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**POSTbrief**

Number 22, December 2016

# Academic Evidence on Selective Secondary Education

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## Overview

- Estimating the impact of school type is difficult because any differences in outcomes for pupils attending different types of schools may be explained not by the type of school, but by differences in the characteristics of pupil intake, including prior attainment, and other factors, such as the level of deprivation in the local area.
- Despite the high level of interest and commentary on grammar schools, there are only a small number of independent, robust studies on the grammar school system in England. These use sophisticated statistical methods to make adequate comparisons between school types, which control for other factors that could influence outcomes.
- Unless otherwise stated, studies reported in this brief are nationally representative. However, it is worth noting that available research on medium and long-term impacts of school type is necessarily based on outcomes for pupils who entered secondary school 30 to 40 years ago and could be different for pupils in the current system.
- Historic and current data show that children who are eligible for Free School Meals (FSM) are less likely to attend a grammar school than children who are not eligible for FSM. This is the case even when comparing only those pupils who achieve similar high levels in English and Maths at the end of primary school. Research suggests that this is because children from poorer backgrounds have less access to economic, social, and cultural resources, such as high-quality primary school education and private tuition, which help children to perform well at school and prepare for entrance exams.
- Academic attainment at GCSE level is on average higher for pupils attending grammar schools than for pupils who attend other types of school. When comparing pupils who achieved similar high levels in English and Maths at the end of primary school, most studies report a statistically significant but modest difference.
- To understand the impact of academic selection on pupil attainment it is important to also look at outcomes for the majority of pupils who did not get into grammar school in a selective area. When comparing pupils who achieved similar levels at the end of primary school, available studies report that academic attainment at GCSE level is on average lower for pupils in selective areas who attend non-grammar schools than for pupils in non-selective areas. This finding is statistically significant but very modest.
- Differences in outcomes for pupils attending grammar school and those attending non-grammar schools in selective areas may be due in part to the quality of teaching and peer effects (i.e., the impact of average peer ability on own ability).
- One study looked at social mobility and found that the selective education system as a whole does not improve social mobility for children who were born into any particular income bracket or social class.
- Available evidence from England and international comparisons using PISA data suggests that selective education systems widen educational inequality.

## Background

Selective schools admit some or all of their pupils based upon certain selection criteria. Grammar schools are an example of selective secondary education in England, where entry is dependent upon measured academic attainment in examinations at age 11 years ('11-plus exams'). In contrast, non-selective schools accept pupils regardless of their attainment (although they may use an admissions criteria when oversubscribed, see Table 1). Non-selective schools may stream, track, or band pupils by ability or aptitude, but this generally takes place within a school rather than across different schools.

In September 2016, the Prime Minister announced that the Government intends to remove the ban on opening entirely new state-funded grammar schools in England, and to allow non-selective schools to convert under certain circumstances. From September to December 2016, the Department for Education (DfE) ran a consultation on the proposals, which also includes plans to allow new free schools to select up to 100% of pupils based on their faith.<sup>1</sup> Recent policy developments in relation to grammar schools in England can be found in the Commons Library Briefing Paper 7070, [Grammar Schools in England](#), and Lords Library Note LLN-2016-0049, [Extension of Grammar Schools and Selection in Education](#). Statistics on grammar schools, including trends in the number and share of pupils at grammar schools since the late 1940s, are available in the Commons Library Briefing Paper 1398, [Grammar School Statistics](#).

This POSTbrief provides a brief overview of methodologically robust studies on state-funded selective schools that select the majority of their intake on academic criteria. Most of the available data on the medium and long-term impact of selective secondary education are UK-wide, but some data are limited to England only. It covers:

- types of secondary schools;
- limitations of available data and interpretation;
- evidence on access to grammar schools, including pupil characteristics and the 11-plus exam;
- evidence on outcomes for the individual in the short, medium, and long-term, including educational attainment, higher education participation, earnings, social mobility, family size, and health, and;
- evidence on outcomes for society, including educational and earnings inequalities.

## Types of secondary school

From 1944 to the mid-1960s Britain had a 'tripartite' system of state-funded secondary education, consisting of grammar, secondary modern, and technical schools. The 11-plus examination was used to determine which type of school a pupil would attend. Grammar schools provided an academic education to high-

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1. Department for Education. (2016). *Consultation on Schools that Work for Everyone*. Sep to Dec 2016.

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attaining children, and secondary moderns provided a more general education with an emphasis on more practical subjects. Technical schools provided a more general education with a focus on technical subjects, but never existed in large numbers.<sup>2</sup> There are a number of different types of secondary school in England today, as shown in Table 1. Grammar schools remain part of state-funded educational provision in Northern Ireland from the previous tripartite system, but there are no grammar schools in Wales or Scotland.

There are currently 163 grammar schools in England with a total of 167,000 pupils in 2016 (about 5% of the total number of secondary school pupils).<sup>4</sup>

<i>Comprehensive schools</i>	Comprehensives schools are state-funded, non-selective secondary schools. If a comprehensive school is over-subscribed a set of admissions criteria can be applied to allocate places, most often related to residential proximity to the school.
<i>Academies and Free-schools</i>	Academies are state-funded schools that are independent of local authorities and can be non-selective or selective if they were previously local authority maintained selective schools. Free-schools are an extension to the academy programme and are new state-funded schools set up through a specific application process. They are legally banned from using academic selection.
<i>Grammar schools</i>	Grammar schools are state-funded selective secondary schools, which select their intake based on pupil performance on a test at age 11 years, the '11-plus'. Different schools and areas use different entrance exams and admissions criteria, and children in some areas may take multiple exams. Some grammar schools also have academy status.
<i>Faith schools</i>	Faith schools can be state-funded or independent. Currently, around one third of state-funded schools in England have a faith designation and these can either be maintained by the Local Authority, or have academy status. Their admissions and staffing policies may use faith-based criteria.
<i>Independent schools</i>	Independent or fee-paying schools are not state-funded and can be academically selective or non-selective.
<i>Specialist schools</i>	From 1993, state-funded secondary schools were able to apply to the Department for Education to be designated centres of excellence in their chosen specialism. Under the School Standards and Framework Act 1998, Specialist Schools are permitted to select up to 10% of pupil intake on the basis of 'aptitude' for the specialism subject; however in practice very few specialist schools do so.

2. Commons Library Briefing Paper 7070 *Grammar Schools in England*.

3. Further details on the school system in England, including funding arrangements, can be found in the Commons Library Briefing Paper 07169, *The School System in England*.

4. Commons Library Briefing Paper 1398 *Grammar School Statistics*.

There are two main types of grammar schools:

- **Grammar schools that are part of a fully selective system.** In general, in Local Authority Areas (LEAs) that operate a fully selective system, pupils take one or more exams at age 11 years; top attaining students are offered a place in a grammar school, whilst the remaining pupils attend non-grammar schools in the area (previously known as secondary moderns). The DfE classifies 10 LEAs as being fully selective.<sup>5</sup> Around 15,000 year 7 pupils were admitted into grammar schools in fully selective areas in 2011.<sup>6</sup>
- **Stand-alone grammar schools.** Some other LEAs contain one or more grammar schools that co-exist alongside other school types, such as comprehensive schools, with fewer than 10% of local pupils attending a selective school.<sup>7</sup> These stand-alone grammar schools often have a much larger geographical intake area than those comprehensive schools which are over-subscribed.<sup>8</sup> 26 LEAs have one or more grammar schools.<sup>4</sup> Around 4,000 year 7 pupils were admitted into stand-alone grammar schools in 2011.<sup>6</sup>

## Limits of available data and interpretation

Estimating the impact of school type is difficult because any differences in outcomes for pupils attending different types of schools may be explained not by the type of school, but by other differences, so-called 'confounding factors'.<sup>9</sup> These include differences in the characteristics of pupil intake, for example, prior attainment, family background, the proportion of children eligible for Free School Meals (FSM), and ethnicity. It also includes other school-type factors, such as whether the school is also single-sex or religious. Grammar schools are not evenly distributed around the country, and fully selective LEAs are not a representative sample of LEAs in England as a whole, so other factors such as the level of deprivation in the local area may also be important.

Despite the high level of interest and commentary on grammar schools, there are only a small number of independent, robust studies on the grammar school system in England. These tend to focus on who attends grammar schools and on outcomes for individual pupils, but some studies have examined the impact of selective education systems on wider society. Robust studies use sophisticated statistical methods to make adequate comparisons between school types, which control for confounding factors that could influence outcomes. The specific methods employed and the measures used to control for these factors differ between studies depending on the nature of the research question and the data. Unless otherwise stated, studies reported in this brief are nationally representative.

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5. Bexley, Buckinghamshire, Kent, Lincolnshire, Medway, Slough, Southend-on-Sea, Torbay, Trafford and Sutton. For more information see Commons Library Briefing Paper 1398 *Grammar School Statistics*.

6. Cribb, J., Jesson, D., Sibieta, L., Skipp, A. & Vignoles, A. (2013) *Poor grammar: Entry into Grammar Schools for Disadvantaged Pupils in England*. Report for the Sutton Trust.

7. Cribb, J., Sibieta, L. & Vignoles, A. (2013) *Entry into Grammar Schools in England*. Institute of Fiscal Studies.

8. When comprehensive schools are oversubscribed, they are able to apply a set of admissions criteria in order to allocate pupil places. The most commonly used criteria is residential proximity to the school, meaning that the catchment area may become smaller in cases where the school is oversubscribed.

9. Gorard, S. & Siddiqui, N. (2016) *Grammar schools in England: a new approach to analysing their intakes and outcomes*. Project report. Durham University.

The most robust datasets on medium and long-term outcomes tend to come from studies that follow the same group of people over time (longitudinal research, see Box 1). However, available research on medium and long-term impacts of school type is necessarily based on outcomes for pupils who entered secondary school 30 to 40 years ago, under the previous tripartite system. As such, outcomes for pupils in the current (or future) systems could be different. For example, current grammar school pupils study a similar curriculum and work towards the same qualifications as pupils in other schools, whereas under the tripartite system grammar school pupils often undertook different exams to pupils at secondary moderns.<sup>10</sup>

A further limitation is that data on the 11-plus examination is generally not available, so comparisons between groups tend to use a measure of attainment at the end of Key Stage 2 (KS2), which coincides with the end of primary schooling at age 11 years. However, it is possible that these tests may identify different competencies.<sup>11</sup> As with all research, it is also possible that there could be additional unknown factors that explain the findings reported in the studies.

## Access to grammar schools

### Pupil characteristics

Historic and current data indicate that grammar schools under-represent children from poorer backgrounds; children who are eligible for Free School Meals (FSM) are less likely to attend a grammar school than children who are not eligible for FSM.<sup>12</sup> A study conducted in 2013 for the Sutton Trust, one of the What Works Centres, looked at entry into grammar schools. This study was based on 2009-2012 data from DfE's National Pupil Database (NPD), which contains data on all pupils in state schools, including on pupil and school characteristics and pupil level attainment. It found that less than 3% of all pupils going to grammar schools are entitled to FSM, against an average of 18% in other schools in the areas they are located in<sup>6</sup> (the national average is about 13%<sup>13</sup>). The authors note this is in part because on average, pupils eligible for FSM tend to have lower educational achievements at the end of primary school than pupils not eligible for FSM.<sup>6</sup> However, it found that even controlling for previous attainment, pupils eligible for FSM were still significantly less likely to go to a grammar school. For example, when comparing data from fully selective LEAs, on only those pupils who achieved similar high levels in English and Maths at the end of primary school at age 11 years, it found that only 40% of pupils eligible for FSM attended grammar school, compared to two-thirds of pupils not eligible for FSM.

The Sutton Trust 2013 report also found that grammar schools over-represent pupils who have been privately educated at primary school level: in 2013 roughly 6% of all 10 year olds were educated in fee-paying independent schools, yet on

10. Clark, D. & Del Bono, E. (2016). *The Long-Run Effects of Attending an Elite School: Evidence from the United Kingdom*. American Economic Journal: Applied Economics, 8(1): 150-176.

11. Atkinson, A., Gregg, P. & McConnell, P. (2006) *The Results of 11 Plus Selection: An Investigation into Opportunities and Outcomes for Pupils in Selective LEAs*. CMPO Working Paper Series No. 06/150.

12. Pupil eligibility for FSM is commonly used as a proxy for deprivation; however, the use of a single binary measure has been criticised because deprivation covers a broad range of issues and eligibility or not for FSM does not demonstrate where a pupil falls on a continuum of deprivation or their duration of deprivation

13. Department for Education (2016). *Schools, Pupils and their Characteristics*, January 2016.

**Box 1: Key UK sources of longitudinal data**

Longitudinal studies track, observe, and measure the same individuals or households over a long period of time. They include panel studies, based on a random sample of households or individuals, and cohort studies, based on a group of people who share a common characteristic, for example being born in the same week. Longitudinal research can be used to understand how circumstances change at the level of the individual, rather than for the population as a whole. For example, it can show how early life experiences influence later outcomes, how an individual's health, wealth, family, parenting, education, employment, and social attitudes are linked, and how these aspects of life vary for different people. Key UK longitudinal datasets that have been used to assess the impact of selective secondary education are outlined below.

**1970 British Cohort Study:** nationally representative birth cohort study following an original sample of 17,196 people born in England, Scotland and Wales in a single week of 1970. Data on health, economic circumstances, physical, educational and social development have been collected at nine key points in the cohort members lives: birth, ages 5, 10, 16, 26, 30, 34, 38, and 42 years. The study is currently collecting biomedical data from cohort members at 46 years old.<sup>14,15</sup>

**1958 National Child Development Study:** nationally representative cohort study following an original sample of 17,415 people born in England, Scotland and Wales in a single week of 1958. Data on physical and educational development, economic circumstances, employment, family life, health behaviour, wellbeing, social participation and attitudes have been collected at eleven key points in their lives: birth, ages 7, 11, 16, 23, 33, 42, 45, 46, 50, and 55 years. The next data collection sweep will take place when cohort members are 60 years old.<sup>16</sup>

**Understanding Society:** nationally representative panel study following 40,000 households in Scotland, Wales, Northern Ireland, and England, which began in 2009. Information is collected annually from all individuals in the household age 10 and over on a wide range of topics, including family, education, finance, employment, health, and wellbeing. Understanding Society incorporates data from the previous British Household Panel Survey, the UK's first socio-economic household panel survey, which collected data from over 10,500 households annually from 1991 until 2008.<sup>17</sup>

**The Aberdeen Children of the 1950s Study:** cohort study established in 1999, based on the Aberdeen Child Development Survey from the 1950s, which is not nationally representative. It is a follow-up into adult life of all individuals (12,150) born in Aberdeen between 1950 and 1956 who were in primary school in Aberdeen in December 1962 when they were 6–12 years old. It contains data on education, health and family characteristics and is linked to the Aberdeen Maternity and Neonatal Databank (for details about birth and maternal characteristics) and the Scottish Morbidity Records System (medical records).<sup>18</sup>

14. Used by Bann, D., Hammer, M., Parsons, S., Ploubidis, G. B & Sullivan, A. (2016) Does an elite education benefit health? Findings from the 1970 British Cohort Study. *Int J Epidemiol*: 1-10.

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

16. Used by Boliver, V. & Swift, A. (2011) Do comprehensive schools reduce social mobility? *British Journal of Sociology*, 62(1): 89-110.

17. Used by Burgess, S. Dickson, M. & Macmillan, L. (2014) Selective Schooling Systems Increase Inequality. Department of Quantitative Social Science, Working Paper No. 14-09.

18. Used by Clark, D. & Del Bono, E. (2016). The Long-Run Effects of Attending an Elite School: Evidence from the United Kingdom. *American Economic Journal: Applied Economics*, 8(1): 150-176.



average about 13% of Year 7 grammar school pupils had transferred from these schools. This figure was higher for stand-alone grammar schools (15%). Children of Asian and Chinese ethnicity are also more likely to go to grammar school than “white pupils” with similar characteristics. In-depth analysis conducted by the Institute for Fiscal Studies for the Sutton Trust 2013 report showed that in fully selective LEAs, when comparing only those pupils who achieved a similar high level in English and Maths, children of Asian and Chinese ethnicity were respectively 17.3 and 18.1% more likely to attend a grammar school than pupils from white backgrounds.<sup>7</sup>

Two other studies have looked at pupil intakes using the NPD. One found that after controlling for prior attainment, grammar schools also under-represent children with special educational needs and English as a second language.<sup>11</sup> The other found that selective education systems are linked to higher levels of disproportionate clustering of students within schools in terms of their personal characteristics, such as family income and ethnic origin.<sup>19</sup>

The characteristics of grammar school pupil intakes have led some academics to comment that grammar schools are more socially selective, as well as academically selective, than comprehensive schools.<sup>20,21</sup> The underrepresentation of particular groups may be in part due to differences in the amount of coaching for the 11-plus that different groups of children receive, cultural differences in the value placed on education, or how far families are willing for their child to travel to attend a grammar school.<sup>7</sup> One academic study suggests that it may also be because schools are selecting pupils using criteria other than ability, as there is a grey area where high attainment in the 11-plus doesn't automatically secure admission if there is competition for places even after setting the pass mark.<sup>11</sup>

## Barriers to grammar school entry for poorer pupils

The wider academic literature suggests that there are multiple barriers for children from poorer backgrounds to taking and passing the entry examinations for grammar school at age 11 years. Children from poorer backgrounds may have less access to economic, social, and cultural resources than children from more affluent families. Inequalities between children from disadvantaged families and their wealthier peers emerge in the pre-school years and continue to grow throughout primary school.<sup>22</sup> Children from poorer backgrounds are also less likely to receive private tuition for the 11-plus exam or to have books at home, which can help children to prepare for grammar school exams.<sup>20,23</sup> Children from poorer backgrounds may also be less likely to be put forward by their parents or primary schools for the 11-plus than children from better-off homes.<sup>6</sup>

Education Data Lab, part of a non-profit company, has evaluated attempts to modify grammar school admission criteria to increase the proportion of FSM

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19. Gorard, S. (2015) *The complex determinants of school intake characteristics and segregation, England 1989 to 2014. Cambridge Journal of Education, Volume 46, 2016 – Issue: pp131-146.*

20. Sullivan, A. & Heath, A. F. (2002) *State and Private Schools in England and Wales. Sociology Working Papers; Oxford.*

21. Coe, R., Jones, K., Searle, J., Kokotsaki, D., Kosnin, A. M. & Skinner, P. (2008) *Evidence on the effects of selective educational systems. A report for the Sutton Trust.*

22. Connelly, R., Sullivan, A. & Jerrim, J. (2014) *Primary and secondary education and poverty review. Centre for Longitudinal Studies; London.*

23. Hobbs, G. & Vignoles, A. (2010) Is children's free school meal 'eligibility' a good proxy for family income? *British Educational Research Journal, 36(4): 673-690.*

pupils. Based on data from 2001-2015, it concluded that grammar schools had overall not succeeded in taking an increasing share of high-attaining FSM pupils. It noted that there was evidence however that reforms to grammar school admissions in the five King Edward VI grammar schools in Birmingham has increased the proportion of FSM pupils at those grammar schools. It suggested that some of this increase may be because the King Edward VI schools are recruiting some FSM pupils who might have otherwise attended a non-King Edward VI grammar school. The authors noted that this highlights the importance of collective action in deciding how to reform admission policies.<sup>24</sup> Changes to admission criteria from 2015/16 and 2016/17 have yet to be evaluated.

## Measuring attainment at age 11 years

There is debate as to whether measuring attainment at age 11 years is a good indicator of future academic attainment. Some research suggests that it may predict future academic attainment more accurately for pupils from better-off homes than for those from poorer backgrounds.<sup>25</sup> One study estimates that up to 20% of pupils may be wrongly allocated on the basis of the 11-plus.<sup>21</sup> Options for transfer between schools at various ages post-11 have been proposed to allow for errors to be corrected and for differences in cognitive development; however, under the previous tripartite system, transfer between grammar schools and secondary moderns was rare after age 11 years despite it being possible.<sup>10</sup>

Some researchers consider that attempts at creating a 'tutor-proof test' have been unsuccessful so far.<sup>24</sup> Further, they have warned that efforts to make the examination less predictable may have the converse effect of encouraging well-off parents to pay for more private tuition, further disadvantaging children from poorer backgrounds.<sup>26</sup>

## Outcomes for the individual

### Educational attainment at ages 16 and 18

GCSE examination results demonstrate that educational attainment is on average substantially higher at ages 16 and 18 years for pupils attending grammar schools when compared to pupils attending non-grammar schools; 96.7% of all grammar school pupils achieved five A\*-C GCSEs (including English and Maths) in 2015 compared to a national average of just over 57% of all pupils in non-selective schools.<sup>27</sup> However, it is misleading to compare raw data because it does not account for the background characteristics of the pupils attending these schools. Most studies find that this difference in achievement is more modest but still statistically significant, when comparing only pupils who achieved the same high level in English and Maths at the end of primary school.<sup>10,11,21,28</sup> Quantifying this difference is difficult because of the different methods used in the studies.

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24. Allen, R. (2016) There is not yet a proven route to help disadvantaged pupils into grammar schools. Education Data Lab.

25. Crawford, C., Macmillan, L. & Vignoles, A. (2014) Progress made by high attaining children from disadvantaged backgrounds. Social Mobility & Child Poverty Commission; London.

26. House of Commons Education Select Committee inquiry on Selective Education, HC 780. Oral evidence transcript, 8 November 2016. Evidence given by Dr Rebecca Allen, Director, Education Datalab, Professor David Jesson, Professor of Economics, University of York, Luke Sibeta, Programme Director, Institute for Fiscal Studies, and Professor Anna Vignoles, Professor of Education, University of Cambridge.

27. Andrews, J., Hutchinson, J. & Johnes, R. (2016) Grammar schools and social mobility. Education Policy Institute; London.

One study, based on 2015 data from the NPD, has tried to identify why these differences are seen. It suggests that it may be in part due to the low proportion of pupils who are eligible for FSM in grammar schools – because wider evidence shows that on average, children from disadvantaged backgrounds are less likely to get good GCSE results. It also reports that attainment is lower for pupils who have been deprived for longer, measured as years of FSM-eligibility, and that those pupils eligible for FSM that do attend grammar school have been eligible for fewer years than pupils eligible for FSM attending other state funded schools in England.<sup>9</sup> Another study based on the NPD, by the Education Policy Institute in 2016, suggests that for high-attaining pupils, there is no advantage to attending a grammar school in terms of GCSE grades when compared with non-selective schools which they ranked as ‘high-quality’; however the methodology used in this study and the basis for the ranking system is unclear.<sup>27</sup>

To understand the impact of academic selection on pupil attainment, it is important to also look at outcomes for the majority of pupils who did not get into grammar school in a selective area. Two studies have looked at this and both found that when comparing pupils who achieved similar results at the end of primary school, those pupils who attended non-grammar schools (secondary moderns) in selective areas achieved slightly lower GCSE grades than those pupils who attend secondary schools in non-selective areas. The effect is statistically significant but very modest.<sup>11,29</sup> These differences in outcomes for pupils attending grammar school and those attending non-grammar schools in selective systems may be due in part to peer effects (i.e. the impact of average peer ability on own ability),<sup>30</sup> and the movement of high-quality teachers and other resources out of secondary moderns and into grammar schools.<sup>28,31,32</sup>

There are other measures of educational attainment at age 16, such as Progress 8. This new measure works by comparing each pupil’s progress across eight subjects (based on three subject categories) with the national average for pupils who scored the same as them in English and Maths tests at primary school.<sup>33</sup> However, it has been criticised for exaggerating grammar school performance and understating the performance of alternative schools in selective areas (i.e., secondary moderns)<sup>34</sup> and is not yet widely used by researchers.

## Higher Education participation

Evidence on the impacts of grammar schools on higher education participation and attainment is mixed. Two studies have found that, on average, pupils attending grammar school complete more years of post-compulsory schooling and are more likely to enrol in university and to attain a degree than pupils from non-grammar schools.<sup>10,28</sup> However, these two studies were not nationally

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28. Clark, D. (2009) Selective Schools and Academic Achievement. The B. E. Journal of Economic analysis and Policy.

29. Levacic, R. & Marsh, A. (2007) Secondary modern schools: are their pupils disadvantaged? *British Educational Research Journal*, 33 (2). pp. 155-178.

30. Lavy, V., Silva, O. & Weinhard, F. (2009). The good, the bad, and the average: Evidence on the scale and nature of ability peer effects in schools.

31. Allen, R. (2016) Grammar schools four key research points. Education Data Lab.

32. Burgess, S. Dickson, M. & Macmillan, L. (2014) Selective Schooling Systems Increase Inequality. Department of Quantitative Social Science, Working Paper No. 14-09.

33. Bolton, P. (2016). School league tables: how are GCSE results changing? House of Commons Library blog post, 14 November 2016.

34. Allen, R. (2016) Progress 8 is too favourable to grammar schools and understates secondary modern achievement. Education Data Lab.

representative. One study was based on 11-plus exam results in the East Riding of Yorkshire in the early 1970s, matched to administrative university data.<sup>28</sup> The other used data from the Aberdeen Children of the 1950s study (Box 1). The authors of the Aberdeen study suggest that this finding may be because failing the 11-plus had a detrimental impact on the aspirations of schools to encourage pupils to apply for university, pupil's aspirations to attend university, and because the type of qualifications typically pursued in secondary moderns were less suited to university applications.<sup>10</sup> Another study, using the 1970 British Cohort Study data, which is nationally representative, found no difference in the proportion of students with a degree by whether they attended a comprehensive, secondary modern, or grammar school, even when socio-economic background differences were controlled for.<sup>35</sup>

The type of Higher Education Institute attended may also be important, because there is evidence of different status and income returns from degrees between elite and non-elite universities.<sup>35</sup> A 2011 report by the Sutton Trust of 2007-2009 data from DfE and UCAS shows that when looking at raw data, grammar school pupils were more than twice as likely to be accepted into the top 30 elite universities as pupils in comprehensive schools: 47.6% of grammar school pupils in England were accepted by these universities, compared with 18.0% of pupils in non-grammar schools.<sup>36</sup> Research based on the 1970 British Cohort found that 13% of grammar school pupils in the cohort obtained a degree from an elite university, compared to 5% from comprehensives, and 2% from secondary moderns. However, the researchers concluded that the apparent success of grammar schools on this measure could be attributed to pupils' social backgrounds and other factors such as their attainment at age 11 years.<sup>35</sup> It also found that grammar school attendance did not confer a statistically significant advantage on working class pupils who attended them in terms of gaining a degree from an elite or non-elite university. The authors note that it is difficult to provide estimates of the impact of school type on obtaining a degree from particular elite universities, because numbers can be too small for robust analysis.

It is not clear whether these findings would be replicated in a contemporary setting, as there has been a large increase in the proportion of students attending university in the UK and funding arrangements for university education have changed.

## Earnings

Longer-term outcomes on earnings and employment have been explored in two studies and evidence is mixed. One used data from the Aberdeen Children of the 1950s study (Box 1). This found that women who attended grammar school had 20% higher gross annual incomes and 10% higher hourly wages when compared to women attending a secondary modern.<sup>10</sup> No difference was found for men. The authors note that these findings need to be interpreted cautiously as they can be influenced by factors such as whether or not the person attended university. Further, the data may be reflective of factors specific to Aberdeen at that time, such as unique labour market changes associated with the discovery

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

36. Sutton Trust. (2011). *Degrees of success: University chances by individual school*.

of North Sea Oil, which may have artificially inflated the life chances of men attending secondary moderns as their vocational qualifications became valuable in this context. The other study used data from the 1970 British Cohort Study (Box 1). It found that men who attended a grammar school were significantly more likely to be in the top 15% of earners compared to men attending a comprehensive school, after controlling for a wide range of socio-economic and demographic characteristics. No difference was found for women.<sup>35</sup>

## Social mobility

Social mobility is typically defined as the movement of individuals from one social class or income bracket (usually the one they are born into) into another over time.<sup>37</sup> One robust study has looked at social mobility using data from the 1958 National Child Development Study, a cohort which experienced a large mix of selective and non-selective education in the 1970s (Box 1). It showed that when children were matched on a number of characteristics, including previous academic attainment, comprehensive schools were as good for mobility as selective schools, although there were subtle differences.<sup>38</sup> In terms of class mobility (defined by the father's occupation), they found that grammar schools did not benefit children from working-class families more than they benefitted children of professional-class ('white-collar') families. However, in terms of income mobility, grammar schools were found to benefit children from low-income families slightly more than children from higher income families, although the benefit was modest. However, the authors conclude that the selective education system as a whole does not improve social mobility for children who were born into any particular income bracket or social class. They note that this is because any mobility advantage accruing to children from low-income or working-class origins who attended grammar schools was statistically cancelled out by an equivalent mobility disadvantage suffered by those who went to non-grammar schools in selective areas.

## Family size and health

Two studies have looked at medium and long-term impacts of school type on family size and health. One of these studies used data from the Aberdeen Children of the 1950s Study (Box 1). It found that on average, women who attended grammar school had fewer children than women who did not attend grammar school; no effect was found for men.<sup>10</sup> The other study used the 1970 British Cohort Study to look at physical health and related health-impacting behaviours in midlife (age 42 years). Compared with those who attended secondary schools, grammar school attendance was generally associated with a very modest improvement in health outcomes. Most of these effects were substantially reduced further once factors such as parental income and class were accounted for. Only effects related to obesity remained; grammar school attendees had lower body mass index as adults, and have less frequent take-away meal consumption and television viewing. The authors noted that such effects may be explained by factors other than schooling, such as unmeasured

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37. Ipsos Mori and the Sutton Trust (2008). *Social Mobility*.

38. Boliver, V. & Swift, A. (2011) Do comprehensive schools reduce social mobility? *The British Journal of Sociology*, 62(1): 89-110.

family characteristics, or students' future income.<sup>39</sup> There is currently a lack of research on mental health outcomes.

## Outcomes for society

### Educational inequality

Educational inequality refers to differences in attainment between pupils from different backgrounds. One robust study has looked at educational inequality based on 2002 NPD data. It found that selective education systems had no substantive impact on net academic attainment in England once gains for those attending the grammar schools and a slight disadvantage for the rest are taken into account. However, it did find that the advantage of attending grammar school in terms of academic attainment was higher for FSM pupils than for more affluent children. However the authors note that very few FSM pupils attend grammar school, so the majority are disadvantaged by the selective system.<sup>11</sup>

There are also data from Northern Ireland, where there was a change in access to grammar schools with no other educational reform. In the 1980s, based on the results of a national ability test taken at age 11 years, 30% of students attended grammar school. However, following an 'open enrolment' reform in 1989, grammar schools were required to accept pupils, on parental request, up to a new (larger) admission number determined by the DfE and based only on the physical capacity of the school. This reform was intended to make the education system more amenable to parental choice. It increased the percentage of pupils attending grammar school to about 35% between 1989 and 1992.<sup>40</sup>

Research indicates that this change increased academic attainment across Northern Ireland overall, with a 10% increase in the number of pupils completing three or more A-Levels. The authors found that it had had a negative effect on the average performance of pupils in non-grammar schools, but that this was outweighed overall by the positive effect for the pupils newly attending grammar school. The authors suggest that this demonstrates that widening access to a more academic 'track' or pathway can generate very positive net effects in attainment. However, it is important to note that in this case, expansion of grammar schools was through parental choice, not through selection by academic ability.<sup>40</sup> It is likely that the outcomes seen in Northern Ireland would not be directly transferable to England, in part due to the higher prevalence of faith schools in Northern Ireland.

Analysis of the Programme of International Student Assessment (PISA) data by the Organisation for Economic Co-operation and Development (OECD) suggests that across OECD countries, having a greater proportion of academically selective schools did not increase a school system's performance overall.<sup>41</sup> It also suggests that in school systems with a high degree of pupil sorting and grouping (such as in selective school systems), disadvantaged students tend to have

39. Bann, D., Hammer, M., Parsons, S., Ploubidis, G. B & Sullivan, A. (2016) Does an elite education benefit health? Findings from the 1970 British Cohort Study. *Int J Epidemiol*: 1-10.

40. Guyon, N., Maurin, E. & McNally, S. (2012) The effect of tracking students by ability into different schools: a natural experiment. *Journal of Human Resources*, 47(3): 684-721.

41. OECD (2013). What makes schools successful? Resources, policies and practices. (Volume IV). Chapter 1: How resources, policies and practices are related to education outcomes.

lower educational aspirations than in schools systems where there is less rigid selection and grouping (see Box 2).<sup>42</sup> Some researchers have argued that other interventions to raise school standards and the attainment of disadvantaged pupils have proven to be more effective than grammar schools (see Box 3).

## Educational inequality

One robust study has looked at the impact of selective education systems on earnings inequalities in England. This used Understanding Society data (Box 1), to compare adult earnings of young people who grew up in an area that operated selective schooling and young people who grew up in an area with a comprehensive school system, between 1961 and 1983. Selective and non-selective geographical areas were matched on a number of labour market and school characteristics. It found that after controlling for a range of individual background characteristics as well as the labour market and location of the individual, earnings variance (the gap between the highest and lowest) was statistically significant and substantially greater between individuals who grew up in selective schooling areas compared to peers who grew up in non-selective

### Box 2: International comparisons using PISA data

Comparing education policy between different countries is difficult due to different economic, political and contextual factors. The Programme of International Student Assessment (PISA) collects information from wealthy industrialised countries about children aged 15 years and their schools. Analysis by the Organisation for Economic Co-operation and Development (OECD) using PISA data from 2012 indicates across OECD countries, 43% of students are in schools that operate some form of selection based on academic criteria. In the Netherlands, Croatia, Hong Kong, China, Japan, Thailand, Serbia, Vietnam, Hungary, Singapore, and Bulgaria, over 80% of students are in academically selective schools, while in Finland, Spain, Norway, Greece, Sweden, Denmark, Argentina, Poland, and Lithuania, fewer than 20% are enrolled in such schools. The analysis found that academically selective schools tend to show better school average performance, even after accounting for the socio-economic status and demographic background of students and various other school characteristics. However, having a greater proportion of academically selective schools was not found to increase a school system's performance overall. Rather, in systems with more academically selective schools, the relationship between socio-economic status and academic performance was stronger.<sup>41</sup>

The OECD analysis also found that in countries where the school system selected and grouped children onto rigid 'tracks' or pathways by academic ability, either within school or between schools, the impact of a students' socio-economic status on their educational goals was stronger than in systems where there was less rigid selection and grouping. The authors suggest that this is because in highly selective systems, socio-economically disadvantaged students tend to be grouped into less academically orientated pathways or schools. This has an impact on their educational aspirations, possibly because students, parents, and schools tend to expect lower performance among students enrolled in these tracks and schools, and because less and often poorer quality resources are allocated to these schools. The authors also found that students tend to report feeling less motivated to work towards their goals in systems with a high degree of pupil sorting and grouping.<sup>42</sup>

42. OECD (2013). What makes schools successful? Resources, policies and practices. (Volume IV). Chapter 2: Selecting and grouping students.

areas.<sup>32</sup> The authors note that if earnings inequality is coupled with inequalities in access to grammar schools then it seems likely that selective systems will reinforce inequalities across generations.

**Box 3: Lessons from London schools**

London schools have been put forward as an example of where the academic attainment gap between FSM pupils and non-FSM pupils has been reduced. Research carried out by the Institute for Fiscal Studies and the Institute of Education for the Social Mobility Commission in 2014 found that over the last 10 years the academic performance of students in inner London has significantly improved; around 50% of FSM pupils now achieve five GCSEs (A\*-C including English and Maths) compared to 30% in the rest of South-East England. The authors of the study note that in contrast to grammar schools, measures taken in London schools have stretched academically gifted children, whilst ensuring good achievement across the board. The authors suggest that the big improvement over the last decade is unlikely to have been driven by changes within secondary schools and that the main factor is likely to be improved primary school provision and attainment. Importantly however, improved attainment at age 16 years translated into higher achievement at A-Level and increased higher education participation, suggesting that one key role of successful secondary schools is in keeping high achieving pupils on track.<sup>43</sup>

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43. Greaves, E., Macmillan, L. & Sibieta, L. (2014) *Lessons from London schools for attainment gaps and social mobility*. Research Report for the Social Mobility and Child Poverty Commission