2016-17 Cambridgeshire County Council Policy Challenges

Investigating the educational achievement gap

Andrew Day

Victoria Plutshack

Mary Zhang

Final Report 23 November 2017

Acknowledgements

The team thanks Jasmit Kaur, Will Temple, Dan Thorp, Tom Barden, Geoffroy Dolphin, Helen Freeman, Martin Gray, Keith Grimwade, Ian Manning, Jo Sollars and Michael Soper for their insightful suggestions and great help in producing this report.

Andrew Day
Victoria Plutshack
Mary Zhang

November 2017

Contents

Executive Summary

In October 2016, Cambridgeshire County Council initiated a collaboration with the Cambridge University Science and Policy Exchange (CUSPE), which brought on teams of researchers to explore challenges faced by the County Council. This report outlines the research conducted by the team set to explore the **educational achievement gap** in Cambridgeshire.

Anecdotal evidence suggested that there was a specific educational gap involving students in receipt of Free School Meals (FSM students). This gap was that FSM students in schools in more affluent wards underperformed compared to their peers in less affluent wards. We confirmed that in 2016 in Key Stage 1, this was apparent, and we therefore focused on understanding why this gap existed. To do so, we looked into how two policy interventions were being implemented in schools in more affluent and less affluent wards. Those policy interventions were the **pupil premium** and **access to support services** for parents and students.

The **hypotheses** that we sought to test were:

Hypothesis 1: Differential spending of Pupil Premium funds between schools in more affluent and less affluent wards results in reduced achievement in schools in more affluent wards

Hypothesis 2: Schools in more affluent wards will be less familiar with, and therefore refer students and parents less often to, support services than schools in less affluent wards.

Hypothesis 1 was tested by using random stratified sampling to select schools, and then coding their pupil premium spending by categories in line with those set out by the Education Endowment Foundation. A survey was designed to test Hypothesis 2, and was sent to the Special Educational Needs Coordinator (SENCo) in all primary schools to test their familiarity with services and to which services they had recently referred parents or students.

Findings & Recommendations

Hypothesis 1: Pupil Premium spending on staff training, parental involvement and generalised teaching assistants is much more likely to occur in schools in which disadvantaged students achieve above the average at KS1, but is not significantly linked to affluence.

Hypothesis 1: Schools in more affluent wards are more likely to spend Pupil Premium spending on buying resources, behavioural and social interventions and arts participation, but these are not significantly linked to above average achievement for disadvantaged children.

The team believes that Hypothesis 1 has scope for further research. The team recommends that the Council encourage schools to give more **detailed breakdowns of pupil premium spending**, including details such as specific activity, cost and hours, and develop a more detailed template for schools to use.

The team also recommends that **further research** could be done on Hypothesis 1 by: (a) Expanding the sample size (from N = 32); (b) Attempting to classify use of Pupil Premium according to actual financial expenditure; and (c) Undertaking fieldwork and interviews to better understand how pupil premium spending is targeted on FSM students.

Hypothesis 2: Less affluent schools and those in which FSM students achieved below the average were more likely to refer students or parents to support services.

Hypothesis 2: The degree of awareness of support services did not vary significantly between schools regardless of affluence or achievement.

The team therefore rejects Hypothesis 2, although the data from Hypothesis 2 may still be of interest to members of the council who are interested in **awareness of support services** among SENCos.

I Introduction

1.1 The educational achievement gap in Cambridgeshire

Past Ofsted reports have found Cambridgeshire to have an "unacceptably wide" achievement gap between students that receive Free School Meals (FSM students) and their more affluent peers.[1] Whilst Cambridgeshire as a whole currently performs around average, children from less affluent families perform below the national average. In Cambridgeshire, only 30% of disadvantaged students met the expected standards in 2016, compared with 39% nationally.[2] The Cambridgeshire Country Council has outlined several approaches for addressing this achievement gap including the Narrowing the Gap Strategy (2012-2014), the Accelerating the Achievement of Vulnerable Groups of Children and Young People within Cambridgeshire (2014-16), and the Cambridgeshire's School Improvement Strategy 2016-18, which includes the Accelerating Achievement Action Plan. In 2016, Cambridgeshire County Council initiated a collaboration with the Cambridge University Science and Policy Exchange to allow PhD students to explore a number of issues, including the educational achievement gap.

1.2 Disadvantaged students and underachievement in affluent schools

Anecdotal evidence suggested that there was a specific gap for FSM students in that those in schools in more affluent wards underperformed their peers in less affluent wards. We investigated the validity of this claim by focusing on 2016 Key Stage 1 attainment in reading, writing and maths. We found that 28% of FSM students attending schools in affluent wards achieved expected standards, compared to 39% of their peers in less affluent wards.[3] This counter-intuitive finding acted as the basis for our research. Due to the sensitivity of accessing data linked to pupils, we used publically available or easily obtainable data to investigate the 2016 cohort. We questioned whether the gap is due to policy interventions already in place, namely the pupil premium and support services, being applied/accessed differently between

[1] Policy Challenges Briefing, 19 Oct 2016.
[2] https://www.compare-school-performance.service.gov.uk/
[3] Using the affluence of the ward as a proxy for the school's affluence, the team found that 28% of FSM students in more affluent schools met expected standards, compared to 39% in less affluent schools.

schools. The subsequent report outlines the research questions, methodology, results and analysis that we undertook, as well as our recommendations for further action and research.

II Research Questions

2.1 Policy interventions

We set out to investigate why FSM students performed worse in more affluent schools than their peers in less affluent schools did. While scholars have found a correlation between educational achievement and a number of relevant factors, such as family socioeconomic status, parental involvement, and self-efficacy, there is little research on why students perform worse in more affluent schools.

One possible explanation is that schools in more affluent wards have less experience with FSM students, and therefore have less experience with addressing the needs of disadvantaged pupils. Using this logic, we sought to test the implementation of current policy interventions aimed at improving the outcomes for FSM students. The logic was that interventions would be implemented differently if schools had less experience with disadvantaged pupils and that this would correlate with achievement of FSM students.

2.2 Pupil premium spending

Hypothesis 1: Differential spending of Pupil Premium funds between schools in more affluent and less affluent wards results in reduced achievement in schools in more affluent wards

The Pupil Premium (PP) was introduced in 2011 to support disadvantaged students with funds provided to schools for each eligible student. Eligibility criteria has changed since its introduction, but the general principle has remained the same. Notably, the PP has increased from £430 per pupil in 2011–12, to £1,320 per primary pupil in 2016-17. [4]

Although the Department for Education has guidelines on best practice for spending the Pupil Premium funds, spending is at the discretion of the school. Each school must also provide a publically available account of how the pupil premium is spent on an annual basis. In 2015, a

[4] Jarret, et al. School Funding: Pupil Premium. House of Commons Briefing Paper No. 6700. 21 Nov 2016. http://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN06700#fullreport

National Audit Office Report found that there was a risk that funds were not targeted on activities that support the intended demographic. The report found that 77% of schools use Pupil Premium on activities supporting all children, rather than just those disadvantaged students. While the report recognized possibly positive impacts for this use of funding, it cautioned that FSM students might not be receiving the benefits of the Pupil Premium.[5]

Lastly, it is possible that schools in more affluent wards have fewer pupils who receive the Pupil Premium, and therefore have a smaller budget with which to organize beneficial activities. This may influence the scale, type and targeting of the activities that the school can afford to provide via the Pupil Premium. For these reasons, we decided to investigate the manner in which schools were spending the Pupil Premium.

2.3 Awareness of support services

Hypothesis 2: Schools in more affluent wards will be less familiar with, and therefore refer students and parents less often to support services than schools in less affluent wards.

In addition to the work undertaken at school to support disadvantaged students, many have access to support services also intended to support students and their parents including mentoring schemes, extracurricular educational opportunities and free school transport support. Special Educational Needs Coordinators (SENCos) in each school focus on addressing the needs of SEN students, but also provide a key role as liaison between students, parents, teachers and the governing body of the school. While referral to support services can come from a number of different people, SENCos are well placed to make parents and students aware of those support services that might be relevant for them, to improve their lives.

Assuming that schools in more affluent wards have fewer FSM students, it is possible that SENCos in more affluent schools would have less reason to be familiar with important and valuable support services, and may therefore refer fewer students and parents to relevant services. In order to determine whether this is the case, we aimed to survey all Cambridgeshire primary school SENCos about which services they were aware of and to which they had recently referred students or parents.

[5] https://www.nao.org.uk/wp-content/uploads/2015/06/Funding-for-disadvantaged-pupils.pdf

III Hypothesis 1

Hypothesis 1: Differential spending of Pupil Premium funds between schools in more affluent and less affluent wards results in reduced achievement in schools in more affluent wards

3.1 Process of data collection and sampling

In order to test the hypothesis that schools are spending their PP funding differentially, a random sample of the reported spending of PP funding in 2015-2016 across Cambridgeshire was taken. All primary schools in Cambridgeshire that reported the achievement of FSM students in 2015-2016 were ranked on the Index of Multiple Deprivation (2010) of their ward. The median rank was used to separate the schools into two groups: schools in more affluent wards and schools in less affluent wards. The average percentage of FSM students in KS1 that achieved expected standards in 2016 was 32.6%. The two groups of schools were therefore split again into those in which FSM students achieved above this average and those that achieved below. This resulted in four groups of schools. The groups were of unequal size however, and therefore the sample sizes from each group were weighted to take into account this difference. This process is summarised in the flowchart in ***Fig.1***.

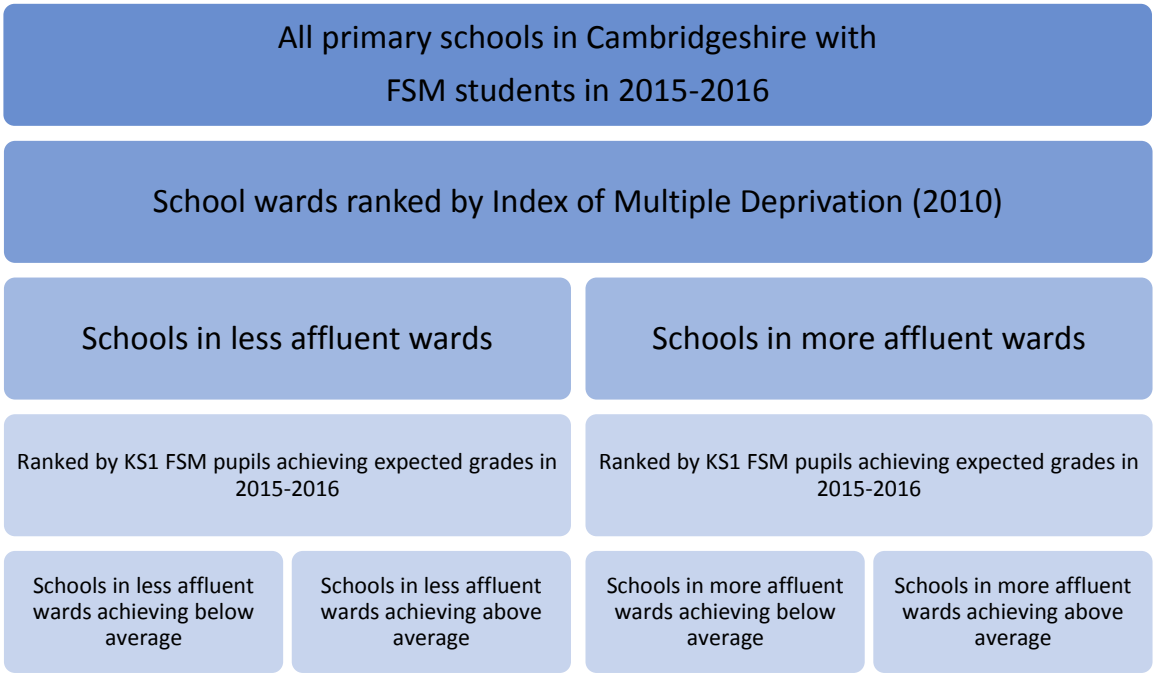

Fig.1. Flowchart summarising the grouping of primary schools by affluence and educational achievement

The PP data from the forty schools selected was searched for on the websites of the schools. Eight of the schools did not have the PP spending data for 2015-2016 available on their website and so they were discounted from the analysis. We classified the PP spending of each school into multiple categories using the classifications suggested by Education Endowment Foundation Teaching and Learning Toolkit, which are rated according to impact, as a base[6]. There is no standardised way of reporting the PP spending other than a template document that some, but not all, of the schools used. This meant that, whilst some schools gave an exact breakdown of the spending on each activity across the year including the year group(s) or number of pupils it was focussed on, others reported generalised programmes without any further detail. Due to the lack of financial reporting, we assigned values to categories using the number of times mentioned only.

3.2 Results

The average number of times each category of PP spending was mentioned is plotted in ***Fig.2***. The chart plots schools in less affluent wards and more affluent wards, as well as schools in which students achieve above the average and below the average. If our hypothesis were true, we would expect the blue and green bars (representing schools in less affluent wards and schools in which FSM students achieve above the average) to correlate separately from the red and purple bars. This is not the case for any of the categories in ***Fig.2***. The most obvious difference between the bars is that schools in more affluent wards are seemingly three times as likely on average to spend PP funding on arts participation when compared to schools in less affluent wards. This category of spending does not seem to differ between schools in which FSM students achieve above and below the average however, and this could suggest that it does not affect the achievement of FSM students.

There are many such inferences that could be made from the data in ***Fig.2***; however, it is a flawed dataset, as it was not possible to assign values to the amount of money spent on each category. The lack of a standardised system of reporting between schools also means that counting the number of occurrences of each category in the reports is also of limited use. For example, some schools may have reported each individual teaching assistant (TA) separately, as opposed to others which may report all the TAs as one. This limitation means that the data

[6] https://educationendowmentfoundation.org.uk/resources/teaching-learning-toolkit

are likely skewed. To try to control for this, we reduced the scoring system for each category to a simple yes or no system: whether the school reported PP spending in this category or not.

The dataset that shows the percentage of schools reporting each category of spending at least once is plotted in ***Fig.3***, and the full dataset can be found in Appendix 2. In many cases a similar pattern is seen to ***Fig.2***, for example the association of PP spending on arts participation and schools in more affluent wards is maintained, with over 80% of these schools reporting spending in this area, compared to less than 40% of schools in less affluent wards. As already stated, if our hypothesis were true, we would expect the blue and green bars to correlate separately from the red and purple bars. Looking across the data, in no category does the spending differ by more than 20% for both affluence and achievement. When looking at schools split by affluence, spending differs by more than 20% for arts participation, behavioural and social intervention and buying resources, with schools in more affluent wards more likely to spend on these categories. When split by the achievement of FSM students, schools in which they achieve above the average are more likely to spend on parental involvement, generalised teaching assistants and staff training, whereas schools in which FSM students achieved below the average are more likely to spend on small group tuition.

3.3 Analysis

Our hypothesis is that schools in wards spent their PP allocation differentially to schools in less affluent wards, potentially due to a lack of experience or lower levels of funding, and that this is the reason that FSM students in schools in more affluent wards underperform compared to those in schools in less affluent wards. Our analysis of the data from a stratified sample of primary schools in Cambridgeshire shows that, whilst in some categories there is a difference of over 20% in reported spending by schools, this correlates with either affluence or achievement, not both. The main conclusion from our analysis therefore is that, whilst there is differential spending between schools, there is no clear area of spending that is correlated with both affluence and achievement. We would therefore reject our hypothesis that this is a cause of the achievement gap at this stage.

3.4 Discussion

We have concluded that, based on our analysis, our hypothesis should be rejected at this stage. There appears to be no specific area of PP spending associated with over-achieving schools in less affluent wards or under-achieving schools in more affluent wards. The only differences in spending correlated with affluence or achievement independently. Schools in which FSM students achieve above the average reported investment in parental involvement, generalised teaching assistants and staff training more often than those in which FSM students performed below average. These may be areas of PP funding that could be investigated and promoted if it is found that they are consistently correlated with achievement. In terms of affluence, our data shows that schools in more affluent wards are more likely to spend on arts participation, behavioural and social interventions, and buying resources, but that these do not appear to be significantly associated with raised achievement in this study. This is backed up by Education Endowment Foundation research, which suggests that spending PP on areas such as arts participation is less effective than other strategies.

The data displayed here represent the imperfect categorisation of one year of publicly available PP spending data from thirty-two primary schools (15% of the total), and therefore we would strongly advise against drawing any definitive conclusions from our analysis. A more robust investigation of PP spending data is needed, taking into account spending across the county and including multiple years of spending as well as the amount spent in each category. A standardised way of reporting PP spending would also be of great use, requiring each school to list each category of spending and the amount spent. This would allow for a much better interrogation of the efficacy of PP spending.

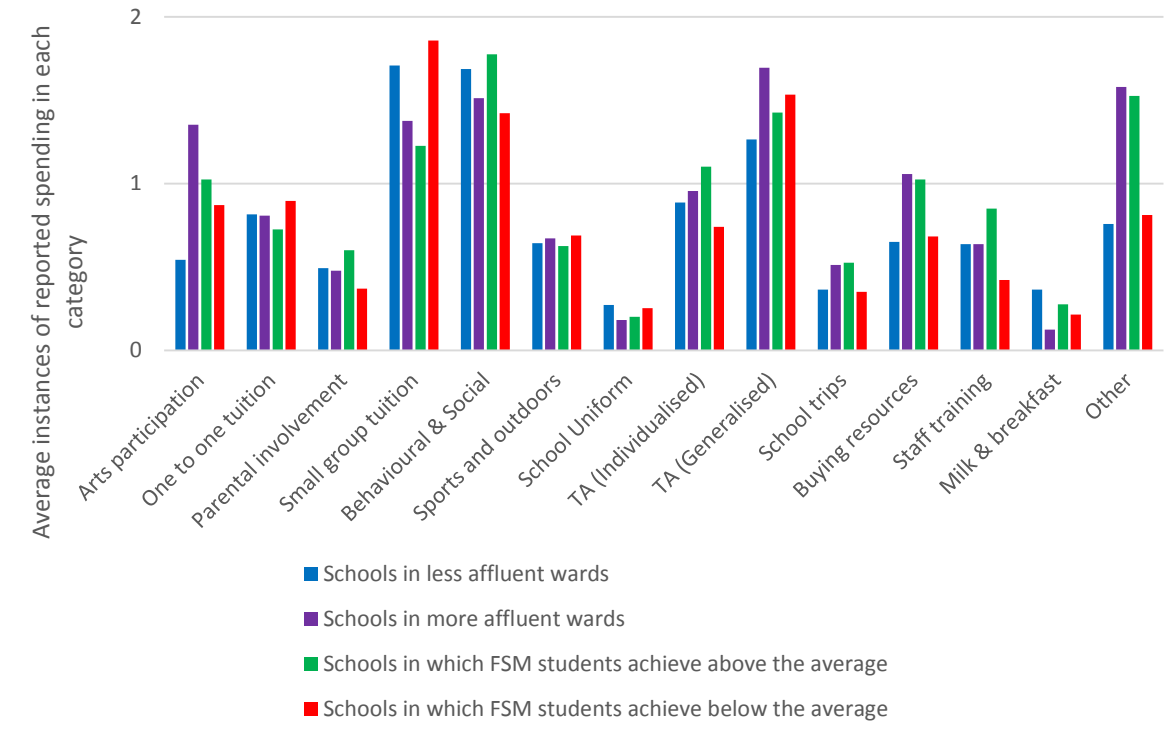

Figure 3 Plot of the average instances of reported spending in each category of PP spending. Values are calculated from the number of times each category of spending was mentioned in the report from each school

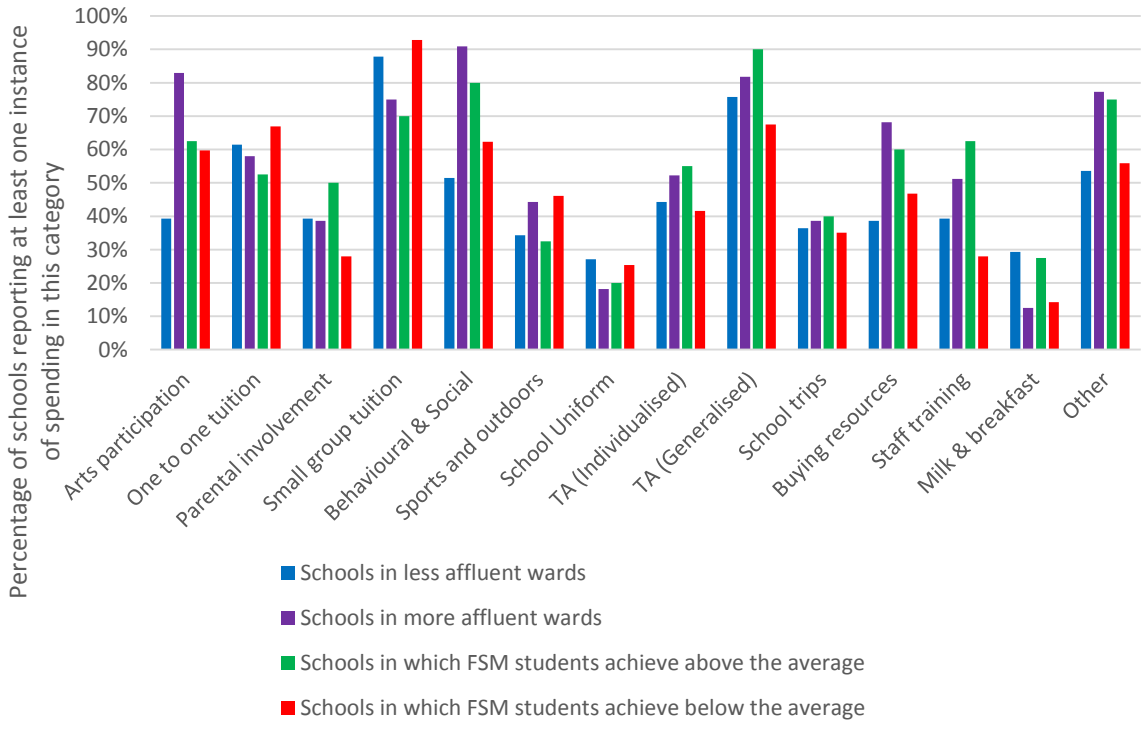

Figure 2 Plot of the percentage of schools spending in each category of PP spending. Values were calculated in a binary fashion based on mentions of each category in each school's report (either at least once or not at all).

IV Hypothesis 2

Hypothesis 2: Schools in more affluent wards will be less familiar with, and therefore refer students and parents less often to support services than schools in less affluent wards.

4.1 Process of data collection and sampling

The second hypothesis proposes that schools in more affluent wards will be less familiar with, and therefore refer students and parents less often to support services informed by Cambridgeshire County Council (see https://www.cambridgeshire.gov.uk/council/). To test this hypothesis, all primary school Special Educational Needs Coordinators (SENCos) in Cambridgeshire were sent a survey as shown in **Table 1**. To ensure that the SENCos could freely discuss their familiarity with and referrals to the support services, the survey started with a Participant Information Sheet, stating that the data collected from the SENCos would remain anonymous. In addition, the services "16-19 Bursary Fund" as well as "Free school meals" were included in the survey. These options serve the function of examining the reliability of the responses; identifying if a respondent answered all of the questions with care and consideration.

Table 1 Survey sent to SENCos in Cambridgeshire primary schools

Here is a list of support services helpful to students and their parents. Please indicate (a) which services you are aware of, and (b) which services you have referred a parent or student to. You can choose more than one service from the list.		
	Awareness*	**Referral***
Family learning activities - Family Learning	☐	☐
Family learning activities - Campaign for Learning	☐	☐
Family learning activities - Cambridgeshire.net	☐	☐
Family learning activities - National Family Week	☐	☐
Government-funded programmes leading to university and industry careers (e.g. Cambridge University Technical College)	☐	☐
Anti-bullying support - Mentoring and student buddy schemes	☐	☐
Anti-bullying support - Student councils on bullying	☐	☐
Education opportunities other than at school (e.g. Cambridgeshire Alternative Education Service)	☐	☐
Funding for special educational needs (e.g. Education Funding Agency)	☐	☐
Help with school & learning costs - Free school meals	☐	☐
Help with school & learning costs - 16-19 Bursary Fund	☐	☐
Free school transport support	☐	☐
Free childcare - Early Years Pupil Premium	☐	☐
Free childcare - Early Years Funding	☐	☐
Other	☐	☐
None of the above	☐	☐
If you selected "Other", please specify by typing the service name(s) below.		
Which school do you represent?		

Note: Awareness = Services you are aware of; Referral = Services that you have referred a parent or student to.

Among 208 primary schools in Cambridgeshire, 45 provided valid responses to the survey, a response rate of 22%. According to the categorisation method illustrated in the previous section, these schools with valid responses were further divided into 4 groups: schools in less affluent wards achieving below average (N = 14), schools in less affluent wards achieving above average (N = 9), schools in more affluent wards achieving below average (N = 9), and schools in more affluent wards achieving above average (N = 13).

4.2 Results

As shown by ***Fig.4***, when dividing the schools according to attainment, there was no real difference in awareness of support services, although an increased number of referrals to support services by schools in which FSM students achieved below the average at KS1.

When the schools are instead split according to affluence, as shown in ***Fig.5***, the same pattern emerges, with no real difference in awareness, but a higher incidence of referrals from schools in less affluent wards.

4.3 Discussion

Based on our analysis, we would reject our hypothesis. There is no obvious difference in the awareness of support services between schools when split by affluence or achievement. We have found that schools in less affluent areas are more likely to have referred students or parents to support services, and the same in schools achieving below the average. There are many possible reasons for this increased referral rate; potentially these schools have more students with greater needs and therefore require more outside services.

Some of the services, including free school meals, Early Year Funding and free school transport support, seem to have received most awareness and recommendation from the SENCos. The

actual percentages for each service can be found in Appendix C. This might provide useful information for members of the council who are interested in the range of support services the council recommends and how effective their promotion has been among SENCos. It should be noted that the sample size might limit the conclusions drawn here, as this only represents 22% of the primary schools in Cambridgeshire. In the future, if the survey were promoted more

aggressively, the response rate may increase and would give a better picture of the awareness of support services in the county.

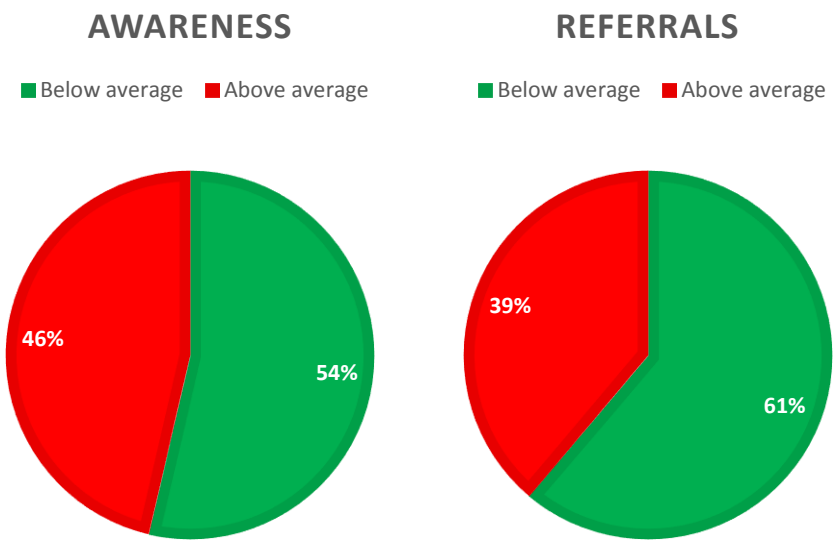

Fig. 4 *Awareness and referral of the council services (schools were categorised according to attainment).*

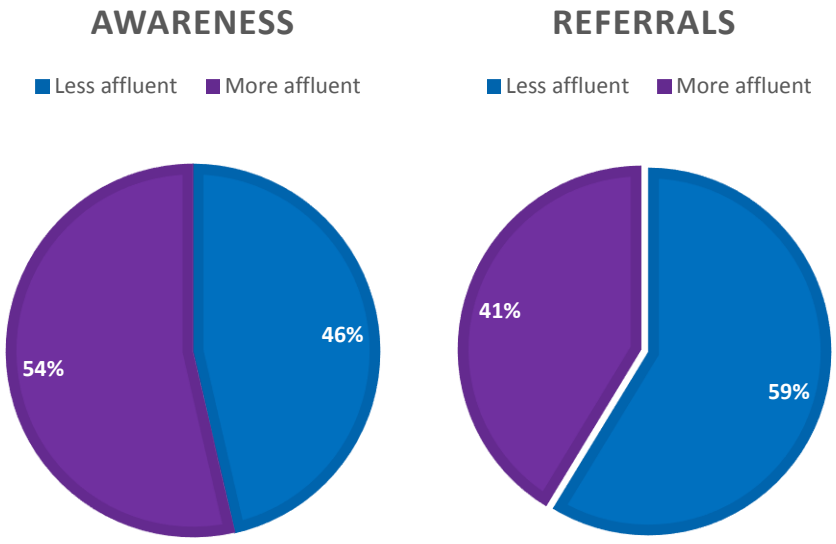

Fig. 5 *Awareness and referral of the council services (schools were categorised according to affluence).*

V Further Research & Recommendations

In this section: our suggestions for how this data may be of use to the council, options for further research into Pupil Premium spending, and our recommendations for the council.

5.1 Data collected

Whilst we have rejected both of our hypotheses at this stage, the data that were collected for this study may still be of further use to the Council. For example, the data collected through our survey may be of further use to parties interested in advertising and improving outreach of services.

5.2 Scope for further research

Our research into Pupil Premium spending showed some differences between schools in more and less affluent wards. However, our sample size was limited to one year and 15% of primary schools, therefore the Council may wish to commission further research.

If further work were to be done, we would suggest:

1) Expanding the sample size and including multiple years of spending and attainment data to see whether changes in spending emerge over time and whether there is any correlation between spending changes and educational outcomes for FSM students.
2) Comparing the Education Endowment Foundation to other publicly available guidelines.
3) Improving the proxies that were used for deprivation and wealth. Given the limited data and time available for the team, we used a few simple proxies for the wealth of the school (i.e. level of deprivation of the ward in which the school sits). Given the limitations above, we also grouped schools into two groups – above and below average affluence of the ward. This proxy could be improved moving forward, allowing later teams to do analysis that is more detailed.
4) Use small focus groups and case studies to explore pupil premium spending further.

It is noted that this the last recommendation would be a very time intensive research project, and the option to have schools review their pupil premium is already available, although

commissioning such a review would cost £600-2000 per school.[7] It may be worth exploring the option to have several schools undergo such a review at once to maximize the comparative aspects and see if costs can be shared or reduced.

5.3 Recommendations

Pupil Premium Data Collection. Whilst all schools are required to provide a report outlining the annual spending of the Pupil Premium funds, the quality of this report differs significantly between schools with seemingly no standardisation, making comparison difficult. Although this report has tried to be as thorough as possible by following Educational Endowment Foundation's guidelines for coding types of spending,[8] and categorizing the spending in both a binary and cumulative fashion, having a more accurate accounting for the type of spending and the amount spent on each programme would have allowed for more robust findings. A 'best practice' template produced and distributed by the council should include a breakdown of spending by programme as well as an explanation of the beneficiaries of the programme and the EEF's categorization of the programme (or a similar set of guidelines). This would have the added benefit of encouraging schools to consider the efficacy of their programmes, according to the EEF's guidelines.

Best Practice from Lower Performing Schools. One of the key outcomes of this research is further confirmation that schools that perform well overall may not necessarily be the most successful schools for students from deprived backgrounds. Given this, the emphasis that is generally placed on high achieving schools in providing best practice and leadership may sideline the institutional knowledge that lower achieving schools have in supporting students from a deprived background.

This study supports the view that best practice may exist in all schools, not just those judged outstanding, when considering groups of the pupil population such as FSM students. Identifying and disseminating best practice from all schools is an important role for the local authority.

[7] https://www.gov.uk/guidance/pupil-premium-reviews
[8] https://educationendowmentfoundation.org.uk/resources/teaching-learning-toolkit

Appendix A

Schools included in the random stratified sample (alphabetical order):

Bassingbourn Primary
Benwick Primary
Bewick Bridge Community Primary
Brampton Village Primary
Burrowmoor Primary
Clarkson Infants
Colville Primary
Cottenham Primary
Duxford CoE Community Primary
Elm Road Primary
Farcet CoE Controlled Primary
Fen Ditton Primary
Great Abington Primary
Great Paxton CoE Primary
Guilden Morden CoE Primary
Harston and Newton Community Primary
Holywell CoE Primary
Icknield Primary
Kennett Community Primary
Kings Hedges Primary
Linton CofE Infant
Lionel Walden Primary
Manea Community Primary
Mayfield Primary
Milton CoE VC Primary
Monkfield Park Primary
Orchard Park Community Primary
Park Lane Primary and Nursery
Peckover Primary
Petersfield CoE Aided Primary
Queen Edith Community Primary
Sawtry Infants'
Spring Meadow Infant
St Andrew's CoE Primary
St Anne's CoE Primary
St Mary's CofE Primary St Neots
The Lantern Community Primary
Thorndown Primary
Waterbeach Community Primary
Wisbech St Mary CoE VA Primary

Appendix B

Table showing the percentages of schools reporting Pupil Premium spending at least once in each of the defined categories.

	Affluence		Attainment		All schools
	Schools in less affluent wards	Schools in more affluent wards	Above average	Below average	
Arts participation	39%	83%	63%	60%	61%
One to one tuition	61%	58%	53%	67%	60%
Parental involvement	39%	39%	50%	28%	39%
Small group tuition	88%	75%	70%	93%	81%
Behavioural & Social	51%	91%	80%	62%	71%
Sports and outdoors	34%	44%	33%	46%	39%
School Uniform	27%	18%	20%	25%	23%
TA (Individualised)	44%	52%	55%	42%	48%
TA (Generalised)	76%	82%	90%	68%	79%
School trips	36%	39%	40%	35%	38%
Buying resources	39%	68%	60%	47%	53%
Staff training	39%	51%	63%	28%	45%
Milk & breakfast	29%	13%	28%	14%	21%
Other	54%	77%	75%	56%	65%

Appendix C

Awareness of and referrals to council recommended services - individual service breakdown

Service	% respondents aware	% respondents have referred
Mentoring and student buddy schemes	27%	8%
Student councils on bullying	16%	8%
Education opportunities other than at school (e.g. Cambridgeshire Alternative Education Service)	24%	3%
Cambridgeshire.net	19%	3%
Campaign for Learning	14%	5%
Family Learning	30%	16%
National Family Week	5%	3%
Early Years Funding	46%	22%
Early Years Pupil Premium	41%	19%
Free school transport support	57%	27%
Funding for special educational needs (e.g. Education Funding Agency)	54%	41%
Government-funded programmes leading to university and industry careers (e.g. Cambridge University Technical College)	11%	0%
16-19 Bursary Fund	5%	0%
Free school meals	86%	54%
None	3%	5%
Other	14%	8%