

- Childhood Environment and Gender Gaps in Adulthood
- The Effect of Disability Insurance Payments on Beneficiaries' Earnings
- Comparing Urbanization in Rich and Poor Nations
- University Innovation and the Professor's Privilege

## For Better and Worse, Class Environment a Powerful Influence

### Tracking the Gifted Boosts High-Achieving Minorities

For years, researchers have debated the impact of high-achievement classes on minority students. Are there significant gains for those

high-achieving minority students make significant gains in such classes, and find no evidence of spillovers, good or bad, on students who remain in traditional classrooms.

Participation in a fourth-grade class for the gifted raised reading and math scores of high-achieving black and Hispanic students, with little effect on whites.

Previous studies have shown that blacks and Hispanics are significantly underrepresented within high-achievement classes and that racial disparities widen even among

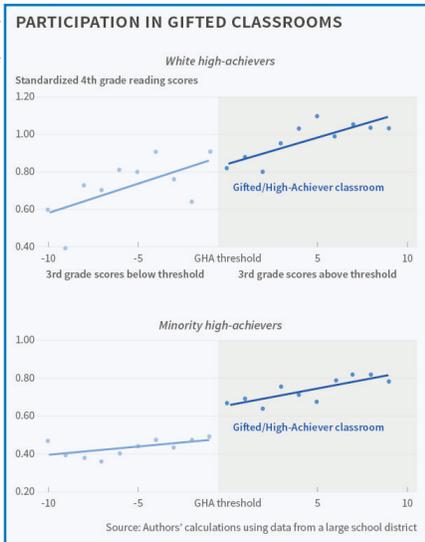
who participate in special classes for gifted and high-achieving students? Do other students who are "left behind" in traditional classrooms experience a declining quality of education if gifted and high-achieving children are re-assigned elsewhere?

In **Can Tracking Raise the Test Scores of High-Ability Minority Students?** (NBER Working Paper No. 22104), [David Card](#) and [Laura Giuliano](#) study the impact of tracking programs that place students—both truly gifted students with

high-achievers as time passes. In the new study, the researchers examine data from a large and racially diverse urban school district that, in 2004, implemented a policy requiring a school

to create advanced academic classes for fourth and fifth graders if the school had one or more students who met the state's standards for gifted status (including a minimum IQ threshold of 130 points for non-disadvantaged students, or 116 points for subsidized lunch participants and English Language Learners). Because there usually

were not enough such students to fill the classroom, schools were allowed to include high achievers in what became known as Gifted/High Achiever (GHA) classes. The GHA stu-



a large urban school district. They conclude that

### Disruptive Students Affect Long-term Prospects of Their Classmates

Teachers, parents, and researchers have long recognized that unruly students in classrooms can impact the quality of education for other pupils, but it has been difficult to estimate their impact. In **The Long-Run Effects of Disruptive Peers** (NBER Working Paper No. 22042), [Scott E. Carrell](#), [Mark Hoekstra](#), and [Elira Kuka](#) report that classroom disruptions lead to more than just short-term lower grades and test scores. They also harm the long-term college, career, and income prospects of other pupils. High-school test scores, college enrollments, and early-adult earnings suffer.

Over the years, a growing body of research has established that classroom environments, including peer influences, can positively or negatively alter the course and quality of teaching and learning in schools. In a previous study, Carrell and Hoekstra showed how elementary school children from families linked to domestic violence disrupted behavior and learning in the classroom. Their analysis focused on short-term consequences of disruptive peer behavior, such as the effect on test scores. This new study explores impacts stretching years into the future.

*Gifted* from page 1

dents were taught by many of the same teachers and used the same textbooks as students in traditional classes, but teachers were given some discretion over the pace and intensity of learning within GHA classrooms.

Using data compiled on third, fourth, and fifth graders in 140 elementary schools between 2008 and 2011, the researchers compared GHA and traditional classrooms. They found that participation in a fourth-grade GHA class had a significant positive impact on the test scores of high-achieving black and Hispanic students, who gained 0.5 standard deviation units in fourth grade reading and math scores. These effects extended into at least sixth grade. The effects for white

students were small and insignificant.

The researchers did not find any evidence of either positive or negative spillover effects on other students in the same school or in other schools, including those who narrowly missed the cutoff for getting into GHA classes.

To investigate why there were impressive test-score gains among minority high-achieving students in GHA classes, while white high-achievers did not post similar results, the researchers explored a number of possible factors. They found that the quality of teachers and general positive peer effects within GHA classrooms accounted for only about 10 percent of the gains, and that other

factors were at work, such as high teacher expectations and the lack of negative peer pressure in GHA classes. They conjecture that negative peer pressure about learning is more prevalent in traditional classrooms, causing many minority high-achievers to underperform within such settings.

“Overall, our results suggest that a comprehensive tracking program that establishes a separate classroom in every school for the top performing students has the potential to significantly boost the performance of higher achieving minority students—even in the poorest neighborhoods of a large urban school district,” the researchers report.

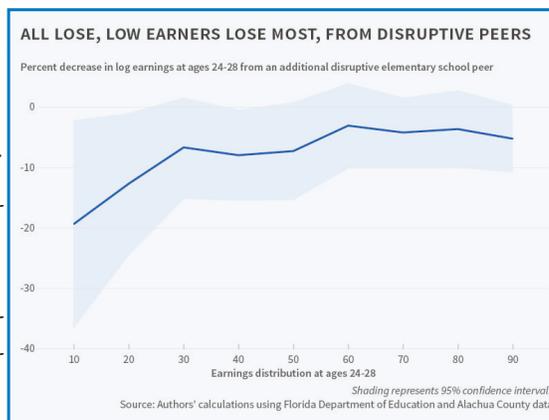
—Jay Fitzgerald

*Disruptive* from page 1

The researchers combine data on disruptive peers in elementary schools in Alachua County, Florida, including information about test scores of children from families with histories of domestic violence, with data on high-school test scores, college enrollments, and early-adult earnings of thousands of students who years earlier had disruptive peers in their elementary school classes.

They find that exposure to disruptive peers in childhood has significant long-run consequences for both educational achievement and earnings in early adulthood. They estimate that exposure to one additional disruptive student in a class of 25 throughout elementary school reduces math and reading test scores in grades

9 and 10 by 0.02 standard deviations and that, in the case of particularly disruptive elementary school students, such as young males



exposed to domestic violence, there are larger effects on later high school test scores and on college degree attainment. Specifically, exposure to a disruptive boy throughout elemen-

tary school reduces college degree attainment by two percentage points, or seven percent.

Exposure to an additional disruptive peer throughout elementary school leads to a three to four percent reduction in earnings at ages 24 to 28. One year of exposure to a disruptive peer in childhood decreases the present discounted value of classmates' future earnings by around \$100,000.

The researchers note that students from lower-income families are more likely to be exposed to disruptive peers in school, and that this may account for five to six percent of the “rich-poor earnings gap” in their early-adult years. They conclude that these “findings illustrate the importance of peer composition in determining long-run educational attainment and labor market outcomes.”

—Jay Fitzgerald

## Childhood Environment and Gender Gaps in Adulthood

The traditional gender gap in employment rates is between more-employed men and less-employed women. But in **Childhood**

**Environment and Gender Gaps in Adulthood** (NBER Working Paper No. 21936), [Raj Chetty](#), [Nathaniel Hendren](#), [Frina Lin](#), [Jeremy Majerovitz](#),

and [Benjamin Scuderi](#) find that the reverse is true for men and women who grow up in poor families. As 30-year-olds, men who grow up in these circum-

stances are less likely to be employed than women who grow up in similar environments. This reversal is especially strong for those who grow up in areas of concentrated poverty.

The researchers explore outcomes of childhood environment using an anonymized database of approximately 10 million observations that link data from federal tax returns of individuals born between 1980 and 1982 to data on their parents. “Parents” are defined as individuals between the ages of 15 and 40 in 1980 who first claimed those born between 1980 and 1982 as dependents. The researchers study employment at age 30 for those born between 1980 and 1982. They define individuals as employed if they had a W-2, 1099, or Schedule C tax form filed on their behalf. They measure earnings as the sum of the amounts reported on W-2 forms, and they define an individual as having attended college if one or more 1098-T forms were filed for that person by a college when the individuals were between the ages of 18 and 23. Parental income is defined as mean family income from 1996–2000.

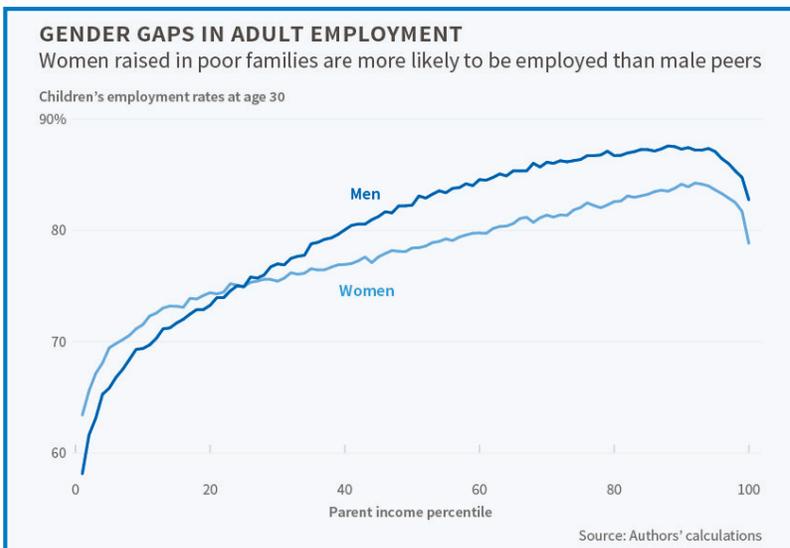
Employment at age 30 is positively correlated with parental income for both men and women. Among those from married-parent families, men worked more than women across the entire parental income distribution. Parental income is closely associated with earnings. Men earned more than women at every parental household income level, even though women were two to 17 percent more likely to attend college.

Growing up with unmarried

parents was associated with lower employment rates for men relative to women throughout the parental income distribution. The researchers note that this finding is “consistent with recent evidence that grow-

Men who grow up in poor families, especially in areas of concentrated poverty, are less likely to be employed at age 30 than are women of that age from similar families.

ing up in a single-parent household is particularly harmful for boys’ outcomes during childhood.”



Differences in outcomes associated with family income varied across places. Men who grew up in low-income families had particularly low employment rates relative to women from similar families if they grew up in the South or in Midwestern cities such as Milwaukee and St. Louis, and very high employment rates relative to women from similar families if they grew up in the Mountain States and parts of Texas. The variation in employment rates was particularly large for men who grew up in low-income, single-parent households.

For example, employment rates for women were similar at each level of

childhood family household income regardless of whether a woman grew up in Charlotte, North Carolina, or New York City. While men who grew up in higher-income households were employed at similar rates in both loca-

tions, those who grew up in families in the bottom quartile of the income distribution had divergent outcomes relative to comparable women. Men who grew up in Charlotte were 12 percent less likely to be employed than comparable women, while that difference was only three percent for those growing up in New York.

Combining these results with those from earlier work showing that the employment outcomes of children who move to different areas converge to those of the permanent residents in their new communities, the researchers conclude that gender gaps in employment and earnings in adulthood are “shaped by the neighborhoods in which children grow up.” While this research does not uncover the underlying mechanisms driving gender gaps in employment, the researchers draw on recent literature from the social sciences to speculate that “growing up in poverty may induce low-ability boys to switch from formal employment to crime or other illicit activities.”

— Linda Gorman

## The Effect of Disability Insurance Payments on Beneficiaries' Earnings

Disability insurance protects workers against unfavorable health shocks that make it difficult or impossible to work, but it can also affect work incentives among those who, while disabled, may still be able to participate in the labor market. Some beneficiaries may reduce their work effort either as a result of program rules that limit their labor market activities, or because the income they receive from disability insurance reduces their need for earned income.

In **The Effect of Disability Insurance Payments on Beneficiaries' Earnings** (NBER Working Paper No. 21851), Alexander Gelber, Timothy Moore, and Alexander Strand use changes in the payment structure of U.S. Social Security Disability Insurance to examine whether the amount of disability insurance income affects labor supply decisions. They conclude that disability payments have a “clear, robust, and substantial income effect” on earnings among some beneficiaries who had relatively high earnings prior to the onset of disability. They find that for individuals in this group, a \$1 increase in disability payments decreases individual earnings by an estimated 20 cents.

A beneficiary's disability insurance payment depends upon average earnings in the highest-earning years before becoming disabled, which is known as Average Indexed Monthly Earnings (AIME). An additional dollar of AIME raises benefits by 90 cents, up to AIME of roughly \$850 a month; by 32 cents from about \$850 to \$5,157; and by 15 cents above that. This study focuses on beneficiaries at the 32 to 15 percent transition point, where the average monthly disability payment is \$2,147 (\$25,761 per year).

The study analyzes all disability beneficia-

ries who entered disability insurance between 2001 and 2007 who were not enrolled in Supplemental Security Income (SSI); 610,271

When the fraction of earnings replaced by disability insurance benefits is lower, earnings are higher among some disability-payment recipients who were previously high earners.

observations were available with AIME within \$1,500 of the 32 to 15 percent transition point. The researchers examine earnings behavior at the 32 to 15 percent transition point rather than at the 90 to 32 percent point because the decision to work at the lower transition point is affected both by earnings and by

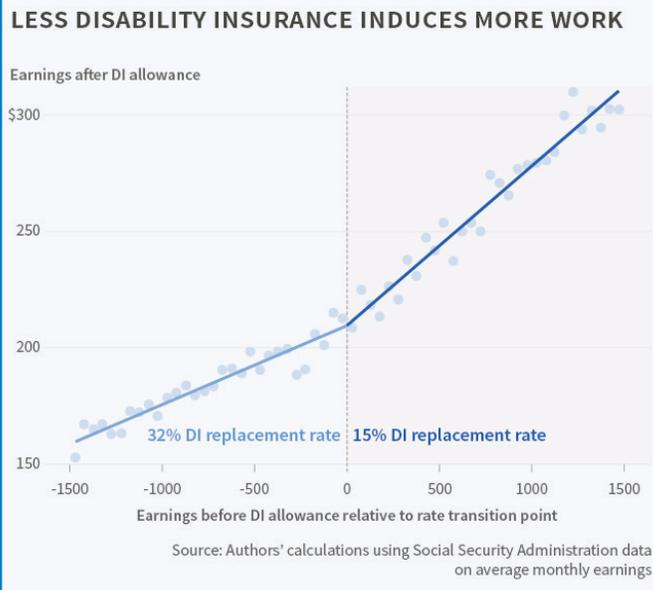
go on [disability insurance], but not before.” Much of the effect of disability insurance eligibility on work effort appears to be due to

the “income effect”—the fact that disability insurance transfers income to beneficiaries and thereby reduces their value of additional earnings—not because earning more would reduce the beneficiaries' payment from disability insurance.

The researchers use their estimates to calculate how shifting to a less generous cost-of-living adjustment formula, in particular one that used the chain-weighted Consumer Price Index instead of the current CPI, would affect disability program beneficiaries. They illustrate this by assuming that such a change would reduce benefits by about three percent for those who have received disability benefits for ten years. For those near the upper transition point, this would mean an average annual benefit cut of about \$638; the researchers conclude that this benefit cut would lead beneficiaries to increase their annual earnings by

about \$128 on average. Although this is substantial relative to the illustrative reduction in benefits, it represents a very small increment to living standards, equivalent to about one percent of the federal poverty level for individuals, and less than one percent of the poverty level for families. Assuming that the federal combined income and payroll marginal tax rate is 25 percent, the increase in earnings would raise total federal annual revenues by a modest \$32 per beneficiary.

—Linda Gorman



changes in benefit eligibility in a variety of programs, including SSI and Medicaid.

Earnings rise smoothly with AIME around the 32 to 15 percent transition point in the four years before individuals became eligible for disability payments, but in the four years after qualifying for disability payments this relationship exhibits a sharp change in slope, suggesting that lower replacement benefits induce more work. The researchers conclude that this shows that “beneficiaries' earnings respond to the transfers after they

## Comparing Urbanization in Rich and Poor Nations

Do insights about the economics of cities that have been developed largely from studies in the United States and Europe apply with equal force in the developing world, where in coming years the majority of the world's urban population will reside? The authors of **What Is Different About Urbanization in Rich and Poor Countries? Cities in Brazil, China, India, and the United States** (NBER Working Paper No. 22002) explore whether key concepts about the patterns of urbanization in wealthy, largely Western nations apply more generally.

Juan Pablo Chauvin, Edward Glaeser, Yueran Ma, and Kristina Tobio focus on three concepts: spatial equilibrium, the notion that differences in wages are offset by differences in costs of living and amenities across metropolitan areas; human capital externalities, the proposition that the productivity of workers of similar characteristics is larger in better-educated areas; and agglomeration economies, which suggest that urban density and proximity increase productivity and local economic success. They find limited support for the spatial equilibrium concept in developing nations, but they find evidence in favor of both human capital externalities and agglomeration economies.

The researchers test for spatial equilibrium by investigating

whether rents rise when earnings rise, whether real wages decrease when natural amenities are more

metropolitan areas, but less so in U.S. cities.

Agglomeration effects are

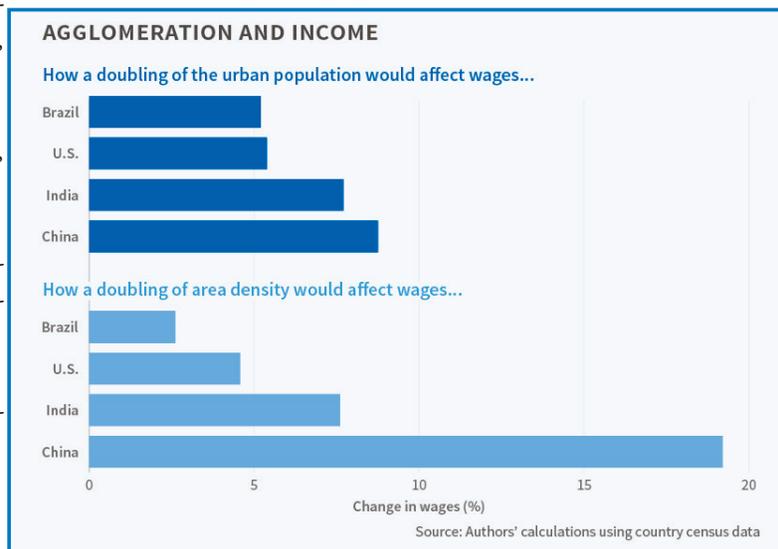
Agglomeration generally increases productivity, but spatial patterns of wages and rents in the U.S. differ from those in Brazil, China, and India.

desirable, and whether income is uncorrelated with self-reported happiness. They find exceptions to all three of these predictions of spatial equilibrium. Rents respond strongly to earnings in the U.S.,

observed in all four countries, but they were noticeably stronger in India and strongest in China, especially with regard to area density. Human capital is strongly associated with earnings in all four countries.

The effect was stronger in Brazil, China, and India than in the U.S.

Skills appear to matter for urban success, and agglomeration increases productivity, in all four countries studied. But the data from the United States are noticeably more consistent with spatial equilibrium than the data from Brazil, China, or India. Why?



Brazil, and China, but not at all in India. In the U.S., real wages are lower in areas with the natural amenity of temperate climate, with average temperatures near 70 degrees Fahrenheit. But the researchers find no relationship between climate and real wages in India or China, and in Brazil real wages are higher in more temperate areas, primarily because nominal wages are much lower in Brazil's hottest regions. There appears to be a positive income-happiness relationship across Chinese and Indian

One explanation, say the researchers, is that "the spatial equilibrium framework is not particularly relevant in poor, traditional economies, where human-capital heterogeneity is enormous and people remain rooted to the communities of their birth ... It seems quite possible that spatial equilibrium emerges with development as human capital becomes more widespread and as people turn to markets instead of traditional social arrangements in their home villages."

—Deborah Kreuze

## University Innovation and the Professor's Privilege

Prior to 2003, Norwegian researchers employed by universities retained blanket rights to the income from any new businesses they started and to the patents they received. Then, Norway adopted legislation that gave universities the rights to two-thirds of the returns from such activities.

In **University Innovation and the Professor's Privilege** (NBER Working Paper No. 22057), Hans K. Hvide and Benjamin F. Jones show that the rate at which Norwegian Ph.D.s employed by Norwegian universities started new businesses declined by more than 50 percent in response to this change.

Detailed workforce and employer data enable the identification of all university employees in Norway. The research combines these data with information on patent claims and business startups to investigate the consequences of the change in property rights.

The researchers compare entrepreneurial activity when university workers retained all rights (2000–02) to entrepreneurial activity in the period after the law was changed (2003–07) and find that the percentage of university researchers who started a new firm in any given year dropped from 0.68 percent to 0.22 percent, a 67 percent decline. In contrast, the startup rate for the Norwegian

population as a whole increased by six percent from the first period to the second. Relative to non-university-based Ph.D.s,

When Norway changed its laws to give universities a major share of the profits from their professors' patents and startups, the rate of innovation was halved.

the per capita start-up rate for university-based researchers declined 49 percent.

Following the change in the law, the number of patents obtained by university-affiliated researchers also fell sharply. Between 1995 and 2010, 431 university

Compared to patents from non-university inventors, patents produced by university-affiliated researchers after the change

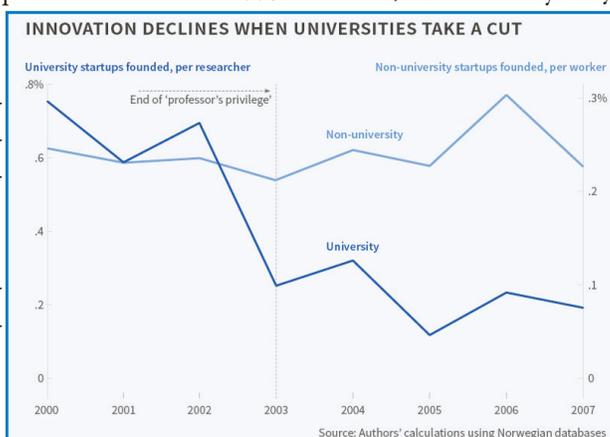
received about 25 percent fewer citations than those produced before it.

To gain another perspective on the decline in innovation, the researchers examined the patenting activities of firms owned by university-affiliated Ph.D.s. Prior to 2003,

about 12 percent of firms founded by university-affiliated Ph.D.s obtained a Norwegian patent within five years of their founding. Only two percent received patents within five years after the law was changed.

Economic theory suggests deep challenges in effectively balancing property rights across investing parties. Intuitively, one may want to give a greater share of the property rights—and hence greater financial incentives—to the party whose investment matters more. From this perspective, the empirical findings following the property rights change in Norway suggest that university researchers, rather than the universities themselves, are especially important to innovative investments.

—Linda Gorman



researchers produced 750 Norwegian patents, and trends in the annual number of patent grants to university researchers roughly tracked the non-university rate prior to 2003. After 2003, however, the patent rate per university researcher fell 48 percent compared to other Norwegian inventors. Patent quality also declined.

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