Issue 9 Winter 2009

CMPO

Research in PUBLIC POLICY

Bulletin of the Centre for Market and Public Organisation

THE NEXT GENERATION

Family transmission of education, skills and employment

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Public service reform:
CMPO's renewed research agenda

Governments around the world are committed to improving the delivery of public services. CMPO's director *Simon Burgess* outlines the Centre's research agenda for the next five years – and the contribution it intends to make to debates around public service reform.

> 'Scandals and Speakers come and go, clamours and controversies build, explode and fade. The enduring Big Question of British politics is about public services. How do we make our schools, our hospitals and our police forces responsive and accountable to those who use them? How do we reward those who perform well and penalise those who fail the public? How do we encourage innovation among the professionals while at the same time maintaining minimum national standards? How do we maximise the bang we get for all those taxpayers' bucks?'

These are the words of Andrew Rawnsley, chief political commentator of *The Observer*, writing in June 2009. In broad terms, they capture the mission of the Centre for Market and Public Organisation (CMPO), which is now supported for a further five years by the Economic and Social Research Council (ESRC). We intend that our research will continue to contribute insightful analysis and robust evidence to the debates around public service reform.

It is clear that this will be intensely politicised terrain in the run-up to the next general election, due by June 2010. There has already been a great deal of jostling for position over public services: Peter Mandelson of Labour and George Osborne of the Conservatives disputing which is the more progressive party; politicians vying to see who can show the most love to the NHS in the light of the US health care debate; and different visions of reform in education.

All of this is sharpened by the very tight fiscal environment that will constrain public services for the next few years. In the middle of these disputes, facts and analysis are at a premium. The ESRC's renewal of our funding could not have been more timely.

Our central research priority for the next five years remains the organisation and delivery of public services. Within this, we have shifted the emphasis and refreshed our portfolio of research topics. We will continue to pay a lot of attention to the role of markets in the delivery of public services. Rawnsley asks 'How do we make our schools, our hospitals and our police forces responsive and accountable' – and, we would add, efficient too.

We will also analyse questions about market structure in public services: for example, what are the long-run effects of opening a new academy school; and what is the impact of hospital mergers in the NHS. A newer emphasis is the interaction in pay setting between the public and private sectors, and the implications for service delivery.

CMPO's central research priority remains the organisation and delivery of public services

An exciting development for CMPO is a research theme on the role of the 'third sector' in the delivery of public services. We have already established the importance of 'pro-social behaviour', which is strongly linked to not-for-profit organisations. We will continue to explore this relationship between institutional structure and individual motivation, and the implications for how public services should be provided.

The government is committed to expanding the role of the third sector in delivering public services, so this theme is a reflection of political reality as well as academic initiatives. With third sector organisations expected to grow in importance, it is natural to ask how effective they are at service provision, especially when the government continues to play an important role as contractor.

We have a set of projects, first mapping the nature of third sector providers, and then comparing the characteristics and performance of private, public and third sector organisations operating in the same industries. This will enable us to both measure and understand differences in performance. The study of 'public organisation' now necessarily encompasses the third sector as a key player alongside traditional government agencies.

An emerging CMPO research theme is the role of not-for-profit ('third sector') organisations in public service delivery

The third core theme of our new programme builds on our reputation as a major centre for the quantitative analysis of neighbourhoods and public services. The role of neighbourhoods is most obvious in relation to schools. The formation of school catchment areas forms a clear link between school outcomes, school sorting and measures of accountability.

Our projects will continue to focus on education provision in neighbourhoods, and we will also develop new methodologies to model the interplay between schools and neighbourhoods. We will shortly be starting a project evaluating the role of lotteries in allocating children to over-subscribed schools, a policy that proved very controversial when introduced in Brighton and Hove.

One new CMPO project will evaluate the role of lotteries in allocating children to over-subscribed schools

To secure renewed funding for the research programme, CMPO had to pass a mid-term review from the ESRC. This process was appropriately challenging and inevitably has given us some issues on which to work. Overall the review was extremely successful and the assessors were very positive. The following two (anonymous) quotes illustrate the common theme:

> 'CMPO's research outputs are high quality as measured both by success in publication in peer reviewed journals… and also through the influence they have in government circles in a range of areas.'

> 'The Centre's primary intellectual focus… is one that is central to the burgeoning global public sector reform agenda being driven particularly by the OECD and the World Bank.'

We are responding to the global nature of the public service reform agenda by including international comparative work in all of our three core themes. The programme includes empirical work, theoretical work and methodological development.

The empirical work exploits longitudinal datasets, administrative datasets, merged survey, spatial and administrative data, case studies and qualitative data. The proposed methodological development is in econometrics, in analysis using 'geographical information systems', and, importantly, in our continuing work melding the two. While most of the Centre's research continues to be in economics, there are also significant components of law, geography and social policy.

It is clear that this scientific agenda addresses leading policy concerns in the UK and around the world. Governments are keen to improve the performance of the public sector and, more broadly, to improve the delivery of public services. Policy-makers want to know what levers they can try to pull to achieve this – that is, they need to know how organisations involved in public service delivery respond to their environment.

That is why there has been such interest in CMPO's research: our research delivers answers to the policy agenda.

PhD scholarships on the Economics of the Third Sector

The Department of Economics, University of Bristol, is seeking applications for two CASE PhD Scholarships. The PhD Scholarships are funded jointly by the Economic and Social Research Council (ESRC) and a non-academic partner organisation. The funding will cover standard ESRC fees and an allowance of £15,290 per year. The scholarships will ideally start in January 2010 but this is subject to negotiation.

The scholarships are part of a new capacity-building cluster on the economic impact of the third sector located within CMPO. The aim of the cluster is to use economic analysis to improve the evidence base on the impact of the non-governmental, not-for-profit sector.

1. The implications of behavioural economics for promoting charitable giving.
Supervisor: Sarah Smith
Tax incentives are typically the main way that governments try to encourage individuals to give to charity, although the evidence on their effectiveness is mixed. Lessons from behavioural economics in other policy areas suggest that alternative mechanisms may be (more) effective. In the area of pensions, for example, the government is introducing automatic enrolment into the National Pension Savings Scheme, a move influenced by evidence from the effect of auto-enrolment in individual firms. This PhD project will consider the implications of behavioural economics for how governments and charities might encourage charitable giving and will test the effect of alternative mechanisms in the field.
This PhD is co-sponsored by the Charities Aid Foundation
For further information contact: Sarah.Smith@bristol.ac.uk

2. The impact of performance measurement in the Third Sector
Supervisors: Simon Burgess and Carol Propper
In some service sectors, not-for-profit organisations are developing and implementing detailed outcomes measures as a way of evaluating performance. Outcomes Star (in the area of homelessness) is a leading example. Potentially, such performance measures could be used as the basis for commissioning services but there are a number of important unresolved issues that this PhD project will look at:

- What has been the impact of introducing performance measures on services?
- Are such performance measures vulnerable to gaming?
- What might be the impact of turning a tool for self-evaluation into a basis for commissioning services?

This PhD is co-sponsored by New Philanthropy Capital.
For further information contact: Simon.Burgess@bristol.ac.uk

Bristol's Department of Economics provides an excellent environment for doctoral research. The department was ranked sixth in the UK for research in the latest Research Assessment Exercise; together with CMPO it also offers a friendly, enthusiastic and sociable research community.

Candidates for this post must satisfy the ESRC's usual requirements for research students regarding academic qualifications and residential eligibility, as set out in the ESRC's 2009 Guidance Notes available at: http://www.esrcsocietytoday.ac.uk/ESRCInfoCentre/How/For_Postgrad_Students/

To apply please send a CV, including the names of two referees, and a covering letter to: Heidi Andrews. H.Andrews@bristol.ac.uk by **Monday 30th November**.

Masters programme in the Economics of Public Policy

The Department of Economics at the University of Bristol offers a unique Masters programme specialising in the economics of public policy, drawing on the expertise of the Centre for Market and Public Organisation.

This course provides an outstanding opportunity to learn from cutting-edge research in the UK's leading economics centre on the organisation and delivery of public services. You will be studying in the University of Bristol's Department of Economics, ranked sixth in the UK for research.

The rigorous one-year programme allows you to specialise in the application of economics to public policy issues. The degree combines rigorous technical training in all areas of economics with broad practical applications and three specialist courses focused on the economics of public policy analysis. Students also complete a dissertation directly supervised by CMPO staff.

It provides ideal training for work as an economist in, or with, the public sector, whether in government, a private sector consultancy or a not-for-profit organisation. It also provides an excellent platform if you want to pursue further research in this area at PhD level.

CMPO

University of BRISTOL

Fathers and sons:
can worklessness be transmitted across generations?

At a time of rising unemployment, there are growing concerns about the long-term impact of being out of work on people's lives. Research by *Lindsey Macmillan* examines the possibility of an even greater threat: that the children of today's jobless might be in more danger of being without work themselves.

The research evidence on the 'scarring' effect of unemployment is now widely understood: spells of youth unemployment increase the likelihood of being workless later in life. But what if fathers' spells of worklessness increase the likelihood of their sons being out of work in adulthood? In that case, the penalty of the rising unemployment we are witnessing today could be paid not only by the current generation in terms of scarring in later adulthood but also by the next generation.

My research analyses such 'intergenerational worklessness' using the two British birth cohort surveys: the National Child Development Study (NCDS), which tracks a representative sample of people born in the UK in 1958, and the British Cohort Study (BCS), which tracks a similar sample of people born in 1970.

In particular, I examine the magnitude of the correlation between fathers' and sons' worklessness, and to what extent the transmission from one generation to the next is driven by observable differences across families, reflecting wider aspects of family deprivation.

One in five children of the 1958 cohort who grew up in workless families ended up unemployed for at least a year before the age of 30

This question has parallels with intergenerational income mobility and the Milburn Commission on access to top professions. But an intergenerational correlation in worklessness may be of greater concern to policy-makers than any movement or lack of movement around the middle or top parts of the income distribution.

The intergenerational correlation in worklessness

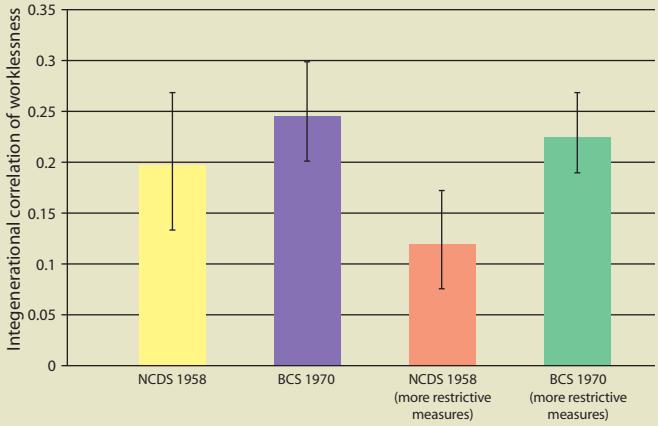
The raw data on intergenerational correlation in worklessness show that the probability of a son whose father was not in work during the son's late childhood spending a year or more out of work themselves, between leaving full-time education and age 30, is 33% in the NCDS. This contrasts with the probability of a son from a family where the father was in work during the son's childhood spending a year or more out of work themselves, between leaving full-time education and age 30, of 14%.

Fathers' employment status for sons born in 1970 is a stronger predictor of sons' employment status than fathers' employment status for sons born in 1958

The intergenerational correlation or difference between the probabilities for the two different types of family is 20%. So one in five children who grew up in workless families ended up unemployed for at least a year before the age of 30. In the BCS cohort, the extent of unemployment was even higher at 25%.

This indicates that between the 1958 cohort and the 1970 cohort, there has been an increase in persistence in the intergenerational correlation in worklessness. Fathers' employment status for sons born in 1970 is a stronger predictor of sons' employment status than fathers' employment status for sons born in 1958.

Figure 1: The intergenerational correlation in worklessness across cohorts for less restrictive and more restrictive measures of sons' worklessness



Increasing the intensity of the sons' measure of worklessness from one year to two years out of work leads to an even larger increase across cohorts. In the NCDS, the gap in two years employment was 11% between those growing up in workless and non-workless families. But for the BCS, the correlation remained at a similar magnitude as for one year at 22% (see Figure 1).

This is in line with the findings on intergenerational income mobility of an increase in 'persistence' across cohorts. Controlling for observable differences in family characteristics accounts for a third of the intergenerational correlation in the two cohorts.

Causality in the intergenerational transmission of worklessness

So is it actually fathers' worklessness or other factors that are driving these correlations? For example, there might be attitudes and beliefs about work or perhaps low ability that leads people only being able to obtain work in low-paid and less secure jobs. Such fathers are more at risk of spells of worklessness than fathers with higher ability and more secure jobs and – through the intergenerational transmission of ability – the same will be true of their children.

If these were the factors driving the correlation in worklessness between fathers and sons, moving fathers into work would not change the probability of their sons experiencing spells of worklessness, as it is their low ability – and hence less secure employment – that is causing the correlation.

But if the poverty associated with spells of worklessness experienced by fathers adversely affects the resources and education that fathers can provide for their sons, moving fathers into work will alleviate some of these constraints and causally influence the likelihood of their children experiencing future worklessness.

To identify causality in intergenerational worklessness, I use data from the UK recession of the early 1980s. Using variation in fathers' employment status by those working in industries hard hit by the recession in terms of employment change, I attempt to isolate a causal impact of employment in one generation on the next generation.

Fathers who lost their jobs in the 1980s recession had a small impact on their children's future employment unless they experienced a long period of worklessness

Given that the father must be employed in 1980 to work in a hard hit industry, I have a less permanent measure of worklessness, and the intergenerational correlation is around one fifth of the size of the more permanent measure of fathers' worklessness. This suggests that there are effects of parental job loss on children's future employment but that these are small unless the period of worklessness is one of long duration.

Conclusion

The results indicate that there is a strong correlation in workless experiences between fathers and sons in the UK. Sons from both cohorts are more than twice as likely to experience spells of worklessness themselves if they come from a family where the father was not in work throughout childhood compared with a father in employment.

Across time, this correlation has increased from those born in 1958 to those born in 1970. The intergenerational correlation is 5% higher in the BCS than in the NCDS. Increasing the intensity of the sons' workless measures leads to an even larger increase across cohorts with the intergenerational correlation doubling from the NCDS to the BCS. This is consistent with an increase in persistence of the impact of family income on sons' adult earnings.

Opportunity for all?

Family income and education in the next generation

How strongly are children's educational outcomes influenced by their parents' incomes? Are we any closer to equality of opportunity? *Paul Gregg* and *Lindsey Macmillan* explore the relationships between family income and education for cohorts of children born between the late 1950s and the early 1990s.

The relationship between the family incomes of children and their educational achievements is of great interest to researchers for a number of reasons. First, this 'gradient' gives us a measure of educational inequality in its own right, and second, because education is a driver of life chances, the gradient reflects one of the key drivers of intergenerational income mobility over time in the UK as well as gradients in life chances across a range of other domains.

There is a growing evidence base that family income has a causal impact on education, and education in turn has a causal impact on life outcomes. Given this evidence, the strength of the relationship between family background and children's educational attainment represents the extent to which adult outcomes mirror people's childhood circumstances and are thus an indicator of equality of opportunity.

This may mean that someone who is born into a poor family faces lifelong penalties regardless of their own abilities or effort. For this reason, this is currently a highly topical area in the UK, where the notion of 'opportunity for all' has been cited as a central policy goal by all three major political parties.

Equality of opportunity at age 16 has markedly improved over the last 20 years

Our latest research explores the relationships between family income and education for a set of cohorts of children born between 1958 and 1991-92. The UK has a wealth of cohort studies, where large samples of children are followed through time, often from birth into adulthood. There is also the British Household Panel Study (BHPS), which includes families with children though the samples are rather small.

We analyse data from the two early birth cohorts discussed in the previous article: the NCDS (1958) and the BCS (1970). In addition, we introduce three younger cohorts using data from the BHPS: those born between 1975-80 (BHPS 1), those born between 1981-86 (BHPS 2) and those born between 1987-89 (BHPS 3).

Two new cohorts track children born around 1990: the Longitudinal Study of Young People in England (LSYPE), a national survey of those born in 1989-90; and the Avon Longitudinal Study of Parents and Children (ALSPAC), a Bristol-based birth cohort of children born in 1991-92.

Income gradients in education

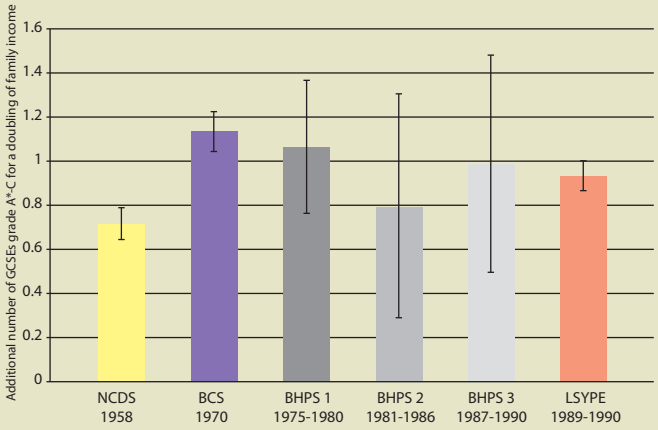
We first examine the strength of the relationships between family income and educational qualifications and the proportion of time spent 'not in education, employment or training' (NEET) before age 24 for each cohort. Across all five cohorts, individuals from better off families did better at every stage of educational attainment than their less well off counterparts and were less likely to spend some of their early labour market experiences as a NEET.

Evidence on children born in the early 1990s supports the notion of a reversal in fortunes for those from lower income families

The strength of the relationship between family income and educational outcomes increased between those born in 1958 and 1970. For all six outcomes we look at: GCSEs at grade A*-C, A-levels and degrees; staying in school post-16 and post-18; and time spent as a NEET.

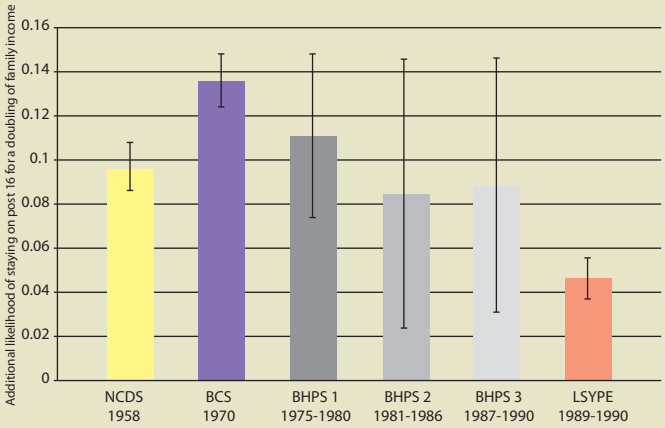
As an example, using standardised income to net out any effect from rising wage inequality, a doubling of family income in the NCDS was associated with an individual being 6% more likely to gain a degree; in the BCS, the individual was 11% more likely to gain a degree. For the BCS, a doubling in income was associated with a gain of one more GCSE at A*-C level than their NCDS counterparts.

Figure 1: Income gradient in the number of GCSEs grade A*-C across cohorts



Confidence intervals represent 5% confidence bounds

Figure 2: Income gradient in staying on in education post age 16 across cohorts



Confidence intervals represent 5% confidence bounds

The relationship between income and education shows no significant changes between those born in the BCS and those born just 5-10 years later in the BHPS 1 cohort. So the picture is one of stability for those two cohorts born in the 1970s and attending secondary school in the 1980s and early 1990s.

But the proportion of time spent as a NEET became significantly more graded by income across these two cohorts. A doubling of family income in the BCS would reduce the proportion of time spent as a NEET by under 2% between leaving full-time education and the age of 24; but the same increase for the BHPS 1 cohort would reduce this time by 6%. This is in line with much recent research on NEETs, and indicates that this is a group of individuals who need a lot of help as they are increasingly constrained by their family background.

NEETs – young people 'not in education, employment or training' – are increasingly constrained by their family background

Figure 1 illustrates the relationship between family income and the number of GCSEs obtained at grades A*-C across all the cohorts. The picture for the BHPS cohorts and the LSYPE is a moderate reduction in the gradient of GCSE scores by family background and more dramatically for staying in school post-16. (The bars around the main result show the confidence range: these are large for the BHPS as the samples are small, which makes it hard to judge the true magnitude of the income gradient and any significant differences for these cohorts.)

But the much larger LSYPE cohort who were born towards the end of the BHPS 3 sample, and who would have experienced their junior and secondary schooling after 1997, show a clear decline in the income gradient since the 1980s. Equality of opportunity at age 16 has markedly improved over the last 20 years. But for education at 18 and degree level, the picture is not yet clear as the LSYPE children are not yet old enough for these data to be available.

Figure 2 explores young people's decisions to stay in education after age 16. This illustrates that the pattern of a decrease in the income gradient for those born after 1980 for GCSEs is replicated. Across the BHPS cohorts, BHPS 1 again looks very similar in magnitude to that of the BCS with a reduction in the income gradient kicking in for those born in 1980-86 and 1987-90.

Again, the magnitude of the confidence ranges prevents any findings of significant differences for these two cohorts and the BCS. But a doubling of family income in the BCS led to a 13% higher chance of staying on post-16 compared with only 8% in the BHPS 2 and BHPS 3 cohorts, a reduction of 5% in the income gradient.

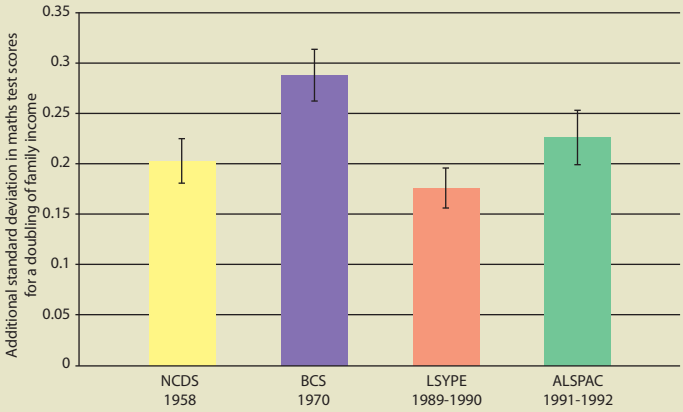
For the larger LSYPE cohort, this difference is more pronounced with a 9% reduction in the income gradient from that of the BCS. This is indicative of the widening access to post-16 education with 76% of individuals in the LSYPE cohort opting to stay in education post-16.

Staying on post-16 is becoming a route that the majority of individuals now take, regardless of their family background. This shows how more and more people from poorer backgrounds are staying on in school, though the courses taken may not reflect the high value level 3 qualifications of A-levels and higher apprenticeships.

Income gradients in test scores

There must be some concern that the growth in post-16 education is driven by changes in exams rather than underlying ability, literacy or numeracy skills. There has been widespread concern that rising pass rates stem from 'grade inflation'. This

Figure 3: Income gradient in maths test scores across cohorts



Confidence intervals represent 5% confidence bounds

would tend to narrow the observed income gradient, as a greater proportion of more affluent children will have already achieved a high number of A*-C grades.

One way to determine whether these findings are driven by changes in underlying ability and literacy and numeracy skills rather than changes in exams is to examine data on IQ, literacy and numeracy scores and their relationship with family background across the cohorts. The relationship between family income and educational attainment can be expanded further into cohort members' childhoods to consider the relationship between family income and test scores.

Previous research has found that test scores measured at the beginning of secondary school are strong predictors of earnings at age 30 and that the majority of the effects work through later educational attainment. These test scores can therefore be thought of as an early proxy for later educational attainment.

As GCSEs become more common and less graded by family background, their value in the labour market may diminish

These data are not available in the BHPS and are limited in the LSYPE, but the ALSPAC cohort can offer some insights. Using comparable standardised reading and maths tests for the NCDS, BCS, LSYPE and ALSPAC for children aged 10/11, we can document the change in the relationship with standardised family income across the four cohorts.

As with educational attainment, the NCDS is far less socially graded than the BCS in terms of test scores. An individual experiencing a doubling of family income (or moving from the 10th to the 50th percentile of the income distribution) is on average likely to score one fifth of a standard deviation higher on all three test scores. In comparison, the same income change in the BCS would increase test scores by one third of a standard deviation.

Figure 3 illustrates that for the LSYPE and ALSPAC cohorts, the relationship between income and maths test scores is consistent with a decrease in the social gradient in test scores for younger cohorts. There is a significant decline in the relationship between family income and test scores from the BCS to both younger cohorts.

This also holds for reading test scores and IQ test scores in the ALSPAC cohort. The social gradients in the two younger cohorts appear similar to those of the NCDS cohort and there is no significant difference between them. This further supports the notion of a reversal in fortunes for those from lower income families.

Conclusion

Our research presents a convincing picture that the gradient of educational attainment at age 16 by family background has lessened from a point between the generations born in the 1970s and late 1980s/early 1990s.

The Department for Children, Schools and Families has used youth cohort studies to look at the relationship between social class and attainment at age 16 and suggest a narrowing of class gaps after 1999 – that is, for children born after 1983. Our data, based on birth cohorts and the BHPS, confirm this pattern using income data.

The picture of an improvement in equality of opportunity in terms of educational attainment at age 16 is also mirrored in IQ and reading and maths test scores in two recent cohorts: LSYPE and ALSPAC. So for younger generations, the educational differences across family backgrounds at age 16 and in literacy and numeracy test scores at age 10/11 appear to be equalising. The picture for post-16 education is less clear.

Given the important role of education in accounting for levels of social mobility, there is a suggestion that this weakening of income gradients in educational attainment at age 16 may improve future mobility levels. But the impact on future earnings remains to be seen and will depend on whether the returns to different aspects of education change across time. As GCSEs are becoming more common and less graded by family background, their value in the labour market may also diminish.

This article summarises 'Family Income and Education in the Next Generation: Exploring Income Gradients in Education for Current Cohorts of Youth' by Paul Gregg and Lindsey Macmillan', CMPO Working Paper No. 09/223 (http://www.bristol.ac.uk/cmpo/publications/papers/2009/wp223.pdf).

Skills: another intergenerational story

To what extent do parents with poor literacy and numeracy skills have children with similarly poor skills? *Anna Vignoles* and colleagues are studying the intergenerational transmission of skills in the UK.

A string of government-commissioned surveys has revealed the large proportion of adults in the UK with very poor skills in literacy and numeracy. For example, in 1999, a report of the group led by Sir Claus Moser found that 20% of adults in England had severe literacy difficulties and 40% had numeracy problems.

Having a population with a large proportion of people with poor literacy and numeracy is certainly damaging to the low-skilled individuals themselves. (Perhaps) unsurprisingly, men and women with poor literacy and numeracy have a much higher chance of remaining unemployed and of securing only low quality and unstable jobs. They also earn considerably less than their more skilled peers.

Having a high proportion of adults with poor literacy and numeracy in comparison with other countries also has an economic impact on UK firms and the wider economy. In particular, firms report difficulties recruiting more skilled workers and have to pay a sizeable wage premium for workers with even modest levels of literacy and numeracy. In contrast, in Germany, where basic literacy and numeracy is not in such short supply, firms do not need to pay a premium for workers with modest skills.

All the evidence of the damaging effects of having a low-skilled workforce has prompted policy-makers to invest considerable sums of public money in programmes designed to improve the cognitive skills of adults – with the aim of improving their individual economic prospects and those of the wider UK economy.

But there is another reason for targeting adults with poor literacy and numeracy: it may help us prevent future generations from having equally poor skills, and thus enable us to break cycles of disadvantage. Providing assistance to parents with weak literacy and numeracy skills may help their children if there is significant intergenerational transmission of (poor) skills.

If the intergenerational transmission of skill is found to exist, this may provide some explanation for the low level of intergenerational social mobility in the UK. In other words, it could be an important part of the complex set of reasons why children from low income families go on to become low income earners themselves, and why children of low educated parents also end up having received less education.

More skilled parents have children who themselves have higher levels of cognitive skill

A pressing challenge for the UK school system today is to avoid producing future generations of adults with equally poor literacy and numeracy skills. To do this, we need a better understanding of the intergenerational nature of skill formation. We need to know the extent to which parents transmit their poor cognitive skills to their children – and then how we can prevent this from happening.

Our research tackles the first of these two issues; analysing the extent to which parents with poor literacy and numeracy skills have children who have similarly poor early cognitive and non-cognitive skills.

Previous research suggests that there are significant cognitive achievement gaps between children from different socio-economic backgrounds and between the children of more and less educated parents. We also know that these socio-economic gaps start to emerge early in children's lives, even during the pre-school years.

We might hope that as children enter the formal schooling system, these socio-economic gaps in achievement would gradually reduce as the impact of schooling starts to outstrip the effect of home environment. Surely our school system is designed to provide additional help for children who lag behind in terms of their achievement? Yet in reality, such socio-economic gaps in cognitive achievement generally increase as children get older and pass through the education system.

Why is this? Existing studies point to the importance of key 'family inputs' into the cognitive development of children. Factors such as parental income, family structure, neighbourhood characteristics and, to a lesser extent, school all affect children's cognitive achievement.

Yet many of these factors are only partial explanations for the intergenerational cycle of low cognitive achievement. Another part of the story is the genetic component of the relationship between parental and child achievement. There is now convincing evidence that parents who have a higher IQ go on to have children who also have a higher IQ and that genetic inheritance is part of the explanation.

What we have a more limited understanding of is the process of intergenerational transmission of skills. Some UK research finds that there is a strong intergenerational transmission of cognitive skill, at least as measured early in the lives of parents and their children. So for example, parents with better cognitive skills at age 7 went on to have children with higher cognitive test scores at a similarly early age.

Yet we also know that individuals' skills change during their lifetime, not least as a result of their education, training and work experience. Thus parents' adult skill levels are potentially as important in predicting the development of their children. For our research, we therefore wanted to explore the extent to which the skills people have as adults, around the time they raise their families, influence the early achievements of their children.

We analysed data from the British Cohort Study, a longitudinal survey that has followed the same group of people from birth into adulthood. The study began in 1971, when data were collected on all the babies born in England, Wales and Scotland in one week in April of that year. Cohort members have since been followed up at various ages, including three times in childhood

More skilled parents are less likely to have children with social, emotional or relationship problems

Each time the surveys have collected rich data about respondents' health, educational, social and economic circumstances. For the purposes of this research, we use the numeracy and literacy tests taken by the parents at age 34, investigating the extent to which they are related to the measures of cognitive and non-cognitive skills of their children acquired in the pre-school period at ages 3 to 6.

Our research analyses the relationship between the parents' literacy and numeracy skills in adulthood and their children's skill at an early age. Since the data are so rich we could also allow for other factors that might influence a child's cognitive and non-cognitive development.

For example, we include measures of the parents' own early childhood cognitive achievement. This means we can investigate the extent to which if we have two parents with similar cognitive achievement at age 5, whether the parent who develops better literacy and numeracy skills by the time they raise their children goes on to have children who in turn have better cognitive and non-cognitive skills.

The results of the analysis are striking. More skilled parents have children who themselves have higher levels of cognitive skill. More skilled parents are also less likely to have children with social, emotional or relationship problems.

This remains true even when we allow for children's characteristics, such as age, gender and family structure. In fact,

even if we allow for parents' social class and their education level, we still find a strong relationship between the parental level of cognitive skill both (in) childhood and in adulthood and the cognitive and non-cognitive skills of their children.

So, parents' adult skill levels in literacy and numeracy provide additional information to help explain their children's early skills, over and above the effect of parents' own early cognitive skill at age 5. This implies at the very least that targeting adults with poor literacy and numeracy would be useful from a policy perspective, in that we could identify individuals whose children are at risk of having poor skills themselves.

Our results also suggest that knowing someone's cognitive skill at age 5 is not sufficient to determine whether their children are at risk of having poor cognitive skills or emotional or behavioural problems. This is the good news: a child's fate is not sealed at the time their parent enters primary school. Rather, people's skills change over their lifetime and the skills with which they enter parenthood will also predict how well their children do in terms of early childhood skill development.

This research has (some) important policy implications. Generally in the UK, the economic rate of return to many adult skill interventions has not been high. In other words, where the government has invested in adult learning or basic skills training, we have not seen substantial improvements to these adults' earnings.

Government programmes aimed at helping low-skilled adults should consider the potential intergenerational effects of such interventions

There is often a temptation to write off such interventions as inefficient and a waste of taxpayers' money. Yet our research suggests a potentially causal relationship between parental cognitive skill, particularly literacy and numeracy, and their children's development. Higher cognitive and non-cognitive achievement of their children will in turn lead to higher earnings and better employment prospects for these children.

Thus, policy-makers need to consider that interventions designed to improve the skills of adults may have wider benefits, in terms of their children's development, that in turn could lead to long-term economic gain.

As our research is not based on experimental evidence, it is difficult to infer causality. It may be that more skilled parents have other qualities that are the real causal factors behind their children's success. We therefore urge that programmes targeted at low-skilled adults should consider the potential intergenerational effects of such interventions and be properly evaluated. We need to determine both whether the programmes have a direct impact on adults' skills and then whether there are any beneficial effects on the cognitive and non-cognitive skills of their children.

This article summarises 'Parents' Basic Skills and Children's Cognitive Outcomes' by Augustin De Coulon, Elena Meschi and Anna Vignoles, Centre for Economics of Education Discussion Paper No. 104 (http://cee.lse.ac.uk/cee%20dps/ceedp104.pdf).

Do teachers matter?

Does the quality of a teacher have a direct impact on their pupils' results – and if so, how can teachers' skills be improved? *Simon Burgess* and colleagues look at the evidence – and comment on proposals for a renewable 'licence to teach'.

Most of us remember inspirational teachers from our school days. Teachers who had so mastered the skills of classroom management that no one noticed it happening; teachers with such deep enthusiasm for their subject that pupils were swept past their indifference and cynicism. But most of us can also remember poor teachers, ruled by their classes and almost as bored and ignorant of their material as the pupils.

It is undoubtedly true that there are teachers matching both these caricatures in schools in England today, as well as teachers at all points in between. This poses a number of problems for public policy. How to raise the standards of teaching? How to remove or improve poor teachers? And how to organise the recruitment and retention of teachers to achieve these aims?

But even before tackling these policy issues, there are some equally difficult questions; how can we measure good and bad teaching? How reliable are such measurements? And even more importantly, do teachers actually matter?

The impact of teachers on pupils' results

So much recent debate about educational outcomes has focused on the importance of the family environment that it is no longer obvious that teachers and schools might have an important role to play. Indeed, it may be that teachers are very similar in their teaching ability, all having trained in similar ways and all bound by the national curriculum. Which if this were the case focusing policy on weeding out a few 'bad apples' would not be a good idea.

Questions about teaching quality have been addressed by a small but growing body of research. The research has been made possible by the availability of new administrative data from schools on pupils' performance, the assignment of pupils to teachers, and the characteristics of teachers. The CMPO has produced the first such evidence for the UK.

Disentangling the separate contributions to pupil outcomes of schools, teachers, classes and the pupils themselves requires extremely rich data. We use a unique dataset that matches over 7,000 pupils, their exam results and prior attainment to the individual teachers who taught them in each of their compulsory subjects in GCSE exams at age 16. We measure teachers' quality by their impact on exam results.

Our results show that teachers matter a great deal: being taught by a high quality (75th percentile) teacher rather than a low quality (25th percentile) teacher adds 42.5% of a GCSE point per subject to a given pupil. This shows the strong potential for improving educational standards by improving the average quality of teachers.

CMPO research provides strong evidence that educational standards can be improved by improving the average quality of teachers

Using another metric, teacher effectiveness is about a quarter as variable as pupil effectiveness, but because teacher effectiveness influences the GCSE outcomes of entire classes, teacher effectiveness has greater leverage.

Showing the importance of teacher quality for the high-stakes GCSE outcomes means that family background is not everything. The same pupil, bringing to bear the skills derived from his or her home and family, can systematically score significantly different marks in different subjects given different teacher quality.

Teacher quality and educational disadvantage

We can relate our measure of teacher quality to the socio-economic gap in outcomes. The gap in GCSE points between a pupil from a poor family and a pupil from a non-poor family is 6.08 GCSE points. Suppose this gap arises over eight subjects: if the poor pupil had good teachers (75th percentile) for all eight subjects and the non-poor pupil had weak teachers (25th percentile) for all eight, this would make up 3.4 points.

This is a powerful effect, and not one typically addressed in explanations of the socio-economic gap in education. School and teacher assignment could in principle have strong roles to play in alleviating unequal outcomes.

By the same token, the assignment of pupils to teachers of varying quality may play an important role in generating the socio-economic attainment gaps in the first place. We can test this idea, correlating within-school differences in teacher quality with within-school differences in classes' average prior attainment.

Taking out school averages of both teacher quality and classes' average initial score, we find a positive correlation between the average ability of the class that a teacher is assigned to and that teacher's quality. This will map quite closely on to a correlation between teacher quality and pupils' socio-economic status.

Schools face complex incentives for teacher allocation, with the key measure of quality being the fraction of pupils getting at least 5 C grades in their GCSEs. It would therefore be valuable to allocate the best teachers to those pupils close to the C/D borderline. The implication of this for the allocation of teacher quality and the evolution of the socio-economic test score gap is an issue for future research.

Improving teachers' skills

One implication of our research is that we should identify the weakest teachers and either remove them from the profession or help them to improve their teaching skills. But such a policy is not straightforward to implement. We know that the observed characteristics of teachers in our data do not predict our measure of their quality well, so it is not easy to spot weak teachers.

Assignment of high quality teachers to economically disadvantaged pupils could in principle alleviate unequal outcomes in education

This debate has important implications for improving average teacher quality that other researchers have also identified. The findings show that it may be hard to identify good teachers *ex ante*, but that sophisticated analysis of pupil performance data can be used to identify them *ex post*.

Stronger performance management and personnel policies in schools might include a greater role for analysis of pupils' progress during teachers' probationary periods. It might also feature mentoring, more stringent hiring procedures and pay more closely linked to performance.

The most recent education White Paper, published in June 2009, contains (some) hints of such a policy. It includes plans for a 'licence to teach', immediately branded as the 'classroom MOT'. The licence would be renewable and valid for five years at a time.

Stronger performance management in schools might include a greater role for analysis of pupils' progress during teachers' probationary periods

The nature of the renewal process is key: it could be a formality or it could have real teeth. The White Paper is rather vague: teachers 'will need to demonstrate that they have up-to-date skills and learning to be effective in the classroom'. This will occur through a 'process of revalidation, building on the performance management arrangements and including other feedback'.

It may be that this policy proposal is reflecting the existence and importance of identifying weak teachers and sketching out a way of dealing with it. But two caveats should be noted before going strongly down this route.

First, we need to bear in mind the dangers of basing important decisions on small samples of pupil performance data in a single school. It may be difficult in many cases to estimate with any precision the contribution of one teacher to a pupil's progress, although the process may be more robust in secondary schools.

Second, introducing an increased element of career risk into the profession will need offsetting salary by means of salary compensation for those strong teachers who perform well in terms of pupil progress.

This article summarises 'Do Teachers Matter? Measuring the Variation in Teacher Effectiveness in England' by Helen Slater, Neil Davies and Simon Burgess, CMPO Discussion Paper No. 09/212. For the full paper, see: http://www.bristol.ac.uk/cmpo/publications/papers/2009/wp212.pdf

Faith schools in England: the impact on standards and segregation

Market-based school reforms that offer parents a choice of school are currently in vogue with policy-makers across the world. Economists have been at the forefront of efforts to analyse the impact of these reforms on pupil achievement and other outcomes.

But choice is not new for some parents in England. Faith schools have provided an alternative to the local neighbourhood secondary school for as long as there has been mass secondary schooling. And it is not just religious families that are able to take advantage of choice. There are more places in faith schools (17% of secondary school places and 35% of primary school places) than can be filled by the 6% of the population who typically attend church on Sunday.

Faith secondary schools provide a genuine opportunity for some parents to choose between schools (without the cost of moving house) since they usually give priority in admissions based on parents' religious affiliation rather than solely the proximity of home to school. Data show that faith schools produce a large amount of 'sorting' in local school systems, significantly reducing the proportion of pupils who attend the nearest secondary school.

There is no evidence that faith schools raise – or damage – academic standards in the parts of England where they are prevalent

We do not know which families actively consider applying for a place at a faith secondary school, but there are relatively high levels of transition between the primary faith sector and the secondary secular sector – and vice versa. Our research begins by asking whether parental choice between faith and secular schools induces competitive behaviour in schools to attract pupils and therefore revenue.

Proponents of market-based reforms argue that competition provides incentives for schools to engage in activities that will raise test scores, such as monitoring teacher performance and encouraging an academic ethos. If schools raise the performance of pupils in GCSE exams, the argument goes, they will attract more applications for places in the future and increase their revenue.

Looking for causal evidence of a relationship between the number of faith schools and the test scores of pupils across an area is not straightforward. One potential source of confounding bias is that faith schools might expand in areas where the quality of provision by the local authority is poor. This would lead to a downward bias in estimates of the impact of faith schools.

On the other hand, we know that faith schools tend to be located in areas where religious families live and their children are known to be more successful at school for reasons related to activities that take place at home rather than at school. This might lead to an upward bias in estimates of the impact of faith schools.

We analyse the National Pupil Database to estimate the impact of the proportion of children in faith schools on the performance of pupils across all secondary schools in an area. This administrative dataset allows us to analyse the performance of all 3,000 secondary schools in England, with data on all children's previous academic achievement and basic socio-demographic characteristics. We match it to modern and historical data on the sizes of religious groups across the country.

Our analysis fails to find an effect of faith schools on GCSE achievement across an area. So while faith schools might serve the purpose of offering choice, there is no evidence that their presence raises (or damages) academic standards in areas where they are prevalent.

Does competition between schools improve pupils' achievements? *Rebecca Allen* and *Anna Vignoles* provide evidence on this question by examining the impact of faith schools in England on educational outcomes and the 'stratification' of local school systems.

We also look at data on the effects of faith schools on 'sorting' of pupils by various characteristics and the possibility of 'stratification' of schools that might arise as a consequence. These potential outcomes might explain why we do not find competitive effects from the presence of faith schools.

We first compare the composition of each faith school with their neighbouring schools in terms of measures of pupils' background and ability. From this analysis, it is clear that faith schools tend to sit at the top of local school hierarchies of pupil characteristics, with fewer pupils eligible for free school meals (a standard measure of disadvantage) and greater numbers of high ability pupils. The presence of faith schools is also associated with greater stratification of local schools by their pupils' social background.

Choice may improve standards in the short run but lead to longer-term stratification of schools by pupils' ability and social class

We cannot explain precisely why this is the case. It may be that schools are responding to competition by 'cream-skimming' the more able pupils to raise their league table performance. Or it may simply be that families from higher social classes are choosing to apply to faith schools.

This stratification is a problem if policy-makers hope to use choice to raise standards. Where schools have intakes of pupils with very different characteristics and therefore very different league table results, they cannot hope to change their league table position simply by working harder to raise standards. Thus, stratification can discourage schools from focusing effort on improving test scores.

The observation that many school systems have a tendency to become stratified in the long run is one of the problems with operating a 'quasi-market'. It sends an important message about other choice reforms, particularly those introduced into more egalitarian schooling systems such as Sweden's.

Choice may be an effective way of improving standards in the short run through competition for pupils, but if the system of choice also leads to stratification, the incentive for schools to compete will eventually start to decline. Any short-term gains are unlikely to persist in the long run.

This article summarises 'Can School Competition Improve Standards? The Case of Faith Schools in England' by Rebecca Allen and Anna Vignoles.

The authors are in the Department of Quantitative Social Science at the Institute of Education, University of London.

Do targets produce better health care?

In 2000, in an attempt to reduce waiting times for non-emergency care in NHS hospitals, the government introduced a system of targets accompanied by strong managerial sanctions for failure. *Carol Propper* and colleagues investigate the outcomes.

Health care absorbs a large proportion of governments' budgets across the OECD, so it is no surprise that governments are constantly looking for ways of increasing productivity in the sector. When Labour came to power in 1997, they maintained a focus on supply-side reform but turned their back on the previous administration's use of competition as a way of increasing NHS productivity.

Instead, they chose to implement a system of targets for senior managers. The most important targets were (those for) waiting times for non-emergency care. Long waiting times had dogged politicians and the NHS for over a decade. In an attempt to reduce them, the government put in place a system of targets accompanied by strong managerial sanctions for failure to meet them.

In 2000, it was announced that waiting times in England were to fall progressively over the next five years, beginning with an 18-month maximum that was to fall to six months by 2005. Hospital managers who failed to meet these targets were subject to a battery of penalties including 'naming and shaming', loss of autonomy and loss of their jobs. Indeed, such was the focus on targets and the strength of sanctions that the system was dubbed 'targets and terror'.

In contrast, the Scottish Parliament, which assumed responsibility for the NHS in Scotland following devolution in 1999, downplayed the use of targets, preferring to promote cooperation and collaboration. This policy variation in a system that had been common until devolution provides an opportunity to evaluate whether targets work. Our research examines whether the targets achieved their goals of reducing waiting times.

Economists tend not to favour the use of targets, arguing that they lead to behaviour that 'hits the target but misses the point'. Commentators in the NHS also argued that targets would simply result in 'gaming'. Undesirable responses could include the 'stacking up' of patients at waits just shorter than the target, a diversion of activity away from other aspects of patient care, and more ill patients being made to wait longer so that scarce capacity could be used to treat those who had been waiting a long time.

Targets linked to strong managerial sanctions were effective in reducing NHS waiting times

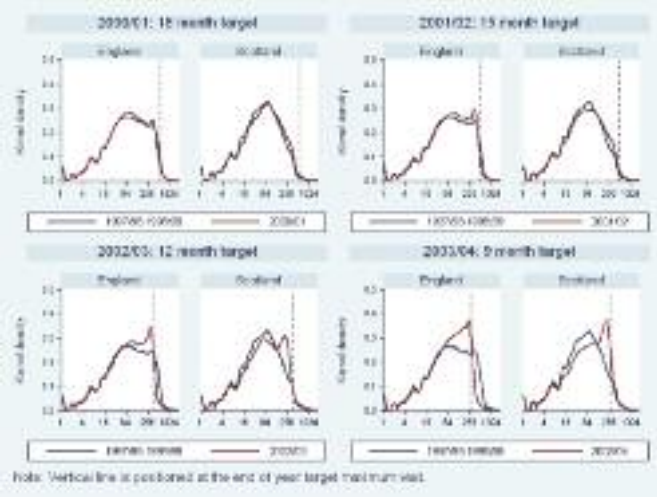
We find little evidence to support these fears. The policy reduced waiting times. Average waiting times fell in England by an average of 12 days more than in Scotland and by around 55 days for those who had to wait the longest. Patients did not get stacked up at the maximum waiting times.

Figure 1 shows the distribution of waiting times for elective treatment in the two nations. The solid line shows the pre-policy distribution, which is the same in each nation-specific panel. The dotted line shows the post-policy distribution, where there is one for each year for each nation. The vertical dotted lines mark the waiting times targets in operation in England.

Comparing pre- and post-policy distributions, it is clear that the effect of the policy in England was not just to reduce the waits of those who would have breached the target but to shift the distribution to the left, thus reducing not only waits that were greater than the target but also waits below the target. In Scotland, in contrast, the distribution moved to the right, increasing the number of longer waits and reducing the number that waited below the target set for England.

We find no compelling evidence that the order in which patients were treated was altered to meet these targets. Nor were shorter waits achieved at the expense of patient treatment. There were

Figure 1: The distribution of waiting times in England and Scotland



no changes in differences in the average length of stay pre- and post-policy. Nor did care outcomes – crudely measured by death rates after hospitalisation – worsen in England post-policy. In fact, if anything, these appear to have improved in England after the targets and terror regime was introduced.

Increased resources do not explain the success of targets – but organisational change may be easier in an era of generous funding

We do find some evidence that hospitals that were at greater risk of breaching their targets did remove or suspend more patients from the waiting list than those who were less close to their targets. This might be interpreted as 'good waiting list management' or it could be seen as an attempt to classify patients in a manner that avoided them being counted towards targets. But this re-classification does not appear to have damaged patient outcomes.

Our conclusion is that – at least in this instance – targets linked to strong managerial sanctions worked. The question is why?

Our tentative answer is that these targets were directed towards something on which there was considerable consensus. Long waiting times were seen as undesirable by almost everyone in the UK – patients, taxpayers, clinicians, hospital administrators and politicians – and by many as a blot on the international reputation of the NHS.

Targets enabled managers to tackle organisational issues that resulted in long lists. Sanctions gave this desire added bite. And the long-term nature of the policy might have allowed the idea of a service run with shorter waiting lists to get embedded in the organisational psyche.

In addition, this was an era of unprecedented growth in resources for the NHS. While differences in resources did not account for the success of the policy (resource growth was similar if not higher in Scotland), bringing about organisational change may be easier in an era of generous funding. For example, managers might have been able to pay staff to undertake extra operations.

We do not advocate targets as the answer to all a politician's prayers. But in this case they appear to have delivered the desired improvement in service.

This article summarises 'Did Targets and Terror Reduce Waiting Times for Hospital Care in England' by Carol Propper, Matt Sutton, Carolyn Whitnall and Frank Windmeijer, *The BE Journal of Economic Analysis and Policy* 8(2), 2008.

An earlier version is available as 'Incentives and Targets in Hospital Care: Evidence from a Natural Experiment', CMPO Working Paper No. 08/205 (http://www.bristol.ac.uk/cmpo/publications/papers/2008/wp205.pdf).

Does naming and shaming work?

More evidence on performance management regimes and hospital waiting times

Since 2001, when the NHS received unprecedented increases in funding across the UK, health care in England and Wales has been subject to very different regimes of performance management. *Gwyn Bevan* and colleagues report the results of this natural experiment in the power of 'naming and shaming'.

Tackling the problem of long hospital waiting times was a central manifesto commitment of the Labour government elected in 1997. The government's limited progress in reducing waiting times was one of the factors that contributed to the perceived crisis of the NHS in 2000.

As underfunding was seen as the root cause of that crisis, one policy outcome was unprecedented increases in NHS funding – 5% in real terms over the six years from 2001. But following devolution in 1999, only the government in England introduced a regime of performance measurement that sought to transform the performance of the NHS alongside its massive injection of extra funding.

Prior to devolution, the NHS in England and Wales were very similar and shared a regime that rewarded failure with extra resources. After 2001, each nation received similar increases in funding. But whereas managers of the NHS in England were subjected to a regime of 'naming and shaming' that celebrated success and penalised failure, a system of perverse incentives continued in Wales.

The difference in the regimes of performance measurement offers an intriguing 'natural experiment'. We use it to compare performance in England and Wales and test the effects of the new regime in England.

The different regimes of performance management

In England, the government announced new policies in 2000, with an objective of cutting maximum waiting times for elective admission from 18 months to six months by December 2005. The principal policy instrument for delivering this transformation was naming and shaming by a system of 'star ratings', which applied to acute hospitals from 2001 to 2005.

This process gave each organisation a score from zero to three stars based on performance against a small number of 'key targets' and a larger set of targets and indicators in a 'balanced scorecard'.

Organisations that failed against key targets and were 'zero-rated' were named and shamed as 'failing', and their chief executives were at risk of losing their jobs. This happened to six chief executives of the 12 trusts given zero rating in 2001 and four of these trusts improved their rankings in the following year's star ratings.

Hospital waiting times in England have all but been eliminated by the use of targets combined with real sanctions for chief executives

Organisations that performed well on both the key targets and the balanced scorecard and achieved the highest rating of three stars, were rewarded by being publicly celebrated for being 'high performing' and granted 'earned autonomy'.

In Wales, although the government introduced targets for waiting times from 2001, these were not always clearly and consistently articulated or subject to specific timescales. These targets were used more as an aspiration in the hope that managers would respond. The system of annual reporting did not make it clear which targets were the most important.

Furthermore, targets in Wales were adjusted to reflect variations in local circumstances, with some trusts allowed a number of

Figure 1: Distribution of numbers of patients waiting in England and Wales at end June 1999 (average)

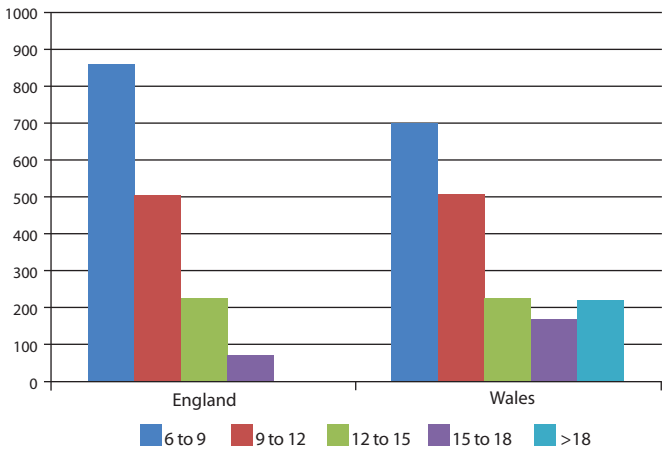
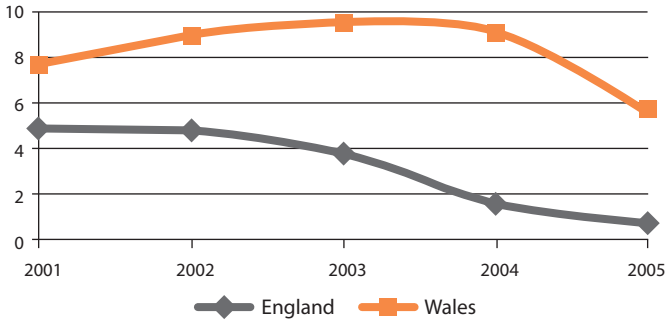


Figure 2: Numbers/'000 > months



breaches. These were not publicised, so people on these waiting lists would have been misled to expect treatment within the relevant waiting time target. There was a website that indicated likely waiting times by specialty, hospital and specialist. But there was no equivalent system to star ratings, no rankings and no annual reports to inform the public about hospitals' performance against targets.

In England, the government's response to the problem of long waiting times was to set ambitious targets; in Wales, targets were set to reflect existing poor performance. So in 2005, the final year of star ratings in England, the total time allowed for a patient to be admitted to hospital following a referral by a GP was nine months in England and three years in Wales.

Furthermore, the government in England had set the NHS the ambitious target of achieving a pathway-based maximum waiting time of 18 weeks from GP referral to treatment by 2008. The government in Wales had no similarly clear strategy in 2005 for the future reduction of waiting times.

The effects of naming and shaming in England

Our research analyses census data on the distribution of how long patients were on a waiting list prior to hospital admission for each NHS trust in Wales and England for the 28 quarters from the first quarter of the financial year 1999/00 to the last quarter of 2005/06. These data are a snapshot on the last day of each quarter of the NHS, giving the numbers of patients waiting in seven different three-month bands: waiting between 0-3 months and so on with the final band being waiting more than 18 months.

Figure 1 shows the distribution of numbers of patients waiting more than six months for three-month bands for an average trust in England and Wales at the end of June 1999. The position in England at that time was better than in Wales. In particular, no one in England was waiting more than 18 months.

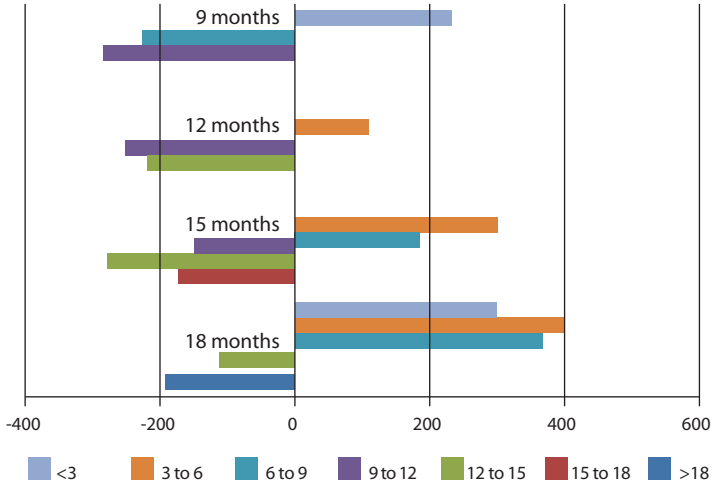
The raw data show that there were negligible numbers of patients in the NHS in England waiting longer than the target when each target came into force for patients waiting more than 18, 15, 12 and nine months, as introduced at the end of March 2001, 2002, 2003 and 2004.

The effects of the different regimes are illustrated by the raw numbers of those waiting more than six months (the target to be achieved by December 2005 in England). Figure 2 gives the number of patients per thousand population waiting more than six months for elective hospital admission in each nation for March of each year. It shows that in 2001, the position was worse in Wales. After 2001, there was consistent improvement in England, performance initially worsened in Wales and, despite improving from 2003, was worse than in England in 2005.

The absence of naming and shaming meant that no such transformation took place in Wales

We estimate the effects of each target in the NHS in England on the number of patients waiting over 18 months, between 15-18 months, between 12-15 months and between 9-12 months using the NHS in Wales as a control. The first three targets (18, 15 and 12 months) reduced the numbers of patients waiting longer than the targeted time to zero.

Figure 3: Impacts of successive target numbers waiting by time band in England



We also examine the effects of the targets on the distribution of patients over the different time bands. Figure 3 depicts the magnitude of the effects we find to be statistically significant. It suggests that there were two different kinds of responses by NHS trusts to the target regime in England.

Initially, when the first 18-month target was applied (2000/01), there appears to have been a focus on 'tail gunning': all that mattered was that no one waited more than the target and this was achieved by shifting the distribution of those waiting. There were significant reductions in the numbers waiting more than 18 and between 12-15 months, but larger increases in the numbers waiting in both time bands between 6-12 months. The effect of the 18-month target was to *increase* the average waiting time.

For the following years, however, NHS trusts understood that systemic changes were required to achieve successively more demanding targets. So although there were increases in the numbers of patients waiting less than the target in later years, average waiting times reduced dramatically: from over four months (during the period 1999-2002) to less than two and a half months (March 2005).

Figure 3 also illustrates that in the later years, trusts anticipated future targets by reducing the number of patients waiting before they came into effect. For example, we find that the 15 and 12-month targets, which came into effect in 2001 and 2002, were associated with significant reductions in the numbers waiting less than nine months, although that target did not come into effect until 2003.

Conclusion

Our study exploits a natural experiment between two regimes for hospital waiting time targets in which failure resulted in naming and shaming in England with no such regime in Wales. Using Wales as a control group, we find that naming and shaming reduced the time that patients waited. In fact, such waiting has all but been eliminated by the use of targets combined with real sanctions for hospital chief executives.

We argue that there was a behavioural effect at the hospital level. Increased funding together with targets and sanctions had an impact and meant that NHS performance in England (as measured by waiting times) was transformed. The absence of naming and shaming meant that no such transformation took place in Wales.

As the previous article shows, Carol Propper and colleagues reach the same conclusion from another natural experiment, comparing the NHS in England with that in Scotland, which also eschewed naming and shaming.

This article summarises 'Naming and Shaming: The Impact of Different Regimes on Hospital Waiting Times in England and Wales' by Tim Besley, Gwyn Bevan and Konrad Burchardi, Centre for Economic Policy Research Discussion Paper No. 7306 (May 2009).

The authors are at the London School of Economics.

Older and heavier:
the role of socio-economic status in weight gain in adulthood

What is the relationship between adult obesity and socio-economic status both as a child and in adulthood? *Charles Baum* and *Christopher Ruhm* analyse US data on the drivers of weight gain.

Obese adults are at relatively high risk of premature death and many health problems. But obesity is not evenly distributed across the population: rather, it is inversely related to social and economic advantage. That fact is consistent with adults of high socio-economic status (SES) being healthier than their less advantaged peers, but the pathways determining the relationship between obesity and SES are difficult to identify.

SES may cause body weight – for example, if the poor are more likely to purchase relatively low-cost high-calorie products. Conversely, causation could run from obesity to SES – for example, because heavier individuals are paid lower wages. And unobserved confounding factors could determine both weight and SES.

We use data from the US National Longitudinal Survey of Youth (NLSY) to investigate these issues. Our research demonstrates that:

- Weight increases with age and is inversely related to SES.
- The obesity 'gradient' widens over the lifecycle.
- A substantial portion of the effect of early life conditions operates through race/ethnicity and the translation of advantaged family backgrounds during childhood into higher levels of subsequent education.
- Adult SES has independent effects, controlling for childhood status.

Examining how SES affects adult outcomes has two main advantages:

- First, it seems unlikely that health could significantly affect childhood SES, since the latter is largely determined by the education and economic situation of the parents.
- Second, omitted factors transmitted across generations (such as genetics) could play a role. But other potential confounders (like discount rates) would not be expected to affect SES until later in life.

Patterns in the data

The NLSY initially included over 12,000 people aged 14-21 in 1979, many of whom have been followed up until 2004. Detailed data on individual and family characteristics are obtained at each interview, with additional retrospective information available from the baseline survey. Questions about body weight were included in 15 survey waves, including measurement of body mass index (BMI) and obesity (BMI of 30 or higher) for people aged 16-45.

Our primary proxy for childhood SES was the highest grade completed by the respondent's mother. We focus on maternal education because previous research suggests it is more directly related to child health than fathers' education, and because mothers may be more instrumental in establishing eating habits and health behaviours.

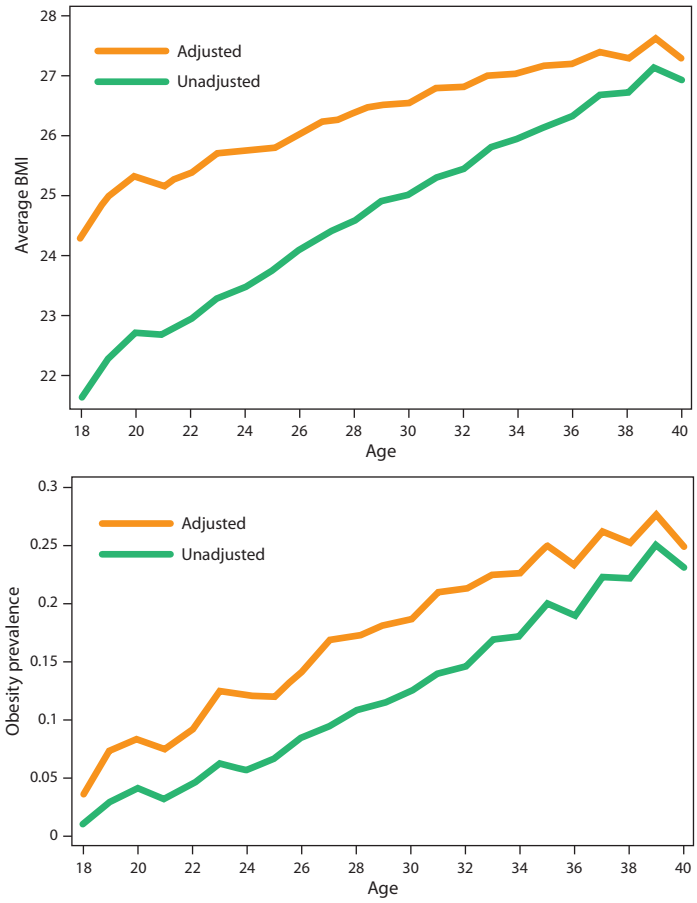
People's body mass index and the prevalence of obesity grow rapidly with age

BMI and obesity are more common and rise faster over time for disadvantaged individuals. We sometimes refer to people as having 'low', 'medium' or 'high' SES if their mothers completed less than 12, exactly 12 or more than 12 years of education.

Using this criteria, average BMI rose 5.4 kg/m² and obesity prevalence by 29.2 percentage points between 1981 and 2004 for the lowest SES group, compared with 5.1 kg/m² and 22.2 points for the middle category and 4.5 kg/m² and 18.7 points for the most advantaged. Not all of these increases are due to ageing, since body weight trended upwards for the entire population during the 25-year period.

BMI and obesity prevalence grow rapidly with age. Average BMI rose from 21.6 to 26.9 kg/m² between the ages of 18 and 40, while

Figure 1: Average BMI and obesity prevalence by age in the United States, with and without adjustment for secular trends



obesity prevalence increased from 1% to 23.2% (see Figure 1). Over two-fifths of BMI growth was due to secular trends rather than ageing, so that adjusted BMI rose from 24.3 to 27.3 kg/m².

Figure 2 displays age-related changes in body weight for gender and maternal education subgroups, adjusted for secular trends in average BMI. BMI and obesity rose with age for all groups. The evolution of body weight did not vary sharply with gender, although BMI increased somewhat faster for men than women. Not only do high SES individuals have lower BMI and obesity prevalence but the gradient steepens with age, with more pronounced SES differences for obesity than BMI.

Econometric analysis

We next investigated associations between age, SES and body weight, after controlling for gender and the survey year. The estimates indicate that BMI (obesity) rose 0.12 kg/m² (0.6 percentage points) per year of age and fell 0.20 kg/m² (1.2 points) for each additional grade completed by the mother. The age change was also similar for males and females but SES disparities were larger for women.

BMI and obesity increased with age for all groups and declined with SES, while the SES gradient widened with age. These disparities were particularly pronounced for obesity. For example, while the predicted obesity rate of individuals whose mothers had nine years of schooling almost tripled between the ages of 20 and 40 (rising from 9% to 24.7%), expected prevalence for their counterparts whose mothers had 16 years of education was two-thirds as large at age 20 (6%) but less than half as great by age 40 (12.1%).

Obesity is more common and rises faster over time for disadvantaged individuals

The SES disparity also rises with age by more for women than men. Thus, a 20-year old female whose mother had nine years of education was 25% less likely to be obese than a corresponding male (7.7% versus 10.2%) but had essentially identical predicted prevalence at age 40 (24.3% versus 24.7%). Conversely, a 40-year old woman whose mother had 16 years of schooling was less than three-fifths as likely to be obese as her male peer (8.6% versus 15.1%).

Results for race/ethnicity subgroups reveal additional differences. Consistent with previous research, SES gaps are generally larger for whites than minorities, with little evidence of an SES gradient for black males. Age-related weight increases are larger for black than white males (and nonexistent for Hispanic men), with smaller differences for women. Finally, the SES disparity grows with age more for whites than non-whites.

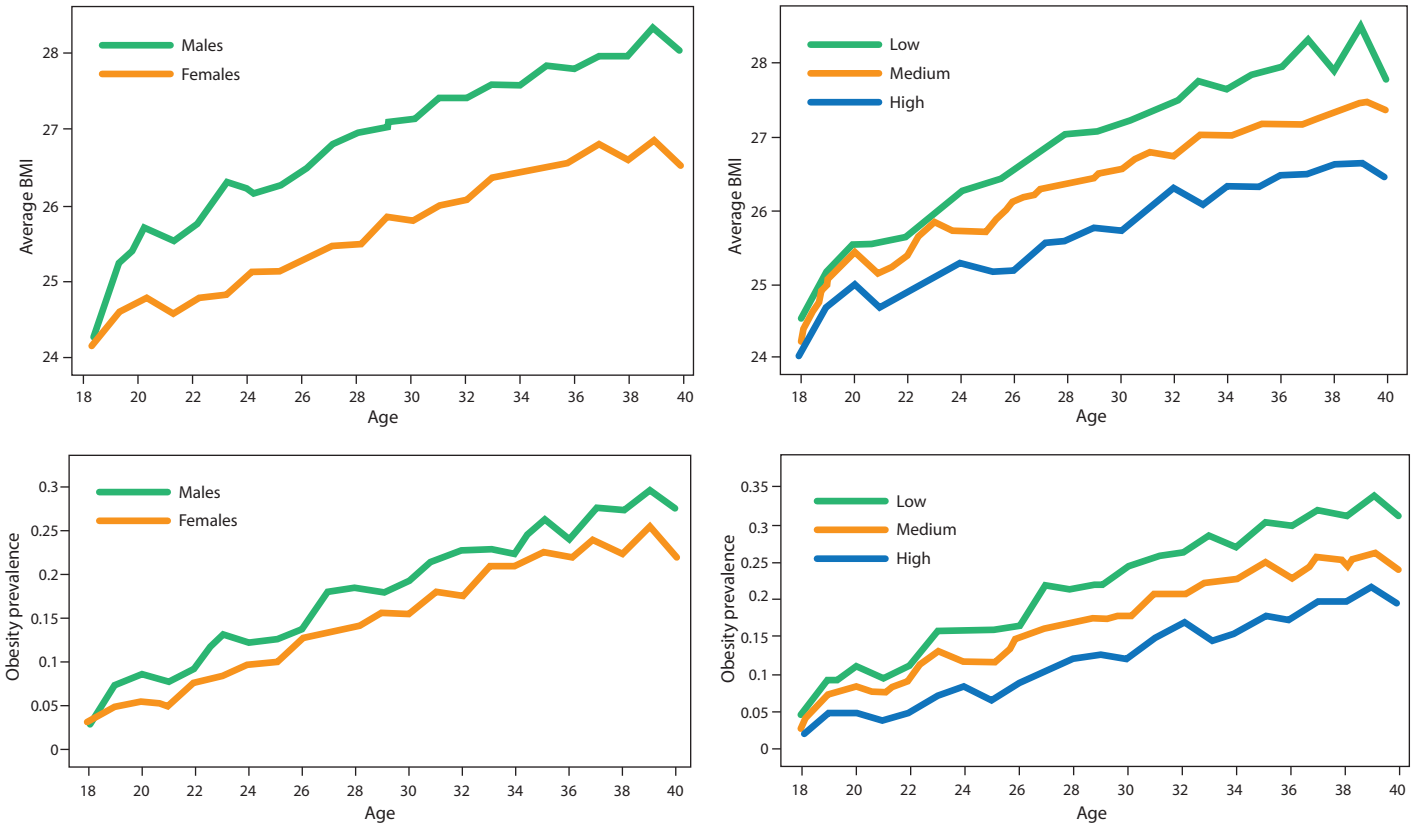
Child and adult socio-economic status

Our evidence that SES at young ages is related to adult obesity is consistent with a large body of research showing lasting health effects of early life conditions. There are three reasons why this might occur:

- Adult weight could be affected only by contemporaneous status but with SES itself being highly correlated over time.
- Early life conditions might affect adult weight, whereas contemporaneous status does not.
- Child and adult SES might have independent effects.

The results of our analysis suggest that early life conditions are important, partly because they are correlated with subsequent status, but that child and contemporaneous SES also have distinct effects.

Figure 2: Age-specific average BMI and obesity prevalence by gender (the two charts on the left-hand side) and maternal education (the two charts on the right-hand side), adjusted for secular trends



Additional propagation mechanisms

We next examined the following additional mechanisms through which early life conditions transmit to adult body weight:

- Some effects of childhood SES are linked to race-based disparities.
- People growing up in advantaged households have relatively high adult incomes.
- SES is correlated with marriage and fertility rates.
- SES early in life is linked to subsequent health behaviours. For this reason, we replicated the analysis using an alternative indicator of childhood status, which was based on occupational prestige, and obtained similar results.

Disadvantaged children are more likely to be obese in adulthood

The beneficial effects of advantaged childhood circumstances primarily propagate through education and, to a lesser extent, race/ethnicity. Conversely, little of the impact appears to be transmitted through family income, household composition or the available health behaviours. Schooling and race/ethnicity are individually responsible for 59-63% and 33-38% of the explained disparity, with education being particularly important for males.

A possible concern is that respondent education may be a more significant mechanism for transmitting the effects of childhood advantage when the latter is proxied by maternal schooling than when using other SES measures.

Conclusion

Excess body weight is inversely related to childhood SES and the disparity increases with age. Our main results suggest that an additional year of maternal education reduces BMI (obesity) by an average of 0.2 kg/m² (1.2 percentage points) and that this effect increases by 0.007 kg/m² (0.07 points) per year of age. Larger SES disparities are predicted for women than men, with smaller differences for minorities than whites and little evidence of an SES gap for black males.

Preliminary examination of the mechanisms through which the effects of childhood advantage translate into future outcomes highlights the importance of educational attainment and

race/ethnicity. Schooling attenuates the childhood SES effect by 26-37% and race/ethnicity by 15-16%. In combination, they explain a large majority of the (small) SES gap in the obesity of 20-year olds but less of the (larger) disparity at age 40. Conversely, family income, marital status, number of children and health behaviours play only a minor role.

Evidence that SES differences in body weight grow with age is consistent with research on other health outcomes. As with that research, pathways for these effects are only partially understood. Between one-third and three-fifths of the differential predicted for 40-year olds remains unaccounted for, and we know even less about how education and race/ethnicity operate.

We are also unable to identify mechanisms for the correlation between *current* SES and weight outcomes: this is a fruitful future research topic. That said, substantial race/ethnicity differences in the lifecycle evolution of SES gradients make it unlikely that the latter result purely from biological causes.

Although much research examines the effects of SES, its meaning is imprecise and subject to a variety of conceptualisations. Economists often focus on income or education-based measures; other social sciences more frequently emphasise the role of social class.

Our analysis is specific in using maternal and respondent education levels as our primary SES proxies, but we do not claim that these are complete or necessarily the best definitions. One strategy to address this is to repeat our analysis using alternative SES measures. The main results are not sensitive to these choices, but future investigations should experiment with additional proxies and examine whether the observed patterns persist later in life. It would also be interesting to link the results for obesity to other health outcomes, particularly those directly affected by excess weight.

Previous related studies using cross-sectional data have provided evidence of age-related increases in body weight and an inverse SES relationship for most groups. Our analysis confirms these results but goes further. Specifically, we distinguish between the effects of contemporaneous SES and status in childhood, and supply some information on the processes by which early life conditions transmit to adult outcomes.

Our evidence suggests that low SES children are more likely than their counterparts to be obese in adulthood, partly because disadvantaged youths become disadvantaged adults, but also that early life conditions and adult status have independent effects. These patterns differ substantially by race/ethnicity in ways that we do not yet fully understand.

This article summarises 'Age, Socio-economic Status and Obesity Growth' by Charles Baum and Christopher Ruhm, which was presented at a CMPO conference on the Economics of Diet and Obesity and has recently been published in the *Journal of Health Economics*.

Charles Baum is at Middle Tennessee State University. Christopher Ruhm is at the University of North Carolina at Greensboro.

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