilots, to help identify the most effective methods of expanding provision of school meals;
- the value for money of expanding the offer of FSMs, based on a comparison of the costs and benefits.

To identify the impact of the pilot on children's outcomes, pupils in pilot areas were first 'matched' with similar pupils in a set of comparison areas on the basis of characteristics (for example, age, sex and ethnicity) before the pilot was introduced. The outcomes of this group of pupils in comparison areas were then used to represent what would have happened to the outcomes of pupils in pilot areas had the pilot not been introduced. Using this approach, the impact of the pilot can be estimated from the difference in outcomes between pupils in pilot and comparison areas after the pilot was introduced.

To minimise the cost of the evaluation and to maximise the reliability of the information used, the evaluation used administrative data wherever possible. These included management data on the provision of school meals and associated costs from the pilot

areas and data on attainment and absence from school from the National Pupil Database. To fully investigate the impacts of the pilot on the take-up of school meals and on children's diet, health and behaviour, and to investigate the implementation of the pilot, the following data collection exercises were also carried out:

- Information on the take-up of school meals amongst a sample of pupils was collected from schools in both pilot and comparison areas. This sample of pupils included those in Reception to Year 4 in areas A and B and Years 7 to 9 in area C. This information is used to estimate the impact of the pilot on the take-up of school meals.
- A longitudinal survey of pupils and parents in pilot and comparison areas was carried out on a sample of those who were not taking school meals before the pilot was introduced. The year groups covered are the same as those for the take-up data (described above). Information from the longitudinal survey is used to estimate the impact of the pilot on various aspects of diet, health and behaviour.
- Telephone interviews with school caterers were carried out to help provide information about the delivery of school meals from a provider's perspective in both pilot and comparison areas. This information is used to help provide contextual background to better understand the changes in take-up that are observed.
- Qualitative case studies were carried out in pilot schools to provide information on the challenges associated with implementation and on the perceived impacts of the pilots from a variety of stakeholders, including pupils, teachers and parents. The findings of these case studies are summarised in Chapter 5 of this report and discussed in detail in a separate report.⁸

Results

It is important to note that the pilot included substantial investment in catering facilities and activities to encourage take-up of school meals by schools and local authorities, supported by the School Food Trust. The activities included engagement and promotion activities with parents and the enforcement of strict packed lunch policies. The impacts reported should therefore be seen as the impacts of the whole pilot approach, rather than solely as the effects of making free school meals more widely available.

Take-up of school meals

The universal pilot approach in areas A and B led to a large increase in the number of children opting for a school lunch. Based on take-up information collected directly from schools, around 90 per cent of pupils were taking school meals at least once a week in the pilot areas two years after the pilot was introduced, compared with around 60 per cent of similar pupils in comparison areas. This suggests that universal entitlement to FSM led to a nearly 30 percentage point increase in the percentage of primary school pupils taking school meals at least once a week.

These effects were greatest for:

- children who did not have school meals before the start of the pilot;
- those who were not eligible for free school meals before the pilot;
- those in universal entitlement areas who would have been newly entitled to free school meals under the extended entitlement criteria introduced in pilot area C.

There was also a significant increase in take-up for primary school children who were entitled to and registered for FSM before the pilot was introduced.

In area C, extending entitlement to FSM did not have a significant impact on take-up of school meals for secondary school pupils, even amongst those who were newly entitled.

Management data provided by the pilot authorities additionally showed that:

- take-up was higher amongst primary than secondary school pupils estimated by the local authority to be entitled to FSM under the extended entitlement criteria introduced in area C;
- take-up was higher amongst primary school pupils who were newly entitled to FSM under the universal criteria introduced in pilot areas A and B than amongst primary school pupils who were estimated to be entitled to FSM under the extended entitlement criteria introduced in pilot area C.

This suggests that extending entitlement does not increase take-up as much amongst pupils who would have been newly entitled to FSM under the extended entitlement criteria as making school meals available to all. Evidence from the qualitative case studies indicates that this may be because universal provision decreases the stigma attached to taking free school meals, or because parents were not aware of or did not think they met the entitlement criteria in area C or were deterred by the application process.

Explaining the changes in take-up

Awareness of the scheme

Awareness of the pilot among parents was very high. After the pilot had been running for two school years:

- Almost all parents of primary school children in areas A and B were aware of the pilot scheme (99 per cent and 100 per cent awareness respectively). Most found out about the scheme through the school.
- Awareness of the scheme in area C was lower but still over two-thirds (71 per cent) of parents who appeared to be entitled to free school meals under the extended criteria were aware of the pilot.

Reasons for not taking up school meals

A small minority of pupils in the universal pilot did not take up free school meals. The main reasons given by parents for this were to do with food choice and provision. More than half of these parents said that there were not enough meals available that their child liked to eat. This suggests that meal choice may be a potential barrier to complete take-up of school meals even when they are provided free of charge to all pupils.

In the comparison areas for the universal pilot, around a third of parents cited cost as a reason for not taking school meals. It seems clear that removing this barrier by making school meals free to all pupils improved take-up of school lunches.

In area C, cost remained a deterrent for a minority of parents. The average price of school meals for those who still had to pay, as reported by catering managers in area C, rose over the course of the pilot: the price by year 2 of the pilot was comparable to the average in similar secondary schools in other areas. This increase could have depressed demand for school meals among those who had to pay and, given that not all parents were aware of the pilot, possibly among some who would have been entitled to free meals.

The most common reason reported by parents for not taking up school meals in area C was the time taken to get served.

Diet, health and behaviour

The substantial increase in take-up of school meals in areas A and B (which offered universal entitlement for primary pupils) was accompanied by changes in the types of food that pupils were choosing for lunch.⁹ Children were:

- more likely to eat hot food, including vegetables, chips or fried or roasted potatoes, and rice, pasta or potatoes not cooked in oil;
- less likely to eat crisps, sandwiches and whole pieces of fruit;
- more likely to drink water and less likely to drink soft drinks with lunch.

There was no evidence of substitution between hot meals at lunch and in the evening: most pupils in pilot areas A and B had hot food at lunchtime at school and for their evening meal. It is important to note, however, that hot food is not necessarily more nutritious than cold food; the nutritional value will depend on the content of the meal.

Pupils in the universal pilot areas were less likely to report eating crisps at least once a day on school days. There was, however, no change in the total reported consumption of chips, vegetables or whole pieces of fruit on school days, despite the changes in food eaten at lunch.

Parents in the universal pilot areas were more likely to:

- talk to their child on most days about what they had eaten;
- rate school meals positively in terms of quality and how healthy they are;

- think that a school meal is healthier than a packed lunch;
- agree that their child is willing to try new food.

The extended entitlement pilot did not lead to significant impacts on lunchtime eating habits and had fewer positive effects than the universal entitlement pilot on parents' attitudes to diet and school meals.

There were no positive impacts on parents' perceptions of their child's behaviour under either of the pilot approaches, but the evaluation did not include quantitative assessments of classroom behaviour.

There was no evidence of change in children's Body Mass Index (BMI) observed during the two year pilot period under either pilot approach.

Attainment and absences

The impacts of the FSM pilot on pupils' attainment and on rate of absence from school were examined using information from the National Pupil Database. For the universal entitlement pilot, the impacts are reported for all pupils who sat Key Stage 1 or Key Stage 2 tests two years into the pilot. For the extended entitlement pilot, the impacts are reported for all pupils who sat Key Stage 1, Key Stage 2 or Key Stage 4 tests at the same time. The results show the following:

- The universal pilot led to a significant increase in attainment for primary school pupils in areas A and B.
- The estimates are larger in magnitude and more consistently significant at Key Stage 2 than at Key Stage 1, with pupils in both areas found to make around two months' more progress, on average, than similar pupils in comparison areas.
- The results tend to be strongest amongst pupils from less affluent families¹⁰ and amongst those with lower prior attainment. This provides some suggestive evidence that the universal pilot may help to reduce educational inequalities, although the effects for pupils with different characteristics are not always significantly different from one another.¹¹
- By contrast, there is little evidence of any significant effect of the extended entitlement pilot on the attainment of pupils in area C, even amongst those who were predicted to be newly entitled to free school meals. This is true for both primary and secondary school pupils. These results suggest that extending entitlement to FSM may not replicate the positive and significant effects found in the universal entitlement areas for pupils who would have been newly entitled to FSM under the extended entitlement criteria introduced in pilot area C. This implies that universality and the associated activities undertaken in the universal pilot areas may be key to the improvements in attainment for these pupils in areas A and B.
- It is clear that reducing the amount of time that pupils are absent from school was not

the route through which the universal entitlement pilot improved attainment, as neither the universal nor extended entitlement pilot had any effect on the amount of time pupils were absent from school. This suggests that the increases in attainment evident in the universal pilot areas must arise as a result of improvements in productivity whilst at school.

Value for money

The total running cost of a programme is thought to provide a good indication of its likely cost in the long term. The total running cost of the pilot was estimated to be £12.1 million in area A and £16.6 million in area B (the universal entitlement areas) and £2.0 million in area C (the extended entitlement area), over two years. These figures are equivalent to around £220 per primary school pupil in areas A and B and just under £40 per pupil in area C.

The 'deadweight' cost of the pilot is the cost associated with providing free school meals for pupils whose parents would have paid for them in the absence of the pilot. This amounted to £3.8 million in area A (around one-third of the total running costs), £7.6 million in area B (just under half of the total running costs) and £0.72 million in area C (just over one-third of the total running costs).

It is difficult to estimate the fixed costs of the pilot with any degree of accuracy, but it is clear that they are relatively small compared with the overall running costs. The figures in this report suggest that reasonable estimates may be around £2500 per school to upgrade kitchen and dining facilities and around £150,000 per local authority to promote and support the pilot.

The extended entitlement pilot yielded little in the way of positive benefits for any of the outcomes considered in this evaluation. Thus it seems clear that it does not offer good value for money.

The universal entitlement pilot gave rise to significant increases in a variety of outcomes. To check whether it offers good value for money, it is necessary to translate these benefits into a common metric, such as a cost per percentage point (ppt) impact. This enables the FSM pilot to be compared with other interventions designed to affect similar outcomes.

The outcomes that can be most readily compared with those in other studies are the proportion of pupils reaching the expected level of attainment in English and maths at Key Stages 1 and 2. The universal entitlement pilot led to a 1.9ppt increase in the proportion of pupils reaching the expected level in reading at Key Stage 1, a 2.2ppt increase for maths at Key Stage 1, a 4.0ppt increase for English at Key Stage 2 and a 5.5ppt increase for maths at Key Stage 2. At a cost of around £112 per pupil per year, this suggests that it has cost £50 to £60 to obtain a 1ppt increase in attainment at Key Stage 1 and £20 to £30

to obtain a 1ppt increase in attainment at Key Stage 2.

Comparing these figures with those for selected other interventions designed to affect similar outcomes suggests that the universal entitlement pilot delivered better value for money (in terms of higher attainment of pupils on average) than some educational interventions, but worse value for money than others. The evidence suggests that the universal entitlement pilot provides better value for money than the extended entitlement pilot, but raises questions over its value for money compared with some other initiatives.

Conclusions

The universal pilot approach was very successful at increasing the take-up of school meals among primary school pupils, with most pupils taking school meals. In contrast, the extended entitlement pilot did not succeed in significantly increasing take-up among entitled pupils. The evaluation findings also show that only the universal entitlement approach had positive impacts on children's diet and attainment. It therefore appears that it is only through the universal provision of free school meals and the accompanying activities undertaken by schools and local authorities in the pilot areas that outcomes have improved.

Of particular note is the fact that the universal pilot approach improved outcomes among children from less affluent families: it increased the take-up of school meals among pupils who were already eligible for free school meals before the pilot was introduced and it had positive impacts on diet among those pupils. School staff in the qualitative case studies also noted that the pilot had a 'levelling effect' on the quality of lunches eaten by pupils from different backgrounds; the implication was that while the quality of packed lunches varied considerably by socio-economic background, all pupils taking school meals had access to a nutritious, balanced meal, thus reducing socio-economic differences in the quality of food eaten at lunchtime. The improvements in attainment in the universal pilot areas also appeared to be greater for children from less affluent families and those with lower prior attainment. The evaluation findings thus provide some suggestive, but not conclusive, evidence that rolling out the universal pilot, including all pilot-related activities, might help to reduce educational inequalities. Evidence from the evaluation shows that it would be a more effective way of trying to do so than extending entitlement to free school meals to a small group.

The shift in lunchtime eating habits in the universal pilot areas from packed lunches to school meals underlines the importance of balanced, healthy school menus. For example, the restrictions on starchy food cooked in oil and deep-fried foods help to ensure that these types of food are not consumed too frequently, while offering desserts with fruit content may help to counteract the decrease in children eating whole pieces of fruit as a result of the pilot. As new academies and free schools no longer have to comply with the nutritional standards, any roll-out of the universal pilot needs to consider how best to ensure that all school menus offer healthy, balanced meals.

It is also important to note that the mechanisms underlying the improvements in attainment observed in the universal pilot are not clear. Neither the universal nor extended entitlement pilot reduced the amount of time pupils were absent from school, suggesting that the increases in attainment must arise as a result of improvements in productivity whilst at school. This increased productivity does not appear to result from better pupil behaviour, however, as neither the universal nor the extended entitlement pilot positively affected parents' perceptions of children's behaviour. The evaluation did not include a quantitative assessment of classroom behaviour though and, of course, it is possible that classroom behaviour might have improved in a way that was not picked up by changes in parental perceptions of behaviour. Nor did the changes in lunchtime eating habits translate into any quantifiable health benefits such as Body Mass Index, during the lifetime of the pilot. It is therefore difficult to identify the underlying causes of the improvements in attainment that have been found, and thus which elements of the universal entitlement pilot will be key to its success in any future roll-out.

The universal pilot approach cost £12.1 million in Newham and £16.6 million in Durham, equivalent to around £220 per primary school pupil, over two years. Of this, 32 per cent in Newham and 46 per cent in Durham was deadweight cost (that is, involved paying for meals that would otherwise have been paid for by parents). It is clear that the universal entitlement pilot delivers better value for money than the extended entitlement pilot, which did not significantly improve any of the outcomes considered in this evaluation. Compared with other initiatives targeting similar outcomes, however, the picture is more mixed: the universal entitlement pilot appeared to deliver better value for money (in terms of higher attainment of pupils on average) than some educational interventions, but worse value for money than others. This raises questions about its overall value for money compared with other initiatives.

1 Introduction

This report presents quantitative evidence on the impact of the Free School Meals (FSM) pilot on a range of pupil outcomes. It has been prepared on behalf of the Department for Education (DfE) and the Department of Health (DH) by a consortium consisting of the National Centre for Social Research (NatCen), the Institute for Fiscal Studies (IFS) and Susan Purdon of Bryson Purdon Social Research (BPSR).

This introduction sets out the background to the FSM pilot and outlines the design of the evaluation. Chapter 2 discusses the impact of the pilot on the take-up of school meals and provides some potential explanations for the differences in take-up that are observed. Chapter 3 discusses the impact of the pilot on various aspects of diet, health and behaviour using information from the longitudinal survey of parents and pupils. Chapter 4 discusses the impact of the pilot on attainment and absence from school using information from the National Pupil Database. Chapter 5 summarises the findings of the qualitative school case studies. Chapter 6 discusses the value for money of the different pilot schemes that were tested. Chapter 7 concludes.

1.1 The Free School Meals pilot

In September 2008, the Government announced its intention to pilot an extension of the entitlement to free school meals in three local authorities in England. The pilot was a joint initiative between the then Department for Children, Schools and Families (now the Department for Education) and the Department of Health, with matched funding from participating local authorities.

Under the current criteria, children whose parents receive one or more of the following support payments are entitled to receive free school meals (FSM): Income Support (IS); income-based Jobseeker's Allowance (IBJSA); income-related Employment and Support Allowance (ESA); support under part VI of the Immigration and Asylum Act 1999; Child Tax Credit, provided they are not entitled to Working Tax Credit and have an annual income, as assessed by Her Majesty's Revenue and Customs, that as of 6 April 2012 does not exceed £16,190; or the guarantee element of State Pension Credit. Where a parent is entitled to Working Tax Credit during the four-week period immediately after their employment ceases, or after they start to work less than 16 hours per week, their children are entitled to free school lunches. Children who receive a qualifying benefit in their own right are also entitled to receive FSM. Around 80 per cent¹² of children currently eligible for FSM live in out-of-work households or households with earned income of less than £1000.

¹² Department for Work and Pensions (DWP) Policy Simulation Model, based on the Family Resources Survey (FRS) 2008-09.

Two different approaches to extending entitlement were tested. In Newham and Durham (pilot areas A and B), free school meals were offered to all primary school children. In Wolverhampton (pilot area C), the current entitlement criteria were extended to cover pupils in primary and secondary schools whose families were on Working Tax Credit and whose annual income met the existing income criteria did not exceed £16,040 in 2009-10 or £16,190 in 2010-11)..

These two versions of the FSM pilot were launched in the autumn term of 2009/10 and ran for two school years, finishing in the summer term of 2010/11.

Background and aims of the pilot

Previous research into children's diets had found that the nutritional content of school lunches was generally better than that of packed lunches. For example, a meta-analysis of studies from 1990 to 2006 provided evidence that the nutrient profile of packed lunches meant that children were consuming more sugars, saturated fat and sodium and less protein, starch, dietary fibre and most vitamins and minerals than those having a school lunch.¹³ Nutritional standards for school meals were introduced in schools in England to ensure that school meals provided a nutritious, balanced meal. The standards comprise both food and nutrient-based standards for food provided by schools. The food-based standards became effective in September 2007 in all schools and the nutrient-based standards were effective from September 2008 in primary schools and from September 2009 in secondary schools. There is evidence that school food has improved since the standards were introduced,¹⁴ although packed lunches are still of poor nutritional quality compared with school meals.¹⁵

Additionally, previous research studies had suggested that take-up of school lunches might improve children's health and behaviour¹⁶ and have a positive impact on their eating habits outside of school.¹⁷

Fewer than half of pupils in 2008 (44 per cent in primary schools) were taking school meals. Although there are many different reasons for not taking school meals, the average costs, which in 2008 were £1.67 in primary schools and £1.77 in secondary schools, were a possible deterrent for many families, particularly those on lower incomes.

The cost of school meals is not likely to be the only deterrent, however; a substantial proportion of pupils who are entitled to receive meals free of charge do not take them up, either because they are not registered with their local authority or because they are

¹³ Evans, Greenwood and Cade, 2010.

¹⁴ School Food Trust, 2010.

¹⁵ Evans, Greenwood, Thomas and Cade, 2010.

¹⁶ See, for example, Golley et al. (2010) and Storey et al. (2011).

¹⁷ See, for example, Harper and Wood (2009).

registered but do not take up their entitlement. For example, research by London Economics in 2008 estimated that 24 per cent of pupils who were estimated to be entitled to FSM were not registered with their local authority. Even amongst those who were registered, 16 per cent of primary school pupils and 25 per cent of secondary pupils did not take up their entitlement.¹⁸

The FSM pilot was therefore launched to test the impacts of extending entitlement to FSM, looking specifically for evidence of impacts on:

- pupils' eating habits at school and at home;
- pupils' Body Mass Index (BMI) and general health and well-being;
- pupils' behaviour, absences and academic performance.

1.2 The evaluation

Objectives

The objectives of the evaluation were to investigate and report on how and to what extent the pilot affects:

- the take-up of school lunches, including how this varies by family background;
- children's outcomes, including diet (at school and at home), health, behaviour, engagement with school and attainment;

and to provide:

- an understanding of the process of implementing the pilot to help identify the most effective methods of expanding provision of FSM;
- an estimate of the value for money of expanding the offer of FSM.

The evaluation was carried out between the summer term of 2008/09, prior to the introduction of the pilot, and the summer term of 2010/11, when the pilot had been running for two academic years. For each of the pilot areas, five local authorities were selected as appropriate comparison areas.¹⁹ The idea was to use the outcomes of pupils in comparison areas to proxy the outcomes of pupils in the pilot areas in the absence of the pilot. This is known as the 'counterfactual' outcome. In other words, the comparison sample is crucial to answering the question 'What would have happened to take-up, diet, behaviour, attainment and so on in pilot areas, had the pilot not been introduced?' and therefore to identifying the impact of the pilot on these outcomes.

For the outcomes of pupils in the comparison sample to act as a valid counterfactual for the outcomes of pupils in the pilot areas in the absence of the pilot, pupils in pilot and

¹⁸ London Economics, 2008.

¹⁹ For details of the process through which comparison authorities were selected, see Appendix A.

comparison areas must be as similar as possible in every other respect before the pilot was introduced ('at baseline'). The information that is available for pupils in pilot and comparison areas at this point is therefore vital to ensuring that the impact of the pilot can be robustly estimated.

To aid this process, the evaluation has made as much use as possible of data from administrative sources. It was also necessary to carry out several bespoke data collection exercises, to help provide information on characteristics that are not well-captured by administrative data, as well as to identify the impact of the pilot on outcomes that are not available from administrative data and to better understand the challenges associated with implementation. These data collection exercises involved:

- Collecting information on the take-up of school meals amongst a sample of pupils from schools in pilot and comparison areas before and after the pilot was introduced, as this information is not available for pupils in administrative data.
- A longitudinal survey of pupils and parents in pilot and comparison areas was carried out on a sample of those who were not taking school meals at baseline. This is used to estimate the impact of the pilot on various aspects of diet, health and behaviour.
- Telephone interviews with school caterers were carried out to help provide information about the delivery of school meals from a provider's perspective.
- Qualitative case studies were carried out in pilot schools to provide information on the challenges associated with implementation and on the perceived impacts of the pilots from a variety of stakeholders, including pupils, teachers and parents.

This report makes use of the take-up data collected from schools, the longitudinal survey of parents and pupils, and various types of administrative data. Findings from the telephone interviews with school caterers and the qualitative case studies are discussed in detail in the accompanying implementation report.²⁰ A summary of the case study findings is provided in Chapter 5 of this report.

Data

Longitudinal survey of parents and pupils

As outlined above, the impacts of the pilot on diet, health and behaviour have been estimated from information collected as part of a longitudinal survey of parents and pupils. There were two stages of interviews: at baseline, before the pilot was introduced, and two years later.

To maximise the chances of identifying the impact of the pilot on these outcomes using a relatively small-scale longitudinal survey, it was decided to restrict eligibility for the survey to those pupils on whom the impact of the pilot was expected to be greatest; that is:

²⁰ <https://www.education.gov.uk/publications/RSG/AllRsgPublications/Page1/DFE-RR228>

- those thought more likely to have less healthy diets;
- those who, at baseline, were not taking up school meals;
- those who would be exposed to the pilot for two full school years;
- in the extended entitlement pilot and comparison areas, those who were likely to be entitled to FSM under either the old or the new criteria.

The selection of pupils for the longitudinal survey was carried out in two stages. First, a sample of pupils thought likely to be at particular risk of having less healthy diets, and who would be exposed to the pilot for two years, was selected from the National Pupil Database. In practice, this involved oversampling pupils from lower socio-economic backgrounds and restricting the sample to pupils in Reception to Year 4 in primary school and Years 7 to 9 in secondary school (see Appendix A for details). Schools were then approached for information about whether these pupils were taking up school meals (defined as taking them at least once in the most recent week). This information was collected in the summer term of 2008/09, before the introduction of the pilot, and then again in summer term 2009/10 and summer term 2010/11. It is used to estimate the impact of the pilot on the take-up of school meals in Section 2.1.

Second, parents of pupils who were identified by their school as not taking school meals at least once a week at baseline were approached to participate in the longitudinal survey. This information on take-up was clarified or, in some cases, obtained directly from parents for the first time as part of the doorstep screening process.²¹ Where pupils were identified, either by the school or on the doorstep, as already taking school meals, no interview was undertaken.

A further screening process was also carried out in pilot area C (the extended entitlement pilot) and its comparison areas, to try to restrict the sample as far as possible to pupils who were likely to be entitled to FSM under either the old or the new criteria. This was assessed by asking pupils' parents about their income and benefit or tax credit receipt. Where their income appeared to be too high for the pupil to be entitled to FSM and they did not receive the relevant benefits or tax credits, no interview was carried out.

For budgetary reasons, the survey in pilot area C and its comparison areas was restricted to secondary school pupils only. To provide an approximate estimate of the impact of the extended entitlement pilot on pupils in primary schools, the impact of the pilot was calculated for a group of pupils in pilot areas A and B who would have been entitled to FSM under the extended criteria that were introduced in pilot area C.

²¹ The first issued sample did not cover enough pupils not taking school meals. A reserve sample was thus issued, for whom there was not enough time to approach schools first about take-up information. Information on take-up was thus obtained for the first time on the doorstep for these pupils.

Of course, the pupils in areas A and B (the universal entitlement areas) who would have been entitled to FSM under the extended entitlement criteria introduced in area C may have had a very different experience of school meal provision from those who are entitled in pilot area C. The reasons for this include the following:

- Universal provision may mean that any potential stigma associated with being identified as eligible for FSM is reduced, thus suggesting that take-up may be higher amongst this group in the universal pilot than in the extended entitlement pilot.
- If ‘spillover’ or ‘peer’ effects are important channels through which the pilot affects pupil attainment (for example, because other pupils in the class benefit from the improved behaviour of previously disruptive pupils), then having more pupils in the school benefiting from FSM may increase the overall impact of the pilot.
- It may be that economies of scale can be reaped from providing more school meals under the universal entitlement pilot, and that these economies of scale lead to improvements in the quality of school meals, which have been shown to have a positive effect on pupil attainment.²²

Estimating the impact of the extended entitlement pilot amongst the group of pupils who would have been entitled under these criteria in the universal pilot areas is thus only an appropriate guide to the impact of the extended entitlement pilot if these factors play a relatively small role in affecting pupil outcomes. Chapter 4 provides some evidence on the likelihood that these assumptions hold.

The restrictions that were imposed on the survey were designed to maximise the value for money of the sample, by focusing face-to-face data collection on individuals on whom the greatest impacts of the pilot could be expected. It is important to note, however, that the sample was designed in such a way as to allow the estimates obtained for this rather skewed sample to be converted into estimates for the entitled population. This is discussed in further detail below, under the heading ‘Quantitative analysis’.

The questionnaire for the longitudinal survey was developed by NatCen in consultation with the Department for Education and the Steering Group for the evaluation. More details of this process are given in Appendix A and a copy of the questionnaire can be found in Appendix E.

National Pupil Database

The National Pupil Database (NPD), maintained and kindly provided for the purposes of this evaluation by the Department for Education, comprises administrative data collected from schools. It contains information on all pupils in state schools in England, including their performance in national achievement tests, the percentage of school time missed in the current academic year and a range of background characteristics. The last include eligibility for free school meals and postcode, which allows pupils to be classified

²² See, for example, Belot and James (2011).

according to the type of area in which they live, using information such as IDACI score and ACORN type.²³ School characteristics are also available. These include the percentage of pupils who are eligible for (and take up) free school meals, the average attainment level of the school and a measure of the increase in pupil attainment over time, known as the school's contextual value added.

The NPD was used in the following ways in this evaluation:

- to select the comparison authorities for each pilot area (see Appendix A for details);
- to select the pupils to be sampled for the longitudinal survey (discussed above and in further detail in Appendix A);
- to provide some baseline background characteristics (for example, gender and ethnicity) to be used as control variables in the estimation of the impact of the pilot on all outcomes;
- to provide information on attainment and absence from school, on which the impact of the pilot is estimated (see Chapter 4 for details).

Management data from the pilot authorities

The three pilot authorities all kindly provided information on the number of school meals that were served each month before and during the pilot, alongside information on the cost of producing these meals and the various sources used to fund the pilot; schools, the local authority, the primary care trust, the School Food Trust and the Department for Education. These data were used to provide additional information on the take-up of school meals in the pilot authorities (to supplement that provided by schools for a sample of pupils, as discussed above), as well as to provide estimates of the total cost of the pilot for the value-for-money analysis.

Analysis

Quantitative analysis

The approach taken in this report to estimating the impact of the FSM pilot on the take-up of school meals and other pupil outcomes is based on a method known as 'propensity score matching'. This approach involves rating pupils in the comparison areas according to how similar they are to each pupil in the relevant pilot area, in terms of available characteristics at baseline. Pupils in comparison areas are then given a different weight in the analysis depending on these ratings so that they 'look' as similar as possible to pupils

²³ IDACI refers to the Income Deprivation Affecting Children Index, which ranges from zero to one and measures the level of deprivation at super output area (each containing approximately 750 households) by combining information on a range of economic, social and housing issues. See <http://www.communities.gov.uk/communities/research/indicesdeprivation/deprivation10/>. ACORN type is available at postcode level and is constructed using a range of information on demographic and socio-economic characteristics, financial holdings and property details, amongst others.

in the pilot areas. As long as the samples look sufficiently similar (that is, they are sufficiently well-balanced) at baseline,²⁴ the impact of the pilot can be estimated by comparing the difference in outcomes between the pilot and comparison areas at follow-up.²⁵

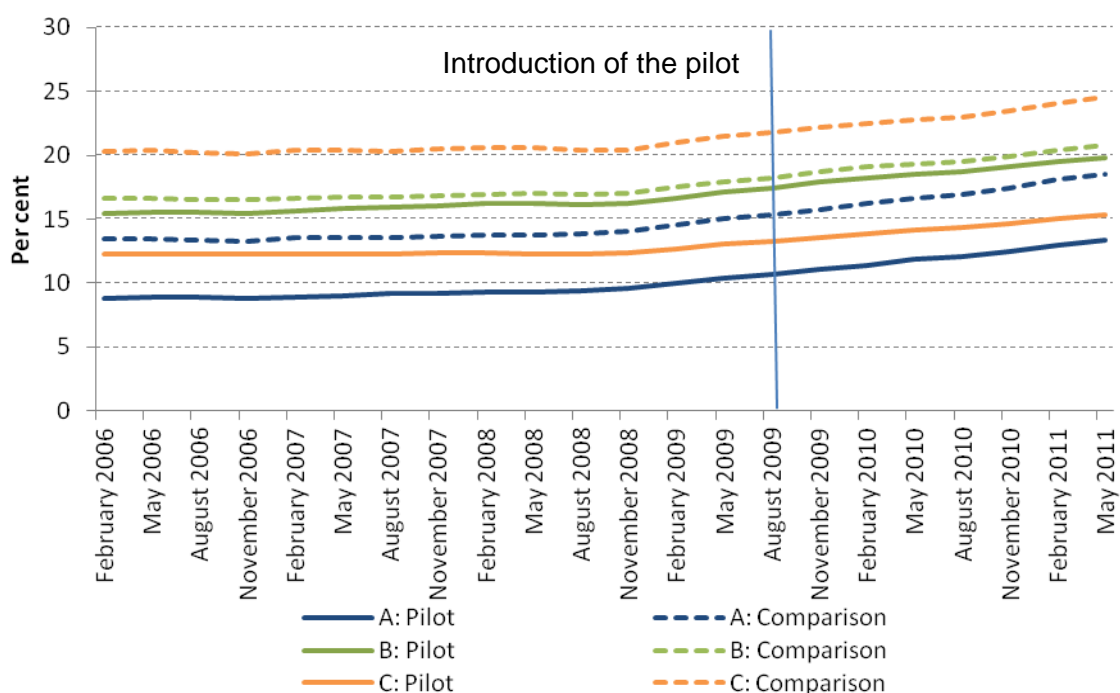
Underlying this approach is the notion of ‘common trends’; that is, the idea that the change in outcomes over time would have been the same in the pilot and comparison areas had the pilot not been introduced. It is not possible to test this assumption over the course of the pilot for the outcomes investigated as part of the evaluation, because they may have been affected by the pilot. But it is possible to do so using these outcomes before the pilot was introduced, or using other factors that are likely to be important predictors of some of the outcomes considered here but are not likely to have been affected by the pilot.

Figure 1.1 takes this latter approach and illustrates how the percentage of the population (aged 16 to 64) receiving Income Support has been changing over the last five years. This is one of the main benefits through which pupils become entitled to FSM under the old criteria. The figure shows that the proportion of individuals receiving Income Support is generally lower in pilot than in comparison areas, particularly in Newham (area A) and Wolverhampton (area C), but that the ways in which these proportions have been changing over time have been relatively similar across pilot and comparison areas. For example, the proportion of individuals receiving Income Support has risen by approximately 4 percentage points in both pilot area A and the set of comparison areas associated with pilot area A. This suggests that, at least on the basis of this particular outcome, which is strongly associated with entitlement to FSM, the common trends assumption seems likely to hold.

²⁴ See Appendix B for more on this issue.

²⁵ This approach is slightly more straightforward than the difference-in-differences approach that was originally proposed for this evaluation (which involves subtracting the change in outcomes over time amongst pupils in comparison areas from the change in outcomes over time amongst pupils in the pilot areas). Where the outcomes at baseline are sufficiently similar, the two approaches are essentially equivalent, assuming that the trend between baseline and follow-up is the same in both pilot and comparison areas.

Figure 1.1 Percentage of the adult population in receipt of Income Support by pilot and comparison area



Notes to Figure 1.1: The figures for comparison areas A, B and C are simple averages (that is, not weighted by population) of all local authorities in each respective comparison area.

Source: Authors' calculations based on NOMIS data (official labour market statistics) from the Office for National Statistics.

The process through which pupils in the pilot area are 'matched' to similar pupils in the comparison area was carried out separately for pupils in each data set used for the analysis. In other words, matching was done separately for the take-up sample, the longitudinal survey sample and the population in the NPD. The reasons for this were that different information is available in each case and that different characteristics are likely to be relevant for determining different outcomes. For example, whether a pupil has special educational needs is likely to be relevant when considering the impact of the pilot on attainment, but not when considering the impact on whether they eat certain types of food at different times of the day. In general, characteristics that may differ across pilot and comparison areas and that are likely to affect the outcome in question are included in the model (see Appendix B for further discussion of the modelling approach that was used).

As discussed above, information on the take-up of school meals and from the longitudinal survey is available for a restricted group of pupils only. It is possible to estimate the impact of the pilot on this specific group of pupils. The way in which these pupils were sampled also allows impacts to be calculated for a wider group of pupils in the pilot area. This can be done by giving less weight to the outcomes of pupils who were oversampled in these data sets, such as those from low socio-economic backgrounds, and more weight to the

outcomes of pupils who were undersampled, such as those from high socio-economic backgrounds.²⁶

While such an approach enables conclusions about the impacts of the pilot to be drawn across a wider range of individuals, it relies on giving a lot of weight to a relatively small number of individuals from high socio-economic backgrounds. If the impacts of the pilot differ markedly across individuals (specifically, if they appear to be very different for this group of pupils compared with the rest of the sample), then this may provide a skewed picture of the overall impact of the pilot. To check that the conclusions drawn about the impact of the pilot are robust to this issue, estimates have been calculated both with and without weighting the sample in this way. In fact, the estimates are very similar regardless of the population used, suggesting that the issue of re-weighting is not a large concern for this evaluation. In general, therefore, impact estimates are presented for the widest possible population in each case. Table 1.1 summarises the populations for which different impact estimates are calculated.

Table 1.1 Population to which different impact estimates relate		
	Pilots A and B (universal entitlement)	Pilot C (extended entitlement)
Take-up data (Section 2.1)	All pupils in Reception to Year 4	All pupils in Years 7 to 9
Longitudinal survey data (Chapter 3)	All non-takers of school meals in Reception to Year 4	All non-takers of school meals in Years 7 to 9 likely to be entitled to FSM under the new criteria
Attainment data (Chapter 4)	All pupils who sat the relevant Key Stage test at follow-up	All pupils who sat the relevant Key Stage test at follow-up
Absences data (Chapter 4)	All pupils in Years 1 to 6	All pupils in Years 1 to 11

It is also worth noting that, unless otherwise stated, all impacts discussed in this report are statistically significant at the 5 per cent level; that is, in 95 per cent of randomly drawn samples of pupils, we would expect the impact of the pilot (the difference observed between pupils in pilot and comparison areas) to be different from zero. In other words, there is a high degree of certainty that statistically significant results do not occur due to chance.

²⁶ Specifically, this is done using weights equivalent to the inverse of the selection probabilities, which varied by quartile of the distribution of socio-economic status. See Appendix B for details.

Qualitative case studies

NatCen also carried out a programme of qualitative research to explore the implementation of the pilot. This research comprised:

- a scoping study exploring the design and implementation of the FSM pilot at the local authority level;
- ten school case studies designed to capture the experiences of implementing the pilot, to explore reflections of take-up in the three pilot areas and to examine the range of perceived impacts of the pilot. Schools were visited on two occasions, in the spring terms of 2010 and 2011,²⁷ during which individuals directly involved in the pilot were interviewed. These people included senior managers, catering staff, teachers, pupils and parents. The sample was (purposively) selected to ensure variation in the range and type of schools involved in the pilot.

The key findings of this qualitative research are summarised in Chapter 5 of this report, with more detail available in the separate implementation report.²⁸ These findings are drawn upon to contextualise the impacts of the pilot where relevant throughout this report.

²⁷ Only nine of the ten schools participated in the second stage.

²⁸ <https://www.education.gov.uk/publications/RSG/AllRsgPublications/Page1/DFE-RR228>

2 Impacts on take-up of school meals

This chapter discusses the impact of the Free School Meals (FSM) pilot on the take-up of school meals and how this differs by area and between pupils with different characteristics. It also provides some potential explanations for these differences in take-up based on information collected in the longitudinal survey of parents and pupils and the caterers' survey.

Key findings

- The impact of the universal entitlement pilot on the take-up of school meals amongst primary school pupils was generally large, positive and significant. This arose primarily because of substantial increases in the take-up of school meals in the pilot areas.
- These effects were largest amongst pupils who were not taking school meals at baseline and those who were not eligible for FSM under the old criteria at baseline. Interestingly, there was also a significant effect amongst those who were already entitled to (and registered for) FSM at baseline.
- The impact of the extended entitlement pilot on the take-up of school meals amongst secondary school pupils was smaller and always statistically indistinguishable from zero. Here, any impact arose primarily through the maintenance of take-up (compared with a decrease amongst similar pupils in comparison areas) rather than an increase in take-up in the pilot area. This was particularly true for older children.
- The impact of the universal entitlement pilot on take-up amongst pupils predicted to be newly entitled to FSM under the extended criteria piloted in area C was generally larger than the impact amongst all pupils in areas A and B (although not always significantly so). It was also substantially larger for primary school pupils in the universal entitlement areas (A and B) than for secondary school pupils in the extended entitlement area (C).
- Awareness of the pilot was high, particularly in the universal entitlement areas. Amongst those who decided not to take up the offer of free meals in the pilot areas, the main deterrents were to do with meal choice, while cost was one of the most common barriers to taking school meals in the comparison areas.

This chapter now proceeds as follows: Section 2.1 presents the impacts of the universal and extended entitlement pilots on school meal take-up overall, amongst those who were newly entitled to FSM under the extended entitlement criteria and amongst various other groups of pupils; Section 2.2 uses information from the longitudinal survey of parents and pupils, telephone interviews with caterers and the qualitative case studies to provide some insight into these changes in take-up; and Section 2.3 discusses these results.

2.1 Impact on school meal take-up

This section discusses the impact of the FSM pilot on school meal take-up. The main source of information used in this section is the take-up data collected from schools for pupils originally sampled for the longitudinal survey of parents and pupils, in which ‘taking school meals’ is defined as having school meals at least once in the previous week. From this source, information is only available for primary school pupils in areas A and B and secondary school pupils in area C. As discussed in the introduction, pupils from low socio-economic backgrounds were oversampled in the longitudinal survey, but the results presented in this chapter have been weighted back to the relevant pilot population in each area.²⁹ The impact of the pilot is thus reported for all pupils in Years 0 (Reception) to 4 in areas A and B and for all pupils in Years 7 to 9 in area C.

The main advantage of estimating the impact of the pilot on take-up using this source is that a matched comparison group (that is, a group of pupils with similar characteristics in the comparison areas) is available to provide a ‘counterfactual’ outcome. In other words, it provides a sense of what would have happened to take-up in the pilot areas if the pilot had not been introduced. There are other sources of data available (generally without this advantage) that also provide information on the take-up of school meals. These additional data are useful for two reasons: (1) as a robustness check for the main results; and (2) to provide some information on the take-up of school meals amongst primary school pupils in area C who were not sampled as part of the longitudinal survey.

Specifically, information on school meal take-up is available from three other sources: (a) data on the number of school meals served by each of the pilot local authorities from their management information; (b) data from the School Food Trust survey, which is based on local authority reports of information similar to that provided to the evaluation by the pilot authorities; and (c) more detailed measures of take-up, such as the number of school meals eaten per week, for pupils in the longitudinal survey (who were all non-takers of school meals at baseline). These sources of information are used as robustness checks where appropriate for the information collected directly from schools.

Overall impact

Each figure in this section compares the proportion of pupils in the pilot area who take up school meals with the proportion of pupils in the comparison areas (with similar characteristics) who take up school meals. Because the pupils in comparison areas are chosen to ‘look’ as similar as possible to pupils in the pilot areas in order to best represent what would have happened to take-up in the pilot areas in the absence of the pilot, the difference in take-up between these two groups represents the impact of the pilot on take-

²⁹ It is worth noting that the unweighted estimates are very similar to those presented in this chapter. This suggests that the impact on take-up is not being driven by particular socio-economic groups.

up. The process through which a similar group of pupils in comparison areas is chosen is known as propensity score matching, the details of which are set out in Appendix B.

In each figure, the dark turquoise bar shows the percentage of pupils in the pilot area who take up school meals. The light turquoise bar shows the percentage of similar pupils in comparison areas (referred to as the matched comparison group) who take up school meals. The final bar shows the percentage point difference between them. Where this final bar is shaded bright green, the difference between the two groups of pupils is statistically significant at the 5 per cent level.

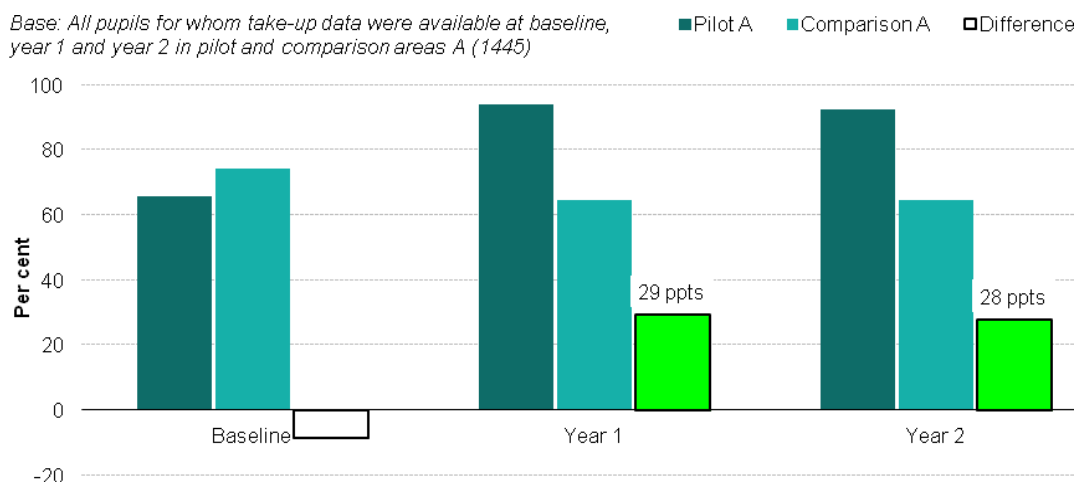
The first three bars in each figure show the take-up of school meals in the pilot and matched comparison groups and the difference between them before the pilot was introduced (at baseline). If the pupils in the comparison areas are very similar to those in the pilot areas, then there should be little or no difference in take-up between the pilot and matched comparison groups at baseline. The figures in this section illustrate that the matching process has worked well for all pilot areas, as there are only small and insignificant differences in take-up at baseline between the pilot area and its respective matched comparison area.

In a similar vein, the second and third groups of bars in each figure represent the impact of the pilot on take-up in year 1 and year 2 of the pilot.

Figures 2.1 and 2.2 present the impact of the universal entitlement pilot on school meal take-up amongst primary school pupils in Reception to Year 4 in areas A and B respectively. They show that, one year into the pilot, take-up had increased substantially in both areas, rising from 66 per cent to 94 per cent in area A and from 56 per cent to 89 per cent in area B, before falling back slightly to 92 per cent in area A and 88 per cent in area B after two years. Taking into account the slight fall in take-up over the same period amongst pupils in the matched comparison group, the impact of the pilot has been to increase take-up by 28 percentage points (ppts) in area A and 29 percentage points in area B after two years. These results are very similar if the impact of the pilot is calculated for areas A and B together. This must be done for some of the analysis for groups of pupils with particular characteristics in this chapter and for outcomes based on the longitudinal survey of parents and pupils, in which sample sizes are somewhat smaller.

Figure 2.1 Impact on take-up in area A (universal entitlement)

Base: All pupils for whom take-up data were available at baseline, year 1 and year 2 in pilot and comparison areas A (1445)

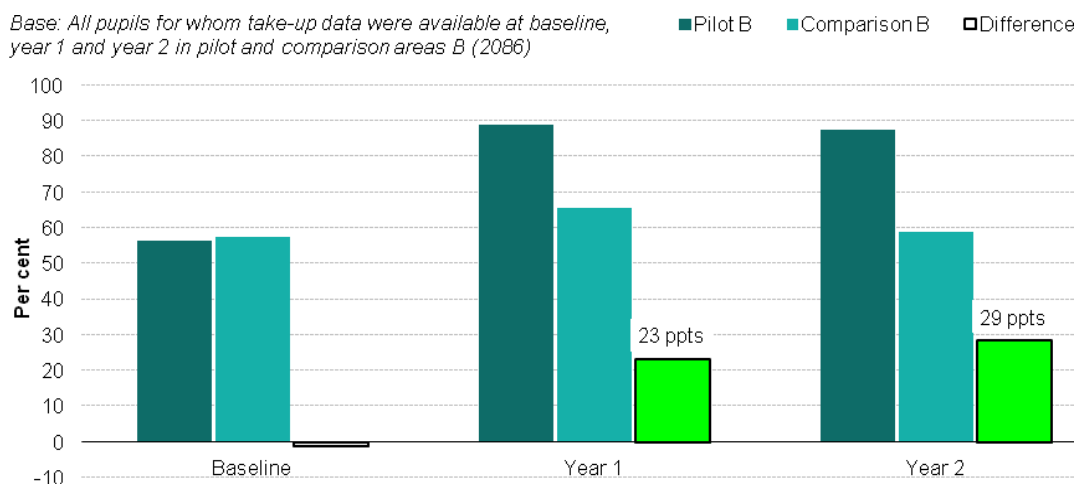


Notes to Figure 2.1: If the difference between the pilot and matched comparison groups is not shaded green, then the impact estimate is not significantly different from zero at the 5 per cent level.

Source: Data collected from a sample of schools in pilot and comparison areas for pupils originally sampled for the longitudinal survey of parents and pupils. These figures relate to all pupils in Years 0 (Reception) to 4.

Figure 2.2 Impact on take-up in area B (universal entitlement)

Base: All pupils for whom take-up data were available at baseline, year 1 and year 2 in pilot and comparison areas B (2086)

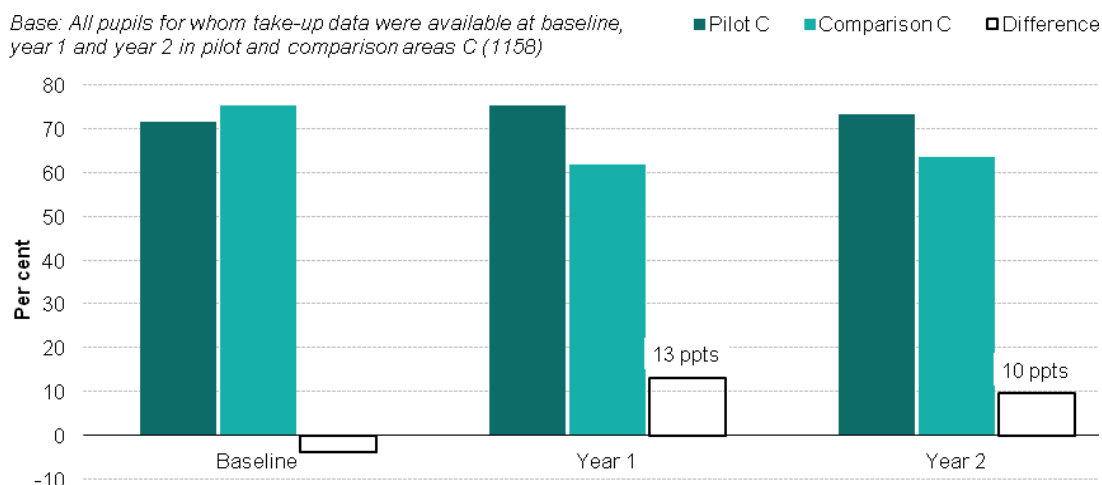


Notes to Figure 2.2: If the difference between the pilot and matched comparison groups is not shaded green, then the impact estimate is not significantly different from zero at the 5 per cent level.

Source: Data collected from a sample of schools in pilot and comparison areas for pupils originally sampled for the longitudinal survey of parents and pupils. These figures relate to all pupils in Years 0 (Reception) to 4.

Figure 2.3 Impact on take-up in area C (extended entitlement)

Base: All pupils for whom take-up data were available at baseline, year 1 and year 2 in pilot and comparison areas C (1158)



Notes to Figure 2.3: If the difference between the pilot and matched comparison groups is not shaded green, then the impact estimate is not significantly different from zero at the 5 per cent level.

Source: Data collected from a sample of schools in pilot and comparison areas for pupils originally sampled for the longitudinal survey of parents and pupils. These figures relate to all pupils in Years 7 to 9.

Figure 2.3 presents the impact of the pilot on take-up amongst pupils in Years 7 to 9 in area C, the extended entitlement pilot.³⁰ It shows that, prior to the introduction of the pilot, take-up amongst these pupils was higher than amongst primary school pupils in areas A and B, with 72 per cent of pupils taking up school meals in area C at baseline, compared with 66 per cent in area A and 56 per cent in area B. In contrast to areas A and B, there was only a very small increase in take-up in area C following the introduction of the pilot, to 75 per cent after one year and 73 per cent after two years. Potential reasons for this are explored in more detail in the qualitative report,³¹ but include the fact that the price of a school meal increased quite substantially (from a low base) in pilot area C over this period; there was also an increase in the amount of time pupils had to spend queuing for their lunch.

Over the same period, take-up amongst similar pupils in the comparison areas fell substantially. Thus, while the impact of the pilot in area C is not significantly different from zero, it appears that take-up in the pilot area was higher than it otherwise would have been, suggesting that the pilot maintained existing levels of take-up rather than increasing them. It is perhaps not surprising that the impact of the pilot in area C is lower than that in areas A and B, given that entitlement to FSM was only extended rather than made universal, thus offering free school meals to fewer additional pupils in area C. To

³⁰ Under this pilot, entitlement to FSM was extended to cover pupils whose families were claiming Working Tax Credit but whose annual income did not exceed the existing income criteria (£16,040 in 2008-09, uprated to £16,190 in 2010-11).

³¹ <https://www.education.gov.uk/publications/RSG/AllRsgPublications/Page1/DFE-RR228>

investigate this issue further, the next section discusses the impact of the pilot on pupils who are predicted to be newly entitled to FSM under pilot C.

Comparison of impact on take-up from other sources

This subsection compares the take-up figures collected directly from schools (discussed above) with the figures available from management information collected by the pilot authorities and from the School Food Trust (SFT) survey for all pilot areas.

The 'annual survey of take up of school meals in England' has been produced by the SFT each year since 2005-06.³² From 2009 onwards, take-up in primary schools is calculated as the reported total number of school meals served divided by the total number of pupils attending the school full-time. The calculation for secondary schools is slightly more complicated as it is based on till receipts rather than reported by lunchtime catering staff.³³ In both cases, figures are based on information from the previous financial year, which runs from April to March, rather than the previous academic year.

Management data have additionally been supplied by each of the pilot authorities. For each month of the pilot, these report the total number of pupils at each school, the number of school days covered, excluding weekends and holidays, and therefore the total potential number of school meals that could be served. They also include the total number of school meals that were actually served. Dividing one by the other produces the percentage of total possible meals that were provided by the school. This information is also used in the value-for-money analysis in Chapter 6.

Table 2.1 compares the take-up of school meals from different sources in each pilot area over the baseline and pilot years. The first column presents the percentage of pupils taking school meals at least once a week (as displayed in Figures 2.1 to 2.3) based on information collected directly from schools. As noted above, this information was not collected for primary school pupils in pilot area C. The second column presents the information available from the SFT and the third column presents the information derived from the management data provided directly by pilot local authorities (LAs).

³² All reports can be found at <http://www.schoolfoodtrust.org.uk/school-cooks-caterers/reports>.

³³ For more details, see http://webarchive.nationalarchives.gov.uk/20091004005018/http://schoolfoodtrust.org.uk/UploadDocs/Library/Documents/technical_paper_on_ni52.pdf.

Table 2.1 Comparison of the take-up of school meals from different sources			
	(1) Take-up data collected from schools	(2) School Food Trust annual survey	(3) Management data supplied by pilot Las
	%	%	%
Pilot area A (universal entitlement; primary)			
Baseline	66	50	48
Year 1	94	60	78
Year 2	92	69	83
Pilot area B (universal entitlement; primary)			
Baseline	56	49	50
Year 1	89	72	85
Year 2	88	84	83
Pilot area C (extended entitlement; primary)			
Baseline	-	39	-
Year 1	-	44	75
Year 2	-	46	75
Pilot area C (extended entitlement; secondary)			
Baseline	72	30	-
Year 1	75	39	61
Year 2	73	44	59

Source: (1) Data collected from a sample of schools in pilot and comparison areas for pupils originally sampled for the longitudinal survey of parents and pupils; the figures in areas A and B relate to all pupils in Years 0 (Reception) to 4; the figures in area C relate to all pupils in Years 7 to 9. (2) Data from the fourth, fifth and sixth annual School Food Trust surveys. (3) Management data supplied by each pilot local authority.

In comparing these figures, there are some important differences to note:

- The information from the SFT survey and from the management data (columns 2 and 3) both show the total percentage of meals provided by the school, rather than the percentage of pupils having school meals at least once a week as in the take-up data collected directly from schools (column 1).
- The figures based on the SFT survey and on the pilot authority management data are for all primary or all secondary school pupils (Reception to Year 6 or Years 7 to 11), while the figures collected directly from schools only cover pupils in Reception to Year 4 or Years 7 to 9, at baseline. To the extent that older pupils are less likely to take up school meals, this may partially explain why the figures collected from schools are generally higher than those provided directly by the pilot authorities.

- The SFT survey relates to a financial year rather than an academic year, which means that the SFT data slightly lag those provided by the pilot authorities and those collected directly from schools. This is particularly noticeable in year 1 of the pilot, where the SFT figures are substantially lower than those based on the other sources of information; this is because the SFT figures comprise a weighted average of four months before the pilot was introduced and seven months after, compared with 12 months after the pilot was introduced in the other two sources of data.
- The management data for pilot area C relate only to pupils believed to be entitled to the pilot, whereas the SFT survey and the information collected directly from schools relate to all pupils in the area.³⁴ This may help to explain why take-up is so much lower in the SFT survey than in the management data for primary and secondary school pupils in area C.

Despite these differences, the figures provided by all three sources (and indeed the figures from the caterers' survey, discussed in more detail in the qualitative report³⁵) still suggest that take-up increased substantially in areas A and B following the introduction of the universal entitlement pilot. The change in take-up is less marked in area C, the extended entitlement pilot, but the figures provided directly by the pilot authority suggest that a substantial proportion of pupils believed to be entitled to FSM under the extended entitlement criteria were taking up school meals in both primary and secondary schools. This latter fact can also be investigated for pupils in all pilot areas (although only for pupils in secondary schools in area C) using information collected directly from schools, which is discussed in the next section.

Impact on those predicted to be newly entitled to free school meals under pilot C

Under the pilot introduced in area C, entitlement to FSM was extended to cover pupils whose families were claiming Working Tax Credit but whose annual income did not exceed the existing income criteria (£16,040 in 2008-09, uprated to £16,190 in 2010-11); that is, to lower-income working families. The pilot authority (Wolverhampton) also made a concerted effort to promote the benefits of school meals to, and encourage the take-up of school meals amongst, pupils who were entitled to FSM under the old and/or new criteria.

Using the information collected in the longitudinal survey of parents and pupils, it is possible to identify pupils who would be newly entitled to FSM under these criteria, not only in the extended entitlement area (C), but also in the universal entitlement areas (A and B). It is not possible to precisely identify entitlement for pupils who do not appear in the longitudinal survey, however, because the necessary information is not available in the take-up data or in the National Pupil Database. To identify the impact of the pilot on

³⁴ Remember that the information obtained directly from schools has been weighted back to the pilot population, even though it was collected on a skewed sample of pupils only.

³⁵ <https://www.education.gov.uk/publications/RSG/AllRsgPublications/Page1/DFE-RR228>

take-up (and attainment and absences) amongst all pupils who would be newly entitled to FSM under the extended entitlement criteria introduced in area C, it is therefore necessary to make some assumptions about the pupils who would be entitled who do not appear in the longitudinal survey.

To do so, information that is available for all pupils and that is likely to be correlated with entitlement is used to model entitlement to FSM under pilot C for pupils in the longitudinal survey (for whom actual entitlement is observed). The information used for this includes ethnicity, attainment at baseline and detailed local area information from the Income Deprivation Affecting Children Index (IDACI) and ACORN data. The results of the model are then used to predict entitlement for all pupils in the pilot and comparison areas. This process accurately predicts entitlement for two-thirds of pupils in area A, three-quarters in area B and 57 per cent in area C. Full details of this procedure can be found in Appendix C.

Using this method, 44 per cent of pupils in pilot area A, 26 per cent of pupils in pilot area B and 36 per cent of pupils in pilot area C are predicted to become newly entitled to FSM under the extended entitlement criteria introduced in area C.³⁶ This section estimates the impact of the pilot on these pupils in area C and in areas A and B combined (to ensure that sample sizes are large enough to produce robust results).

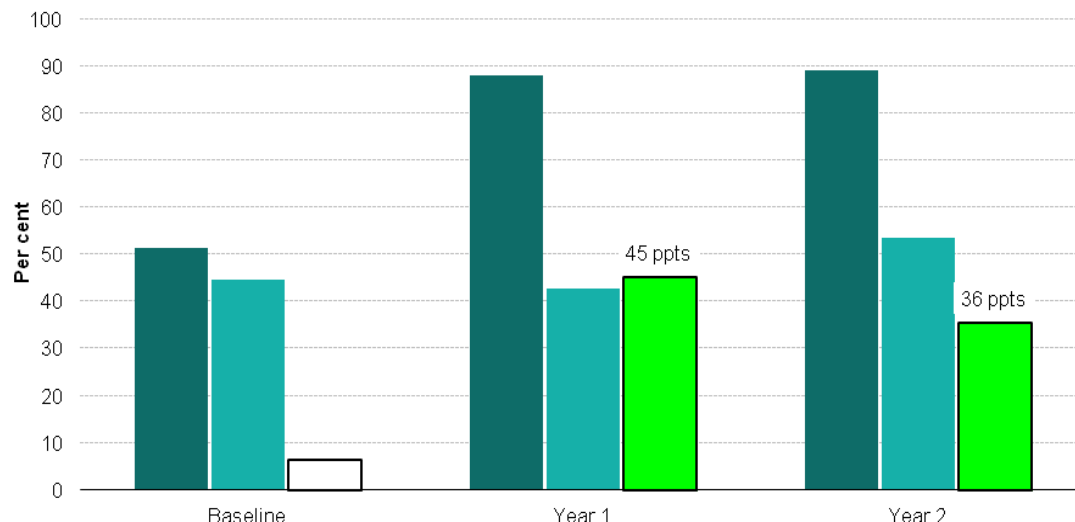
Figure 2.4 presents the combined results for primary school pupils in areas A and B. Take-up amongst pupils predicted to be newly entitled to FSM under the extended entitlement criteria was somewhat lower at baseline (51 per cent) than for all pupils in these areas (59 per cent). This seems reasonable if school meals were (perceived to be) relatively expensive compared with taking a packed lunch from home.

Figure 2.4 also shows that the impact of the universal pilot on school meal take-up was substantially higher amongst this group than for the population overall. For example, one year into the pilot, pupils who are predicted to be newly entitled to FSM under the pilot C criteria in areas A and B were 45 percentage points more likely to take school meals than otherwise identical pupils in the matched comparison group, compared with 26 percentage points more likely amongst all pupils in areas A and B. After two years, this figure fell slightly (to 36 percentage points) but remained higher than the overall figure (at 29 percentage points).

³⁶ Here, 'newly entitled' is used to describe all pupils who were predicted to be entitled to FSM under the extended entitlement criteria introduced in area C, but who were not eligible (that is, entitled and registered) for FSM under the old criteria. This means that it may include some pupils who were entitled to but not registered for FSM under the old criteria.

Figure 2.4 Impact on take-up in areas A and B (universal entitlement) amongst pupils predicted to be newly entitled to FSM under extended entitlement criteria introduced in area C

Base: Pupils who are predicted to be newly entitled under pilot C and for whom take-up data were available at baseline, year 1 and year 2 in pilot and comparison areas A and B (806)



Notes to Figure 2.4: If the difference between the pilot and matched comparison groups is not shaded green, then the impact estimate is not significantly different from zero at the 5 per cent level.

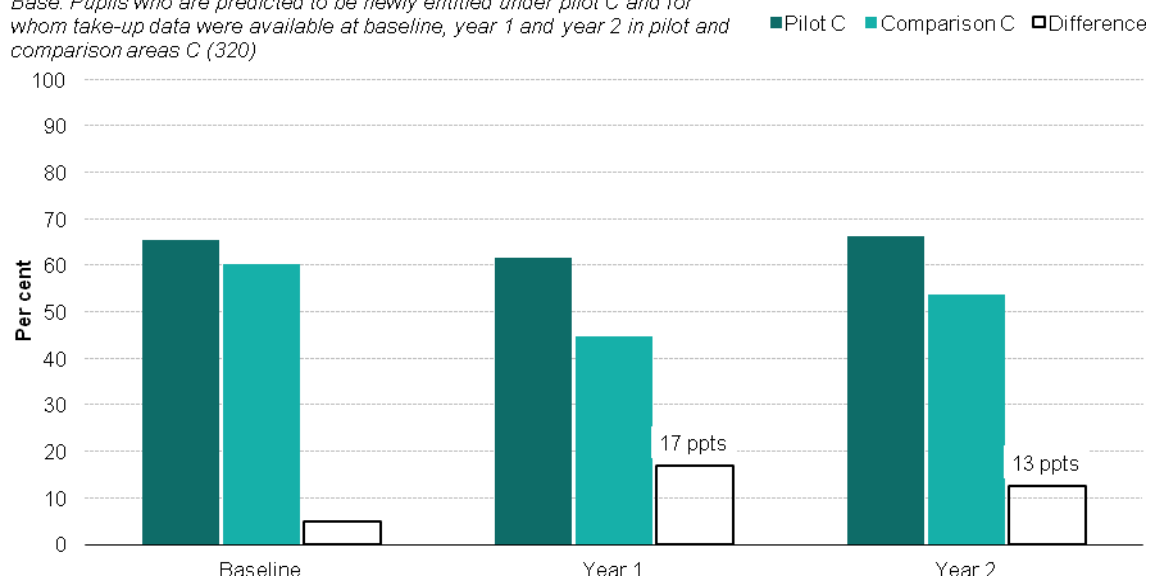
Source: Data collected from a sample of schools in pilot and comparison areas for pupils originally sampled for the longitudinal survey of parents and pupils. These figures relate to all pupils in Years 0 (Reception) to 4 who are predicted to be newly entitled to FSM under the extended entitlement criteria introduced in area C.

It is interesting to note that this larger impact arises primarily because take-up amongst this group was substantially lower in the comparison areas than it was for all pupils (as was the case in the pilot areas at baseline), rather than because take-up in the pilot areas had risen to a higher level for these pupils than for the population as a whole. This suggests that those from the least affluent families may be the least likely to take up school meals in the absence of free provision, and may therefore benefit the most from the introduction of the universal entitlement pilot.

Figure 2.5 presents the impact of the pilot on those who were newly entitled to FSM under pilot C amongst secondary school pupils in area C. As for areas A and B, take-up of school meals at baseline was somewhat lower amongst this group than for all pupils in area C (66 per cent compared with 72 per cent). Moreover, in line with the results for all pupils in area C, the pilot seems to have maintained take-up amongst pupils from less affluent families rather than to have increased it. Given that take-up fell amongst pupils in the matched comparison group over this period, the impact of the pilot on school meal take-up was large and positive, although not significantly different from zero because of the relatively small numbers of pupils in these groups.

Figure 2.5 Impact on take-up in area C (extended entitlement) amongst pupils predicted to be newly entitled to FSM

Base: Pupils who are predicted to be newly entitled under pilot C and for whom take-up data were available at baseline, year 1 and year 2 in pilot and comparison areas C (320)



Notes to Figure 2.5: If the difference between the pilot and matched comparison groups is not shaded green, then the impact estimate is not significantly different from zero at the 5 per cent level.

Source: Data collected from a sample of schools in pilot and comparison areas for pupils originally sampled for the longitudinal survey of parents and pupils. These figures relate to all pupils in Years 7 to 9 who are predicted to be newly entitled to FSM under the extended entitlement criteria introduced in area C.

It is interesting to compare these results with those for pupils in areas A and B who are predicted to be newly entitled to FSM under the extended entitlement criteria introduced in pilot area C, for whom the impact was found to be substantially higher. There are several potential explanations for this difference, including the following:

- The impact on take-up amongst secondary school pupils is generally smaller than the impact on primary school pupils.
- The impact of the pilot on those predicted to be newly entitled to FSM under pilot C is larger when there is universal provision. This could arise if, for example, parents are not aware that they meet the entitlement criteria, or if pupils or parents feel stigmatised by the need to identify themselves as FSM claimants. It could also arise because the ‘whole school’ approach adopted to promote the take-up of school meals in the universal entitlement areas was an important factor driving the impact of the pilot on take-up and other outcomes.

For technical reasons, it was more difficult to predict entitlement amongst pupils in area C than amongst pupils in areas A and B, which could potentially explain some of this difference. (See Appendix C for a fuller discussion of the issues surrounding the prediction of entitlement.) Unfortunately, it is not possible to tell which of these explanations is driving these results, although discussion in Section 2.2 below suggests that parents were less likely to be aware of the pilot in area C than in areas A and B.

Analysis for pupils with different characteristics

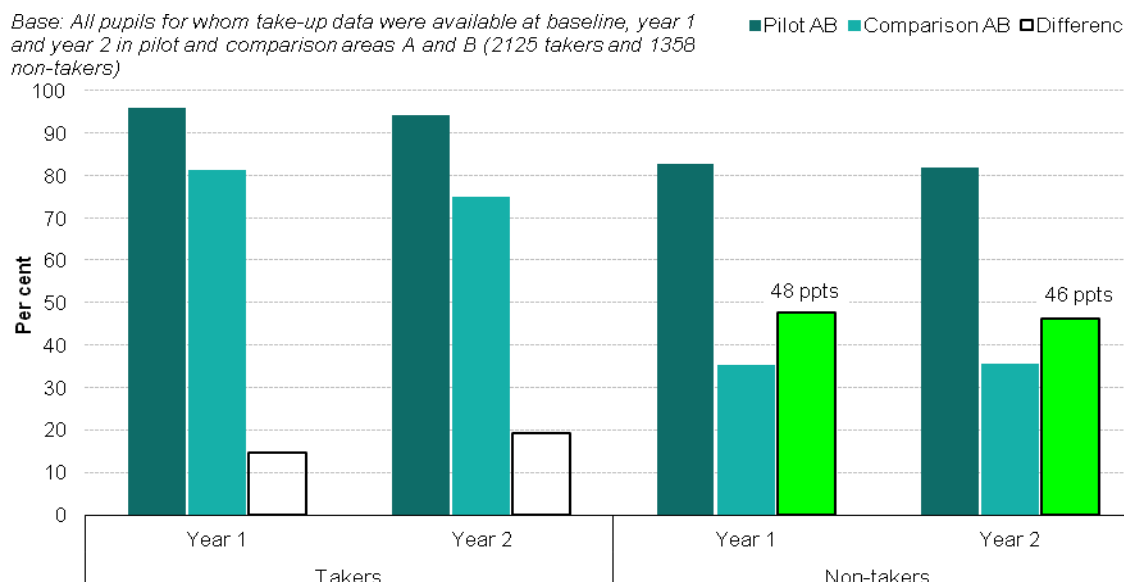
This section discusses whether the impact of the FSM pilot was greater amongst some groups of pupils with particular characteristics at baseline. In particular, it considers differences by school meal take-up status, by eligibility for FSM under the old criteria and by school year group. In each case, areas A and B are considered together.

By school meal take-up at baseline

Figure 2.6 presents estimates of the impact of the universal entitlement pilot on take-up amongst pupils who were and were not taking school meals at baseline in areas A and B combined. In contrast to the figures in the previous sections, baseline differences in take-up are not reported here, as they are zero by construction. This is because all takers are taking school meals at baseline and all non-takers are not; this is true in both pilot and comparison areas, hence the difference between the two is zero at baseline.

Figure 2.6 Impact on take-up in areas A and B (universal entitlement) by take-up status at baseline

Base: All pupils for whom take-up data were available at baseline, year 1 and year 2 in pilot and comparison areas A and B (2125 takers and 1358 non-takers)



Notes to Figure 2.6: If the difference between the pilot and matched comparison groups is not shaded green, then the impact estimate is not significantly different from zero at the 5 per cent level.

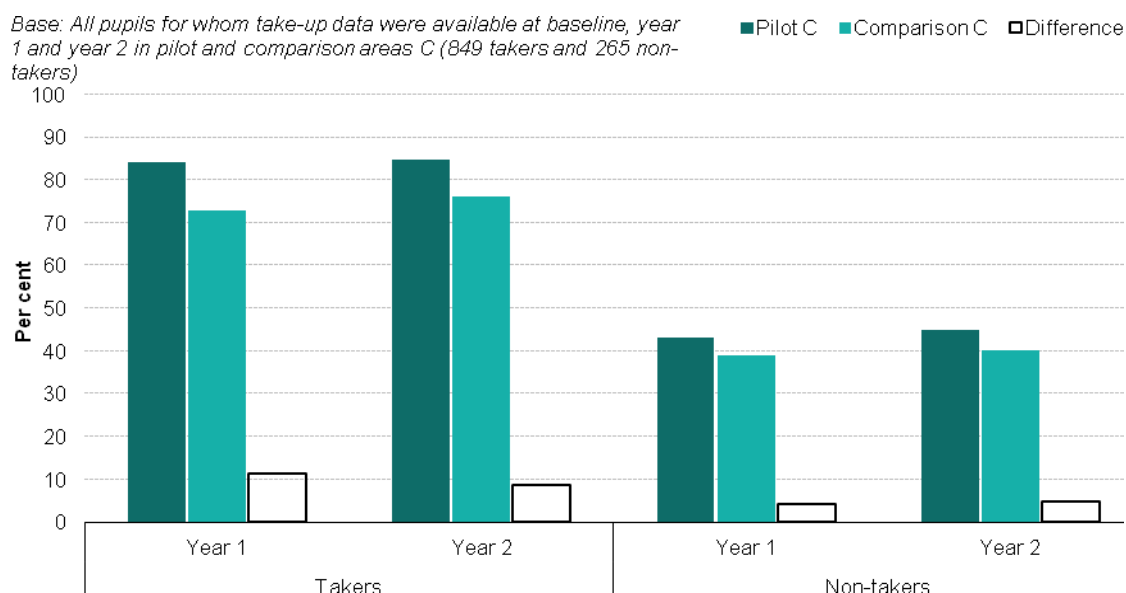
Source: Data collected from a sample of schools in pilot and comparison areas for pupils originally sampled for the longitudinal survey of parents and pupils. These figures relate to all pupils in Years 0 (Reception) to 4 and are split according to take-up status at baseline.

Take-up cannot rise from its baseline level amongst those who were taking school meals at baseline; similarly, it cannot fall amongst those who were not taking school meals at baseline. It is interesting to compare the relative change in take-up between pupils in the pilot and matched comparison groups. This comparison reveals that the decrease in take-up amongst takers was smaller, and the increase amongst non-takers larger, in the pilot areas than in the comparison areas, suggesting that the universal entitlement pilot acted to increase take-up amongst both groups (compared with what would have happened in the absence of the pilot). Amongst takers, these effects ranged from 15 to 19 percentage

points, so are large in magnitude, but they are not significantly different from zero. Amongst non-takers, they are substantially bigger, at nearly 50 percentage points, and highly significant. Reassuringly, these estimates are very similar to those found amongst pupils in the longitudinal survey (who were all non-takers at baseline). Please see Chapter 3 for further discussion.

It seems fairly intuitive that the impact of the pilot on take-up arises largely from those who were not taking school meals at baseline, but it is interesting to note that the introduction of the pilot also offset the decline in take-up for those taking school meals at baseline. This suggests that the substantial increase in the numbers of pupils taking school meals in areas A and B does not appear to have had a detrimental effect on those taking school meals at baseline, at least not in terms of their likelihood of taking up school meals.

Figure 2.7 Impact on take-up in area C (extended entitlement) by take-up status at baseline



Notes to Figure 2.7: If the difference between the pilot and matched comparison groups is not shaded green, then the impact estimate is not significantly different from zero at the 5 per cent level.

Source: Data collected from a sample of schools in pilot and comparison areas for pupils originally sampled for the longitudinal survey of parents and pupils. These figures relate to all pupils in Years 7 to 9 and are split according to take-up status at baseline.

Figure 2.7 presents the impact of the extended entitlement pilot in area C by take-up status at baseline. It shows that the pilot had a positive but insignificant effect on both those who did and those who did not take school meals at baseline. Interestingly, in contrast to the results for areas A and B presented above, the impact in pilot area C was larger for takers than for non-takers. This implies that the extended entitlement pilot seemed to be more successful at maintaining take-up amongst takers than increasing

take-up amongst non-takers, although it is important to note that none of these estimates is significantly different from zero.³⁷

It is also worth noting that take-up estimates based on the longitudinal survey, which in pilot area C comprises pupils from less affluent families who were non-takers at baseline, suggest that the impact of the pilot on this group is larger (16 percentage points), although still not significantly different from zero. See Chapter 3 for further discussion.

By eligibility for free school meals at baseline

Figure 2.8 presents estimates of the impact of the universal entitlement pilot on pupils in areas A and B who were and were not eligible for FSM at baseline under the old criteria. Unsurprisingly, take-up of school meals at baseline was substantially higher amongst those who were eligible for FSM (just under 90 per cent) than amongst those who were not (just over 50 per cent). Perhaps more surprisingly, the impact of the pilot was positive and significant for pupils who were already eligible for FSM at baseline as well as for those who were not. In year 2, take-up had risen slightly in the pilot areas amongst those who were eligible for FSM under the old criteria at baseline, while it had fallen amongst pupils in the matched comparison group, suggesting that the pilot increased take-up by 16 percentage points after two years. After one year, the impact of the pilot was slightly smaller, at 11 percentage points, but still significant; results not shown. Of course, it may be that FSM eligibility amongst pupils in the matched comparison group is changing over time, such that take-up has only fallen in the comparison areas because pupils have become ineligible for FSM; nonetheless, it is interesting to note that the universal FSM pilot was able to improve take-up amongst a group who were already entitled to, and registered for, free school meals at baseline.³⁸

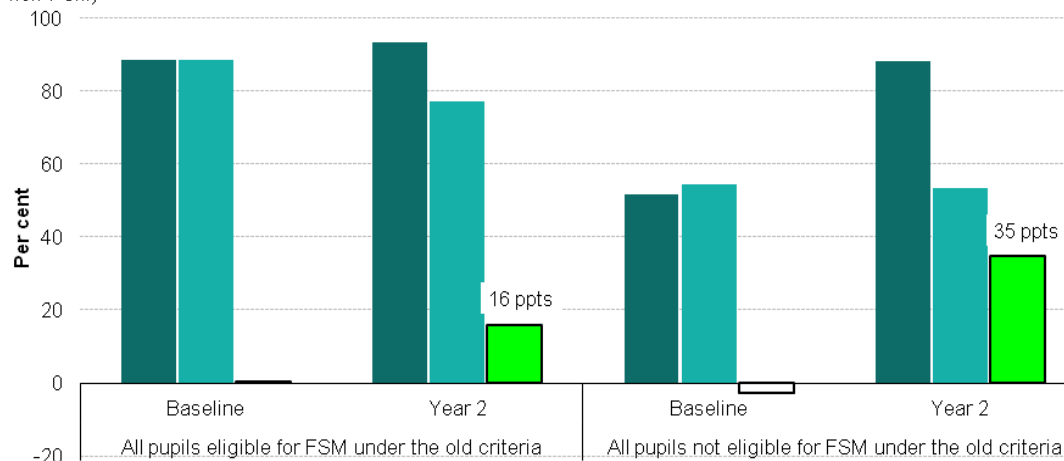
The impact of the universal entitlement pilot on take-up amongst those who were not eligible for FSM at baseline was, unsurprisingly, substantially higher: in year 2, pupils in the pilot area who were not eligible for FSM under the old criteria were 35 percentage points more likely to be taking school meals than those in the matched comparison group. This is a slight fall from a 37 percentage point impact a year earlier.. This difference arises primarily as a result of a substantial increase in take-up amongst those in the pilot area (rather than a fall amongst those in the comparison areas), such that, after the pilot had been in operation for nearly two years, take-up was almost as high amongst this group as amongst those who were eligible for FSM at baseline.

³⁷ While one would generally expect the overall difference in take-up (reported in Figure 2.3) to be a weighted average of the estimated impacts for takers and non-takers (reported in Figure 2.7), this is not the case here. This may be because the estimates in pilot area C are imprecisely estimated, meaning that it is difficult to distinguish them from zero let alone from one another.

³⁸ In fact, figures for the comparison areas as a whole suggest a slight rise in the proportion of pupils who are eligible for FSM over the period covered by the pilot (although that does not mean that the same pattern would have been observed amongst those who were eligible at baseline).

Figure 2.8 Impact on take-up in areas A and B (universal entitlement) by FSM eligibility under the old criteria at baseline

Base: All pupils for whom take-up data were available at baseline, year 1 and year 2 in pilot and comparison areas A and B (1017 FSM and 2522 non-FSM)

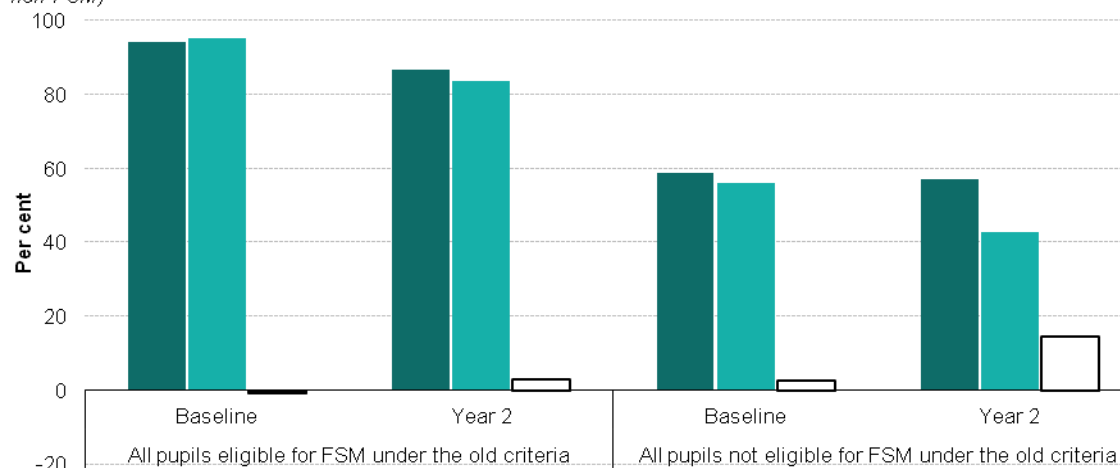


Notes to Figure 2.8: If the difference between the pilot and matched comparison groups is not shaded green, then the impact estimate is not significantly different from zero at the 5 per cent level.

Source: Data collected from a sample of schools in pilot and comparison areas for pupils originally sampled for the longitudinal survey of parents and pupils. These figures relate to all pupils in Years 0 (Reception) to 4 and are split according to FSM eligibility under the old criteria at baseline.

Figure 2.9 Impact on take-up in area C (extended entitlement) by FSM eligibility under the old criteria at baseline

Base: All pupils for whom take-up data were available at baseline, year 1 and year 2 in pilot and comparison areas C (433 FSM and 813 non-FSM)



Notes to Figure 2.9: If the difference between the pilot and matched comparison groups is not shaded green, then the impact estimate is not significantly different from zero at the 5 per cent level.

Source: Data collected from a sample of schools in pilot and comparison areas for pupils originally sampled for the longitudinal survey of parents and pupils. These figures relate to all pupils in Years 7 to 9 and are split according to FSM eligibility under the old criteria at baseline. The group of children who are not eligible for FSM under the old criteria includes both some who are and those who are not entitled to FSM under the new criteria.

In contrast to the results for universal entitlement in areas A and B, Figure 2.9 shows that the extension of entitlement in area C did not significantly increase take-up amongst pupils who were eligible for FSM at baseline. This provides some evidence to suggest that universal entitlement may be more effective at maintaining and increasing take-up amongst this group than extended entitlement, although these differences could also arise if primary school pupils were more responsive to the extended entitlement pilot than secondary school pupils.

Figure 2.9 shows that the extension of entitlement in area C appears to have had a large positive impact on school meal take-up amongst secondary school pupils who were not eligible for FSM under the old criteria at baseline. It should be noted that the relatively small sample sizes mean that this estimate is not significantly different from zero, as indicated by the fact that the bar is not shaded green. The estimated impact for secondary school pupils in area C (15 percentage points) is also substantially smaller than the effect for primary school pupils in the universal entitlement areas A and B (around 35 percentage points). That is not particularly surprising, given that the proportion of pupils who became newly entitled to FSM is likely to be substantially smaller in area C, where the entitlement criteria were extended, than in areas A and B, where all pupils became entitled.

By year group at baseline

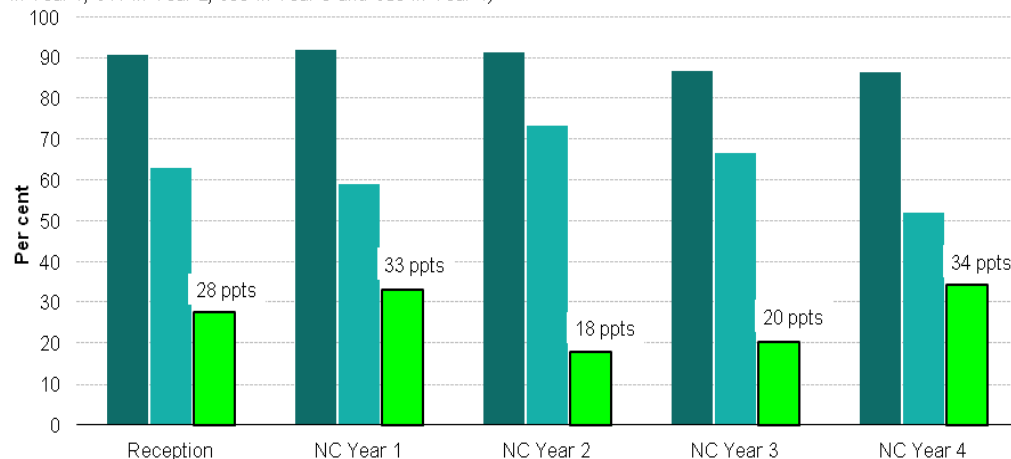
Figure 2.10 presents estimates of the impact of the universal entitlement pilot on take-up in year 2, split according to the national curriculum (NC) year group of pupils at baseline. It is worth noting that, for each NC year group, the pilot and matched comparison groups are well-balanced at baseline and that take-up of school meals before the introduction of the pilot was relatively similar across year groups, at around 60 per cent in all cases (results not shown).

Figure 2.10 shows that take-up increased slightly more for the youngest children than for the older ones in the pilot areas, but that take-up amongst pupils in the matched comparison areas varied more widely and not very systematically. This means that the impact of the universal entitlement pilot on the take-up of school meals after two years varied substantially across national curriculum year groups, being largest for those who were in Reception, Year 1 and Year 4 at baseline (at around 30 percentage points) and somewhat smaller for pupils who were in Years 2 and 3 (at around 20 percentage points). It is not clear what might explain this pattern.

Figure 2.11 presents the differences in take-up between pupils in the pilot and matched comparison group immediately before and nearly two years after the introduction of the extended entitlement pilot for pupils who were in national curriculum year groups 7, 8 and 9 at baseline in area C. In contrast to the findings for primary school pupils (discussed above), there is a clear negative relationship between age and the likelihood of taking school meals at baseline for secondary school pupils, with take-up at baseline falling from 78 per cent amongst Year 7 pupils to 72 per cent amongst Year 8 pupils and just 62 per cent amongst Year 9 pupils.

Figure 2.10 Impact on take-up after two years in areas A and B (universal entitlement) by national curriculum (NC) year group at baseline

Base: All pupils for whom take-up data were available at baseline, year 1 and year 2 in pilot and comparison areas A and B (663 in Reception, 576 in Year 1, 641 in Year 2, 639 in Year 3 and 683 in Year 4)

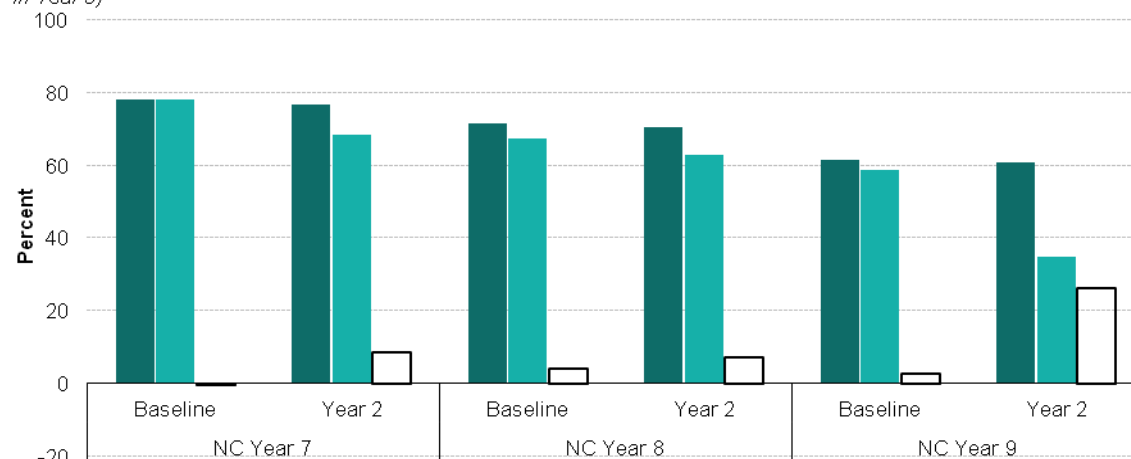


Notes to Figure 2.10: If the difference between the pilot and matched comparison groups is not shaded green, then the impact estimate is not significantly different from zero at the 5 per cent level.

Source: Data collected from a sample of schools in pilot and comparison areas for pupils originally sampled for the longitudinal survey of parents and pupils. These figures relate to all pupils in Years 0 (Reception) to 4 and are split according to national curriculum year group at baseline.

Figure 2.11 Impact on take-up after two years in area C (extended entitlement) by national curriculum (NC) year group at baseline

Base: All pupils for whom take-up data were available at baseline, year 1 and year 2 in pilot and comparison areas C (444 in Year 7, 397 in Year 8 and 376 in Year 9)



Notes to Figure 2.11: if the difference between the pilot and matched comparison groups is not shaded green, then the impact estimate is not significantly different from zero at the 5 per cent level.

Source: data collected from a sample of schools in pilot and comparison areas for pupils originally sampled for the longitudinal survey of parents and pupils. These figures relate to all pupils in Years 7 to 9 and are split according to national curriculum year group at baseline.

In year 2 of the extended entitlement pilot, take-up had barely changed amongst pupils in pilot area C, but had fallen slightly amongst pupils in the matched comparison group, particularly for the older pupils. Thus, while the impact of the pilot was positive but insignificant for all year groups, it was substantial for pupils in national curriculum Year 9. Again, this suggests that the extended entitlement pilot was acting more to maintain take-up rather than to increase it and that this was particularly true amongst older pupils.

2.2 Possible explanations for changes in take-up

Two years after the FSM pilot was introduced, the longitudinal survey of parents and pupils asked a series of questions regarding awareness and perceived impact of the pilot. This section discusses these responses in the context of providing potential explanations for some of the patterns of take-up outlined above.

Awareness of pilots

At the follow-up survey in the summer term of 2011, parents in the pilot areas were asked whether they were aware of the FSM pilot and how they had found out about the wider availability of free school meals. Nearly all parents in pilot areas A and B, the universal entitlement areas, were aware of the pilot (Table 2.2).

In pilot area C, where entitlement was extended but not made universal,³⁹ only two-thirds of parents (67 per cent) were aware of the pilot. This figure was only slightly higher among parents who appeared to be entitled under the new criteria on the basis of information supplied in the interview (71 per cent). The qualitative case studies found that awareness of the pilot was perceived to be a concern in pilot area C and that the information provided to parents was not always felt to have been sufficient for parents to judge whether or not they were likely to be entitled to FSM under the new criteria.

Table 2.2 Whether parents were aware of the FSM pilot in summer term 2011 (end of the pilot)				
<i>Base: All parents in pilot areas who responded at baseline and follow-up surveys</i>				
	Pilot area A (universal entitlement)	Pilot area B (universal entitlement)	Pilot area C (extended entitlement)	Total
Whether aware	%	%	%	%
Yes	99	100	67	94
<i>Bases</i>	306	428	165	899

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 in areas A and B and to pupils in Years 7 to 9 in area C.

³⁹ Entitlement to FSM was extended to cover pupils whose families were claiming Working Tax Credit but whose annual income did not exceed the existing income criteria (£16,040 in 2008-09, uprated to £16,190 in 2010-11).

Table 2.3 How parents found out about the FSM pilot				
<i>Base: Parents who were aware of the pilot in summer term 2011</i>				
	Pilot area A (universal entitlement)	Pilot area B (universal entitlement)	Pilot area C (extended entitlement)	Total
Means of finding out mentioned	%	%	%	%
Letter/newsletter from school	87	92	58	86
Letter from local authority	19	4	7	10
Word of mouth (including from teacher)	14	4	11	8
Local newspaper/radio	9	8	4	8
Told by child	11	1	2	5
National newspaper/radio	2	2	1	2
Publicised at school event	3	1	2	2
School website	2	0	0	1
Other	9	6	23	9
<i>Bases</i>	<i>303</i>	<i>424</i>	<i>111</i>	<i>838</i>

Notes to Table 2.3: Parents could select more than one response.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 in areas A and B and to pupils in Years 7 to 9 in area C.

Given the important role parents play in making choices about school meals, the lower level of awareness may partly explain the low impact on take-up observed in pilot area C (and discussed in Section 2.1 above).

For all pilot areas, by far the most frequently cited method by which parents found out about the pilot was through a letter or newsletter from the school. This was mentioned by 87 per cent of parents in pilot area A, 92 per cent in pilot area B and 58 per cent in pilot area C. Across all methods, there was considerable variation between pilot areas, with area A in particular having publicised the pilot through a wide variety of sources. For example, parents in pilot area A were most likely to have heard about the pilot through a letter from the local authority, by word of mouth, from their child and through the school website (Table 2.3).

Parents in pilot areas A and B held similar views on the extent to which the pilot had affected how often their child took school meals. The perceived impact was large in the universal entitlement areas (A and B) and much smaller in the extended entitlement area (C), as would be expected given the different pilot models. Approximately two-thirds (68 per cent in pilot A and 66 per cent in pilot B) of parents reported that their child took school meals 'a lot more often' as a result of the pilot (Table 2.4). A further 10 to 14 per cent of parents said their child took school meals 'slightly more often'. In pilot area C, two-thirds of parents (66 per cent) reported that the pilot had had no impact on their child's

take-up of school meals. Approximately one in five parents reported that their child took school meals ‘a lot more often’ (15 per cent) or ‘slightly more often’ (7 per cent). Among parents who appeared to be entitled under the new criteria, these figures were slightly higher, with 20 per cent saying their child took school meals ‘a lot more often’ and 6 per cent ‘slightly more often’.

Table 2.4 Perceived impact of the FSM pilot on the frequency of taking school meals

<i>Base: All parents in pilot areas who responded at baseline and follow-up surveys</i>				
	Pilot area A (universal entitlement)	Pilot area B (universal entitlement)	Pilot area C (extended entitlement)	Total
Extent of perceived impact	%	%	%	%
A lot more often	68	66	15	57
Slightly more often	14	10	7	11
Slightly less often	0	0	4	1
A lot less often	1	2	7	2
No change / the same as before	18	22	66	29
Don't know	0	0	1	0
<i>Bases</i>	<i>306</i>	<i>428</i>	<i>165</i>	<i>899</i>

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. They relate to pupils in Years 0 (Reception) to 4 in areas A and B and to pupils in Years 7 to 9 in area C.

These figures are not directly comparable to the estimates of the actual impact of the pilot on take-up discussed in Section 2.1 above. This is partly because those figures relate to the proportion of pupils who take free school meals at least once a week, while these relate to the change in the frequency of taking school meals amongst non-takers at baseline. It is also because these figures cannot be compared with the outcomes of a group of similar pupils in comparison areas. It is interesting to note that the proportion of pupils taking school meals at least once a week increased by nearly 50 percentage points amongst pupils who were not taking school meals at baseline in areas A and B (Figure 2.6), compared with a perceived impact of around 80 percentage points in terms of the frequency of taking school meals amongst non-takers at baseline in Table 2.4. This disparity may be plausible if the universal entitlement pilot was able to increase the frequency with which pupils took school meals, as well as encouraging non-takers to become takers.

Reasons for not taking school meals

The parents of pupils who did not take school meals on any day were asked to provide the reasons for their child not taking school meals on at least some days. For the parents in pilot areas, particularly A and B, these data provide an indication of the ongoing barriers to school meal take-up once the cost element is removed. The reasons mentioned by

parents in comparison areas are also included, providing a useful cross-reference. In contrast to the findings discussed in the previous sections, this section does not weight the data back to the relevant pilot population;⁴⁰ as such, it presents results for a sample of pupils from relatively deprived socio-economic backgrounds (more so in area C than in areas A and B⁴¹) who were not taking school meals at baseline and who were in Years 0 to 4 in areas A and B and Years 7 to 9 in area C at baseline.

Focusing first on the universal entitlement pilot areas, A and B, the main reasons for children not taking school meals when they were provided free of charge related to the child not liking the food on offer (Figures 2.12 and 2.13). Just over half of parents mentioned that there were not enough meals available that their child liked to eat (54 per cent in pilot A, 57 per cent in pilot B). Similarly, 'the choice of meals is too limited' was mentioned by 25 per cent and 37 per cent of parents respectively in areas A and B. (This difference may be partly explained by the number of meals on offer. The caterers' survey indicated that pilot A schools tended to offer three choices, whereas pilot B schools varied between offering one choice and offering five or more.)

This finding suggests that meal choice may be a potential barrier to complete take-up of school meals even when they are provided free of charge to all pupils.

The other reasons for not taking school meals mentioned by parents in pilot areas A and B included the time taken to be served at lunchtime, the food quality and the portion sizes being too small. Unlike in pilot B, a minority of the pupils in pilot A not taking school meals on any day (15 per cent) also went home at lunchtime, despite a reduction in the number of schools allowing pupils to leave the premises at lunchtime during the course of the pilot. This finding is discussed in more detail in the implementation report.⁴²

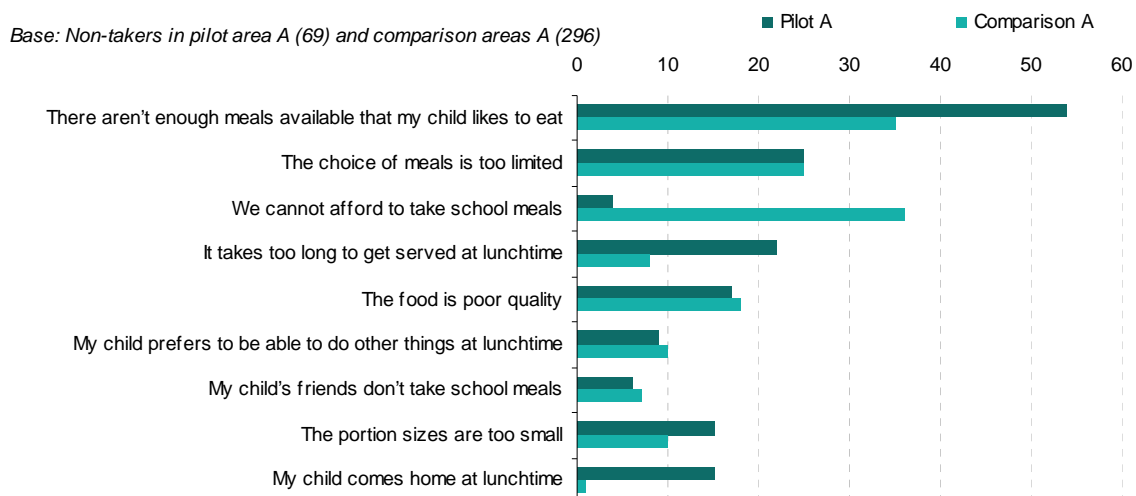
In the extended entitlement pilot area (C), the most frequently cited reason for pupils not taking school meals, mentioned by 41 per cent of parents, was that it took too long to get served (Figure 2.14). This may partly be an issue pertinent to secondary schools, but the proportion who reported this reason in the pilot area was considerably higher than the 33 per cent of parents who reported this reason in the comparison C areas, despite the catering managers reporting longer queuing times in comparison C schools than in pilot area C schools.

⁴⁰ This analysis was not weighted as the group of non-takers in the pilot areas was very small.

⁴¹ Participants in the longitudinal survey in area C were screened on income, whereas those in areas A and B were not. It is worth noting that not all of those who were screened in would have been entitled to free school meals under the new criteria. The results presented in this section include all respondents to the follow-up survey in area C, rather than just those who were entitled under the new criteria.

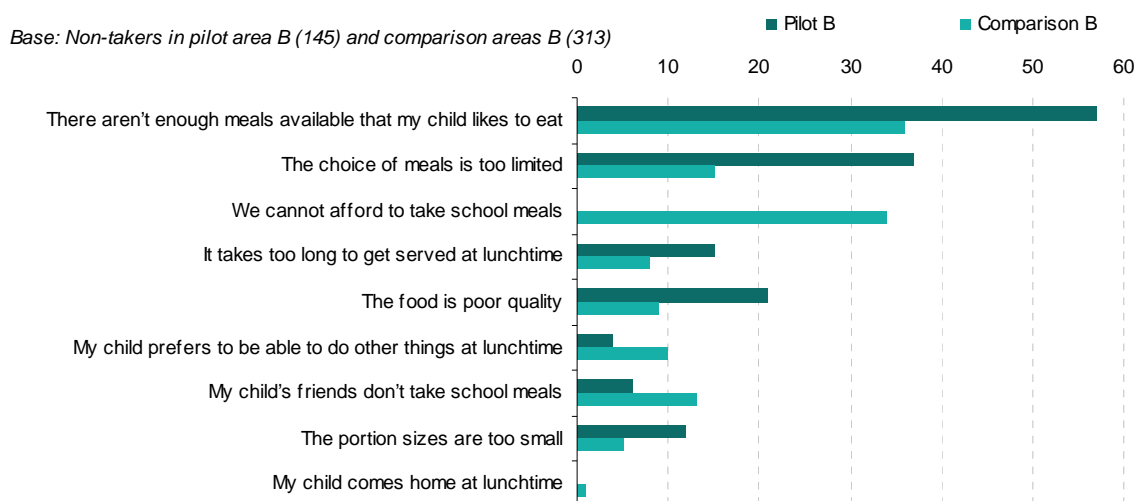
⁴² <https://www.education.gov.uk/publications/RSG/AllRsgPublications/Page1/DFE-RR228>

Figure 2.12 Reasons for not taking school meals in area A (universal entitlement)



Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures are skewed towards families from lower socio-economic backgrounds. They relate to pupils in Years 0 (Reception) to 4.

Figure 2.13 Reasons for not taking school meals in area B (universal entitlement)



Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures are skewed towards families from lower socio-economic backgrounds. They relate to pupils in Years 0 (Reception) to 4.

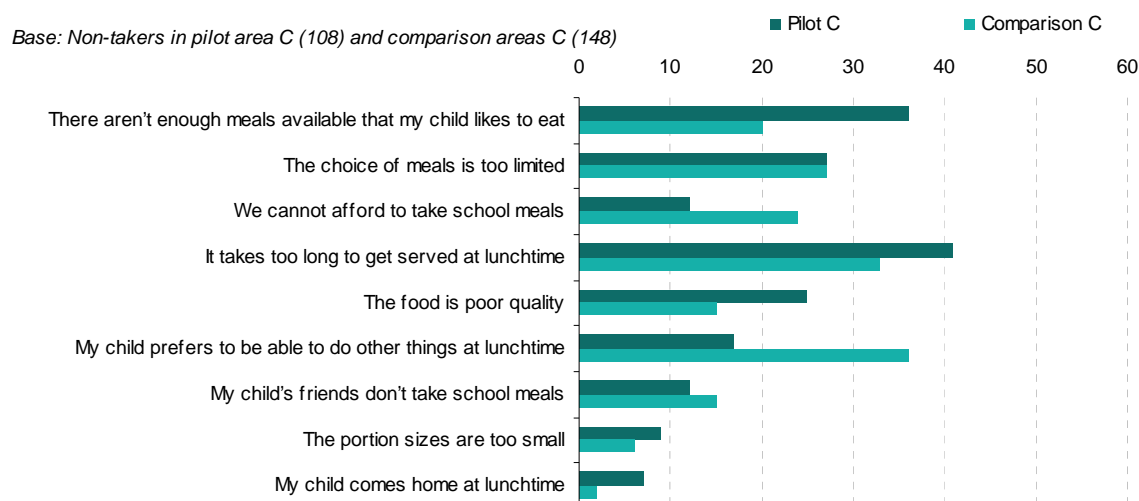
Cost remained a deterrent for 12 per cent of parents in pilot area C, which was half the proportion in comparison C areas, in which low-income working families were not entitled to FSM.⁴³ This proportion was only slightly lower (8 per cent) among parents in pilot area

⁴³ Under this pilot, entitlement to FSM was extended to cover pupils whose families were claiming Working Tax Credit but whose annual income did not exceed the existing income criteria (£16,040 in 2008-09, uprated to £16,190 in 2010-11).

C who appeared to be entitled under the new criteria. A considerably lower proportion of parents in pilot area C than in pilot areas A and B cited there not being enough meals that their child liked as a reason for not taking them.

The lower mention of choice in pilot area C could be due to the relative fussiness of pupils in primary and secondary schools, although, notably, pilot area C schools had increased the number of choices offered to a small extent during the course of the pilot.

Figure 2.14 Reasons for not taking school meals in area C (extended entitlement)



Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures are particularly skewed towards families from lower socio-economic backgrounds. They relate to pupils in Years 7 to 9.

More discussion of the reasons around choosing to take up school meals in the pilot can be found in the implementation report.⁴⁴

2.3 Discussion and conclusions

This section reflects on the impacts of the FSM pilot on school meal take-up and some of the potential reasons for the changes that have been observed and discussed in this chapter.

Discussion of findings

- The impact of the universal entitlement pilot on the take-up of school meals amongst primary school pupils was large, positive and significant. By contrast, there was no evidence that the extended entitlement pilot had any significant effect on the take-up of school meals amongst secondary school pupils, even amongst those who became entitled to free school meals under the new criteria.

⁴⁴ <https://www.education.gov.uk/publications/RSG/AllRsgPublications/Page1/DFE-RR228>

- This could be because the impact of the pilot is smaller for secondary than for primary school pupils, or because the impact amongst those from less affluent families is larger under universal than under extended entitlement. This could arise if, for example, parents are not aware that they meet the entitlement criteria, or if pupils or parents feel stigmatised by the need to identify themselves as FSM claimants.
- Both of these potential explanations are borne out by take-up figures derived from management data provided by the pilot local authorities. These figures show that: (a) take-up was higher amongst primary than secondary school pupils entitled to FSM in the extended entitlement pilot area; and (b) take-up was higher amongst primary school pupils in the universal pilot areas than amongst primary school pupils entitled to FSM in the extended entitlement area.
- Parents in the extended entitlement area were also less aware of the pilot than parents in the universal pilot areas, even amongst entitled parents. This suggests that the universal pilot areas may have been more successful at promoting the pilot and the benefits of taking school meals than the extended entitlement area.
- Overall, these findings suggest that extending entitlement to FSM is unlikely to increase take-up as much amongst those targeted by such a policy as making school meals available to all. This suggests that universality, combined with the additional activities that schools and local authorities undertook to promote the pilot, encourage the take-up of school meals and support healthy eating, may be key to improving school meal take-up amongst this group of disadvantaged pupils.
- Alongside those who would have been newly entitled to FSM under the extended criteria introduced in area C, the universal entitlement pilot had the largest impact on take-up amongst those who were not taking school meals at baseline and those who were not eligible for FSM under the old criteria at baseline.
- Interestingly, the universal entitlement pilot also had a significant effect amongst those who were already entitled to, and registered for, FSM at baseline. This effect is driven mainly by maintaining take-up in pilot areas (compared with a fall in take-up in comparison areas) rather than by increasing take-up substantially in pilot areas.
- It may be that this effect is driven by eligibility for FSM falling over time, and more so amongst pupils in comparison than in pilot areas. Figures available from the Department for Education, together with information about the numbers of claimants of Income Support and other benefits that directly affect entitlement to FSM under the old criteria, suggest that this is not the case. It appears that the universal entitlement pilot was able to improve take-up amongst a group who were already entitled to, and registered for, FSM before the introduction of the pilot.
- Amongst parents of pupils who were not taking up the offer of FSM on a regular basis, the main deterrents were to do with meal choice, with more than half of these parents in universal pilot areas citing an opinion that there were not enough meals available

that their child liked. This suggests that meal choice may be a potential barrier to complete take-up of school meals even when they are provided free of charge to all pupils. By contrast, cost remained one of the key barriers to taking school meals in comparison areas.

Lessons for policymakers

- It is clear that only the universal pilot areas were able to increase school meal take-up; the extended entitlement pilot did not operate successfully in this respect.
- While the largest increases in take-up in the universal pilot areas were for those who were not eligible for FSM under the old criteria at baseline, the pilot also increased take-up, relative to similar pupils in comparison areas, for those who were already eligible for FSM before the pilot was introduced. This was one of the main aims of the pilot, so it has been successful in that respect.
- Despite the fact that meals were provided free of charge to all primary school pupils in the universal pilot areas, not all of the children took up this offer every day, with one of the main deterrents found to be meal choice. This suggests that complete take-up of school meals is unlikely to be possible, at least in the short term, even when they are provided free of charge.

3 Impacts on child outcomes: diet, health and behaviour

This chapter describes the impacts of the Free School Meals (FSM) pilot on pupil outcomes related to diet, health and behaviour. These outcomes were measured through the longitudinal survey of pupils and parents. Information on pupils' food consumption was reported by pupils (if aged 11 or over) or parents (if the pupil was aged under 11).

Key findings

- In the universal pilot areas, the increased take-up of school meals led to a shift in the types of food that pupils ate at lunchtime, away from foods typically associated with packed lunches towards those associated with hot meals.
- The universal entitlement pilot changed the types of food that pupils ate and drank at lunchtime. Pupils in the universal pilot areas were significantly more likely to eat vegetables (+26 percentage points (ppts)), chips or roasted/fried potatoes (+13ppts) and rice/pasta/potatoes not fried in oil (+16ppts) and to drink water (+20ppts). Pupils were significantly less likely to eat whole pieces of fruit (−19ppts) and crisps (−18ppts) and to drink soft drinks (−16ppts).
- Pupils in the universal pilot areas were also significantly less likely to report eating crisps at least once a day (−13ppts), but there were no other significant changes in the overall consumption of other types of food or drink on school days, despite the changes observed at lunchtime; nor were pupils in the universal pilot areas less likely to eat a hot meal in the evening.
- The universal entitlement pilot also affected parents' perceptions of school meals and their children's eating habits. Parents in the universal pilot areas were more likely to think that a school meal was better for their child's health than a packed lunch. They were also more likely to talk to their child every day or most days about what they had eaten at school and were more likely to agree that their child was willing to try new foods.
- By contrast, the extended entitlement pilot had little effect on the consumption of different types of food and drink, either at lunchtime or overall, or on parental perceptions of school meals and children's eating habits amongst secondary pupils.
- There was no evidence of changes in children's Body Mass Index (BMI) over the two year pilot period or parents' perceptions of their child's behaviour as a result of either the universal or the extended entitlement pilot.

3.1 Methodology

The findings presented in this chapter are based on analysis of the longitudinal survey of parents and pupils carried out as part of the evaluation. The longitudinal survey comprised two face-to-face interviews, the baseline carried out in summer term 2009 and the follow-up in summer term 2011. The year groups included in the survey at baseline were Reception to Year 4 (primary school) in pilot areas A and B and Years 7 to 9 (secondary school) in pilot area C. Therefore, at the time of the follow-up survey, the year groups represented were Years 2 to 6 (ages 6 to 11) in pilot areas A and B and Years 9 to 11 (ages 13 to 16) in pilot area C.

The survey included only pupils who were not taking school meals at the time of the baseline survey. Furthermore, doorstep screening was carried out in pilot area C on income and on benefit and tax credit take-up so that only the families of pupils likely to be entitled to FSM under the extended entitlement criteria were interviewed.⁴⁵

Pupils in the pilot areas have been 'matched' to pupils in comparison areas on the basis of their characteristics and their outcomes at baseline. The analysis has therefore compared outcomes for pilot pupils at the follow-up survey with those for a group of similar pupils in comparison areas. Pupils from low socio-economic backgrounds, who may be more likely to have less healthy diets, were oversampled in the longitudinal survey. Selection weights have been applied to correct for this, so the results presented in this chapter are for the population of non-takers of school meals in the relevant age group (as outlined above).⁴⁶ More information on these processes can be found in Appendix B.

Impacts for primary school pupils in pilot area C (the extended entitlement pilot) have been estimated through analysis of pupils in pilot areas A and B (the universal entitlement areas) who would have been entitled to FSM under the extended entitlement criteria introduced in pilot area C.⁴⁷

Impacts are therefore reported for the following groups:

- pilot areas A and B (all pupils in the longitudinal survey in areas A and B combined);
- pilot area C (all pupils in the longitudinal survey in area C);

⁴⁵ It is worth noting, however, that only 54 per cent of those interviewed in pilot area C were predicted to be entitled to FSM on the basis of the more detailed information on income, benefits and tax credits collected during the interview.

⁴⁶ It is worth noting that this process of weighting the sample back to the original population does not materially affect the conclusions that can be drawn from the analysis.

⁴⁷ Note that this is slightly different from the definition of this group used in Chapters 2 and 4, which focus on pupils who were newly entitled to FSM under the new criteria, thus excluding those who were already eligible for FSM under the old criteria. Those chapters had to rely on predictions of newly entitled pupils rather than actually being able to observe entitlement – albeit measured with some error.

- pupils in pilot areas A and B who would have met the extended entitlement criteria introduced in pilot area C.

Nutritional standards for school food

The Education (Nutritional Standards and Requirements for School Food) (England) Regulations 2007⁴⁸ (amendments 2008⁴⁹ and 2011⁵⁰) provide important context for understanding the impacts of the FSM pilot on lunchtime eating. The regulations comprise both food-based and nutrient-based standards for lunches provided by schools. The food-based standards for school lunches became effective in September 2006 in all schools, and the nutrient-based standards for school lunches were effective from September 2008 in primary schools and from September 2009 in secondary and special schools. The food-based standards for school lunches are as follows:

- Fruit and vegetables: not less than two portions per day per pupil must be provided at lunchtime; at least one should be vegetables or salad and at least one should be fruit.
- Free, fresh drinking water should be provided at all times.
- Savoury snacks (for example, crisps) must not be provided at any time of day. Nuts, seeds, fruit and vegetables with no added salt, sugar or fat are allowed. Savoury crackers and breadsticks can only be served with fruit, vegetables or dairy food as part of a school lunch.
- Bread with no added fat or oil must be provided at lunchtime every day.
- Healthier drinks: only healthier drinks, including water, low-fat milk, fruit juice and combinations of these, are permitted across the school day.
- Oily fish must be provided at least once every three weeks at lunchtime.
- Confectionery must not be provided at any time of the day.
- No salt should be added to food after cooking is complete, or provided on tables or service counters.
- Condiments such as ketchup and mayonnaise should only be available in sachets or in individual portions of not more than 10g or 1 teaspoonful.
- Starchy food cooked in fat or oil should not be provided on more than three days in a week across the school day.

⁴⁸ <http://www.legislation.gov.uk/uksi/2007/2359/contents/made>.

⁴⁹ http://www.legislation.gov.uk/uksi/2008/1800/pdfs/uksi_20081800_en.pdf.

⁵⁰ <http://www.legislation.gov.uk/uksi/2011/1190/contents/made>.

- No more than two deep-fried foods (including those deep-fried or flash-fried in the kitchen or manufacturing process) should be provided in a single week across the school day.
- Only one meat product (manufactured or homemade) from each of four separate groups can be provided across the school day within a fortnight.

3.2 Eating habits

The longitudinal survey examined the impacts of the pilot on pupils' reported eating habits at school and at home. The survey asked about eating habits on days pupils were at school in the most recent week. If pupils were aged under 11, information on eating habits was supplied by the parent, while pupils aged 11 or over gave this information themselves. The survey asked about lunch arrangements made by pupils, what pupils ate for lunch, what they ate at other times of the day and how often they ate certain foods on school days. These impacts are described in the following sections.

Impacts on lunchtime arrangements

As discussed in Chapter 2, the pilot brought about a substantial increase in the take-up of school meals in areas A and B, the universal entitlement pilot areas. This increase was reflected in the lunchtime arrangements of pupils surveyed in pilot areas A and B, with 79 per cent reporting that they had had at least one school lunch in the last week, compared with 32 per cent of pupils in comparison areas A and B (Table 3.1). This suggests that the universal entitlement pilot increased take-up by nearly 50 percentage points amongst primary school pupils in areas A and B; reassuringly, these figures are very similar to those reported for non-takers in Figure 2.6 earlier. By contrast, 29 per cent of pupils in pilot areas A and B had had a packed lunch in the last week, compared with 86 per cent in comparison areas A and B. Very few pupils in pilot or comparison areas had any other kind of arrangement at lunchtime.

In pilot area C, the extended entitlement pilot,⁵¹ 55 per cent of secondary pupils had had at least one school lunch in the last week, while just 39 per cent of pupils in comparison areas C had done so (Table 3.2). This suggests that the extended entitlement pilot increased take-up by 16 percentage points amongst secondary school pupils in area C who did not previously take school meals, although this difference is not statistically significant. Among pupils in area C who appeared to be entitled to FSM under the extended criteria, 61 per cent had had a school meal, compared with 35 per cent of those in comparison areas (again, this difference is not significant).

⁵¹ Recall that under the pilot introduced in area C, entitlement to FSM was extended to cover pupils whose families were claiming Working Tax Credit but whose annual income did not exceed the existing income criteria (£16,040 in 2008-09, uprated to £16,190 in 2010-11).

Table 3.1 Arrangements at lunchtime: pilot areas A and B (universal entitlement)

<i>Base: Surveyed pupils in pilot and comparison areas A and B at school at least three days in the last week</i>			
Any lunch in most recent five school days	Pilot areas A and B	Comparison areas A and B	Difference
	%	%	ppt
Provided by school	79	32	+47**
Packed lunch from home	29	86	-56**
At home	2	1	+1
Purchased from cafe or shop	1	0	0
Elsewhere	1	1	0
<i>Bases</i>	<i>718</i>	<i>735</i>	

Notes to Table 3.1: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Differences may not sum exactly, due to rounding.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

Table 3.2 Arrangements at lunchtime: pilot area C (extended entitlement)

<i>Base: Surveyed pupils in pilot and comparison areas C at school at least three days in the last week</i>			
Any lunch in most recent five school days	Pilot area C	Comparison areas C	Difference
	%	%	ppt
Provided by school	55	39	+16
Packed lunch from home	56	71	-15
At home	9	4	+6
Purchased from cafe or shop	8	6	+2
Elsewhere	7	12	-4
<i>Bases</i>	<i>119</i>	<i>150</i>	

Notes to Table 3.2: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Differences may not sum exactly, due to rounding.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 7 to 9 at baseline.

Almost the same number of pupils in pilot area C had eaten at least one packed lunch (56 per cent) as had eaten at least one school meal in the last week, while substantially more pupils had eaten a packed lunch in comparison areas (71 per cent). A minority (between 7 and 9 per cent) of secondary school pupils in the extended entitlement pilot area and similar proportions of pupils in the comparison C areas had had lunch at home, from a shop or café, or elsewhere.

Among pupils in the universal entitlement areas (A and B) who would have been entitled to FSM under the extended entitlement criteria introduced in pilot area C, most (80 per cent) had had at least one school lunch in the most recent week, while 41 per cent of similar pupils in comparison areas had done so (Table 3.3).

Table 3.3 Arrangements at lunchtime: pupils in pilot areas A and B (universal entitlement) who would have been entitled to FSM under the extended entitlement criteria introduced in pilot area C

<i>Base: Surveyed pupils in pilot and comparison areas A and B who would have been entitled to free school meals under the extended entitlement criteria introduced in pilot area C and who were at school at least three days in the last week</i>			
Any lunch in most recent five school days	Pilot	Comparison	Difference
	%	%	ppt
Provided by school	80	41	+39**
Packed lunch from home	27	75	-48**
At home	3	0	+3
Purchased from cafe or shop	0	1	-1
Elsewhere	0	0	0
<i>Bases</i>	<i>204</i>	<i>248</i>	

Notes to Table 3.3: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Differences may not sum exactly, due to rounding.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

Impacts on food consumption at lunch and other times

This section examines the types of food that pupils were eating for lunch and their consumption of certain foods at other times of the day, first for primary school pupils in the universal entitlement pilot areas and then for both primary and secondary pupils in the extended entitlement pilot area.

Pupils (if aged 11 or over) or parents (if the pupil was aged under 11) were asked to list what the pupil had eaten and drunk for lunch on the most recent day they were at school. The food and drink described by pupils/parents was later coded to a codeframe of food and drink items based on the National Diet and Nutrition Survey (NDNS).⁵² Information about food and drink consumed for the evening meal on the most recent school day was collected and coded in the same way.

Pupils/parents were also asked what the pupil had eaten at other times of the day on school days in the last week. The times of day asked about were: in the morning before school; during the morning at school; during the afternoon at school; on the way home

⁵² http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsStatistics/DH_128166

from school; and at home after school. For these questions, pupils/parents were shown a card with likely responses listed; other items mentioned were coded to a codeframe.

The frequency of consuming certain types of food was also estimated by asking pupils/parents how many times on a school day the pupil ate that particular food. The food types asked about were: fruit; vegetables; crisps; chips; and cake, biscuits or chocolate bars.

The analysis of food consumption has focused on types of food for which daily reported consumption could usefully be measured and for which there is likely to be most interest in monitoring children's daily consumption. It is important to note that meals, both at school and at home, may have included food groups that were not necessarily reported by pupils. For example, pasta sauce served as part of a school meal may have included a portion of vegetables that would not have been reported by the pupil.

Consumption in the universal pilot areas

There were significant impacts on the types of food consumed at lunchtime in the universal pilot areas, A and B. These impacts largely reflected the considerable increase in the take-up of school meals seen in these areas, with a move away from food items typically associated with packed lunches towards foods more associated with hot meals.

In summary, the main changes in consumption of foods at lunchtime (shown in Table 3.4) were that, compared with similar pupils in comparison areas, pupils in the universal pilot areas were significantly:

- more likely to eat hot food (+31ppts) and less likely to eat sandwiches (−27ppts);
- more likely to eat vegetables (+26ppts) but less likely to eat whole pieces of fruit (−19ppts);
- more likely to eat chips or roasted or fried potatoes (+13ppts) and other starchy foods⁵³ (+16ppts) but less likely to eat crisps (−18ppts);
- more likely to drink water (+20ppts) and less likely to drink soft drinks (−16ppts).

By contrast, there were no significant differences between pupils in pilot and comparison areas in terms of the likelihood of eating processed meat and meat products or of eating cakes, biscuits, chocolate bars and puddings.

The impacts on each type of food are discussed in more detail in the subsections that follow.

The impacts on eating particular foods at lunchtime must also be considered in relation to overall consumption and consumption at different times of day. It is possible that changes in consumption at lunchtime could be 'cancelled out' by changes at other times of the day

⁵³ This category comprises potatoes not fried in oil, rice and pasta.

(for example, pupils eating particular foods after school that were not available at lunchtime or parents not providing a hot meal in the evening because the child had had one at school). These effects are also considered in the following subsections.

Table 3.4 Impact on consumption of foods at lunchtime: pilot areas A and B (universal entitlement)			
<i>Base: Surveyed pupils in pilot and comparison areas A and B</i>			
Ate at lunch on most recent school day	Pilot areas A and B	Comparison areas A and B	Difference
	%	%	ppt
Chips or fried/roasted potatoes	21	8	+13**
Starchy foods ⁵⁴	29	13	+16**
Crisps	11	29	-18**
Processed meat and meat products ⁵⁵	26	30	-4
Whole pieces of fruit	27	46	-19**
Vegetables	53	27	+26**
Sandwich	33	60	-27**
Cake / biscuit / chocolate bar / pudding	51	49	+2
Any hot food	70	39	+31**
<i>Bases</i>	<i>732</i>	<i>745</i>	

Notes to Table 3.4: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Differences may not sum exactly, due to rounding.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

Hot food and sandwiches

Increased take-up of school meals might be expected to lead to increased consumption of hot food at lunchtime and this was evidently the case in the universal pilot areas, A and B. Figure 3.1 shows that seven in ten pupils in these areas had eaten some hot food at lunchtime on their most recent school day compared with just under four in ten pupils in comparison areas, an impact of 31 percentage points. The shift from packed lunches to hot school meals was further demonstrated by pupils in pilot areas A and B being less likely to eat sandwiches at lunchtime: a third of pupils in these areas had eaten a sandwich for their most recent lunch compared with 60 per cent of pupils in comparison areas, an impact of -27 percentage points.

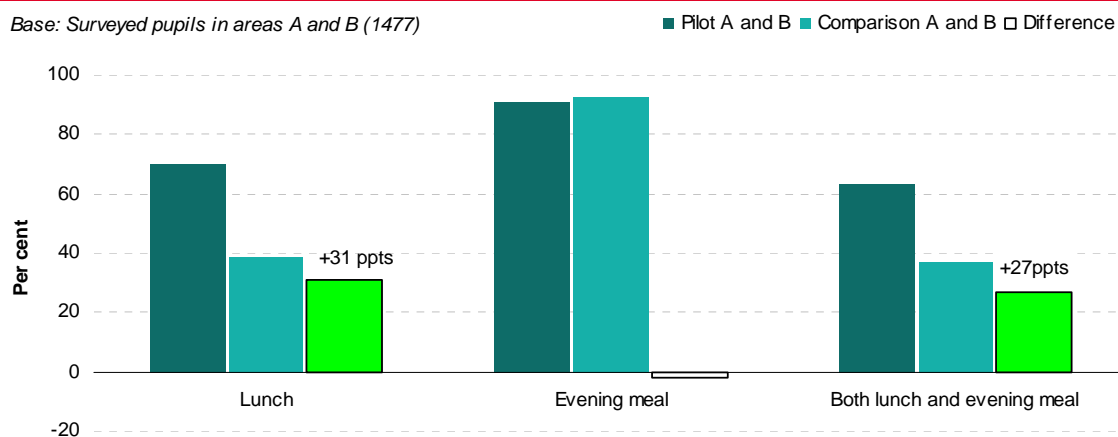
⁵⁴ This category comprises potatoes not fried in oil, rice and pasta.

⁵⁵ For the purpose of this evaluation, this category comprises bacon, ham, sausages, burgers, kebabs, meat pies and pasties.

Sandwiches were available on the menus offered by schools in the universal pilot areas, but these findings suggest that, even in the summer term, hot food options were more popular than sandwiches. As part of the original impetus for the FSM pilot was to give all pupils access to at least one hot meal a day, the universal pilot appears to have had positive results in this respect.

Moreover, the universal pilot did not significantly affect the likelihood of pupils having hot food in the evening. Most of the pilot and comparison pupils had had some form of hot food at their most recent evening meal. Consequently, 64 per cent of pupils in pilot areas A and B had had some hot food both at lunchtime and for their evening meal, compared with 37 per cent in comparison areas, an impact of 27 percentage points (Figure 3.1).

Figure 3.1 Impacts on eating hot food: pilot areas A and B (universal entitlement)



Notes to Figure 3.1: If the difference between the pilot and matched comparison groups is not shaded green, then the impact estimate is not significantly different from zero at the 5 per cent level.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

This finding may suggest that a hot meal at lunchtime was not seen by many parents as a substitute for a hot meal in the evening. It is important to note, however, that hot food is not necessarily more nutritious than cold food; the nutritional value will depend on the content of the meal.

Fruit and vegetables

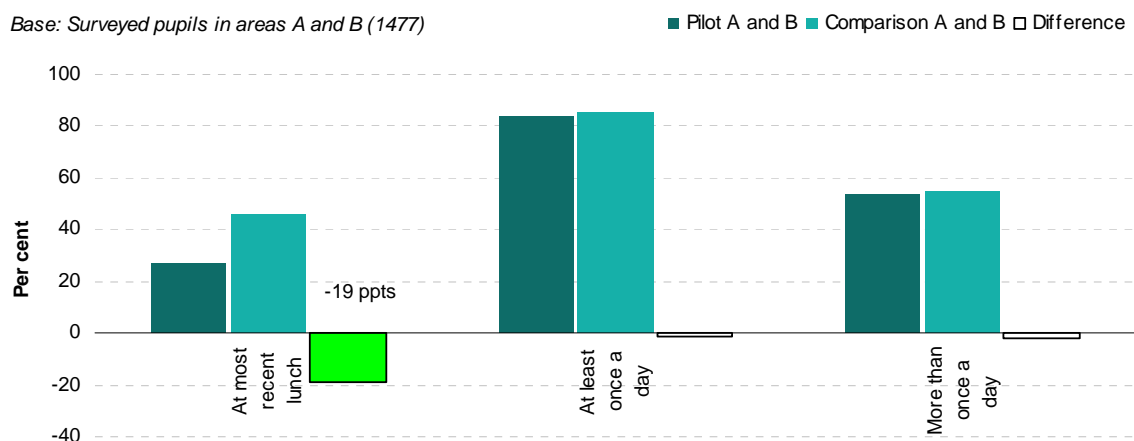
The nutritional standards for school meals state that at least one portion of fruit and one of vegetables should be made available to pupils having a school lunch. The universal pilot had a positive impact on the consumption of vegetables⁵⁶ at lunchtime, with more than half (53 per cent) of pupils in pilot areas A and B having eaten vegetables with lunch compared with 27 per cent in comparison areas, an impact of 26 percentage points. On

⁵⁶ The 'vegetables' category includes servings of vegetables, beans or pulses and vegetable-based dishes. It does not include potatoes.

the other hand, pupils in the universal pilot areas were 19 percentage points less likely to eat whole pieces of fruit at lunchtime than similar pupils in comparison areas, with just over a quarter (27 per cent) of pupils in pilot areas A and B having eaten a whole piece of fruit compared with 46 per cent in the comparison areas.

The analysis of fruit eaten at lunchtime covered only portions of fruit (fresh, tinned or dried) and desserts that consisted mainly of fruit (for example, fruit salad or peaches with cream). Other desserts with some fruit content (for example, apple crumble or chocolate and orange slice) were not included in the analysis of fruit consumption. Fruit pies and crumbles served in school meals should, under the nutritional standards, contain a minimum of 50 per cent fruit. Just 2 per cent of pupils in the universal pilot areas reported eating fruit pies or crumbles at their most recent lunch. The analysis of fruit did not include these other desserts with some fruit content, for reasons of consistency of measurement across the baseline and follow-up surveys and between different sources of food (for example, school lunch, home-made or bought from a shop). Such desserts are covered later under ‘puddings’. Therefore, while pupils in the pilot areas appear to have been less likely to eat whole pieces of fruit and largely fruit-based desserts at lunchtime, they may still have consumed fruit as part of a dessert.

Figure 3.2 Impact on eating fruit: pilot areas A and B (universal entitlement)



Notes to Figure 3.2: If the difference between the pilot and matched comparison groups is not shaded green, then the impact estimate is not significantly different from zero at the 5 per cent level.

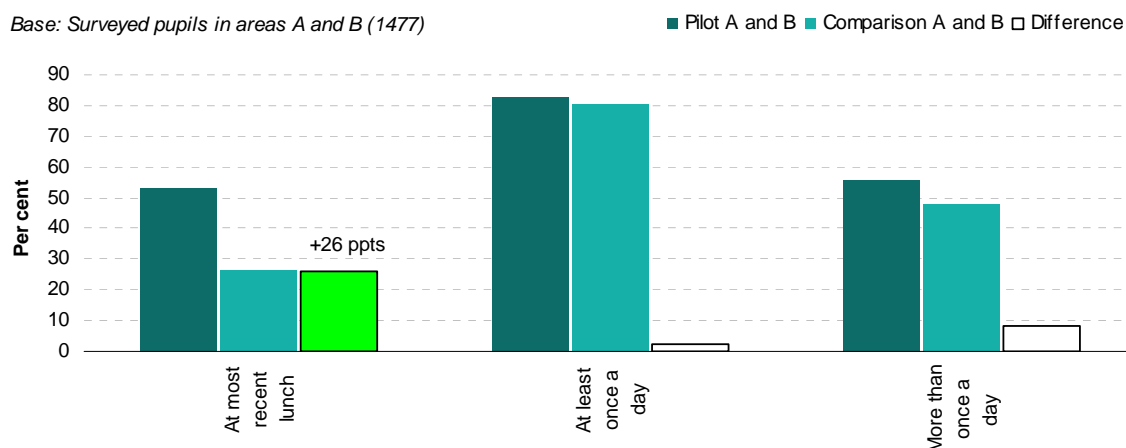
Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

The negative impact on eating whole pieces of fruit at lunchtime was not reflected in reported overall consumption of fruit, however, with similar proportions of pupils in the pilot and comparison areas reporting eating fruit at least once a day, or more than once a day (Figure 3.2). Neither were there any significant impacts on eating fruit at any other times of day.

Similarly, the positive impact on eating vegetables at lunchtime was not reflected in overall consumption of vegetables (Figure 3.3). Nor was there any significant impact on the likelihood of eating vegetables at the most recent evening meal, with nearly half of pupils in both the pilot and comparison groups having done so. Pupils in pilot areas A and B

were more likely to have eaten vegetables at both the most recent lunch and the most recent evening meal on a school day, with just over a quarter (26 per cent) having done so compared with 15 per cent of pupils in the comparison areas, an impact of 12 percentage points.

Figure 3.3 Impact on eating vegetables: pilot areas A and B (universal entitlement)



Notes to Figure 3.3: If the difference between the pilot and matched comparison groups is not shaded green, then the impact estimate is not significantly different from zero at the 5 per cent level.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

Crisps

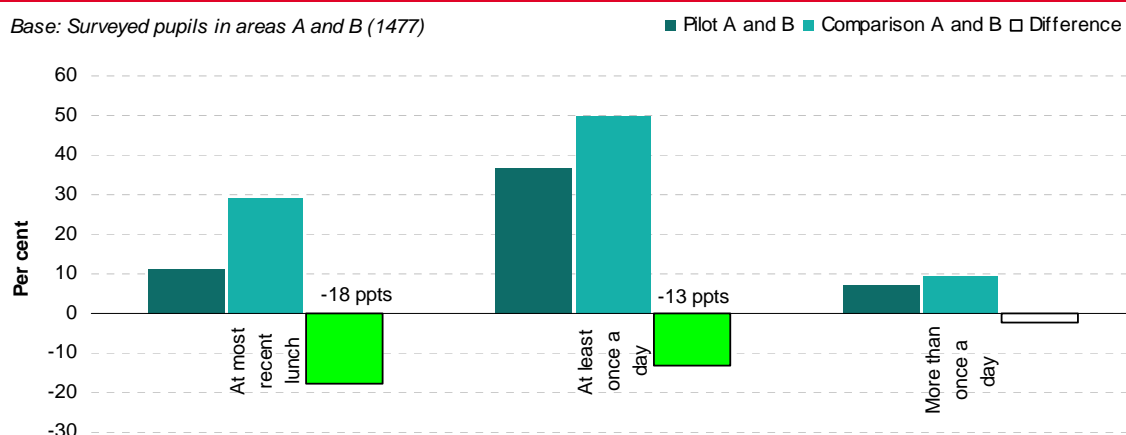
The universal pilot significantly decreased the likelihood of pupils eating crisps at lunchtime, with just 11 per cent of pupils in the universal pilot areas doing so compared with 29 per cent of similar pupils in comparison areas, an impact of –18 percentage points.

This finding reflected the trend towards having a hot meal at lunchtime and the removal of crisps from school lunch provision (and sale on school premises) under the nutritional standards. This change in nutritional standards partly helps to explain the relatively low proportion of pupils in comparison areas eating crisps at lunchtime, as does the fact that many schools have strict packed lunch policies, which often ban crisps. While most pupils in pilot areas were taking school meals at least once a week, not all will have done so on the most recent school day; thus it is not improbable for a sizeable proportion of pupils in pilot areas to have been eating crisps at lunchtime.

The lower proportion of pupils in pilot areas A and B eating crisps at lunchtime also translated into fewer pupils reporting eating crisps at least once a day. While half of pupils in comparison areas had crisps at least once a day, only 37 per cent of pupils in pilot areas A and B did so (an impact of –13 percentage points) (Figure 3.4). There was no significant impact on the proportion of pupils eating crisps more than once a day, but only a small minority reported doing so in any case (7 per cent of pupils in pilot areas A and B and 10 per cent of pupils in comparison areas). Similarly, very few pupils in either pilot or

comparison areas reported eating crisps at any other time apart from at home after school, when around a quarter in each group did so (Table 3.5).

Figure 3.4 Impact on eating crisps: pilot areas A and B (universal entitlement)



Notes to Figure 3.4: If the difference between the pilot and matched comparison groups is not shaded green, then the impact estimate is not significantly different from zero at the 5 per cent level.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

Table 3.5 Impact on eating crisps at other times of day: pilot areas A and B (universal entitlement)

Base: Surveyed pupils in pilot and comparison areas A and B

	Pilot areas A and B	Comparison areas A and B	Difference
Eating crisps	%	%	ppt
In the morning before school	1	1	+1
At school in the morning	0	2	-2
In the afternoon at school	0	1	-1
On the way home from school	6	6	0
At home after school as a snack	28	24	+4
For most recent school-day evening meal	3	1	+2
Bases	732	743	

Notes to Table 3.5: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Differences may not sum exactly, due to rounding.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

These findings suggest that not having crisps at lunchtime did lead to reduced consumption of crisps among primary school pupils in the universal pilot areas.

Chips or fried or roasted potatoes and other starchy foods

Pupils/parents were asked about the consumption of chips and roasted or fried potatoes at lunchtime and for their evening meal, and of chips at other times of the day and overall.⁵⁷ Pupils in the universal pilot areas were more likely to have eaten chips or fried or roasted potatoes at the most recent lunchtime, although only a minority had done so (21 per cent in the pilot areas compared with 8 per cent in the comparison areas), an impact of 13 percentage points (Figure 3.5). There was a similar impact (+16ppts) on the likelihood of eating other starchy foods (rice, pasta or potatoes not cooked in oil) at lunchtime, with 29 per cent of pupils in the pilot areas having done so compared with 13 per cent in comparison areas (Figure 3.6).

Again, these findings reflect the trend towards having a hot school meal at lunchtime. In both pilot areas A and B, school menus tended to offer chips on one day of the week and roasted potatoes on one other day, indicating that pupils taking school meals would not have eaten chips at lunch more than once a week. Assuming interviews are spread evenly throughout the week, a figure of 21 per cent for the proportion of pupils eating chips or fried or roasted potatoes for their most recent lunch thus seems reasonable.

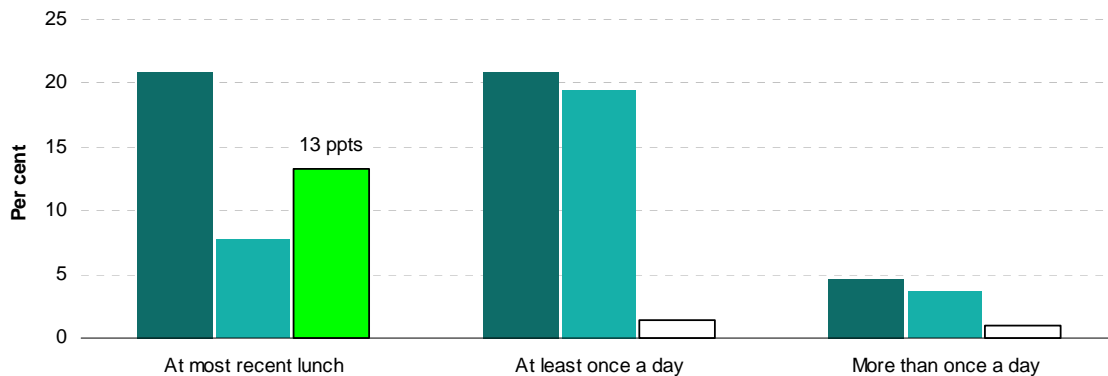
Importantly, the increased likelihood of eating chips or similar products at lunchtime did not appear to translate into an overall increased likelihood of eating chips in the universal pilot areas. There were no significant impacts on the likelihoods of eating chips at least once a day or more than once a day (Figure 3.5).

The universal pilot had a small but significant impact of 6 percentage points on the likelihood of having eaten chips or roasted or fried potatoes at the most recent school-day evening meal but no impact on the likelihood of eating chips on the way home from school or at home after school as a snack (Table 3.6).

⁵⁷ The nutritional value of chips will vary according to cooking method as the fat content will differ. Information on cooking methods of foods consumed was not collected in the survey.

Figure 3.5 Impact on eating chips: pilot areas A and B (universal entitlement)

Base: Surveyed pupils in areas A and B (1477) ■ Pilot A and B ■ Comparison A and B □ Difference

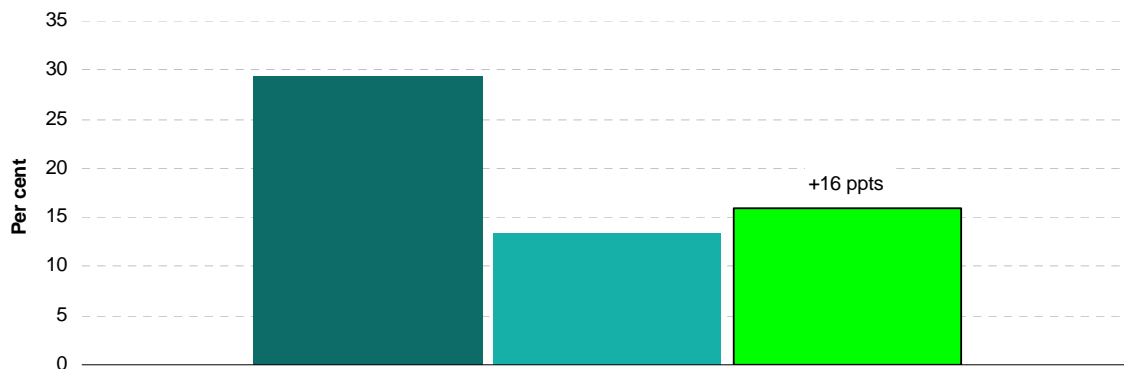


Notes to Figure 3.5: If the difference between the pilot and matched comparison groups is not shaded green, then the impact estimate is not significantly different from zero at the 5 per cent level. For lunchtime consumption, ‘chips’ included roasted and fried potatoes and other potato products. ‘Frequency of eating’ questions asked specifically about chips.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

Figure 3.6 Impact on eating starchy foods (rice, pasta or potatoes not cooked in oil): pilot areas A and B (universal entitlement)

Base: Surveyed pupils in areas A and B (1477) ■ Pilot A and B ■ Comparison A and B □ Difference



Notes to Figure 3.6: If the difference between the pilot and matched comparison groups is not shaded green, then the impact estimate is not significantly different from zero at the 5 per cent level.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

Table 3.6 Impact on eating chips at other times of day: pilot areas A and B (universal entitlement)

<i>Base: Surveyed pupils in pilot and comparison areas A and B</i>			
	Pilot areas A and B	Comparison areas A and B	Difference
Eating chips or roasted/fried potatoes	%	%	ppt
On the way home from school	1	1	0
At home after school as a snack	4	4	0
For most recent school-day evening meal	24	18	+6*
<i>Bases</i>	733	747	

Notes to Table 3.6: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Differences may not sum exactly, due to rounding. For evening meal consumption, 'chips' included roasted and fried potatoes and other potato products. Questions on eating at other times asked specifically about chips.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

Pupils in the universal pilot areas were 12 percentage points significantly less likely to have eaten rice, pasta or potatoes not cooked in oil for their most recent school-day evening meal, although the proportion of pupils in pilot areas having these types of food was still relatively high (43 per cent) and almost twice as high as the proportion having chips or roasted or fried potatoes.

Cake / biscuit / chocolate bar / pudding

The nutritional standards for school food permit the provision of cakes and puddings as part of a school lunch. Chocolate (with the exception of cocoa powder) is not permitted under the standards.

The universal entitlement pilot had no significant impact on the likelihood of eating cake, biscuits, chocolate bars or pudding at lunchtime. Around half of primary pupils (51 per cent in pilot areas and 49 per cent in comparison areas) had some food of this type for lunch.

In the pilot areas, pupils were considerably more likely to have had foods of this type for lunch than to have had whole pieces of fruit, indicating that dessert options were more popular than whole pieces of fruit as part of the school meal. Fruit pies and crumbles, classified here as puddings rather than fruit, served in school meals should contain a minimum of 50 per cent fruit under the nutritional standards. Just 2 per cent of pupils in pilot areas A and B reported having eaten fruit pies or crumbles at the most recent lunch. Other desserts offered on school menus also had some fruit content.

There was a small but statistically significant decrease of 5 percentage points in the likelihood of eating cake, biscuits or chocolate bars in the morning at school, but only a very small proportion of pupils did this anyway (7 per cent in comparison areas). There were no other significant impacts on eating these foods at other times of day. Similarly, no

significant impacts were seen on the proportion of pupils reporting eating cake, biscuits or chocolate bars at least once a day or more than once a day.

Drinks

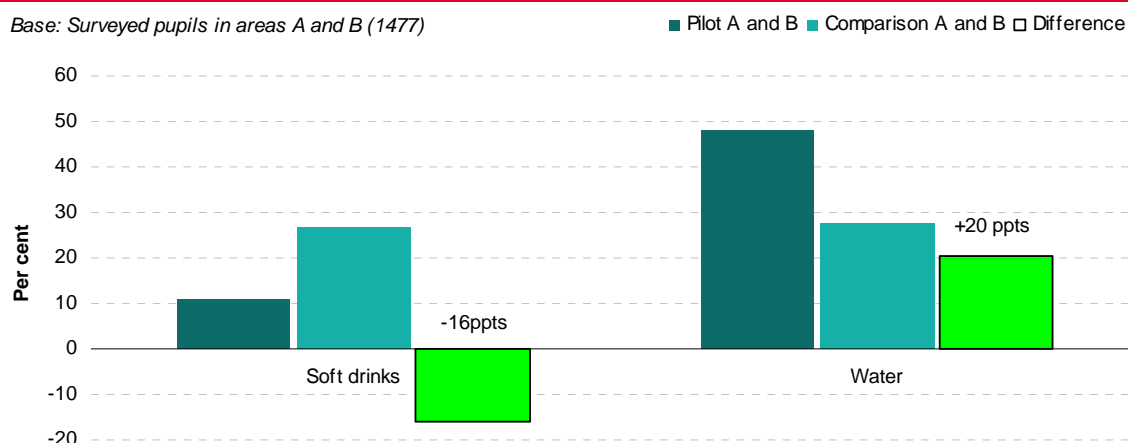
The universal pilot also had significant impacts on what pupils had to drink at lunchtime. There was a positive impact of 20 percentage points on drinking water with lunch, with almost half (48 per cent) of pupils in pilot areas A and B drinking water compared with 28 per cent of pupils in comparison areas. Conversely, pupils in the pilot areas were significantly less likely to drink soft drinks (fizzy drinks, squash or cordial) at lunchtime, with only 10 per cent of pupils doing so compared with 26 per cent of pupils in the comparison areas, an impact of -16 percentage points (Figure 3.7).

School menus in the universal pilot areas supported these findings by indicating that water was always available with meals, while other drink options were not necessarily available.

Children in the pilot areas were, 9 percentage points significantly more likely to drink soft drinks at home after school than similar children in comparison areas (Figure 3.8). This finding might indicate that these kinds of drinks were more likely to be offered at home if they were not available in school (or that parents still purchased drinks they would previously have put in a packed lunch).

Data were not collected on the overall daily consumption of water and soft drinks.

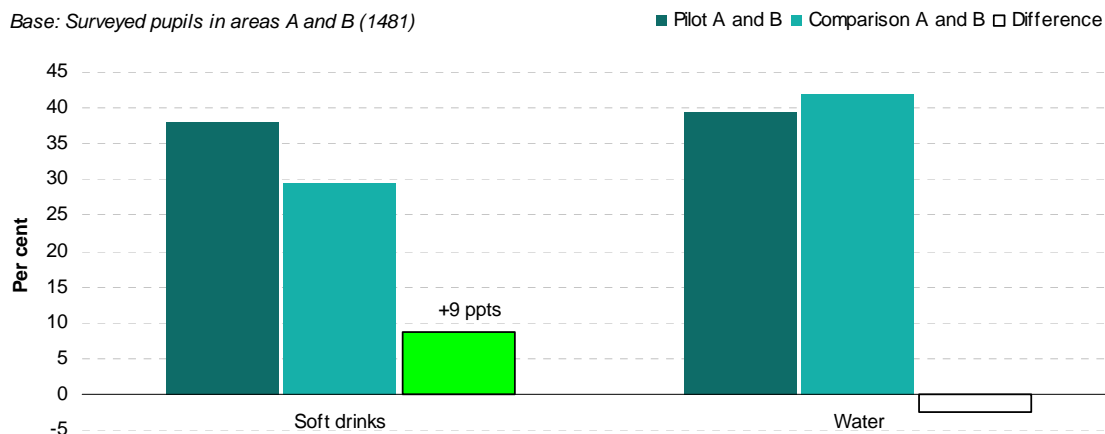
Figure 3.7 Impact on drinking water and soft drinks at lunchtime: pilot areas A and B (universal entitlement)



Notes to Figure 3.7: If the difference between the pilot and matched comparison groups is not shaded green, then the impact estimate is not significantly different from zero at the 5 per cent level.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

Figure 3.8 Impact on drinks at home after school: pilot areas A and B (universal entitlement)



Notes to Figure 3.8: If the difference between the pilot and matched comparison groups is not shaded green, then the impact estimate is not significantly different from zero at the 5 per cent level.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

Consumption in the extended entitlement pilot area

Consumption at lunchtime

In pilot area C, the extended entitlement pilot, the impacts on take-up were smaller and not significantly different from zero. There were consequently fewer impacts on food consumed at lunchtime. In line with the findings for primary school pupils in the universal pilot areas, secondary school pupils in the extended entitlement pilot area appeared to be more likely to eat chips or roasted or fried potatoes at lunchtime and less likely to eat fruit, but the relatively smaller number of pupils interviewed in area C than in areas A and B combined meant that these impacts were not statistically significant (Table 3.7).

Table 3.7 Impact on consumption of foods at lunchtime: all pupils in pilot area C (extended entitlement)

<i>Base: Surveyed pupils in pilot and comparison areas C</i>			
	Pilot area C	Comparison areas C	Difference
Ate at lunch on most recent school day	%	%	ppt
Chips or fried/ roasted potatoes	7	5	+1
Starchy foods ⁵⁸	9	11	-2
Crisps	28	28	0
Processed meat and meat products ⁵⁹	30	26	+4
Whole pieces of fruit	15	26	-11
Vegetables	11	13	-2
Sandwich	62	59	+3
Cake / biscuit / chocolate bar / pudding	31	25	+6
Any hot food	31	31	0
<i>Bases</i>	<i>151</i>	<i>178</i>	

Notes to Table 3.7: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Differences may not sum exactly, due to rounding.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 7 to 9 at baseline.

The impacts of the extended entitlement pilot on the consumption of food and drink at lunchtime were also analysed for secondary school pupils in pilot area C who appeared to be entitled to FSM under the extended criteria (54 per cent of the total sample in area C). There were no significant impacts to report for this group.

Among the primary school pupils in the universal entitlement areas who would have been entitled to FSM under the extended entitlement criteria introduced in area C, impacts were similar to those in the A and B group as a whole (Table 3.8 compared with Table 3.4). Given the concerns about inferring impacts for the extended entitlement pilot from the impacts amongst those in the universal pilot areas who would have been entitled to FSM under the extended entitlement criteria, these findings should not necessarily be taken as evidence that the extended entitlement pilot would have significantly affected lunchtime consumption amongst primary school pupils.

⁵⁸ This category comprises potatoes not fried in oil, rice and pasta.

⁵⁹ For the purpose of this evaluation, this category comprises bacon, ham, sausages, burgers, kebabs, meat pies and pasties.

Table 3.8 Impact on consumption of foods at lunchtime: pupils in pilot areas A and B (universal entitlement) who would have been entitled to FSM under the extended entitlement criteria introduced in pilot area C

<i>Base: Surveyed pupils in pilot and comparison areas A and B who would have been entitled to free school meals under the extended entitlement criteria introduced in pilot area C</i>			
	Pilot	Comparison	Difference
Ate at lunch on most recent school day	%	%	ppt
Chips or fried/roasted potatoes	25	9	+16**
Starchy foods ⁶⁰	26	18	+9
Crisps	8	33	-25**
Processed meat and meat products ⁶¹	21	22	-1
Whole pieces of fruit	26	39	-14**
Vegetables	57	33	+25**
Sandwich	30	55	-24**
Cake / biscuit / chocolate bar / pudding	49	44	+5
Any hot food	75	48	+26**
<i>Bases</i>	<i>205</i>	<i>250</i>	

Notes to Table 3.8: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Differences may not sum exactly, due to rounding.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

Overall consumption and consumption at other times of day

In the extended entitlement pilot, there were very few significant differences between pupils in pilot and comparison areas in terms of either the overall consumption of particular types of food or consumption at other times of the day. This was true both for secondary school pupils observed directly and for primary school pupils in the universal pilot areas who would have been entitled to FSM under the extended entitlement criteria introduced in area C.

Like primary school pupils in the universal entitlement areas, the negative (though in this case insignificant) impact of the extended entitlement pilot on the likelihood of eating whole pieces of fruit at lunchtime amongst secondary school pupils did not translate into impacts on the proportions of pupils reporting eating whole pieces of fruit at least once a day or more than once a day. This was also true for entitled pupils in the universal pilot areas. There was a negative impact of -13 percentage points on the proportion of secondary pupils eating fruit in the morning at school but no significant impacts on eating fruit at other times of day (Table 3.9).

⁶⁰ This category comprises potatoes not fried in oil, rice and pasta.

⁶¹ This category comprises bacon, ham, sausages, burgers, kebabs, meat pies and pasties.

Table 3.9 Impact on eating fruit at other times of day: pilot area C (extended entitlement)

<i>Base: Surveyed pupils in pilot and comparison areas C</i>			
	Pilot area C	Comparison areas C	Difference
Eating fruit	%	%	ppt
In the morning before school	7	6	0
At school in the morning	6	19	-13*
In the afternoon at school	2	2	0
On the way home from school	1	5	-4
At home after school as a snack	23	22	+1
For most recent school-day evening meal	3	2	0
<i>Bases</i>	<i>150</i>	<i>178</i>	

Notes to Table 3.9: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Differences may not sum exactly, due to rounding.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 7 to 9 at baseline.

Table 3.10 Impact on eating crisps at other times of day: pupils in pilot areas A and B (universal entitlement) who would have been entitled to FSM under the extended entitlement criteria introduced in pilot area C

<i>Base: Surveyed pupils in pilot and comparison areas A and B who would have been entitled to free school meals under the extended entitlement criteria introduced in pilot area C</i>			
	Pilot	Comparison	Difference
Eating crisps	%	%	ppt
In the morning before school	1	0	+1
At school in the morning	0	5	-5
In the afternoon at school	0	0	0
On the way home from school	6	5	0
At home after school as a snack	33	19	+14**
For most recent school-day evening meal	3	2	+1
<i>Bases</i>	<i>206</i>	<i>251</i>	

Notes to Table 3.10: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Differences may not sum exactly, due to rounding.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

In contrast to the results for primary school pupils in the universal entitlement areas, however, there were no significant impacts on the proportions of secondary pupils in pilot area C reporting eating crisps at least once a day or more than once a day. Nor were there any significant impacts on eating crisps at other times of day.

There was a negative impact of –15 percentage points on the likelihood of eating crisps at least once a day amongst primary school pupils in the universal pilot areas who would have been entitled to FSM under the extended criteria introduced in area C. These pupils were significantly more likely than similar pupils in comparison areas to eat crisps at home after school (33 per cent compared with 19 per cent, an impact of +14ppts) (Table 3.10).

Impacts on eating arrangements at other times

The longitudinal survey collected information about what pupils ate at particular times of the day in order to examine whether the pilot had any impacts on eating patterns on school days. In the universal pilot areas, there was an impact of 12 percentage points on pupils never eating anything during the morning at school (65 per cent of pupils in pilot areas A and B did not eat during the morning compared with 53 per cent in comparison areas) (Table 3.11).

Table 3.11 Impact on eating at different times of day: pilot areas A and B (universal entitlement)			
<i>Base: Surveyed pupils in pilot and comparison areas A and B</i>			
	Pilot areas A and B	Comparison areas A and B	Difference
Child never eats	%	%	ppt
Before school	1	1	0
At school in the morning	65	53	+12**
In the afternoon at school	91	89	+2
On the way home from school	72	74	–2
At home after school, before evening meal	22	24	–2
<i>Bases</i>	<i>722</i>	<i>734</i>	

Notes to Table 3.11: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Differences may not sum exactly, due to rounding.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

This might suggest that pupils who were having a school meal were less likely to have brought food with them to consume during the morning. The survey of catering managers found that few of the primary schools in pilot or comparison areas provided food for pupils in the morning.

There were no significant impacts in pilot areas A and B on eating before school in the morning, in the afternoon at school, on the way home from school or at home after school before the evening meal.

Amongst secondary school pupils in pilot area C and primary school pupils in the universal entitlement areas who would have been entitled to FSM under the extended

entitlement criteria introduced in area C, there was no evidence of any significant impacts on eating at different times of day.

The longitudinal survey also asked on how many school days in the most recent week pupils had had different types of evening meal. The types asked about were: a meal prepared from fresh ingredients; convenience food; food from a takeaway; and food eaten at a cafe or restaurant. In the universal entitlement pilot areas, there was a small but significant negative impact of 3 percentage points on having eaten at least one meal prepared with fresh ingredients, although most pupils (94 per cent) in the pilot areas had eaten at least one meal of this type (Table 3.12). There were no impacts on eating at least one meal that was convenience food, from a takeaway or eaten in a cafe or restaurant.

Table 3.12 Impact on types of evening meal eaten: pilot areas A and B (universal entitlement)			
<i>Base: Surveyed pupils in pilot and comparison areas A and B</i>			
At least one evening meal on school day in last week	Pilot areas A and B	Comparison areas A and B	Difference
	%	%	ppt
Prepared from fresh ingredients	94	97	-3*
Convenience food prepared at home	40	36	+4
Food from a takeaway	19	15	+5
Meal eaten in a café or restaurant	7	5	+2
<i>Bases</i>	733	747	

Notes to Table 3.12: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Differences may not sum exactly, due to rounding.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

Nor were there any significant impacts on the type of evening meal eaten among secondary school pupils in the extended entitlement pilot (area C).

Among primary school pupils in the universal entitlement areas who would have been entitled to FSM under the extended entitlement criteria introduced in area C, the impacts on evening meals were similar to those found for all primary school pupils in pilot areas A and B. There was a negative impact of 5 percentage points on having at least one evening meal prepared from ingredients, with no other significant impacts on the type of evening meals eaten.

Impacts on diet among pupils with different characteristics

This section examines the impacts of the universal entitlement pilot on diet for groups of pupils with particular characteristics of interest. These groups are:

- pupils who were entitled to FSM under the old criteria;
- pupils who were not entitled to FSM under the old criteria;

- pupils who had less healthy diets than other pupils.

Pupils entitled to free school meals under the old criteria

All pupils included in the longitudinal survey were non-takers of school meals before the pilot began. Pupils who were entitled to FSM will comprise a mixture of pupils who were and were not registered for free school meals with their local authority; some will have chosen not to take up their free meals, at least on a regular basis, for some reason; others may not have been aware that they were entitled to free meals in the first place or chose not to register for them for some reason. Pupils entitled to but not taking free school meals form a rather unusual group and one that is different from the group of pupils who are eligible (that is, entitled and registered) for free school meals that is considered in Chapters 2 and 4. The former group covered 11 per cent of pupils in the universal pilot areas.

Interestingly, the universal entitlement pilot substantially increased the likelihood of this group taking school meals, with 73 per cent having done so during the last week compared with 34 per cent of similar pupils in comparison areas. This figure is only slightly lower than that for all non-takers of school meals in the pilot areas (79 per cent).

The increased likelihood of having school meals among this group might be attributable to a number of factors, including the removal of any stigma associated with taking free school meals, the removal of the requirement to apply for free meals, lack of awareness of entitlement and the promotion of school meals during the pilot. The qualitative case studies suggested that all these factors can influence the take-up of school meals.

The impacts of the pilot on lunchtime consumption among this group were similar to those observed among the universal pilot group as a whole, but there were also some differences.

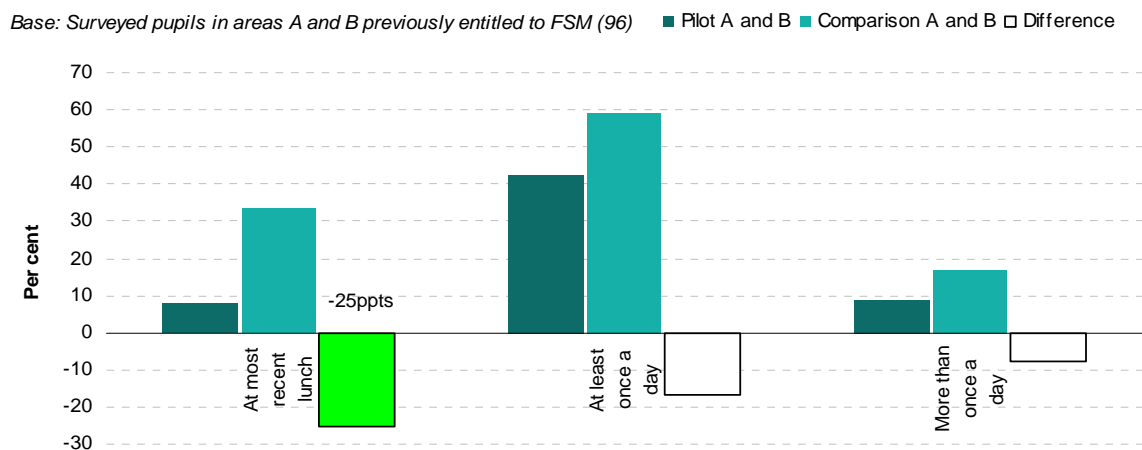
As was the case for pilot area A and B pupils as a whole, those previously entitled to FSM were more likely than similar pupils in comparison areas to have eaten some hot food at lunchtime (+25 percentage point impact); they were also significantly more likely to have eaten chips or fried or roasted potatoes (+14ppts) and vegetables (+23ppts) and significantly less likely to have eaten crisps (-25ppts). The impact on eating crisps at least once a day was also similar to that found for the whole pilot group (-17ppts) but was not statistically significant due to the small size of the group (Figure 3.9).

In contrast to the results found for all primary school pupils, the universal entitlement pilot did not have a significant impact on the likelihood of those previously entitled to FSM eating fruit at lunchtime, with around a third of pupils in both the pilot and comparison groups having done so.

The difference in impacts on eating fruit at lunchtime between the whole pilot group and the group previously entitled to FSM was largely due to the proportion of pupils eating fruit in comparison areas being smaller among this group (34 per cent) than among the whole

comparison group (46 per cent). This might suggest that pupils in the previously entitled group were less likely to eat fruit as part of a packed lunch.

Figure 3.9 Impact on eating crisps among pupils in pilot areas A and B (universal entitlement) entitled to FSM before the pilot



Notes to Figure 3.9: If the difference between the pilot and matched comparison groups is not shaded green, then the impact estimate is not significantly different from zero at the 5 per cent level.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

The proportion of previously entitled pupils drinking water at lunchtime (38 per cent) was lower than that for the whole pilot group (48 per cent) and not significantly different from that for the comparison group. The proportion drinking soft drinks at lunchtime was higher among previously entitled pupils (19 per cent) than among the whole pilot group (10 per cent) and again not significantly different from the comparison group.

Pupils not entitled to free school meals under the old criteria

The impacts of the pilot on diet for pupils who were not previously entitled to FSM were also examined. These pupils formed the majority of the pilot group and thus these impacts were very similar to the impacts on the pilot group as a whole.

Pupils with a less healthy diet

A group of pupils in the universal pilot areas who appeared to have a less healthy diet than other pupils at baseline was identified. The definition of a less healthy diet was developed in consultation with the survey nutritionist. The group comprised those who reported eating crisps at least once a day, cake / biscuit / chocolate bars at least once a day and fruit less than twice a day. It covered 15 per cent of pupils in the universal pilot areas.

Pupils with a less healthy diet at baseline appeared to be slightly less likely to take up free meals, with 69 per cent having had at least one school meal in the last week (compared with 79 per cent of the whole sample). They were still significantly more likely to have had at least one school meal than the comparison group (35 per cent of whom had done so),

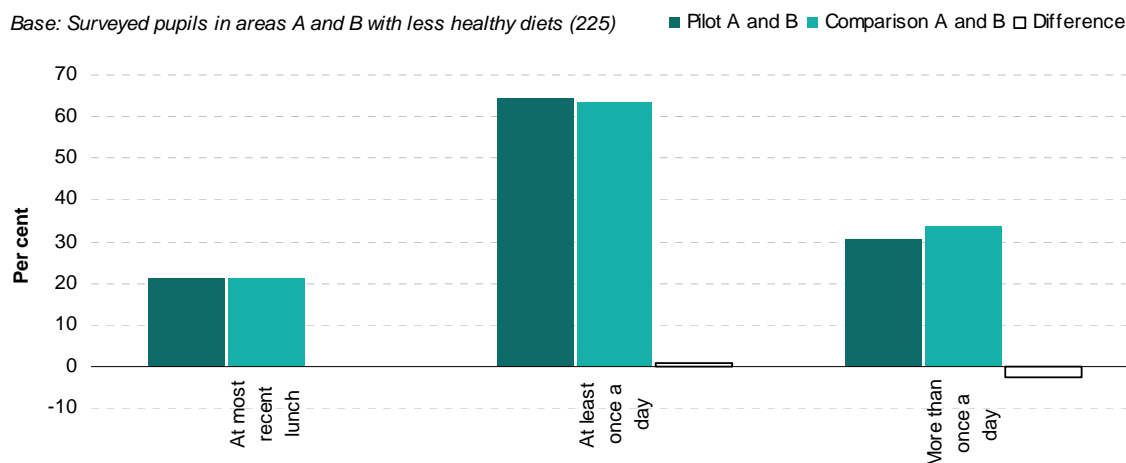
but the impact was lower than for the universal pilot area as a whole (+34ppts versus +47ppts).

The pattern of impacts among pupils with a less healthy diet also differed in some ways from that for the whole group of pilot pupils, partly because small sample sizes meant that differences were not always significant. The pilot decreased the likelihood of pupils with less healthy diets eating crisps at lunchtime (-25ppts), although they were still more likely to have eaten crisps than the pilot group as a whole (25 per cent had done so). There was no significant impact on the likelihood of eating crisps at least once a day among pupils with less healthy diets.

In contrast to the results for all pupils in the universal pilot areas, the pilot did not significantly affect the likelihood of pupils with less healthy diets eating whole pieces of fruit at lunchtime. The proportion of pupils with less healthy diets who ate whole pieces of fruit was the same in the pilot and comparison groups (21 per cent) (Figure 3.10); this was similar to the pilot group as a whole but lower than for the comparison group as a whole.

This finding suggests that pupils with less healthy diets were less likely to take whole pieces of fruit as part of a packed lunch, and so switching to school meals as a result of the pilot did not adversely affect their consumption of fruit at lunchtime.

Figure 3.10 Impact on eating fruit among pupils in pilot areas A and B (universal entitlement) defined as having less healthy diets



Notes to Figure 3.10: If the difference between the pilot and matched comparison groups is not shaded green, then the impact estimate is not significantly different from zero at the 5 per cent level.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

The impact on eating vegetables at lunchtime for pupils with less healthy diets appeared to be similar to that for all pupils in the universal pilot areas, but was not statistically significant due to the small sample sizes.

Interestingly, while there was no impact on eating cake, biscuits, chocolate bars or puddings among the whole pilot group, there was an impact of +23ppts among the pupils

with a less healthy diet. This was partly offset by the pilot pupils in this group being less likely to eat this type of food in the morning at school (–14ppts).

Finally, the universal entitlement pilot did not significantly affect the consumption of water or soft drinks at lunchtime among the pupils defined as having less healthy diets.

3.3 Parents' perceptions of eating habits and school meals

The longitudinal survey examined parents' perceptions of their child's eating habits and school meals to assess how these were affected by the pilot. As described in the case studies, parents played a central role in determining what their children ate at school and at home. The views of parents are therefore likely to be key to the success of the pilot.

Parents' perceptions of children's eating habits

Parents were asked how often they spoke to their child about what they had eaten at school and the extent to which they agreed or disagreed with three statements:

- My child is willing to try new food if it is offered to them.
- My child knows about healthy eating.
- Parents whose children have school meals do not need to worry so much about what their children eat at home.

In universal entitlement pilot areas, there was an impact of 14 percentage points on the proportion of parents saying that they spoke to their child 'every day or most days' about what they had eaten at school, with three-quarters of parents saying that they did this (Table 3.13).

The universal pilot also had a positive impact on parents' perceptions of children's willingness to try new food, with a 9 percentage point impact on agreement with the statement about this (Table 3.14). Two-thirds (66 per cent) of parents in pilot areas A and B agreed that their child was willing to try new food, compared with 57 per cent in comparison areas.

This finding supports the evidence from the case studies that parents felt that taking school meals in the pilot had encouraged their child to try a wider range of foods.

The universal pilot had no effect on the likelihood of parents agreeing with the other two statements, however. Most primary school parents (96 per cent in pilot areas A and B and 94 per cent in comparison areas A and B) agreed that their child knew about healthy eating. Only a minority (12 per cent in pilot areas A and B and 10 per cent in comparison areas A and B) agreed that parents whose children ate school meals did not need to worry so much about what their children ate at home.

This supports the finding discussed in Section 3.2 that parents in the universal pilot areas did not appear to be substituting the school meal for a main meal in the evening.

Table 3.13 How often parent speaks to child about what they have eaten at school: pilot areas A and B (universal entitlement)

<i>Base: Surveyed pupils in pilot and comparison areas A and B</i>			
	Pilot areas A and B	Comparison areas A and B	Difference
Speaks about food at school	%	%	ppt
Every day or most days	74	60	+14**
Two or three days a week	14	18	-5
Once a week	5	7	-2
Less often than once a week	3	8	-5
Never	4	7	-4
<i>Bases</i>	<i>734</i>	<i>750</i>	

Notes to Table 3.13: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Differences may not sum exactly, due to rounding.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

Table 3.14 Impact on perceptions of children's eating habits: pilot areas A and B (universal entitlement)

<i>Base: Surveyed pupils in pilot and comparison areas A and B</i>			
	Pilot areas A and B	Comparison areas A and B	Difference
Agree / Strongly agree	%	%	ppt
Child is willing to try new food if it is offered to them	66	57	+9**
Child knows about healthy eating	96	94	+1
Parents whose children have school meals do not need to worry so much about what their children eat at home	12	10	+3
<i>Bases</i>	<i>734</i>	<i>752</i>	

Notes to Table 3.14: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Differences may not sum exactly, due to rounding.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

A different pattern of impacts on parental attitudes was seen in the extended entitlement pilot area. Parents of secondary school pupils in pilot area C were significantly less likely to speak to their child every day or most days about what they had eaten at school than parents in comparison areas (-14ppt impact). There was also a +16ppt impact on parents agreeing or strongly agreeing that 'parents whose children have school meals do not need to worry so much about what their children eat at home' (Table 3.15), although the level of

agreement with this statement was still relatively low (20 per cent). There were no significant impacts in pilot area C on agreement with the other two statements.

Table 3.15 Impact on perceptions of children's eating habits: pilot area C (extended entitlement)			
<i>Base: Surveyed pupils in pilot and comparison areas C</i>			
	Pilot area C	Comparison areas C	Difference
Agree / Strongly agree	%	%	ppt
Child is willing to try new food if it is offered to them	66	59	+7
Child knows about healthy eating	95	96	-1
Parents whose children have school meals do not need to worry so much about what their children eat at home	20	3	+16**
<i>Bases</i>	<i>164</i>	<i>182</i>	

Notes to Table 3.15: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Differences may not sum exactly, due to rounding.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 7 to 9 at baseline.

Among the pupils in the universal entitlement areas, A and B, who would have been entitled to FSM under the extended entitlement pilot, there were no significant impacts on agreement with the three statements or on how often parents spoke to their child about what they had eaten at school. Three-quarters (75 per cent) of parents in this group in the pilot areas spoke to their child 'every day or most days' about what they had eaten, while two-thirds (66 per cent) of those in comparison areas had done so. The proportion who thought their child was willing to try new food (64 per cent) was very similar to that in the universal pilot group as a whole (66 per cent), while the proportion in comparison areas (63 per cent) was slightly higher than among all parents in the comparison areas (57 per cent).

Perceptions of school meals

The longitudinal survey examined whether the experience of the pilot had changed parents' perceptions of school meals. Parents were asked to give their views on the following aspects of school meals, using a scale from very good to very poor:

- quality;
- choice of meals provided;
- range of meals provided;
- how healthy meals are;
- dining room facilities;

- time taken for pupils to be served;
- facilities for pupils bringing packed lunch.

The universal pilot appeared to have improved perceptions of school meals. Parents in pilot areas A and B were more likely to give positive ratings for the quality of school meals (+7ppts), how healthy school meals are (+7ppts), dining facilities (+12ppts) and time taken for pupils to be served (+9ppts) (Table 3.16). Parents in comparison areas were not, however, more likely to give negative ratings for these aspects of school meals but were more likely to choose the ‘don’t know’ option.

The finding that parents in comparison areas were more likely to choose the ‘don’t know’ option when rating different aspects of school meals may reflect a lower level of knowledge about school meals because children in these areas were less likely to be taking school meals.

Table 3.16 Impacts on parents’ perceptions of school meals: pilot areas A and B (universal entitlement)			
<i>Base: Surveyed pupils in pilot and comparison areas A and B</i>			
	Pilot areas A and B	Comparison areas A and B	Difference
Rated very good / quite good	%	%	ppt
Quality	77	70	+7*
Choice of meals provided	69	68	+1
Range of meals provided	75	70	+6
How healthy meals are	85	78	+7*
Dining room facilities	76	64	+12*
Time taken for pupils to be served	53	44	+9*
Facilities for pupils bringing packed lunch	77	77	0
<i>Bases</i>	<i>734</i>	<i>752</i>	

Notes to Table 3.16: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Differences may not sum exactly, due to rounding.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

In the extended entitlement area, parents were less likely to give positive ratings of dining facilities at the school (–17ppt impact), but there were no other statistically significant impacts on the ratings of school meals (Table 3.17). The proportions of secondary school parents in pilot area C and its comparison areas giving positive ratings for each aspect of school meal provision were noticeably lower than among primary school parents in pilot areas A and B and their comparison areas. This was in most cases due to parents being more likely to choose the ‘don’t know’ option, suggesting that secondary school parents may be less likely to know much about school meal provision. The exception was

assessing the time taken to be served, where a substantial proportion of parents gave negative ratings.

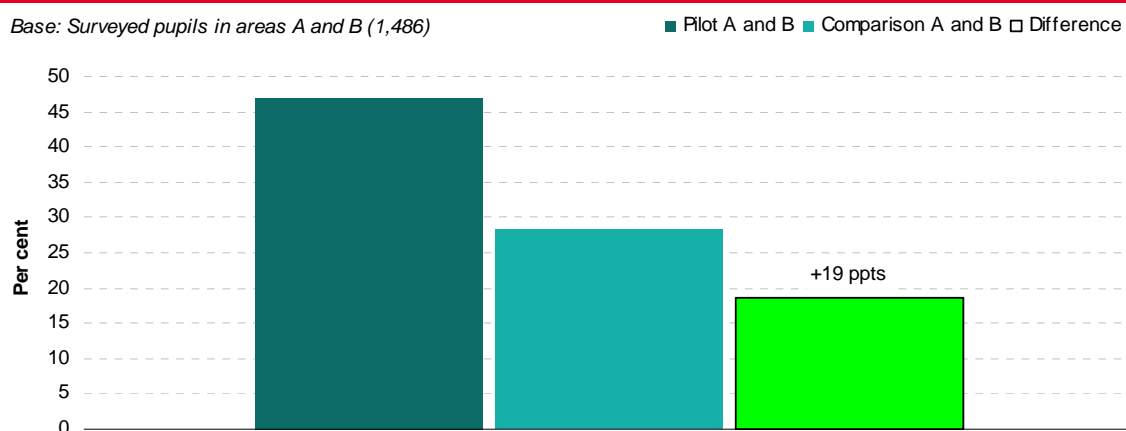
Among the pupils in the universal entitlement areas who would have been entitled to FSM under the extended entitlement pilot, there were no significant impacts on the ratings of any aspects of school meals.

Table 3.17 Impacts on parents' perceptions of school meals: pilot area C (extended entitlement)			
<i>Base: Surveyed pupils in pilot and comparison areas C</i>			
	Pilot area C	Comparison areas C	Difference
Rated very good / quite good	%	%	ppt
Quality	52	55	-4
Choice of meals provided	36	41	-5
Range of meals provided	37	37	0
How healthy meals are	51	51	0
Dining room facilities	41	58	-17*
Time taken for pupils to be served	21	15	+6
Facilities for pupils bringing packed lunch	50	43	+8
<i>Bases</i>	<i>165</i>	<i>182</i>	

Notes to Table 3.17: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Differences may not sum exactly, due to rounding.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 7 to 9 at baseline.

Figure 3.11 Impact on proportion of parents thinking school meal is healthier than packed lunch: pilot areas A and B (universal entitlement)



Notes to Figure 3.11: If the difference between the pilot and matched comparison groups is not shaded green, then the impact estimate is not significantly different from zero at the 5 per cent level.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

Parents were also asked to select which they thought was better for their child's health: a packed lunch brought from home or a meal provided by school. In the universal entitlement pilot, there was further evidence of a positive impact on the perceived healthiness of school meals, with a 19 percentage point impact on the proportion of parents rating the school meal as better than a packed lunch (Figure 3.11). The impact on pupils in pilot areas A and B who would have been entitled to FSM under the extended criteria introduced in pilot area C was similar to that in pilot areas A and B as a whole, with 52 per cent of parents saying that a school meal was healthier (an impact of +13ppts). Among parents of secondary school pupils in pilot area C, however, there was no significant impact on the relative perceived healthiness of the school meal.

The pilot did not have any significant impacts on parents' perceptions of the change in the quality of school meals, with no significant impacts seen on the proportions saying that the quality of meals had improved over the last two years.

3.4 Pupil behaviour

Previous studies had suggested that there may be a link between eating school meals and improved classroom behaviour.⁶² With this in mind, the evaluation of the FSM pilot explored impacts on behaviour from a range of perspectives:

- The case studies with teachers, parents and pupils explored perceptions of impacts on behaviour.
- The telephone surveys with catering managers asked about changes in pupil behaviour in the dining area.
- The longitudinal survey included questions to capture parents' perceptions of their child's behaviour. These questions were asked in a self-completion module whereby the parent entered their responses directly into the computer without the interviewer being able to see their answers.⁶³

For budgetary reasons, the evaluation did not include quantitative assessments of classroom behaviour and concentration. Thus it is not possible to assess the effect of the pilot on behaviour within particular classes or subjects.

In the longitudinal survey, parents were asked whether their child enjoyed school and then asked five questions drawn from Goodman's Strengths and Difficulties Questionnaire (SDQ).⁶⁴ The SDQ is a well-used and validated tool for assessing children's behaviour. It was decided by the evaluation steering group not to include the whole SDQ in the survey, because of constraints on questionnaire length so as not to place an excessive burden on

⁶² See, for example, Golley et al. (2010) and Storey et al. (2011).

⁶³ If the parent was unable or did not want to use the computer, these questions were administered by the interviewer.

⁶⁴ Goodman, 1997.

parents. Instead, five measures were selected from the SDQ. Consequently, the behaviour measures do not have the validity of the SDQ as a whole and it was not possible to score the assessments, as would usually be done with the SDQ. Nonetheless, it was thought by the evaluation steering group that a small selection of measures would provide useful insight into the effects of the pilot on parents' perceptions of their child's behaviour. The measures selected were those considered to be most relevant to behaviour in a school context and were agreed in consultation with the evaluation steering group. These questions asked parents to say whether the statements listed below were 'certainly true', 'somewhat true' or 'not true' about their child:

- Generally obedient, usually does what adults request.
- Restless, overactive, cannot stay still for long.
- Often complains of headaches, stomach aches or sickness.
- Easily distracted, concentration wanders.
- Sees tasks through to the end, good attention span.

The only significant impact on parental perceptions of behaviour observed in the universal entitlement pilot related to obedience to adults. There was a positive impact of 9 percentage points on the proportion of parents saying it was 'certainly true' that their child was 'generally obedient, usually does what adults request' (Table 3.18). If both of the positive responses, 'certainly true' and 'somewhat true', were combined, however, there were no significant differences between the pilot and comparison groups.

In the extended entitlement area, a positive impact of 10 percentage points was observed on the proportion of parents saying that it was 'certainly true' that their child was 'restless, overactive, cannot stay still for long' (Table 3.19). Again, however, if the responses 'certainly true' and 'somewhat true' were combined, there were no significant differences between the pilot and comparison groups.

Table 3.18 Impact on whether child is generally obedient, usually does what adults request (SDQ): pilot areas A and B (universal entitlement)			
<i>Base: Surveyed pupils in pilot and comparison areas A and B</i>			
	Pilot areas A and B	Comparison areas A and B	Difference
Generally obedient, usually does what adults request	%	%	ppt
Certainly true	56	46	+9**
Somewhat true	38	45	-7**
Not true	6	8	-2
Don't know	0	1	0
<i>Bases</i>	<i>727</i>	<i>739</i>	

Notes to Table 3.18: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Differences may not sum exactly, due to rounding.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

Table 3.19 Impact on whether child is restless, overactive, cannot stay still for long (SDQ): pilot area C (extended entitlement)

<i>Base: Surveyed pupils in pilot and comparison areas C</i>			
Restless, overactive, cannot stay still for long	Pilot area C	Comparison areas C	Difference
	%	%	ppt
Certainly true	13	3	+10*
Somewhat true	20	27	-7
Not true	65	67	-2
Don't know	2	2	0
<i>Bases</i>	163	177	

Notes to Table 3.19: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Differences may not sum exactly, due to rounding.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 7 to 9 at baseline.

No significant impacts on behaviour were detected for pupils in the universal entitlement areas who would have been entitled to FSM under the extended entitlement criteria introduced in pilot area C.

Of course, parents were not necessarily in a position to judge how their child's classroom behaviour was affected by eating a school meal. The qualitative case studies found that there were mixed views among staff and pupils about whether the pilot had led to changes in behaviour or concentration in the classroom. While some school staff observed that pupils were generally more alert and able to concentrate after lunchtime, others noted that pupils could be lethargic after eating a large meal. School staff and parents in the case studies felt that the pilot had improved children's social skills such as awareness of dining etiquette.

Similarly, the pilot appeared to have few impacts on catering managers' perceptions of pupil behaviour at lunchtime. Most schools reported in both years 1 and 2 of the pilot that pupil behaviour had stayed the same or improved since the previous year. This suggests that the increased take-up of school meals (with consequent increase in queuing times and more pupils in the dining hall) did not result in a marked deterioration in pupil behaviour at lunchtime, at least from the caterers' perspective.

3.5 Body Mass Index (BMI)

Body Mass Index was calculated using the height and weight measurements taken during the face-to-face interview. Using calculations from the Health Survey for England⁶⁵ based on BMI and age, a measure of obesity was derived.

None of the pilot models was found to have any significant impact on the likelihood of being obese or overweight (see Table 3.20 for pilot areas A and B, Table 3.21 for pilot area C and Table 3.22 for pupils in pilot areas A and B who would have been entitled to FSM under the extended entitlement criteria introduced in pilot area C). Around a third (34 per cent) of pupils in the universal pilot areas were classified as being overweight or obese, with 18 per cent categorised as obese; the latter figure was slightly higher among pupils who would have been entitled to FSM under the extended entitlement pilot (21 per cent). By contrast, more than half of secondary school pupils in pilot area C (55 per cent) and comparison areas (57 per cent) were overweight or obese.

Further analysis of the impact of the pilot on BMI was undertaken using administrative data. Height and weight measurements from all pupils in Reception and Year 6 are taken each year as part of the Child Measurement Programme. This information was made available by the NHS Information Centre via the UK Data Archive and is used to create a number of indicators, including BMI and the proportions of pupils underweight, overweight or obese.

Table 3.20 Impact on obesity: pilot areas A and B (universal entitlement)			
<i>Base: Surveyed pupils in pilot and comparison areas A and B</i>			
	Pilot areas A and B	Comparison areas A and B	Difference
	%	%	ppt
Obese	18	15	+3
Overweight including obese	34	28	+5
Not overweight	66	72	-5
<i>Bases</i>	<i>719</i>	<i>724</i>	

Notes to Table 3.20: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Differences may not sum exactly, due to rounding.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

⁶⁵ The Health Survey for England (HSE) comprises a series of annual surveys beginning in 1991. This survey is now commissioned and published by the NHS Information Centre. It is designed to provide regular information on various aspects of the nation's health. All surveys have covered the adult population aged 16 and over living in private households in England. Children have been included every year since 1995.

Table 3.21 Impact on obesity: pilot area C (extended entitlement)

<i>Base: Surveyed pupils in pilot and comparison areas C</i>			
	Pilot area C	Comparison areas C	Difference
	%	%	ppt
Obese	22	25	-4
Overweight including obese	55	57	-2
Not overweight	45	43	+2
Bases	151	170	

Notes to Table 3.21: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Differences may not sum exactly, due to rounding.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 7 to 9 at baseline.

Table 3.22 Impact on obesity: pupils in pilot areas A and B (universal entitlement) who would have been entitled to FSM under the extended entitlement criteria introduced in pilot area C

<i>Base: Surveyed pupils in pilot and comparison areas A and B who would have been entitled to free school meals under the extended entitlement criteria introduced in pilot area C</i>			
	Pilot	Comparison	Difference
	%	%	ppt
Obese	21	23	-2
Overweight including obese	32	36	-5
Not overweight	68	64	+5
Bases	203	247	

Notes to Table 3.22: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Differences may not sum exactly, due to rounding.

Source: Data collected from a sample of parents and pupils as part of the longitudinal survey in year 2 of the pilot. These figures relate to pupils in Years 0 (Reception) to 4 at baseline.

For each indicator, the change over time amongst pupils in the universal and extended entitlement pilot areas can be compared with the change over time amongst pupils in their respective comparison areas. This analysis confirms the findings from the survey described above, providing little evidence that either pilot model had any significant impact on BMI or obesity levels amongst pupils of these ages. (Further details of this analysis are available on request.)

3.6 Discussion and conclusions

This section reflects on the impacts of the FSM pilot on children’s diet, health and behaviour that have been observed and discussed in this chapter.

Discussion of findings

- The substantial increase in take-up in the universal pilot areas led to a shift in the types of food that pupils were eating at lunchtime, away from 'packed lunch' type foods such as sandwiches, crisps and pieces of fruit, towards hot meals including starchy carbohydrates and vegetables. It is interesting to note that even though sandwiches were available on school menus, pupils were more likely to opt for hot meals. The nutritional standards in place for school meals will have helped to ensure that pupils taking a school meal received a balance of healthy meals across the week. Thus, while there was, for example, an increased likelihood of pupils having chips or potatoes cooked in oil for lunch, these were only offered as a menu choice in the pilot areas twice a week.
- One consequence of the shift from packed lunches to hot school meals was that pupils in the universal pilot areas were less likely to eat whole pieces of fruit at lunchtime. Fresh fruit was always available on menus but this finding suggests that pupils were more likely to choose other dessert options. Some school menus in the pilot areas were addressing this by offering desserts containing fruit, so that pupils could still consume some fruit even if they were not choosing whole pieces of fruit. Another way of addressing the decrease in eating whole pieces of fruit at lunchtime might be to make fruit available at other times of day when pupils did not have other choices of food to eat.
- It is interesting that a decline in the likelihood of eating whole pieces of fruit at lunchtime was not observed among the pupils defined as having less healthy diets in the universal pilot areas. This suggests that for pupils who were less likely to eat whole pieces of fruit as part of a packed lunch, there was no further decline in the likelihood of eating fruit at lunchtime as a result of taking school meals.
- The main impact of the universal pilot on overall food consumption was the reduction in the proportion of pupils reported to eat crisps at least once a day. This suggests that not eating crisps at lunchtime leads to a net reduction in the frequency of eating crisps among primary school pupils.
- The change in eating habits at lunchtime in the universal pilot did not appear to have many other impacts on what pupils ate at other times of day. There was little evidence of foods being substituted at other times of day (with the exception of soft drinks after school). Pupils in the universal pilot were not less likely to have hot food in the evening or to have vegetables with their evening meal, suggesting that the school meal was not being viewed by parents as a substitute for a meal in the evening.
- There was some evidence that the universal pilot was perceived by parents to encourage children to try a wider range of foods. Parents in the pilot areas were more likely to agree that their child was willing to try new foods and this was perceived to be one of the main benefits of the pilot among parents in the qualitative case studies.

- Parents in the universal pilot areas generally had more positive views on the quality and healthiness of school meals. This suggests that messages about the benefits of school meals had been communicated successfully to parents in the pilot areas. The qualitative case studies found that perceptions of quality and the dining experience helped to influence decisions about taking up school meals.
- The extended entitlement approach had little impact on eating habits, as was to be expected given that take-up of school meals did not increase significantly with this approach.
- There was no clear evidence that the pilot improved children's behaviour or concentration. The qualitative case studies found mixed views on this subject among school staff, while there was little impact on parents' perceptions of their child's behaviour in the survey. Previous studies have suggested some links between eating school meals and improved classroom behaviour and concentration. More research on this subject may be beneficial.
- There were no significant impacts on Body Mass Index (BMI) under either pilot approach. It may be that the changes to eating habits in the universal pilot areas did not significantly change calorie intake or that the evaluation period was too short for changes to become apparent.

Lessons for policymakers

- Any significant changes to children's eating habits that materialised as a result of the FSM pilot arose only in the universal entitlement pilot areas, not the extended entitlement pilot area. This may mean that universality has important advantages that cannot be ignored. Equally, it could be that the universal pilot areas implemented more, or more successful, activities to promote the benefits of school meals than the extended entitlement pilot area.
- One of the main benefits of the universal entitlement pilot in dietary terms was that it reduced the consumption of crisps, not only at lunchtime but also overall. Although there was little evidence of positive health benefits resulting from such changes during the pilot itself, these habits may reap positive health benefits in the long run, especially if they are sustained.
- The shift in lunchtime eating habits in the universal pilot from packed lunches to hot school meals underlines the importance of balanced, healthy school menus. For example, the restrictions on starchy food cooked in oil and on deep-fried foods help to ensure that these types of food are not consumed too frequently, while offering desserts with fruit content may help to counteract the decrease in children eating pieces of fruit. As new academies and free schools no longer have to comply with the nutritional standards, any roll-out of universal or extended entitlement to FSM needs to consider how best to ensure that school menus offer healthy, balanced meals.

- There was little evidence that the universal entitlement pilot positively affected parental perceptions of children's behaviour or health outcomes. This may have been because behaviour in the classroom was not a major focus of the evaluation and because it was too early to pick up any significant health benefits. The fact that the evaluation did not find any evidence to support such benefits should be considered in any future decisions about whether or not to roll out the universal pilot.

4 Impacts on child outcomes: attainment and absences

This chapter discusses the impacts of the Free School Meals (FSM) pilot on pupil attainment and on the likelihood of being absent from school. Previous research has found that an improvement in the quality of school meals led to a significant improvement in these outcomes;⁶⁶ this chapter complements that analysis by evaluating whether changes to the availability of free school meals, as well as the wider changes brought about by the pilot, also have a positive impact on pupil attainment and absence rates.

It is important to remember that the FSM pilot not only provided some pupils with free school meals, but also included a range of supporting activities to promote the pilot, encourage the take-up of school meals and support healthy eating. The effects on attainment discussed in this chapter, and indeed the impacts on diet and eating habits discussed in Chapter 3, could thus have arisen through the provision of free school meals directly, through the wider activities that accompanied the pilot, or both.

Key findings

- The universal entitlement pilot led to a significant increase in attainment for primary school pupils in areas A and B. The estimates are larger in magnitude and more consistently significant at Key Stage 2 than at Key Stage 1, with pupils in both areas found to make around two months' more progress, on average, than similar pupils in comparison areas.
- The universal entitlement pilot appeared to improve attainment by more amongst pupils from less affluent families⁶⁷ than amongst pupils from more affluent families. It also appeared to improve attainment by more for pupils with lower prior attainment than for those with higher prior attainment. It should be noted that the effects for different types of pupils are not always significantly different from one another.
- By contrast, there was little evidence of any significant effect of the extended entitlement pilot on the attainment of pupils in area C, even amongst those who were predicted to be newly entitled to free school meals.
- Reducing the amount of time that pupils are absent from school is not the route through which the universal entitlement pilot improved attainment: no difference was found between the absence rates of pupils in pilot and comparison areas.

⁶⁶ Belot and James, 2011.

⁶⁷ 'Pupils from less affluent families' here refers to both those who are eligible for FSM under the old criteria and those who are newly entitled under the extended entitlement criteria introduced in pilot area C.

4.1 Introduction

Throughout this chapter, the overall impact of the pilot on each outcome is documented. The impact of the pilot on the following groups of pupils is also considered:

- **Pupils predicted to be newly entitled to free school meals under the extended entitlement criteria implemented in pilot area C.**⁶⁸ This will provide insight into whether the extended entitlement pilot has had any impact on the group of pupils to whom entitlement was extended. As discussed in Section 2.1, it is not possible to identify precisely which pupils would have been newly entitled to FSM under the extended criteria; instead, information on actual entitlement from the longitudinal survey was used to help predict which pupils were most likely to be newly entitled. (This process is discussed in more detail in Appendix C.)

As the longitudinal survey only covered secondary school pupils in area C, it was hoped that the impact of the extended entitlement pilot on primary school pupils could be inferred from the impact on pupils in areas A and B who would have been newly entitled to FSM under the extended entitlement criteria introduced in area C. In this chapter, it is possible to test the validity of this interpretation, by comparing the impacts of the pilot on attainment and absence from school amongst primary school pupils in areas A and B who would have been newly entitled to FSM under the extended entitlement criteria introduced in area C with those for a similar group of pupils in area C.

- **Pupils who are and are not eligible for free school meals under the old criteria at baseline.** Chapter 2 showed that the pilot increased take-up amongst both groups, but by considerably more amongst those who were not eligible for FSM than amongst those who were. This chapter will show whether these differences in take-up are mirrored in differences in attainment, and thus whether universal or extended provision of FSM is likely to be able to help reduce the gap in attainment between children from different socio-economic backgrounds.
- **Pupils by quartile of achievement at the previous Key Stage.** Pupils will be split into four equally sized groups (quartiles) on the basis of their standardised average point score at the previous Key Stage, with the impact of the pilot estimated separately for each group. This will complement the analysis by family background described above.

This chapter now proceeds as follows: Section 4.2 discusses the effects of the FSM pilot on attainment at Key Stages 1 and 2 (and 4 for the extended entitlement pilot), including for particular groups of pupils; Section 4.3 considers its effect on rates of absence from

⁶⁸ Recall that under the pilot introduced in area C, entitlement to FSM was extended to cover pupils whose families were claiming Working Tax Credit but whose annual income did not exceed the existing income criteria (£16,040 in 2008-09, uprated to £16,190 in 2010-11).

school; and Section 4.4 discusses these results and offers some lessons for policymakers.

4.2 Attainment

National achievement test scores are recorded in the National Pupil Database (NPD). This evaluation considers the impact of the FSM pilot on attainment at age 7 (at the end of Key Stage 1), age 11 (at the end of Key Stage 2) and age 16 (at the end of Key Stage 4). At age 7, the tests are teacher-assessed, while at ages 11 and 16 (the end of primary and compulsory secondary schooling respectively), they are externally assessed.

At each Key Stage, two main outcomes are considered: an average or total point score and whether the pupil reaches the government's expected level in a variety of subjects. The point score is standardised to have a mean of zero and a standard deviation of one for each set of pilot and comparison areas (that is, for A separately from B separately from C).⁶⁹ A negative standardised score indicates that a pupil is performing below average relative to other pupils in his/her pilot and comparison areas, while a positive score indicates the opposite. The difference between two standardised scores is measured in terms of standard deviations, so a difference of 0.1 is equivalent to a difference of one-tenth of a standard deviation.

Whether a pupil reaches the expected level of attainment is coded to one if the pupil reaches that level and zero otherwise. Summarising these variables provides an indication of the percentage of pupils reaching the expected level of attainment. The difference between two percentages is measured in percentage points, so a difference of 10 percentage points represents a change from 70 per cent to 80 per cent or for 80 per cent to 90 per cent, for example.

The results presented in this section focus on the impact of the FSM pilot on attainment in year 2 of the pilot (that is, two years after its introduction). They therefore relate to pupils who are assessed at the end of Key Stage 1, Key Stage 2 or Key Stage 4 in 2010/11.⁷⁰ It

⁶⁹ One would usually standardise using information from the whole population of pupils to ensure that the results are nationally representative and thus comparable to those of other studies. This was not possible in this evaluation, however, as only information for pupils in each pilot area and their respective comparison areas was available. It makes little difference whether one standardises within or across pilot areas.

⁷⁰ Results were also available for the Foundation Stage Profile and Key Stage 5, but neither is included in this report. In the case of the Foundation Stage Profile, this is because results are taken at the end of the Reception Year and thus after a maximum of one year's exposure to the pilot, so the pilot's impact cannot be compared to the other estimates presented in this section. Key Stage 5 is not included because pupils attending further education (FE) colleges are not entitled to free school meals. Moreover, both the proportion of FSM-eligible pupils staying on in post-compulsory education and the proportion attending FE colleges are likely to vary from area to area, making it harder to produce a consistent estimate of the impact of the pilot on Key Stage 5 attainment.

is also worth noting that the impact on Key Stage 4 is only estimated for pupils in area C, in which entitlement was extended for both primary and secondary school pupils, and not for pupils in pilot areas A or B, in which all primary school pupils became entitled to FSM.

Each table in this section presents the level of attainment for pupils in pilot areas and for a group of similar pupils in comparison areas (henceforth referred to as the matched comparison group), and the difference between the two, in 2010/11.⁷¹ Because pupils do not take exactly the same tests every year, the attainment measures that are used to 'match' pupils in the pilot and comparison areas at baseline are standardised average point scores from the last test taken. Thus, when considering the impact of the pilot on attainment at Key Stage 1, the model includes an average point score from the Foundation Stage Profile, which is teacher-assessed at the end of the Reception Year (around age 5). Similarly, an average point score from Key Stage 1 is included in the analysis of the impact of the pilot on attainment at Key Stage 2 and an average point score from Key Stage 2 is included in the analysis of the impact of the pilot on attainment at Key Stage 4. For this reason, baseline differences in attainment are not reported in this chapter. Nonetheless, for each outcome, pupils in the pilot and matched comparison groups were well-matched at baseline, with most differences being small and all being statistically insignificantly different from zero.

This section first considers the impacts of the universal and extended entitlement pilots on attainment at Key Stages 1 and 2 and then moves on to report the impact of the extended entitlement pilot on attainment at Key Stage 4. In each case, the overall results are presented first, before considering: (a) the impact amongst pupils predicted to be newly entitled to FSM under the extended entitlement criteria implemented in pilot area C; (b) the impact according to eligibility for FSM under the old criteria at baseline; and (c) the impact by quartile of prior attainment.

Impact on attainment at Key Stage 1

At Key Stage 1, pupils are tested in maths, reading, writing, speaking and listening, and science. Pupils are awarded a level for each subject by their teacher, with Level 1 worth 9 points, Level 2C 13 points, Level 2B 15 points, Level 2A 17 points, Level 3 21 points and Level 4 27 points.⁷² Level 2 is the expected level of achievement at Key Stage 1. Attainment is measured both using a standardised average point score, created from scores awarded in maths, reading, writing and science,⁷³ and using a set of variables indicating whether the pupil reached the expected level of attainment in each subject.

⁷¹ The way in which a similar group of pupils is chosen or 'matched' in comparison areas is discussed in more detail in Appendix B.

⁷² Science is the exception, where there is no distinction between Levels 2C, 2B and 2A; Level 2 is worth 15 points.

⁷³ The points score for speaking and listening is not available.

Overall impact

Table 4.1 presents the impact of the universal entitlement pilot on Key Stage 1 attainment in area A. It shows that there was a positive impact on both the average point score and the likelihood of reaching the expected level in all subjects, although not all of these results are significantly different from zero. For example, in year 2, pupils in pilot area A scored 0.116 standard deviations higher than otherwise-identical pupils in the matched comparison group, a figure that is equivalent to around six weeks' progress.⁷⁴ This overall difference in attainment also masks variation by subject, with impacts on the likelihood of reaching the expected level ranging from 0.8 percentage points (ppts) in reading to 3.5ppts in speaking and listening. Thus, while the pilot did not have a uniform impact on attainment across subjects in area A, all of the results seem to be consistently positive.

Table 4.1 Impact on attainment at Key Stage 1 in area A (universal entitlement)			
<i>Base: All pupils in pilot and comparison areas A who sat Key Stage 1 tests in 2010/11</i>			
	Pilot area A	Comparison areas A	Difference
	score	score	Score
Standardised average point score	-0.027	-0.143	+0.116*
	%	%	Ppt
Expected level in maths	90.1	86.9	+3.2*
Expected level in reading	86.8	86.0	+0.8
Expected level in writing	82.9	81.1	+1.8
Expected level in speaking and listening	87.5	84.0	+3.5*
Expected level in science	88.1	86.0	+2.1
<i>Maximum bases</i>	<i>3626</i>	<i>16,331</i>	

Notes to Table 4.1: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Note that the analysis of the standardised average point score uses slightly fewer observations than the analysis of the expected levels, with 3622 pupils in the pilot area and 16,305 pupils in the comparison areas. Figures may not sum exactly due to rounding.

Source: National Pupil Database.

Table 4.2 presents the impact of the universal entitlement pilot on attainment at Key Stage 1 in area B. In line with the results for area A, it suggests that the pilot had a positive impact on attainment in all subjects, although, again, not all results are statistically significant. For example, the average point scores of pupils in the pilot area are, on

⁷⁴ Pupils are expected to increase their attainment by around half a Key Stage level per year between the Foundation Stage Profile and Key Stage 1, which is equivalent to 3 points on the average point score (or 0.25 per month). One standard deviation of the average point score in the sample is equal to 3.4 points, so 0.116 standard deviations is equivalent to 0.39 points, or around six weeks' progress.

average, 0.07 standard deviations higher (equivalent to around four weeks' progress⁷⁵) than those of pupils in the matched comparison group, although this difference is not significantly different from zero. The impact is also smaller in magnitude than that in area A, although not significantly so.

Table 4.2 Impact on attainment at Key Stage 1 in area B (universal entitlement)

Base: All pupils in pilot and comparison areas B who sat Key Stage 1 tests in 2010/11

	Pilot area B	Comparison areas B	Difference
	score	score	Score
Standardised average point score	-0.083	-0.153	+0.070
	%	%	Ppt
Expected level in maths	87.9	85.6	+2.3*
Expected level in reading	82.3	79.9	+2.4
Expected level in writing	78.9	76.0	+2.9*
Expected level in speaking and listening	85.3	83.5	+1.8
Expected level in science	87.2	85.3	+1.9
<i>Maximum bases</i>	<i>5022</i>	<i>29,251</i>	

Notes to Table 4.2: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Note that the number of observations varies across outcomes. The minimum number of observations is 34,229: 5019 in the pilot area and 29,210 in the comparison areas. Figures may not sum exactly due to rounding.

Source: National Pupil Database.

As in area A, there is also a significant impact of the pilot on the percentage of pupils reaching the expected level in maths, suggesting that attainment in this subject was particularly affected by the extension of entitlement to free school meals to all primary school pupils and the associated activities undertaken by schools and local authorities to promote the pilot, encourage the take-up of school meals and support healthy eating.

Table 4.3 presents the estimated impact of the extended entitlement pilot on Key Stage 1 attainment in area C. In contrast to the results presented above for the universal entitlement pilot areas, there is no evidence to suggest that the extension of entitlement to FSM, and any associated activities undertaken by the schools and local authorities involved, had a significant impact on the attainment of pupils at Key Stage 1: all estimates are small in magnitude and not significantly different from zero.

⁷⁵ Using the same methodology as applied in area A (see footnote 74), one standard deviation of the average point score in the sample is equal to 3.5 points, so 0.07 standard deviations is equivalent to 0.25 points, or around 4 weeks progress.

Table 4.3 Impact on attainment at Key Stage 1 in area C (extended entitlement)*Base: All pupils in pilot and comparison areas C who sat Key Stage 1 tests in 2010/11*

	Pilot area C	Comparison areas C	Difference
	score	score	Score
Standardised average point score	-0.195	-0.204	+0.009
	%	%	Ppt
Expected level in maths	87.3	87.4	-0.1
Expected level in reading	84.8	83.6	+1.3
Expected level in writing	78.3	78.8	-0.4
Expected level in speaking and listening	81.1	85.1	-4.0
Expected level in science	85.3	85.4	-0.1
<i>Maximum bases</i>	<i>2634</i>	<i>23,726</i>	

Notes to Table 4.3: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Note that the number of observations varies across outcomes. The minimum number of observations is 26,324: 2625 in the pilot area and 23,699 in the comparison areas. Figures may not sum exactly due to rounding.

Source: National Pupil Database.

Given that entitlement was only extended to a subset of pupils in area C, however, it is possible that an examination of the impact on the entire population is diluting a significant effect on the newly entitled population. The next subsection investigates this possibility.

Impact on pupils predicted to be newly entitled to free school meals under pilot C

This subsection discusses the impact of the pilot on pupils who are predicted to be newly entitled to FSM under the extended entitlement criteria introduced in area C. As expected, these pupils are more likely to come from low socio-economic backgrounds: compared with the pilot population as a whole, they are more likely to live in deprived areas, have substantially lower prior attainment and are more likely to come from homes in which the first language is not English. (See Table D1 in Appendix D for full details.)

Table 4.4 presents the impact of the universal entitlement pilot on Key Stage 1 attainment for pupils who fall into this group in area A. There are no significant effects to report, but note that the smaller sample size means that small effects are harder to detect. The impacts on the standardised average point score and on the proportion of pupils reaching the expected level in maths are similar in magnitude to those found for the sample as a whole (see Table 4.1). For all remaining outcomes, the impact is negative or close to zero and statistically insignificant. This suggests that the universal entitlement pilot had no significant effect on the likelihood of reaching the expected level in reading, writing, speaking and listening or science at Key Stage 1 amongst pupils in area A who are predicted to be newly entitled to FSM under the extended entitlement criteria introduced in area C.

Table 4.4 Impact on attainment at Key Stage 1 in area A (universal entitlement) amongst pupils predicted to be newly entitled to FSM under the extended entitlement criteria introduced in pilot area C

Base: Pupils in pilot and comparison areas A who sat Key Stage 1 tests in 2010/11 and were predicted to be newly entitled to free school meals under the extended entitlement criteria introduced in pilot area C

	Pilot area A	Comparison areas A	Difference
	score	score	Score
Standardised average point score	-0.038	-0.186	+0.148
	%	%	Ppt
Expected level in maths	89.4	85.2	+4.1
Expected level in reading	88.4	90.5	-2.2
Expected level in writing	82.9	81.7	+1.2
Expected level in speaking and listening	85.8	86.0	-0.1
Expected level in science	87.7	89.9	-2.2
<i>Maximum bases</i>	<i>753</i>	<i>1145</i>	

Notes to Table 4.4: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Note that the number of observations varies across outcomes. The minimum number of observations is 1852: 713 in the pilot area and 1139 in the comparison areas. Figures may not sum exactly due to rounding.

Source: National Pupil Database.

Table 4.5 Impact on attainment at Key Stage 1 in area B (universal entitlement) amongst pupils predicted to be newly entitled to FSM under the extended entitlement criteria introduced in pilot area C

Base: Pupils in pilot and comparison areas B who sat Key Stage 1 tests in 2010/11 and were predicted to be newly entitled to free school meals under the extended entitlement criteria introduced in pilot area C

	Pilot area B	Comparison areas B	Difference
	score	score	Score
Standardised average point score	-0.163	-0.300	+0.137*
	%	%	ppt
Expected level in maths	87.0	83.0	+4.0*
Expected level in reading	80.5	77.6	+2.9
Expected level in writing	77.2	71.8	+5.4*
Expected level in speaking and listening	84.4	80.5	+3.9
Expected level in science	84.6	82.4	+2.2
<i>Maximum bases</i>	<i>694</i>	<i>2497</i>	

Notes to Table 4.5: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Note that the analysis of the standardised average point score uses slightly fewer observations than the analysis of the expected levels, with 694 pupils in the pilot area and 2491 pupils in the comparison areas. Figures may not sum exactly due to rounding.

Source: National Pupil Database.

Table 4.5 presents the corresponding results for pupils in area B. All impacts are more positive for this group than for the population as a whole. This is consistent with the finding that the effect on take-up was larger for this group than for the population as a whole in areas A and B (see Section 2.1). For example, there was no significant effect on the standardised average point score for the population as a whole in area B (see Table 4.2), but the impact is significant and large in magnitude for the group of pupils who are predicted to be newly entitled to FSM under the extended entitlement criteria introduced in area C. Table 4.5 shows that this impact is 0.137 standard deviations, equivalent to around two months' progress.⁷⁶

Similarly, the effects on the proportion of pupils reaching the expected level of attainment in maths and writing remain positive and significant and are larger in magnitude than for the population as a whole (although not significantly so). It is also interesting to note that the results for maths and overall attainment are very similar in magnitude to those found for newly entitled pupils in area A, where they were insignificant. This suggests that the lack of significance in area A may have been driven more by smaller sample sizes than by the lack of a substantive effect.

Table 4.6 Impact on attainment at Key Stage 1 in area C (extended entitlement) amongst pupils predicted to be newly entitled to FSM

Base: Pupils in pilot and comparison areas C who sat Key Stage 1 tests in 2010/11 and were predicted to be newly entitled to free school meals

	Pilot area C	Comparison areas C	Difference
	score	score	Score
Standardised average point score	-0.234	-0.213	-0.020
	%	%	ppt
Expected level in maths	87.5	88.8	-1.3
Expected level in reading	86.3	84.1	+2.2
Expected level in writing	79.7	80.5	-0.7
Expected level in speaking and listening	80.6	85.6	-4.9
Expected level in science	84.5	86.4	-1.9
<i>Maximum bases</i>	<i>621</i>	<i>2795</i>	

Notes to Table 4.6: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Note that the number of observations varies across outcomes. The minimum number of observations is 3299: 618 in the pilot area and 2681 in the comparison areas. Figures may not sum exactly due to rounding.

⁷⁶ Using the same methodology as earlier (see footnote 74), one standard deviation of the average point score in area B is equal to 3.5 points, so 0.137 standard deviations is equivalent to 0.48 points, or around two months' progress.

Source: National Pupil Database.

The effect of the extended entitlement pilot on the Key Stage 1 attainment of the group of pupils who are predicted to be newly entitled to FSM in area C is given in Table 4.6. There is little evidence that the extended entitlement pilot, and associated activities, has any effect on attainment for these pupils. Most of the effects are small in magnitude and all are statistically insignificant. This is in contrast to the findings for areas A and B using a similar sample of individuals, for whom positive impacts were found for both overall attainment and the expected level in maths (although these results were not significant in area A).

The management data from the pilot authorities (discussed in Section 2.1) suggested that three-quarters of entitled primary school pupils took up the offer of free school meals in area C. This figure is substantially lower than the nearly 90 per cent take-up rate amongst pupils in areas A and B who would have been newly entitled. It seems that this disparity in take-up, in addition to any differences in the wider activities in the pilot areas, translates into different impacts of the pilot on academic achievement.

As suggested earlier, the FSM pilot may have different effects on academic achievement in different areas because of differences in implementation between the extended and universal entitlement pilots. For example, the fact that all primary school pupils in areas A and B were involved in the pilot may have led to greater awareness of, and emphasis on, the importance of healthy eating than in the extended entitlement area, C. This is only one potential explanation for the differences in the impact of the FSM pilot across models. If providing more school meals leads to economies of scale, then another possible explanation for the increase in attainment in areas with universal provision is that these pupils are receiving higher-quality food, which may have a positive impact on their attainment. This was not borne out, however, by substantially higher parental perceptions of the quality of school meals in pilot areas A and B than in pilot area C (see Section 2.2). Nor did there appear to have been a significant switch in consumption from less to more healthy foods at lunchtime, with pupils in the pilot areas more likely to eat vegetables and rice/pasta/potatoes not fried in oil, but also more likely to eat chips or roasted/fried potatoes and less likely to eat whole pieces of fruit (see Section 3.2). Nonetheless, these findings have important implications for the efficacy of extending entitlement to free school meals as a way of increasing FSM take-up and attainment amongst these pupils.

Impact by eligibility for free school meals at baseline

Chapter 2 showed that the pilot increased take-up in all areas by more amongst pupils who were not eligible for free school meals under the old criteria at baseline than amongst those who were. This subsection discusses whether these differences in take-up are mirrored by differences in Key Stage 1 attainment. Table 4.7 presents the results for area A. The impact of the universal entitlement pilot on overall attainment, as measured by the standardised average point score, is larger in magnitude for pupils who were eligible for FSM at baseline than for those who were not. The respective impacts are just under 0.2 standard deviations, which is equivalent to 11 weeks' progress, and 0.12 standard deviations, around five weeks' progress. It should be noted that the results for FSM-

eligible pupils are not significantly different from zero at the 5 per cent level, probably due to the relatively small sample sizes.

Table 4.7 Impact on attainment at Key Stage 1 in area A (universal entitlement) by FSM status at baseline

Base: Pupils in pilot and comparison areas A who sat Key Stage 1 tests in 2010/11

	Pilot area A	Comparison areas A	Difference
Eligible for free school meals at baseline			
	score	score	Score
Standardised average point score	-0.157	-0.354	+0.197
	%	%	ppt
Expected level in maths	86.8	84.0	+2.9
Expected level in reading	83.3	81.1	+2.2
Expected level in writing	79.9	80.1	-0.2
Expected level in speaking and listening	85.6	82.6	+3.0
Expected level in science	85.9	84.6	+1.3
<i>Maximum bases</i>	<i>1004</i>	<i>4811</i>	
Not eligible for free school meals at baseline			
	score	score	Score
Standardised average point score	0.012	-0.110	+0.123*
	%	%	ppt
Expected level in maths	91.1	87.5	+3.6
Expected level in reading	87.8	86.8	+1.0
Expected level in writing	84.0	83.1	+0.9
Expected level in speaking and listening	88.1	84.4	+3.6*
Expected level in science	88.9	87.4	+1.5
<i>Maximum bases</i>	<i>2606</i>	<i>11,533</i>	

Notes to Table 4.7: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Note that the number of observations varies across outcomes. For the analysis of pupils who are eligible for FSM at baseline, the minimum number of observations is 5705: 939 in the pilot area and 4766 in the comparison areas. For the analysis of pupils who are not eligible for FSM at baseline, the minimum number of observations is 14,085: 2629 in the pilot area and 11,456 in the comparison areas. Figures may not sum exactly due to rounding.

Source: National Pupil Database.

By contrast, the impacts on the proportion of pupils reaching the expected level are generally larger in magnitude for pupils who were not eligible for FSM at baseline, although few are significantly different from zero. (The exception is a 3.6 percentage point impact on the percentage of pupils reaching the expected level of attainment in speaking

and listening.) This suggests that the pilot may be working to improve attainment for pupils who are some distance below the borderline of the expected level of attainment.⁷⁷

Table 4.8 Impact on attainment at Key Stage 1 in area B (universal entitlement) by FSM status at baseline

Base: Pupils in pilot and comparison areas B who sat Key Stage 1 tests in 2010/11

	Pilot area B	Comparison areas B	Difference
Eligible for free school meals at baseline			
	score	score	Score
Standardised average point score	-0.578	-0.671	+0.093
	%	%	ppt
Expected level in maths	76.4	73.7	+2.7
Expected level in reading	65.9	65.1	+0.8
Expected level in writing	62.8	60.3	+2.5
Expected level in speaking and listening	72.9	70.4	+2.4
Expected level in science	75.0	74.9	+0.1
<i>Maximum bases</i>	<i>1134</i>	<i>4582</i>	
Not eligible for free school meals at baseline			
	score	score	Score
Standardised average point score	0.065	0.020	+0.045
	%	%	ppt
Expected level in maths	91.4	88.9	+2.5**
Expected level in reading	87.2	85.7	+1.5
Expected level in writing	83.7	82.0	+1.7
Expected level in speaking and listening	89.1	86.6	+2.5*
Expected level in science	90.9	88.5	+2.4*
<i>Maximum bases</i>	<i>3890</i>	<i>24,669</i>	

Notes to Table 4.8: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Note that the number of observations varies across outcomes. For the analysis of pupils who are eligible for FSM at baseline, the minimum number of observations is 5701: 1124 in the pilot area and 4577 in the comparison areas. For the analysis of pupils who are not eligible for FSM at baseline, the minimum number of observations is 28,516: 3883 in the pilot area and 24,633 in the comparison areas. Figures may not sum exactly due to rounding.

Source: National Pupil Database.

⁷⁷ Pupils who are eligible for FSM may be working some distance below the expected level of attainment (see Table D1 in Appendix D), thus providing a potential reason for the pilot appearing to have relatively little effect on their likelihood of reaching the expected level of attainment.

The corresponding results for area B are shown in Table 4.8. The impact of the universal entitlement pilot on attainment at Key Stage 1 is positive for all outcomes across both groups, but these differences are only ever significant for the group who were not eligible for FSM under the old criteria at baseline. As in area A, the effect of the pilot on overall attainment was larger for FSM-eligible pupils than for FSM-ineligible pupils, although neither of these differences between groups of pupils is significantly different from zero. The effects on the percentage of pupils reaching the expected level are rather more mixed. As was the case for the population as a whole, there is a positive impact on the percentage of pupils reaching the expected level in maths in both groups. These estimates are similar in magnitude to each other and to the results for the population as a whole (2.7ppts and 2.5ppts compared to 2.3ppts). By contrast, the pilot had no impact on the likelihood of FSM-eligible pupils reaching the expected level in science, while it had a positive and significant effect (2.4ppts) for pupils who were not eligible for FSM.

The corresponding results for area C show that the pilot does not appear to have had any significant positive impact on Key Stage 1 attainment for either group (as was the case for the population as a whole). See Table D2 in Appendix D for full details of these results.

Impact by quartile of prior attainment

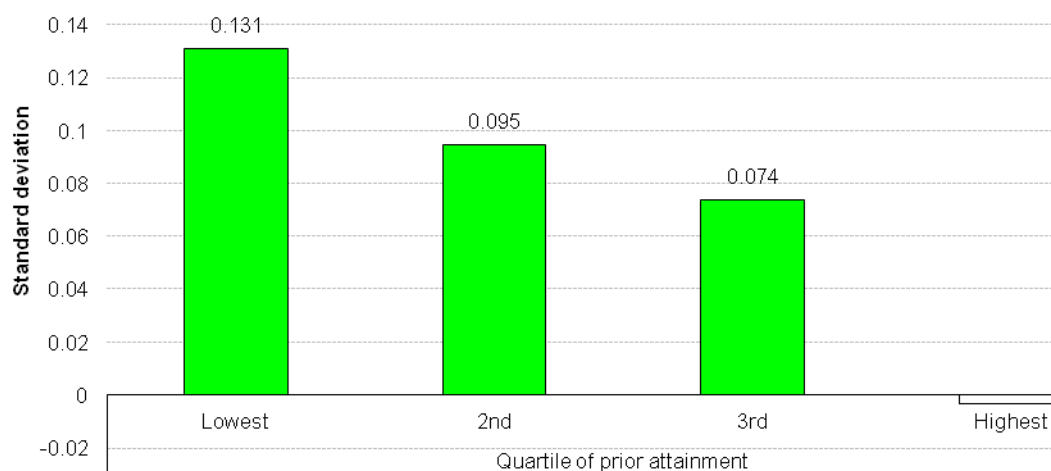
This subsection considers whether the impact of the FSM pilot on attainment at Key Stage 1 is different for pupils with different levels of achievement in the Foundation Stage Profile (FSP), assessed two years earlier, before the pilot was introduced. The different levels of achievement considered are the quartiles of attainment. Given that the population is being split into four groups here, the data for the universal entitlement areas (A and B) are combined to increase the sample size and therefore the accuracy of the estimated impacts.

Figure 4.1 presents the impact of the universal entitlement pilot in areas A and B combined on Key Stage 1 standardised average point scores, split according to the quartile in which pupils performed in the FSP. It shows that there is a clear relationship between prior attainment and the impact of the pilot. For example, amongst pupils who scored in the lowest quartile in the FSP, those in pilot areas score 0.131 standard deviations higher at Key Stage 1 than similar pupils in comparison areas (equivalent to around seven weeks' progress⁷⁸); by contrast, the pilot had no impact on pupils who scored in the highest quartile in the FSP. This suggests that low-ability pupils, who are also more likely to come from less affluent families (see Table D1 in Appendix D), benefit significantly more on average from the universal pilot than high-ability pupils.

⁷⁸ Pupils are expected to increase their attainment by around half a Key Stage level per year between the Foundation Stage Profile and Key Stage 1, which is equivalent to 3 points on the average point score (or 0.25 per month). One standard deviation of the average point score in the sample is equal to 3.5 points, so 0.131 standard deviations is equivalent to 0.46 points, or around seven weeks' progress.

Figure 4.1 Impact on attainment at Key Stage 1 in areas A and B combined (universal entitlement), by quartile of attainment at Foundation Stage

Base: All pupils for whom attainment at Key Stage 1 and baseline attainment (FSP) were observed



Notes to Figure 4.1: If the bar is not shaded green, then the impact estimate is not significantly different from zero at the 5 per cent level. The number of observations varies across quartiles. For the analysis of pupils who were in the lowest quartile of the FSP, the number of observations is 13,513: 2717 in the pilot areas and 10,796 in the comparison areas. For the analysis of pupils who were in the second-lowest quartile of the FSP, the number of observations is 11,433: 1953 in the pilot areas and 9480 in the comparison areas. For the analysis of pupils who were in the second-highest quartile of the FSP, the number of observations is 15,713: 2203 in the pilot areas and 13,510 in the comparison areas. For the analysis of pupils who were in the highest quartile of the FSP, the number of observations is 13,574: 1765 in the pilot areas and 11,809 in the comparison areas.

Source: National Pupil Database.

This conclusion is also borne out by comparisons of the impact of the pilot on the proportion of pupils reaching the expected level in various subjects (for which full results are available on request). For example, the universal entitlement pilot significantly increased the likelihood of reaching the expected level in maths at Key Stage 1 by 5.3 percentage points amongst pupils who scored in the lowest quartile of the FSP, but it had no significant effect on pupils who scored in higher quartiles. The same story is true for reading, where the impact of the pilot was 4.4 percentage points for those in the lowest quartile of the FSP, but there was no significant effect on pupils in other quartiles.

These results were also run for pupils in the extended entitlement pilot area (C), but, in common with the analysis presented throughout the rest of the chapter, they showed no significant positive effects on attainment at Key Stage 1 for pupils of any prior ability.

Impact on attainment at Key Stage 2

At Key Stage 2, pupils are externally assessed in maths and English, and assessed by their teacher in maths, English and science. Pupils are awarded a level for each subject, from Level 2 (worth 15 points), rising in increments of six points to Level 6 (39 points). Level 4 is the expected level of achievement at Key Stage 2. This section focuses on the externally assessed measures of attainment, which are less likely to be influenced by

other changes in the school, including any potential psychological effects of the pilot on teachers' marking decisions. As for Key Stage 1, attainment is measured using both a standardised average point score and a set of variables indicating whether the pupil reached the expected level of attainment; here, these measures are created using the externally assessed test scores awarded in English and maths.⁷⁹

Overall impact

Tables 4.9 and 4.10 present the impact of the universal entitlement pilot on attainment at Key Stage 2 in areas A and B respectively. These results appear to be more consistently positive than the equivalent results for Key Stage 1 (presented in Tables 4.1 and 4.2), as there is a positive and significant increase in both the standardised score and the percentage of pupils reaching the expected level of attainment in English and maths in both areas.

Table 4.9 Impact on attainment at Key Stage 2 in area A (universal entitlement)			
<i>Base: All pupils in pilot and comparison areas A who sat Key Stage 2 tests in 2010/11</i>			
	Pilot area A	Comparison areas A	Difference
	score	score	Score
Standardised average point score	0.010	-0.113	+0.123*
	%	%	Ppt
Expected level in English	83.3	79.2	+4.2**
Expected level in maths	83.5	79.0	+4.5**
<i>Maximum bases</i>	<i>3247</i>	<i>14,313</i>	

Notes to Table 4.9: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Note that the number of observations varies across outcomes. The minimum number of observations is 17,488: 3233 in the pilot area and 14,255 in the comparison areas. Figures may not sum exactly due to rounding.

Source: National Pupil Database.

The increase in the standardised score is just over one-tenth of a standard deviation. This impact is equivalent to around two months' expected progress,⁸⁰ slightly larger than the impact on Key Stage 1 attainment, which in area A was equivalent to around six weeks' expected progress. This pattern is mirrored in the percentages of pupils reaching the expected level of attainment in English and maths, for which there are significant positive increases of 4.2 percentage points and 4.5 percentage points respectively in area A and

⁷⁹ Results based on the teacher-assessed measures of attainment can be found in Appendix D.

⁸⁰ Pupils are expected to increase their attainment by around half a Key Stage level per year between Key Stage 1 and Key Stage 2, which is equivalent to 3 points on the average points score (or 0.25 per month). One standard deviation of the average points score in area A (B) is equal to 4.6 (4.9) points, so one-tenth of a standard deviation is equivalent to 0.46 (0.49) points, or around two months' progress.

3.1ppts and 4.7ppts respectively in area B. The percentage change implied by these results is also larger at Key Stage 2 than at Key Stage 1: around 6 per cent at Key Stage 2 compared with around 3 or 4 per cent at Key Stage 1.⁸¹

Table 4.10 Impact on attainment at Key Stage 2 in area B (universal entitlement)			
<i>Base: All pupils in pilot and comparison areas B who sat Key Stage 2 tests in 2010/11</i>			
	Pilot area B	Comparison areas B	Difference
	score	score	Score
Standardised average point score	0.039	-0.083	+0.122**
	%	%	Ppt
Expected level in English	82.5	79.4	+3.1*
Expected level in maths	82.8	78.1	+4.7**
<i>Maximum bases</i>	<i>4926</i>	<i>29,281</i>	

Notes to Table 4.10: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Note that the number of observations varies across outcomes. The minimum number of observations is 34,165: 4916 in the pilot area and 29,249 in the comparison areas. Figures may not sum exactly due to rounding.

Source: National Pupil Database.

The consistent positive and significant results found at Key Stage 2 in pilot areas A and B, compared with the somewhat less conclusive, although still positive, results at Key Stage 1, suggest that the impact of the universal entitlement pilot on attainment may have been greater for older pupils (although the results are not always significantly different from one another). Chapter 2 does not provide very strong evidence to suggest that the impact of the pilot was greater amongst older pupils. Instead, this effect could be explained if improvements in nutrition were more readily translated into effects on concentration and hence attainment amongst older children, or if teacher assessments (which measures of attainment at Key Stage 1 are based on) were more likely to be influenced by other factors.

It is possible to test this last hypothesis by comparing the impact of the pilot on attainment using the externally assessed measures and that using teacher assessments in the same subjects at Key Stage 2. These results can be found in Tables D3 and D4 in Appendix D. In area B in particular, there are extremely large positive impacts on the percentage of pupils reaching the expected level of attainment as judged by their teacher. For example, teachers in pilot area B judge that 82 per cent of their pupils have reached the expected level in maths at Key Stage 2, compared with just 59 per cent in the matched comparison areas, a large and significant difference of 23 percentage points. Although these results

⁸¹ These calculations are made by comparing the percentage point impact with the counterfactual level of attainment (the level in the relevant matched comparison area). For example, for maths at Key Stage 2 in area A, the percentage change as a result of the pilot is $((83.5-79.0)/79.0) \times 100 = 5.7$.

are not nearly so strong in area A, these comparisons still provide some evidence to suggest that performance assessed by the child's class teacher is more strongly influenced by the pilot than performance in external exams. If this were true, then it suggests that the positive effect found on some measures of attainment at Key Stage 1, which is based on teacher assessments, may be an upper bound on the effect that would have been observed in external tests at that age, had they been available. It is worth noting, however, that teachers in pilot area B do not seem to be overestimating the performance of their pupils, because the percentage that they judge to be reaching the expected level is very close to the percentage that actually do so in external tests. Instead, the difference appears to be driven by teachers substantially underestimating the performance of pupils in the matched comparison areas.

Table 4.11 presents the impact of the extended entitlement pilot on attainment at Key Stage 2 for all pupils in pilot area C relative to their matched comparison group. As was the case for Key Stage 1, there is no evidence that the pilot had a significant positive effect on any measure of attainment at Key Stage 2 in area C. This is perhaps not entirely surprising, given that only a subset of pupils became entitled to free school meals in this area, compared with all primary school pupils in areas A and B. The results for pupils likely to be newly entitled to FSM under pilot C at Key Stage 2 are considered in the following subsection.

Table 4.11 Impact on attainment at Key Stage 2 in area C (extended entitlement)			
<i>Base: All pupils in pilot and comparison areas C who sat Key Stage 2 tests in 2010/11</i>			
	Pilot area C	Comparison areas C	Difference
	score	score	Score
Standardised average point score	-0.216	-0.122	-0.094
	%	%	Ppt
Expected level in English	77.5	78.1	-0.6
Expected level in maths	76.9	75.5	+1.4
<i>Maximum bases</i>	<i>2467</i>	<i>25,019</i>	

Notes to Table 4.11: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Note that the analysis of the standardised average point score uses slightly fewer observations than the analysis of the expected levels, with 2463 pupils in the pilot area and 25,019 pupils in the comparison areas. Figures may not sum exactly due to rounding.

Source: National Pupil Database.

Impact on pupils predicted to be newly entitled to free school meals under pilot C

Table 4.12 presents the impact of the universal entitlement pilot on Key Stage 2 attainment amongst pupils in area A who would have been newly entitled to FSM under the extended entitlement criteria implemented in area C. Table 4.13 presents equivalent results for pupils in area B. These tables show that the impact of the universal entitlement pilot was generally large and consistently positive for this group of pupils (although not

significantly so for the percentage of pupils reaching the expected level of attainment in English in area A).

Table 4.12 Impact on attainment at Key Stage 2 in area A (universal entitlement) amongst pupils predicted to be newly entitled to FSM under the extended entitlement criteria introduced in pilot area C

Base: Pupils in pilot and comparison areas A who sat Key Stage 2 tests in 2010/11 and were predicted to be newly entitled to free school meals under the extended entitlement criteria introduced in pilot area C

	Pilot area A	Comparison areas A	Difference
	score	score	Score
Standardised average point score	0.011	-0.121	+0.132*
	%	%	ppt
Expected level in English	84.6	80.5	+4.1
Expected level in maths	84.1	75.5	+8.6**
<i>Maximum bases</i>	<i>941</i>	<i>2997</i>	

Notes to Table 4.12: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Note that the number of observations varies across outcomes. The minimum number of observations is 3924: 933 in the pilot area and 2991 in the comparison areas. Figures may not sum exactly due to rounding.

Source: National Pupil Database.

Table 4.13 Impact on attainment at Key Stage 2 in area B (universal entitlement) amongst pupils predicted to be newly entitled to FSM under the extended entitlement criteria introduced in pilot area C

Base: Pupils in pilot and comparison areas B who sat Key Stage 2 tests in 2010/11 and were predicted to be newly entitled to free school meals under the extended entitlement criteria introduced in pilot area C

	Pilot area B	Comparison areas B	Difference
	score	score	Score
Standardised average point score	-0.127	-0.257	+0.130**
	%	%	ppt
Expected level in English	80.3	75.9	+4.4**
Expected level in maths	77.8	73.2	+4.6**
<i>Maximum bases</i>	<i>1003</i>	<i>4038</i>	

Notes to Table 4.13: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Note that the number of observations varies across outcomes. The minimum number of observations is 5036: 1001 in the pilot area and 4035 in the comparison areas. Figures may not sum exactly due to rounding.

Source: National Pupil Database.

In both areas, the impact on the standardised average point score is significant and of a very similar magnitude to that in the population as a whole. In area A, the impact on the likelihood of reaching the expected level in maths is almost twice the magnitude of the

effect observed for the population as a whole, although the two estimates are not significantly different from one another. The remaining estimates are of approximately similar magnitude to those observed for the population as a whole. These results suggest that, despite their substantially greater likelihood of taking up school meals, the attainment of pupils predicted to be newly entitled to FSM does not, on the whole, increase by more than for other types of pupils, at least in absolute terms (although the percentage difference is often greater, because they start from a lower base).

An important assumption underlying the analysis of the impact of the pilot on diet and behaviour (discussed in Chapter 3) is that the results for those in areas A and B who would have been newly entitled to FSM under the extended entitlement criteria introduced in area C may be thought of as providing a reasonable approximation of the likely impact of the extended entitlement pilot for primary school pupils in area C (who were not surveyed). Table 4.14 provides some evidence that this may not be a good assumption, however, at least in terms of academic attainment at Key Stage 2. While the results for this group of pupils in areas A and B were consistently positive, the impacts for pupils in area C are never significantly different from zero and the point estimates are negative in each case.

Table 4.14 Impact on attainment at Key Stage 2 in area C (extended entitlement) amongst pupils predicted to be newly entitled to FSM

Base: Pupils in pilot and comparison areas C who sat Key Stage 2 tests in 2010/11 and were predicted to be newly entitled to free school meals

	Pilot area C	Comparison areas C	Difference
	score	score	Score
Standardised average point score	-0.345	-0.176	-0.169
	%	%	ppt
Expected level in English	76.0	76.9	-0.8
Expected level in maths	72.9	75.0	-2.1
<i>Maximum bases</i>	<i>577</i>	<i>4061</i>	

Notes to Table 4.14: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Note that the number of observations is lower for the expected level in English and maths. The minimum number of observations is 4290: 572 in the pilot area and 3718 in the comparison areas. Figures may not sum exactly due to rounding.

Source: National Pupil Database.

There are a number of reasons why the impact observed for those predicted to be newly entitled in areas A and B may be higher than that in area C, including, but not limited to, the following:

- The fact that take-up was lower amongst those predicted to be newly entitled in area C. This may be because universal provision decreases the stigma attached to having free school meals, because parents were not aware of or did not think they met the

entitlement criteria in area C, because parents were deterred by the application process or simply because more parents were aware of the pilots in areas A and B (see the implementation report for further discussion of these issues⁸²).

- If 'spillover' or 'peer' effects are important channels through which the pilot affects pupil attainment (for example, because other pupils in the class benefit from the improved behaviour of previously disruptive pupils), then having more pupils in the school benefiting from FSM may increase its overall impact.
- It may be that the economies of scale that can be reaped from providing more school meals under the universal entitlement pilot lead to improvements in the quality of school meals, which have been shown to have a positive effect on pupil attainment.⁸³

Impact by eligibility for free school meals at baseline

Table 4.15 presents the impact of the universal entitlement pilot in area A by FSM status at baseline: the top panel relates to those who were eligible for free school meals at baseline and the bottom panel relates to those who were not. It shows that, despite the smaller increase in take-up amongst those who were already eligible for FSM, the pilot actually had slightly larger effects on this group than on pupils who were not eligible for FSM at baseline, although the differences are not significantly different from zero. The positive effect is particularly apparent in percentage terms, because FSM-eligible pupils start from a lower base: for example, the pilot increased the percentage of pupils reaching the expected level in maths by 5.6 percentage points (7.7 per cent) for FSM-eligible pupils, compared with 4.6ppts (5.6 per cent) for non-FSM-eligible pupils.

Table 4.16 presents the equivalent results for area B. As was the case for area A, the impact of the pilot is positive and generally significant for both groups of pupils. Here, however, the impact on FSM-eligible pupils is not greater across the board: while it is larger in terms of the percentage of pupils reaching the expected level in both maths and English, it is smaller and not significantly different from zero in terms of the standardised average point score. For example, the pilot increased the percentage of pupils reaching the expected level in maths by 7.5 percentage points (11.8 per cent) for FSM-eligible pupils, compared with 3.8ppts (4.6 per cent) for non-FSM-eligible pupils. By contrast, the effect on the average point score is less than one-tenth of a standard deviation and not significant for FSM pupils, while it is just under 0.13 standard deviations (about two-and-a-half months' expected progress⁸⁴) for non-FSM-eligible pupils, similar to the effect for newly entitled pupils and marginally larger than the effect for the population as a whole.

⁸² <https://www.education.gov.uk/publications/RSG/AllRsgPublications/Page1/DFE-RR228>

⁸³ See, for example, Belot and James (2011).

⁸⁴ Pupils are expected to increase their attainment by around half a Key Stage level per year between Key Stage 1 and Key Stage 2, which is equivalent to 3 points on the average points score (or 0.25 per month). One standard deviation of the average points score in area B is equal to 4.9

Table 4.15 Impact on attainment at Key Stage 2 in area A (universal entitlement) by FSM status at baseline

Base: Pupils in pilot and comparison areas A who sat Key Stage 2 tests in 2010/11

	Pilot area A	Comparison areas A	Difference
Eligible for free school meals at baseline			
	score	score	Score
Standardised average point score	-0.196	-0.343	+0.148**
	%	%	ppt
Expected level in English	77.6	72.7	+4.8
Expected level in maths	78.4	72.9	+5.6*
<i>Maximum bases</i>	<i>1261</i>	<i>4375</i>	
Not eligible for free school meals at baseline			
	score	score	Score
Standardised average point score	0.133	0.031	+0.102*
	%	%	ppt
Expected level in English	87.0	83.6	+3.3*
Expected level in maths	86.9	82.3	+4.6*
<i>Maximum bases</i>	<i>1986</i>	<i>9932</i>	

Notes to Table 4.15: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Note that the number of observations varies across outcomes. For the analysis of pupils who were eligible for FSM at baseline, the minimum number of observations is 5580: 1225 in the pilot area and 4355 in the comparison areas. For the analysis of pupils who were not eligible for FSM at baseline, the minimum number of observations is 11,862: 1986 in the pilot area and 9876 in the comparison areas. Figures may not sum exactly due to rounding.

Source: National Pupil Database.

The corresponding results for the extended entitlement pilot in area C show that the pilot had little effect on the attainment of pupils who were or were not eligible for free school meals under the old criteria at baseline. (See Table D5 in Appendix D for full details of these results.)

points, so 0.13 of a standard deviation is equivalent to 0.64 points, or around two-and-a-half months' expected progress.

Table 4.16 Impact on attainment at Key Stage 2 in area B (universal entitlement) by FSM status at baseline

Base: Pupils in pilot and comparison areas B who sat Key Stage 2 tests in 2010/11

	Pilot area B	Comparison areas B	Difference
Eligible for free school meals at baseline			
	score	score	Score
Standardised average point score	-0.422	-0.512	+0.089
	%	%	ppt
Expected level in English	67.7	62.6	+5.1*
Expected level in maths	70.9	63.4	+7.5**
<i>Maximum bases</i>	<i>1044</i>	<i>4789</i>	
Not eligible for free school meals at baseline			
	score	score	Score
Standardised average point score	0.164	0.036	+0.129**
	%	%	ppt
Expected level in English	86.5	83.9	+2.6*
Expected level in maths	86.0	82.2	+3.8**
<i>Maximum bases</i>	<i>3879</i>	<i>24,489</i>	

Notes to Table 4.16: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Note that the number of observations varies across outcomes. For the analysis of pupils who were eligible for FSM at baseline, the minimum number of observations is 5831: 1046 in the pilot area and 4785 in the comparison areas. For the analysis of pupils who were not eligible for FSM at baseline, the minimum number of observations is 28,334: 3874 in the pilot area and 24,460 in the comparison areas. Figures may not sum exactly due to rounding.

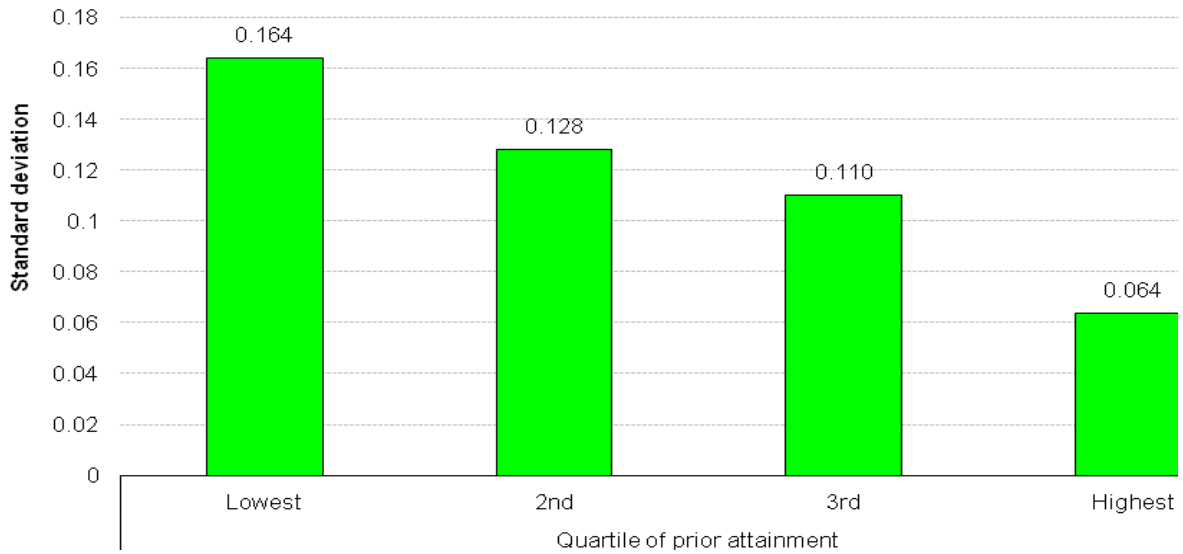
Source: National Pupil Database.

Impact by quartile of prior attainment

Figure 4.2 presents the impact of the universal entitlement pilot in areas A and B combined on Key Stage 2 standardised average point scores, split according to pupils' performance at Key Stage 1. As was the case at Key Stage 1, it shows that there is a clear relationship between prior attainment and the impact of the pilot. For example, amongst pupils who scored in the lowest quartile at Key Stage 1, those in pilot areas scored 0.164 standard deviations higher at Key Stage 2 than similar pupils in comparison areas; by contrast, the impact of the pilot was only 0.064 standard deviations amongst pupils who scored in the highest quartile at Key Stage 1. This suggests that low-ability pupils, who are also more likely to come from less affluent families (see Table D1 in Appendix D), benefit significantly more on average from the universal pilot than high-ability pupils.

Figure 4.2 Impact on attainment at Key Stage 2 in areas A and B combined (universal entitlement), by quartile of attainment at Key Stage 1

Base: All pupils for whom attainment at Key Stage 2 and baseline attainment (Key Stage 1) were observed



Notes to Figure 4.2: If the bar is not shaded green, then the impact estimate is not significantly different from zero at the 5 per cent level. The number of observations varies across quartiles. For the analysis of pupils who were in the lowest quartile at Key Stage 1, the number of observations is 11,888: 2067 in the pilot areas and 9821 in the comparison areas. For the analysis of pupils who were in the second-lowest quartile at Key Stage 1, the number of observations is 13,170: 2276 in the pilot areas and 10,894 in the comparison areas. For the analysis of pupils who were in the second-highest quartile at Key Stage 1, the number of observations is 14,985: 2364 in the pilot areas and 12,621 in the comparison areas. For the analysis of pupils who were in the highest quartile at Key Stage 1, the number of observations is 11,732: 1451 in the pilot areas and 10,281 in the comparison areas.

Source: National Pupil Database.

This conclusion is also borne out by comparisons of the impact of the pilot on the proportion of pupils reaching the expected level in English and maths (full results available on request). For example, the universal entitlement pilot significantly increased the likelihood of reaching the expected level in maths (English) at Key Stage 2 by 8.7 (5.9) percentage points amongst pupils who scored in the lowest quartile at Key Stage 1, while it had no significant effect on pupils who scored in the highest quartile. (Of course, this is perhaps not very surprising, given that almost all pupils in the highest quartile would have reached the expected level in the absence of the pilot; however, the impact for pupils in the third quartile of prior attainment is also significantly different from that in the lowest quartile.)

Again, there is no evidence that the extended entitlement pilot has any significant effects on attainment at Key Stage 2. Overall, therefore, the results presented in this section are building up a fairly clear picture that the extended entitlement pilot had little or no impact on attainment in primary school.

Impact on attainment at Key Stage 4

The end of Key Stage 4 coincides with the end of compulsory schooling in England. Pupils sit around 10 external exams, known as General Certificates of Secondary Education (GCSEs), in a variety of subjects, including maths, English and science. They are awarded grades from A* to G in each subject, which can be translated into points: 16 for a G, then increasing in increments of six points up to 58 for an A*. The point score in this section is a total, rather than an average, point score calculated across all the exams the pupil took. The expected level of attainment at the end of Key Stage 4 is the achievement of five A* to C grades in GCSE exams or the equivalent. This standard is widely recognised (for example, it is used in school league tables) and is especially pertinent for pupils as it often determines admission to further education.

Only the extended entitlement pilot was in operation in secondary schools, so this section focuses on the impact of the pilot on Key Stage 4 attainment in area C only. As discussed above, the results for primary school pupils provided no evidence of any significant positive impact of the pilot on pupil attainment in area C. This section will investigate whether the same is also true for secondary school pupils.

Table 4.17 presents the impact of the extended entitlement pilot on Key Stage 4 attainment in area C for all pupils who reached the end of compulsory schooling and took GCSE exams in the summer term of 2010/11. Although positive, the impact of the pilot on the standardised total point score is small and not significantly different from zero, while the impact on the percentage of pupils reaching the expected level of attainment is large and negative (although insignificant). The overall results for pupils in secondary schools thus seem to be consistent with the results for pupils in primary schools: on average, there is little evidence of a significant positive impact of the extension of entitlement to FSM, and any associated activities carried out by involved schools and local authorities, on the academic attainment of pupils in pilot area C.

Table 4.17 Impact on attainment at Key Stage 4 in area C (extended entitlement)			
<i>Base: All pupils in pilot and comparison areas C who sat Key Stage 4 tests in 2010/11</i>			
	Pilot area C	Comparison areas C	Difference
	score	score	Score
Standardised total point score	0.008	-0.061	+0.069
	%	%	Ppt
At least five A* to C grades at GCSE or equivalent	44.2	50.4	-6.2
<i>Maximum bases</i>	<i>2537</i>	<i>30,707</i>	

Notes to Table 4.17: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Note that the analysis of the standardised total point score uses slightly fewer observations than the analysis of the percentage reaching the expected level of attainment, with 2520 pupils in the pilot area and 30,660 pupils in the comparison areas. Figures may not sum exactly due to rounding.

Source: National Pupil Database.

Nor is there any evidence to suggest that insignificant overall results are hiding significant results for particular groups of pupils. The impact of the extended entitlement pilot on those who became newly entitled to FSM and those who were and were not eligible for FSM at baseline can be found in Tables D6 and D7 in Appendix D. In common with the findings for Key Stages 1 and 2, there is little evidence to suggest that the extended entitlement pilot had a significant positive effect on the attainment of any of these groups of pupils.

4.3 Absences

Persistent absence from school has been identified as a potential barrier to student attainment and has been recognised as such by the Department for Education.⁸⁵ Of particular concern is the possibility that persistent absence might hinder progression to post-compulsory education over and above any impact on attainment if it causes pupils to become disengaged from school. It is therefore important to assess whether the introduction of the FSM pilot had a significant impact on the percentage of school missed due to absence.

Why might the pilot affect absence from school? If pupils are now eating a more nutritious lunch, then it is plausible that this might improve their health and thus reduce the amount of time they spend away from school due to illness. Previous research has found that authorised absences (which are more likely to be related to illness) decreased as a result of improvements in the quality of school meals.⁸⁶ It is also possible that pupils' concentration and behaviour might improve as a result of improved nutrition, such that they are more able to access the curriculum, become more engaged in school and thus decide to play truant less often. Both are also plausible routes through which the pilot might affect academic attainment. Thus the findings in this section may provide some insight into what is driving the attainment results discussed in Section 4.2 above.

The National Pupil Database provides information on the percentage of school missed due to both authorised and unauthorised absences:⁸⁷

- Authorised absence is the percentage of school missed through absence with permission from a teacher or other authorised representative of the school. This includes instances of absence for which a satisfactory explanation has been provided (for example, illness).

⁸⁵ The definition of persistent absenteeism was changed from 20 per cent to 15 per cent in January 2012 in response to the Department's belief that being persistently absent from school has a negative effect on pupils' attainment. For further details, see <http://www.education.gov.uk/schools/pupilsupport/behaviour/attendance/a00192057/government-changes-definition-of-persistent-absence-to-deal-with-reality-of-pupil-absenteeism-in-schools>.

⁸⁶ Belot and James, 2011.

⁸⁷ See <http://www.bris.ac.uk/cmpo/plug/support-docs/2011censususerguide.pdf> for details.

- Unauthorised absence is the percentage of school missed through absence without permission from a teacher or other authorised representative of the school. This includes all unexplained or unjustified absences. For example, arriving late for school, after the register has closed, is recorded as unauthorised absence, as is playing truant from school.

Absence records are available for all pupils in Years 1 to 11 (not Reception) and, for the purposes of this evaluation, the available data only include absences recorded in the first two terms of the school year. The impact estimates presented thus apply to all pupils in Years 1 to 6 in areas A and B (the universal entitlement pilot areas) and all pupils from Years 1 to 11 in area C (the extended entitlement pilot area). This is a slightly different population from that discussed in the preceding section, as academic attainment in a given year is not observed for all cohorts.

Given the large number of pupils for whom information on absences is available, one would expect to be able to detect any impact the pilot may have had, however small. A lack of statistical significance here thus quite clearly reflects the fact that the pilot had no impact on this outcome.

Results are presented for the percentage of time missed due to authorised, unauthorised and overall absence (the sum of authorised and unauthorised absences). Most of the discussion focuses on overall absences, as the decision to authorise an absence rests with the school and as such may vary systematically across schools and pilot areas.⁸⁸

Table 4.18 Impact on absences from primary school in area A (universal entitlement)			
<i>Base: All pupils in primary schools in pilot and comparison areas A in 2010/11</i>			
	Pilot area A	Comparison areas A	Difference
	%	%	Ppt
Total percentage of time absent from school	5.4	5.4	+0.1
Total percentage of time absent from school: authorised	4.1	4.0	+0.1
Total percentage of time absent from school: unauthorised	1.3	1.3	0.0
<i>Maximum bases</i>	<i>21,216</i>	<i>87,564</i>	

Notes to Table 4.18: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Note that the analysis of unauthorised absences uses slightly fewer observations than the other analyses in the table, with 20,346 pupils in the pilot area and 87,190 pupils in the comparison areas. Figures may not sum exactly due to rounding.

Source: National Pupil Database.

⁸⁸ See footnote 87.

Table 4.19 Impact on absences from primary school in area B (universal entitlement)

Base: All pupils in primary schools in pilot and comparison areas B in 2010/11

	Pilot area B	Comparison areas B	Difference
	%	%	Ppt
Total percentage of time absent from school	5.4	5.5	-0.1
Total percentage of time absent from school: authorised	4.9	4.9	0.0
Total percentage of time absent from school: unauthorised	0.5	0.5	0.0
<i>Maximum bases</i>	<i>29,208</i>	<i>176,720</i>	

Notes to Table 4.19: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Note that the analysis of unauthorised absences uses slightly fewer observations than the other analyses in the table, with 29,187 pupils in the pilot area and 176,720 pupils in the comparison areas. Figures may not sum exactly due to rounding.

Source: National Pupil Database.

Table 4.18 presents the impact of the universal entitlement pilot on the percentage of school missed due to absence amongst primary school pupils in area A. It shows that, on average, both pupils in the pilot area and similar pupils in the comparison areas (the matched comparison group) miss 5.4 per cent of school due to absence, with the majority of those absences being authorised by the school (around 4 per cent of school time is missed due to authorised absence). The fact that the absence figures are so close to one another highlights that the pilot had no impact on the percentage of school that pupils missed each term, either authorised or unauthorised.

Table 4.19 tells a similar story for pilot area B: the percentage of school missed as a result of absence is around 5.5 per cent amongst pupils in both the pilot area and the matched comparison group, and the difference is not statistically significant. The percentage of time missed that is authorised by the school is slightly higher in area B than it was in area A, but, again, there is no difference across pilot and comparison areas. Taken together, Tables 4.18 and 4.19 show that there is absolutely no evidence of a significant impact of universal provision of free school meals, and other activities associated with the pilot, on the percentage of school missed by primary school pupils.

Table 4.20 shows a similar picture for primary and secondary school pupils in area C, where the extended entitlement pilot offered free school meals to a more limited subset of pupils. The percentage of school missed is slightly higher here, at around 6.5 per cent, presumably due to the inclusion of secondary school pupils, but again there is no difference between the pilot area and the matched comparison group. Nor is there any significant difference in the percentage of school missed due to authorised absence or in the percentage missed due to unauthorised absence.

Table 4.20 Impact on absences from primary and secondary school in area C (extended entitlement)

Base: All pupils in primary and secondary schools in pilot and comparison areas C in 2010/11

	Pilot area C	Comparison areas C	Difference
	%	%	Ppt
Total percentage of time absent from school	6.5	6.4	+0.1
Total percentage of time absent from school: authorised	5.0	5.1	-0.1
Total percentage of time absent from school: unauthorised	1.5	1.3	+0.2
<i>Maximum bases</i>	<i>22,118</i>	<i>238,367</i>	

Notes to Table 4.20: ** indicates significance at the 1 per cent level, * at the 5 per cent level. Note that the analysis of unauthorised absences uses slightly fewer observations than the other analyses in the table, with 22,128 pupils in the pilot area and 232,563 pupils in the comparison areas. Figures may not sum exactly due to rounding.

Source: National Pupil Database.

It is plausible that these results may mask significant effects for certain groups of pupils. Analysis was thus also carried out separately for pupils in all areas who would have been newly entitled to FSM under the extended entitlement pilot, as well as for those who were and were not eligible for FSM under the old criteria at baseline. The results of this analysis show that there are no significant differences in absence rates between pupils in the pilot area and similar pupils in the comparison areas for any particular groups of pupils.

These results provide fairly conclusive evidence that the introduction of the FSM pilot had no impact on the percentage of school missed by pupils, whether the absence was authorised or unauthorised. As such, the increases in educational attainment discussed in Section 4.2 must be due to improvements in productivity whilst at school, rather than to any increase in the amount of time spent in school.

4.4 Discussion and conclusions

This section reflects on the impacts of the FSM pilot on children's academic attainment and absences from school that have been observed and discussed in this chapter.

Discussion of findings

- The universal entitlement pilot led to significant increases in attainment for primary school pupils in areas A and B, with pupils in both areas found to make around two months' more progress in Key Stage 2, on average, than similar pupils in comparison areas.
- It is clear that reducing the amount of time that pupils are absent from school was not the route through which the universal entitlement pilot improved attainment. This suggests that these increases in attainment must arise as a result of improvements in

productivity whilst at school, rather than from any increase in the amount of time spent in school.

- Potential explanations for such effects may include the benefits of having a nutritious meal at lunchtime, the social benefits of children eating a meal together (cited in the school case studies) and potentially more positive relationships between parents and the school, for which the case studies found some evidence.
- The effect of the universal entitlement pilot appears to be strongest amongst pupils from less affluent families. This could be partly because school meals provided greater improvements in nutrition over packed lunches for children from less affluent families than for children from more affluent families because their packed lunches were originally of lower quality. The qualitative case studies described this as a 'levelling effect' associated with all children being offered free meals, with school meals providing a nutritious, balanced meal for all pupils, thus reducing socio-economic differences in the quality of food eaten at lunchtime. This finding provides some suggestive evidence that universal entitlement to free school meals may contribute towards reducing the gap in attainment between pupils from different socio-economic backgrounds.⁸⁹
- By contrast, there is little evidence of any significant effect of the extended entitlement pilot on the attainment of pupils in area C, even amongst pupils who would have been newly entitled to FSM under the extended entitlement criteria. This may be because take-up was higher amongst this group in the universal pilot areas or because there are important peer effects associated with a larger group of pupils benefiting from free school meals.
- These results suggest that extending entitlement to FSM may not replicate the positive and significant effects found in the universal entitlement areas for pupils who would have been entitled to FSM under the extended entitlement criteria introduced in pilot area C. This implies that universality, combined with the additional activities undertaken by schools and local authorities as part of the universal pilot, may be key to the improvements in attainment for these pupils in areas A and B.

Lessons for policymakers

- As was the case for take-up (discussed in Chapter 2) and for children's diet, health and behaviour (discussed in Chapter 3), attainment was only successfully increased in

⁸⁹ It is possible that the universal entitlement pilot may reduce the attainment gap between pupils from different socio-economic backgrounds because its impact is larger amongst pupils who were eligible for FSM at baseline and amongst those who are predicted to be entitled to FSM under the extended entitlement criteria introduced in area C than it is amongst pupils who were not eligible for FSM at baseline. The evidence is regarded as suggestive rather than conclusive because the differences are not generally significantly different from zero.

the universal pilot areas, not the extended entitlement area. This adds to the growing body of evidence presented in this report that suggests that outcomes are improved only through the universal provision of free school meals, and the accompanying activities undertaken by schools and local authorities in the pilot areas.

- This chapter also provides some suggestive (though not conclusive) evidence that the universal pilot may contribute to the reduction of educational inequalities, which is one of the key aims of the government and the Department for Education: the universal pilot appears to have a greater positive effect for children from less affluent families and those with lower prior attainment.
- The results presented in this chapter must be interpreted with some caution, however, as the mechanisms underlying these improvements in attainment are not clear. The universal pilot did not appear to significantly improve children's behaviour or absence rates from school, making it difficult to pinpoint the cause of the improvements in attainment and thus which elements of the universal entitlement pilot are key to its success.

5 Summary of case study findings

This chapter summarises the findings of the qualitative school case studies that were conducted as part of the evaluation. The case studies explored how the Free School Meals (FSM) pilot was set up and delivered and the impacts it was perceived to have on all those involved.

The detailed report of the case study findings can be found at <https://www.education.gov.uk/publications/RSG/AllRsgPublications/Page1/DFE-RR228>

The research included:

- a scoping study exploring the design and implementation of the FSM pilot at the local authority level;
- ten school case studies to capture the experiences of implementing the pilot, to explore reflections of take-up in the three pilot areas and to examine the range of perceived impacts of the pilot. Schools were visited on two occasions during the spring terms of 2010 and 2011,⁹⁰ during which all those who were directly involved in the pilot were interviewed: senior managers, catering staff, teachers, pupils and parents. The sample was (purposively) selected to ensure variation in the range and type of schools involved in the pilot.

Setting up the pilot

Local authorities led the implementation of the pilot in each area, with support provided by the School Food Trust (SFT). The role of the primary care trusts (PCTs) was primarily limited to engaging in strategic issues affecting the pilot. Set-up activities included promoting awareness of the pilot and ensuring schools had adequate kitchen capacity, equipment, staff and data-monitoring systems in place.

Implementation was approached in different ways, depending on the pilot type and on the anticipated increase in take-up as a result of the pilot. In universal pilot local authorities, schools concentrated on building their capacity to deliver the pilot by extending the school kitchens and by purchasing new equipment. In contrast, in the extended entitlement pilot area, there was a need to develop effective data-monitoring systems and to promote the pilot to parents.

- The scale of work undertaken to set up an adequate infrastructure in schools was the most extensive in Durham, a universal pilot area. The average cost per school of extending and equipping school kitchens and dining facilities was reported to be around £20,000. The catering company contracted by the local authority increased its

⁹⁰ Only nine of the ten schools participated in the second stage.

workforce by 30 per cent, which translated into 160 new cooks including staff employed on fixed-term two-year contracts.

- In Newham (the other universal pilot area), there was some investment in additional equipment and furniture in specific schools but facilities were mostly seen to be adequate to deal with the increased demand. There was also a 30 per cent increase in staff recruited in Newham. Due to the uncertainty about the future of the pilot, these were largely temporary agency staff.
- In Wolverhampton (the extended entitlement pilot area), implementation activities involved identifying entitled families, adapting the application process to cope with the extended entitlement and processing applications.

Experiences of the set-up period were largely defined by schools' ability to complete preparatory work by the end of the 2009 summer holiday. This proved challenging where schools were late to receive resources, such as menus and literature for parents, and where major building work was required. Providing early information and guidance on what the pilot would involve and on the revised entitlement criteria were suggested as ways to avoid problems in the set-up, planning and implementation of the pilot.

Delivering the pilot

The primary challenge for schools, particularly in the universal pilot areas, was dealing with an increased volume of pupils taking school meals. Initial teething problems, such as a lack of storage space, insufficient time to train staff to use new equipment and speeding up the lunch service, were addressed quickly and schools soon settled into efficient routines.

A number of key points underpinned successful implementation and delivery of the pilot:

- Effective communication and partnership working between all parties involved in implementing and delivering the pilot. School staff involved in delivering the pilot identified the need for local authority staff and senior school managers to provide clear, accurate and timely information; to be available and responsive; to consult with the relevant staff; and to share information and updates.
- Building sufficient staff resource and capacity. This was enabled by having the appropriate levels of staff with the right skills.
- Being prepared to trial new approaches to delivery until the right solution was found. This helped schools develop systems to manage the increased volume of FSM.
- Being able to monitor demand accurately. SIMS (the School Information Management System) and cashless systems were a helpful resource in monitoring take-up in Wolverhampton.

The following minor challenges continued to present some schools with ongoing difficulties:

- Management and organisation of the lunch service: coping with external factors that could slow down the lunch service, such as the arrival of reception pupils who were unfamiliar with lunch routines, increased noise levels and more accidents in dining halls. Responses included extending the lunch break, a buddying system for reception pupils and practices to reduce the noise during lunch.
- Meal planning and preparation. Schools found it difficult to accurately predict demand for particular meal options and order the appropriate quantities of food. This problem was addressed using a pre-order system for meal selection.
- Staffing. Continuing problems with understaffing and high staff turnover in catering and lunchtime supervisory teams meant some schools found it difficult to achieve both adequate and consistent levels of staff to cover the workload during the pilot.
- In extended pilot schools, there were concerns that entitled parents were not applying for the pilot and parents reported difficulties understanding the entitlement criteria and application process. Parents' difficulties stemmed from literacy problems, language issues, and uncertainty about whether they met the new criteria and how to demonstrate entitlement. Some schools responded by providing one-to-one support and guidance to parents but this resulted in a further drain on staff capacity.

Experiences of information, support and guidance

Local authorities and catering services were the main source of information, support and guidance for schools throughout the pilot. They helped schools implement changes to the physical school structure, workforce and menus, and in Wolverhampton they helped set up administrative systems and sent schools literature for distribution to parents.

Good relationships between schools and local authorities were underpinned by the provision of timely, clear and accurate information and by responsiveness and flexibility in addressing individual schools' needs.

Less positive experiences resulted from delayed or unclear information: for example, in relation to the literature about entitlement to free school meals (in Wolverhampton). They also stemmed from being unable to access additional resources to help manage capacity issues and being unable to modify menus and portion sizes.

Furthermore, it was felt that a platform for sharing good practice between schools participating in the pilot, such as a web forum, would have helped with the delivery of the pilot.

Choosing to take up free school meals

School staff generally found it difficult to identify a particular profile of children who took up FSM, although age and previous eligibility for FSM were felt to be influential. School staff distinguished between consistent takers or non-takers and children who changed their preferences from week to week, influenced by what was on the menu and whether parents had time to make a packed lunch.

Three approaches to decision making were identified:

- Child-led. In families where the decision was child-led, the priority was to ensure that their child would eat their lunch.
- Parent-led. Parents who made the decision to take up the pilot identified the financial benefits, the reduced burden on parent time, the quality of the meals and the social benefits of school meals as factors that outweighed the preferences of the child.
- Joint. When the parent encouraged their child to try school meals but left it open for them to return to packed lunches if they preferred, joint decision-making occurred.

An understanding of these models could help schools to identify where to target efforts to encourage take-up.

Cost savings were identified as the main reason for taking up a free school meal. Other factors affecting the take-up of FSM included: the choice of food available; the extent to which pupils and parents felt they had control over what children ate; the quality of the food available; social factors; the dining experience; the impacts on parents of taking school meals; and the entitlement and application process.

A number of initiatives were felt to encourage take-up including: introducing a pre-order system for meal selection; maintaining a strict policy about the contents of packed lunches; involving children in decisions about the menu options; improving the dining experience; offering taster sessions to parents; promoting school meals by emphasising the health and social benefits; and reducing the stigma attached to school meals through, for example, the introduction of a cashless payment system.

Perceived impacts on pupils, families and schools

It proved difficult to disentangle the perceived impacts arising from pupils opting for a school lunch, the actual impact of school meals being free and the effect of the wider activities of the pilot including healthy-eating activities. The ability to isolate the impact of the pilot was further mediated by four other factors: the pilot model (the impact being felt most acutely in universal pilot areas), other initiatives running in the school and local authority, the school context, and whether pupils enjoyed and ate their school meal.

- Pupils. The primary impacts identified were an increase in the range of food pupils eat for lunch, the associated health benefits of having a balanced meal, improved social skills at meal times, and a 'levelling effect' for children in universal areas who opted for a free school meal. Not surprisingly, there was much less agreement about whether the pilot had impacted on pupil performance and behaviour in the classroom, as there were felt to be other more influential factors driving any differences in this.
- Families. The main impacts highlighted for parents and families were the financial and time savings resulting from not having to pay for a lunch and not having to prepare a packed lunch. These were particularly identified for those on low incomes and for those with more than one child. Parents also commented on the positive impact on

diets and cooking practices at home, with children tending to be less 'fussy', eating more healthily and asking for new dishes at home.

- Schools. The following impacts were identified by schools particularly where there was a large increase in the number of children opting for a free school meal as a result of the pilot:
 - Staff. Administrative and catering staff increased their working hours and/or took on additional duties resulting from the pilot.
 - School infrastructure. The pilot resulted in an expansion of school kitchen facilities and serving areas and the rearrangement of dining halls to cater for more pupils. Durham saw this impact more than the other pilot areas.
 - Lunchtime arrangements. These tended to be modified to accommodate the increased number of pupils taking school meals. Changes tended to involve one or more of the following: staggered lunchtimes, pupil involvement in clearing up their own trays and the introduction of the pre-choice menu system.

Reflections on the FSM pilot

The pilot was valued by parent and schools for:

- raising the profile of healthy eating and ensuring pupils get at least one healthy, good-quality meal a day;
- increasing the range of food pupils eat and building their social skills at meal times;
- easing the financial stress for parents and providing additional family time.

Participants made a number of recommendations for improving the delivery of the pilot: providing a longer lead-in time to prepare for the pilot; creating a platform for schools to share good practice about the organisation and management of lunchtimes; and, where schools experienced staffing problems, employing additional staff on a fixed-term basis rather than relying on temporary agency staff. Improving the quality, quantity and range of food on offer was a priority for pupils and parents.

6 Cost-effectiveness of the pilot

This report has so far demonstrated that universal entitlement to free school meals, alongside the other activities associated with implementation of the pilot, has had a positive impact on the take-up of school meals, some aspects of pupil's eating habits and attainment at Key Stage 1 and Key Stage 2. This chapter looks at whether the pilot is cost-effective, by considering whether the cost of the pilot is 'reasonable' in the context of the impacts that have been found, especially in relation to other programmes that have sought to affect similar outcomes. The 'deadweight' cost of the pilot, which is the cost associated with providing free school meals for pupils whose parents would have paid for them in the absence of the pilot, is also calculated.

Key findings

- The total running cost of a programme is thought to provide a good indication of its likely cost in the long term. The total running costs of the FSM pilot were estimated to be £12.1 million in area A and £16.6 million in area B (the universal entitlement areas) and £2.0 million in area C (the extended entitlement area) over two years.
- The deadweight cost of the pilot is the cost associated with providing free school meals for pupils whose parents would have paid for them in the absence of the pilot. This amounted to around £3.8 million in area A (around one-third of the total running costs), £7.6 million in area B (just under half of the total running costs) and £0.72 million in area C (just over one-third of the total running costs).
- It is difficult to estimate the fixed costs of the pilot with any degree of accuracy, but it is clear that they are relatively small compared with the overall running costs. The figures in this report suggest that reasonable estimates may be around £2500 per school to upgrade kitchen and dining facilities and around £150,000 per authority to promote and support the pilot.
- The extended entitlement pilot yielded little in the way of positive benefits for any of the outcomes considered in this evaluation. Thus it seems clear that it does not offer good value for money.
- The universal entitlement pilot led to a 1.9 percentage point (ppt) increase in the proportion of pupils reaching the expected level in reading at Key Stage 1, a 2.2ppt increase for maths at Key Stage 1, a 4.0ppt increase for English at Key Stage 2 and a 5.5ppt increase for maths at Key Stage 2. At a cost of around £112 per pupil per year, this suggests that it has cost £50 to £60 to obtain a 1 percentage point increase in attainment at Key Stage 1 and £20 to £30 to obtain a 1 percentage point increase in attainment at Key Stage 2.

Other initiatives targeting similar outcomes, such as the Jamie Oliver 'Feed Me Better' campaign, appeared to be able to deliver significant impacts on educational attainment at

substantially lower cost. It is worth bearing in mind, however, that this initiative was designed to improve the quality of school meals rather than to extend the offer of free school meals. Also, it was introduced before the recent changes to nutritional standards in schools, which would make it substantially more difficult to achieve similar impacts now. By contrast, the universal entitlement pilot appeared to deliver better value for money for pupils, on average, than highly targeted educational interventions such as Every Child a Reader and Every Child Counts, at least in terms of the educational outcomes that could be directly compared.

This chapter proceeds as follows: Section 6.1 describes the approach used to calculate the total cost of the pilot, including running costs, deadweight cost and fixed costs; Section 6.2 examines the impact of the pilot in relation to these costs; Section 6.3 considers how this compares with that of other initiatives that have sought to improve similar pupil outcomes; and Section 6.4 discusses these findings and offers some potential lessons for policymakers.

6.1 Calculating the total cost of the pilot

The Department for Education (DfE) and the Department of Health (DH) provided funding for the Free School Meals pilot, which was matched locally by the local authority (LA) and/or the primary care trust (PCT). In pilot area A, central funding was matched by the LA; in area B, it was matched jointly by the LA and the PCT; and in area C, it was matched by the PCT alone. This distinction between central and local funding is not important here, however, as it is the estimated total cost of the pilot that matters.

As a general principle, any costs that were incurred as a direct result of the pilot should be included in calculations of total cost, while costs that would have been incurred anyway should not. While some authorities undertook refurbishments of their kitchen facilities once the pilot had started, their cost should only be counted as a cost of the pilot if the refurbishments would not have happened had the pilot not been introduced. This distinction is difficult to make in practice, however, and is likely to depend on the individual circumstances of each local authority.

Another important distinction to make is between the fixed or short-term costs of the pilot and the running or long-term costs. The fixed costs are likely to be one-off investments (for example, upgrading kitchen equipment), which will not be incurred on a regular basis. By contrast, the running costs are likely to reflect the ongoing costs of the pilot in terms of ingredients and staff that are required to produce and deliver additional school meals on a regular basis. As such, the running costs are likely to provide a better reflection of the long-term cost of extending entitlement to free school meals to all pupils, so it is the measurement and comparison of these costs on which this chapter focuses. (The information available on fixed costs is also less comprehensive and recorded with a lower degree of accuracy than the information provided on running costs.)

Of course, there are a whole host of costs that might be regarded as part of the running costs of the pilot that one cannot hope to measure. These might include the cost to pupils

who took school meals before the pilot of having to spend longer queuing for lunch or of not being offered their first-choice meal, or the opportunity cost of not using the funds spent on providing free school meals for other purposes, such as more one-to-one tuition for pupils with low achievement. Such costs cannot be easily measured and thus are not included as part of this analysis, but their potential existence should be borne in mind in the context of deciding whether or not to extend entitlement to FSM in future.

Information on the costs of the pilot comes from three sources. First, management data from the pilot authorities provide information on the total number of meals delivered before and after the pilot and on the average cost per meal charged to the local authority by catering contractors and to parents by the local authority. This information is important for calculating the running costs of the pilot. Second, for the purposes of this evaluation, the School Food Trust (SFT) collected information from the pilot authorities on additional expenditure incurred after the introduction of the pilot. This information provides some indication of the fixed costs associated with the pilot. Third, information from a sample of schools that were interviewed as part of the qualitative case studies provides some indication of the fixed and running costs incurred by particular schools.

Running costs: the cost of providing additional meals

To estimate the running costs of the pilot, this chapter makes the reasonable assumption that the price the local authority is charged per meal by those who deliver school meals (for example, catering contractors) is an accurate reflection of the marginal cost of providing an additional school meal. This assumes that all the factors that one might expect to increase as a result of delivering more school meals, such as the cost of raw ingredients, hours of labour and light equipment, are included in the price charged by the contractor.

Pilot A provides some evidence that this assumption is valid: the catering contractor's charge-out price was around £2.60 per meal throughout the pilot period, even though its wage bill increased by £0.5 million as a result of the pilot. This suggests that the additional cost of providing these meals was accounted for in the contractor's charge per meal, such that increases in labour costs associated with food preparation or serving as a result of the pilot do not have to be accounted for separately in the calculation of total cost.

Using information on contractors' costs rather than the price charged to parents by the local authority is also preferred, as data from the SFT suggest that school meals are subsidised by at least some authorities: amongst a sample of primary schools in 52 local authorities, the cost of producing a school meal (on average within a region) exceeded the price charged to parents for a school meal (on average within a region) in every case, although the SFT highlights that these figures should be treated with caution.⁹¹ This

⁹¹ Source: section 3.11.3 of the sixth annual survey of take-up of school meals in England; see <http://www.schoolfoodtrust.org.uk/school-cooks-caterers/reports/sixth-annual-survey-of-take-up-of-school-meals-in-england>.

means that simply using the price charged to parents per school meal would underestimate the total cost of the pilot, because this price is lower than the price that DfE, DH or the local authority would have to pay the contractor to cover any additional meals taken as a result of the pilot. This issue is discussed in more detail in relation to Table 6.1 below.

A straightforward estimate of the running costs of the pilot in each area could, in theory, be calculated simply by multiplying the contractor's price per meal by the number of additional meals served as a result of the pilot. (Of course, if schools face additional costs as a result of the pilot that are not accounted for by the contractor's price and cannot be included separately, then this measure will underestimate the total running costs of the pilot. An example of such additional costs is the need for extra lunchtime supervision. It seems unlikely that such costs would be substantial, however.)

Obtaining an estimate of the pilot's running costs is not so straightforward in practice, for several reasons. First, the management data available from pilot authorities provide information on the total number of additional school meals served, over and above those that were provided before the pilot was introduced, rather than on the impact of the pilot on the total number of meals served.⁹² To the extent that the number of school meals served would have increased (or decreased) in the absence of the pilot, not accounting for this difference may lead to an overestimate (or underestimate) of the total cost of the pilot.

To try to account for this, data provided by the SFT (based on its annual surveys of take-up) are used to estimate what would have happened to the percentage of potential school meals served in the absence of the pilot. More specifically, the change in take-up for each of the groups of comparison areas is calculated, and this figure is used to scale the number of school meals that are attributed to the pilot in each area. For example, in the group of comparison areas for pilot area B, take-up in primary schools increased by 3 per cent between 2008/09 and 2009/10 and by 7.5 per cent between 2008/09 and 2010/11. The number of additional meals served in pilot area B is thus reduced by about 3 per cent⁹³ in 2009/10 and by about 7 per cent⁹⁴ in 2010/11, to reflect what is likely to have

⁹² Note that it is not possible to simply impose the estimate of the impact of the pilot on take-up (as reported in Section 2.1) onto these data, because the management data from the pilot authorities record the percentage of all potential school meals that were taken, rather than the percentage of individuals who had school meals at least once in the past week (which is the measure used to estimate the impact of the pilot on take-up in Section 2.1).

⁹³ $100 \times (1 - 1/1.0309) = 3.00$ per cent.

⁹⁴ $100 \times (1 - 1/1.0751) = 6.99$ per cent.

happened to take-up in the absence of the pilot. The resulting figure is then multiplied by the contractor's charge-out price per meal to calculate the running cost in each area.⁹⁵

Related to this, if pupils are more likely to become eligible for FSM (under the old criteria) over time,⁹⁶ then the cost of providing these meals should not be included in the total cost of the pilot either. Data from DfE show that the percentage of pupils eligible for FSM, under the old criteria, rose by between 1.0 and 1.8 percentage points amongst the three sets of comparison areas used in this evaluation between 2008/09 and 2010/11.⁹⁷ Changes of this magnitude are unlikely to bias the estimates of the running costs substantially; nonetheless, the total number of pupils thought to be newly entitled to FSM in areas A and B (that is, those who were not eligible for FSM in the absence of the pilot) is scaled down accordingly when calculating the 'per eligible pupil cost' in Table 6.2 below.^{98,99}

To the extent that what happened to the take-up of school meals and the proportion of pupils eligible for FSM in comparison areas does not accurately reflect what would have happened in the pilot areas in the absence of the pilot, this may affect the total estimated cost of the pilot. For example, if take-up increased by more in comparison areas than it would have done in the pilot areas, then imposing the comparison area change will lead to an underestimation of the number of additional meals served as a result of the pilot and thus an underestimation of the total cost of the pilot. Given the relatively small

⁹⁵ In pilot area C, one must assume that take-up amongst all pupils in the comparison C areas is a reasonable approximation of what would have happened to take-up amongst newly eligible pupils in pilot area C in the absence of the pilot.

⁹⁶ For example, if the macroeconomic conditions mean that more children become entitled to FSM, or schools are more likely to ensure that all entitled pupils are registered for FSM as a result of the introduction of the 'pupil premium' in 2011/12.

⁹⁷ Authors' calculations using <http://www.education.gov.uk/rsgateway/DB/SFR/s001012/index.shtml> and its 2008/09 counterpart. These figures are based on a simple average, which does not weight by the number of pupils in each area. In fact, eligibility for FSM increased the most in Wolverhampton (area C), which extended entitlement to pupils whose families were on Working Tax Credit and whose annual income did not exceed £16,040 in 2009-10 or £16,190 in 2010-11. It is thus not clear whether this rise reflects eligibility for FSM under the old or new criteria.

⁹⁸ A similar adjustment is not applied to the total number of meals consumed, however, as it is unclear whether those who become eligible for FSM under the new criteria would have taken school meals in the absence of the pilot (and thus whether this change should lead to an absolute decrease in the number of additional meals attributed to the pilot or not). It is also unclear how many meals to assume such individuals would take, such that the magnitude of any adjustment would also be uncertain.

⁹⁹ A similar adjustment is not made to the numbers of pupils who were thought to be newly eligible in area C, because information on the proportion of pupils likely to be entitled under the new criteria was not available before the introduction of the pilot.

adjustments that have been made, however, it seems unlikely that they will have changed any of the conclusions that are drawn.

Finally, the issue of local authorities subsidising school meals is also important. As discussed above, this is relatively common practice, and it happens in two of the FSM pilot areas: Newham (area A) and Wolverhampton (area C). The existence of a subsidy for school meals means that the additional cost to DfE/DH, the PCT or the local authority of providing meals for pupils whose parents were previously paying for them is equivalent to the subsidised price rather than the contractor's charge-out price. If, as a result of the pilot, those parents chose to increase the number of school meals that their child ate each week, then the cost of the extra meals would be charged at the full price; the same goes for all meals eaten by pupils who were not previously taking them. This ensures that the calculated cost of the pilot only considers the additional cost to local authorities or central funders.¹⁰⁰

Table 6.1 summarises the price per meal, the estimated rise in the number of school meals served as a result of the pilot, and the estimated total cost of the pilot in each area.

A catering service contractor delivers all school meals in pilot area A. The price charged per meal by this contractor (which can equivalently be thought of as the total cost per meal paid by parents and/or the local authority) was £2.59 between September 2009 and March 2011 and £2.63 from April 2011 until July 2011. As mentioned above, the local authority subsidised the cost of school meals before the introduction of the pilot, so that those not eligible for free school meals paid £1.70 per meal rather than £2.59 or £2.63 per meal. This means that the approximate calculation of costs in pilot A is the sum of the two figures obtained by: (a) multiplying the total number of meals paid for at baseline (2.3 million) by the subsidised price (£1.70); and (b) multiplying the total number of additional meals taken (3.2 million) by the actual price charged by the contractor (£2.59 or £2.63,

¹⁰⁰ Unfortunately, it is not possible to do this exactly in area C, as the management data do not include the number of meals paid for by parents before the pilot was introduced. The figures presented in Table 6.1 are instead based on estimates of the numbers of pupils eligible for FSM under the old and new criteria after the pilot was introduced. To the extent that the pilot increased the number of meals taken by pupils whose parents were previously paying for them to take at least some school meals, this will potentially overestimate the total number of meals paid for at baseline (and underestimate the number of additional meals taken as a result of the pilot) and hence potentially underestimate the total cost of the pilot (because some meals that should have been charged at the full price were instead charged at the subsidised price). Unfortunately, it is not possible to predict how much this might affect the estimates presented here, but the effect is unlikely to be large.

depending on the month of interest).¹⁰¹ In fact, the estimated total running costs of the pilot in area A amounted to around £12.1 million over two years.

Catering service contractors also deliver most school meals in pilot area B. The local authority's management data suggest that the price charged was £1.92 per meal over the course of the pilot and the local authority did not subsidise the meals before the pilot. This means that the approximate running costs of the pilot in area B can be obtained by multiplying the total number of meals served (8.6 million) by the price charged per meal (£1.92). In practice, the total running costs of the pilot over two years in area B amounted to £16.6 million, around £4 million more than in area A. This difference arises largely because there are more pupils in area B than in area A, but the fact that a smaller proportion of pupils were eligible for FSM at baseline in area B than in area A also contributes to this difference.

Table 6.1 Total estimated running costs of the pilot			
	Pilot area A (universal entitlement)	Pilot area B (universal entitlement)	Pilot area C (extended entitlement)
Charge-out price per meal	£2.59/£2.63 ₁₀₂	£1.92	£2.52/£2.57/£2.69 ₁₀₃
Subsidised price per meal	£1.70	-	£2.00/£2.10 ¹⁰⁴
Total number of meals taken by those paying for them at baseline	2.3m	-	0.35m
Total number of additional meals taken	3.2m	-	0.49m
Total number of meals taken	-	8.6m	-
Total cost (over two years)	£12.1m	£16.6m	£2.0m

Notes to Table 6.1: For each area, the number of meals served per month is multiplied by the relevant cost per meal (either subsidised or not) in that month, and then summed over the two-year pilot period. As such, the total costs given in the table cannot be exactly replicated by multiplying the total number of additional meals served by the prices listed, although the figures are very close in practice. More detailed figures and calculations are available from the authors on request.

¹⁰¹ As outlined in the notes to Table 6.1, the total cost is actually obtained by multiplying monthly figures on the number of meals served by the price charged in that month, so cannot be exactly replicated by undertaking this simple calculation (although it is a very good approximation).

¹⁰² The price charged per meal was £2.59 between September 2009 and March 2011 and £2.63 from April 2011 until July 2011.

¹⁰³ The price charged per meal was £2.52 for infant school pupils, £2.57 for junior and secondary school pupils, and £2.69 for pupils attending special schools.

¹⁰⁴ The price charged to parents per meal was £2.00 for primary school pupils and £2.10 for secondary school pupils.

The price charged per meal in pilot area C is derived from the initial contract signed with the Department for Children, Schools and Families (now the Department for Education), as price-per-meal figures are not available from the management information provided by the local authority. These prices are £2.52 for infant school pupils, £2.57 for junior and secondary school pupils, and £2.69 for pupils attending special schools. The local authority subsidised school meals prior to the introduction of the pilot, charging meals out to parents at just £2.00 for primary school pupils and £2.10 for secondary school pupils. This means that the approach taken to calculate the cost of the pilot is similar to that outlined above for pilot area A and suggests that the total running costs of the pilot in area C amounted to around £2.0 million over two years.¹⁰⁵

The total running costs of the extended entitlement pilot in area C are, unsurprisingly, substantially lower than the running costs in the universal entitlement areas.¹⁰⁶ To more easily compare the costs of implementing these different pilot approaches, Table 6.2 converts the total running costs of the pilot into costs per pupil and per newly eligible pupil.

Total running costs per pupil are calculated by dividing the total running costs of the pilot by the total number of pupils in the pilot area. To calculate total running costs per newly eligible pupil, one first needs to estimate or predict the number of pupils who are likely to be newly eligible for the pilot. The local authority in area C (Wolverhampton) makes its own assessment of the number of pupils it believes to be entitled to free school meals under the new criteria and reports this information directly in its management data. In Newham and Durham (areas A and B), the total number of newly eligible pupils is considered to be the number who were not eligible for FSM under the old criteria at baseline, minus a very small adjustment to account for the increase in FSM eligibility in the comparison areas.¹⁰⁷ This change makes very little difference to the overall estimates of cost per newly eligible pupil, as it amounts to a reduction in the number of newly eligible pupils of just 500 pupils in Newham and 1200 pupils in Durham.

Table 6.2 shows that running costs per pupil are actually very similar in areas A and B. These costs are, in turn, substantially higher than the cost per pupil of the extended entitlement pilot in area C. Interestingly, the total cost per newly eligible pupil is substantially larger in area A than in area B, because a larger proportion of pupils were

¹⁰⁵ As discussed in footnote 100, it is possible that this might represent a slight underestimate of the total cost of the pilot, because some meals that should have been charged at full price were instead charged at the subsidised price. While it is not possible to predict how much of an underestimate this might be, it is unlikely to be large.

¹⁰⁶ Recall that under the pilot introduced in area C, entitlement to FSM was extended to cover pupils whose families were claiming Working Tax Credit but whose annual income did not exceed the existing income criteria (£16,040 in 2008-09, uprated to £16,190 in 2010-11).

¹⁰⁷ This includes pupils who were entitled but not eligible for FSM under the old criteria at baseline. It also assumes that the proportion of pupils eligible for FSM under the old criteria in each pilot area changes in line with the average change in their respective comparison areas.

eligible for free school meals under the old criteria at baseline in area A than in area B. Moreover, the costs per newly eligible pupil in areas A and B are quite similar to the cost per newly eligible pupil in area C, despite the substantial differences in total cost and cost per pupil in the universal and extended entitlement pilot areas.

Table 6.2 Estimated running cost of the pilot per pupil			
	Pilot area A (universal entitlement)	Pilot area B (universal entitlement)	Pilot area C (extended entitlement)
Total running cost (over two years)	£12.1m	£16.6m	£2.0m
Total number of pupils (over two years)	55,880	72,256	53,200
Total number of pupils newly eligible for the pilot (over two years)	36,546	57,552	6343
Total running cost per pupil (per year)	£217	£229	£37
Total running cost per pupil newly eligible for the pilot (per year)	£332	£288	£310

Notes to Table 6.2: The total number of pupils is reported in the management data. In Newham and Durham (areas A and B), the total number of newly eligible pupils is the number of pupils who were not eligible for free school meals under the old criteria at baseline, minus a very small adjustment to account for the increase in FSM eligibility in the comparison areas. This change amounts to a reduction in the number of newly eligible pupils of around 500 pupils in Newham and 1200 pupils in Durham. In Wolverhampton (area C), the number of newly eligible pupils is based on the local authority's own estimates from its management data.

Local authorities wishing to introduce one of these pilot schemes can estimate the approximate running cost per newly eligible pupil by estimating the likely increase in take-up as a result of the pilot and carrying out the following simple calculation:

$$\text{Per pupil cost (per year)} = (\text{Take-up rate} \times \text{Number of potential additional free school meals (per year)} \times \text{Cost per meal}) / (\text{Number of newly eligible pupils})$$

The cost per pupil will be lower for authorities with lower meal costs, lower expected take-up rates (although these may also mean the pilot has a lower impact) and fewer 'feeding days' (although this number is unlikely to vary much between authorities across the school year). Evidence from the SFT suggests that average meal costs across the country (at £2.23 for primary schools and £2.36 for secondary schools¹⁰⁸) are closer to the price charged per meal in pilot areas A and C than to the price charged in area B. Thus the total costs and costs per pupil for areas A and C may provide a better indication of the likely costs of introducing the universal and extended entitlement pilot respectively than the costs for area B.

The number of newly eligible pupils affects both the numerator (through the number of potential additional free school meals) and the denominator. On balance, the number of

¹⁰⁸ Source: table 30 of the sixth annual survey of take-up of school meals in England; see <http://www.schoolfoodtrust.org.uk/school-cooks-caterers/reports/sixth-annual-survey-of-take-up-of-school-meals-in-england>.

newly eligible pupils should not affect the cost of the pilot per pupil, unless substantial economies of scale can be reaped from producing more meals. (Data from the caterers' survey show that prices rose slightly in comparison areas over time, while prices in the pilot areas did not, suggesting that the pilot may have produced some economies of scale. This could not be investigated further, however, as it would have required detailed knowledge of the accounts and profits of the catering services in each area, something to which the evaluation team did not have access.)

Deadweight costs

It is also interesting to consider the 'deadweight' cost of the pilot, which is the cost associated with providing free school meals for pupils whose parents would have paid for them in the absence of the pilot. This can be calculated by multiplying the number of meals paid for at baseline (which is assumed not to change over the course of the pilot) by the price charged per meal to parents. Note that the price charged to parents, rather than the contractor's charge-out price, is used because, as discussed above, this signifies the additional cost incurred by the local authority (or DfE/DH or the PCT) as a result of the pilot amongst those who were paying for school meals at baseline.

In areas A and B, the average number of meals paid for by parents¹⁰⁹ is multiplied by the price charged per meal to parents to give rough estimates of the deadweight cost of the universal entitlement pilot of £3.8 million in area A (equivalent to 32 per cent of the total running costs) and £7.6 million in area B (equivalent to 46 per cent of the total running costs) over two years.

The substantial absolute difference between deadweight costs in areas A and B can be explained by three factors. First, there are more pupils in Durham (area B) than in Newham (area A). Second, the price per meal paid by parents was higher in Durham than in Newham (£1.92 compared with £1.70). Third, a slightly higher proportion of pupils were taking and paying for school meals in Durham than in Newham prior to the introduction of the pilot (46 per cent compared with 40 per cent). This final reason also helps to explain why the proportional deadweight cost is higher in Durham than in Newham.

Things are slightly more complicated in area C, the extended entitlement area, because the management data only provide information on the number of meals served after the pilot was introduced to children with parents who would have paid for them under the old criteria. To the extent that the pilot increased the number of meals taken by pupils whose parents would previously have paid for them, this will potentially overestimate the total number of meals paid for at baseline and hence potentially overestimate the deadweight

¹⁰⁹ Information on the total number of meals served to those not eligible for FSM under the old criteria and the total number of serving days in each month was used to create a measure of average meals served per day for each month of the year before the pilot. These figures were then averaged across months to create a measure of the average number of meals served per day at baseline.

cost of the pilot. Using the figures available, the deadweight cost of the extended entitlement pilot is estimated to be around £0.72 million over two years (equivalent to 37 per cent of the total running costs). Unfortunately, it is not possible to estimate the extent to which this might overestimate the deadweight cost of the pilot, but it is unlikely to be large.

Fixed costs: the cost of initial investment

This section draws on two sources of information regarding the fixed costs of the FSM pilot: first, data collected from the pilot authorities by the SFT; and second, the implementation report,¹¹⁰ which documented the investment in facilities and equipment undertaken in 10 school case studies. These sources provide some insight into the fixed costs incurred by each pilot authority. Unfortunately, the information provided is not comprehensive enough to be able to robustly estimate the fixed costs of the pilot, both because information is not available for each category of expenditure in every pilot authority and because it is not clear to what extent this expenditure would have occurred in the absence of the pilot. The information provided in this section should thus be taken as indicative only.

Table 6.3 summarises the information obtained by the SFT from the pilot authorities regarding the main sources of their fixed costs. These are the cost of upgrading kitchen and dining facilities and equipment, which is more important in the universal entitlement areas (A and B), and the cost of additional staffing required to publicise, assess and implement the pilot, which is more important for the extended entitlement pilot in area C.

The table shows that relatively little was spent upgrading the kitchen and dining facilities in area A. This is borne out by the results from the implementation report, which suggested that facilities were mostly seen to be adequate to deal with the increased demand for school meals (possibly as a consequence of a recent refurbishment of school kitchens by the local authority). Extra serving counters, cooking equipment and dining furniture were reported to have been provided to a small number of schools, which is borne out by the small amount of expenditure on these items in Table 6.3.

By contrast, a very substantial sum was spent upgrading kitchen and dining facilities in area B, amounting to nearly £4 million (or £17,000 per school). It is likely that the majority of these costs would have been necessary even in the absence of the pilot, and the findings from the qualitative case studies suggest that funding had already been secured from the county council and DfE to undertake these improvements before the pilot began. As such, these costs should not necessarily be regarded as fixed costs incurred as a result of the pilot. It might be more reasonable to suppose that the fixed costs experienced in area A (around £2400 per school) provide a better indication of the fixed costs that might be necessary if universal entitlement to free school meals were to be extended to

¹¹⁰ <https://www.education.gov.uk/publications/RSG/AllRsgPublications/Page1/DFE-RR228>

other areas. Of course, it is highly likely that facilities, and thus the fixed costs associated with improving those facilities, vary dramatically across authorities; thus these costs should be treated with caution and regarded as indicative only.

Table 6.3 Total estimated fixed costs of the pilot			
	Pilot area A (universal entitlement)	Pilot area B (universal entitlement)	Pilot area C (extended entitlement)
Equipment and kitchen / dining room facilities			
Renovating kitchen and installing new heavy kitchen equipment	£51,800	£3,852,000	NI
Training in the use of new facilities and equipment	NI	£9500	NI
Additional dining furniture	£62,200	NI	NI
Additional servery counters	£40,500	NI	NI
Additional clearing trolleys	£11,100	NI	NI
Light equipment	NI	£106,500	NI
Staff costs not included in the running cost charged by catering contractors			
Development Officer (part salary)	NI	NI	£16,800
Support Officer (August 2010 to July 2011)	NI	NI	£21,900
Finance support	NI	NI	£29,200
Student support	NI	NI	£40,300
SIMS support	NI	NI	£12,600
GIS software training	NI	NI	£1300
Total cost	£165,600	£3,968,000	£122,100
Number of schools	68	234	101
Approximate cost per school	£2400	£17,000	£1200

Notes to Table 6.3: NI indicates that no information was provided by the pilot authority regarding this particular cost. All figures are rounded to the nearest £100. It is not clear how much of the costs in area B were incurred as a direct result of the pilot, as funding had already been secured to undertake some improvements to kitchen and dining facilities before the pilot began.

Table 6.3 also indicates that no improvements to kitchen or dining facilities were made as a result of the pilot in area C, presumably because extending FSM entitlement to a subgroup of pupils rather than to all pupils put less strain on existing facilities. Instead, the evidence suggests that the bulk of the costs in area C arose as a result of the need to promote the new entitlement criteria and assess applications. This is borne out by the

results of the qualitative case studies and the figures reported in Table 6.3, which show that just over £120,000 was spent on staff costs over the pilot period.¹¹¹ While all pilot areas would presumably have incurred some administrative costs, these are likely to have been larger in area C, given the need to register those newly entitled to FSM under the extended criteria. In the absence of cost data for the universal pilot areas in this respect, however, it is impossible to investigate this issue further.

The evidence presented in this section suggests that local authorities considering introducing either universal or extended entitlement to FSM should attempt to account both for the cost of adequately equipping their schools in terms of kitchen and dining facilities and for the cost of promoting and supporting the pilot. Table 6.3 suggests that £2400 per school may be a reasonable guide to the costs of upgrading kitchen and dining facilities if universal entitlement were to be introduced, while £120,000 may be a reasonable guide to the cost of providing staff to promote and support an extension of entitlement criteria. Pilot area C also spent a further £37,500 on promotional materials; given the efforts to which all pilot authorities went to publicise and support the pilot, this may be a reasonable estimate for the universal entitlement areas too.

Having said this, however, it is clear from the information discussed in this section that fixed costs, in the absence of substantial adjustments to kitchen and dining facilities, are relatively small compared with the running costs of the pilot discussed above. This, together with the fact that running costs are more economically relevant over the longer term and the fact that the data available on fixed costs are less robust, is why Section 6.2 considers the benefits of the pilot in relation to the running costs of the pilot (and not the fixed costs).

6.2 Comparing the costs and benefits of the pilot

As outlined above, this section compares the benefits of the pilot in relation to its running costs. To enable comparisons to be made both across outcomes within this evaluation and with other initiatives designed to improve children's attainment and health (discussed further in Section 6.3), this section focuses on the cost per pupil to obtain a 1 percentage point increase in a selected group of outcomes that were affected by the pilot.

In consultation with the Department, this section compares the costs of the FSM pilot with its immediate benefits in terms of the outcomes on which it has been shown to have had a positive impact; it does not consider how these immediate benefits might translate into longer-term benefits. This is primarily because of the large degree of uncertainty over the extent to which these immediate benefits are maintained. For instance, it is possible that an increase in attainment at Key Stage 1 or 2 translates into an improvement at later ages (for example, GCSE attainment), which has been shown to have benefits in the labour

¹¹¹ It is unclear whether some or all of these staff costs relate to the start-up of the pilot (for example, GIS software training) or are more likely to reflect running costs not captured in the contract price of the school meals provider (for example, student support).

market.¹¹² But it is also possible that some or all of the immediate benefits dissipate over time and thus have no long-term impact. Moreover, while it is feasible to make a reasonable attempt at translating the impacts of short-term improvements in attainment into longer-term benefits (albeit with a large degree of uncertainty), it is much more difficult to know how to translate changes in pupils' eating habits, for example, into longer-term benefits.

This focus on immediate rather than longer-term benefits means that the cost-effectiveness of the pilot will be underestimated if short-term gains (for example, in terms of Key Stage 1 or 2 attainment) are maintained into secondary school and beyond, but overestimated if gains at young ages dissipate quickly.

This approach removes some of the uncertainty associated with calculating and expressing benefits in terms of longer-term outcomes; but this does not mean that the resultant analysis is straightforward. Of particular importance is the fact that the pilot has been shown to positively affect a number of different pupil outcomes. Because of this 'joint production' of outcomes, it is extremely difficult (and possibly misleading) to try to decompose the cost of the pilot into the costs relating to different benefits.

It may be helpful to illustrate this issue with an example. Imagine that the pilot affected only two outcomes: it increased attainment in reading at Key Stage 1 by 3 percentage points and it improved children's ability to concentrate in class by 2 percentage points. While it might be tempting to simply sum these impacts and divide the costs between them, such that the increase in attainment would be assumed to cost three-fifths of the total and the increase in concentration would be assumed to cost two-fifths of the total, it is not clear whether these benefits are really additive. It could be that improved concentration in class is driving the improvement in reading scores, in which case summing the impacts on these two outcomes and comparing them with the total cost of the pilot would lead to an overestimate of the benefits of the pilot in relation to its cost. Without making further assumptions about whether and to what extent some outcomes act as pathways through which the pilot affects other outcomes, it is thus extremely difficult to calculate the 'total benefit' of the pilot.

An alternative approach, which is the one taken in this report, is to consider each outcome separately and compare the total cost of the pilot with each outcome in turn. To the extent that this approach treats each benefit as arising separately from the pilot, it risks overstating the costs of the pilot in relation to any single outcome. In deciding whether to extend the pilot in future, however, this provides a more conservative estimate of its cost-effectiveness: if the pilot appears to be cost-effective compared with other initiatives in terms of a single outcome using this approach, then one can be confident that it will also be cost-effective when considering all outcomes together.

¹¹² See, for example, McIntosh (2006).

It also important to remember that there are at least two further sources of uncertainty around these estimates. First, the impacts of the pilot are estimated with statistical uncertainty, because they are based on a sample of pupils; had that sample been different, the observed impact may also have been different. To highlight this uncertainty, lower and upper bounds of the impacts of the pilot are shown in Tables 6.4 and 6.5, representing the bounds within which impacts are estimated to lie for 95 per cent of samples drawn (also known as the 95 per cent confidence interval). Second, while the running cost of the pilot with which these benefits are compared has no statistical uncertainty, its calculation does contain some assumptions and is only an approximation of the true cost of the pilot. (These assumptions were discussed in detail in Section 6.1.)

The outcomes considered in this section are the take-up of school meals, the percentages of pupils reaching the expected level of attainment in reading and maths at Key Stage 1 and in English and maths at Key Stage 2, and the likelihood of having a healthier diet (defined as eating crisps less than once a day, eating cake and/or biscuits less than once a day and eating fruit at least twice a day). Of course, there are a number of other outcomes on which the pilot had a positive effect, such as the likelihood of eating vegetables at lunchtime, which could also have been included; but this selected group of outcomes was chosen both to maximise comparability to other studies and to focus on outcomes for which there is more evidence to support the plausibility of longer-term effects. For example, numerous studies have shown that academic performance in primary school is strongly linked to attainment in secondary school and to subsequent education and labour market choices, suggesting a credible route through which the pilot might affect longer-term outcomes. On the other hand, there is less evidence that changing the consumption of particular food items over a relatively short period has measurable consequences for diet or health in the longer term.

Table 6.4 uses the running cost per pupil over two years from Table 6.2 and compares it with the impact of the pilot on this selected group of outcomes after two years. The cost per 1 percentage point (ppt) impact is obtained by dividing the cost per pupil by the overall percentage point impact. This assumes that there is a linear relationship between cost and impact (that is, that it costs the same to obtain a 1ppt impact compared with nothing as it does to change the impact from 5ppts, say, to 6ppts). For example, the universal pilot cost £217 per pupil in area A and increased take-up (measured in terms of the proportion of pupils who took a school meal at least once per week, as in Section 2.1) by 28ppts, thus giving rise to a cost of £8 per 1ppt impact in terms of take-up. Of course, there is a degree of uncertainty around this estimate; the 95 per cent confidence interval suggests that the cost per percentage point actually lies somewhere between £5 and £14.

This figure is similar in area B (which also introduced universal entitlement) and somewhat lower in area C (in which entitlement to FSM was extended to a smaller group of pupils). The impact estimate in area C is not significantly different from zero, so one should not read too much into the difference in cost per percentage point impact across pilot types illustrated here.

Table 6.4 Value for money: benefits in relation to cost per pupil			
	Pilot area A	Pilot area B	Pilot area C
	(universal entitlement)		(extended)
Cost per pupil	£217	£229	£37
	£223		
Take-up of school meals			
Impact (ppt)	28	29	10
[Lower bound, upper bound]	[15.7,40.3]	[19.2,38.8]	[-12.3,32.3]
Cost per 1ppt impact	£8	£8	£4
[Lower bound, upper bound]	[£5.4,£13.9]	[£5.9,£11.9]	[£1.1,NA]
Expected level in maths at Key Stage 1			
Impact (ppt)	3.2	2.3	-0.1
[Lower bound, upper bound]	[0.3,6.1]	[0.5,4.1]	[-2.6,2.4]
Cost per 1ppt impact	£68	£100	NA
[Lower bound, upper bound]	[£35.3,£834.6]	[£56.3,£427.2]	[£15.1,NA]
Expected level in reading at Key Stage 1			
Impact (ppt)	0.8	2.4	1.3
[Lower bound, upper bound]	[-1.9,3.5]	[-0.1,4.9]	[-1.4,4.0]
Cost per 1ppt impact	£271	£95	£28
[Lower bound, upper bound]	[£61.2,NA]	[£46.3,NA]	[£9.1,NA]
Expected level in maths at Key Stage 2			
Impact (ppt)	4.5	4.7	1.4
[Lower bound, upper bound]	[1.2,7.8]	[2.2,7.2]	[-3.5,6.3]
Cost per 1ppt impact	£48	£49	£26
[Lower bound, upper bound]	[£27.7,£185.8]	[£31.6,£106.4]	[£5.9,NA]
Expected level in English at Key Stage 2			
Impact (ppt)	4.2	3.1	-0.6
[Lower bound, upper bound]	[1.1,7.3]	[0.6,5.6]	[-5.5,4.3]
Cost per 1ppt impact	£52	£74	NA
[Lower bound, upper bound]	[£29.6,£203.9]	[£40.5,£414.9]	[£8.6,NA]
Healthier diet			
Impact (ppt)	-1.8		-8.8
[Lower bound, upper bound]	[-6.3,2.7]		[-20.4,2.8]
Cost per 1ppt impact	NA		NA
[Lower bound, upper bound]	[£82.2,NA]		[£13.4,NA]

Notes to Table 6.4: Estimates that are significantly different from zero at the 5 per cent level or above are reported in black; all other estimates are reported in grey. Figures shown in square brackets represent the 95 per cent confidence interval around the main estimates and the cost per pupil associated with these estimates. NA is used to signify a cost associated with a negative impact estimate.

The impact of the pilot on other outcomes is substantially lower than the impact on take-up, so it is not surprising that it costs more to obtain a 1ppt impact on these other outcomes than it does to obtain a 1ppt impact on take-up. For example, the estimated impact of the pilot in areas A and B on the likelihood of reaching the expected level of attainment in maths at Key Stage 1 is around 2 or 3 percentage points. Compared with a cost per pupil of between £215 and £230, this suggests that it would cost around £70 to £100 to achieve a 1ppt increase in maths attainment at age 7. The confidence intervals around these estimates are considerably wider than they were for take-up, though, with the cost per percentage point impact in area A, for example, ranging from £35 to £835.

The impact estimates are somewhat bigger, and the confidence intervals somewhat smaller, when considering attainment at Key Stage 2. The impact of the universal pilot on the likelihood of reaching the expected level of attainment in maths at Key Stage 2 is around 4.5 percentage points. When compared with a cost per pupil of between £215 and £230, this suggests that it would cost around £50 to obtain a 1ppt impact on maths attainment at age 11. Again, the impact estimates in area C are not significantly different from zero; thus it is not possible to draw any firm conclusions about the relative merits of universal and extended entitlement to FSM in terms of their effect on educational attainment, at least when considering the impact amongst all pupils.

Nor is it possible to draw any firm conclusions about the costs of the pilot relative to its impact on the likelihood of having a healthier diet as neither of the impact estimates (for areas A and B combined or for area C) is significantly different from zero.

Table 6.5 goes on to consider whether any stronger conclusions can be drawn in terms of the relative merits of universal and extended entitlement by comparing the cost of the pilot per newly eligible pupil (from Table 6.2) with the impact of the pilot on pupils who were predicted to be newly entitled to FSM under the extended entitlement in area C.¹¹³

As discussed in previous sections, where these impact estimates are significantly different from zero they are generally larger than for the population as a whole, as are the costs for this group of pupils. This combination means that the cost per percentage point for newly eligible pupils is actually very similar to that for all pupils. For example, it costs £9 to achieve a 1ppt impact on take-up amongst newly eligible pupils in areas A and B, a very similar amount to that for the population as a whole in these areas. Similarly, it costs £40 to £65 to achieve a 1ppt impact on the likelihood of reaching the expected level of attainment in maths at Key Stage 2 for these pupils, which is only slightly more, on average, than for the population as a whole.

¹¹³ Note that it was not possible to calculate the impact of the pilot on the likelihood of having a healthier diet amongst those who were entitled to FSM under the extended entitlement criteria introduced in area C because of the very small numbers of pupils who met these criteria in the longitudinal survey.

Table 6.5 Value for money: benefits in relation to costs for those predicted to be newly entitled to free school meals under the extended entitlement criteria introduced in area C

	Pilot area A	Pilot area B	Pilot area C
	(universal entitlement)		(extended)
Cost per pupil	£332	£288	£310
	£310		
Take-up of school meals			
Impact (ppt)	36		13
[Lower bound, upper bound]	[22.5,49.5]		[-10.3,36.3]
Cost per 1ppt impact	£9		£24
[Lower bound, upper bound]	[£6.3,£13.8]		[£8.5,NA]
Expected level in maths at Key Stage 1			
Impact (ppt)	4.1	4.0	-1.3
[Lower bound, upper bound]	[0.2,8.0]	[0.5,7.5]	[-4.6,2.0]
Cost per 1ppt impact	£81	£72	NA
[Lower bound, upper bound]	[£41.4,£1844.4]	[£38.3,£610.2]	[£152.6,NA]
Expected level in reading at Key Stage 1			
Impact (ppt)	-2.2	2.9	2.2
[Lower bound, upper bound]	[-6.5,2.1]	[-1.2,7.0]	[-1.9,6.3]
Cost per 1ppt impact	NA	£99	£141
[Lower bound, upper bound]	[£157.2,NA]	[£41.0,NA]	[£49.1,NA]
Expected level in maths at Key Stage 2			
Impact (ppt)	8.6	4.6	-2.1
[Lower bound, upper bound]	[2.9,14.3]	[1.1,8.1]	[-8.4,4.2]
Cost per 1ppt impact	£38	£63	NA
[Lower bound, upper bound]	[£23.2,£113.9]	[£35.4,£268.7]	[£74.3,NA]
Expected level in English at Key Stage 2			
Impact (ppt)	4.1	4.4	-0.8
[Lower bound, upper bound]	[-1.4,9.6]	[1.1,7.7]	[-7.5,5.9]
Cost per 1ppt impact	£81	£66	NA
[Lower bound, upper bound]	[NA,£34.6]	[£37.2,£269.7]	[£52.9,NA]

Notes to Table 6.5: Estimates that are significantly different from zero at the 5 per cent level or above are reported in black; all other estimates are reported in grey. Figures shown in square brackets represent the 95 per cent confidence interval around the main estimates and the cost per pupil associated with these estimates. NA is used to signify a cost associated with a negative impact estimate.

Unfortunately, none of the point estimates for these pupils from low-income working families¹¹⁴ is significantly different from zero in area C, making it impossible to conclude from this analysis whether extending entitlement to some or to all pupils is a more cost-effective way of improving the outcomes of this group. On the basis that there is some evidence of a significant impact in areas A and B, but none in area C, one would be inclined to conclude that the universal entitlement pilot offers better value for money, both for this group of pupils and for the population as a whole. The next section goes on to consider whether the universal entitlement pilot also looks to offer reasonable value for money compared with other interventions that have targeted similar outcomes.

6.3 The costs and benefits of the universal entitlement pilot compared with those of other schemes

This section considers the cost-effectiveness of the universal entitlement pilot in relation to four other interventions: the Jamie Oliver 'Feed Me Better' campaign, the Literacy Hour, Every Child a Reader and Every Child Counts. These programmes have been chosen both because their impact has been estimated on outcomes very similar to those considered here (particularly educational attainment) and because they provide comparable information about the cost of the intervention per pupil in the school.¹¹⁵ This means that it is possible to calculate estimates of the cost per percentage point impact for each of these initiatives to compare with those for the universal entitlement pilot reported in Table 6.4. Other potentially relevant schemes, such as a breakfast club programme evaluated by the SFT,¹¹⁶ generally did not provide sufficiently detailed information about the costs of the intervention to provide a useful comparison.¹¹⁷

The Jamie Oliver 'Feed Me Better' campaign started in Greenwich in 2004/05. Oliver obtained permission from the local authority to change the menus offered in its schools, replacing meals containing mostly pre-prepared processed foods with freshly prepared meals with a higher nutritional content. He also launched a nationwide media campaign to highlight the generally poor quality of school meals in England. This initiative was evaluated by Belot and James (2011) using a difference-in-differences approach, by comparing the change in outcomes over time amongst pupils in the pilot area with the

¹¹⁴ That is, pupils whose families were on Working Tax Credit and whose annual income did not exceed £16,040 in 2009-10 or £16,190 in 2010-11.

¹¹⁵ The exception is the Every Child Counts programme, for which the impact and total cost per pupil are only available for pupils directly involved in the programme rather than for all pupils at the school.

¹¹⁶ See <http://www.schoolfoodtrust.org.uk/schools/reports/the-impact-of-primary-school-breakfast-clubs-in-deprived-areas-of-london>.

¹¹⁷ Rough calculations can be computed. For example, see <http://www.schoolfoodtrust.org.uk/schools/reports/estimating-the-economic-impact-of-healthy-eating>.

change in outcomes over time amongst a selected group of neighbouring authorities. It is worth noting that the initiative sought to improve the quality of school meals provided, rather than to increase the number of meals provided free of charge to pupils.

Belot and James (2011) found that pupils were 2.7 and 2.9 percentage points more likely to reach the expected level of attainment in English and maths respectively at Key Stage 2. They also found that authorised absences fell by 14 per cent. According to figures obtained from Greenwich council, around £1.2 million was invested in the initiative over two years, improving the quality of school meals for 28,000 children.¹¹⁸ These costs included extra staff hours that were needed for preparing the meals, equipment and promoting the scheme to parents. These costs largely reflect the running costs of the scheme and can therefore be reasonably compared to the costs presented for the FSM pilot. To the extent that some one-off costs, such as the retraining of staff and the refurbishment of kitchens, are included in the estimates from Greenwich, this will tend to overestimate the running costs of the campaign; on the other hand, if not all expenditure incurred by schools was reported to Greenwich council, then these costs may represent an underestimate of the total running costs of the initiative.

The Literacy Hour was first introduced as part of the National Literacy Programme in a small group of local authorities in September 1996, with the aim of raising literacy standards in schools by improving the quality of teaching. The programme was evaluated by Machin and McNally (2008), again using a difference-in-differences approach. They found that pupils in the pilot areas were 3.2 percentage points more likely to reach the expected level of attainment in English at Key Stage 2 than pupils in the comparison areas; they also found a significant improvement in reading scores. The main costs were for local literacy consultants, plus the cost of providing training and resource support for teachers. At a cost of just £25 per pupil, it was a relatively cheap intervention which was subsequently rolled out across the country.

Every Child a Reader (ECaR) was an intervention designed to improve the literacy attainment of pupils identified as struggling in this area during the early stages of primary school, with a view to preventing them from falling further behind their peers. The centrepiece of the programme was 'Reading Recovery', which provided pupils with one-to-one support for up to 20 weeks. This programme was evaluated by a consortium including researchers from NatCen and IFS¹¹⁹ (some of whom are also involved in this evaluation) using a difference-in-differences approach. On this occasion, the comparison group included schools that implemented the programme at some point after the evaluation period. The authors found that pupils in ECaR schools were 1.9 percentage points more likely to reach the expected level of attainment in reading at Key Stage 1 than pupils in comparison schools (focusing on all pupils in these schools rather than those

¹¹⁸ Belot and James, 2011.

¹¹⁹ See <https://www.education.gov.uk/publications/eOrderingDownload/DFE-RR114.pdf>.

receiving targeted support only). The programme cost around £2600 per participant and approximately 650 pupils took part, suggesting that the overall cost was just under £1.7 million; the cost per pupil at participating schools was £295. Central government funding for this initiative has recently been halted, but some authorities continue to offer it to their pupils.

Every Child Counts (ECC) was an intervention similar to ECaR which was designed to improve the maths attainment of pupils with very low attainment at Key Stage 1 and the teaching of maths in schools more generally. Like ECaR with its 'Reading Recovery' element, the centrepiece of ECC was 'Numbers Count', which provided intensive one-to-one support for struggling pupils for approximately 12 weeks (around one school term). ECC was evaluated at pupil level using randomised control trials and at school level (using a group of comparison schools) to capture the wider impacts of the programme. It was found to have a positive impact on attainment in maths for pupils receiving one-to-one tuition, equivalent to around seven weeks' expected progress, but there was no significant impact detected at the school level. The evaluation suggests that the programme's running cost was around £1200 per participant. Unfortunately, the total cost per pupil cannot be calculated, as the number of pupils in schools receiving ECC is not reported. Table 6.6 thus presents both the impact and costs of this programme amongst participants rather than amongst all pupils, which is different from the other programmes considered in this section but still permits an equivalent cost per percentage point impact to be calculated.

Table 6.6 translates the costs and impact estimates described above into the standard cost per 1ppt impact that has been used throughout this chapter. It compares the results across the five programmes of interest. The top panel concentrates on literacy, while the bottom panel focuses on numeracy. (As discussed above, while the universal entitlement pilot also positively affected a range of other outcomes, such as pupils' eating habits at lunchtime, it is much more difficult to find other studies with which to compare impacts on these outcomes; there is also relatively less evidence to support the idea that such impacts might have longer-term benefits.)

The top panel shows that the percentage point impacts obtained in both reading at Key Stage 1 and English at Key Stage 2 as a result of the universal entitlement pilot are similar to the impacts obtained from the other initiatives considered. The costs per pupil for the Literacy Hour and the 'Feed Me Better' campaign were both extremely low: these initiatives cost between a quarter and a half as much as offering all primary school pupils free school meals. These programmes can thus be regarded as the most cost-effective in terms of the impact on literacy alone. By contrast, Every Child a Reader was an extremely high-cost intervention for the relatively small number of pupils who received the most intense provision, which, when averaged across all pupils in the school, worked out nearly three times more expensive per percentage point impact than offering all primary school pupils free school meals.

Table 6.6 Value for money: universal entitlement pilot versus other programmes

	Universal entitlement to free school meals	Jamie Oliver 'Feed Me Better' Campaign	Literacy Hour	Every Child a Reader	Every Child Counts
Cost per pupil per year	£112	£43	£25	£295 ¹²⁰	£1201 ¹²¹ (per participant)
	Literacy				
	<i>Expected level in reading at Key Stage 1</i>				
Impact (ppt)	1.9	N/A	N/A	1.9	N/A
Cost per 1ppt impact	£59			£155	
	<i>Expected level in English at Key Stage 2</i>				
Impact (ppt)	4.0	2.7	3.2	N/A	N/A
Cost per 1ppt impact	£28	£16	£8		
	Numeracy				
	<i>Expected level in maths at Key Stage 1</i>				
Impact (ppt)	2.2	N/A	N/A	1.0	9.0 (per participant)
Cost per 1ppt impact	£51			£295	£133
	<i>Expected level in maths at Key Stage 2</i>				
Impact (ppt)	5.5	2.9	N/A	N/A	N/A
Cost per 1ppt impact	£20	£15			

Notes to Table 6.6: Impact estimates reported in grey are not significantly different from zero at the 5 per cent level. Figures for universal entitlement to FSM are for areas A and B combined.

¹²⁰ There were 5755 pupils in ECaR schools, of whom 11.4 per cent received the intervention. The long-run cost per treated pupil was estimated to be £2591. This means that the total long-run cost of the intervention was just under £1.7 million and the cost per pupil was approximately £295.

¹²¹ This figure is calculated from table 6-2 in the ECC evaluation report (<https://www.education.gov.uk/publications/eOrderingDownload/DFE-RR091A.pdf>), based on long-run costs of the pilot only. The annual cost of a specialised teacher (£13,589) is added to the annual cost to local authorities (£826) and divided by the number of pupils taught in a one-to-one setting per year (12). The number of pupils in ECC schools is not reported in the evaluation, so the total cost of this scheme cannot be calculated. The impact at the school level (rather than for treated pupils only) is also not reported in terms of reaching the expected level of attainment.

The bottom panel shows that, in terms of its effect on numeracy, the 'Feed Me Better' campaign seems to provide better value for money than the universal entitlement pilot. The difference is smaller than for literacy, however, because of the larger percentage point impact of the universal pilot on maths than on English at Key Stage 2. Although the cost and impact figures for Every Child Counts are not directly comparable, being reported per participant rather than per pupil, the cost per percentage point impact for ECC is substantially larger, as was the case for its sister programme ECaR in terms of literacy.

As discussed above, the comparisons presented in Table 6.6 consider the cost per percentage point impact of each scheme on a series of outcomes in isolation. The Literacy Hour, ECaR and ECC had clearly identified objectives of improving attainment in literacy or numeracy and are thus unlikely to have had wider impacts on pupils' health, for example. The universal entitlement pilot positively affected a range of other outcomes, including other measures of educational attainment and pupil eating habits, as well as these specific measures of literacy and numeracy achievement. To the extent that these other impacts are likely to confer long-term benefits that are additional to those captured through literacy and numeracy achievement, these simple comparisons may understate the value of the universal entitlement pilot relative to the Literacy Hour, ECaR and ECC.

This criticism is much less likely to apply to the Jamie Oliver 'Feed Me Better' campaign, which is probably most comparable to the universal entitlement pilot, in terms of both the scope of the intervention and the likely range of impacts. To the extent that that initiative cost less and produced a similar impact on educational attainment (and a significant reduction in absence rates from school, compared with no impact on this outcome for the universal entitlement pilot), one might be tempted to conclude that offering free school meals to all primary school pupils offers worse value for money in comparison. It must be remembered, however, that this campaign focused on the quality of school meals rather than on free provision and pre-dated the introduction of nutritional guidelines for schools, which would make it substantially more difficult to achieve similar impacts now. There is also the potentially unquantifiable benefit associated with Oliver's involvement in the campaign.

To the extent that the Department and/or local authorities are interested in reducing the gaps in educational attainment between children from different socio-economic backgrounds, it also seems important to bear in mind that the 'Feed Me Better' campaign predominantly increased attainment for pupils from more affluent families and with higher prior attainment. In contrast, this report has provided some evidence to suggest that the impact of the universal entitlement pilot was greater amongst children from less affluent backgrounds, including those from low-income working families,¹²² and amongst children with low prior attainment.

¹²² That is, pupils whose families were on Working Tax Credit and whose annual income did not exceed £16,040 in 2009-10 or £16,190 in 2010-11.

6.4 Discussion and conclusions

This section reflects on the cost-effectiveness of the FSM pilot.

Discussion of findings

- The total running cost of a programme is thought to provide a good indication of its likely cost in the long term. The total running cost of the FSM pilot was estimated to be £12.1 million in area A and £16.6 million in area B (the universal entitlement areas) and £2.0 million in area C (the extended entitlement area) over two years.
- These costs were compared with the immediate benefits of the pilot, primarily in terms of its impact on educational attainment, to provide a sense of whether or not it was cost-effective. The extended entitlement pilot yielded little in the way of positive benefits for any of the outcomes considered in this evaluation; thus it seems clear that it does not offer good value for money.
- The impacts of the universal entitlement pilot on literacy and numeracy attainment at Key Stages 1 and 2 were compared with those of a range of other initiatives targeting similar outcomes. These initiatives included the Jamie Oliver 'Feed Me Better' campaign and the Literacy Hour, as well as the more targeted Every Child a Reader and Every Child Counts programmes. The universal entitlement pilot seemed to provide better value for money than the high-cost, highly targeted interventions, but worse value for money than the Literacy Hour and the 'Feed Me Better' campaign, which both cost very little and achieved comparable impacts on attainment to the universal entitlement pilot.
- Of course, the universal entitlement pilot also positively affected a range of other outcomes, including pupils' eating habits. To the extent that these other impacts are likely to confer long-term benefits that are additional to those captured through literacy and numeracy achievement, these simple comparisons may understate the value of the universal entitlement pilot. This is likely to be particularly true relative to the Literacy Hour, ECaR and ECC, all of which focused on the relatively narrow set of outcomes compared.
- This criticism is much less likely to apply to the Jamie Oliver 'Feed Me Better' campaign. In terms of both the scope of the intervention and the likely range of impacts, this initiative is probably most comparable to the universal entitlement pilot. To the extent that the campaign cost less and produced a similar impact on educational attainment (as well as a significant reduction in absence rates from school, compared with no impact on this outcome for the universal entitlement pilot), one might be tempted to conclude that offering free school meals to all primary school pupils represents worse value for money in comparison. It must be remembered, however, that this campaign focused on the quality of school meals rather than on free provision and it pre-dated the introduction of nutritional guidelines for schools, which would make it substantially more difficult to achieve similar impacts now.

- It is also worth noting that the deadweight cost of the pilot, which is the cost associated with providing free school meals for pupils whose parents would have paid for them in the absence of the pilot, was substantial. It amounted to around £3.8 million in area A (around one-third of the total running costs), £7.6 million in area B (just under half of the total running costs) and £0.72 million in area C (just over one-third of the total running costs). While a high deadweight cost does not preclude an intervention from being cost-effective, it means resources are being transferred from the Department to parents of relatively better-off pupils, which must be weighed against the other benefits of the pilot.

Lessons for policymakers

- It is clear that the extended entitlement pilot does not offer good value for money.
- The cost-effectiveness of the universal entitlement pilot is somewhat less clear. It appears to offer better value for money than some very high-cost, highly targeted interventions (such as Every Child a Reader and Every Child Counts) but substantially worse value for money than some other initiatives (such as the Jamie Oliver 'Feed Me Better' campaign and the Literacy Hour), at least in terms of the immediate educational outcomes considered in this evaluation. These last two programmes both resulted in changes being made on a national scale, however, so do not provide policymakers with a credible alternative to the universal entitlement pilot in terms of improvements relative to the current policy environment.
- It should also be remembered that the long-term benefits of the pilot (and many of these other programmes) remain uncertain. Whether the immediate benefits in terms of higher attainment or healthier eating habits observed during primary school will translate into higher wages and better health during adulthood, or whether these benefits will quickly dissipate, remain open questions. It would seem prudent to revisit these issues in a few years' time, to see whether the improvements in attainment at Key Stage 2, for example, have been translated into higher GCSE attainment (which is known to have a return in the labour market).
- Finally, it is worth noting that the average running cost per pupil in universal pilot areas was equivalent to approximately half of the funding schools receive per pupil eligible for free school meals via the 'pupil premium' in 2011/12. Assuming that around 30 per cent of pupils in a local authority were entitled to the pupil premium, the total funding from this source would provide around 60 per cent of the cost of providing universal free school meals.

7 Conclusions

In this chapter, we summarise the findings of the evaluation and consider the conclusions that can be drawn from the findings.

7.1 Summary of findings

- Most pupils in the universal pilot areas took up the offer of free school meals. Around nine in ten primary school pupils were taking at least one school meal per week by the end of the pilot compared with around six in ten similar pupils in a set of similar comparison areas.
- Take-up of school meals increased for pupils who were not eligible (that is, entitled and registered) for free school meals before the pilot was introduced, but it also increased among pupils who were already eligible for free school meals.
- Take-up of school meals was lower for newly entitled pupils in the extended entitlement area than for pupils in the universal entitlement areas who would have been newly entitled to free school meals under the extended entitlement criteria.
- By contrast, the extended entitlement pilot did not significantly increase take-up among secondary school pupils, even for those who became newly entitled to free school meals as a result of the pilot.
- In the universal pilot areas, the increased take-up of school meals led to a shift in the types of food that pupils ate at lunchtime, away from foods typically associated with packed lunches towards those associated with hot meals.
- Despite the changes in lunchtime food consumption, the universal pilot had few significant impacts on the reported overall consumption of different types of food, although children in the universal pilot areas were less likely to report eating crisps at least once a day than children in the comparison areas. This suggests that the reduction in crisp consumption at lunchtime did not lead children to eat crisps in the afternoon and/or evening instead.
- The extended entitlement pilot had little impact on children's diet and eating habits.
- The universal pilot had a significant positive impact on attainment for primary school pupils at Key Stages 1 and 2, with pupils in the pilot areas making between four and eight weeks' more progress than similar pupils in comparison areas. These effects could have arisen either through the provision of free school meals directly or through the wider activities that accompanied the pilot (such as the promotion of school meals and healthy eating to pupils and parents) or both.

- The universal entitlement pilot appeared to improve attainment by more amongst pupils from less affluent families¹²³ than amongst pupils from more affluent families. It also appeared to improve attainment by more for pupils with lower prior attainment than for those with higher prior attainment. It should be noted that the effects for different types of pupils are not always significantly different from one another.
- By contrast, the extended entitlement pilot did not significantly affect attainment for either primary or secondary school pupils.
- The improvements in attainment found in the universal pilot areas do not appear to have been driven by an increase in the amount of time children spend in school, as neither pilot approach led to a significant reduction in absence rates from school. This suggests that the increases in attainment evident in the universal pilot areas must arise as a result of improvements in productivity whilst at school.
- The source of these improvements in productivity is not clear, however, as the evaluation did not provide any evidence that the universal or extended entitlement pilot positively affected parents' perceptions of children's behaviour.
- Nor was there any evidence that the FSM pilot led to significant health benefits during the two year pilot period. For example, there was no evidence of any change in children's Body Mass Index.

7.2 Conclusions

It is important to note at the outset that the Free School Meals pilot was accompanied by substantial investment in catering facilities and activities to encourage the take-up of school meals by schools and local authorities, supported by the School Food Trust such as promoting the pilot to parents, school food tasting sessions and the enforcement of strict packed lunch policies. This means that the impacts of the pilot cannot be attributed solely to making meals available to some or all pupils free of charge, but rather to the whole pilot approach. Any roll-out of the pilot would thus need to consider the supporting activities that might be necessary to achieve the same impacts.

The universal pilot approach was very successful at increasing the take-up of school meals among primary school pupils, with most pupils taking school meals. In contrast, the extended entitlement pilot did not succeed in significantly increasing take-up among entitled pupils. The evaluation findings also show that only the universal entitlement approach had positive impacts on children's diet and attainment. It therefore appears that it is only through the universal provision of free school meals, and the accompanying activities undertaken by schools and local authorities in the pilot areas, that outcomes have improved.

¹²³ 'Pupils from less affluent families' here refers to both those who are eligible for FSM under the old criteria and those who are newly entitled under the extended entitlement criteria.

Of particular note is the fact that the universal pilot approach improved outcomes among children from less affluent families: it increased the take-up of school meals among pupils who were already eligible for free school meals before the pilot was introduced and it had positive impacts on diet among these pupils. School staff in the qualitative case studies also noted that the pilot had a 'levelling effect' on the quality of lunches eaten by pupils from different backgrounds; the implication was that while the quality of packed lunches varied considerably by socio-economic background, all pupils taking school meals had access to a nutritious, balanced meal, thus reducing socio-economic differences in the quality of food eaten at lunchtime. The improvements in attainment in the universal pilot areas also appeared to be greater for children from less affluent backgrounds and those with lower prior attainment. The evaluation findings thus provide some suggestive (but not conclusive) evidence that rolling out the universal pilot might help to reduce educational inequalities; evidence from the evaluation shows that it would be a more effective way of trying to do so than extending entitlement to free school meals to a small group.

The shift in lunchtime eating habits in the universal pilot areas from packed lunches to school meals underlines the importance of balanced, healthy school menus. For example, the restrictions on starchy food cooked in oil and deep-fried foods help to ensure that these types of food are not consumed too frequently, while offering desserts with fruit content may help to counteract the decrease in children eating whole pieces of fruit as a result of the pilot. As new academies and free schools no longer have to comply with the nutritional standards, any roll-out of the universal pilot needs to consider how best to ensure that all school menus offer healthy, balanced meals.

It is also important to note that the mechanisms underlying the improvements in attainment observed in the universal pilot are not clear. Neither the universal nor extended entitlement pilot reduced the amount of time pupils were absent from school, suggesting that the increases in attainment must arise as a result of improvements in productivity whilst at school. This increased productivity does not appear to result from better pupil behaviour, however, as neither the universal nor the extended entitlement pilot affected parents' perceptions of children's behaviour.¹²⁴ Nor did the changes in lunchtime eating habits translate into any quantifiable health benefits (for example, in terms of Body Mass Index), at least not during the lifetime of the pilot. It is therefore difficult to identify the underlying causes of the improvements in attainment that have been found, and thus which elements of the universal entitlement pilot will be key to its success in any future roll-out.

The universal pilot approach cost £12.1 million in Newham and £16.6 million in Durham, equivalent to around £220 per primary school pupil, over two years. Of this, 32 per cent in Newham and 46 per cent in Durham was deadweight cost (that is, involved paying for meals that would otherwise have been paid for by parents). Other initiatives targeting

¹²⁴ Of course, it is possible that classroom behaviour might have improved in a way that was not picked up by changes in parental perceptions of behaviour.

similar outcomes, such as the Jamie Oliver 'Feed Me Better' campaign, appeared to be able to deliver significant impacts at substantially lower cost. It is worth bearing in mind, however, that this initiative was designed to improve the quality of school meals rather than to offer universal entitlement. Also, it was introduced before the recent changes to nutritional standards in schools, which would make it substantially more difficult to achieve similar impacts now. By contrast, the universal entitlement pilot appeared to deliver better value for money for pupils, on average, than highly targeted educational interventions such as Every Child a Reader and Every Child Counts, at least in terms of the educational outcomes that could be directly compared.

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