NBER | NATIONAL BUREAU of ECONOMIC RESEARCH

The Digest

October 2024

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Disaster Risk and Rising Home Insurance Premiums

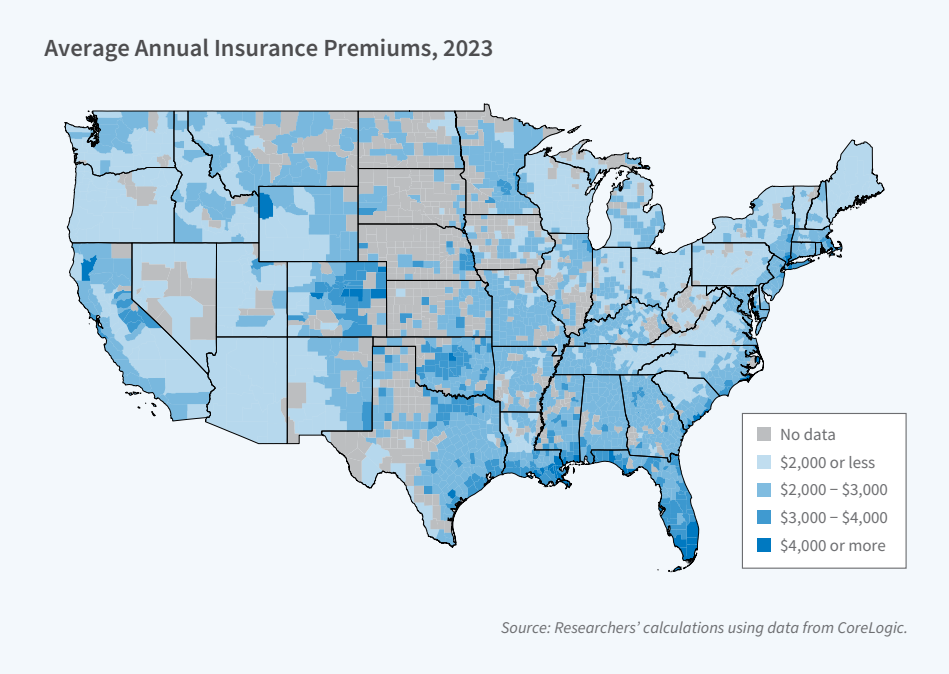
Average property insurance premiums have risen by more than 30 percent since 2020, and there is wide variation by location. Premiums have risen the most for homeowners in areas with the highest risk of natural disasters such as hurricanes or wildfires.

While premiums have always been higher in riskier locations, the relationship between disaster risk and premiums has grown stronger over time. If present trends in the incidence of natural disasters continue, premiums are likely to continue to rise.

The main factor behind the higher prices homeowners face is a rapid rise in reinsurance rates, according to Benjamin J. Keys and Philip Mulder in Property Insurance and Disaster Risk: New Evidence from Mortgage Escrow Data (NBER Working Paper 32579). Insurance companies buy reinsurance to guard against one or more catastrophes wiping out their assets.

The researchers study the drivers of insurance prices by analyzing data on escrow payments. Most mortgage holders make monthly payments to an escrow account that covers the mortgage principal and interest, local property taxes, and homeowners' insurance. By isolating the insurance piece of those payments, the researchers were able to build a dataset with more than 47 million observations of insurance costs in the US between 2014 and 2023.

Between 2020 and 2023, average home insurance costs rose from $1,902 to $2,530 — a 13 percent rise once adjusted for inflation. But in ZIP codes with the highest disaster risk, the increases were much larger. Neither changes in home values nor changes in state-specific regulations or other factors can account for this finding. In 2018, a 1 standard deviation increase in disaster risk in a ZIP code resulted in an average premium increase of about $300. By 2023, the increase was nearly $500. More than a quarter of the rise in inflation-adjusted homeowners' insurance costs can be explained by this rise in the risk premium.



Source: Researchers' calculations using data from CoreLogic.

The rise in risk premiums coincides with a doubling of US property and casualty reinsurance costs between 2018 and 2023. The researchers call this a "reinsurance shock." It is the main reason homeowners' insurance rates are rising, but its effects also vary across locations. Take the border counties between Florida and Georgia along the Atlantic coast, where communities are at equal risk for hurricanes regardless of which side of the state border they are on. In Florida, specialty insurers dominate the residential market and rely on reinsurance to cover nearly 40 percent of the properties in the state. In Georgia, by contrast, national carriers play a bigger role and rely on reinsurers for less than 10 percent of the properties in that state. This may explain why inflation-adjusted premiums in some coastal counties in northeast Florida rose by about $1,000 between 2018 and 2023, while for nearby and similarly situated counties in coastal Georgia, they increased by less than $500.

The researchers observe that rising reinsurance rates could be due to a number of factors, including migration of the US population toward increasingly risky areas, the end of a low-interest-rate environment, and a "climate epiphany" as reinsurers assess their future exposure in light of growing climate risks. They also point out that if extreme weather events become more frequent, the reinsurance shock may continue and strengthen.

— Laurent Belsie

Financial Incentives Can Increase Permanence for Foster Children

Protracted periods in foster care can lead to negative long-term outcomes for children. Many states have tried to shorten foster care stays by moving children into either permanent adoptive homes or kinship care. While foster parents receive financial support for the children in their care, adoptive parents or kin guardians often receive less — or no — support. In Financial Incentives for Adoption and Kin Guardianship Improve Achievement for Foster Children (NBER Working Paper 32560), David Simon, Aaron Sojourner, Jon Pedersen, and Heidi Ombisa Skallet examine the outcomes of a policy reform in Minnesota that increased payments to adoptive parents and kin guardians of children over the age of six.

Over a tenth, and sometimes as much as a quarter, of children in foster care remain in it until they become adults, and the older a child is, the less likely they are to exit the system through either adoption or placement with a kin guardian. Children who "age out" of foster care are more likely to have a difficult transition into adulthood, and they have an increased risk of homelessness.

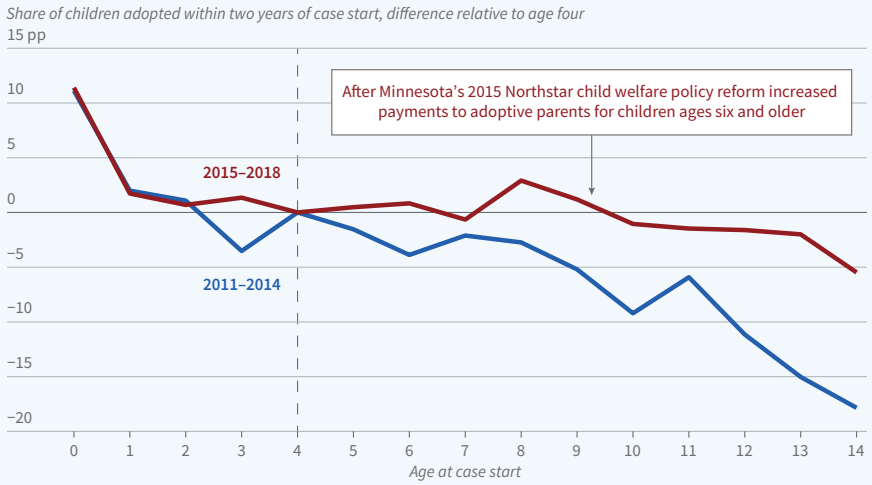
Kinship care — placing a child with relatives or fictive kin such as family friends — is an alternative to adoption and long-term foster care placement. While kin guardians have a stronger interest in the child, they may not be able to support the child financially over the long term.

In January 2015, the State of Minnesota adopted a new policy that led to adoptive parents or kin guardians receiving average monthly payments of 90 percent of what foster parents receive to care for children over the age of six, up from 21 percent before the policy change, but caused little change among guardians of children under age six. This reform resulted in average monthly payments of $128 more for adoptive parents and $362 more for kin guardians of older children than of younger children. After this reform, children over the age of six spent an average of five fewer months in foster care before achieving permanency through adoption or kin guardianship.

The researchers find that children affected by this reform had a boost in academic achievement of between a third and a half of a standard deviation after three years. Before the policy, these children received an average score that was 0.77 standard deviations below the average score for the whole state population. Additionally, the authors document that adopted foster children have fewer suspensions and are less likely to change schools in the 1–3 years leading up to when test scores are measured. The researchers estimate that this learning improvement translates into a rise of about $32,000 in the expected net present value of a child's lifelong earnings.

— Greta Gaffin

Adoption Rates and Financial Incentives



Source: Researchers' calculations using data from the Minnesota Department of Human Services.

After a reform in Minnesota, children over age six spent an average of five fewer months in foster care.

Returns to Port Infrastructure Investments

Ships carry nearly 80 percent of internationally traded goods, which makes port infrastructure essential to a well-functioning trading system. In Investment in Infrastructure and Trade: The Case of Ports (NBER Working Paper 32503), Giulia Brancaccio, Myrto Kalouptsidi, and Theodore Papageorgiou examine the returns to investments in port infrastructure.

The researchers analyze data on the universe of port calls between 2016 and 2021 by bulk carriers with a deadweight of more than 10,000 tons. They find that the average port call lasts 117 hours, one-third of which is waiting time and the rest service time. There is substantial variation across ports and years, with wait times more variable than service times.

When a port is not full, ships can be serviced immediately upon arrival. Otherwise, the ship must join a queue. When demand for service surpasses port capacity, further increases in demand can overwhelm the port and result in a lengthening of the queue. Investments in capacity generate savings in time-in-port, but only when the port would otherwise be full.

Congestion at one port can influence nearby ports, as carriers may reroute ships based on factors like distance, time at port, and costs. The researchers estimate that carriers are willing to pay 90 cents per deadweight ton of their vessel — or $18,000 for a 20,000-ton ship — to reduce time at port by one day. This translates to $45,000 for the average ship. Demand is highly responsive to time at port: 83 percent of shippers do not choose the closest port to their shipments' ultimate destinations.

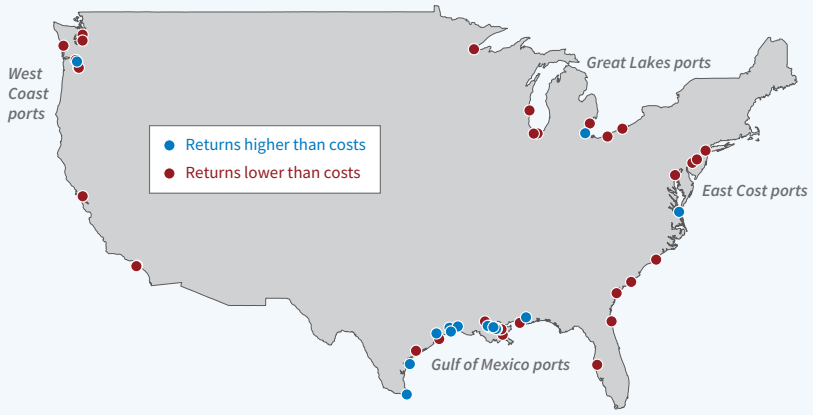
Investments in capacity at a given port reduce demand for services at other ports, as carriers take advantage of the newly expanded capacity. However, in addition to this substitution effect, this creates positive spillovers across ports: Other ports also become less congested and this, in turn, makes them more attractive to carriers who become more likely to choose them. On average, when a port expands its capacity by one ship, it sees 42 percent more trade and 4 percent less congestion. All other ports see 0.2 percent less trade and 0.6 percent less congestion.

The increases in trade and welfare are largest when infrastructure investments are targeted at ports that are already congested and in convenient locations, but also those ports whose closest substitutes are themselves congested and geographically attractive. After accounting for both the land and construction costs of expanding port infrastructure, the researchers estimate that increasing port capacity by one ship would yield benefits in excess of costs at 15 out of 51 US ports. The returns are highest for ports on the Gulf Coast.

Finally, in line with concerns about disruptive shocks becoming more common, the researchers compute how frequent macroeconomic shocks need to be to warrant investment. An increase in volatility makes both very high and very low demand realizations more likely. While low demand realizations matter little, high demand shocks can lead to sharp increases in congestion. As a result, higher volatility makes infrastructure investment more valuable: on average, welfare gains double when volatility doubles, and net returns turn positive for 10 additional ports. At one extreme, welfare gains quadruple for some ports. However, at the other extreme, for a sizable share of ports (25 percent) net returns do not turn positive even when volatility more than triples; for these ports, investment is unlikely to be warranted even if the policymaker only cares about resilience.

— Whitney Zhang

Welfare Gain from Expanding Bulk Capacity at Ports



Source: Researchers' calculations using data on port production, demand, and costs from multiple sources.

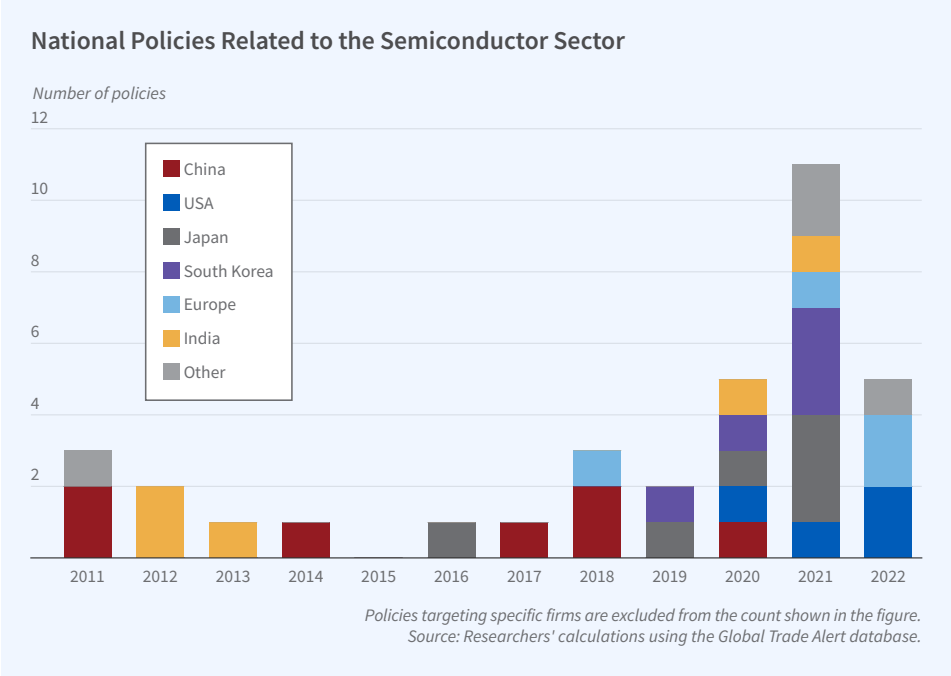
Increasing port capacity can significantly reduce congestion, increase trade, and create positive spillover effects for nearby ports. However, investment returns crucially depend on port geography and macroeconomic volatility.

A Global Perspective on Industrial Policy and the Semiconductor Industry

In 2022, Congress passed and President Biden signed the Creating Helpful Incentives to Produce Semiconductors (CHIPS) Act, which included tens of billions of dollars in grants and loans for production facilities and research, as well as new investment tax credits for domestic semiconductor manufacturing plants. The recent rise of similar subsidies in other nations has raised concerns about an international subsidy race and questions about the economic rationale for such policies.

In Industrial Policy in the Global Semiconductor Sector (NBER Working Paper 32651), researchers Pinelopi K. Goldberg, Réka Juhász, Nathan J. Lane, Giulia Lo Forte, and Jeff Thurk examine the history of government support for the semiconductor industry in many nations and present new evidence on the extent to which learning-by-doing, a traditional economic rationale for subsidizing an industry's growth, may justify such subsidies.

The researchers search the industrial policy dataset of Juhász, Lane, Oehlsen, and Pérez (2022), which is based on the Global Trade Alert database, to identify state financial incentives and other financial policies between 2010 and 2022. They highlight several data challenges, most importantly that in China, subnational governments — which are not included in this database — are a key source of industrial subsidies. After augmenting these data with other information, the researchers conclude that most of the 17 countries that are actively involved in the production of semiconductors have provided support to this sector. Between 2010 and 2022, the average jurisdiction adopted four policies and spent about $12.8 billion (including policies targeting specific firms). These policies are concentrated among five established producers — China, Europe, Japan, South Korea, and the US — and one new entrant, India. Taiwan does not appear to have offered industrial subsidies during the period covered by the Global Trade Alert database, though it may have done so earlier. Government support has historically been greatest when the industry is getting started in a country.



The average semiconductor-producing country has provided substantial subsidies to support its domestic industry.

Learning-by-doing, by reducing future production variable costs through higher levels of current production, can justify startup subsidies to currently uncompetitive firms because it may make them competitive in the future and because there may be positive spillovers to the rest of the economy. While a valid conceptual point, its relevance for policy depends critically on the speed, magnitude, and nature of such learning, e.g., is it internal to the chips-producing firm or is it shared with other producers? The researchers estimate the rate of learning using data on semiconductor prices provided by the Global Semiconductor Alliance for the period 2004–2015. They focus on microprocessors, "systems on a chip," and commodity integrated circuits, and estimate a learning rate of 3.4 percent at the firm-technology node level. This is much lower than "industry lore." Allowing for within-firm spillovers across technology nodes yields a somewhat higher learning rate, about 4.7 percent per year. However, the researchers also estimate substantial cross-country learning effects, which they hypothesize are due to customers transmitting new advances from one producer to another. While within-product and cross-product within-firm learning accrues to the firm producing the chips and the nation providing the subsidies, cross-border learning does not.

— Laurel Britt

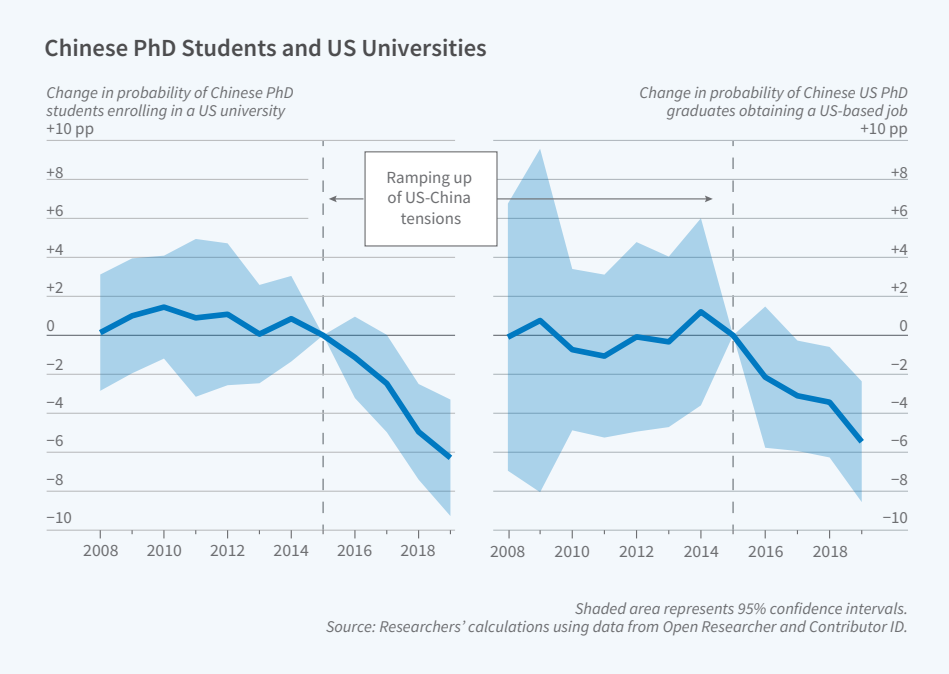
US-China, STEM Researchers, and Students

Since 2015, geopolitical tensions between the US and China have risen. There has been an increase in anti-China rhetoric from US politicians and growing anti-China sentiment in the population. These developments have been manifested in trade barriers and FBI-DOJ investigations of Chinese American scientists under suspicion of espionage and intellectual property theft.

In Building a Wall around Science: The Effect of US-China Tensions on International Scientific Research (NBER Working Paper 32622), Robert Flynn, Britta Glennon, Raviv Murciano-Goroff, and Jiusi Xiao investigate the effects of China-US geopolitical tensions on science. The scientific communities in the two countries have historically been well connected. The authors' data on US graduates who took a job shows that between 2008 and 2019, ethnically Chinese students accounted for about 18 percent of STEM graduates in the US, and scientists in the two countries frequently collaborated and cited each other's work.

The researchers study the effects of rising geopolitical tensions on graduate study and the employment of Chinese scientists in the US, US-China citation flows, and the productivity of US and Chinese scientists. They analyze curricula vitae that scientists post publicly on their Open Researcher and Contributor ID profiles, and they track citation and publication patterns using Dimensions, a bibliometric database.

A comparison of ethnically Chinese students and non-Chinese students before and after 2015 reveals a decline of about 3.7 percentage points in the probability of Chinese students enrolling in a US PhD program, and an increase of 2.1 percentage points in their probability of attending a PhD program in a non-US Anglophone country such as the UK, Canada, or Australia, countries that are not directly implicated in rising tensions. Among PhD students graduating from US PhD programs, the likelihood that a Chinese graduate's first job was in the US decreased by 3.6 percentage points, while the likelihood that it was in a non-US Anglophone country increased by 0.9 percentage points.



Rising geopolitical tensions have been associated with a decline of almost 4 percent in the probability of Chinese students enrolling in a US PhD program.

The researchers also analyze citation flows between China and the US, using citations to researchers based in the UK as a control. They find that Chinese citations of US publications declined by 6.5 percent after 2015; citations to recent US publications declined by even more, 10 percent. This decline applied even to high-quality "frontier" US research. By contrast, the researchers find no statistically significant evidence of a decrease in US citations of Chinese publications.

The decline in Chinese citations of US work does not appear to coincide with a decline in productivity for Chinese scientists. Comparing before- and after-2015 publications of Chinese scientists based in China whose citation patterns heavily relied on US work, and again using the UK as a control, does not suggest any change in productivity for China-based scientists. In contrast, the productivity of Chinese scientists in the US, as measured by impact-weighted publications in US-based journals, fell by about 3 percent after 2015.

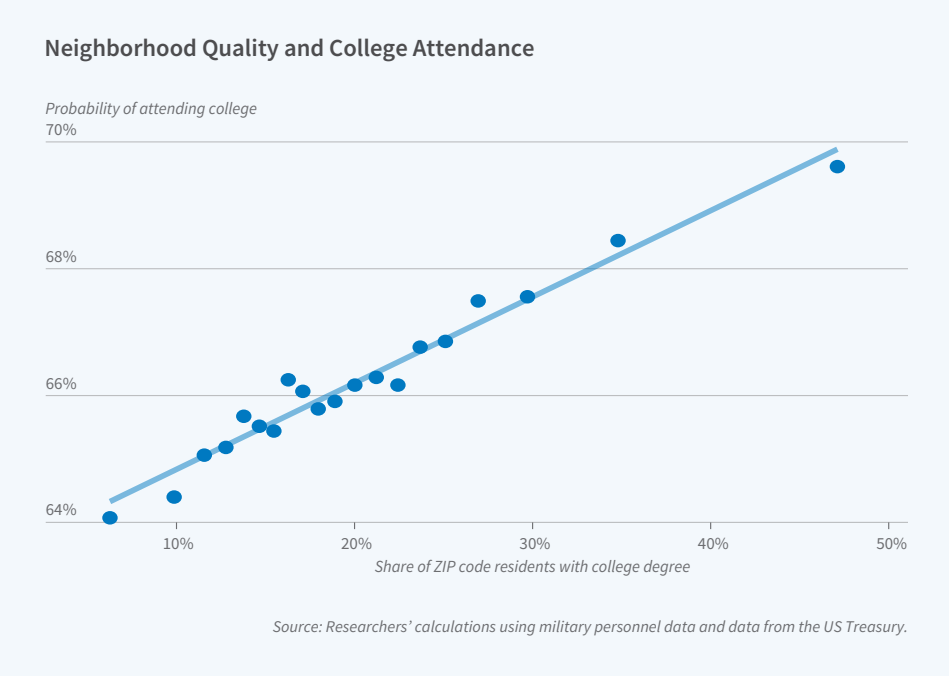
— Shakked Noy

Neighborhood Quality and Children's Outcomes: Insights from Military Families

The United States Army Human Resources Command annually assigns hundreds of thousands of soldiers to global positions based on military needs, prioritizing these over individual preferences. Assignments are determined by a soldier's primary military occupational specialty and rank. Service members of the same specialty and rank are considered interchangeable, which results in essentially random assignments within these categories.

In On the Determinants of Young Adult Outcomes: Impacts of Randomly Assigned Neighborhoods for Children in Military Families (NBER Working Paper 32674), Laura Kawano, Bruce Sacerdote, William L. Skimmyhorn, and Michael Stevens exploit this quasi-random assignment to examine the impact of the neighborhood children live in on their future economic outcomes. They link military personnel data spanning the 1990 to 2017 period to administrative tax records.[1] Their database includes information on about 500,000 service members and their 800,000 children. They focus on junior personnel, who have minimal influence over their assignments.

The researchers estimate positive and statistically significant effects of neighborhood quality on various outcomes. A typical 3.5-year assignment to a location where the share of the population with bachelor's degrees is 10 percentage points above average correlates with a 3.5-point increase in SAT scores and a 0.4 percentage point increase in a child's college attendance probability. Extended exposure amplifies these effects: two decades in a county 1 standard deviation above average in terms of college-educated population share is associated with



Life outcomes for children in military families, who move frequently, are better if they spend more childhood years in higher-quality neighborhoods.

SAT scores that are 10 points higher and a college attendance rate increase of 1.7 percentage points. When measured at the ZIP code rather than county level, the impact more than triples to 38 points and 6.6 percentage points, respectively. This suggests more localized neighborhood characteristics exert stronger influences on outcomes.

Neighborhood quality during a child's high school years has the most significant impact on college attendance. Assignment to a county with a 10 percentage point higher college graduate share raises college attendance by 0.09 percentage points per year of exposure during preschool ages, but by 0.19 percentage points per year during high school. For SAT scores, the effect is strongest during middle school years. Similar neighborhood effects are observed across racial groups, implying that the Army's assignment process may reduce racial disparities by equalizing the environments to which children are exposed.

The study also explores how neighborhood quality influences the income of young adults. Growing up in a better-quality neighborhood increases earnings at age 25, raises the likelihood of tax filing in young adulthood, and reduces the probability of claiming the Earned Income Tax Credit.

— Leonardo Vasquez

[1] Any taxpayer data used in this research was kept in a secured IRS data repository, and all results have been reviewed to ensure that no confidential information is disclosed.

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