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# Educational Institutions poised to meet the workforce needs generated by the Investing in America Agenda

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## Introduction

Historic legislation introduced by the Biden-Harris Administration has mobilized unprecedented levels of public and private investment in the United States. The American Rescue Plan, Bipartisan Infrastructure Law, CHIPS and Science Act, and the Inflation Reduction Act—which together form the foundation of the Investing in America (IIA) agenda—aim to boost U.S. competitiveness and economic growth through targeted investments in key industries. These investments focus on growing sectors and emerging technologies such as clean energy, semiconductor manufacturing, and infrastructure, providing incentives such as grants, tax incentives, and other federal supports to encourage private sector investment and innovation in these industries.

The U.S. postsecondary education system is playing a key role in supporting these economic goals and ensuring the efficiency of IIA investments, and that role will continue as the impact of these dollars are felt for years to come. Realizing the maximum impact of these investments requires that Americans have access to the training needed to help staff the jobs created by these investments. This blog post is the first in a series that connects the IIA investments to education program participation and outcomes. In this post we introduce forthcoming data from the Department of Education that will highlight how colleges and universities around the

country are supporting local investments now and will continue to do so in the future: by creating new programs, welcoming new students, awarding valuable credentials, and playing a crucial role in the formation of a skilled workforce that will drive the innovation and growth prioritized by the Investing in America agenda.

Preliminary analyses of these data suggest that the US system of higher education is well-positioned to enroll and train individuals in programs that align with economic need and the focus of these investments. Additionally, these investments may already be attracting students to related programs in industries that require at least some training offered by two- and four-year colleges. Beyond this initial analysis, these data will provide information to individuals and communities about where programs are offered that could support training and certification needed to access jobs in areas where employment growth is expected.

## **Data**

These data align public and private investments made through this legislation with the postsecondary institutions and programs most likely to be partners in meeting the increased workforce demand spurred by these investments. In prior work, information from Investing in America ([invest.gov](http://invest.gov)) and the Department of Labor connected government investments to industries to facilitate measurement of the skill and training needs that may emerge in geographic areas where the investments are being made. Understanding the important role that post-secondary institutions play in meeting these workforce needs, we add another link in the chain by identifying educational outcomes (enrollment, completions, and program offerings) aligned with the relevant industry in that same county or area. In simple terms, we provide data on program offerings and participation at postsecondary institutions are aligned with likely workforce needs in their local areas.

In the coming weeks, the Department of Education will release a publicly available version of the data and a technical appendix that links investments made through these bills to postsecondary education data for colleges and universities across geographic areas.

## **Establishing the Connection Between Investments and Program Offerings**

We began by examining how levels of investment and share of post-secondary enrollment were aligned across the nation. We connect aligned programs by mapping investments to their related industries (identified using occupation codes: SOCs) to degree-level program codes (CIPs, classification of instructional programs) using established crosswalks.<sup>1</sup> We then demonstrated that places that received investments also had access to undergraduate programs in subjects that align with industries impacted the investments, underscoring the availability of relevant programs in postsecondary institutions and emphasizing the potential for these schools to support workforce development in industries receiving investments.

Though our preliminary analysis suggests that there is broad participation and availability of programs (CIPs) that align with the industries likely affected by federal investments, a remaining question is whether postsecondary enrollment *changed* in these subjects in response to, for example, heightened training needs for workforce entry or advancement.

To begin to address such questions, we focus on two specific industries: green energy and electric vehicles and green transportation.<sup>2</sup> We chose these sectors because of their alignment with areas of investment, and their relationship to emerging industries important to overall economic growth. To identify enrollment changes in response to investments, we compare enrollment trends in affected CIP codes across a) counties that received investments targeted to these industries to b) enrollment in counties that did not receive investments in those industries.

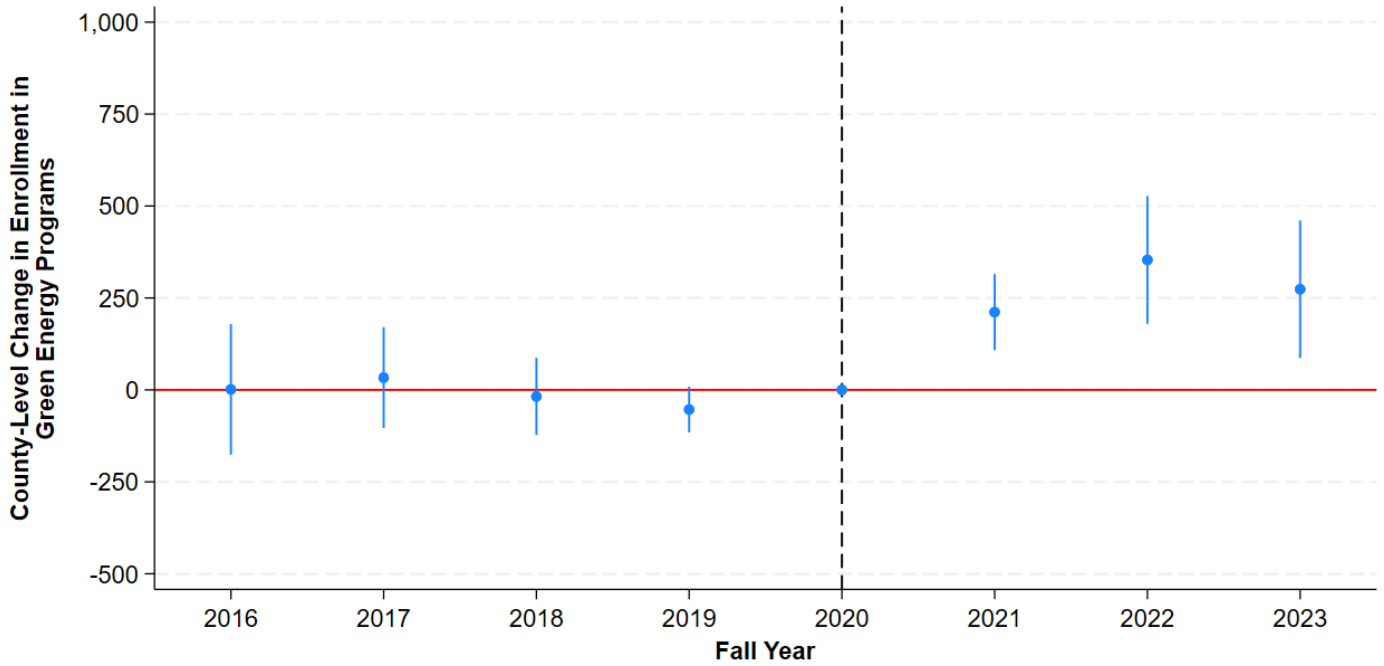
We present estimates in Figure 1 below. The dotted vertical line marks the year 2020, which was the last calendar year before any of the IRA, BIL, and CHIPS were passed or signed into law. As a result, we treat years after 2020 as potentially affected by the staggered announcement and implementation of these bills, and therefore likely to inform the enrollment decisions of individuals in places that were expected or that had already begun to receive investment funds. The listed years represent the fall of the related academic years.

Figure 1 shows that in each of the years up through 2020, the estimated difference in enrollment between counties that received investments in the given industry (green energy and clean transportation) and counties that did not receive federal investments in those industries is generally zero (the estimates and error bars overlaps the red horizontal line indicating zero difference). This indicates that enrollment trends in subjects aligned with the industry did not differ substantially between investment counties and non-investment counties. However, beginning in 2021, there is a clear uptick in enrollments in the counties that received investments in green energy (panel a) and clean transportation (panel b).

Some of this increase is likely driven by the recovery from a pandemic-related downturn in enrollment and related pandemic recovery efforts. More work is necessary to identify the causal effect of investments on post-secondary enrollment trends. However, Figure 1 is suggestive evidence that the increase in enrollments in these three sectors followed local investments made in those industries. The fact that the differences in counties grew from 2021 to 2022, and are distinct from enrollments in other areas, lends support for the suggestion that these investments may have affected the enrollment behaviors of individuals.

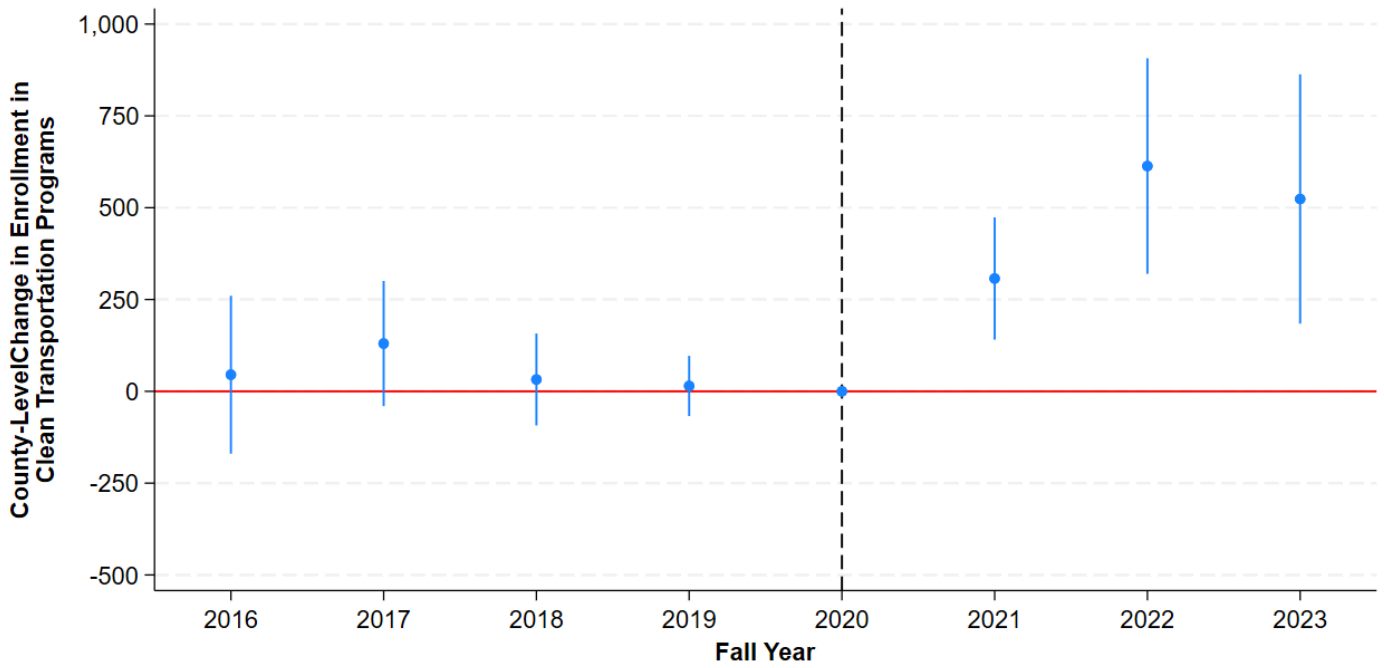
**Figure 1. Changes in enrollment in priority sector-related CIPs in counties receiving aligned public investments, relative to counties that received investments in other areas.**

### Panel a. Green Energy



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### Panel b. Clean Transportation



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Sources: Invest.gov; Department of Labor; Department of Education.

**Notes:** Event study estimates represent average differences in enrollment in the specified aligned programs, relative to all other programs, at each point in time. Differences at each period are measured relative to 2020-2021, which represented the last pre-investment announcement academic year.

## Case Study Examples

The Department's newly released data will give researchers and policymakers an aggregate view of how postsecondary institutions are positioned to help respond to the workforce needs these investments are likely to create. In this section, we discuss a few case studies where explicit efforts are already underway between postsecondary institutions and local organizations to support related workforce needs generated by investments. We cannot make strong conclusions at this time about whether these examples are driving the results we share above, but they may be illustrative of the types of coordination that is being done to ensure that postsecondary institutions are supporting evolving workforce needs. We note that examples and external links are provided below for the reader's convenience. Their inclusion does not imply endorsement from the Department of Education.

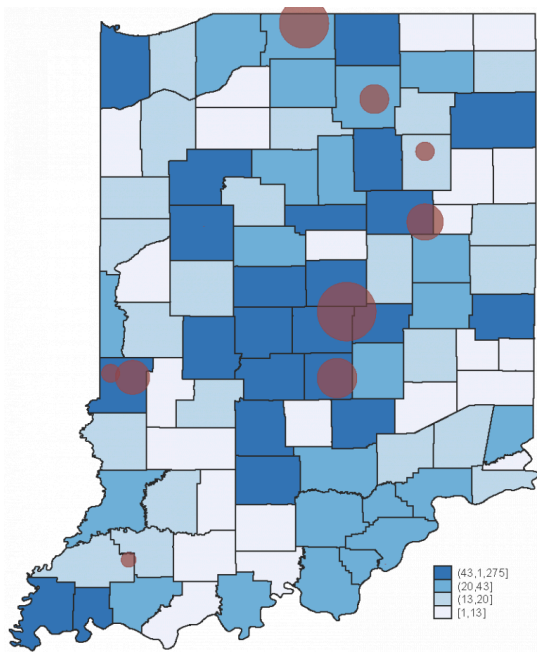
The CHIPS and Science Act appropriated \$53 billion to address national supply chain weaknesses in the semiconductor manufacturing industry.<sup>3</sup> A key component of addressing these shortages is developing a dynamic and sustainable workforce capable of meeting current demand and fueling continued research and innovation in the space. Our Federal investment data verify that \$5.6 billion of these investments were awarded in West Lafayette Indiana, home of Purdue University. Purdue is a national leader in the development of microelectronics devices—a key input into semiconductor manufacturing.

To meet workforce needs, Purdue University has partnered with Ivy Tech—Indiana's community college system and the largest singly accredited community college in the nation—to develop programs and recruit students to build the workforce needed to meet the emerging semiconductor industry's needs.<sup>4</sup> Across 19 campuses statewide, Ivy Tech's enrollment is 190,000 students, including 90,000 students currently enrolled in high school, this partnership aims to develop a sustainable pipeline for talent to meet emerging workforce needs. These efforts include the development of training programs for "industry-driven" stackable credentials and customized skills training as well as curriculum for associate and bachelor's degrees. Ivy Tech, Purdue, the local workforce board, Greater Lafayette Chamber and regional community-based partners have collaboratively designed summer programming for high school students as well as smart manufacturing and electronics-focused dual-credit courses and career pathways. If fully realized, such training pipelines could help meet demand for skilled workers that are generated from investment in the local communities.

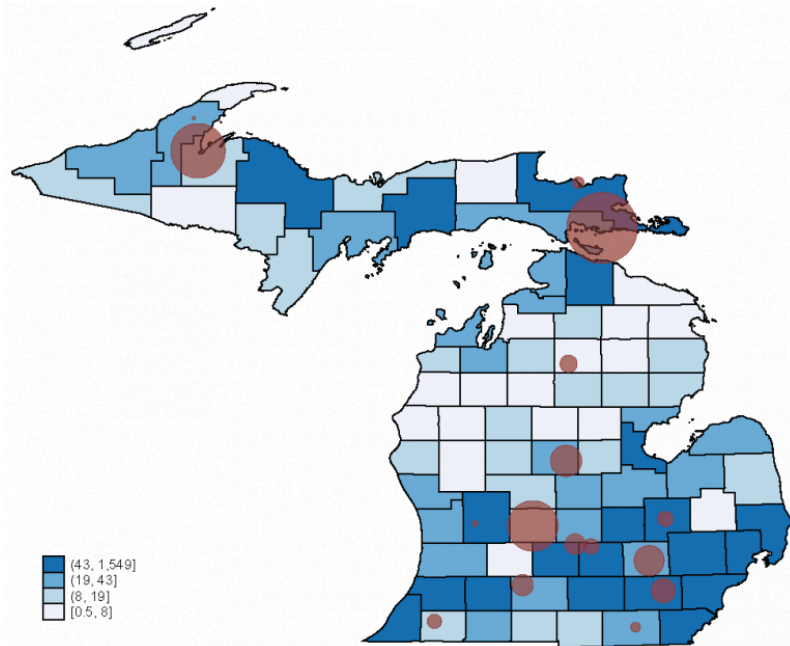
Another example is a \$3 billion investment from General Motors (GM) in EVs concentrated in Lansing, Michigan. Locally, Lansing Community College (LCC) has been engaged in the planning for workforce development and training to meet emerging needs created by this and other investments to expand EV battery factories and manufacturing centers. LCC and other area community colleges have partnered with General Motors (and partner firms) to offer relevant coursework and training programs, aimed at ensuring that community members are among the primary beneficiaries of the investments designed to expand EV battery factories and manufacturing centers. These efforts are part of the larger efforts related to the [Michigan Workforce Hub](https://www.whitehouse.gov/briefing-room/statements-releases/2024/09/23/fact-sheet-taking-action-to-support-auto-workers-and-manufacturers-including-in-michigan/). (<https://www.whitehouse.gov/briefing-room/statements-releases/2024/09/23/fact-sheet-taking-action-to-support-auto-workers-and-manufacturers-including-in-michigan/>)

Other postsecondary efforts are underway in the state that may fuel future enrollment changes. The Department of Energy's Battery Workforce Challenge Program is trying to build STEM talent pipelines in battery manufacturing, including in Dearborn. Key partners in the Michigan pilot will include the Michigan Economic Development Corporation, high schools, vocational institutions, colleges and higher education, and battery and automotive manufacturers. The Department of Energy will provide \$200,000 in seed funding to Henry Ford Community College in Detroit to establish a state-of-the-art Battery and Electric Vehicle Technical Center. Our most recent data are not yet able to pick up enrollment changes that are likely to emerge from these investments.

Figure 3 (below) illustrates the location of investments in Indiana and Michigan in relation to post-secondary enrollment in local colleges across each state. Investments are shown at the county-level, with darker shades corresponding to larger investments. Since not all investments were made in the same year, the shading represents the aggregate investments made since 2020. Enrollment changes in investment-aligned CIP codes between 2020 and 2023 is overlaid on these maps, with the size of the circle corresponding to size of the change in enrollment since the roll-out of investments. Although causal conclusions should not be drawn from this map, it is useful to see that large investments are often co-located with large post-secondary enrollment changes in affected CIP codes. Similar to Figure 2, this collocation suggests that enrollment is responding to investments and that post-secondary institutions are well-positioned to continue to provide relevant training as these investments are implemented.



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### **Figure 3. Enrollment in Affected CIPs and Federal Investments**

**Notes:** Funding is shown at the county level and represents aggregate funding between 2020 and 2024. Higher funding levels correspond to darker shades of blue. Enrollment changes between 2020 and 2023 in aligned CIP-codes is given by the red markers and is proportional to the size of the marker (a larger marker represents a larger change).

### **Conclusion**

Postsecondary institutions are critical partners in meeting the needs of a dynamic and growing economy. As we consider their role at the time of major Federal investments, our initial analysis suggests that the recent investments from the Biden-Harris administration are likely to extend this tradition. Building on these investments, the Department has leveraged cross-agency

collaboration with the DOL and the Executive Office of the President to offer a new resource to the research and policy community. We expect that there will be opportunities for deeper and longer-running analysis of these data, as well as extensions and additions to further support such work. For example, in ongoing work, we analyze which programs experienced the largest enrollment declines during the COVID-19 pandemic, and how they have recovered over the subsequent period.

From research and innovation at four-year institutions, to workforce training including upskilling and re-skilling for workers at two-year institutions, and the ability of public K-12 systems to partner with local post-secondary institutions to create pathways to higher education and training: the role of post-secondary institutions is as important as ever in responding to labor demand in emergent technologies across all skill levels.

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