Return on Higher Education

PI: Dr. Murat Arik, PDBP, CERP, Middle Tennessee State University

Co-PI: Dr. Corey Pendleton, Lincoln Memorial University

Co-PI: Dr. Riza Bayrak, Middle Tennessee State University

This study was submitted to the *Global Journal of Accounting and Finance* for publication on December 12, 2025

The Value of a Degree is in Question.

A growing number of Americans are skeptical about the economic returns of higher education. This sentiment, especially pronounced among younger generations, poses a challenge for individuals, institutions, and national economic strategy.

Perceived Importance of a College Education Among 18-34 Year-Olds

Source: Gallup, 2025

35% of U.S. adults now consider a college education "Very important," a sharp decline from 74% among 18-34 year-olds in 2013.

Source: Gallup, 2025

22% of adults believe a four-year degree is worth the cost if it requires student debt.

Source: Pew Research Center, 2024

A Clear Answer: Each Additional Year of Higher Education **Causally** Increases Wages by 13.9%.

13.9%

Our research isolates the true causal impact of postsecondary schooling on income. This is not simply a correlation; it is a robust, statistically significant measure of the economic premium conferred by investing in higher education.

This Finding is Built on a Foundation of Proof.

Massive Scale

Analysis of approximately **20.5 million** individual worker records from the IPUMS USA database, one of the most comprehensive datasets available.

Longitudinal Scope

Data spans nearly two decades of economic changes, from **2005 to 2023**, providing a modern and relevant perspective.

Causal Methodology

Employing a two-stage least squares (2SLS) approach with an instrumental variable to move beyond correlation and isolate the true causal effect of education on wages.

Isolating the True Impact of Education

How can we be sure it's the education, and not just that more ambitious people go to college?

The Challenge

People who pursue higher education may already have traits that lead to higher earnings. A simple comparison is not enough.

Our Solution

We used a **Bartik-style instrumental variable**—a technique that leverages a "natural experiment" to isolate the effect of education.

How It Works

Natural Experiment

Historical State-Level Financial Aid Policies (Need & Merit Grants)

This creates...

Exogenous Shock

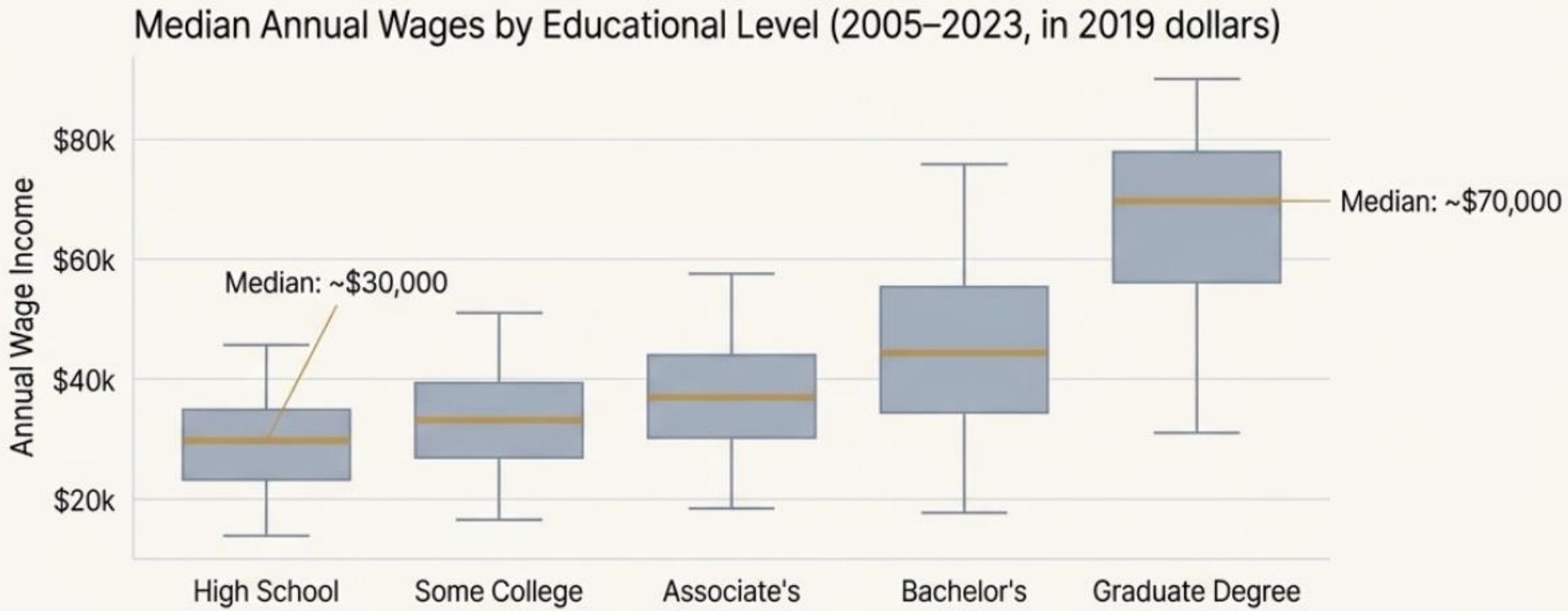
An external "push" or "pull" for students to enroll in college that is **not related to their individual ability**.

Allowing us to measure...

Causal Effect

The wage increase **caused specifically by the additional schooling**, separate from other factors.

Higher Educational Attainment Consistently Correlates with with Higher Wages.



The data shows a clear, monotonic relationship: as education level increases, so do median wages. The widening range at higher levels also indicates greater wage potential for those with advanced degrees.

The Causal Effect of Higher Education Remains Strong After Controlling for Other Factors

The Causal Impact of One Additional Year of Higher Education on Log Wages

Variable	Coefficient
yrs_highered (Years of Higher Education)	+0.1389*

***p < 0.001

Translates to a 13.9% increase in annual wages

This estimate is the output of our 2SLS model. model. It represents the wage premium for education *after* accounting for:


Years of K-12 schooling


Work experience


Hours worked per week


Gender, race, and ethnicity


Metropolitan vs. non-metropolitan residence


State and year fixed effects

But the Economic Return on a Degree is Not Uniform Across All Industries

While every industry shows a positive and statistically significant wage premium for higher education, the magnitude of this premium **varies considerably**. This addresses our **second research hypothesis**: The effect of additional years of schooing on individual income varies according to industry.

Understanding this variation is **critical for aligning education policy**, corporate talent strategy, and individual career choices with economic reality.

Agriculture

Manufacturing

Health

Mining

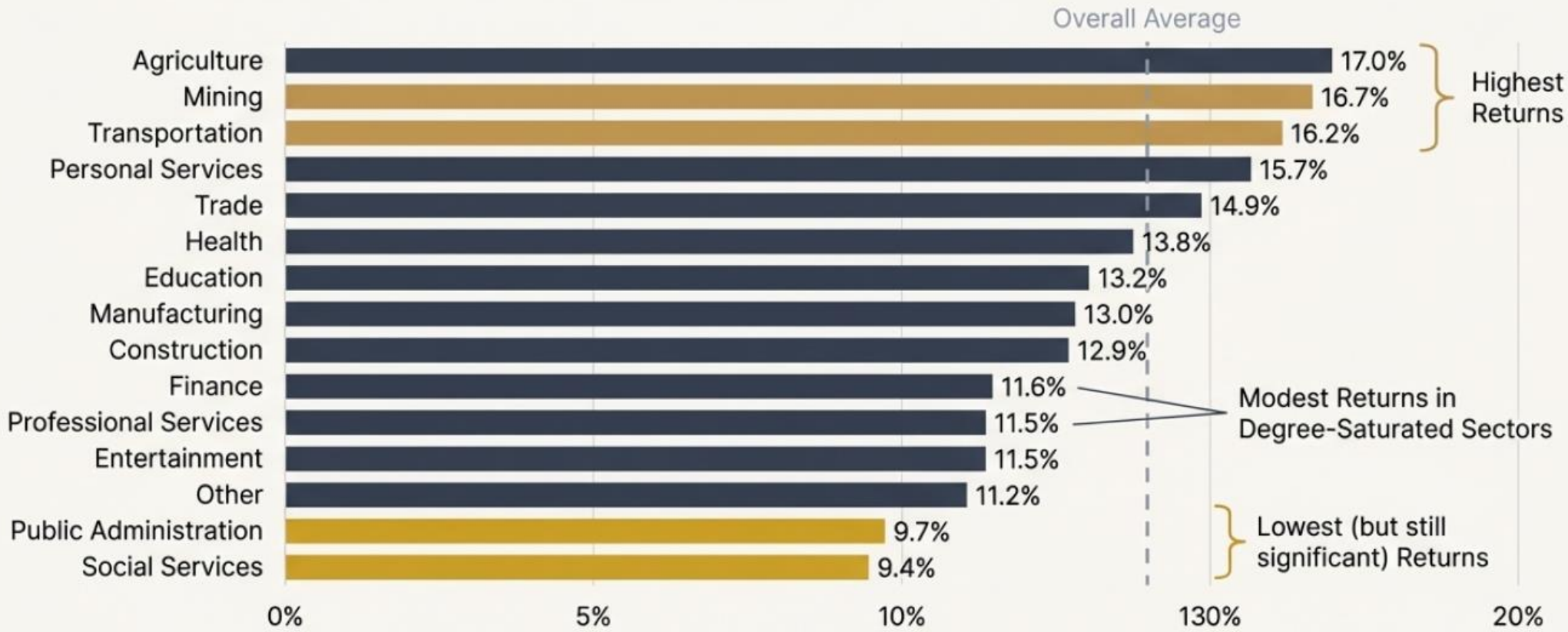
Finance

Public Administration

Social Services

The “Scarcity Premium”: A Degree’s Value is Highest Where It is Least Common

Causal Wage Return for One Additional Year of Higher Education by Industry



Contrary to expectation, the highest returns are not in sectors saturated with degree-holders. Instead, a degree provides the largest marginal benefit in industries where college-educated labor is a scarcer resource.

Human Capital as a Core Competitive Advantage.

Our findings provide quantitative evidence for the **Resource-Based** Theory (RBT) of the firm. Education creates human capital that is:

Valuable: Directly increasing productivity and wages (by 13.9%).

Rare: Especially in certain industries, creating a "scarcity premium."

Imperfectly Imitable & Non-Substitutable: The skills and knowledge gained through formal education are difficult for competitors to replicate quickly.

"...a firm's resources are pivotal in determining its long-term competitive character." —Barney, 1991

This study moves human capital from a qualitative concept to a resource with a distinct, measurable economic value.

Implications for Policy & Education Leaders

For Policymakers

- **View education spending as a high-return economic investment, not a social expenditure.** The 13.9% private return signals significant public returns through increased tax revenues and productivity.
- **Target investment where it matters most.** Consider programs, scholarships, or tax credits that encourage higher education in high-return sectors like agriculture and mining to boost regional development.
- **Use robust data to counter public skepticism.** These causal findings provide a powerful tool to communicate the enduring value of higher education.

For University Administrators

- **Clearly articulate the value proposition.** Use this evidence to reinforce the economic benefits of a degree to prospective students and families.
- **Enhance curricula in lower-return sectors.** For fields like Social Services, integrate in-demand skills (e.g., data analytics, project management) to improve graduates' wage profiles.
- **Strengthen industry partnerships.** Align programs with the specific human capital needs of both high-scarcity and high-demand sectors.

Implications for Students & Business Strategy

For Students & Families

- **Focus on long-term returns over short-term costs.** While debt is a serious consideration, the evidence shows a substantial lifetime earnings premium that can far outweigh the initial investment.
- **Consider the "scarcity premium."** A degree in a less-traditional field may offer surprisingly high returns. Profitability exists in both department selection and sector choice.

For Business & HR Executives

- **Recognize human capital as the key to competitive advantage.** As demonstrated by Romer (1990) and others, acquiring knowledge through education is essential for growth and competitiveness.
- **Invest in employee training and education.** High-performance work systems that empower employees through education lead to higher retention of productive talent and reduced turnover.
- **Strategic hiring** can leverage the "scarcity premium." Recruiting degree-holders into roles or industries where they are uncommon can unlock significant value.

Acknowledging the Boundaries of This Research.

Rigorous research involves understanding its limitations. While our findings are robust, future work can build upon these areas:

◇ The Instrumental Variable

While strong, there is a risk that long-term state characteristics (beyond financial aid) could influence wages, a challenge known as the "exclusion restriction."

◇ Cross-Sectional Data

We analyze a snapshot of 20.5 million people, but we do not follow the *same* individuals over time. This prevents controlling for fixed personal traits like innate ability or motivation with perfect precision.

◇ Data Granularity

Our "years of schooling" variable is constructed from categories, which introduces some measurement error. We also cannot distinguish between returns to different fields of study (e.g., engineering vs. humanities) or specific occupations.

The Evidence is Clear: Investment in Human Capital Pays.

1. **A Powerful Causal Return:** Despite public skepticism, an additional year of higher education causally increases individual wages by a substantial **13.9%**.

2. **Universal, But Varied, Premiums:** This positive return exists across all 15 industries studied, with the highest premiums found in sectors where educated labor is scarcest.

3. **An Enduring Pathway to Welfare:** Investing in human capital through higher education remains one of the most reliable and rewarding pathways to individual economic welfare and a nation's competitive advantage.

The debate over the value of college must be grounded in robust, causal evidence. This study provides a clear verdict.