

TEACHERS

An 'inverse education law'

In this report we investigate the relationship between the proportion of young people without qualifications, and the availability of teachers in areas across England and Wales. An 'inverse education law' seems to exist, where areas with the greatest proportions of unqualified young people have the lowest availability of teachers per head of population. The areas doing best have four times the density of teachers and one third of the rate of young people with no or unknown qualifications when compared to the areas doing worst.

Teachers and qualifications

A person's educational attainment has the potential to be a strong influence on their quality of life and on what kinds of opportunities arise for them. If young people obtain good qualifications, they are more likely to get good jobs with good incomes and then be able to enjoy the associated higher quality of life¹. To achieve good qualifications is commonly thought to take a combination of the efforts of pupils, their families and their teachers. Without appropriate teaching, young people rarely succeed in obtaining good qualifications.

What are the implications of having no qualifications? Young people who have left school with qualifications are much more likely to be employed than their peers who do not have qualifications. Basic educational qualifications open the door both to higher and further education, and to skilled work. They also open the door to a greater income, as shown in Figure 1, which shows the distribution of people without qualifications and those with a university degree or higher among five income groups. More than half of the working-age adults who have a university degree are in the top income group, whereas less than 1 in 10 of those with no qualifications

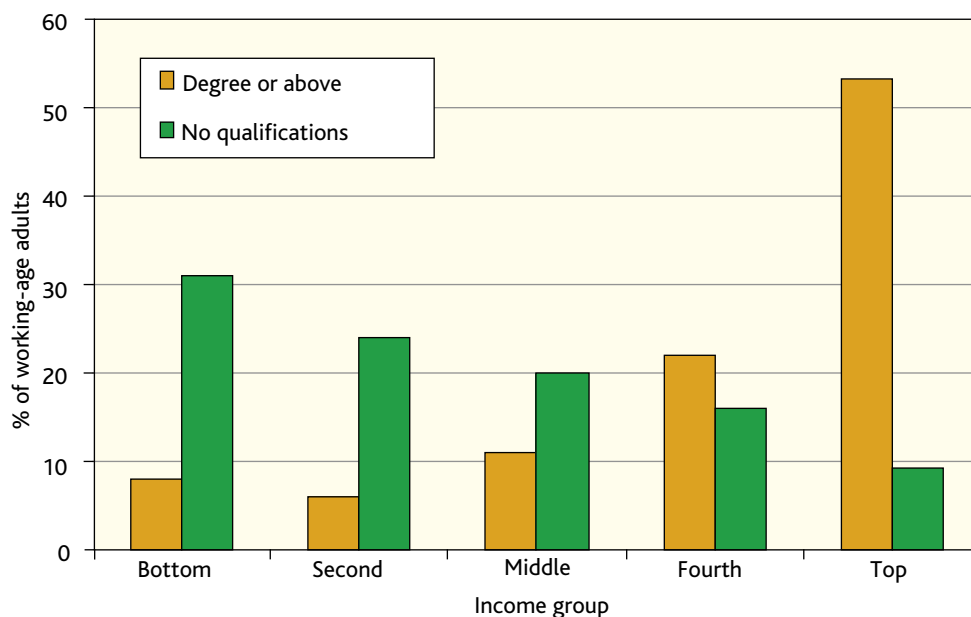


Life in Britain

The latest Census reveals that within the UK people live in very different worlds. For some, resources and amenities abound; for others life is characterised by deprivation and difficulties, especially when their need for support is great.

The 2001 Census marked the bi-centenary of census taking in the UK. It is the most comprehensive social record of life in this country now available. Since 1801 successive governments have asked the population to assist in the taking of a Census.

This report is one of a series of 10 showing key patterns and inequalities in life in the UK revealed by the 2001 Census. These reports focus on geographical inequalities, highlighting where services and opportunities appear not to be available or accessible to those people and places that need them most.

Figure 1: Income group and level of qualification²

are in that group. In contrast, more than half of those with no qualifications are in either the lowest, or the second lowest income groups. Of course, these are not hard and fast rules; some people with no qualifications go on to earn a great deal of money while others with excellent qualifications struggle to get any kind of job (see *The office*, Report no 7).

In this report, the analysis investigates whether or not there is an 'inverse education law' by comparing the number of young people without qualifications in an area to the number of teachers living and working there. Another report in this series, *Doctors and nurses* (Report no 1), describes an 'inverse care law' that is apparent in the UK – areas with the worst health tend also to have fewer doctors. This seems inappropriate, since a national health service designed to bring about the greatest improvement in the population's health would probably involve having the greatest number of doctors available in places where health is worst. This report investigates whether a comparable situation exists with regard to the geographic distribution of teachers and young people without qualifications.

The 2001 Census asked each person in England and Wales³ if they had a professional teaching qualification (for teaching in schools). The Census also asked for

each person's occupation, which means that it is possible to count qualified teachers who are actually teaching. In addition, the Census asked each person to list their qualifications, with options from no/unknown qualifications, through GCSEs, A-levels and NVQs to higher degrees, making it possible to count young people who have no or unknown qualifications. The analysis presented here divides the country into the same areas used in other reports in the series (counties, unitary authorities, and former metropolitan authorities), and asks:

Do areas where high proportions of young people have no or unknown qualifications tend also to have fewer teachers?

Findings

In England and Wales in 2001 there were 662,000 qualified teaching professionals who were working as teachers at that time; one teacher for every 16 children aged 5-15 (compulsory school ages). However, this takes no account of teachers working part time; using government figures of 438,900 full-time equivalent (FTE) teachers in January 2001 gives a ratio of one full-time teacher for every 24 children in the 5-15 age group.

The 2001 Census also recorded 5.7 million people aged 16-24, one million (17.6%) of whom had no (or unknown⁴) qualifications. Due to the way that ages and qualifications are grouped in Census data releases, this analysis considers the proportion of 17 year olds who are in full-time education and who have no or unknown qualifications. Although these young people are still in full-time education, the system could be deemed to have failed them because they did not obtain standard qualifications at the age of 15/16 with most of their peers. In 2001, of the 427,500 17 year olds who were in full-time education, 29,200 (7%) had no qualifications.

Comparing areas

Figure 2 shows the relationship between the proportion of young people with no or unknown qualifications and the number of qualified teaching professionals per 100 children aged 5-15, for the 109 areas of England and Wales. The graph shows that there is an 'inverse' relationship between these measures; areas with a high proportion of young people with no or unknown qualifications tend to have a lower number of teachers per child aged 5-15. This inverse relationship is statistically significant and fairly strong^{TR}.

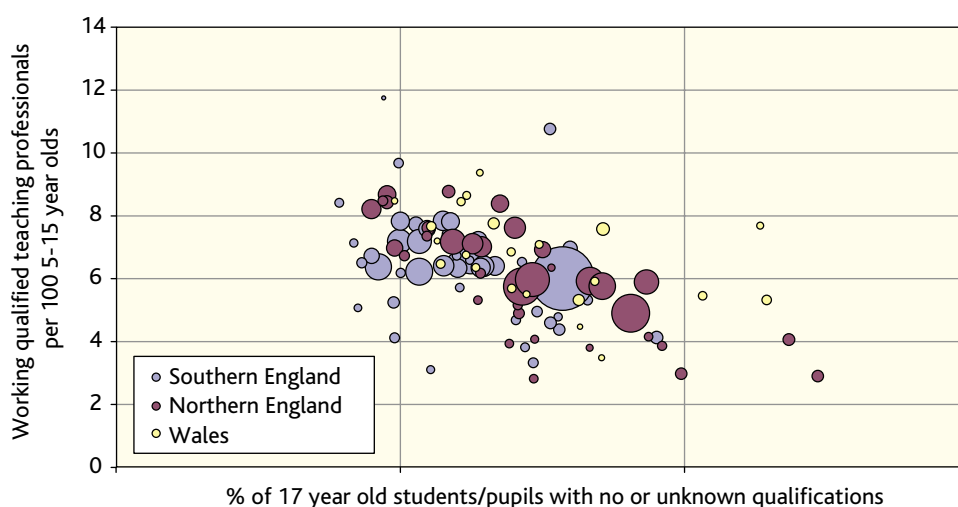
100 years ago

The 1901 Census returns document 230,345 teachers in England and Wales. The ratio of pupils to teachers in state-funded elementary schools was 48.5 pupils for each teacher. Secondary education was not universally available, and even when local education authorities (LEAs) were established in 1902 to provide a post-elementary state education, most pupils would still have had to pay fees. By 1911, still only 7.5% of 12-14 year olds went to secondary school. The legal school leaving age only reached 16 in 1972.

For more information, see the National Archives (www.nationalarchives.gov.uk).

The geography of the two measures can be explored to a greater extent using the maps in Figures 3 and 4. Figure 3 shows the distribution of the young people without qualifications measure, indicating that the areas with the highest proportion of 17 year old students with no or unknown qualifications include a number of towns and

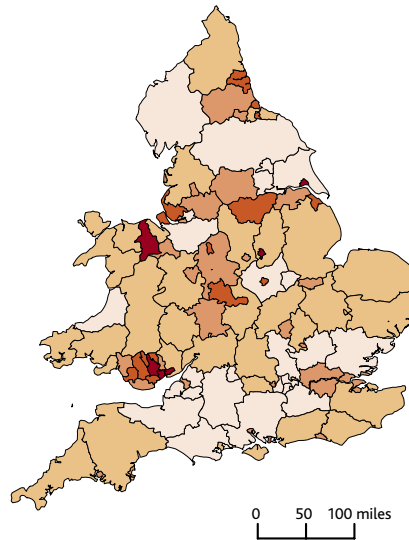
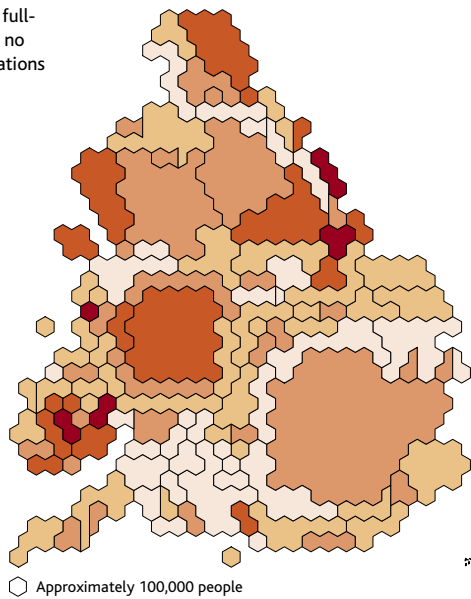
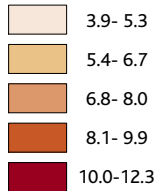
Figure 2: The association between the percentage of 17 year olds with no or unknown qualifications and the number of working, qualified teaching professionals per 100 children aged 5-15 in the 109 areas of England and Wales (2001)^{TR}



Note: Each circle is a county, unitary or former metropolitan authority, drawn with the area in proportion to the total population in 2001 (the largest circle represents London, with a population of just over 7 million). Areas in northern England are those that lie west or north of the counties of Gloucestershire, Warwickshire, Leicestershire and Lincolnshire (the Severn-Humber divide).

Figure 3: The proportion of young people with no or unknown qualifications in each area

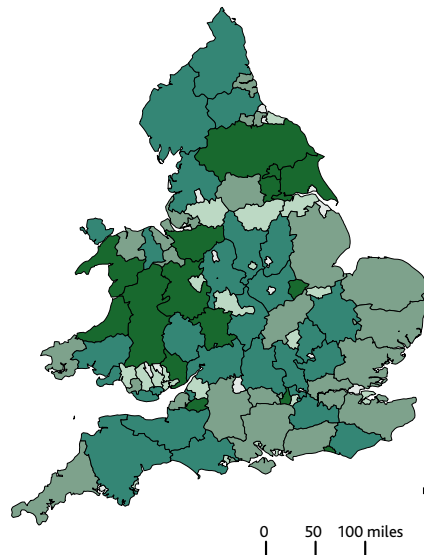
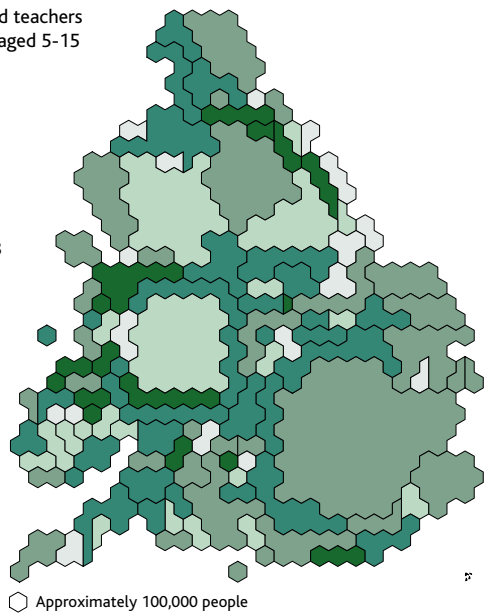
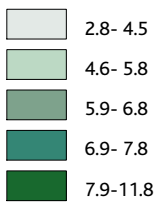
% of 17 year olds in full-time education with no or unknown qualifications



Note: Both maps in each figure represent the same places, shaded identically. The map on the left is a cartogram – each area is shown in proportion to the size of its population in 2001. The largest area is London, since it has the highest population of any of the places^{TR}. The map on the right shows the actual boundaries of the areas.

Figure 4: The geographical variation in the number of working, qualified teachers per 100 children aged 5-15

Working, qualified teachers per 100 children aged 5-15



cities in the North and Midlands of England as well as areas of South Wales.

Figure 4 shows the distribution of the 'teachers per 100 children' measure across England and Wales. Along with the areas listed in Table 2, the highest densities of teachers are generally found in mid-Wales, parts of the West Midlands and Yorkshire. The lowest numbers of teachers are found in the Valleys of South Wales, and towns and cities in the East Midlands and the North, such as Hartlepool, Kingston-upon-Hull, Leicester and Nottingham.

Tables 1 and 2 list the five areas with the highest proportion of young people with no or unknown qualifications, and the five with the lowest number of children per teacher. Notice that in Table 1 most of the areas have more children per teacher than the average, but that there is still some variation within the group. Notice too that in Table 2 not all the areas have a particularly low proportion of 17 year olds with no or unknown qualifications despite a higher density of teachers. Although the association demonstrated in Figure 2 is strong, a few areas do not fit the trend observed among most.

Table 1: The five areas with the highest proportion of young people with no or unknown qualifications

Area	% of 17 year old students with no or unknown qualifications	Children aged 5-15 for each working, qualified teacher ^a
Kingston upon Hull	12.3	34.5
Nottingham	11.8	24.4
Caerphilly	11.4	18.9
Denbighshire	11.3	13.0
Newport	10.3	18.2
England and Wales	6.8	15.9

Table 2: The five areas with the lowest number of children per teacher

Area	% of 17 year old students with no or unknown qualifications	Children aged 5-15 for each working, qualified teacher ^a
Rutland	4.7	8.5
Brighton and Hove	7.6	9.3
Bath and North East Somerset	5.0	10.3
Monmouthshire	6.4	10.6
Shropshire County	5.9	11.4
England and Wales	6.8	15.9

Note: ^a Note that these figures do not account for teachers working part time; they are based on counts of people working as teachers (full-time equivalents are not available in the Census data).

Since 2001

In January 2001 there were 438,900 FTE teachers in the state-maintained sector in England and Wales; by January 2004, this had risen to 457,200 FTE, an increase of 4%. In England in January 2001 there were 18.3 pupils for every teacher (nursery, primary and secondary); this fell to 17.7 by January 2004. Figures for Wales were similar, reducing from 21.5 to 20.6 for primary schools and 16.6 to 16.5 for secondary schools between 2001 and 2003 (combined figures are unavailable)⁵. It seems fair to say that education and teacher numbers have received a considerable boost in terms of investment and recruitment in recent years. This will not help the thousands of young people who have already left school with no qualifications, although the increasing availability and promotion of 'lifelong learning' and adult education should be of benefit to people who did not get qualifications while at school.

Discussion

The significance of having no qualifications needs to be properly understood. Qualifications are a marker of educational attainment and essentially, the higher the educational attainment, the more likely a person is to have and hold a good job, with a high wage. This is true for both men and women. Education is also an important marker for a better chance of good health in later life, although this is partly because it is so strongly associated with increased wealth.

An alternative perspective comes from reflecting that education is expensive in terms of the investment of time and money by pupils, teachers, administrators, parents and, of course, tax payers. It is meant to benefit both the individual and the wider society of which the educated individual should become a useful member. In our society, qualifications are used to denote the degree of success achieved by both pupil and school. For a child to attend school for 11 years or so and to leave without a formal recognition of what has been achieved must be regarded as very serious. Of course, to get into further and higher education, pupils need qualifications such as GCSEs. The young people focused on in this analysis did not achieve those standard qualifications at the same time as most of

their peers, and at the time of the Census, at age 17, did not have any formal qualifications.

The relationship between numbers of teachers and the educational attainment of young people must be considered in order to weigh the significance of these findings. It is a relatively simple equation that says that the more teachers there are per pupil, the smaller a class size ought to be on average. Although the evidence is not entirely straightforward, smaller class sizes have been shown to produce better results from pupils, particularly in the crucial early school years⁶. More teachers might also reflect provision of a wider variety of educational opportunities for a pupil, allowing them a greater chance of finding their own particular aptitudes, honing them, and getting them recognised through a formal qualification.

In England and Wales the LEA is largely responsible for recruiting teachers and evidence suggests that higher expenditure by the LEA (including employing more teachers) is associated with better examination results at LEA level, even after taking poverty in the local community into account⁷. Many of the areas identified by this report as having both a higher proportion of young people who have no or unknown qualifications and a lower number of teachers are poor and deprived. The difficulties in recruiting teachers in these areas are well known⁸, so much so that some LEAs are now experimenting with special incentives and assistance to try to attract staff. This analysis supports this approach, and substantial incentive schemes may need to be implemented on a national basis to recruit and retain teachers in areas with the greatest need.

Of course, no incentive schemes will be successful if there are simply not enough teachers trained and available to work in the first place. 'Teacher shortages' has been a familiar headline in recent years in the UK. However, more recent official figures do show a considerable positive shift in attitudes towards teaching as a career and a corresponding rise in applicants. There are also 25,000 more teachers in the classroom than there were five years ago, with the job jumping from 100th place to first in a league table of the most popular career swaps⁹.

Teachers are not just there to guide children to success in examinations. They also have important roles as stable figures, role models even, particularly in the often turbulent and difficult lives of children living in deprived areas. Although this report has focused on success in examinations as the key outcome of a good education, greater teacher availability is also likely to be associated with less easily measured benefits such as the provision of extra-curricular activities. The increasing numbers of teachers are to be welcomed and it is hoped that they will be deployed in the areas which need them most – those areas where teacher numbers are lower, which are also those areas that, as this analysis has shown, are those where higher proportions of young people leave compulsory schooling with no formal qualifications.



Notes

- ¹ Kuh, D., Head, J., Hardy, R. and Wadsworth, M. (1997) 'The influence of education and family background on women's earnings in midlife: evidence from a British National Birth Cohort Study', *British Journal of Sociology of Education*, vol 18, no 3, pp 385-405.
 - ² Source: Department for Work and Pensions, *Households Below Average Income 2002/03*, © Crown Copyright 2004.
 - ³ This report only considers England and Wales, as this question was not asked in Scotland and Northern Ireland.
 - ⁴ In this report we have considered people who have 'unknown' qualifications along with those we know not to have any qualifications, since (a) they are grouped together in most Census tables and (b) it seems reasonable to assume that most people who did not tick any boxes for the qualifications question on the Census form had none. In terms of the data available for the analyses presented in this report, the two groups are inseparable.
 - ⁵ Data sources: Department for Education and Skills (www.dfes.gov.uk), National Assembly for Wales (www.wales.gov.uk).
 - ⁶ Blatchford, P., Bassett, P., Goldstein, H. and Martin, C. (2003) 'Are class size differences related to pupils' educational progress and classroom processes? Findings from the Institute of Education class size study of children aged 5-7 years', *British Educational Research Journal*, vol 29, no 5, pp 708-30.
 - ⁷ West, A., Pennell, H., Travers, T. and West, R. (2001) 'Financing school-based education in England: poverty, examination results, and expenditure', *Environment And Planning C: Government and Policy*, vol 19, no 3, pp 461-71.
 - ⁸ *Standards and quality in education 2001/02: The annual report of Her Majesty's Chief Inspector of Schools*, London: The Stationery Office.
 - ⁹ 'Teaching becomes class act at last', *The Observer*, 11 April 2004^{TR}.
- ^{TR} Further information on this point is available in the accompanying technical report.

What do we know?

- ▶ In the UK, educational attainment is measured by gaining qualifications. The higher the qualifications obtained, the greater a person's chances of getting a good job, with a high income. Educational attainment is also a good predictor of better health.



What have we found?

- ▶ There appears to be an 'inverse education law' operating in England and Wales; areas which have fewer teachers per 100 children aged 5-15 have a greater proportion of 17 year olds with no qualifications.



Other reports in the series

The companion report to this, *Sons and daughters*, looks at the extent to which areas with higher proportions of young people with qualifications tend also to have a higher proportion of their parents' generation with good qualifications.

1. *Doctors and nurses*
2. *In sickness and in health*
3. *Teachers*
4. *Sons and daughters*
5. *Changing rooms*
6. *A place in the sun*
7. *The office*
8. *Open all hours*
9. *Top gear*
10. *Home front*

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