

Breakout sessions: Education 1

Chaucer

11:30-12:50

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Added value of attending an independent primary school?

Sam Parsons

CLOSER Conference 30th November 2015



Aim

- The key aim of this research is to see whether children in a private independent fee-paying primary school make better cognitive progress during their primary school years compared to the overwhelming majority of children in state-run primary schools.
- How has this picture changed for children born in 1958, 1970 and 2000/1?

Background

Schooling and unequal outcomes in youth and adulthood

ESRC funded project (2014-2017)

Alice Sullivan, Dick Wiggins, Francis Green

Research focused (largely) on the 1970 cohort (BCS70), and in particular how the type of secondary school attended influences later outcomes:

- access to higher education,
- occupation & earnings
- political attitudes, well-being measures

Main outputs (1)

Sullivan, A., Parsons, S., Wiggins, R. and Green, F. (2014) ***Social origins, school type and higher education destinations***. Oxford Review of Education 40 (6): 739-763

Going to a private secondary school is very significantly associated with attending university, and especially an elite Russell Group university, even after taking family background, childhood cognitive performance, age 16 and age 18 examination results into account.

Main outputs (2)

Green, F., Parsons, S, Sullivan, A. & Wiggins, R.W. (2015)
Dreaming Big: Self-Evaluations, Aspirations, High-Valued Social Networks, and the Private-School Earnings Premium
CLS Working Paper 2015/09. London: Institute of Education.

Here we looked at whether raising state school children's aspirations, self-confidence, and improved access to social networks, would counter the huge pay advantages enjoyed by their privately-educated peers. And found, NO.

Main reasons earn more: superior academic performance and entry to higher-ranking universities

Cross-cohort comparison (1)

- We have also begun work on a cross-cohort comparison between NCDS and BCS70, to see how the relationship between the type of secondary school attended and later educational/occupational outcomes compare over time – particularly given the move away from Grammar/Technical/Secondary Modern schools to Comprehensive schools during the 1970s.

Cross-cohort comparison (2)

- What about Private Primary schools?
- In taking such a close look at the childhood data of the 1958 and 1970 cohort, we became aware that the information on school type at age 11 (NCDS) and age 10 (BCS70) had been very underused, if used at all, in any substantive way.
- Also, with the (relatively) recent release of the age 11 MCS data, we had an opportunity for a 3-cohort comparison, and to (potentially) be 'relevant' as we are using up-to-date information.

Private primary schools: What do we know?

There is a relatively established literature on type of secondary school and later outcomes (notably academic attainment), but very little on type of primary school. What does exist is mainly from USA

USA

Research focused on Catholic schools – can't unpick faith from fee-paying schools as all Catholic schools are independent/private schools in the US. E.g.

- Jepsen, C. (2003). The effectiveness of Catholic primary schooling. *Journal of Human Resources*, 38, 928-941.
- Elder, T. & Jepsen, C. (2014). Are Catholic primary schools more effective than public primary schools? *Journal of Urban Economics*, 80, 28-38.

UK

Uses administrative (NPD) data to look at educational progress between age 7-11 (KS1-2). Some suggestion that children attending a Faith primary school with more autonomous governance and admissions structures do progress marginally faster. Does not include Independent schools (largely as not included in database).

- Gibbons, S. & Silva, O. (2011). Faith primary schools: better schools or better pupils? *Journal of Labor Economics*, 29, 589-635.
- Green et al (2015) Dreaming Big

AUSTRALIA (LSAC data)

Distinguishes between Independent, Public and Catholic schools. No advantage of attending an Independent school once family and individual characteristics taken into account

- Nghiem, Nguyen, Khanam and Connelly (2015). Does school type affect cognitive and non-cognitive development in children? Evidence from Australian primary schools. *Labour Economics*, 33, 55-65.

Private schools: UK picture

- Between 6-7% of school age children attend a private school – relatively constant over time – and 12% of adult population have attended a private school at some time (ISC)
- (So far, haven't managed to get hold of official figures for private primary/prep schools – Wikipedia tells me there are 130,000 pupils in over 500 'private' primary schools)

Private schools: cohort data

- Between 6-7% of NCDS and BCS70 children attended a private secondary school when they were 16
- In terms of private (fee-paying) primary schools
 - NCDS 1969 (age 11) 4%
 - BCS70 1980 (age 10) 2.4%
 - MCS 2012 (age 5/7/11)* 4.5%

*Note: currently at private school

Preliminary research

- We look at the cognitive performance/progress of children at age 10 or 11 in three British birth cohorts – born in 1958, 1970 and 2000/1 – by school type
- Take account of prior cognitive performance and a range of child, family and school characteristics
 - We have currently only focused on information that could be ‘matched’ across the three studies
 - However, there is richer information – particularly to do with schools – available in each study separately that we also plan to exploit

Cognitive assessments

- **NCDS:** Reading & Maths (age 7 and 11)
- **BCS70:** a range of assessments at age 5 and age 10. Use EPVT (age 5) and Reading age 10 (for further details: CLS Data Note: Parsons, 2014)
- **MCS:** Naming Vocabulary (age 5), Word Reading (age 7), Verbal Similarities (age 11). Use NV and VS (also looked at WR and VS).

Controls available across cohorts

Child controls

- **Gender**
- **Birthweight**
- **Long-standing health condition**
- **Ethnicity & age at test (MCS)**
- **Gestation**
- **Behaviour (teacher or parent rated)**

School characteristics

- **Number of children in class**
- **Streamed**
- **Academic ability of school population (BCS and NCDS)**

Family controls

- **Age parents left ft education**
- **Social class**
- **Home ownership**
- **Overcrowding**
- **HQ of parents (BCS and MCS)**

Home-learning environment

- **Reading to the child**

Descriptive characteristics of children by school type

Summary

- Children in private school
 - had higher cognitive scores
 - were educated in smaller classes
 - came from a privileged background e.g. many of their parents had experienced some form of extended education, owned their home, and did not live in overcrowded living conditions
 - The changes taking place in Britain at the societal level however, worked to narrow the gap between the two groups of children over time

All results based on samples of children with complete data

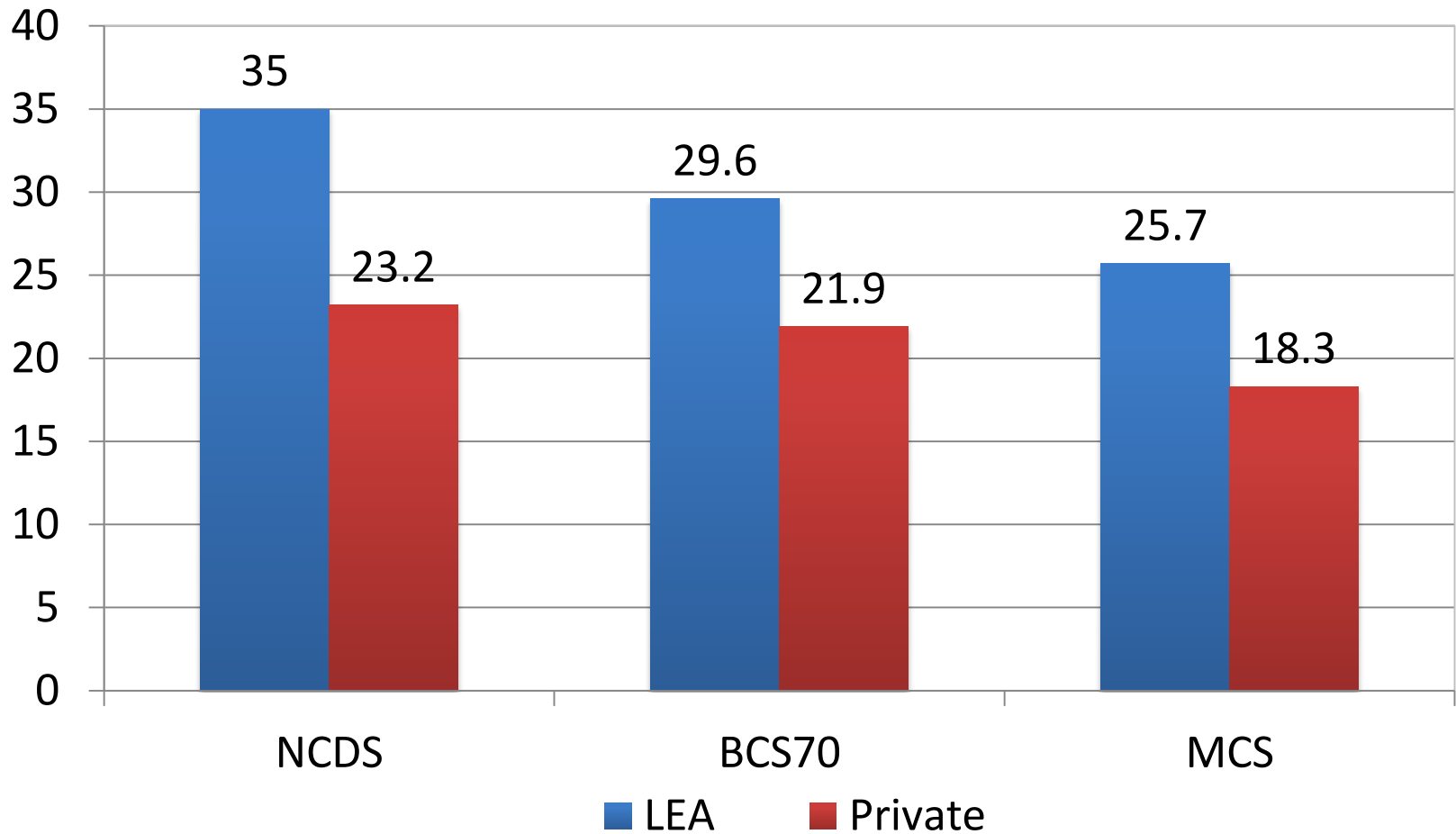
Mean standardised cognitive scores (mean = 0, sd = 1)

	1958 cohort NCDS		1970 cohort BCS70		2000/1 cohort MCS	
	LEA	Private	LEA	Private	LEA	Private
Read7/EPVT5/NV5	.07	.55*	.09	.52*	.14	.41*
Read 11/10 VS 11	.05	.85*	.08	.82*	.02	.45*
Maths 7	.03	.62*				
Maths 11	.06	.78*				

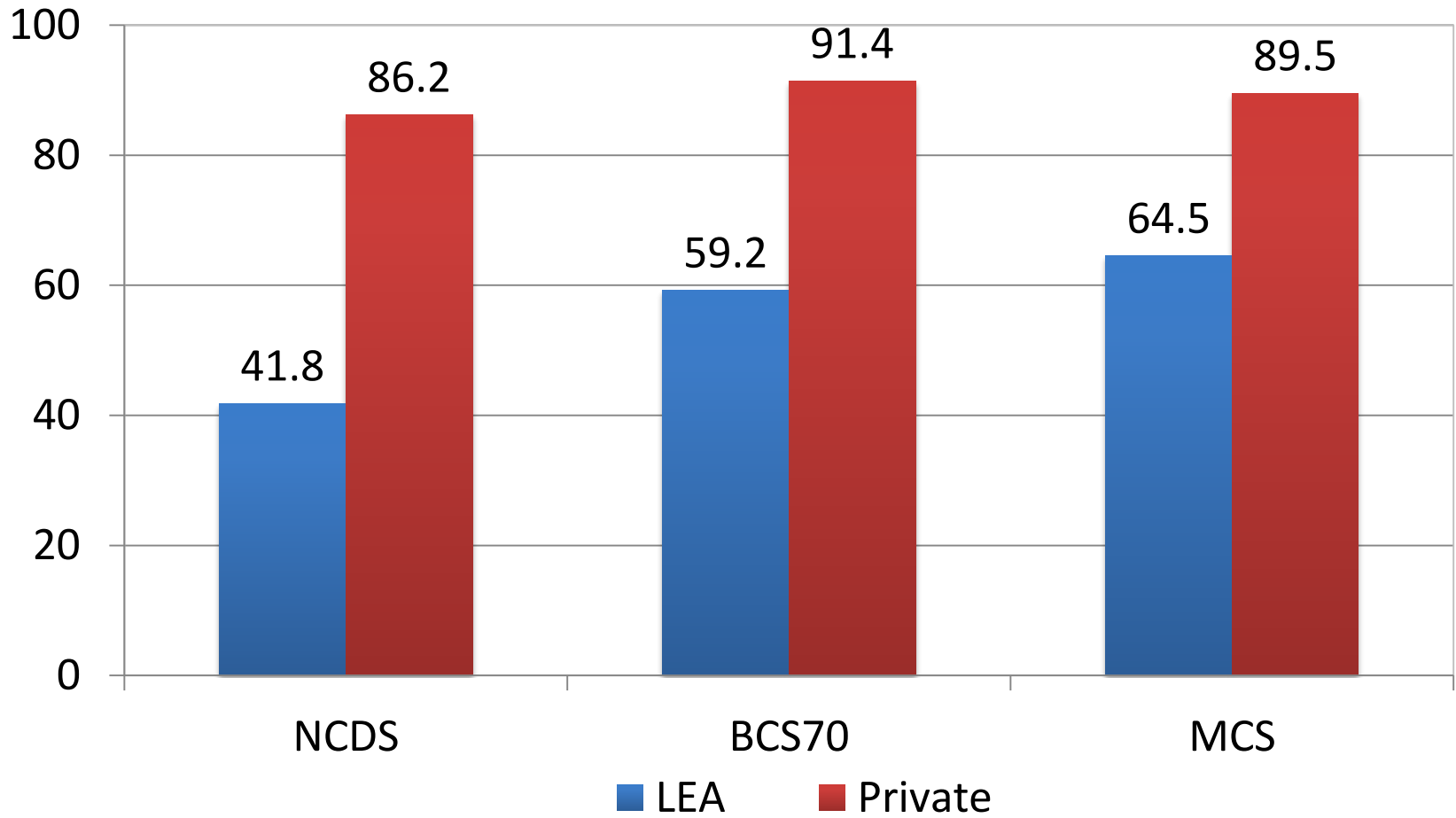
*p<.001 Note: the assessments sat by the children vary between the studies

Note: for NCDS and BCS70 an overall cognitive score was also derived at each age point

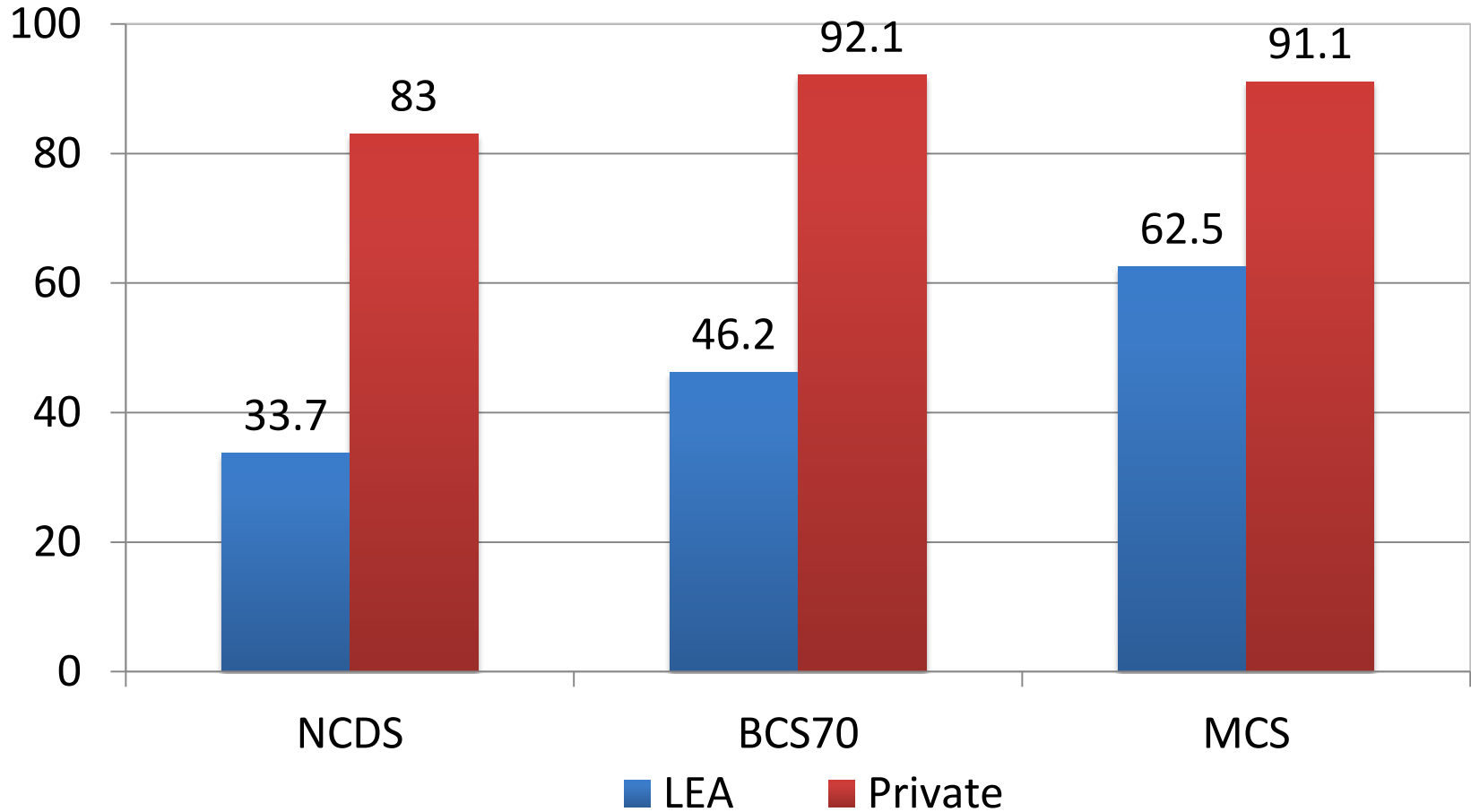
Average number of children in CM's class



% home owners



% 1+ parents who had post-compulsory education



Preliminary Regression results (1)

Standardised cognitive score at age 10/11
(controlling for earlier cognitive attainment)

	NCDS		BCS70		MCS	
	UNADJ beta	ADJ beta	UNADJ beta	ADJ beta	UNADJ beta	ADJ beta
Private Primary School	.14***	.05***	.12***	.05***	.11**	.04**
<i>R</i> ²	<i>.02</i>	<i>.43</i>	<i>.01</i>	<i>.28</i>	<i>.01</i>	<i>.18</i>
<i>N(100%)</i>	<i>8958</i>	<i>8958</i>	<i>7942</i>	<i>7942</i>	<i>6081[^]</i>	<i>6081</i>

ADJ= adjusted for Personal, Family & School characteristics

[^]relatively small N as use information from Teacher survey: not carried out in Scotland and greater non-response than other survey instruments

Preliminary Regression results (2)

Value added cognitive progress score at age 10/11

[did children of a similar ability at Time 1, make the expected – or more/less – progress at Time 2]

	NCDS		BCS70		MCS	
	UNADJ beta	ADJ beta	UNADJ beta	ADJ beta	UNADJ beta	ADJ beta
Private Primary School	.10***	.05***	.09***	.05***	.09**	.04**
<i>R²</i>	<i>.02</i>	<i>.10</i>	<i>.01</i>	<i>.12</i>	<i>.01</i>	<i>.04</i>
<i>N(100%)</i>	<i>8958</i>	<i>8958</i>	<i>7942</i>	<i>7942</i>	<i>6081[^]</i>	<i>6081</i>

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Next steps...

- Really early days but seems to be finding something in the data from the three cohorts, but given the substantial differences between the two populations of school children, the first 'next step' is to do PSM [propensity score matching]
- Exploit the more detailed school information that we have available in each cohort to see what – if anything – can remove the premium attached to attending a private primary school – start with most recent cohort
- Expand to include 1946 cohort and ALSPAC (1990s) data
- Any further ideas...

Preterm Birth, Age at School Entry and Educational Performance

David Odd^{1,2}

David Evans¹

Alan Emond²

1. Neonatal Unit, Southmead Hospital, Bristol, BS10 5NB, United Kingdom.

2. Centre for Child and Adolescent Health, University of Bristol, Bristol, BS8 2BN, United Kingdom.

Conflicts of interest



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- ▶ I was a preterm infant....



Introduction

- ▶ Premature birth is not rare
- ▶ 6% of pregnancies deliver before 37 weeks of gestation (UK)



World Prematurity Day, November 17th

1 baby in 10 is born premature. Worldwide.

Introduction

- ▶ Often subcategorised as very (<32 weeks) and late/moderate (33-36 weeks) gestations



- ▶ High risk of direct neurological consequences
- ▶ Worse outcomes at school age, including cognition and educational performance

Introduction

- ▶ Often subcategorised as very (<32 weeks) and late/moderate (33-36 weeks) gestations



- ▶ High risk of direct neurological consequences
- ▶ Worse outcomes at school age, including cognition and educational performance
- ▶ BUT.... educational failure seen is not fully explained by the cognitive outcomes

Introduction

- ▶ In England, infants enter school based on their age on the 1st of September
- ▶ Hence many preterm infants are likely to enter school a year earlier than if they had not been born early: and hence at a younger true age than their peers

Introduction

- ▶ Work based on the Avon Longitudinal Study of Parents and Children
 - Approx. 14,000 children born in Bristol, UK from April 1991 to December 1992
- ▶ Initial work in 2013 was performed to investigate if year of schooling impacts on your early educational scores
- ▶ Year of school may entry modifies the impact of prematurity on outcome ($p_{\text{interaction}}=0.034$) in early measures and halves the SEN requirement.

Early Impact

Early term babies held back

Science: Premature children 'at a disadvantage' when they go to school



BY CLAIRE HAYHURST

Premature babies are at an educational disadvantage compared to those born at full term, new research has found.

This difference is more marked when children enter school a year earlier because they have been born prematurely.

A study involving 12,000 children found almost one in three born before 37 weeks has lower Key Stage 1 test results than their full term peers.

The Bristol University research found more than a third of premature babies have special educational needs.

Experts are now calling for a change in policy so school entry age for children born prematurely is based on their expected due date – rather than their actual date of birth.

Lead author Dr David

Odd said difficulties faced by premature babies in school could be "avoidable".

"Our research indicates that children who were born prematurely are at higher risk of poor school performance and in greater need of additional educational support at primary school," Dr Odd said.

"Some of the social and

"Premature babies need school support"

educational difficulties these children face may be avoided by recognising the impact that their date of birth has on when they start school."

In the study, researchers analysed data on almost 12,000 participants from the Children of the 90s study at the university.

They found a gradual reduction in mean Key Stage 1 scores for all children born after September.

The pattern was more marked in children born prematurely, especially if they entered school a year earlier because of being born early.

Data showed up to one in six premature babies are enrolled in school a year earlier than they would have been if they had been born at full term, between 37 and 42 weeks.

Professor Sir Al Aynsley-Green of University College London, said: "The increase in survival rates for premature babies is a great medical success."

"However, the consequence of this for too many infants is that their educational needs are not being addressed adequately, including the age at which they start formal school education."

LEARNING

'Prem' babies' disadvantage

Premature babies are at an educational disadvantage compared to those born at full term, new research has found.

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Premature babies 'lose out in the classroom'

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The University research found most of premature babies have special educational needs.

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Lead author Dr David Odd said: "Our research indicates that children who were born prematurely are at high school performance and in greater need of additional educational support at primary school," Dr Odd said.

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"This suggests these problems weren't just a result of early birth. Instead, their brains were still maturing and they would have done better if they had



BABIES BORN PREMATURELY DO WORSE AT SCHOOL

Babies born prematurely should have their school entry date determined by their due date, not their actual date of birth, a leading child health expert has said.

Researchers at the University of Bristol found that children born prematurely are at a higher risk of poor school performance and in greater need of additional educational support at primary school.

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"Some premature babies should start school a year late to give their brains time to develop, say experts. A British study found that boys and girls born early are 50 per cent more likely to fail the reading, writing and maths tests set at the end of their second year in school.

Children born prematurely – classed as before 37 weeks of pregnancy – are also more likely to have asthma, deafness and other problems that class them as having special educational needs. However, the Bristol University study suggested that some of these difficulties are due to them starting school too early. Campaigners argue that if the children's start date was based on their due date, rather than the date they actually started, they would do better.

Children in England generally start school in the September after their fourth birthday. This means that a child born prematurely on August 31 would begin a year earlier than they would have if they had been carried to full term.

The researchers analysed data on almost 12,000 children. More than 700 were born prematurely. Overall, premature children were more likely to do badly in second-year school tests. More than a third had special educational needs, compared with less than a quarter of their full-term classmates.

What was most striking from the study was the finding that those children who were born close to the cut-off date for starting school – and so began their education a year earlier than they would have done otherwise – did worse.

This suggests these problems weren't just a result of early birth. Instead, their brains were still maturing and they would have done better if they had

Premature children should start school a year later

By Fiona Macrae
Science Correspondent

SOME premature babies should start school a year late to give their brains time to develop, say experts. A British study found that boys and girls born early are 50 per cent more likely to fail the reading, writing and maths tests set at the end of their second year in school.

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Andrew Gregory's

HEALTH NOTES

PREMATURE babies are disadvantaged at school compared to those born at full term, new research reveals.

And the difference is even bigger when premature kids enter school a year earlier.

A study of 12,000 children found nearly one in three born before 37 weeks had lower Key Stage 1 test results than full-term peers. Bristol University research in scientific journal PLOS ONE also found a third of prem babies have special educational needs.

Experts want school entry age for premature kids to be based on their expected due date not their date of birth.

Sir Al Aynsley-Green, the ex-first children's commissioner for England, added: "Education experts must look at this data and argue for a change in policy."

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Early babies at 'disadvantage'

PREMATURE babies are at an educational disadvantage compared to those born at full term, new research has found.

This difference is more marked when children enter school a year earlier because they have been born prematurely.

A study involving 12,000 children found almost one in three born before 37 weeks has lower Key Stage 1 test results than their full term peers. The University of Bristol research found more than a third of premature babies have special educational needs.

Experts are now calling for a change in policy so school entry age for children born prematurely is based on their expected due date – rather than their actual date of birth.

EDUCATION

School age should be based on due date, says expert

By Charlie Cooper

HEALTH REPORTER

Babies born prematurely should have their school entry date determined by their due date, not their actual date of birth, the former Children's Commissioner has said, after a study found pre-term babies were more likely to go on to underperform at school.

Researchers from the University of Bristol found that premature babies were at an educational disadvantage compared to children born at full term – and observed that the

problem was especially prevalent in August premature babies who went on to attend school a year earlier.

Sir Albert Aynsley Green, professor emeritus of child health at University College London and one of the UK's leading experts on children's services, said the data should prompt a change in policy on entry ages.

"The increase in survival rates for premature babies is a great medical success," he said. "However, the consequence of this for too many infants is that their educational needs are not being addressed."

SET BACK

..with some policy change likely...

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Bliss for babies born too soon,
too small, too sick
bliss.org.uk

Action for Bliss newsletter September 2015

Minister for School Reform wants to give parents full control of summer born admissions decisions in England

Hundreds of parents have told us increased flexibility for those children born premature in the summer months is crucial. The Government has listened and now wants to introduce complete flexibility once and for all.

Minister for School Reform, **Nick Gibb MP**, has announced his intentions to amend the **School Admissions Code** to allow children born in the summer months the right to start reception at five years old, with a guarantee that they will stay in that year group throughout school. This announcement follows a debate on 7 September led by Stephen Hammond MP, where the Minister also stated he would consider the possibility of using due date to make admissions decisions for children who were born premature.

A group of children, some wearing blue Bliss t-shirts, are holding a white banner with the Bliss logo and tagline. They are standing in front of a brick wall with balloons.

A public consultation will be released soon and we will share this with you, so your thoughts on the proposed changes can be taken into account.

Bliss is delighted with this news and the extra flexibility these proposals could bring. However, we will be responding to the consultation to make sure that children who were born premature in the summer months continue to be fully represented and protected.

If you would like to help shape our response to the upcoming consultation, you can do so by **sharing your experiences in this short survey**.

These changes are unlikely to come into effect for some time. If you're interested in the current process for delaying or deferring your child's school start date, **please visit our website** for more information.

..with some policy change likely...



...in SOME of the UK parents of preterm infants MAY soon be given some flexibility on the age of admission to school...

Minister for School Reform wants to give parents full control of summer born admissions decisions in England

Minister for School Reform, Nick Gibb MP, has announced his intentions to amend the Education Act 2002 to allow parents of children born premature in the summer months to start reception at five years old, with a guarantee that they will stay in that year group throughout school. This announcement follows a debate on 7 September led by Stephen Hammond MP, where the Minister also stated he would consider the possibility of using 'due date' to make admissions decisions for children who were born premature.

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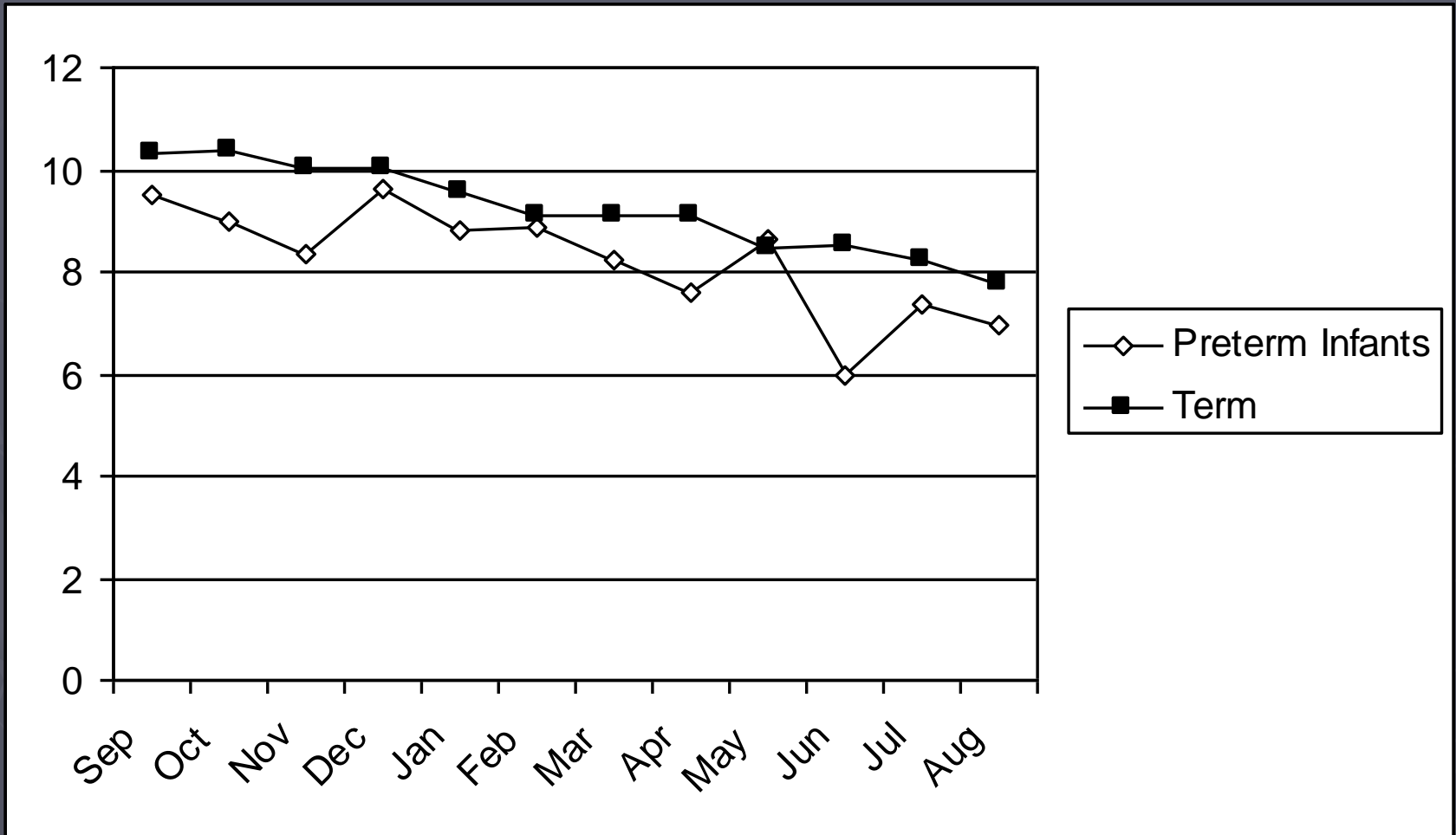
So... does this effect persist as the child grows?

- ▶ ALSPAC Data linked with educational measures from National Curriculum assessments and Pupil Level Annual School Census (PLASC)
 - KS1 – 5 to 7 years
 - KS2 – 7 to 11 years
 - KS3 – 11 to 14 years
 - KS4 – 14 to 16 years: GCSE and SEN measures

Methods – 3 Analyses

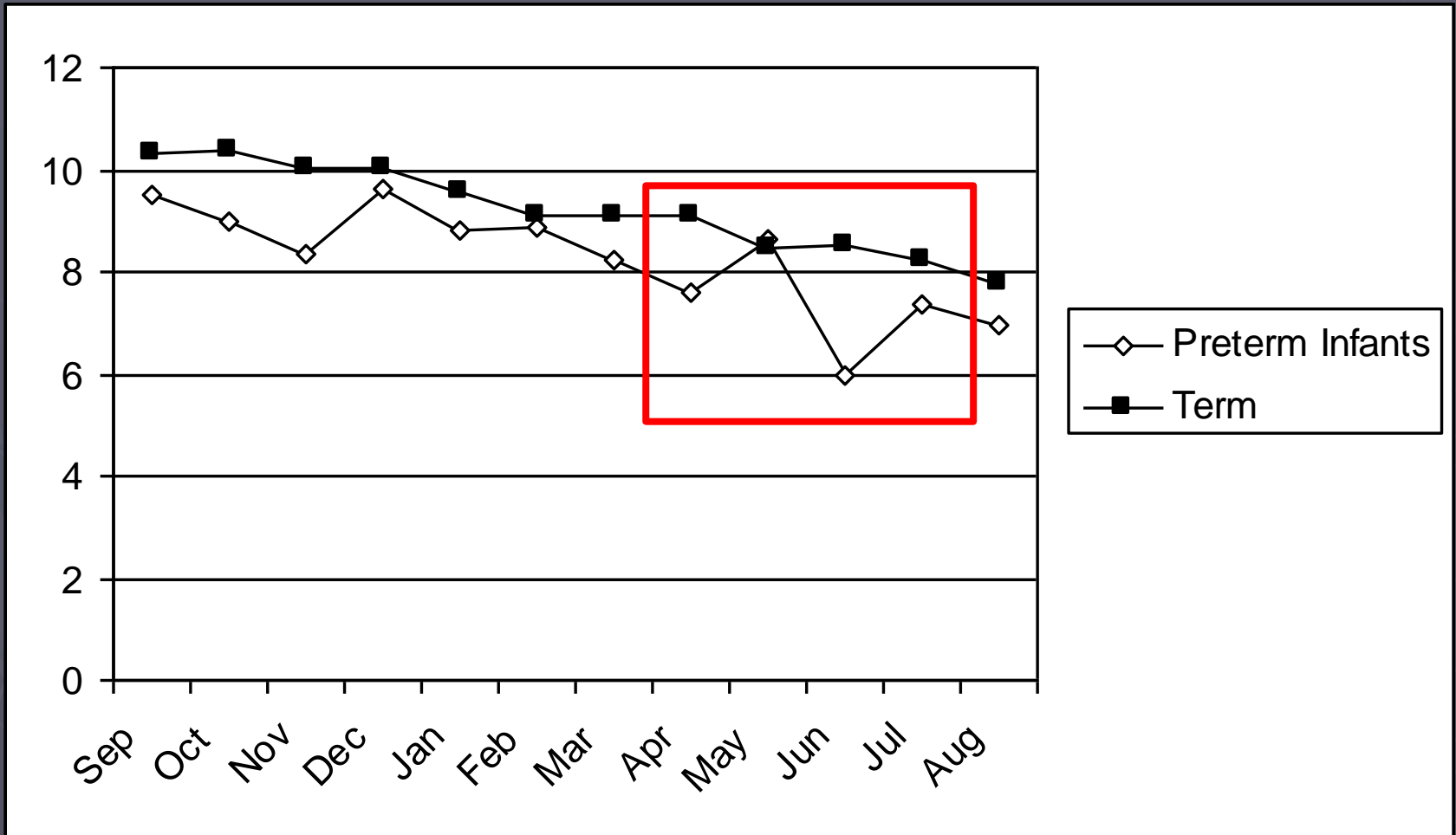
1. **DOB matched:** Each preterm infant was randomly matched with 10 term infants with a date of birth (DOB) within the same calendar month
2. **EDD matched:** Then repeated matching with expected date of delivery (EDD)
3. **+Restricted to correct school year:**
 - Matched with EDD
 - Restricted to those infants who were placed in the 'correct' school year as predicted by their EDD
 - Model was weighted (inverse probability weights) to represent the initial cohort

Mean KS1 scores by gestation and month of birth



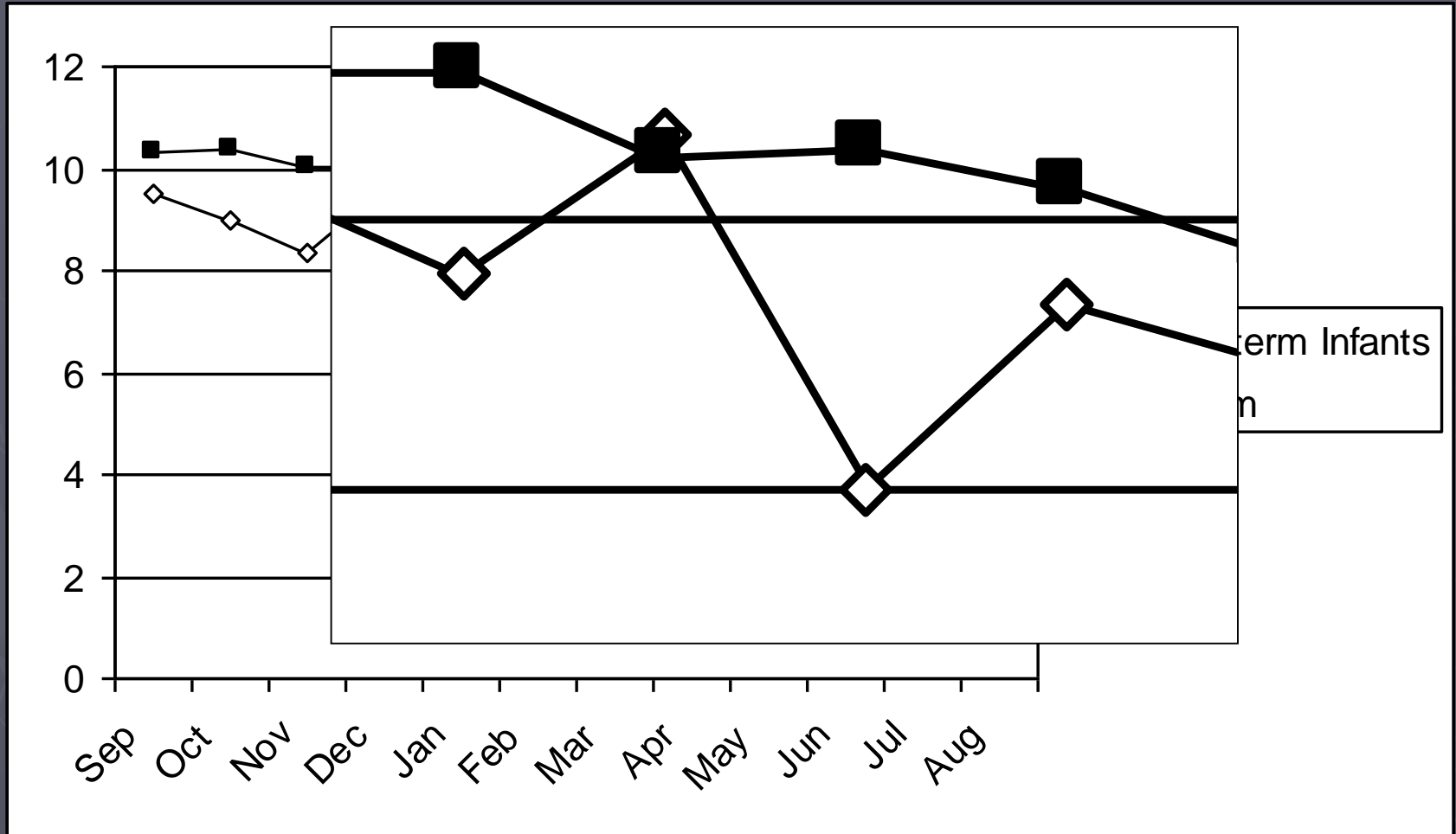
- Mean drop of points of 0.23 points/month
- Infants in the correct school year had higher KS1 scores (9.2 vs. 7.4)

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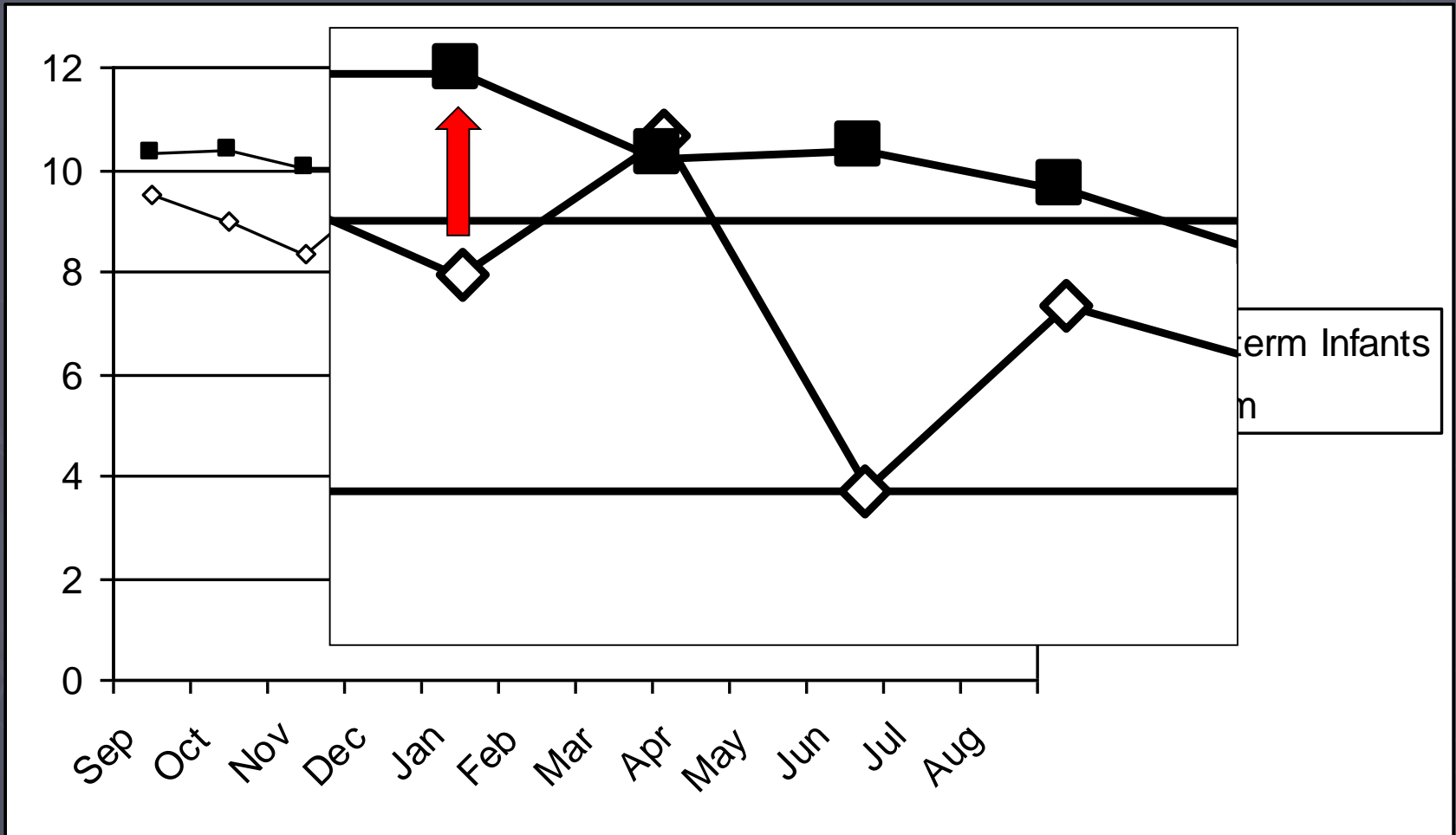


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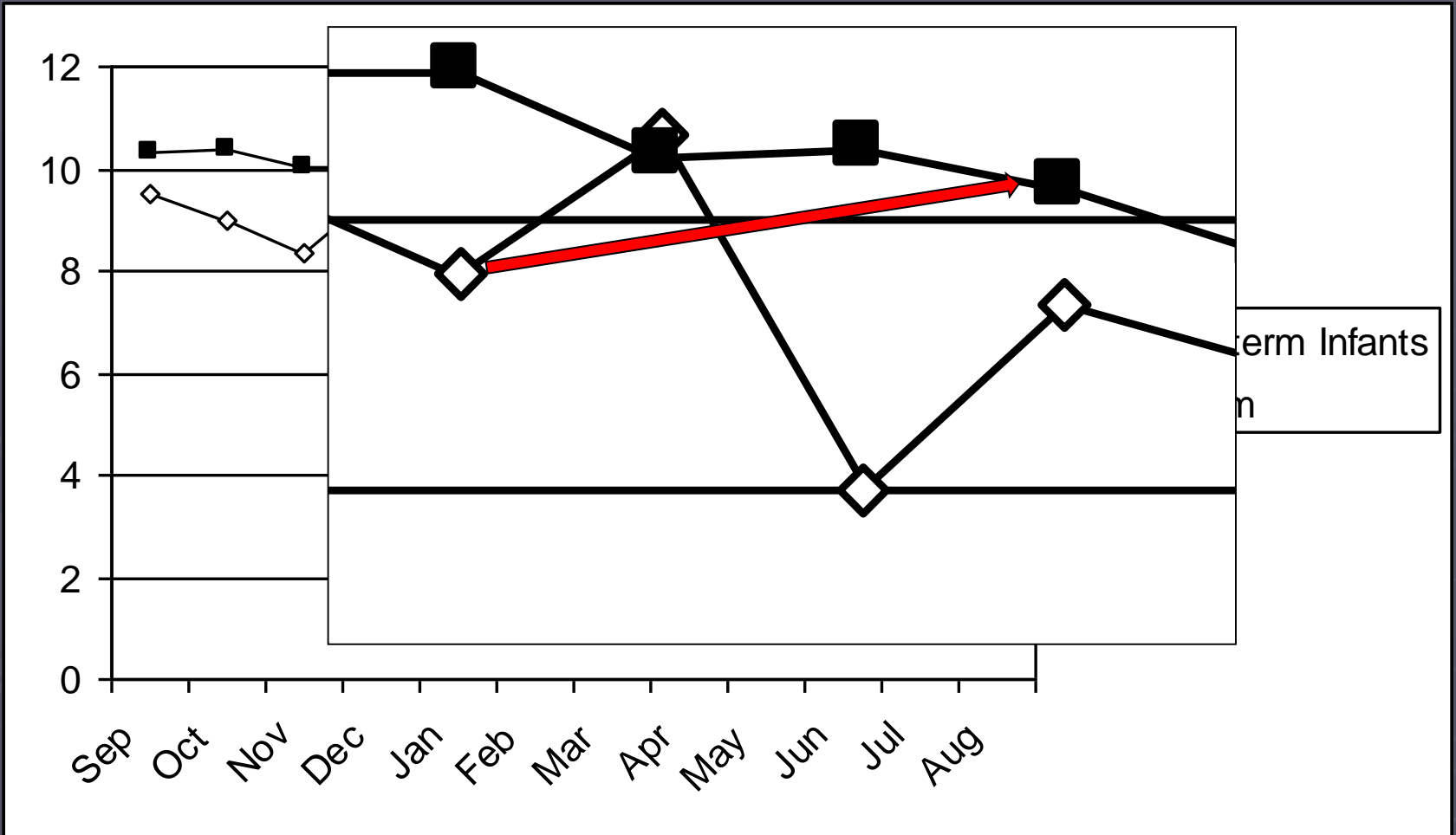
Mean KS1 scores by gestation and month of birth



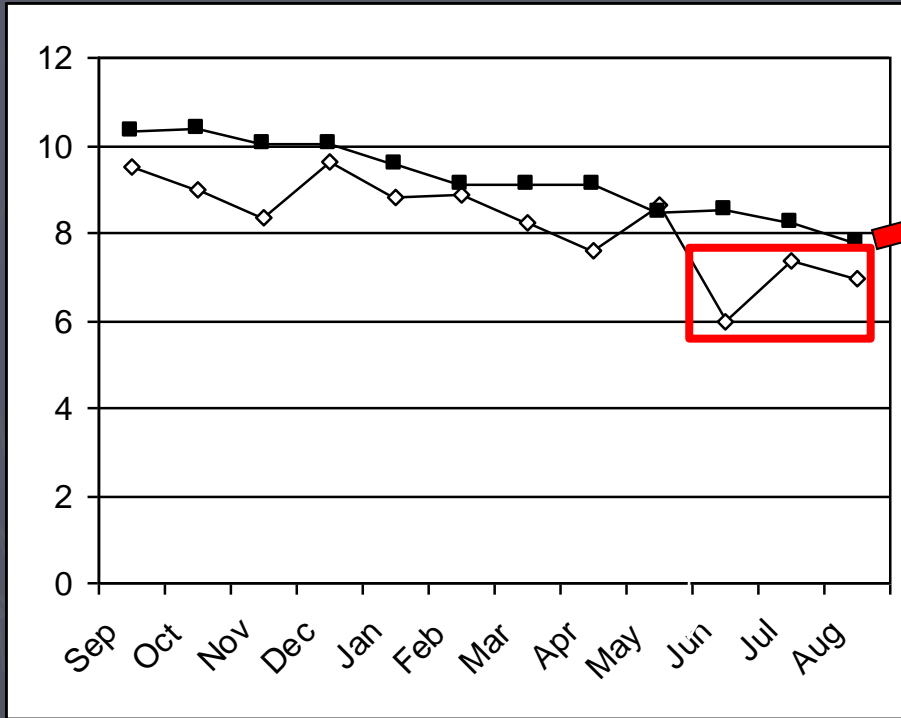
Matched on DOB ('real' life)



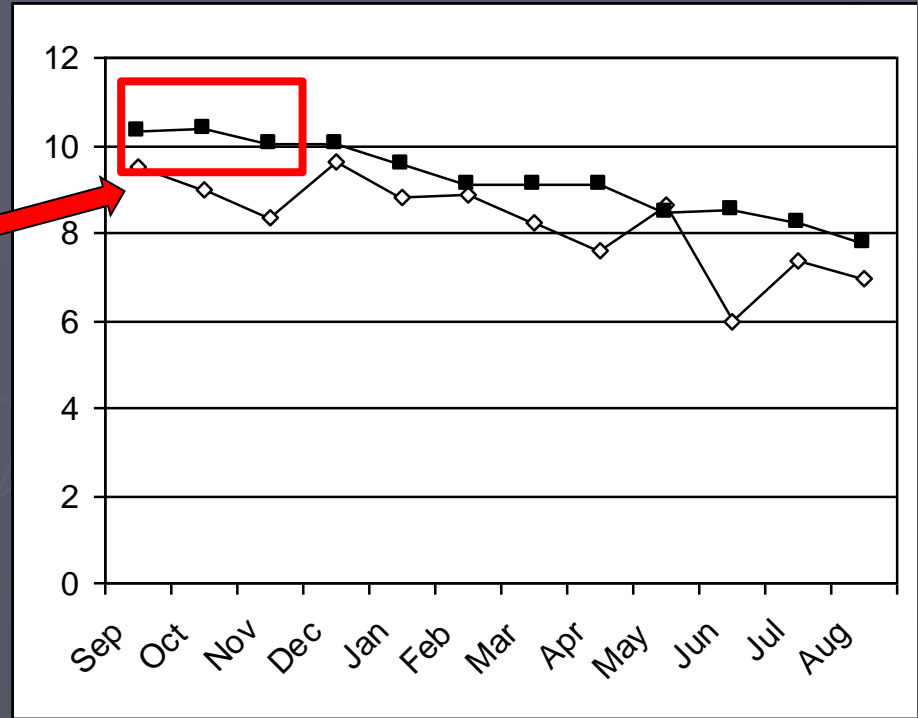
Match on EDD



Match on EDD and school year



1998



1999

Further Methods

- ▶ Infants were defined as preterm (<37 weeks) or term (37-42 weeks)
- ▶ Conditional regression models were derived, adjusting for possible confounders
- ▶ A multiple imputation data technique (Chained Equations) was used to impute the missing covariate data
- ▶ Same cohort as previous work
- ▶ Outcomes were
 - 1) The expected standard at KS1, 2, 3 and 4 (defined as 5 GCSE at A*-C).
 - 2) During KS4 the child was identified as have SEN

Covariates

▶ Social Factors:

- Ethnicity, housing, crowding, and maternal education, socio-economic group, car ownership and age

▶ Antenatal Factors:

- Gender, parity, weight, length and head circumference at birth

▶ Intrapartum/Neonatal Factors

- Mode of delivery, maternal hypertension, pyrexia and need for resuscitation at birth

Details of Multiple Imputation Methods

All variables and a-priori interaction included in the imputation model

Assumptions of MAR made

Analysis was based on 20 imputed datasets

Imputation Variable	n	%	Imputation Command
Gender	0	0.0%	-
Gestation	0	0.0%	-
Multiple Birth	0	0.0%	-
Maternal Age	0	0.0%	-
Maternal Socioeconomic Status	3,534	28.1%	ordinal
Maternal Education	1,411	11.2%	ordinal
Parity	954	7.6%	logistic
Ethnicity	998	7.9%	logistic
Mode of delivery	1,121	8.9%	multinomial
Hypertension	0	0.0%	-
Neonatal Resuscitation	1,134	9.0%	logistic
Birth weight	145	1.2%	linear
Birth length	3,068	24.4%	linear
Birth head circumference	2,923	23.2%	linear
Incorrect schooling year	0	0.0%	-
Special Educational Needs	1,486	11.8%	Logistic
Key Stage 1 summary score	1,722	13.7%	Linear
Low Key Stage 1 score	1,717	13.6%	Logistic
Key Stage 2 summary score	1,103	8.8%	Linear
Low Key Stage 2 score	1,087	8.6%	Logistic
Key Stage 3 summary score	3,137	24.9%	Linear
Low Key Stage 3 score	2,183	17.3%	Logistic
Key Stage 4 summary score	1,181	9.4%	Linear
Low Key Stage 4 score	1,181	9.4%	Logistic
Incorrect Year of Schooling*Preterm	0	0.0%	-

Results



Results

- ▶ In total 1405 infants had missing data on all outcomes, and were not included in any analysis:
 - More likely to come from;
 - ▶ Older mothers
 - ▶ Higher educational qualifications
 - ▶ Higher social economic groups
 - BUT also more likely to be;
 - ▶ Male
 - ▶ Lower Apgar scores
 - ▶ Slightly lower gestational ages
- ▶ Effect of bias difficult to predict

Results

- ▶ 855 (6%) of infants were born preterm

Measure	Preterm	Term	P
Gestation	35 (33-36)	40 (39-41)	<0.001
Wrong school year	148 (17%)	504 (4%)	<0.001
Maternal age	27.6 (4.9)	28.0 (5.0)	0.022
Primiparous	418 (51.3%)	6791 (56.0%)	0.009
Male	512 (57.9%)	6728 (51.4%)	<0.001
Birth Weight (g)	2291 (667)	3456 (484)	<0.001
Died before 8 years of age	44 (5.0%)	52 (0.4%)	<0.001

Results

- ▶ 855 (6%) of infants were born preterm

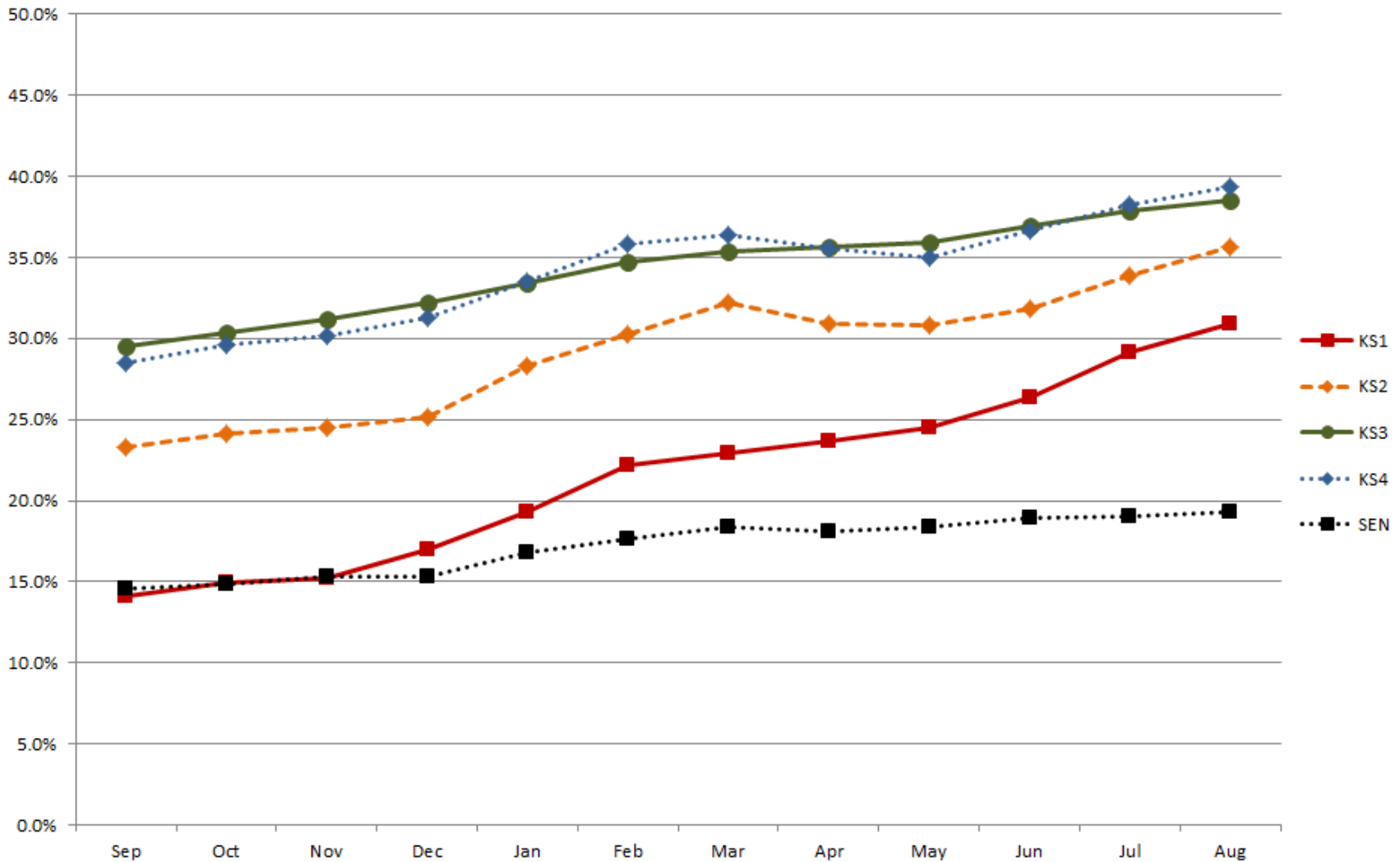
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Proportion of children failing Key Stages 1-4 and requiring SEN in KS4, by month of birth



The unadjusted, 'real' impact

Measure	Preterm (<37 weeks)	Term (37-42 weeks)
Low KS1 score	210 (31.7%)	2,171 (21.3%)
Low KS2 score	239 (35.4%)	3,115 (28.8%)
Low KS3 score	251 (39.8%)	3323 (34.0%)
Low KS4 score	276 (39.4%)	3610 (33.7%)
Special educational needs (KS4)	166 (24.3%)	1737 (16.7%)

Association between being born preterm and school performance

Measure	Unadjusted	Fully adjusted*†‡	$p_{\text{interaction}}$
KS1			
Matched for DOB	1.65 (1.38-1.96)	1.44 (1.17-1.77)	
Matched for EDD	1.77 (1.48-2.10)	1.53 (1.24-1.88)	
Matched for EDD+year	1.47 (1.19-1.81)	1.26 (1.00-1.60)	0.036

Association between being born preterm and school performance

Measure	Unadjusted	Fully adjusted*†‡	$p_{\text{interaction}}$
KS2			
Matched for DOB	1.29 (1.09-1.52)	1.20 (0.99-1.46)	
Matched for EDD	1.38 (1.17-1.64)	1.23 (1.01-1.50)	
Matched for EDD+year	1.13 (0.93-1.37)	1.03 (0.82-1.28)	0.002

Association between being born preterm and school performance

Measure	Unadjusted	Fully adjusted*†‡	$p_{\text{interaction}}$
KS3			
Matched for DOB	1.28 (1.08-1.51)	1.11 (0.91-1.35)	
Matched for EDD	1.30 (1.09-1.55)	1.16 (0.95-1.42)	
Matched for EDD+year	1.21 (0.99-1.48)	1.04 (0.82-1.32)	0.304

Association between being born preterm and school performance

Measure	Unadjusted	Fully adjusted*†‡	$p_{\text{interaction}}$
KS4			
Matched for DOB	1.23 (1.05-1.44)	1.10 (0.91 to 1.34)	
Matched for EDD	1.27 (1.08-1.50)	1.17 (0.96 to 1.42)	
Matched for EDD+year	1.14 (0.95-1.36)	1.00 (0.80 to 1.26)	0.158

Association between being born preterm and school performance

Measure	Unadjusted	Fully adjusted*†‡	$p_{\text{interaction}}$
Special educational needs			
Matched for DOB	1.57 (1.33-1.86)	1.39 (1.14-1.68)	
Matched for EDD	1.64 (1.39-1.93)	1.43 (1.17-1.74)	
Matched for EDD+year	1.40 (1.15-1.70)	1.21 (0.97-1.52)	0.043

Association split by degree of prematurity (KS4)

Measure	Very preterm	Moderate preterm
	Fully adjusted*†‡	Fully adjusted*†‡
Poor outcome at KS4		
Matched for DOB	1.84 (1.20-2.83)	1.05 (0.85-1.30)
Matched for EDD	1.84 (1.20-2.83)	1.05 (0.85-1.31)
Matched for EDD+year	1.63 (0.95-2.78)	0.93 (0.73-1.19)



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Measure	Very preterm	Moderate preterm
	Fully adjusted*†‡	Fully adjusted*†‡
Poor outcome at KS4		
Matched for DOB	1.84 (1.20-2.83)	1.05 (0.85-1.30)
Matched for EDD	1.84 (1.20-2.83)	1.05 (0.85-1.31)
Matched for EDD+year	1.63 (0.95-2.78)	0.93 (0.73-1.19)



Population Impact

- ▶ Year of school entry modifies the impact of prematurity on outcome for KS1, KS2 and SEN, but not KS3 or KS4.
- ▶ Population attributable risk fraction (KS4)
 - DOB matched: 0.92%
 - EDD matched: 1.47%
 - EDD and school year restricted: 0.00%
- ▶ Population attributable risk fraction (SEN)
 - DOB matched: 3.44%
 - EDD matched: 3.73%
 - EDD and school year restricted: 1.94%

Discussion



Discussion

- ▶ Children born in the summer have worse scores at KS1-4 and higher SEN than those in the autumn
- ▶ This is particularly detrimental for preterm infants
- ▶ However, the effect of prematurity on school outcomes attenuates over time
 - r^2 for a KS4 score is 1.2%

Discussion

- ▶ Overall;
 - The school-year effect on KS4 appears attenuated compared with earlier measures
 - This is despite (or perhaps, because of) increased and persistent SEN requirements
- ▶ However for very preterm infants the effect of the 'wrong' school year still appears to have an important role at KS4

Strengths and Limitations

- ▶ Linkage with routine school data provided good data completeness and allowed investigation of a wider range of outcomes
- ▶ Missing data
 - MI was used to reduce any impact of missing confounders
 - CCA produced compatible results
- ▶ We have assumed that all infants entered education in the year that they were offered a place
 - Possible that some preterm infants delayed entry into school
 - However this is likely to cause us to underestimate the true effect size

Conclusions

- ▶ The impact of prematurity appears to attenuate as the children grow, although they remain at higher risk of low GCSE scores and needing special educational support.
- ▶ The effect of going to school in a year earlier than predicted by their due date appears to still have measurable consequences for ex-preterm infants in adolescence, and consequently may limit adulthood opportunities.

Thank You, and Questions?

Lunch

CLOSER search platform demonstrations and poster session

12:50-14:00

@CLOSER_UK #CLOSERconf

CLOSER website: www.closer.ac.uk

CLOSER Discovery: www.discovery.closer.ac.uk