Cambridgeshire County Council

Joint Strategic Needs Assessment (JSNA) Vulnerable Children and Families

2015

FINAL REPORT

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1 Executive Summary and Key Findings

1.1 Background

A number of stakeholders requested a JSNA focusing on vulnerable children and families in Cambridgeshire. Children can experience many adverse 'risk factors' relating to a health, family or environment. These risk factors rarely occur in isolation and can combine to lead to relatively poor outcomes later in life.

Establishing which children face different combinations of these risk factors would allow for a whole range of services to be better targeted and coordinated to improve positive outcomes later in life.

This is a particular issue in Cambridgeshire as we know that children growing up in poverty achieve less well than almost anywhere else in the country[1]. There is much work underway to address this and it is described in 'Accelerating the achievement of vulnerable groups of children and young people within Cambridgeshire 2014-16'. This analysis supports the continued implementation of that strategy.

1.2 Methodology

This study is different in style from previous JSNAs and focuses on answering the following questions:

a) *Using the data we have access to, can we identify children and young people in Cambridgeshire who have risk factors which make them potentially vulnerable to poor educational outcomes and understand what services they are in contact with?*

b) *How are vulnerability factors spread across Cambridgeshire geographically and what do the key findings from this work mean for commissioners?*

In attempting to answer question a) the study sought to bring together data **about individuals** to understand better how risk factors combine. Access to data that enabled the identification and combining of risk factors at an individual level proved to be a limiting factor however, leading to the JSNA being narrower in focus than originally envisaged. It does however make recommendations to enable a more complete analysis to be undertaken in the future. The study does combine data on attainment, County Council service use, free school meals and deprivation to build a partial picture of factors associated with poor educational attainment. We also combine this with information about other factors which influence outcomes for children and young people and draw conclusions and recommendations for commissioners.

Poor levels of attainment are nationally agreed levels of attainment, and at KS2 and KS3/4 this is in both English and Maths. The assessments at KS2 are externally marked assessments, which are used for national reporting purposes. The other stage assessments are based on un-moderated teacher assessments. Good levels of attainment are those children who achieve these levels of attainment. Annex A of this document provides full details of the definitions used in this analysis.

[1] Accelerating the achievement of vulnerable groups of children and young people within Cambridgeshire 2014-16.

Key Findings

1.2.1 School Attainment, free school meals and deprivation 2012/13

- At January 2014, 14% of children aged 5-15 years (excluding those aged 6) in Cambridgeshire had **poor** attainment levels from their latest assessment results up to 2012/13. Assessments of attainment include the Early Years Foundation Stage (end of reception year, age 4-5), Key Stage 2 (age 7-10 years) and Key Stage 3/4 (age 11-15 years). Conversely, 86% of children in Cambridgeshire had **good** attainment levels at these stages. *(Note: The proportions with poor attainment vary at each stage[2]).*
- Approximately one in three (29%) children with poor attainment levels live in the 20% most deprived parts of the county (and approximately two in three (71%) outside these areas).
- The rate of children not reaching attainment levels increases as deprivation increases.
- 20% of children with poor levels of attainment are claiming free school meals, compared to approximately 11% of children overall with an attainment record.
- 9% of those children with poor levels of attainment live in the most deprived areas **and** access free school meals.
- Of all children accessing FSMs 26% have poor levels of attainment, and 56% of those live outside the most deprived parts of the county.

Findings:

Poor attainment is more concentrated is the most deprived parts of the county. However, focusing efforts on those with poor attainment at EYFS, KS2 and KS3/4, living in the most deprived parts of the county will only address 29% of poor attainment.

1.2.2 Use of County Council Services

- Overall, 69% of children with poor attainment and accessing free school meals are in touch with County council services. The highest concentration of these children is in Fenland but the numbers are small and may fluctuate over time. *(Note: It shouldn't be assumed that all children with low attainment / living in deprivation need to be in direct touch with services; this analysis may also underestimate the number of EYFS children in touch with services).*
- The highest proportion of children with poor attainment and accessing free school meals in touch with Council services is at KS2 with 83% of this group in touch with services. This reflects current service provision at primary school age.

1.2.3 Key Stage specific findings

- Children with SEN and poor levels of attainment account for 55% of all children with poor levels of attainment at KS2. Compared to all children with poor levels of attainment those with SEN are more likely to live in the most deprived areas of the county or be accessing free school meals.

[2] The numbers used for EYFS are smaller than other Key Stages as there was only one year of data available. This was due to the fact that the assessment at EYFS changed and therefore data for children age six is not comparable.

- The vast majority of pupils with poor attainment levels are white British in line with the ethnic profile of the population..
- Those of other backgrounds, 'Any other white', 'mixed white Caribbean' and 'gypsy Roma' groups are over represented within those with poor attainment levels at EYFS and KS2 but the numbers are small. At KS3/4 White British children account for 85% of all pupils and 89% of those pupils with poor attainment.
- The rate of children not achieving expected levels increases as deprivation increases. However, the pattern at KS2 is slightly different as the rate of poor attainment is statistically significantly higher in the top two quintiles for deprivation. Therefore, those who do not meet expected levels are more likely to live in the **top 40%** most deprived areas of the county.
- The proportion of pupils on free school meals and achieving **good levels** of attainment at all three stages combined is fairly similar in the top three quintiles for deprivation and increase slightly in the 4th and 5th quintiles (least deprived).
- The proportion of pupils on free school meals and achieving **good levels of attainment** at all three stages combined is spread fairly evenly across the county, with a concentration of lower levels of attainment to the north of Fenland and South Cambridgeshire and to the west of Huntingdonshire.

Findings:

A large proportion of children with poor levels of attainment accessing free school meals are in touch with council services, particularly at KS2.

Children with special educational needs account for a large proportion of children with poor attainment who access free school meals. This is particularly the case at KS2 when the Council is also in contact with a high percentage of these children.

The ethnic profile of children with poor attainment and accessing FSM in 2012/13 was different at KS3/4 compared to the other stages.

There are parts of the county where there are lower levels of good attainment, and these are not necessarily in the most deprived parts of the county.

1.2.4 Other vulnerability factors

- It is estimated that 5,400 children and young people are living with a problem drinker with concurrent mental health problems, and 3,300 living with a drug user with concurrent mental health problems. A further 1,300 live with a parent with all three conditions.
- The Cambridgeshire Domestic Violence/Abuse Needs Assessment[3] (May 2014) outlines the increased vulnerability that children face in households where domestic violence occurs, including pre-birth. During 2012/13, the Cambridgeshire Police received 11,286 reports of domestic violence across their area, which includes Peterborough. *(Note: Not all of these will relate to households with children).*
- Smoking in pregnancy has been shown to be linked to poorer developmental outcomes for children at the age of five years. The percentage of women who smoke at the time of delivery is 10.6% in Cambridgeshire which compares to 10.8% in East Anglia and 12% in England. The percentages are likely to be much higher in the more deprived parts of the county.

[3] www.cambridgeshire.gov.uk/download/downloads/id/2881/domestic_abuse_needs_assessment_2013

- Longitudinal studies have found maternal qualifications, language spoken at home, mother's self-rated health, depression and socio-economic situation to be common factors across educational, behavioural and health outcomes for children. The home learning environment, where mothers provide more stimulation and teaching was found to be a protective factor. Proxy data, such as the female population aged over sixteen with no qualifications or level 1 qualifications along with information about mothers under the age of 22, provided here shows again some geographical areas outside of those most deprived for additional prevention work. Information about the home learning environment is likely to be to being gathered informally by health visitors who see the vast majority of mothers during pregnancy and first few years of a child's life.

The table below presents a summary of the key indicators available at district level and shows the areas that were statistically significantly high or low compared to Cambridgeshire. As can be seen Fenland appears to be high (relatively worse) for all of the indicators reported.

Table 1: Summary of indicators by district

Indicator		Cambridge City	East Cambridgeshire	Fenland	Huntingdonshire	South Cambridgeshire
Poor attainment (all pupils)	EYFS	High	Low	High	Low	Low
	KS2	High		High	Low	Low
	KS3/4	High		High		Low
Breastfeeding 6-8 weeks		High	Unknown	Low	Low	Unknown
Teenage conceptions			Low	High		
Mothers aged under 22 years		Low		High		
Hospital admissions due to unintentional and deliberate injuries	0-4 years			High		Low
	0-14 years					Low
A&E attendances (0-14 years)		High (under 5's only)	High	High	Low	Low
Female population with low qualifications		Low	High	High	High	Low
Household overcrowding		High	Low	High	Low	Low

Statistically significantly higher/worse than Cambridgeshire

Statistically significantly lower/better than Cambridgeshire

Findings:

It is difficult, to draw conclusions about detailed local geographical patterns from the data available on domestic violence, drug and alcohol treatment, smoking at time of delivery and parental mental health.

Geographical patterns, which reflect research findings on family vulnerability factors, identified in data on female qualifications and births under the age of 22 should be considered for focusing prevention work, particularly as this data is available from the census by small geographical areas (Lower super output area).

Fenland remains the district area with the highest concentration of risk factors.

1.2.5 Data sharing and consent

This type of analysis is limited by the availability of individual level data. For much of the sensitive data needed for this kind of work individual consent needs to be sought for its use. However, we do not routinely seek consent to use data such as this for strategic planning purposes where the output of work is anonymised. National guidance on this issue would be helpful, and this currently severely limits the amount of cross-agency analysis that is possible.

Findings:

Consideration should be given to seeking consent to share information for strategic planning purposes where the output is anonymised, when an individual accesses services.

Recording of the characteristics of those children and families which the County council and other services are working with should be reviewed to so that key vulnerability factors the research suggests influence childhood development are recorded, such as the learning environment at home and mothers qualifications.

2. Introduction

This JSNA is different in style to previous JSNAs as it tries to answer a very specific question using a defined methodology. As the data involved was sensitive it has been an internal process, unlike other JSNAs. This was to ensure we complied with information governance requirements and protected sensitive and confidential data. All the data presented in this report is anonymised, and the principles from the Data Protection Act and Information Governance requirements have been adhered to.

This introduction sets out the background, aim and methodology to the JSNA and then the scope of the work. This is because the scope of the JSNA has changed, largely due to data sharing restrictions, since its original scope. The questions the JSNA attempts to answer is the following:

a) *Using the data we have access to, can we identify children and young people in Cambridgeshire who have risk factors which make them potentially vulnerable to poor educational outcomes and understand what services they are in contact with?*

b) *How are vulnerability factors spread across Cambridgeshire geographically and what do the key findings from this work mean for commissioners?*

Definitions of the terms used in the question are given at Appendix A.

2.1 Risk Factors

It is widely accepted that adverse factors relating to a young child's family and environment cause poorer outcomes for the child, both to their safety, and to their development and behaviour (National Institute for Health and Clinical Excellence (NICE), 2012[4]). Parental mental health issues, substance misuse, domestic violence, financial stress and teenage motherhood are themes which are frequently identified as indicating poorer outcomes for children. Factors rarely occur in isolation, with certain combinations being more common than others. The children within these households are at a higher risk of poorer development and physical harm. While the risk factors discussed below are intended to give an idea of the magnitude of the problems within Cambridgeshire it should be noted that many parents facing challenging circumstances successfully raise healthy and happy children.

Sabates and Dex (2013)[5] identified a number of key risk factors which strongly hinder successful development. They found that the higher the number of risk factors affecting the child, the more subsequent short and long-term problems that child encounters.
The risk factors included:

- parental depression
- parental illness or disability
- smoking in pregnancy
- parent at risk of alcoholism
- domestic violence
- financial stress

[4] Social and Emotional Wellbeing: Early Years. NICE PH40 (2012).
[5] Sabates, R. and Dex S. (2013) The impact of multiple risk factors on young children's cognitive and behavioural development. Children and Society.

- parental worklessness
- teenage mother
- parental lack of basic skills, which limits their daily activities
- household overcrowding

They found a significant correlation between many of these factors, indicating that they are likely to occur jointly. Looking specifically at combinations of three risk factors, they found that teenage motherhood, smoking in pregnancy and parental depression commonly occurred together.

They examined the impact of these risk factors on six cognitive and behavioural outcomes (cognitive, emotional, conduct, hyperactivity, peer and prosocial) at the age of five years, and found that parental depression, smoking in pregnancy and financial stress were associated with worse outcomes for all or almost all of the six outcomes.

Findings from recent longitudinal studies, which follow a group of children over time, also provide some consistent risk factors for childhood development.

The Millennium Cohort Study (MCS)[6] collected information on 18,818 children born between June 2001 and January 2003 at nine months, three years and at age four to five years when they start school. The study found that adverse cognitive and behavioural development outcomes at age three are associated with poverty, maternal depression and heavy drinking of alcohol.

The MCS used three outcome measures:

a) Educational progress – measured through the Foundation Stage Profile at school entry.
b) Behaviour – measured using questionnaires and an interview at age five.
c) Health status of the child – as categorised by the mother.

A number of factors were more common across all outcomes. These were maternal qualification, language spoken at home, mother's self-rated health, depression and socio-economic situation. However, the analysis showed that there were different levels of risk of vulnerability amongst children conceived, born or growing up in different contexts. As an illustration the group where a parent first had a child in their teens and no qualifications/or NVQ1 level only or were aged 20-22 years with no qualifications, accounted for 30% of children with poor learning and development, 24% with behavioural difficulties and 20% of children with health difficulties despite only being 12% of the population. Therefore there are clear graduations of risk for children's outcomes across particular groups of mothers with risk factors.[7]

Particular factors were found to be more or less influential depending on the child outcome under consideration. For example, socio-economic characteristics (broadly IMD measures) were found to be strongly related to how well a child did in the Foundation Stage Profile, but maternal health, particularly mental health, tended to be more important in relation to the child's behaviour and health outcomes.

The study found that children in families that experience persistent disadvantage show greatest risk of poor outcomes, but that episodic disadvantage is also associated with poorer

[6] Preview literature review – Factors which predict health and wellbeing outcomes for children up to the age of 5. Sue Hennessy, Josephine Green, Helen Spiby. Mother and Infant Research Unit, University of York. June 2008.

[7] Preview literature review – factors which predict health and wellbeing outcomes for children up to the age of 5. Sue Hennessay, Josephine M Green, Helen Spiby. June 2008. www.chimat.org.uk

outcomes, with the risk of poor outcomes in such families four times that of those who did not experience such disadvantage.

The recently published initial findings from the age 11 survey of the MCS found that, 'At age 11, parent's education and family income were the most powerful predictors of cognitive test performance across the board'[8].

Further information on this and other longitudinal studies can be found on the ChiMat website at www.chimat.org.uk/preview.

2.2 Protective factors

The MCS does not provide information on protective factors. However, the Avon Longitudinal Survey of Parents and Children (ALSPAC), which looked at 14,000 mothers from pregnancy in 1991 and 1992 onwards, found the following for children aged six to 42 months in terms of protective factors.[9]

a. Socio-economic effects on parenting behaviour – mothers with higher levels of education and greater family income interacted more with their children and engaged in more stimulating and teaching activities.
b. More interactive and stimulating parenting behaviours had a beneficial impact on children's social and motor skills development.
c. Moderating factors – maternal education: the effect of more stimulating parenting was stronger for children of mothers with low levels of education.
d. In home environments, where mothers provided more stimulation and teaching, child development was generally higher regardless of maternal education level or economic circumstances.

The study also found that in children aged four to six years with an older sibling, having an affectionate sibling relationship moderated the relationship between stressful life events and later child adjustment.[10]

The Effective Provision of Preschool Education Project (EPPE), which follows a sample of 3,000 children aged three years up to age seven also found the home learning environment to be a protective factor.[11]

Overall, these findings reflect previous research over many years in the UK and US about the factors that influence school engagement, which include home background, ethnicity and gender. In general children are more prepared for school in homes that encouraged reading, and concentrating on intellectual tasks, which was particularly the case with girls[12].

2.3 Vulnerable Children JSNA

2.3.1 Aim of JSNA

[8] MCS Initial findings from the age 11 survey. November 2014.p51. Institute of Education, University of London. Editor Lucinda Platt.
[9] Preview literature review – published findings from longitudinal datasets. Sue Hennessy, Josephine Green, Helen Spilby. Mother and infant research unit, University of York. June 2008. www.chimat.org.uk.
[10] Preview literature review – published findings from longitudinal datasets. Sue Hennessy, Josephine Green, Helen Spilby. Mother and infant research unit, University of York. June 2008. www.chimat.org.uk.
[11] Preview literature review – published findings from longitudinal datasets. Sue Hennessy, Josephine Green, Helen Spilby. Mother and infant research unit, University of York. June 2008. www.chimat.org.uk.
[12] Starting school – why girls are already ahead of boys. Joan M. Whitehead. Teacher development. Vol 10, No.2, July 2006, pp.249-270.

The Health and Wellbeing Board requested that a JSNA be undertaken on Children and Young People in Cambridgeshire. It was decided that this needed to be narrowed to give the JSNA a focus and to make it most useful for stakeholders. A number of stakeholders requested a focus on vulnerable children in Cambridgeshire, requesting that the JSNA attempt to answer the question 'Who are the most vulnerable children and families in Cambridgeshire and what services are they currently in contact with?' Answering this question should help commissioners and providers to shape services which can promote prevention, intervene early and have highest impact.

The original aim of this JSNA was therefore to:

a) Identify all children and young people in Cambridgeshire who have risk factors which make them potentially vulnerable.

b) Examine which services they and their families are in contact with.

In the initial planning of the JSNA, we defined vulnerability as vulnerable to poor life chances.[13]

2.3.2 Methodology

Following research into similar pieces of work undertaken elsewhere in England, and studies on such risk factors, such as the MCS, we produced a list of indicators that are considered to be the most important in identifying vulnerable/high need children.

To gain a full picture of all risk factors for an individual requires joining person-identifiable data from different agencies, such as those within the County Council (which includes data from schools), the Department of Work and Pensions, District Councils, the Police and Health. The data can then be analysed to identify those children with different combinations of risk factors for vulnerability and to compare this with County Council service usage. In a proportion of cases it is also possible to identify families.

There are a number of different methods for capturing the data needed to identify vulnerable children. There is no national consensus on how this type of work should be undertaken. Three of these methods are detailed below. We had to use method 3 for the JSNA for the reasons explained below.

Method 1: Drawing together lists of vulnerable families as identified by single agencies.

This method is suggested by ChiMat (The Child and Maternal Health Observatory[14]), and proposes that each agency prepares lists of children that they consider to be most at risk. These are then collated to give a prioritised list of families who are likely to benefit most from early intervention. Their method focuses on maternal mental health and parenting, domestic violence and other criminal behaviour, substance misuse, poverty and other warning signs, such as, frequent A&E attendances. However, it can be expanded or altered locally to take into account relevant agencies and indicators that are pertinent to identifying vulnerable children in Cambridgeshire.

This method may help with some of the data sharing issues, and a version of this method is suggested for the second phase of the troubled families programme.[15] It needs careful work

[13] Every Child Matters (2003) The stationary office.
[14] www.chimat.org.uk
[15] Interim Guidance for Troubled Families programme early starter areas.

to understand what each agency considers vulnerable, agree definitions and to share the data so that one organisation can combine it. In addition, it may not be possible to share information about the nature of the risk factor if individual consent has not been given to do so, simply that there is one.[16] This method does not allow a population approach to identifying need, and could exclude those individuals not in contact with services.

Method 2: Combining multi-agency datasets together

This method involves joining person identifiable level multi-agency datasets together to identify those that are most vulnerable. The methodology assumes that those with the most risks factors are those in greater need.

The Nottingham City Total Place project used this type of methodology to join datasets from different agencies together in order to be able to investigate how outcomes could be improved for complex, chaotic and high cost families within Nottingham while also reducing cost and duplication of services.[17] The Nottingham work was undertaken in 2011.

This method relies on sharing person-identifiable data between agencies, and information sharing frameworks and having data sharing agreements arranged between agencies to allow this type of data sharing. Other projects such as Together for Families, already have a range of data sharing agreements with other organisations, some of which are supported by additional legislation allowing data sharing for this specific purpose.

This methodology provides the most comprehensive data, and allows a population approach to be taken in considering risk factors. However, in discussions with individual organisations it became clear that the approach to person-identifiable data sharing has changed since the introduction of the Health and Social Care Act (2012), and they could not consider this type of Data Sharing Agreement.

There are a small number of legislative options which allow access to health information in particular, and these are outlined in the Houses of Parliament post note on 'Big Data and Public Health' which is at Appendix B. We explored an application for a Section 251 but in discussions with the Department of Health agreed this was not a suitable route for this JSNA.

Method 3: Using variables readily available within Cambridgeshire County Council

This is essentially a reduced version of Method 2 and examines data that is available within Cambridgeshire County Council only. This means that data is not shared between agencies which avoids many of the issues described above, although compliance with the Data Protection Act is still critical.

This method means that access to information on risk indicators is hugely reduced. As a result the scope of the JSNA is a more focused question that the initial question posed.

The table below provides a list of the indicators we would have liked to bring together for this JSNA, and the ones we were able to use. The ones we were able to use are highlighted in blue.

[16] Interim Guidance for Troubled Families programme early starter areas.
[17] Total Place Report, Nottingham City Council, August 2011

Table 2: List of indicators proposed for the JSNA

	Indicator name	Comments
Child	Demographics	School aged children aged 5-15 years only
	At risk of being excluded	
	Excluded from school	
	Free school meals	
	Gypsy and Traveller	
	School Action Plus	
	Poor level of progress at Key Stage 1	
	Poor level of progress at Key Stage 2	
	Poor level of progress at Key Stage 4	Cohort was age 5-15 years only
	Migrant Workers	Ethnicity used as a proxy.
	Not attending pre-school	Cohort was age 5-15 years only. Under 5 years denominator not available at this time.
	Pre school readiness (EYFS)	
	Pupil absence	
	Special Educational Need or Disability (SEND)	
	Teen parent	Not included in analysis due to small numbers
	Youth Offending Involvement	Not included in this analysis but further analysis planned.
	Asylum seekers	Not explored within this JSNA
	Disability Living Allowance (child)	Data currently not able to be shared at individual level.
	Behind with immunisations	Data currently not able to be shared at individual level.
Family	Mother was a teenage parent	Not included in analysis due to small numbers
	Mother was a Looked After Child	Complete data not available
	Mother with low educational attainment	Based on Lower Super Output Area census data (2011). Individual level data not available.
	Under financial stress	Not explored within this JSNA, and difficult to access consistent data.
	Living in a deprived area	Based on Lower Super Output Area Index of Multiple Deprivation 2010 Score
	Benefits	Data not able to be shared - but highly correlated to living in a deprived area.
	Homelessness	Not explored in this JSNA but available where in touch with Social Care
	Living in poor conditions	Not explored in this JSNA
	Neither parent in employment	Based on Lower Super Output Area census data (2011). Individual level data not available.
	Parent(s) with a diagnosed disability (in receipt of DLA)	Data not able to be shared at individual level. Data available only where family in touch with Social Care. Self-reported disability used at Lower Super Output Area from census data (2011).
	Parent(s) with issues with drug and/or alcohol dependency/use	Data not able to be shared at individual level. Data available only where family in touch with Social Care
	Parent(s) with mental health/depression	Data not able to be shared at individual level. Data available only where family in touch with Social Care
	Parent(s) with serious health condition/illness undergoing treatment	Data not able to be shared at individual level. Data available only where family in touch with Social Care
	Anti Social Behaviour	May be possible to access data in future with data sharing agreement.
	Current or recent Domestic Violence	Data only available at household level
	Frequent police call outs	May be possible to access data in future with data sharing agreement.
Services	**In contact with services**	
	Child in care	
	Child Protection Plan	
	Children in Need	
	Common Assessment Framework	
	Children's Centre	Cohort was age 5-15 years only. Under 5 years denominator not available at this time.
	Locality team services	
	Together For Families client	
	Community support services	
	CREDS	
	Early Support	
	Educational Psychology	
	Family Intervention Partnership	
	Hearing Support Services, Visual Impairment Service	
	Specialist Teachers	
	Multi Systemic Therapy	
	Specialist Family Support Service	
	Short breaks	
	Support to Early Years	
	Regular A&E visits	Data not able to be shared at individual level.
	Contact with Police	May be possible to access data in future with data sharing agreement.
	Contact with District Council	May be possible to access data in future with data sharing agreement. But DC services provided by range of organisations. Consistent data difficult to access.
	Contact with NHS	Data not able to be shared

2.3.3 Scope of the JSNA

2.3.3.1 The question

Due to the restrictions described above we have therefore narrowed the aim of the JSNA to the following:

c) *Using the data we have access to, can we identify children and young people in Cambridgeshire who have risk factors which make them potentially vulnerable to poor educational outcomes and understand what services they are in contact with?*

d) *How are vulnerability factors spread across Cambridgeshire geographically and what do the key findings from this work mean for commissioners?*

The JSNA is designed to identify need against service provision, at an aggregate level. Families and children will normally be given a privacy statement when they begin receiving a service from the council. This explains their rights under the Data Protection Act and explains the way in which the Council will use the data they provide. This includes use of the data to produce statistics to allow the Council to make informed decisions in meeting its duties, for example, to assess the performance of schools, in many cases involving only aggregated, statistical data.

2.3.3.2 The denominator

The JSNA is also restricted to children aged between five and 15 years. It is not possible, at present, to obtain a list of all children in Cambridgeshire under the age of five. To obtain this information, all children registered with the GP would be needed from the Exeter System. The Council hold information on all children attending school on their school based system – system ONE. This relates only to school-aged children, accessing Cambridgeshire schools and, therefore, does not take into account cross boundary issues for children resident in Cambridgeshire but who attend an external school, excludes independent schools and non-school based further education. The county council are notified of births, which are recorded on the ONE system, however, until a child hits statutory school services little is known about the movement of these children. This makes the population denominator for under five year olds unstable from this data source, and GP registrations the best data source. Where the denominator used may create issues in the data for children aged 5-15 years, this is reflected in the commentary.

The data is therefore limited to the population attending school. This means that it does not include children who are home schools, or those attending independent schools.

Similarly, matching children to families has been problematic and it has only been possible to match 25% of children with families and, therefore, the analysis here focuses on children rather than families.

2.3.3.3 Key Findings - Data sharing and coding

Consideration should be given to seeking consent to share information for strategic planning purposes where the output is anonymised, when an individual accesses services.

Recording of the characteristics of those children and families which the County council and other services are working with should be reviewed too so that key vulnerability factors the research suggests influence childhood development are recorded, such as the learning environment at home and mothers qualifications.

3 Analysis of the data

3.1 Introduction

Poor attainment data is takes the latest attainment data for children at school in January 2014 up to the 2012/13 school year. Services data is three years' worth of data beginning in 2011 and ending in 2013, except for locality team data for which there is only a year (2013). The data relate to the latest Key Stage results available for a pupil i.e. at the School Census 2014 pupils would have been in Key Stage 4 but their latest available results would be from Key Stage 3. This report presents data for pupils in each school setting i.e. Reception (Early Years Foundation), Primary School (Key Stage 2) and Secondary School (Key Stages 3 and 4 combined) and their latest Key Stage result. The data are presented by the Key Stage that pupils were in at the time of the School Census 2014.

The analysis is broken into two sections:

- **Poor attainment data combined with free school meals and deprivation data.**

  Using individual data can we identify children and young people in Cambridgeshire who have risk factors which make them potentially vulnerable to poor educational outcomes and understand what services they are in contact with?

- **Analysis of other vulnerability factors and how these are spread geographically and the identification of any patterns for commissioning purposes.**

  How are vulnerability factors spread across Cambridgeshire geographically and what do the key findings from this work mean for commissioners?

3.2 Poor attainment data combined with free school meals and deprivation data – children age 5-15 years

3.2.1 Poor attainment

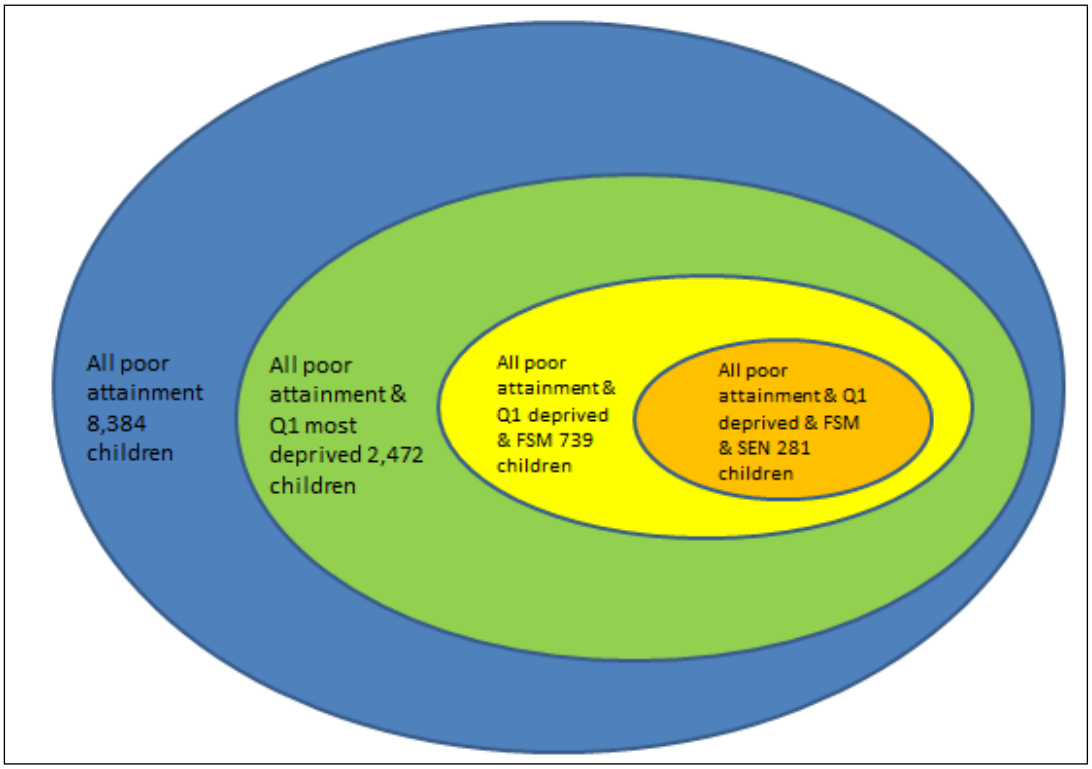
As at January 2014 there were 59,872 children on the school census between the ages of five and 7-15 years, resident in Cambridgeshire.

This analysis has considered 81,000 records, and looks at poor attainment within one school year (2012/13).

It is important to remember that many of the children and families identified here may not require any services, as the children are healthy and developing well in secure families.

This work only considers a limited number of vulnerability factors. This does not mean that only the children identified here are vulnerable. There will be many children who are vulnerable to factors we do currently have data on, such as poor parental mental health, and parental drug and alcohol use.

Figure 1: All poor attainment and other vulnerability markers

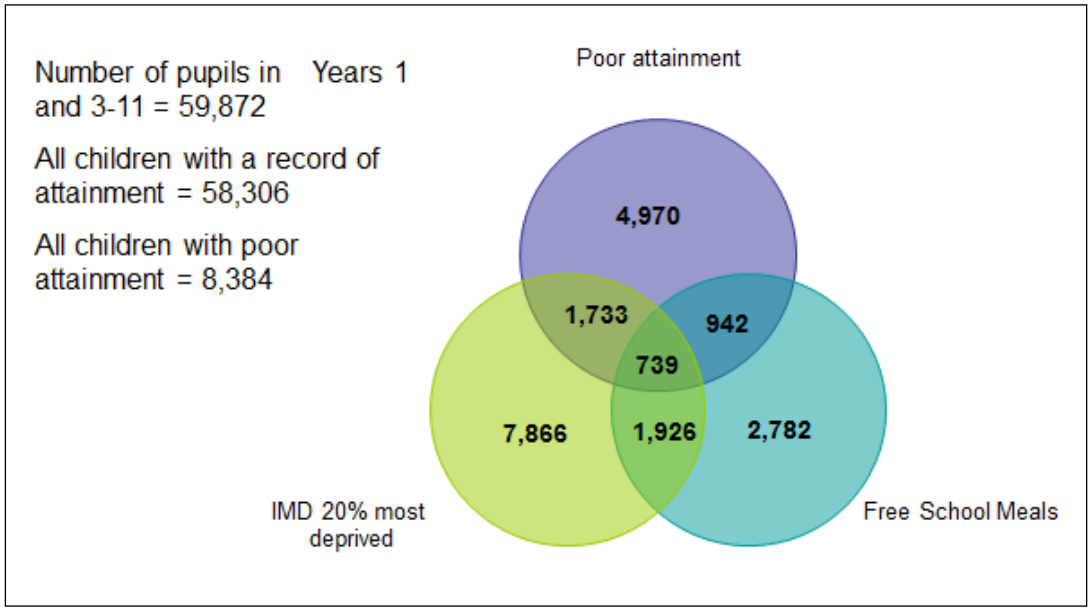


Having linked the records in the datasets we found of the children in years 1 and 3 -11 with a record of progress (58,306), 14% or 8,384 were found to be not progressing as well as expected at the three stages of assessment (Early Years Foundation Stage, Key Stage 2 and Key Stage 3/4). *(Note: The proportions vary at stage and the numbers used in the EYFS are smaller than other Key Stages as this only uses one year of data).*

2,472 of these children were living in the most deprived 20% of the county, and 739 of these children were accessing free school meals. Of these 739 children 281 also have Special Educational Needs (SEN).

Figure 2 shows how these factors interact with each other.

Figure 2: All poor attainment in Cambridgeshire residents with a progress record 2012/13



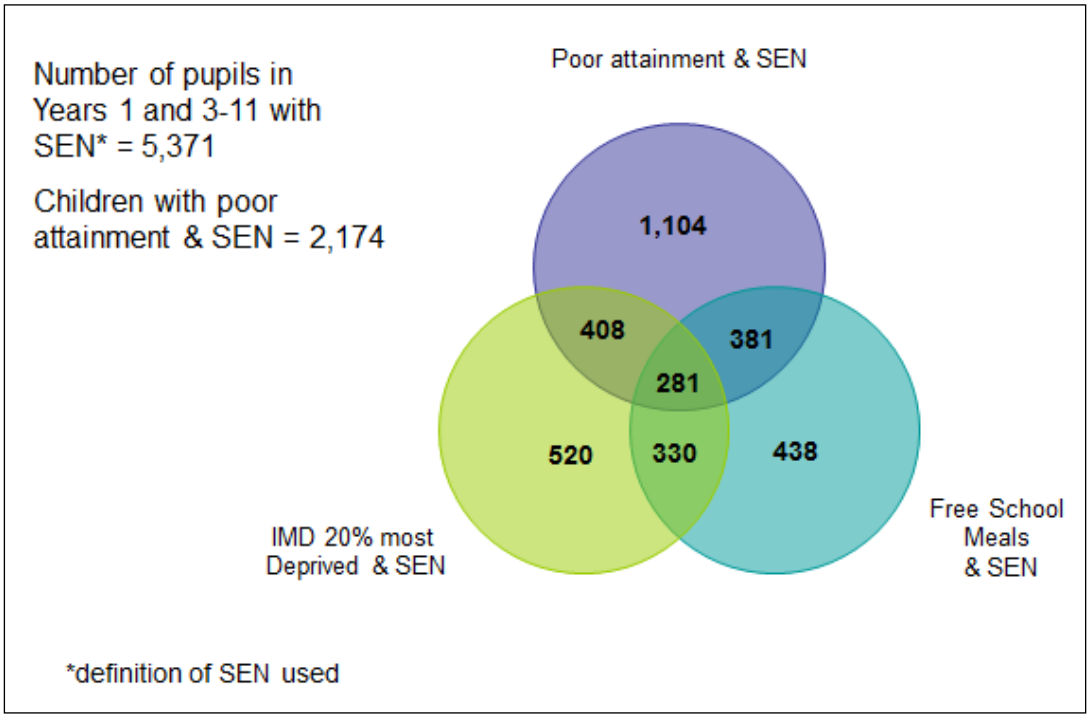
The figure shows that 739 children have poor attainment levels, live in the 20% most deprived parts of the county and access free school meals. 942 children access FSM and have poor attainment but do not live in the most deprived parts of the county, and 1,733 children have poor attainment and live in the most deprived part of the county but do not access FSMs.

Of those children with poor attainment, 20% are receiving FSMs, and 29% live in the most deprived areas, and 9% have both factors.

We can also see that the 20% of children living in the most deprived areas of the county have poor attainment, and 26% of children accessing free school meals have poor attainment.

Figure 3 shows all poor attainment in Cambridgeshire resident children with SEN and a progress record for 2012/13. This group is a subset of children from Figure 2.

Figure 3: All poor attainment - Cambridgeshire resident children with SEN and a progress record for the school year 2012/13



40% of children with SEN have poor levels of attainment. Of these 30% are receiving FSMs, 32% live in the most deprived 20% of the county and 13% fall into both categories. Of all those receiving free school meals 46% have poor attainment and of all those living in deprived areas 45% have poor attainment.

The proportion of children with SEN with poor attainment who are accessing free school meals, living in the most deprived area or both of these is higher in children with SEN than in all children with poor attainment.

3.2.2 Summary Tables

The findings across all three stage of development are summarised in the two tables below. For example, 29% of children with poor attainment at KS2 also access free school meals, 32% live in the most deprived area (IMD quintile 1) and 12% have a combination of both factors.

Table 3: Combinations of vulnerability factors with poor attainment (PA) as a proportion of all children poor attainment at EYFS, KS2 and KS3/4

	PA&FSM	PA&IMD	PA&FSM&IMD
EYFS	17%	28%	7%
KS2	29%	32%	12%
KS3/4	18%	30%	9%
All stages	20%	29%	9%
All stages with SEN*	30%	20%	13%

Note: *as a proportion of all children with SEN

Table 4: Children with poor attainment as a proportion of all children accessing FSM or living in the most deprived parts of the county (IMD)

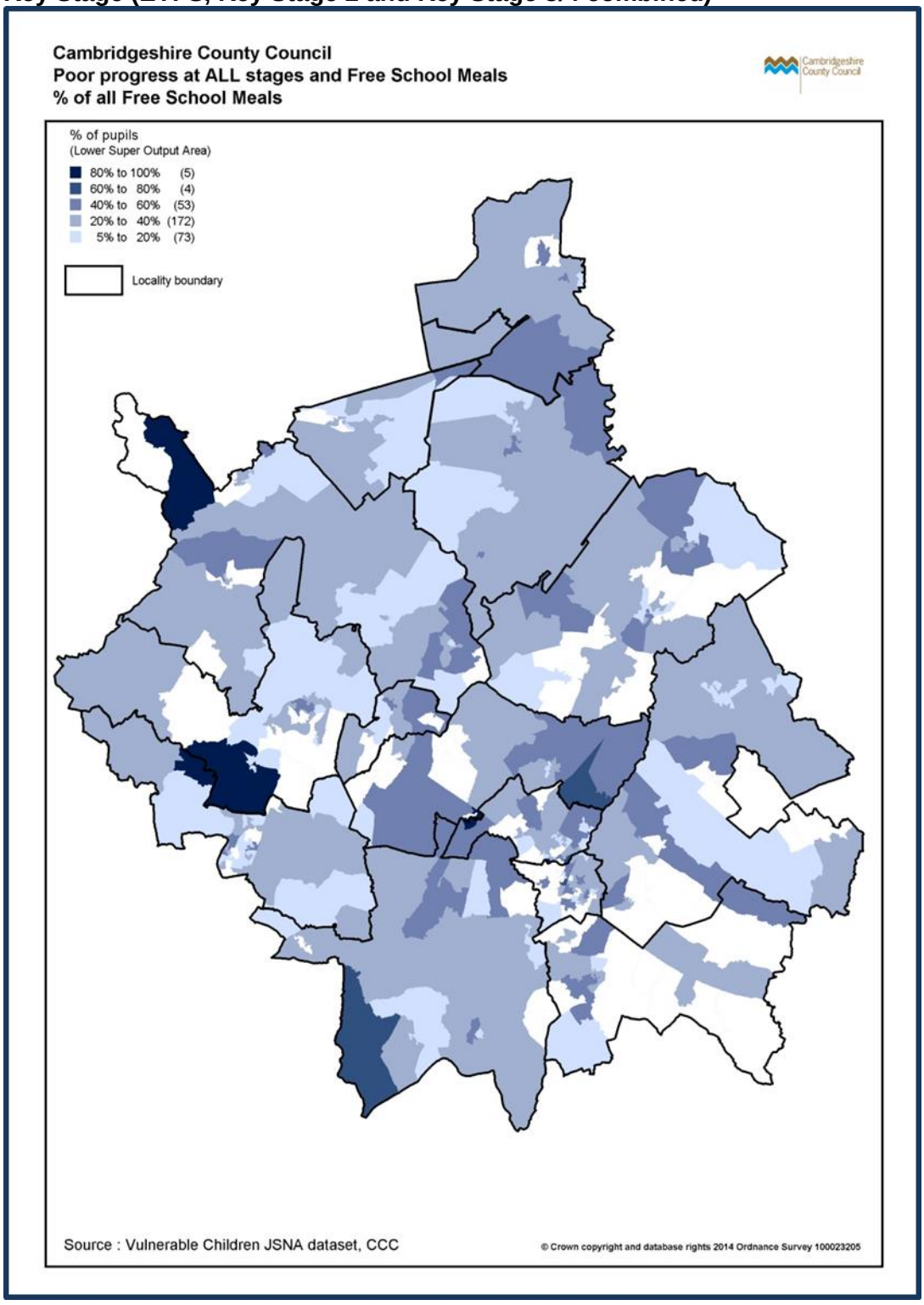
	PA children as % of all children accessing FSM	PA children as a % of all children in IMD Q1
EYFS*	70%	62%
KS2	20%	12%
KS3/4	21%	16%
All stages	26%	20%
All stages with SEN**	46%	45%

Note: *the numbers are smallest at EYFS for IMD and FSM and this partly explains the high percentage.

**as a proportion of all children with SEN

The map below presents the proportion of children on free school meals who are not achieving the expected level of attainment for the combined key stages. There are no particular distinct patterns, and numbers are relatively small at Lower Super Output Areas (areas with a population of between 1,000-3,000 or 400-1,200 households).

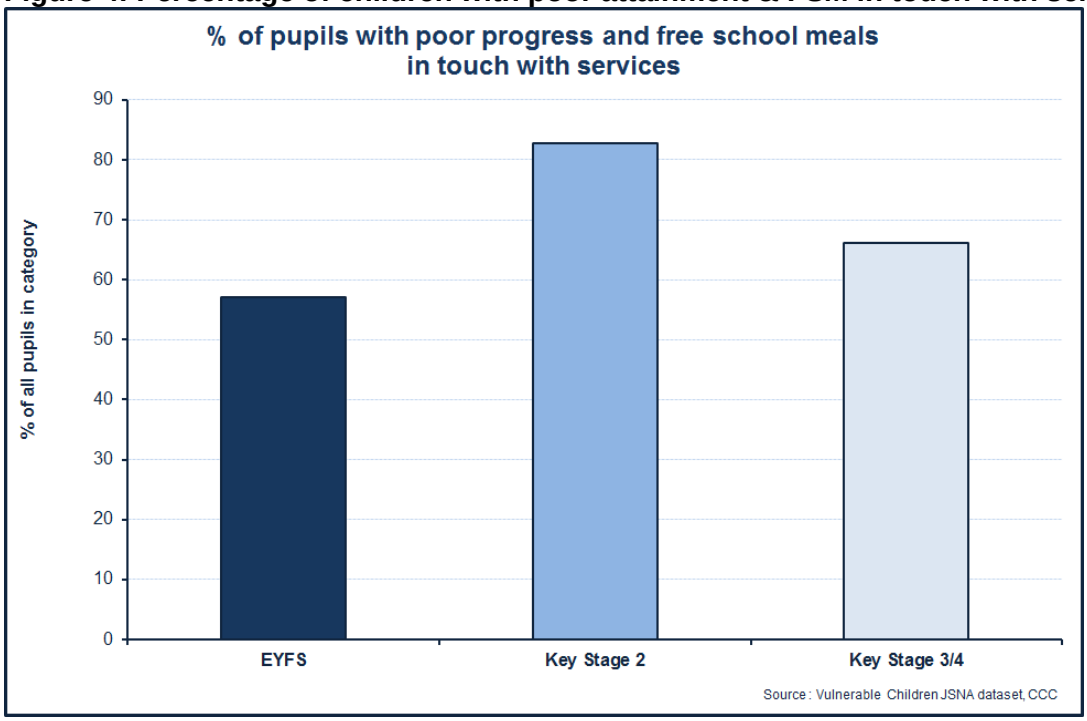
Map 1: Percentage of children receiving Free School Meals with poor attainment at Key Stage (EYFS, Key Stage 2 and Key Stage 3/4 combined)



Children in touch with services

At EYFS 57% of children with poor attainment and accessing free school meals were in contact with services. This increases to 83% at Key Stage 2 and reduces at Key Stage 3/4 to 66%. In addition the analysis shows that the proportion of children who have been or are in touch with services increases proportionally with deprivation and additional vulnerability factors.

Figure 4: Percentage of children with poor attainment & FSM in touch with services



3.2.3 Children not in touch with services

Overall, 69% of children with poor attainment and accessing free school meals are in touch with County Council Services. These are services such as social care, family and community support services, educational psychology and other special educational needs support services. These are services provided directed by the County council, and not by schools. A full list of those services included in this analysis is on page 42.

Children at all stages with poor attainment who access free school meals and who are NOT in touch with services are spread across the county. The highest concentration of these children is in Fenland (around a third of children) but the numbers are small and may fluctuate over time.

3.2.4 Good attainment and Free School Meals

The table below shows the percentage of pupils that are on free school meals and have a good level of attainment at the end of their Key Stage. As can be seen the numbers on Free School Meals decreases as relative deprivation decreases. The proportions are fairly similar in the three most deprived quintiles, with Quintile 4 had a significantly high proportion compared to Cambridgeshire.

Table 5: Percentage of pupils with Free School Meals who have good attainment at Key Stage (combined EYFS, KS2 and KS3/4)

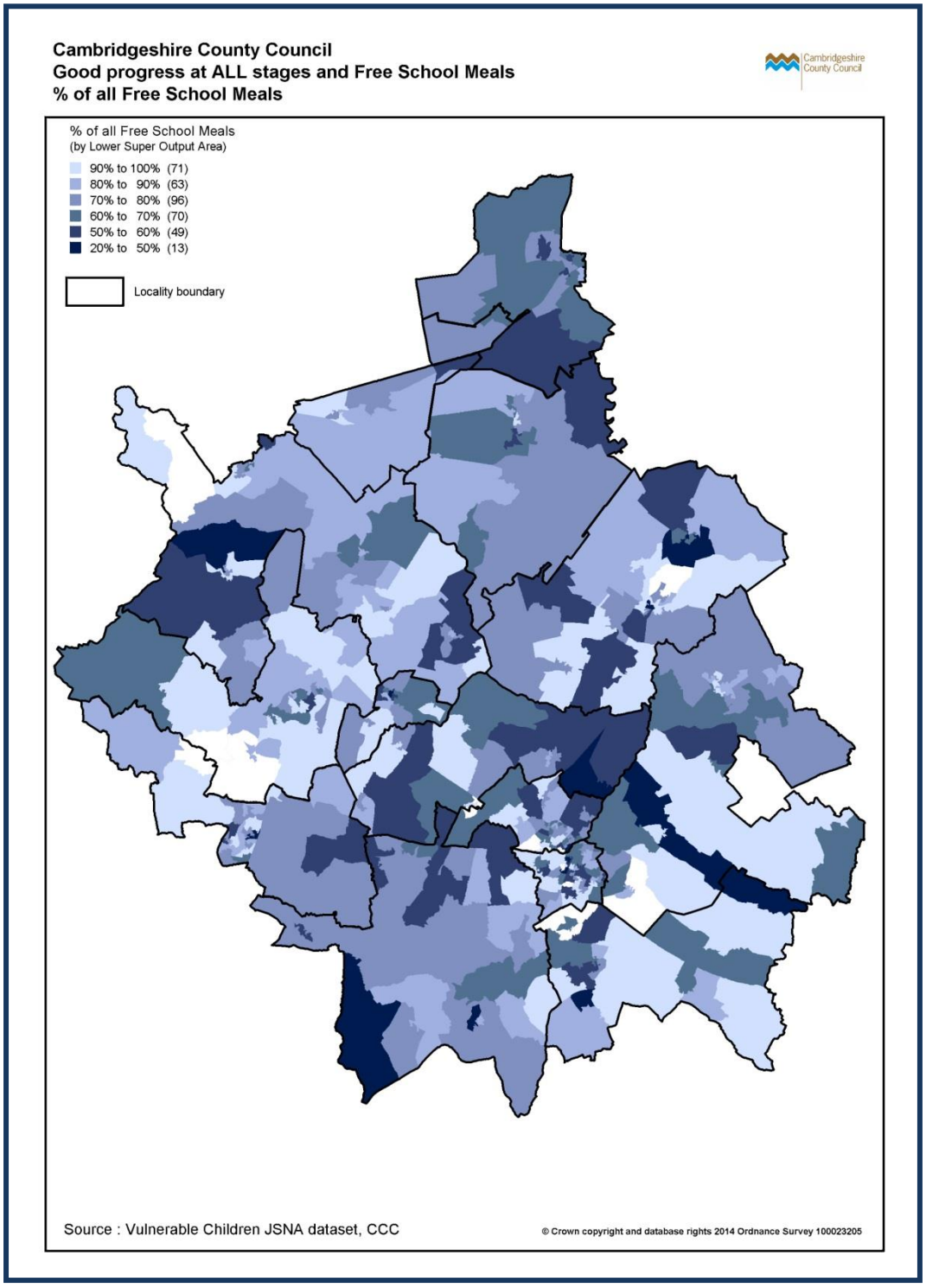
Quintile of deprivation	Good attainment and FSM	Total FSM	%	95% Confidence intervals	
				Lower	Upper
Q1 (most deprived)	1,926	2,705	71.2%	69.5%	72.9%
Q2	1,058	1,488	71.1%	68.7%	73.3%
Q3	699	972	71.9%	69.0%	74.6%
Q4	648	827	78.4%	75.4%	81.0%
Q5 (least deprived)	377	503	75.0%	71.0%	78.5%
Total	4,708	6,495	72.5%	71.4%	73.6%

Statistically significantly worse than the Cambridgeshire average

Statistically significantly better than the Cambridgeshire average

These data are presented below but at Lower Super Output Area. As can be seen the proportion of pupils on free school meals and achieving good attainment is spread across the county, with concentration of lower achievement to the north of Fenland and South Cambridgeshire and to the west of Huntingdonshire.

Map 2: Percentage of children accessing free school meals with good attainment at Key Stage (EYFS, Key Stage 2 and Key Stage 3/4 combined)



Additional detail of the analysis at each school stage can be found in section 4 but a summary of the findings at each stage is provided below.

3.2.5 Summary of findings - Early Years Foundation Stage

- 49% percent of children in 12/13, for whom there is a progress record, have poor attainment at this stage. It should be noted that this figure reduced to 39% in 2013/14[18].

- The rate of children not achieving expected development levels at the EYFS increases as deprivation increases. The highest concentration of poor attainment is in the most deprived 20% of the County, however 72% of those progressing poorly do not live in the most deprived 20% of the county.

- Fenland has a statistically significantly higher rate of children not achieving expected development levels at EYFS and accessing free school meals compared to the Cambridgeshire average, while South Cambridgeshire has statistically significantly lower levels.

- 73% of pupils not achieving expected development levels at the EYFS are white British. 'Any other white', 'mixed white Caribbean' and 'gypsy Roma' groups are over represented in those not reaching development levels, but the numbers are small.

- 10% of all children not achieving expected levels of development at EYFS are children with SEN.

- Across the county, services are in touch with 57% of children who are not achieving expected development levels at the EYFS, and are accessing free school meals.

3.2.6 Summary of findings – Key Stage 2

- Eight percent of children have poor levels of attainment at this stage. Of those children not reaching attainment levels at Key Stage 2, 29% are receiving FSMs, and 32% live in the most deprived areas, and 12% have both factors.

- The rate of children not achieving attainment levels at KS2 increases as deprivation increases. However, the rate of poor attainment is statistically significantly higher in the top **two quintiles** for deprivation. Therefore, those who have poor attainment levels are spread across the top 40% most deprived areas of the county.

- Fenland and Cambridge City have a statistically significantly higher rate of children not achieving expected development levels at KS2 and accessing free school meals compared to the Cambridgeshire average, while South Cambridgeshire and Huntingdonshire have statistically significantly lower levels.

- Children not reaching expected levels at Key Stage 2 with SEN account for 55% (1,037 out of 1,893 children) of children not reaching expected levels. Children with SEN account for 63% of all children with poor attainment who live in the most deprived areas and who access free school meals.

- White British children account for 80% of all pupils and 76% of those pupils with poor attainment at KS2. 'Any other white', 'mixed white Caribbean' and 'gypsy Roma' groups are over represented in those not reaching attainment levels, but the numbers are small.

- Across the county, services are in touch with 83% of children accessing free school meals who are not achieving attainment levels at KS2. Out of the district areas,

[18] Department for Education.

Fenland and Huntingdonshire are in touch with the highest proportion of children in this group. This is the highest service contact rate out of the three stages of progress.

3.2.7 Summary of findings – Key Stage 3/4

- 11.5% of children (3,204) for whom there is a progress record, have poor levels of attainment at this stage. Of those children not reaching attainment levels at KS3/4, 18% are receiving FSMs, and 30% live in the most deprived areas, and 9% have both factors.

- The rate of children not achieving attainment levels at KS3/4 increases as deprivation increases. The rate of poor attainment is statistically significantly higher in the 20% most deprived areas.

- Fenland and Cambridge City have a statistically significantly higher rate of children not achieving attainment levels at KS3/4 and accessing free school meals compared to the Cambridgeshire average, while South Cambridgeshire have statistically significantly lower levels.

- Children not reaching attainment levels at KS3/4 with SEN account for 25% of poor attainment at this stage. Children with poor attainment at KS3/4, IMD, FSM and SEN account for 34% of all children with those factors. The primary reason for a child having SEN shows a different pattern to previous stages with behaviour, emotional and social difficulties accounting for the largest proportion of children.

- White British children account for 85% of all pupils and 89% of those pupils with poor attainment at KS3/4. This is different from the EYFS and KS2 where this group were under represented compared to their numbers in the population.

- Across the county, services are in touch with 60% of children who are not achieving attainment levels at KS3/4, and are accessing free school meals.

Key Findings

Poor attainment is more concentrated is the most deprived parts of the county. However, focusing efforts on those with poor attainment at EYFS, KS2 and KS3/4, living in the most deprived parts of the county will only address 30% of poor attainment.

A large proportion of children with poor levels of attainment accessing free school meals are in touch with council services, particularly at KS2.

Children with special educational needs account for a large proportion of children with poor attainment who access free school meals. This is particularly the case at KS2 when the Council is also in contact with a high percentage of these children.

The ethnic profile of children with poor attainment and accessing FSM in 2012/13 was different at KS3/4 compared to the other stages.

There are parts of the county where there lower levels of good attainment, and these are not necessarily in the most deprived parts of the county. `

3.3 Analysis of other vulnerability factors and how these are spread geographically and the identification of any patterns for commissioning purposes

There is more detailed analysis of many of these factors in other JSNA's or Needs Assessments and these are referred to here for further information.

As the introductory section to this JSNA describes, it is widely accepted that adverse factors relating to a young child's family and environment cause poorer outcomes for the child, both to their safety, and to their development and behaviour[i] (National Institute for Health and Clinical Excellence (NICE), 2012). Parental mental health issues, substance misuse, domestic violence, financial stress and teenage motherhood are themes which are frequently identified as indicating poorer outcomes for children. Factors rarely occur in isolation, with certain combinations being more common than others. The children within these households are at a higher risk of poorer development and physical harm. However, it should be noted that many parents facing challenging circumstances successfully raise healthy and happy children.

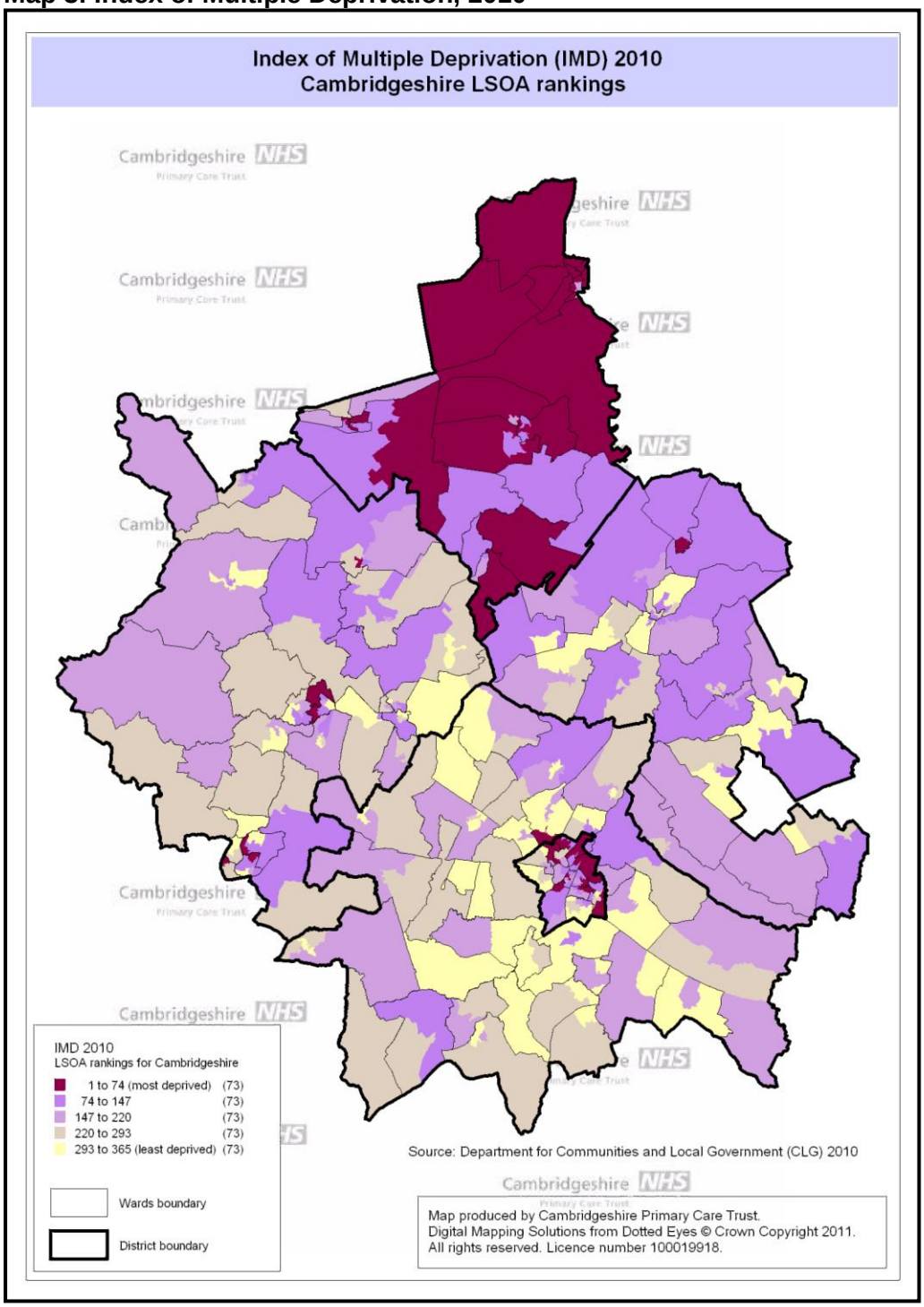
This section of the JSNA attempts to answer the following:

How are vulnerability factors spread across Cambridgeshire geographically and what do the key findings from this work mean for commissioners?

3.3.1 Deprivation

For general context Map 3 below shows the Local Super Output Areas (usually areas with approx. 1,500 residents) ranked by the index of multiple deprivation. The darkest areas are the most deprived areas of the county.

Map 3: Index of Multiple Deprivation, 2010



3.3.2 Parental mental health

There is no service data currently available on parental mental health in Cambridgeshire, although this is being collected for future strategic planning work. The Mental Health and Wellbeing of Children and Young People JSNA (2013) estimated the following:

- There are an estimated 22,700 children and young people living with at least one parent with mental illness, in Cambridgeshire. Between one and two thirds of these children and young people are likely to develop mental health problems themselves.

- Maternal mental health, particularly in the first 18 months of life, has a major impact on a child's long-term mental health. In 2013, there were estimated to be 740 women with chronic post-natal depression, in the county. Services supporting vulnerable families with children, aged 0-5, and those families with children with Special Educational Needs (SEN) find high levels of mental health problems in both parents and children.

- It is also estimated that 5,400 children and young people are living with a problem drinker with concurrent mental health problems, and 3,300 living with a drug user with concurrent mental health problems. A further 1,300 live with a parent with all three conditions. There are also between 27-40% young carers currently in contact with support services who care for someone in their family, with a mental health problem.

3.3.3 Parents who misuse drugs and alcohol

The Government has committed to turning around the lives of 120,000 'troubled families' by 2015 (Department for Communities and Local Government, 2013). Part of this is through treatment for substance misuse.

Substance misuse can reduce a parent's ability to provide care. The effects on the child can include neglect, educational problems, emotional difficulties and abuse. Parental substance misuse is rarely the sole cause of family difficulties, and often occurs alongside poverty, social exclusion, unemployment and poor mental health.

The Health Survey for England and the General Household Survey both estimated that 30% of children under 16 years in the UK lived with one binge drinking parent (Manning et al, 2013). The British Crime Survey and the National Psychiatric Morbidity Survey indicated that 8% of children lived with an adult who had recently used illicit drugs (Manning et al, 2013).

The National Treatment Agency for Substance Misuse (2012) found that during 2011/12, one third of adults in treatment lived in a household containing children (this includes parents living with their own children and adults living in a house with children who are not theirs, for example step-children or grandchildren). Parents who live with their own children tend to have fewer drug-related problems than others in treatment, are less likely to use the most addictive drugs, and are less likely to inject drugs when compared to non-parents in treatment. They are also less likely to be homeless or arrive in treatment via the criminal justice system.

The data below show the parents who live with their children, who are currently receiving drug and alcohol treatment in Cambridgeshire. This is only part of the picture, and does not give any indication of the numbers of parents in Cambridgeshire who misuse drugs and alcohol who are **not** in treatment. The proportion of substance misusers who seek treatment is likely to vary according to relative levels of deprivation as well as other factors such as employment opportunities and provision for treatment in the area.

Table 6: Parents in alcohol and drug treatment, 2012/13

Area	Drug treatment				Alcohol treatment			
	% adults in structured drug treatment living with at least one child		% adults in drug treatment who are parents		% adults in alcohol treatment living with at least one child		% adults in structured alcohol treatment who are parents	
	No	%	No	%	No	%	No	%
Cambridgeshire	517	22.7	1,179	51.7	229	27.0	444	51.7
East Anglia	5,889	28.0	11,535	52.7	3,656	32.9	6,556	56.2
England	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Source: NDTMS (via Fingertips PHE)

3.3.4 Domestic violence

Lord Laming (2009) identified that 200,000 (1.8%) of children in England live in households where there is a known high risk case of domestic abuse and violence.

The most recent Crime Survey data (formerly British Crime Survey) for 2011/12 estimates that 7% of women and 5% of men experienced domestic abuse in the previous year. Using these figures applied to local population it can be estimated that 18,220 adult (aged 16 – 59) females and 12,459 adult males became victims of domestic violence/abuse in Cambridgeshire in 2012/13.

Crimes in Cambridgeshire would ordinarily be reported to the Cambridgeshire Police Force. During 2012/13, the Cambridgeshire police received 11,286 reports of domestic violence in their constabulary (which includes Peterborough). This is a rate of 17.8 per 1,000 all ages population compared to a national rate of 18.8 per 1,000, although not all would relate to households with children. Previous local research, undertaken between 2009 and 2012 showed that 52% of police incidents reported had a child in the household, although this figure rose to over 80% for those incidents deemed to be 'high-risk'.

Data from Cambridgeshire's specialist voluntary sector providers (Cambridge Women's Aid and Refuge) showed that 770 individuals (with 707 children) accessed outreach provision in the South (City and South Cambridgeshire) of the county in 2012/13, with a further 176 individuals (with 150 children) accessing similar provision in East Cambridgeshire, Fenland and Huntingdonshire. Cambridgeshire's three women's refuges supported a total of 230 women to flee domestic violence/abuse in 2012/13. 156 children were also provided for during this period by the refuges.

Domestic violence often begins in pregnancy (Lewis and Drife, 2004) and evidence suggests having experienced partner violence during pregnancy results in a three-fold increase in the odds of high levels of depressive symptoms in the postnatal period. (Howard et al, 2013).

The Cambridgeshire Domestic Violence/Abuse Needs Assessment[19] (May 2014) clearly and comprehensibly outlines the increased vulnerability that children face in households where domestic violence occurs, including pre-birth.

[19] www.cambridgeshire.gov.uk/download/downloads/id/2881/domestic_abuse_needs_assessment_2013

3.3.5 Exposure to tobacco smoke

Smoking in pregnancy was shown to be linked to poorer developmental outcomes for the children at the age of five years[20]. Further evidence has shown that early exposure to household tobacco smoke can be associated with increased propensity toward physical aggression and antisocial behaviour when the child is older[21]. In Cambridgeshire 764 women were recorded as smokers at the time of their baby's birth, which is 10.6%. The percentage of women smoking in Cambridgeshire is shown in the table below, as well as the figure for the region and for England.

Table 7: Smoking status at time of delivery 2013/14

District	% of women who smoke at delivery
Cambridgeshire	10.6%
East Anglia	10.8%
England	12.0%

Source: HSCIC (via Fingertips PHE)

3.3.6 Breastfeeding

In 2013/11 83% mothers in Cambridgeshire initiated breastfeeding at birth and this had dropped to 56% by 6-8 weeks. Fenland had the lowest percentage at initiation and 6-8 weeks. Local data at Lower Super Output Area (LSOA) have been analysed but are not able to be published due to small numbers. However, there appears to be a definite north/south divide across the county for low uptake and continuance of breastfeeding, with low rates in the majority of Fenland and north of Huntingdonshire, as well as small pockets in the other districts.

Table 8: Breastfeeding initiation and prevalence at 6-8 weeks, 2013/14

District	Breast feeding initation		Breast feeding 6-8 weeks	
	Number	%	Number	%
Cambridge City	1,491	89.5	1,137	*
East Cambridgeshire	784	*	548	*
Fenland	887	70.0	490	37.0
Huntingdonshire	1,519	79.8	966	49.0
South Cambridgeshire	1,179	*	900	*
Cambridgeshire	5,860	83.0	4,041	56.2
England	449,063	73.9	278,590	*

*Value not published due to data quality issues
Source: Public Health Outcome Framework, Fingertips, Public Health England

[20] Sabates, R. and Dex S. (2013) The impact of multiple risk factors on young children's cognitive and behavioural development. Children and Society.

[21] Pagani, L.S. and Fitzpatrick, C. (2013) Prospective associations between early long-term household tobacco smoke exposure and antisocial behaviour in later childhood. Journal of Epidemiology and Community Health. 67:552-557.

3.3.7 Finance and housing difficulties

In Cambridgeshire:

- Over 14,000 children (13.1%) aged under 16 were living in poverty in 2011. This compares to an England average of 20.6%. 7.7% of children were living in households where there was no working adult present in 2011; this compares to 15.9% in England in 2011.
- There were 445 homeless households in Cambridgeshire with children or a pregnant woman in 2012/13, which equates to 1.7 per 1,000 households, the same as the England average.

The highest concentration of child poverty is in Fenland and there remain pockets of high levels of deprivation within the county.

- 31.8% of children in Wisbech are living in poverty.
- 610 children in Huntingdon North ward are growing up in poverty.

3.3.8 Teenage conceptions

There are on average just under 200 teenage conceptions (under 18 years) a year in Cambridgeshire, with rates being statistically significantly higher in Fenland compared to the county rate.

In 2013 there were 173 teenage conceptions, of which 47% led to an abortion.

Table 9: Total teenage conceptions aged under 18 years over three years, 2011-2013

District	Number	Rate	95% confidence intervals	
			Lower	Upper
Cambridge City	93	19.2	15.5	23.5
East Cambridgeshire	57	12.8	9.7	16.6
Fenland	162	31.0	26.4	36.2
Huntingdonshire	158	16.6	14.1	19.4
South Cambridgeshire	122	14.5	12.0	17.3
Cambridgeshire	592	18.3	16.9	19.8
England	78,153	27.6	27.4	27.8

Source: Public Health Outcome Framework, Fingertips, Public Health England

Statistically significantly worse than the Cambridgeshire average
Statistically significantly better than the Cambridgeshire average

3.3.9 Mothers aged under 22 years

In 2013/14 there were 606 live births in hospital to mothers aged under 22 years in Cambridgeshire, with the highest numbers and rates in Fenland.

Analysis has been undertaken to look at these birth rates at Lower Super Output Area level, but the numbers are too small to publish. However, rates are highest to the north of Fenland, areas around central Huntingdonshire, St Neots and to the north of South Cambridgeshire

Source: Admitted Patient Care Commissioning Data Set, Cambridgeshire and Peterborough Clinical Commissioning group

3.3.10 Hospital admissions

In 2012/13 there were 434 admissions to hospital for children aged under 5 years in Cambridgeshire for unintentional and deliberate injuries. Rates were significantly higher in Fenland and Huntingdonshire compared to the Cambridgeshire rate.

Table 10: Hospital admissions caused by unintentional and deliberate injuries in children aged 0-4 years, 2012/13

District	Number	Rate per 10,000	95% confidence	
			Lower	Upper
Cambridge City	56	80.4	60.8	104.5
East Cambridgeshire	57	100.0	75.7	129.5
Fenland	89	165.5	132.9	203.6
Huntingdonshire	159	153.7	130.7	179.5
South Cambridgeshire	73	77.4	60.7	97.3
Cambridgeshire	434	114.8	104.2	126.1
England	45,708	134.7	133.5	135.9

Source: Public Health Outcome Framework, Fingertips, Public Health England

Statistically significantly worse than the Cambridgeshire average
Statistically significantly better than the Cambridgeshire average

In 2012/13 there were a further 503 admissions to hospital for children aged between 5 and 14 years in Cambridgeshire for unintentional and deliberate injuries. For children aged under 15 years the rates were significantly higher in Huntingdonshire compared to Cambridgeshire rate.

Table 11: Hospital admissions caused by unintentional and deliberate injuries in children aged 0-14 years, 2012/13

District	Number	Rate per 10,000	95% confidence	
			Lower	Upper
Cambridge City	125	71.0	59.1	84.6
East Cambridgeshire	114	72.4	59.8	87.0
Fenland	169	107.9	92.3	125.5
Huntingdonshire	341	112.4	100.8	125.0
South Cambridgeshire	188	67.5	58.2	77.8
Cambridgeshire	937	87.4	81.9	93.2
England	98,480	103.8	103.2	104.5

Source: Public Health Outcome Framework, Fingertips, Public Health England

Statistically significantly worse than the Cambridgeshire average
Statistically significantly better than the Cambridgeshire average

Geographical data for 2013/14 were analysed and mapped for all emergency admissions in children and young people. Unfortunately, due to current data recording differences between the local hospitals, it is not possible to draw firm conclusions from the data.

3.3.11 Accident and Emergency attendances

In 2013/14 there were over 30,000 attendances at A&E for children aged under 15 years, with 44% of these being aged under 5 years. East Cambridgeshire and Fenland had statistically significantly high rates in each age band reported compared to the county average, along with Cambridge City for under 5 years olds. These patterns are likely to reflect complex relationships between levels of needs and healthcare provision within and out of hours as well as other factors.

Table 12: Accident and Emergency attendances, 2013/14

District	Age band							
	0-4 years		5-9 years		10-14 years		Total (0-14 years)	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Cambridge City	2,765	402.0	1,219	201.0	1,192	230.1	5,176	285.6
East Cambridgeshire	1,952	390.4	1,476	289.2	1,720	378.2	5,148	351.4
Fenland	2,524	438.7	1,754	328.2	2,433	466.1	6,711	411.3
Huntingdonshire	2,734	272.3	1,646	164.7	2,296	236.8	6,676	224.5
South Cambridgeshire	3,316	381.9	1,620	168.8	1,879	210.5	6,815	250.5
Cambridgeshire	13,291	365.6	7,715	213.7	9,520	283.6	30,526	287.9

Source: A&E Commissioning Data Set, Cambridgeshire and Peterborough CCG

Statistically significantly worse than the Cambridgeshire average
Statistically significantly better than the Cambridgeshire average

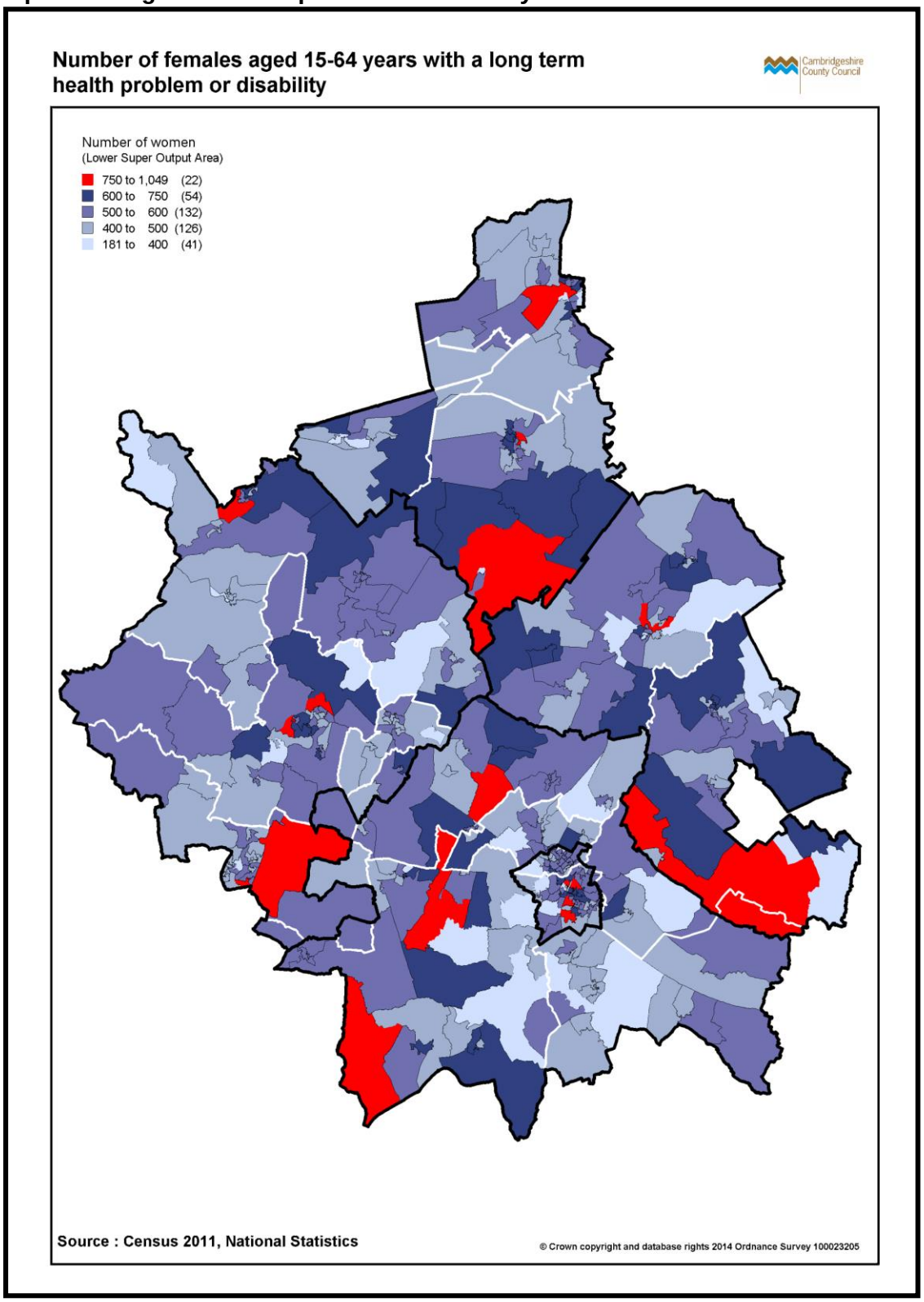
Findings: It is difficult, to draw conclusions about local geographical patterns for the data available on domestic violence, drug and alcohol treatment, smoking at time of delivery and parental mental health.

3.4 Other vulnerability factors

To attempt to compensate for the restricted number of indicators used here we have taken some of the key indicators for risk from other data sources, and mapped these at the lowest geographical level possible, as individual data was not available. The longitudinal studies raise mother's health and mother's educational attainment level as critical factors for childhood development. Mother's mental health was found to be particularly important but there is no data local data on this available for use in this piece of work. There is however information from the 2011 Census about women with a long term health problem or disability. This is a self-reported measure and is therefore subjective. The definition of a long term health problem was one that limits a person's day-to-day activities or is expected to last, at least 12 months. Only a proportion of these women will be parents with dependent children.

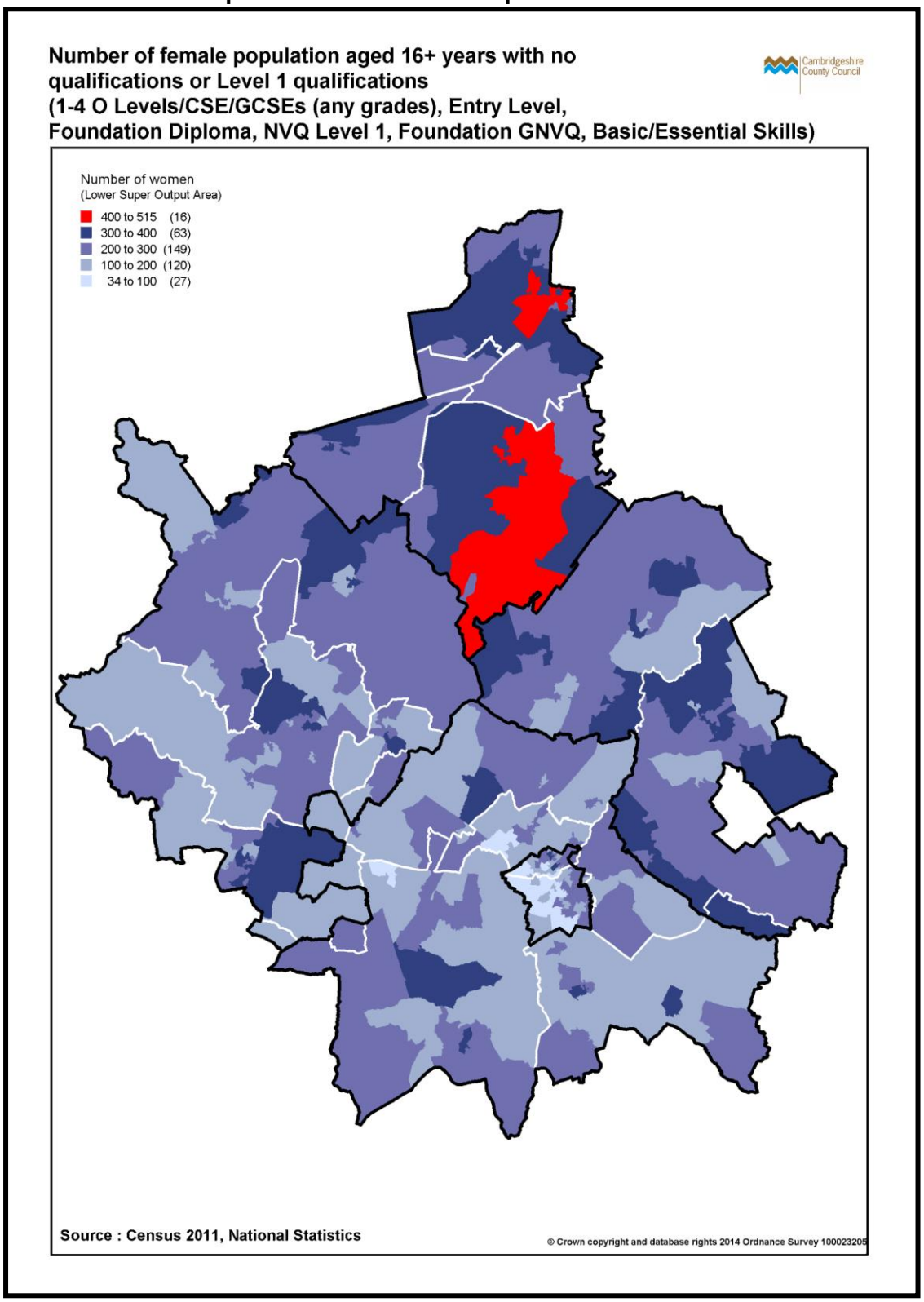
The map below presents the number of women aged 15-64 years with a long term health problem or disability living by Lower Super Output Area, as a proxy for poor maternal health. The areas shaded red represent the LSOA's with the highest numbers of women. As can be seen there are several areas within each district where the numbers are highest.

Map 4: Proxy for Mother's health – Number of women aged 15-64 years with a self-reported long term health problem or disability



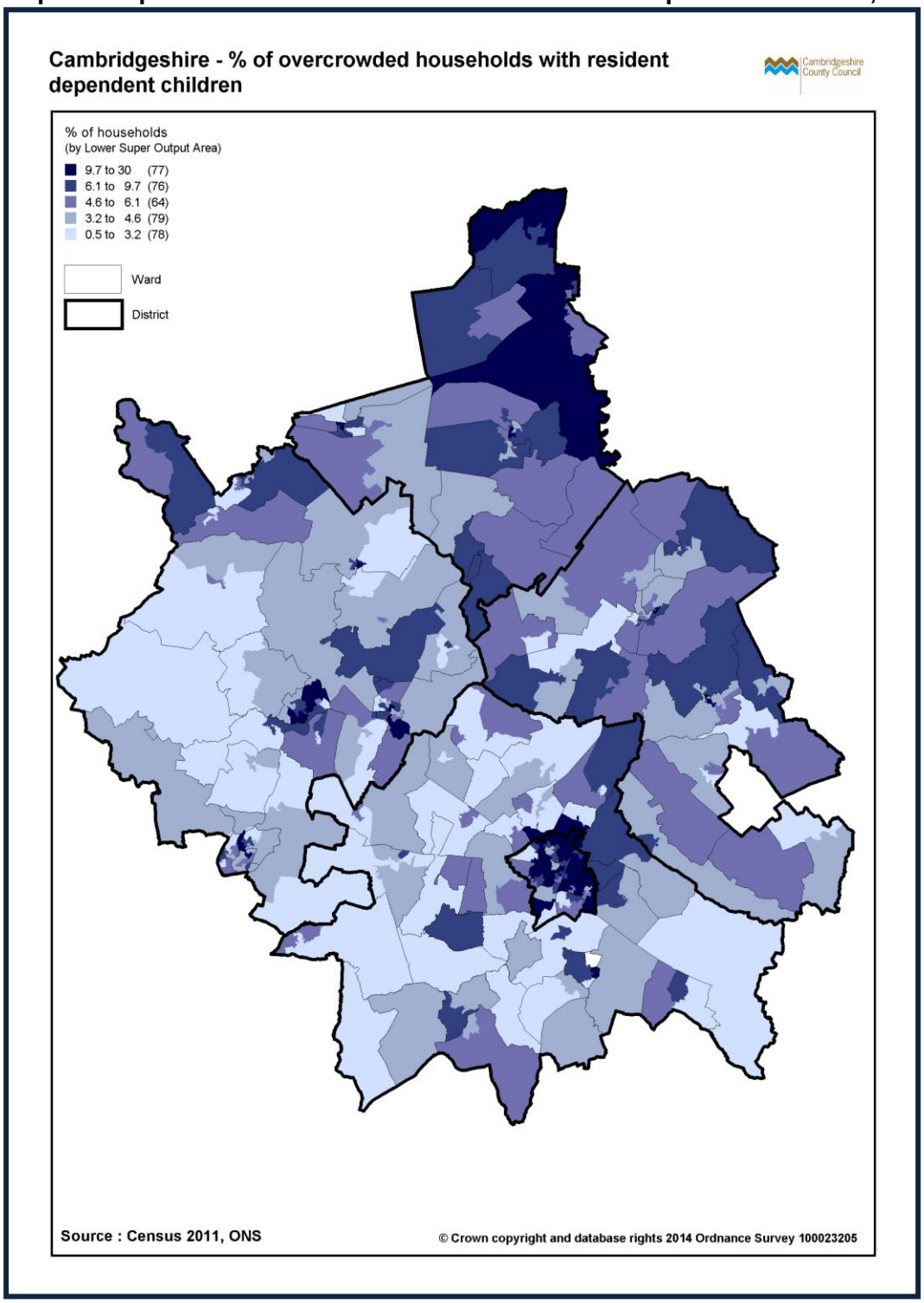
The map below shows the number of the female population aged 16 and above with no qualifications or Level 1 qualifications only. Maternal education was found to be moderating factor for childhood development. The map highlights the areas with greatest concentrations of the female population with level 1 qualifications, the vast majority of which are in Fenland.

Map 5: Proxy for Mother's Qualifications – Number of the female population aged 16 and above with no qualifications or Level 1 qualifications



The map below presents the variation across the county of the percentage of households that are classed as overcrowded from the 2011 Census where there are dependent children resident. As would be expected there is a concentration of overcrowded households in Cambridge City but there are also noticeably high proportion to the north of Fenland and around Huntingdon.

Map 6 : Proportion of overcrowded households with dependent children, 2011



In summary in Cambridgeshire according to the most recent data there are:

- 138,000 children aged 0-18 years living in Cambridgeshire.[22]
- 14,110 children living in poverty (aged under 16 years).[23]
- 530 Looked After Children.[24] (this includes those placed out of county)
- 381 Child Protection Plans. [24]
- 5,185 open Common Assessment Frameworks (CAFs).[24]
- 3,118 children with a statement of Special Educational Need (SEN).[24]
- 1,264 children aged two receiving funded Early Years places.[24]
- 520 children are home educated.[24]
- 8,575 children aged three and four years receiving funded Early Years places.[24]
- 2,969 open Social Care Cases, with 115 new referrals in the week commencing 09/03/15.[24]
- 286 new entrants into the Youth Justice System.[23]
- 445 statutory homeless households with dependent children or pregnant women.[24]
- 78 teenage mothers in a year.[23]
- 13,259 A&E attendances in under five year olds.[23]

Key Findings

Geographical patterns, which reflect research findings on family vulnerability factors, identified in data on female qualifications and births under the age of 22 should be considered for focusing prevention work, particularly as this data is available from the census by small geographical areas (Lower super output area).

Fenland remains the district area with the highest concentration of risk factors.

[22] Mid 2013 population estimates, Research and Performance Team, Cambridgeshire County Council
[23] Child Health Profile, 2014, ChiMat
[24] CFA key metrics, 16 March 2015, Cambridgeshire County Council

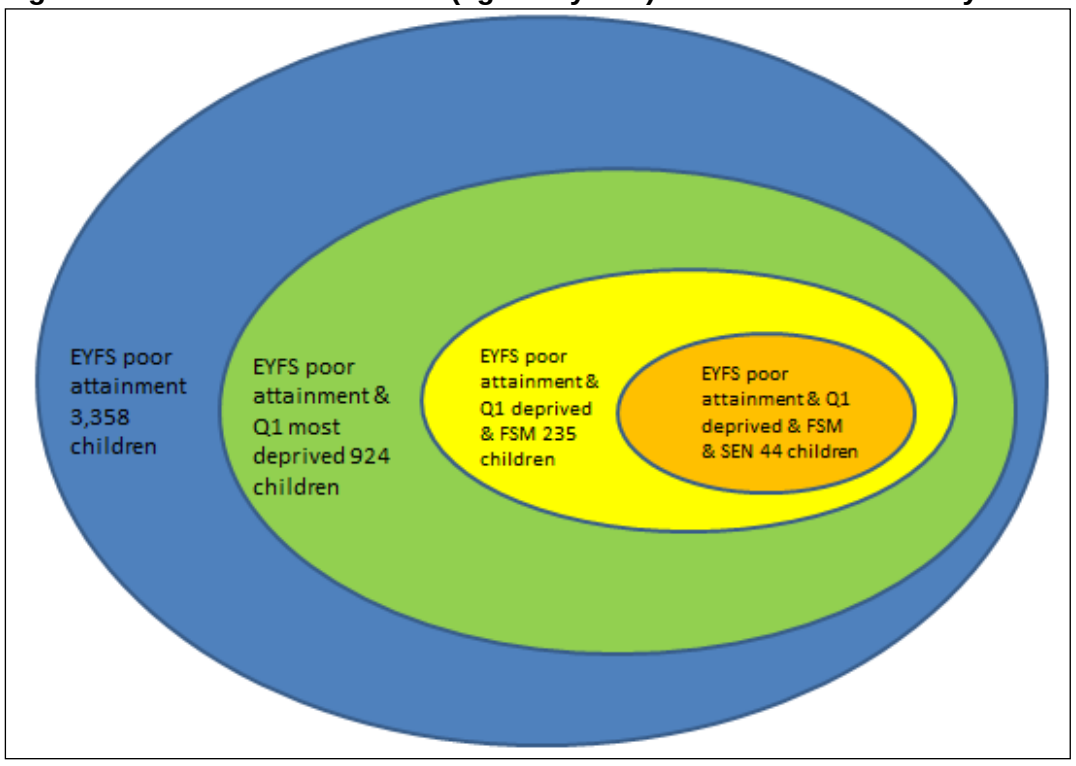
4 Detailed analysis of Early Years Foundation Stage, Key Stage 2 and Key Stage 3/4

4.1 Section 1: Early Years Foundation Stage (Reception year, children age 4-5)

There is only one year of EYFS data available as the nature of the EYFS assessment changed so the data is not comparable, and therefore children age 6 at January 2014 are not included in this report. At January 2014 there are 7,172 pupils at school aged five. For 6,862 of these children there is a record of their attainment at the Early Years Foundation Stage (EYFS). Of these children, 3,287 do not meet expected attainment levels at this stage (49%). A number of these children have risk factors for poor attainment at school, making them more likely to have poor attainment at this and later stages at school. In addition a number of children have multiple risk factors for poor attainment. The two diagrams that follow express this in different ways.

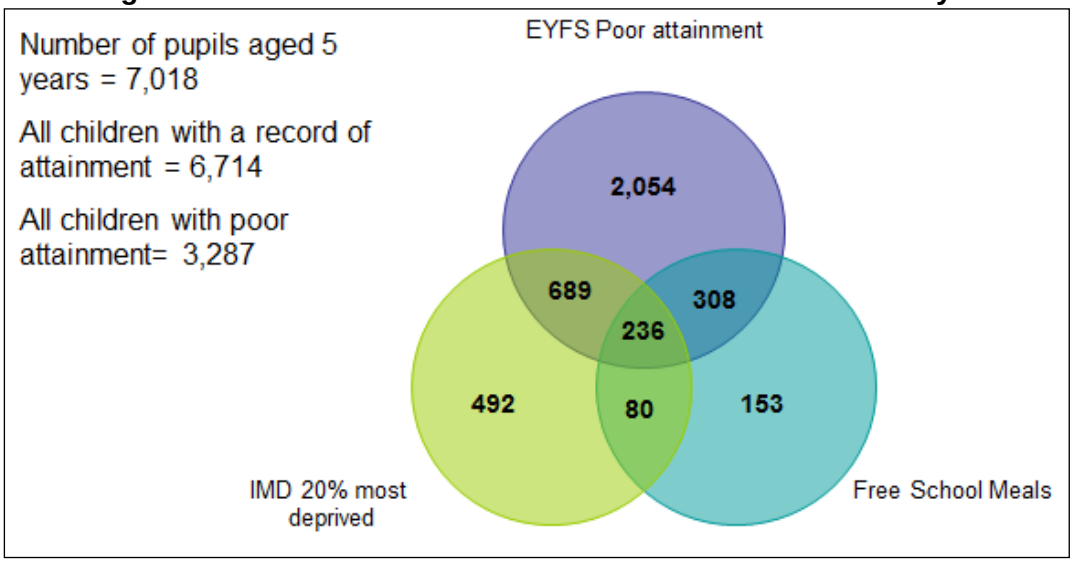
Figure 5 shows how these factors combine. There are 3,358 children with poor attainment of which 925 live in the 20% most deprived areas of the county. Of the 925 there are 236 children who are accessing free school meals, and of the 236 there are 45 children with SEN. Therefore there are 45 children with three risk factors who fall into the poor attainment category. Although the risk factor information is limited here we know that both deprivation, for which IMD and FSM are markers, and special educational needs are predicting factors for poor attainment in school. Poor attainment in school is a predicting factor for life chances.

Figure 5: EYFS Poor attainment (age 4-5 years) and other vulnerability markers



It is useful to separate out the factors we know about, poor attainment, IMD and FSMs and identify which children overlap within each category.

Figure 6: Early Years foundation Stage not reaching expected levels of attainment in Cambridgeshire residents with a attainment record 2012/13 school year



The diagram shows that 236 children are not reaching expected levels of attainment at EYFS, live in the 20% most deprived parts of the county and access free school meals. 308 children access FSM and have poor attainment but do not live in the most deprived parts of the county, and 689 children have poor attainment and live in the most deprived part of the county but do not access FSMs.

Of those children not reaching expected levels of attainment at EYFS, 16% are receiving FSMs, and 28% live in the most deprived areas, and 7% have both factors.

We can also see that the 62% of children living in the most deprived areas of the county have poor attainment, and 70% of children accessing free school meals also progress poorly. It is important to note that the numbers at EYFS are smaller than at other key stages as only one year of data is used.

Table 13 shows how poor attainment breaks down across quintiles of IMD.

Table 13: Rate of poor attainment and Quintile of deprivation

Quintile of deprivation	EYFS		Number of pupils (as at Jan 2014)	Rate per 1,000 pupils	
	Poor attainment	Good attainment		Poor attainment	Good attainment
Q1 (most deprived)	**925**	572	1,577	586.6	362.7
Q2	640	651	1,364	469.2	477.3
Q3	570	651	1,266	450.2	514.2
Q4	614	775	1,447	424.3	535.6
Q5 (least deprived)	538	778	1,364	394.4	570.4
Total	3,287	3,427	7,018	468.4	488.3
Unknown or outside CCC	71	78	154		

Statistically significantly worse than the Cambridgeshire average
Statistically significantly better than the Cambridgeshire average

The rate of poor attainment increases as deprivation increases, with the highest rate statistically significantly higher in the most deprived quintile. However, a substantial proportion of those with poor attainment do not live in the most deprived quintile (72% of those with poor attainment).

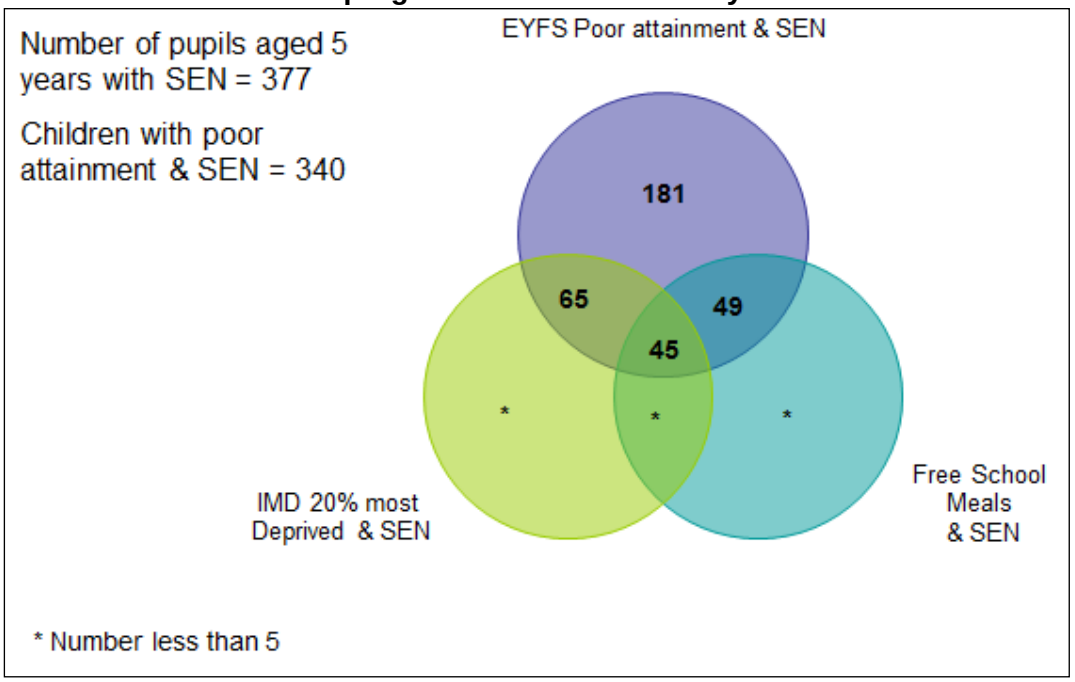
If you concentrated efforts on the 925 children in the most deprived areas of the county this would pick up 28% of all poor attainment.

A similar pattern can be seen looking at those children not achieving expected levels of attainment at EYFS who are also accessing free school meals, and/or have a special educational need, as the number and proportion of these children increases with deprivation.

4.1.1 SEN

It is also useful to separate out SEN as a factor to see how much it is a part of patterns of poor attainment. Figure 7 shows how children with SEN fit within these patterns.

Figure 7: Early Years Foundation Stage Poor attainment – Cambridgeshire resident children with SEN and a progress record for school year 2012/13



Children not reaching expected levels of attainment at EYFS with SEN, account for 10% of all children not reaching expected levels of development at EYFS (340 out of 3287 children). Children with poor attainment, SEN, IMD and free school meals account for 19% of all children who do not reach expected levels of attainment, live in the most deprived area and access free school meals (45 out of 236 children).

4.1.2 Ethnicity

White British children account for 76.6% of all pupils and 73% of those pupils with poor attainment at EYFS. Those with 'Any other white background' are the next largest group accounting for 9.3% of all pupils and 11% of poor attainment pupils. Mixed white Caribbean groups and Gypsy/Roma groups, although small in number, have a higher number of children poorly performing than the proportion of the population they represent. For example, Gypsy/Roma people are 0.8% of all pupils (60) and 1.4% of those pupils progressing poorly (48). Of that group 26 are accessing free school meals.

4.1.3 Service use

It is important to recognise that not all the children identified in this work will need to be in touch with services. The vulnerability factors described here are limited, and only indicate where there may be a need for additional support.

Children in contact with services

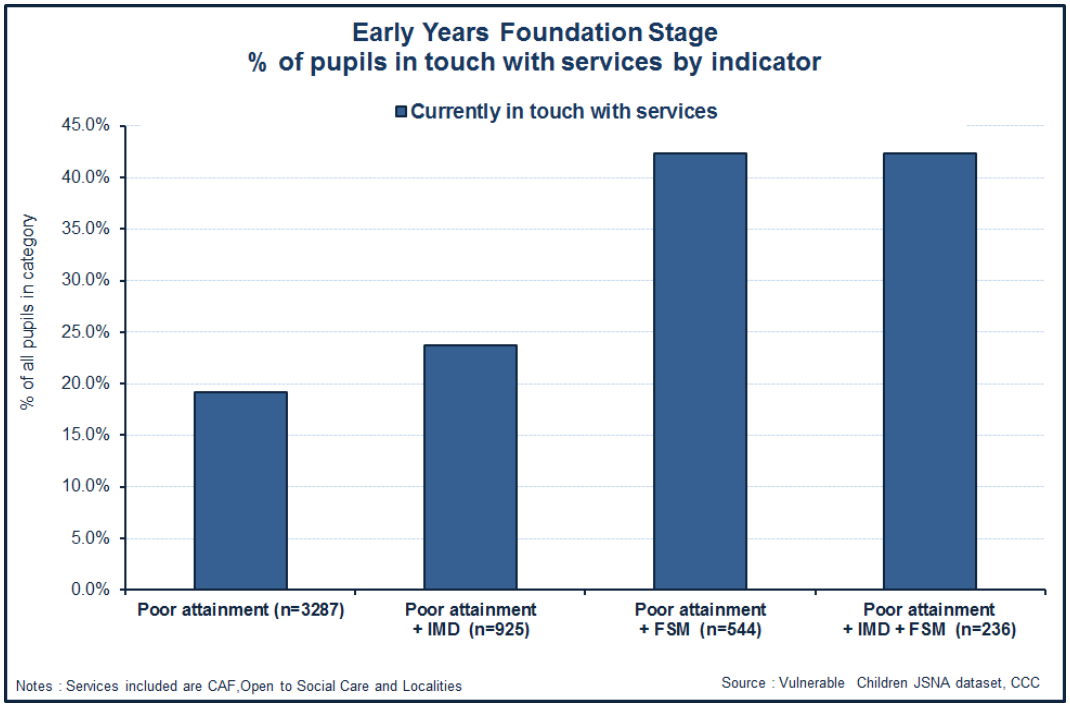
Figure 8 shows the proportion of children in each of the combinations of vulnerability factors in touch with services in the last year. The service data does not include any contact children might have had prior to entry to school with early years services such as children's centres.

Currently in touch with services includes those with an open Common Assessment Framework (CAF), open to social care, or under a Child Protection plan.

The services that have been included for both currently in contact with services and in touch with services within the last three years are :

- Open to social care
- Common Assessment Framework
- Locality services
- Child Protection Plan
- Community support services
- CREDS
- Early support
- Educational Psychology
- Family Intervention Partnership
- Hearing Support Service, Visual Impairment Service, Specialist Teachers
- Multi Systemic Therapy
- Specialist Family Support Service
- Short breaks
- Support to Early Years

Figure 8: Proportion of those with between one and four vulnerability factors currently in touch with services 2012/13 school year



The graph above shows how the proportion of children in each group in touch with services increases as the vulnerability factors increase. This is the pattern we would expect to see.

Table 14 below shows how vulnerability factors break down across district council areas.

Table 14: Not reaching expected level at EYFS and Free School Meals

District	Number of pupils			EYFS + FSM - Rate per 1,000 pupils	
	EYFS poor attainment + FSM	Poor attainment	All	Poor attainment	All pupils
Cambridge City	118	609	1,036	193.8	113.9
East Cambridgeshire	69	438	995	157.5	69.3
Fenland	145	588	1,015	246.6	142.9
Huntingdonshire	114	854	1,910	133.5	59.7
South Cambridgeshire	98	798	1,758	122.8	55.7
Cambridgeshire	544	3,287	6,714	165.5	81.0

Statistically significantly worse than the Cambridgeshire average
Statistically significantly better than the Cambridgeshire average

Overall across Cambridgeshire services are in touch with 52% of children with poor attainment at EYFS who also access free school meals. Fenland have a higher rate of children in this category and are the lowest contact area, but the numbers here are small and are likely to fluctuate over time.

Some children are over represented within those who are progressing poorly. Looked After Children are 1.1% of all pupils but 2.1% pupils progressing poorly at EYFS (69 out of 82 Looked after Children show poor attainment at this stage).

The primary reason for a child having SEN shows a similar pattern across all vulnerability factors with speech, language and communication needs being the largest group of children followed by Autism Spectrum Disorder and moderate learning difficulties.

Of those cases open to social care the most common reason for the case amongst children with poor attainment was abuse or neglect, accounting for 9% of open cases. When poor attainment was combined with free school meals the proportion was 24%, and it was 26% when combined with IMD and free school meals. Combined with free school meals and SEN it was 31.6%. The numbers in these proportions were small and therefore may fluctuate over time.

4.1.4 Summary of findings - Early Years Foundation Stage

- 49% percent of children in 12/13, for whom there is a progress record, have poor attainment at this stage. It should be noted that this figure reduced to 39% in 2013/14[25].

- The rate of children not achieving expected attainment levels at the EYFS increases as deprivation increases. The highest concentration of poor attainment is in the most deprived 20% of the county, however 72% of those progressing poorly do not live in the most deprived 20% of the county.

- Fenland has a statistically significantly higher rate of children not achieving expected development levels at EYFS and accessing free school meals compared to the Cambridgeshire average, while South Cambridgeshire has statistically significantly lower levels.

- 73% of pupils not achieving expected attainment levels at the EYFS are white British. 'Any other white', 'mixed white Caribbean' and 'gypsy Roma' groups are over represented in those not reaching attainment levels, but the numbers are small.

- The proportion of children who have been or are in touch with services increases proportionally with deprivation and additional vulnerability factors. 10% of all children not achieving expected levels of attainment are children with SEN.

- Across the county, services are in touch with 52% of children who are not achieving expected attainment levels at the EYFS, and are accessing free school meals.

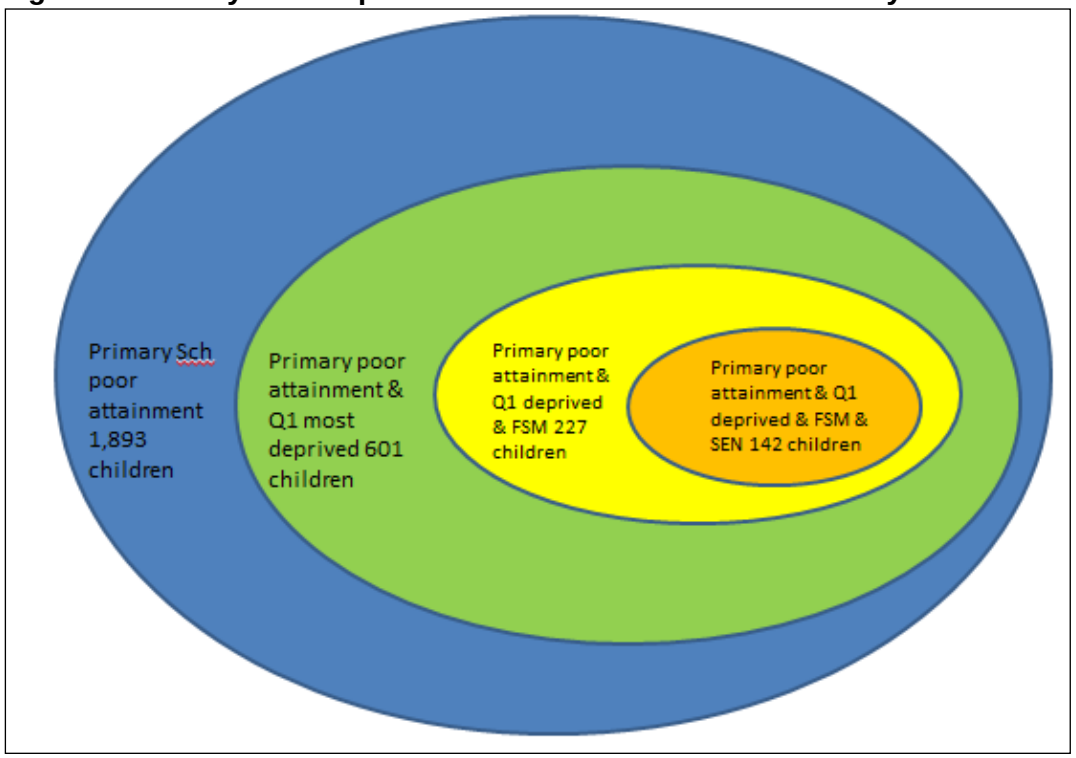
Section 2: Primary School

In total there are 24,693 pupils at school years three to six (aged 7 to 10). For 23,886 of these children there is a record of their attainment at Key Stage 2 and 1,893 of these children (8%) do not meet expected levels at this stage. A number of these children have risk factors for poor attainment at school, making them more likely have poor levels of attainment at this and later stages at school. In addition a number of children have multiple risk factors for poor attainment. The two diagrams that follow express this in different ways.

[25] Department for Education.

The figure below shows how these factors combine. There are 1,893 children with poor attainment of which 601 live in the 20% most deprived areas of the county. Of the 601 there are 227 children who are accessing free school meals, and of the 227 there are 142 children with SEN. Therefore there are 142 children with three risk factors who also have poor attainment levels. Although the risk factor information is limited here we know that both deprivation, for which IMD and FSM are markers, and special educational needs are predicting factors for poor attainment in school.

Figure 9: Primary School poor attainment and other vulnerability markers



It is also useful therefore to separate out the factors we know about, poor attainment, IMD and FSMs and identify which children overlap within each category.

Figure 10: Primary School Poor attainment in Cambridgeshire residents with a progress record 2012/13 school year

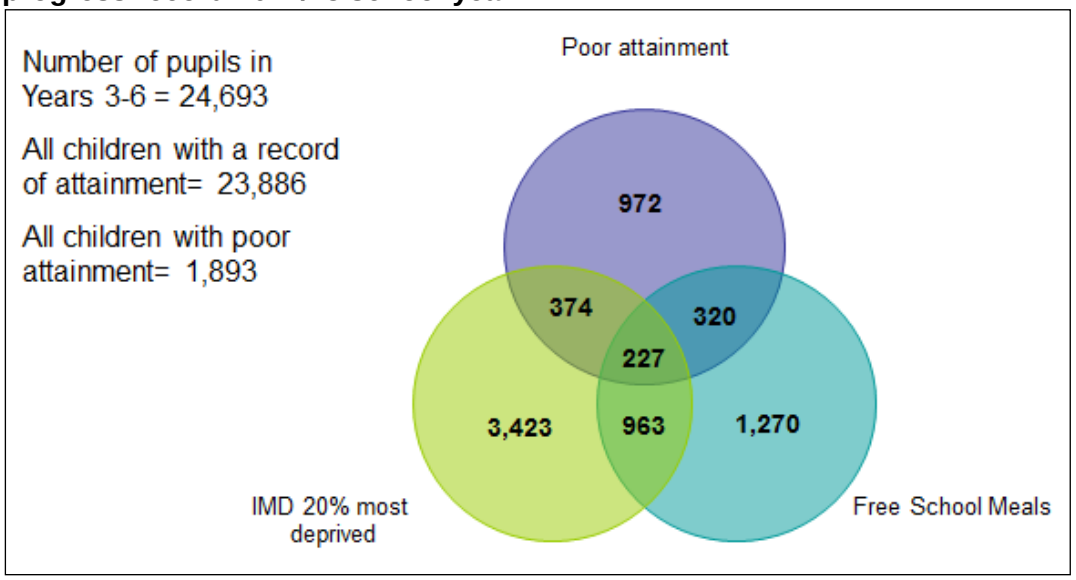


Figure 10 above shows that 227 children are not reaching expected levels of attainment at Key Stage 2, live in the 20% most deprived parts of the county and access free school meals. 320 children access FSM and have poor attainment but do not live in the most deprived parts of the county, and 374 children have poor attainment levels and live in the most deprived part of the county but do not access FSMs.

Of those children not reaching expected levels of attainment at Key Stage 2, 29% are receiving FSMs, and 32% live in the most deprived areas, and 12% have both factors.

We can also see that the 12% of children living in the most deprived areas of the county have poor attainment, as do 20% of children accessing free school meals.

Table 15: below shows how poor attainment breaks down across quintiles of IMD.

Quintile of deprivation	Poor KS2 attainment		Number of pupils (as at Jan 2014)	Rate per 1,000 pupils	
	Poor attainment	Good attainment		Poor attainment	Good attainment
Q1 (most deprived)	**601**	4,386	5,206	115.4	842.5
Q2	446	4,349	4,958	90.0	877.2
Q3	339	4,164	4,646	73.0	896.3
Q4	249	4,656	5,056	49.2	920.9
Q5 (least deprived)	258	4,438	4,827	53.4	919.4
Total	1,893	21,993	24,693	76.7	890.7
Unknown or outside CCC	44	547	602	73.1	908.6

Statistically significantly worse than the Cambridgeshire average
Statistically significantly better than the Cambridgeshire average

The rate of poor attainment increases as deprivation increases, with the highest rate statistically significantly higher in the two most deprived quintiles. However, a substantial proportion of those with poor attainment do not live in the most deprived quintile (68% of those progressing poorly). The fact that the top two quintiles are statistically significantly higher than the Cambridgeshire average and the bottom two are statistically significantly lower, compared with just the top and bottom quintile for EYFS, suggests that the poor attainment may be spread more evenly between the top two quintiles for deprivation.

If efforts are concentrated on the 601 children in the most deprived quintile of the county this would pick up 32% of all poor attainment. If this was extended to quintile two as well as quintile one this would pick up 55% of all poor attainment.

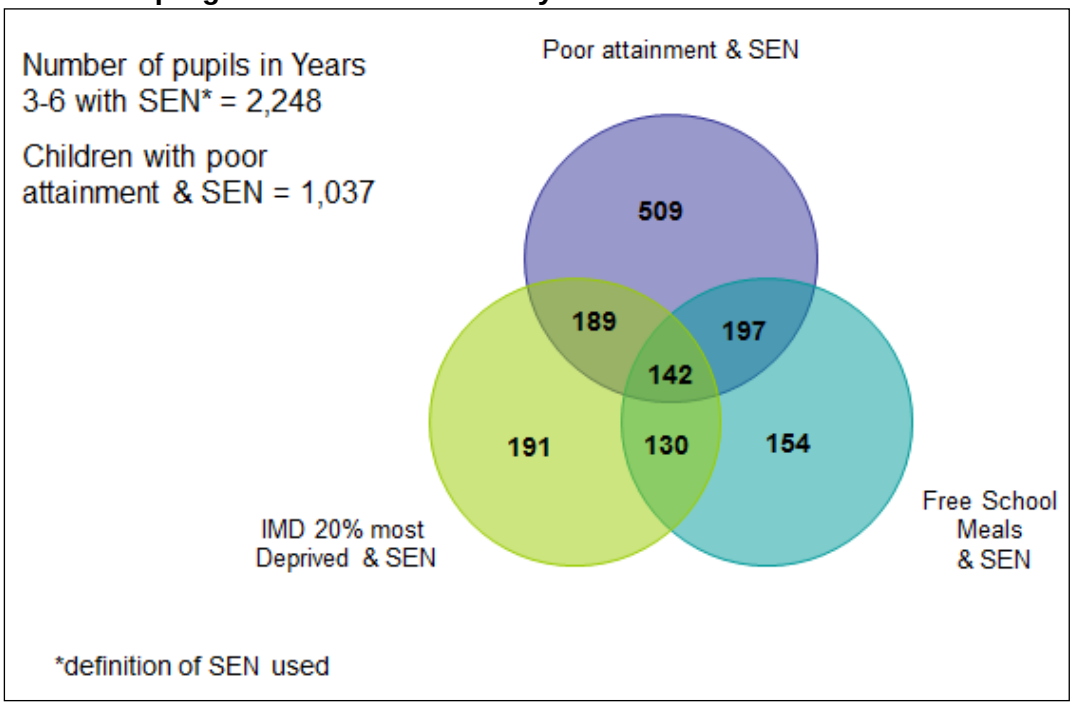
A similar pattern can be seen looking at those children not achieving expected levels of attainment at Key Stage 2 who are also accessing free school meals, and/or have a special educational need, as the number and proportion of these children increases with deprivation.

4.1.5 SEN

Figure 11 shows how children with SEN fit within the broader pattern described above.

Children not reaching expected levels at Key Stage 2 with SEN, account for 55% (1,037 out of 1,893 children) of children not reaching expected levels. This significant increase from 10% at EYFS is explained by the general increase in children who are assessed as needing a statement of educational needs above the age of five. Children with poor attainment at KS2, SEN, IMD and Free school meals, account for 63% of all children with poor attainment, living in the most deprived area and accessing free school meals (142 out of 227 children).

Figure 11: Primary School Poor attainment – Cambridgeshire resident children with SEN and a progress record for school year 2012/13



4.1.6 Ethnicity

White British children account for 80% of all pupils and 76% of those pupils with poor attainment at KS2. Those with 'Any other white background' are the next largest group accounting for 7.2% of all pupils and 8.6%% of poor attainment pupils. The gypsy/Roma group, although small in number have a higher number of children with poor attainment than the proportion of the population they represent, 4.1% (79) poorly performing at KS2 but 0.9% (239) of all children.

4.1.7 Service use

Children in contact with services

Figure 12 shows the proportion of children in each of the combinations of vulnerability factors in touch with services in the last year and the last three years (please see the definitions below).

The services that have been included for both currently in contact with services and in touch with services within the last three years are :

- Open to social care
- Common Assessment Framework
- Locality services (one year only)
- Child Protection Plan
- Community support services
- CREDS
- Early support
- Educational Psychology
- Family Intervention Partnership
- Hearing Support Service, Visual Impairment Service, Specialist Teachers
- Multi Systemic Therapy
- Specialist Family Support Service
- Short breaks

- Support to Early Years

Generally the proportion of children in contact with services increases with an increase in vulnerability factors.

Figure 12: Key Stage 2 (years 3-6) Percentage of pupils in touch with services by indicator

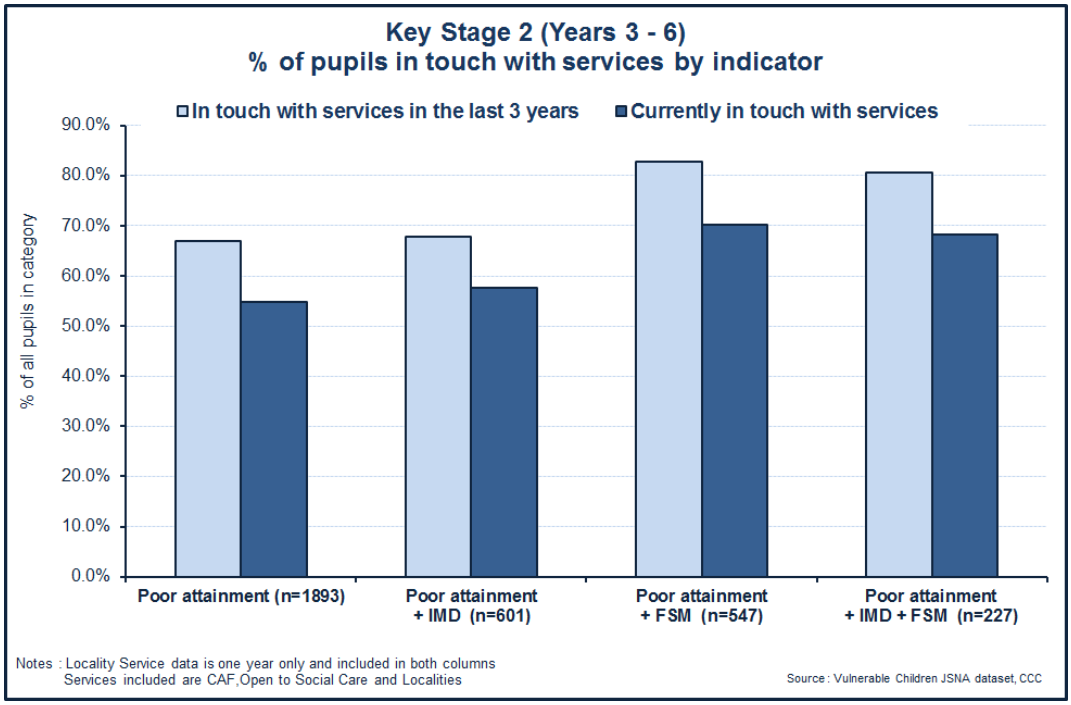


Table 16: Not reaching expected level at Key Stage 2 and Free School Meals

District	Number of pupils			KS1 + FSM - Rate per 1,000 pupils	
	KS1 poor attainment + FSM	Poor attainment	All	Poor attainment	All pupils
Cambridge City	115	315	3,229	365.1	35.6
East Cambridgeshire	64	247	3,481	259.1	18.4
Fenland	150	425	3,782	352.9	39.7
Huntingdonshire	113	495	7,065	228.3	16.0
South Cambridgeshire	105	411	6,329	255.5	16.6
Cambridgeshire	547	1,893	23,886	289.0	22.9

Statistically significantly worse than the Cambridgeshire average
Statistically significantly better than the Cambridgeshire average

Overall across Cambridgeshire services are in touch with 83% of children with poor attainment at KS2 who also access free school meals. Fenland has the highest rate of children per 1000 population in this category.

Some children are over represented within those who have poor attainment levels. Looked After Children are over represented but the numbers are small. The primary reason for a child having SEN shows a similar pattern across all vulnerability factors with speech, language and communication needs being the largest group of children followed by moderate learning difficulties. Looking at children with poor attainment and IMD and/or

FSM, behaviour, emotional and social difficulties become 15-16% of the primary reason for a child having SEN, compared to 7-8% within all those with poor attainment. However, language and communication needs and moderate learning difficulties are also higher amongst these groups compared to the overall poor attainment population.

Of those cases open to social care, the most common reason for the case amongst children with poor attainment was abuse or neglect, accounting for 16.5% of open cases. When poor attainment was combined with free school meals the proportion was 31%, combined with free school meals and SEN it was 34%, and it was 37% when combined with IMD and free school meals. The numbers in these proportions are small and therefore may fluctuate over time.

4.1.8 Summary of findings – Key Stage 2

- Eight percent of children, for whom there is a progress record, have poor attainment at this stage. Of those children not reaching expected levels at Key Stage 2, 29% are receiving FSMs, and 32% live in the most deprived areas, and 12% have both factors.

- The rate of children not achieving expected levels at KS2 increases as deprivation increases. However, the rate of poor attainment is statistically significantly higher in the top two quintiles for deprivation. Therefore, those with poor attainment are spread across the top 40% most deprived areas of the county.

- Fenland and Cambridge City have a statistically significantly higher rate of children not achieving expected attainment levels at KS2 and accessing free school meals compared to the Cambridgeshire average, while South Cambridgeshire and Huntingdonshire have statistically significantly lower levels.

- Children not reaching expected levels at Key Stage 2 with SEN account for 55% (1,037 out of 1,893 children) of children not reaching expected levels. Children with poor attainment at KS2, SEN, IMD and free school meals account for 63% of all children with poor attainment, living in the most deprived area and accessing free school meals (142 out of 227 children).

- White British children account for 80% of all pupils and 76% of those pupils with poor attainment at KS2. ‘Any other white’, ‘mixed white Caribbean’ and ‘gypsy Roma’ groups are over represented in those not reaching attainment levels, but the numbers are small.

- The proportion of children who have been or are in touch with services increases proportionally with deprivation and additional vulnerability factors.

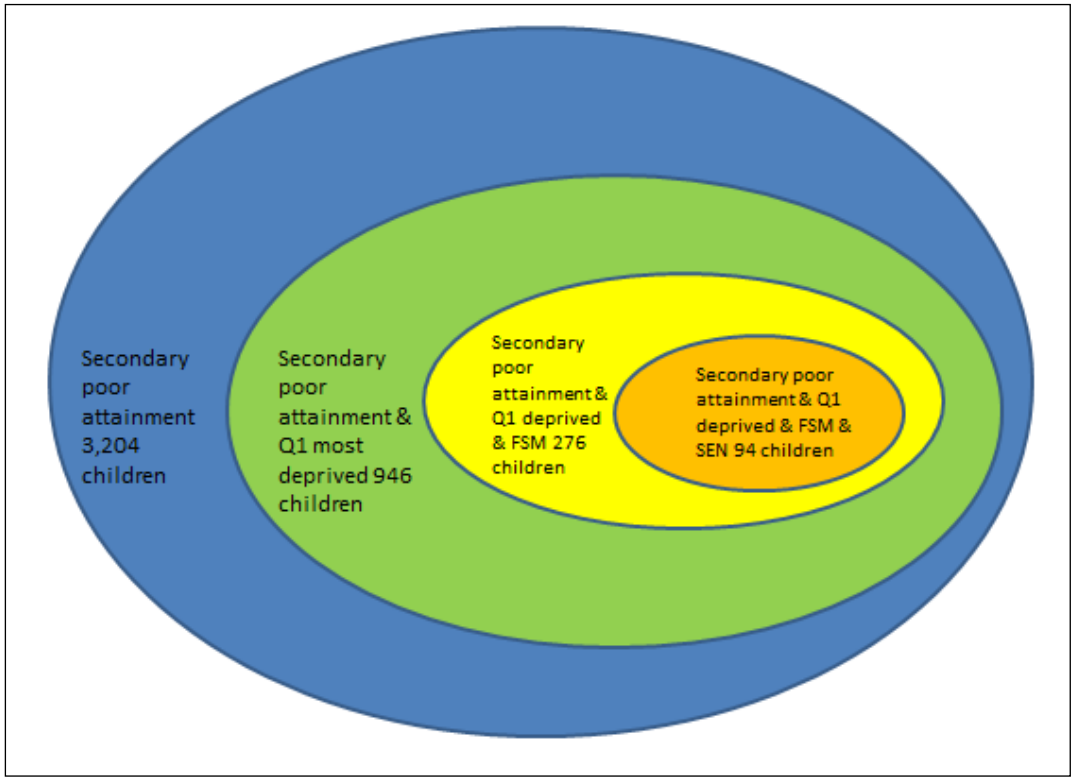
- Across the county, services are in touch with 69% of children who are not achieving expected attainment at KS2, and are accessing free school meals. Out of the district areas, Fenland and Huntingdonshire are in touch with the highest proportion of children in this group. This is the highest service contact rate out of the three stages of progress.

4.2 Section 3: Secondary School (Key Stage 3/4)

In total there are 28,161 pupils at school years 7-11 (aged 11 to 15). For 27,706 of these children there is a record of their attainment at Key Stage 3/4 and 3,204 of these children (11.5%) do not meet expected levels at this stage. A number of these children have risk factors for poor attainment at school, making them more likely to have poor attainment levels at this and later stages at school. In addition a number of children have multiple risk factors for poor attainment. The two diagrams that follow express this in different ways.

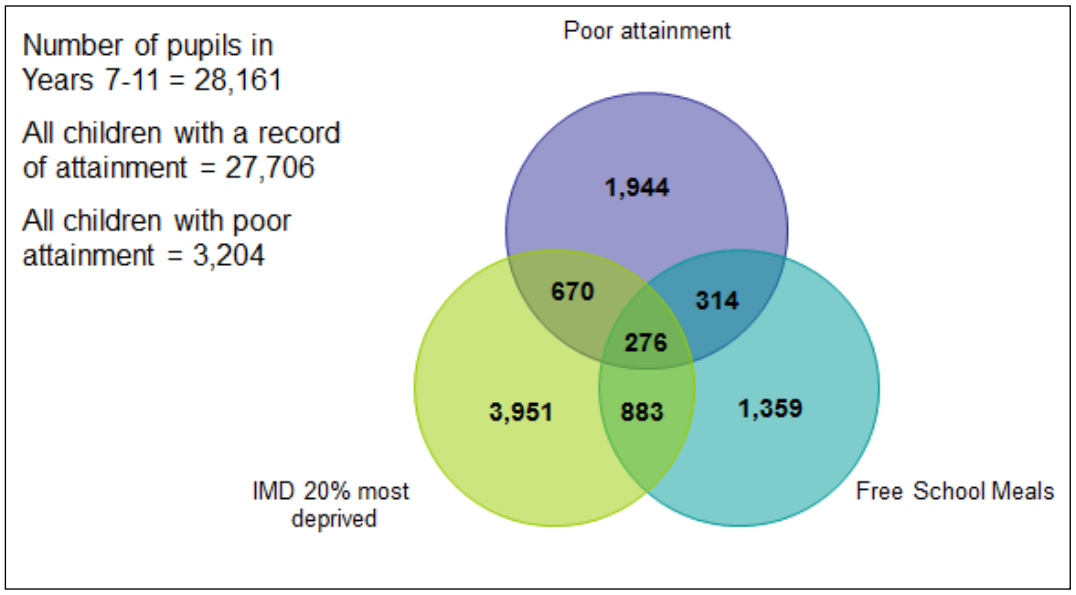
The figure below shows how these factors combine. There are 3,204 children with poor attainment of which 946 live in the 20% most deprived areas of the county. Of the 946 there are 276 children who are accessing free school meals, and of the 276 there are 94 children with SEN. Therefore there are 94 children with three risk factors who also have poor attainment.

Figure 13: Secondary School poor attainment and other vulnerability markers



It is useful to separate out the factors we know about, poor attainment, IMD and FSMs and identify which children overlap within each category.

Figure 14: Secondary School Poor attainment in Cambridgeshire residents with a progress record 2012/13 school year



The diagram shows that 276 children are not reaching expected levels of attainment at KS3/4, live in the 20% most deprived parts of the county and access free school meals. 314 children access FSM and have poor progression but do not live in the most deprived parts of the county, and 670 children who have poor attainment and live in the most deprived part of the county but do not access FSMs.

Of those children not reaching expected levels at KS3/4, 18% are receiving FSMs, and 30% live in the most deprived areas, and 9% have both factors.

It can also be seen that the 16% of children living in the most deprived areas of the county have poor levels of attainment, as do 21% of children accessing free school meals.

It is not surprising that the figures for IMD are higher than those for free school meals as free school meals, are in large part a subset of the IMD definition.

Table 17: shows how poor attainment breaks down across quintiles of IMD.

Quintile of deprivation	Poor KS attainment		Number of pupils (as at Jan 2014)	Rate per 1,000 pupils	
	Poor attainment	Good attainment		Poor attainment	Good attainment
Q1 (most deprived)	**946**	4,834	5,949	159.0	812.6
Q2	655	4,750	5,491	119.3	865.1
Q3	525	4,551	5,138	102.2	885.8
Q4	575	5,325	5,965	96.4	892.7
Q5 (least deprived)	503	5,042	5,618	89.5	897.5
Total	3,204	24,502	28,161	113.8	870.1
Unknown or outside CCC	98	705	812	120.7	868.2

Statistically significantly worse than the Cambridgeshire average
Statistically significantly better than the Cambridgeshire average

The rate of poor attainment increases as deprivation increases, with the highest rate statistically significantly higher in the most deprived quintile. 30% of those with poor attainment live in the most deprived area (quintile) of the county, and 34% of those children live in the two least deprived areas of the county, where the rate of poor attainment is statistically significantly lower than the Cambridgeshire average. If efforts are concentrated on the two most deprived quintiles this would pick up 50% of all poor attainment at this stage.

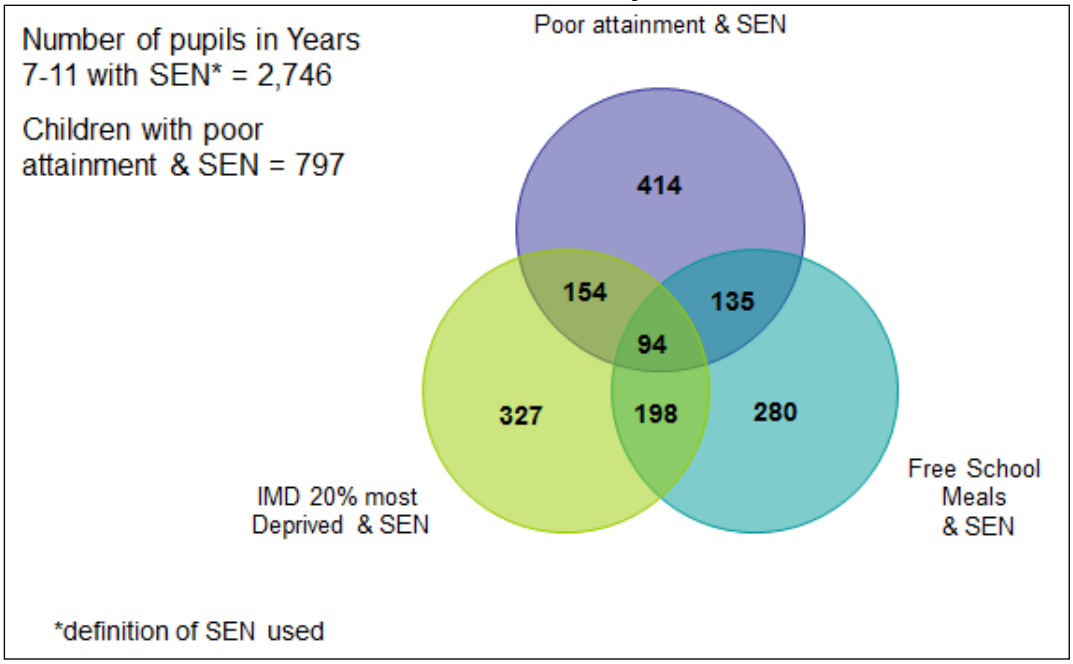
250 pupils in the 946 (26%) who have poor attainment at KS3/4 and live in the most deprived area of the county also have poor attendance.

4.2.1 SEN

Figure 15 shows how children with SEN fit within the broader pattern described above.

Children not reaching expected levels at KS3/4 with SEN, account for 25% of poor attainment children at this stage. Children with poor attainment at KS3/4, IMD, FSM and SEN account for 34% of all children with those factors.

Figure 15: Secondary School Poor attainment – Cambridgeshire resident children with SEN and an attainment record for the school year 2012/13



4.2.2 Ethnicity

White British children account for 85% of all pupils and 89% of those pupils with poor attainment at KS3/4. This is different from the EYFS and KS3/4 where this group were under represented compared to their numbers in the population.

Those with 'Any other white background' are the next largest group accounting for 5.2% of all pupils and 2.2%% of poor attainment pupils. Again this is a change from previous stages.

The gypsy/Roma group, are 0.4% of the population and 0.5% of those poorly performing at KS3/4, but this is only 18 children.

4.2.3 Service use

Children in contact with services

Figure 16 shows the proportion of children in each of the combinations of vulnerability factors in touch with services in the last year and in the last three years. The services that have been included for both currently in contact with services and in touch with services within the last three years are :

- Open to social care
- Common Assessment Framework
- Locality services (one year only)
- Child Protection Plan
- Community support services
- CREDS
- Early support
- Educational Psychology
- Family Intervention Partnership
- Hearing Support Service, Visual Impairment Service, Specialist Teachers
- Multi Systemic Therapy
- Specialist Family Support Service
- Short breaks
- Support to Early Years

Figure 16: Proportion of children in touch with services by indicator - Key Stage 3/4

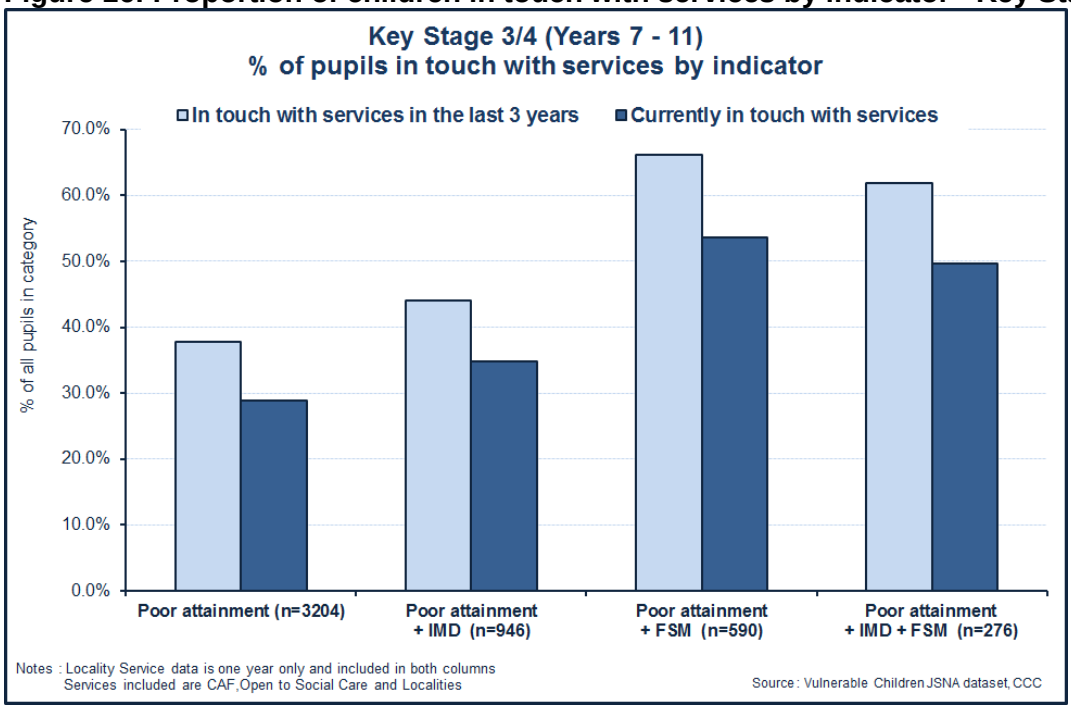


Table 18: Key Stage 3/4: Poor attainment and contact with services by District Council

District	Number of pupils			KS3/4 + FSM - Rate per 1,000 pupils	
	KS3/4 poor attainment + FSM	Poor attainment	All	Poor attainment	All pupils
Cambridge City	108	406	3,690	266.0	29.3
East Cambridgeshire	64	440	3,917	145.5	16.3
Fenland	172	625	4,394	275.2	39.1
Huntingdonshire	158	999	8,508	158.2	18.6
South Cambridgeshire	88	734	7,197	119.9	12.2
Cambridgeshire	590	3,204	27,706	184.1	21.3

Statistically significantly worse than the Cambridgeshire average
Statistically significantly better than the Cambridgeshire average

The proportion of children with poor attainment in touch with social care is 18% and the figure is 23% for those in touch with locality services. 9% of these children have been in touch with both.

Overall across Cambridgeshire services are in touch with 59.8% of children with poor attainment at KS3/4 who also access free school meals. Fenland have the highest rate of children in this category, but both Fenland and Cambridge City have a rate of poor attainment and children accessing free school meals above the Cambridgeshire average. The largest number of these children live in Fenland.

Some children are over represented within those with poor attainment levels. Looked After Children are 0.4% of all pupils but 0.9% pupils with poor attainment at KS3/4 (29 out of 125 Looked after Children show poor attainment at this stage).

The primary reason for a child having SEN shows a different pattern to previous stages with behaviour, emotional and social difficulties accounting for the largest proportion of children. This reason accounts for 3.2% of all pupils and 6.9% of poor attainment pupils. When poor attainment is combined with free school meals this increases to 12.3%. This is followed by moderate learning difficulties, which again are higher as a reason for SEN in the poor attainment population (5.1) compared to 1.8% overall.

Of those cases open to social care the most common reason for the case amongst children with poor attainment was abuse or neglect, accounting for 10% of open cases. When poor attainment was combined with free school meals the proportion was 26%, combined with free school meals and SEN it was 28.5%, and it was 28% when combined with IMD and free school meals. The numbers in these proportions are small and therefore may fluctuate over time.

4.2.4 Summary of findings – Key Stage 3/4

- 11.5% of children (3,204) for whom there is an attainment record, have poor attainment at this stage. Of those children not reaching expected levels at KS3/4, 18% are receiving FSMs, and 30% live in the most deprived areas, and 9% have both factors.

- The rate of children not achieving expected levels of attainment at KS3/4 increases as deprivation increases. The rate of poor attainment is statistically significantly higher in the 20% most deprived areas.

- Fenland and Cambridge City have a statistically significantly higher rate of children not achieving expected development levels at KS3/4 and accessing free school meals compared to the Cambridgeshire average, while South Cambridgeshire have statistically significantly lower levels.

- Children not reaching expected levels at KS3/4 with SEN account for 25% of those children with poor attainment at this stage. Children with poor attainment at KS3/4, IMD, FSM and SEN account for 34% of all children with those factors. The primary reason for a child having SEN shows a different pattern to previous stages with behaviour, emotional and social difficulties accounting of the largest proportion children.

- White British children account for 85% of all pupils and 89% of those pupils with poor attainment at KS3/4. This is different from the EYFS and KS2 where this group were under represented compared to their numbers in the population.

- The proportion of children who have been or are in touch with services increases proportionally with deprivation and additional vulnerability factors.

- Across the county services are in touch with 60% of children who are not achieving expected attainment at KS3/4, and are accessing free school meals. Out of the district areas, East Cambridgeshire and South Cambridgeshire are in touch with the greatest proportion of this group, but the numbers are small and will fluctuate.

Appendix A: Glossary and Definitions

Free School Meal (FSM) – where a pupil meets the eligibility criteria for FSM and make a claim. Eligibility criteria for FSM are based on family receipt of benefits, such as Income Support and Jobseekers Allowance.

Special Educational Need (SEN) – where a pupil has an educational statement or classed as School Action Plus. Special Educational Need is where a child's ability to learn is affected due to their:

- Behaviour or ability to socialise, eg not being able to make friends.
- Reading and writing, eg they have dyslexia.
- Ability to understand things.
- Concentration levels, eg they have Attention Deficit Hyperactivity Disorder.
- Physical needs or impairments.

The JSNA combines pupils that have a statement of SEN or are part of School Action Plus. A statement is normally made when all the educational provision required to meet a child's needs cannot reasonably be met by the resources within a child's school. Children with School Action Plus have their needs met within the school setting but the school will seek external advice from the LEA's support services, the local Health Authority or from Social Services.

Index of Multiple Deprivation (2010) – this is a composite deprivation index that combines seven Lower Super Output Area level domain indices. These that relate to income deprivation, employment deprivation, health deprivation and disability, education skills and training deprivation, barriers to housing and services, living environment deprivation, and crime which reflect the broad range of deprivation that people can experience. In Cambridgeshire the 20% of geographical areas with the highest deprivation scores (indicating greater relative deprivation) are combined to give a quintile of greatest deprivation.

Early Years Foundation Stage - End of reception year, age 4-5. Children are defined as having a poor level of development if they haven't achieved at least the expected level in the early learning goals in the prime areas of learning (personal, social and emotional development; physical development; and communication and language) and the early learning goals in the specific areas of mathematics and literacy.

Key Stage 1 poor attainment – Aged 5-7 years. Where a pupil is below Level 2 in English **AND** Maths (used for Key Stage 2 pupils' latest attainment results), as supplied in Fischer Family Trust data.

Key Stage 2 poor attainment – Aged 7-10 years. Where a pupil is below Level 4 in English **AND** Maths (used for Key Stage 3 pupils' latest attainment results), as supplied in Fischer Family Trust data.
KS2 results are externally marked assessments.

Key Stage 3 poor attainment – Aged 11-15 years. Where a pupil is below Level 7 in English **AND** Maths (used for Key Stage 4 pupils' latest attainment results), as supplied in Fischer Family Trust data. KS3 results are un-moderated teacher assessments, therefore different in nature from those at KS2. They are not used for national reporting, and are likely to be more variable than those at KS2.

This following link provides more detail about assessment levels and the national curriculum. https://www.gov.uk/national-curriculum/overview

Common Assessment Framework (CAF) – A framework to help practitioners working with children, young people and families to assess children and young people's additional needs for earlier, and more effective services, and develop a common understanding of those needs and how to work together to meet them.

Open to Social Care – includes children referred to local authority social care services, children assessed to be in need, and children who were the subject of a child protection plan, and will include looked after children.

Together for Families – is a project that is part of a government initiative to improve the coordination of support for families who are involved with a number of services.

Appendix B: House of Commons POST NOTE: Big Data and Public Health (relevant to health datasets)

HOUSES OF PARLIAMENT
PARLIAMENTARY OFFICE OF SCIENCE & TECHNOLOGY

POSTNOTE

Number 474 July 2014

Big Data and Public Health

Patient health records and other large scale medical and administrative datasets are increasingly being considered as a valuable tool for the study and improvement of health. This POSTnote examines the sources of data, their current and potential uses for health improvement, and the legal and practical issues raised by data use for public health or research purposes.

Overview

- Large-scale medical and administrative datasets can be used for health service management and research.
- Data sources include prescription data, GP records and education records.
- Medical records may be used in direct patient care, healthcare planning, public health monitoring and academic research and are increasingly being linked to other sources of health and administrative data.
- There are recent and ongoing changes to UK and EU laws relating to the use of patient records beyond direct care.
- Issues with the use of medical records beyond direct care include: public attitudes; timely access to data; privacy, security and identifiability; and data quality and accuracy.

Background

The NHS holds millions of electronic medical records on the health of the population from birth to death. Increased integration and analysis of these alongside other datasets may provide insights that can improve the understanding and management of the population's health. However, the use of personal identifiable data is regulated under the Data Protection Act 1998 and other laws that usually require sensitive information such as individual medical records to be de-identified unless the individual has consented to their use (Box 1).

This POSTnote is part of a series of notes covering the theme of big data. Medical data meet many of the defining parameters for big data such as being large in volume, containing a variety of data formats, and often needing to be accessed quickly (see Big Data Overview, POSTnote 468 for more detail of what big data is).

Sources of Data

There are several sets of data that cover a large proportion of the population and have the potential to be used for population health management. These include NHS records from GPs, hospitals and other settings, along with administrative datasets held by the public sector. Other sources of data that pertain to subsets of the population (cohorts) include genetic information and biobank samples (POSTnote 473), clinical trials data (POSTnote 461) and public survey results gathered across a prolonged period on one cohort. There is also the potential to include data from other sources such as patient experiences shared on social media platforms, and data from supermarkets on consumer habits. The principal sources of data considered within this note are NHS records and administrative datasets collected by government departments and agencies (Box 2).

Box 1. De-identification of patient data

Individual patient records are examples of identifiable data because they contain identifiers such as NHS number, name and date of birth from which individuals can be easily identified. They can be subjected to different levels of de-identification. Broadly speaking these include:

- **pseudonymised** (also called key-coded) – identifiers are separated from the record and replaced with a code
- **anonymised** – all personal identifiers are removed
- **aggregated** – multiple records are combined to produce summary level statistics that do not include individual level data.

NHS Records

The conversion of health records into electronic form has provided new opportunities for their use and linkage within and outside the health service for public health

Box 2. Organisations that extract and link health data
There are a number of organisations that routinely extract and link health datasets within 'accredited safe havens' (POSTnote 468).

- **The Health and Social Care Information Centre (HSCIC)** collects Hospital Episode Statistics (HES) and other hospital datasets at a national level and routinely links patient level data from some of these datasets. It plans to collect GP records at a national level as part of the care.data programme (see Box 3). It is an arm's length body of NHS England established in 2013 to replace the NHS Information Centre (IC).
- **The Clinical Practice Research Datalink (CPRD)** contains pseudonymised records from around 8.5% of GP practices which can be accessed securely for health research. It also links these records with other England-wide medical records. It was initially set up in 1987.
- **Clinical Commissioning Groups (CCGs)** employ commercial health informatics specialists to extract and link data from GP and hospital care settings for commissioning purposes at a local level.
- **Public Health England (PHE)** collects and processes vast amounts of data from settings such as GP surgeries, hospitals and NHS laboratories as part of its health surveillance and protection activities. PHE also links its bespoke data collections to existing datasets such as HES and the Office of National Statistics' mortality data. It also generates data via activities such as the genomic sequencing of infectious disease agents.

management and research. The NHS generates a vast range of data including **GP records** of individual patients' illnesses and treatments, and **Hospital Episode Statistics** (HES) containing data from all English NHS hospitals about all attendances, diagnoses and treatments. NHS England plans to link these data under the care.data scheme (Box 3). Additional datasets include prescription records and imaging data such as X-rays and MRI scans.

Administrative Data

Administrative data are data routinely collected by government and other public sector organisations for purposes such as registration, transaction and record keeping. Examples of UK datasets held by government include the National Pupil Database that holds information on school attainment, various indices of deprivation, tax payment records, benefit records and birth and death records. There are currently few examples of research using linked administrative data because of cultural and legislative barriers. A new Administrative Data Research Network aims to enable systematic linkage of data for research purposes.[1] Administrative data about specific individuals can also be linked to their medical records (see Boxes 4 and 5). This enables researchers to study the links between health patterns and factors such as education, environment or socio-economic status at a population level.

Uses of Data

The use of medical records for health improvement purposes can be broadly broken down into primary and secondary uses within the NHS, and secondary uses beyond the NHS for public health and research purposes, regulated by the laws outlined in Box 6. Secondary use of data both within and outside the NHS may require identifiers in order to ensure that linked records refer to the same individual.

Box 3. care.data
In 2013, NHS England commissioned HSCIC to develop care.data, a programme to link individuals' medical records from GP practices and hospitals at a national level.[2] HSCIC already collects patient level data from hospitals and plans to collect patient level GP records through the General Practice Extraction Service (GPES). The aim is to link the datasets for each patient using identifiers such as NHS number or date of birth. Records will be de-identified before any further use. The scheme has raised concerns from the public, GPs, Parliament and the GPES Independent Advisory Group (IAG) such as:

- whether the extent of extraction by GPES might be excessive under the Data Protection and Human Rights Acts
- that the leaflets used to inform people about the scheme were not widely received or read and did not contain sufficient information
- the lack of a straightforward 'opt out' system for patients
- the fact that data would not be pseudonymised at source
- the usefulness of the collected data given that some information would not be extracted and only recent records would be collected
- that personal data might be sold or leaked to commercial organisations such as insurance companies
- the scheme might conflict with GPs' duty of confidence to patients.

Implementation of the scheme has been delayed while these concerns are addressed. The care.data programme board has commissioned an advisory group, made provisions for an 'opt out' for patients and plans to implement a 'secure data lab'. There are concerns that the affair may have affected public attitudes towards health data programmes in general.

Primary Use Within the NHS

Primary use in the case of medical records refers to direct care, as doctors need information about their patients to make decisions about treatment. These data may need to be shared between members of a patient's care team. Sharing of data for direct care purposes usually relies on implied consent from the patient.

Secondary Use Within the NHS

The NHS also makes extensive use of data beyond direct patient care. For instance data informs commissioning, clinical audit, treatment outcome monitoring, calculation of treatment costs and payment to practices. Some of these functions are carried out 'in-house' while others are outsourced to commercial companies. Many functions require linkage of NHS datasets such as GP patient records, HES and prescribing information. Examples of NHS secondary data use include:

- **clinical audit** to assess the standard of care provided by GP practices and hospitals to identify areas which are exceeding or falling short of expected standards.
- **risk stratification** to identify groups or individuals potentially at high risk of disease development or progression to allow timely intervention or treatment.
- **commissioning** of NHS care at a local level via CCGs (Box 2) or at a national level. Patient information is used to identify population needs in order to select the most efficient and effective services and providers.

Secondary Use Beyond the NHS

Secondary uses of medical data beyond the NHS may be broken down into: local and national public health activities; academic research; and data use by commercial

Box 4. National Cancer Intelligence Network Routes to Diagnosis
The National Cancer Intelligence Network (NCIN) Routes to Diagnosis study examines different routes to cancer diagnosis, including delays in diagnosis, and their impacts on survival. It links data from Hospital Episode Statistics, cancer waiting times and cancer screening to data from the National Cancer Data Repository. Personal identifiers are used to link these datasets at patient level and to look at the effects of factors such as socio-economic status, age, gender and ethnicity on Route to Diagnosis and patient outcome, by cancer type. Results have fed into public awareness campaigns such as PHE's Be Clear On Cancer Campaign, with the aim of helping patients to spot symptoms of cancer earlier.

Box 5. Avon Longitudinal Study of Parents & Children (ALSPAC)
ALSPAC is a long term research project charting the health and development of around 14,500 individuals who were born in 1991-1992 in the Bristol area.[3] The study's parents and children provide questionnaire data, clinical data, and biological and genetic samples. These are linked to health and administrative records such as GP records and education data from the National Pupil Database. Additional secure data sharing with government departments is being arranged in conjunction with the Farr Institute and the Administrative Data Research Network, and ALSPAC is developing anonymous record linkage procedures that do not require any data extraction.[4] ALSPAC operates a broad consent model for the use of data, and participants can opt out of specific research projects on a case-by-case basis. ALSPAC has published over 1,000 research papers to date with many findings used to inform UK and international health policy. These include findings that the consumption of oily fish benefits childhood IQ and development and that peanut oil in leaky creams may trigger nut allergies.

Box 6. Legislation of access to medical records
In addition to the Common Law Duty of Confidentiality, several pieces of primary and secondary legislation apply to use of medical records.

- **The Human Rights Act 1998** sets out the right to privacy and a family life, with no interference from the state except for specific lawful purposes such as health protection.
- **The Data Protection Act 1998 (DPA)** balances an individual's rights to privacy with the requirement of organisations to collect and use personal information. Under the Act, medical records are classed as personal sensitive information subject to stricter access requirements than other personal data. The Act sets out a duty of fair processing that requires data controllers to inform data subjects of how their information is being used and requires that data use is accurate and not excessive. Anonymised data are no longer classed as personal data.
- **The Health Service (Control of Patient Information) Regulations 2002** provide a statutory gateway for the collection of confidential patient information relating to neoplasia (abnormal cell growth including cancer) and infectious disease.
- **Section 251 of the National Health Service Act 2006** makes provisions for the use of identifiable records without the consent of the data subject, where obtaining consent is not feasible and use of data is in the interests of the patient or of the wider public.
- **The Health Protection (Notification) Regulations 2010** place a duty on healthcare providers to notify the Health Protection Agency of incidences of infectious diseases.
- **The Health and Social Care Act 2012** provides a statutory gateway for the collection and processing of confidential personal data by the Health and Social Care Information Centre (HSCIC).
- **The Care Act 2014** amends the Health and Social Care Act to prevent HSCIC disseminating data unless it is for the provision of health and social care or the promotion of health.

organisations. But there is not always a clear distinction between these. For example, Public Health England (PHE, see Box 2) commission academic research into public health, and research partnerships often involve academia, charities and industry.

Public Health Monitoring and Management
Medical and administrative records are used to carry out public health monitoring and management. National and local authorities conduct surveillance of infectious diseases and environmental hazards for public health protection purposes, along with the monitoring of non-infectious diseases such as cancer, with a view to improving treatment efficiency and outcomes (Box 4).

Academic Research
The linkage of medical records to cohort studies and trials has enabled research into population health such as that linking smoking to lung cancer.[5] Linkage across different healthcare datasets is also of value in identifying new risk factors and highlighting novel pathways for treatment. Multiple ongoing large-scale long-term cohort studies collect and link datasets to improve understanding of population health (Box 5 and POSTnote 473). There has been recent investment in a number of research institutes specialising in the use and linkage of large medical datasets, such as the FARR institutes.

Use by Commercial Organisations
The pharmaceutical industry uses medical data to monitor drug safety (required by statute) and efficacy at a population level. Findings are fed back to clinicians to improve the efficacy of care pathways. The industry is seeking to make greater use of health records and other data to improve drug development and provide a targeted approach to medicine which uses a patient's genetic, health and lifestyle data to inform treatment decisions (stratified medicine).[6] Other commercial organisations, including insurance companies, have previously accessed and used pseudonymysed HSCIC datasets. Access to these data is now only permitted for healthcare provision or promotion (Box 6).

Challenges Related to Data Use

General issues concerning big data are discussed in POSTnote 468. The following sections examine technical issues specific to the collection and use of health-related data, including data extraction and linkage, and data quality, along with the governance challenges of maintaining data security and public support while allowing data access for public benefit.

Technical Challenges

Data Extraction and Linkage
Linkage of an individual's data from multiple care settings can give a more complete picture of their health status and treatment pathway. Because there is no central database holding all such records, datasets must first be extracted (collected) from their original source (such as GP computer systems) before they can be linked. Currently there is no national standard mechanism for medical data extraction and processing. The type and quality of data extracted, the method and frequency of extraction and the extent of

linkage to other datasets depend on the sources of data used and the intended purpose of the programme. The care.data programme (Box 3) is an attempt to link data from multiple settings at a national level. However, it also highlights some of the problems that can be encountered when attempting to link large sets of medical data.

Data Quality and Accuracy

There are concerns about the quality, completeness and accuracy of health-related data. Clinicians are increasingly using pre-assigned codes to record illnesses and treatments, rather than free text, which leads to the possibility of incorrect codes being used. Further issues include missing information such as cessation of medicine use, and duplication and invalidation of NHS numbers and other identifiers that can affect data quality and linkage.

Legislation and Governance Challenges

Public trust in the governance of data use is considered key to the continued and expanded use of medical records for health research and management. Surveys suggest that the public is broadly supportive of the use of data for medical research. However, numerous concerns remain. These include: use without consent; use of identifiable data; data security; lack of transparency; potential discrimination by employers or insurers; and access by commercial organisations.[7, 8, 9] Such concerns may result in patients withholding information from healthcare providers, which may be detrimental to the patient and reduce data quality.

UK Legislation Regulating Data Access

Healthcare providers have a duty of confidentiality to their patients and must seek a patient's consent before sharing his or her personal data. Identifiable medical records are also classed as sensitive data under the DPA and their use is therefore strictly regulated. As outlined in Box 6 there are several statutory provisions for the use of this data without consent, such as monitoring of neoplasia (cancer) and infectious disease. Approval for other uses of identifiable health data without explicit consent can be granted under section 251 of the NHS Act (Box 6). However, some section 251 approvals, such as those for routine healthcare planning, have been criticised by privacy advocates, who argue that the measure was intended as an extraordinary provision for use in high priority public health work and research. There are also calls to make more use of explicit consent models for secondary uses of data rather than relying on implied consent or statutory provisions.[10] Explicit consent is always required for the use of identifiable data from social care settings. The new Care Act aims to restrict data release from the HSCIC to that for appropriate health related purposes (Box 6). However, concerns remain about the breadth of access that might be permitted on 'health promotion' grounds.

The European Data Protection Regulation

A new draft European Data Protection Regulation is currently being debated. There is uncertainty about how the European Parliament's amendments to the text will impact on the use of personal identifiable data for public health and research purposes.[11] In particular, there are concerns that the consent requirements for use of identifiable data in research laid out in article 81 of the current draft may be incompatible with the broad consent models used in many studies. Individual member states may make provisions for de-identified data to be used without consent under certain circumstances, but there is no clear provision for the use of identifiable data without consent, such as that granted under section 251 of the NHS Act. It is not clear how the proposed regulation would affect public health activities. There are provisions for the retention and use of data for health related purposes, but concerns remain about the possible impact on public health monitoring activities, such as those in Box 4.[12]

Governance of Data Access

A recent review has highlighted lax governance of data release by the HSCIC's predecessor, the NHS IC.[13] Despite this, researchers reported significant administrative burdens in gaining access to medical records, such as the need for approval from multiple advisory bodies, leading to campaigns for improved access for research.[7,14] Lengthy access procedures conflict with the need for timely access to data needed for research addressing immediate health concerns and/or conducted on short-term grants. The HSCIC is currently reviewing its data release procedures to address the failings of its predecessor. However, public health officials report that this is delaying their access to data for important disease surveillance activities. Increased extraction and use of medical records also increases the burden of fair processing placed on GPs under the DPA to ensure that patients are aware of how their data are used.

Data Security and Identifiability

Security experts have demonstrated that there is always a risk that patient level data could be re-identified even if it has been anonymised or pseudonymised.[15] The linkage of multiple records about one individual may increase data usefulness but requires the use of identifiers to do so, and may increase the risk of re-identification. This is both a security and a legal issue since the use of identifiable data without consent is limited by law (Box 6). Data security may be increased by use of advanced data linkage technologies that do not require extraction of identifiable data.[4, 16]

Endnotes

1 ESRC Press Release on ADRN, 2013
2 House of Commons Standard Note: Care.data, 2014
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11 Protecting health and scientific research in the Data Protection Regulations (2012/0011(COD)), Wellcome Trust, 2014
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15 Ohm P, 'Broken promises of privacy', *UCLA Law Review*, 57, 2010.
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POST is an office of both Houses of Parliament, charged with providing independent and balanced analysis of policy issues that have a basis in science and technology. POST is grateful to Helen Brewer for researching this briefing, to the BBSRC for funding her parliamentary fellowship, and to all contributors and reviewers. For further information on this subject, please contact the co-author, Pete Border.

[i] Social and Emotional Wellbeing: Early Years. NICE PH40 (2012).