

QUARTZ

BACK TO THE DRAWING BOARD

Girls are still afraid of math, even when their moms are scientists

Jenny Anderson | April 28, 2016



📷 Next move? (Reuters/Laszlo Balogh)

Understanding [why girls do worse than boys](#) (pdf) in math, and why they have more anxiety about the subject, is complicated. [Cultural norms that favor boys](#), teacher bias, and even [parents' own math anxiety](#) all seem to play a role.

By that logic, things should be better in more countries where lots of women hold powerful math and engineering jobs.

They are not.

A [new study](#) shows that even when countries where lots of moms have high-status STEM (science, technology, engineering and math) jobs, math anxiety for girls is significant. What's more, the gap between girls' and boys' anxiety in math is bigger in more developed and equitable countries.

This is bad news for the vast majority of women-in-STEM advocates who argue that more role models are key to getting more women to pursue degrees and careers in the area. "The assumption that just seeing women role models will open the floodgates won't be enough," said David Geary, a professor of psychological sciences and neuroscience at University of Missouri and one of the authors of the study.

The study, published in PlosOne, analyzed data from more than 750,000 15-year-old students across 68 countries. The researchers wanted to explore the anxiety gap: if cultural norms played a big role, then more gender-equal countries would show a smaller gap. Countries where lots of moms worked in high-powered STEM jobs would surely show a smaller performance gap between girls and boys and a smaller anxiety gap.

That's not what the data showed. "The patterns were exactly the opposite of what you would predict from social cultural theories of why you find sex-related differences," Geary said.

The researchers found that when equality is low, math performance for both girls and boys tends to be low, and anxiety over the subject is high. As gender equality improves, performance improves and math anxiety for everyone declines. But the drop in anxiety is dramatically steeper for boys than girls. In the US and Britain, for example, there's a small performance gap favoring boys, but the anxiety gap is three times larger.

According to the [US department of commerce](#) (pdf), women hold 24% of all STEM jobs, compared to 48% of all jobs. That number hasn't budged much in recent years, which is unfortunate since women earn 33% more in those STEM jobs.

The Commerce Department chalks the discrepancy up to: "A lack of female role models, gender stereotyping, and less family-friendly flexibility in the STEM fields."

But this evidence doesn't seem to hold that up. And that leaves a lot of people at a loss. "It is fair to say that nobody knows what will actually attract more girls into these subjects. Policies and programs to change the gender balance in non-organic STEM subjects have just not worked," said Gijsbert Stoet, a researcher from the University of Glasgow and the co-author of the study [said in a statement](#).

Geary says we have to look closer at the decisions students make. “Rather than look at broad social interventions—role models and trying to entice girls into STEM— we have to look into the decision-making of high school and college students.” Many of them are more than capable of succeeding in STEM, he says, but that’s not the route they are taking.

RICH CITY/POOR CITY

Geography is making America’s uneven economic recovery worse

[Sarah Kendzior](#) | 6 hours ago



📷 Gateway to the heartland. (Reuters/Lucas Jackson)

This June, it will have been seven years since the official end of the “Great Recession,” which began in December 2007. Pundits and politicians continue to laud what US president Barack Obama [called](#) in February “the strongest, most

durable economy in the world,” boasting of soaring stock prices and [allegedly low unemployment](#). And yet, in 2008, 35% of Americans self-identified as “lower class.” In 2015, 48% of Americans claimed that title, according to a [2015 Gallup poll](#). Similarly, the number of Americans self-identifying as “upper-middle to middle class” dropped from 63% from 2008 to 51% in 2015.

What’s behind this discrepancy? For one thing, pundits and politician are unlikely to work in the regions where most Americans live. Cities where prestige industries like media, policy, and tech are centered—New York, Washington DC, San Francisco—have witnessed economic growth along with a skyrocketing cost of living. In fact, the vast majority of [American wealth is clustered](#) in a corridor of Northeastern cities stretching from Boston to Washington DC. The rest of the country, particularly most areas of the South and the Midwest, has seen massive job loss, while cost of living remains more affordable. A few southern cities, including Atlanta, Nashville, and Dallas, have boasted post-recession job growth. But even these tend to be surrounded by rural regions mired in poverty.

In effect, we have two American economies. One is made up of expensive coastal zip codes where the pundits proclaiming “recovery” are surrounded by prosperity. The other is composed of heartland regions where ordinary Americans struggle without jobs. Over 50 million Americans live in what the Economic Innovation Group calls [“distressed communities”](#)—zip codes where over 55% of the population is unemployed. Of those distressed communities, over half are in the South, defined generously by the census as the region stretching from Maryland and Delaware to Oklahoma and Texas. The rest tend to live in Midwest rust belt cities that have long suffered from economic decline, like Gary, Indiana and Cleveland, Ohio. It is nearly impossible for Americans of the latter group to move to the cities of the former group—or to work in the industries that shape public perception of how the economy is going.

The result is the populist rage that has consumed the 2016 election, whether from left-leaning supporters of Sanders or right-leaning supporters of Trump.

The unequal geographic recovery has put the average American in an impossible situation. Most cities that have thriving economies—coastal cities like New York or San Francisco, for example—have become exorbitantly expensive over the past decade, with rents tripling or even quadrupling, forcing lower-income residents to flee to the exurbs. Cities where rent is cheap—Midwestern cities like St. Louis, Missouri, or Southern cities like Jackson, Mississippi—have some of the worst economies in the country, ranking in the bottom ten of [Brookings'](#) 2016 study on 2009-2014 job growth.

The economic gulf between the coast and the heartland is a phenomenon that began in the Reagan era and accelerated during the Great Recession: in the late 1970s, per capita incomes in St. Louis and New York City were roughly the same. Today, a job has become less an indicator of where you are going, and more an indicator of where you come from: your geographic roots, your family's social class, and how much money you have on hand to relocate—particularly in an era where unpaid internships or low-wage entry-level jobs are common in prestigious industries. Many Americans have no option but to remain where they are.

In 2015, the number of Americans who moved across state lines was reported to have [fallen](#) to a low not seen since 1947. Barriers to moving include a [massive drop in personal savings](#): 62% of Americans have less than \$1,000 and are unable to afford relocation costs. This was not always the case. Among those who had savings prior to 2008, 57% said they'd used some or all of their savings in the Great Recession. The soaring cost of living in cities with healthy economies

combined with the low wages of America's distressed heartland has locked many Americans in place.

What makes this discrepancy between the haves of the coastal cities and the have-nots of the heartland so distressing is that, in certain fields, it is avoidable. While digital technology has made telecommuting far more feasible than it was a decade ago, industries have instead tightened geographic requirements of residency since the Great Recession.

Journalism, for example, is an industry where writers and editors could easily work remotely. In 2004, one [out of eight journalism jobs](#) was based in New York, Washington DC, or Los Angeles—a high number even for that era. By 2014, that number had changed one of every four, [even as the cost of rent](#) in those cities [rose astronomically](#), and the number of unpaid and low-paid positions [exploded](#). This has led to journalism increasingly [becoming an occupation of elites](#), with the reporters of the rest of the country underrepresented and the concerns of their communities underreported.

The technology industry operates in a similar fashion. The overwhelming number of jobs in tech are located in the San Francisco and Silicon Valley area. [Industry experts recently boasted](#) that they are expanding beyond their West Coast roots. But the cities where they invest most—New York and Boston—are also financially prohibitive for the average American to live.

And so the talent of the heartland is wasted as job-seekers from these regions remained trapped. For millennials, many of whom are saddled with massive college debt and are expected to complete unpaid internships, the situation is particularly dire. Moving to the city where their field is located can prove

impossible without family wealth. Careers are ending before they have the chance to begin.

The unequal geographic recovery, and the centralization of industries like media and technology in the most expensive regions of the country, has serious ramifications for average Americans in a broader sense as well. These industries hold inordinate sway over policy-makers— who are similarly enclosed in the exorbitant DC bubble. Without an understanding of day-to-day life in the struggling communities that encompass the bulk of America, there is no chance of remedying problems through policy.

Today, heartland Americans use tech and media to describe their experience—in anguished tweets, in furious Facebook posts, in GoFundMe campaigns begging for money to cover healthcare and funeral costs. They detail their struggle using the tools of the industries that exclude them from employment. But is anyone listening to what they have to say?

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