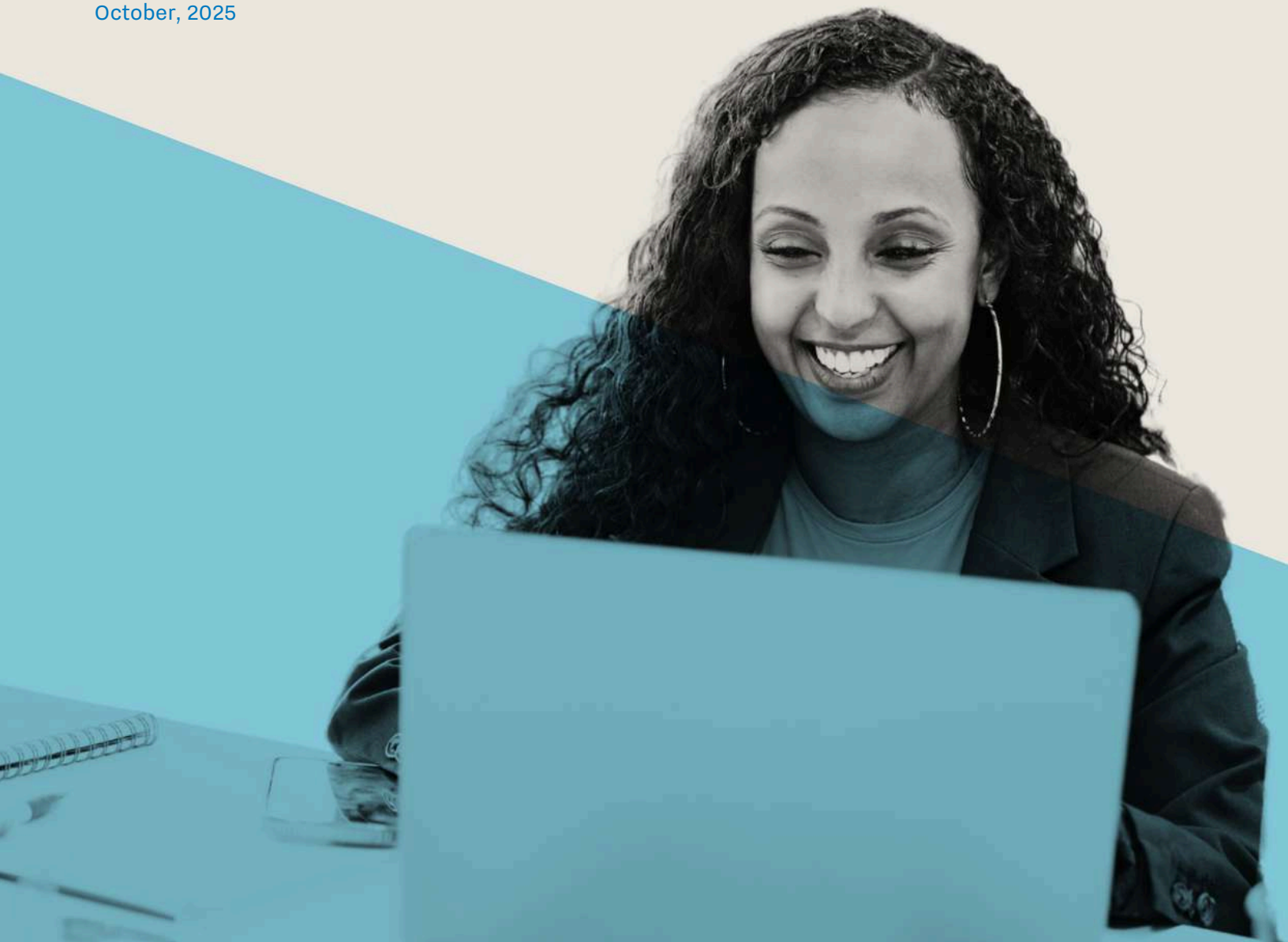
PER SCHOLAS

Upskilling:

A Pathway to Economic Advancement for Early Career Tech Workers

Findings From a Study of Career Accelerator, the Per Scholas Upskilling Program

October, 2025



CONTENTS

03 Summary

05 The Need for Upskilling

07 Career Accelerator: The Per Scholas Upskilling Program

09 Study Design and Methodology

10 Wage Gains From Upskilling

11 Upskilling Timing, Format, and Learner Characteristics

13 From Layoff to Mentor: Kenetra's Tech Transformation

14 Recommendations for Employers, Funders, and Policymakers

Per Scholas gratefully acknowledges Apollo Opportunity Foundation, Ascendium Education Group, Blue Meridian Partners, Comcast, Citizens, MetLife Foundation, Okta, Stand Together, The Blackstone Charitable Foundation, Workday Foundation, TD Charitable Foundation, TE Connectivity Foundation, and 16 Tech Innovation District for their generous investments in Career Accelerator and all our other work to support the economic advancement of Per Scholas graduates. The views expressed in this report are those of the author(s) and should not be attributed to these grantmakers.

We also thank the following individuals from Per Scholas for their contributions to the evaluation and to this report.

Caitlyn Brazill
President

Tamara Johnson
Chief Operating Officer

Jasmine Miller
Chief Program Officer

Sierra Harvey
Senior Director, Alumni Engagement & Training

Ken Moore
Consultant

Bernex Richardson
Senior Vice President, Career Accelerator & Alumni Relations

Dr. Maggie Schultz
Director, Research & Evaluation

Dr. Angelica Thompson
Vice President, Research & Evaluation

Summary

Technology is evolving faster than ever before, necessitating upskilling as a critical strategy for economic and career advancement – not only for early career tech workers, but also for many others in the age of AI. Per Scholas set out to understand the impacts of its own new upskilling initiative, Career Accelerator.

Research Context

Many entry-level tech roles have begun to fall short of providing a living wage, exacerbated by inflation and reliance on outsourcing. In the meantime, employers increasingly seek mid-career talent. Now they also grapple with the challenge of upskilling workers to use AI.

Career Accelerator

The Career Accelerator upskilling program offers a large variety of short-format, career pathways-aligned upskilling courses designed to fit into the busy lives of working professionals. Participants can choose from among remote instructor-led and asynchronous offerings. The program to date has served Per Scholas alumni, but the organization designed it to accommodate any incumbent workers.

Study Design & Methodology

The Per Scholas Research and Evaluation team developed original research to assess the impacts of the program on participant wages and career trajectories. It examined outcomes for more than 17,000 Per Scholas alumni, including upskillers and non-upskillers, with longitudinal wage data collected at multiple points. This report focuses on the outcomes for instructor-led upskilling; a future analysis will consider outcomes for asynchronous courses.

Wage Gains From Upskilling

The researchers found that among those Per Scholas alumni who completed any instructor-led upskilling, the average most recent wage was $27.20/hour; a 32% increase over the average post-immersive starting wage ($20.60/hour), with an average time span of 21.3 months between these two wages.

In addition, after controlling for learner and program characteristics ($p<.001$), there was still a sizable, statistically significant difference in most recent wages between alumni who completed instructor-led upskilling and those who did not complete upskilling. Specifically, alumni who completed instructor-led upskilling earned an average of $2.05/hour more than non-upskillers. For full-time workers, this difference amounts to $4,264/year.



“Per Scholas gave me a lot of confidence.”

—MARIA PATOKINA, PER SCHOLAS ALUMNA
Developer at Neuberger Berman
Certifications: Google Python

Upskilling Timing, Format, and Learner Characteristics

The average enrollment in Career Accelerator occurred about one year after immersive training completion. Some populations were overrepresented among Career Accelerator instructor-led upskilling participants, compared with their proportions of the entire research sample. For example, women, those who were not Black or Hispanic, older workers, and those whose highest educational attainment was high school were more likely to enroll in these courses than others in the research sample. Men, Black, Hispanic and/or younger workers were less likely to enroll. In many cases, however, these differences were not large.

Key Recommendations for Stakeholders

Funders and policymakers should invest in instructor-led upskilling programs that target working adults.

Employers should build internal mobility strategies that emphasize upskilling for incumbent workers, preferably instructor-led.

All stakeholders should support long-term tracking of participant wage status and job advancement; incorporate accessible design principles to address upskilling learner needs; and ensure that upskilling curricula are agile and responsive to real-time labor market changes.



JASMINE MILLER
CHIEF PROGRAM OFFICER, PER SCHOLAS



> **"Now I have options. I have people calling me about jobs. I have ample opportunity."**

—NICO CASTRO-ARRIEN, PER SCHOLAS ALUM
Business Operations Support Analyst at Insight Global
Certifications: Google IT Support, CompTIA A+, CompTIA Security+, CompTIA Network+

The Need for Upskilling

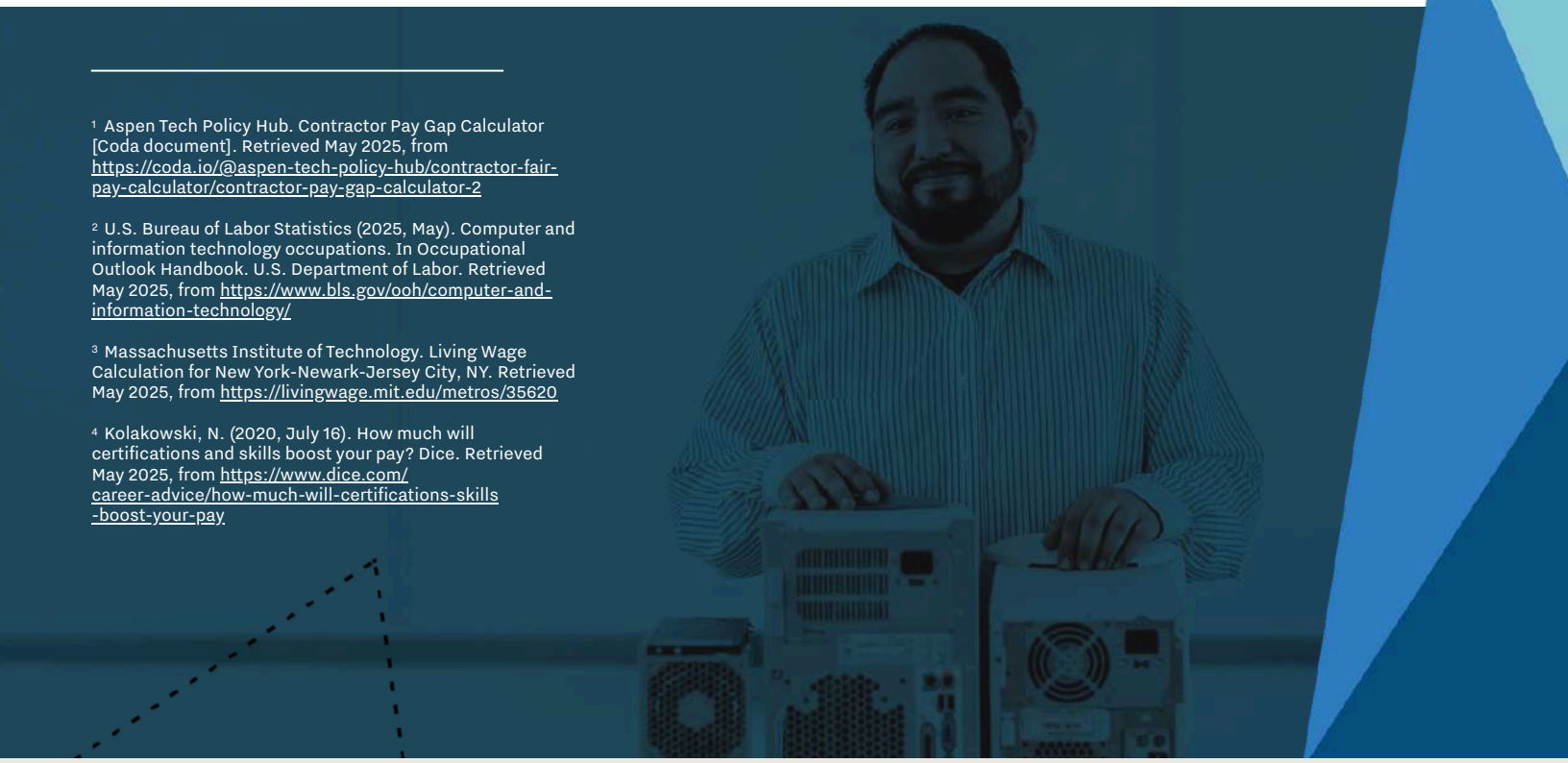
The rapidly evolving technology landscape underlines the need for all workers, especially those in early career tech roles, to embrace upskilling as a primary economic and career advancement strategy.

Initial Earnings and Living Wages

Many entry-level tech roles now fall short of providing a living wage, especially in high-cost markets. This wage gap has several causes, including that entry-level wages have not kept pace with inflation, and many organizations have become reliant on contractors, who may earn half as much in total compensation as regular full-time workers, to fill non-engineering tech roles[1]. But the primary factor is a gap between the skills required for entry-level jobs, in comparison with the more specialized expertise demanded by higher-paying roles.

For example, according to the U.S. Bureau of Labor Statistics (BLS), the median pay for all Computer Support Specialists (including those in mid to late careers) is $61,500, or roughly equivalent to the living wage for a single adult in a higher-cost market like New York City.[2,3] Software Engineers, by contrast, have a median wage of $131,400 (BLS, 2025).

Upskilling can address this gap by offering targeted training for early career tech workers that enhances their skills, preparing individuals for positions that offer better compensation and more opportunities for advancement. For example, earning additional professional certifications in high-demand career pathways like cybersecurity or cloud services can result in significant compensation increases and open up avenues for long-term financial security.[4]



[1] Aspen Tech Policy Hub. Contractor Pay Gap Calculator [Coda document]. Retrieved May 2025, from https://coda.io/@aspen-tech-policy-hub/contractor-fair-pay-calculator/contractor-pay-gap-calculator-2

[2] U.S. Bureau of Labor Statistics (2025, May). Computer and information technology occupations. In Occupational Outlook Handbook. U.S. Department of Labor. Retrieved May 2025, from https://www.bls.gov/ooh/computer-and-information-technology/

[3] Massachusetts Institute of Technology. Living Wage Calculation for New York-Newark-Jersey City, NY. Retrieved May 2025, from https://livingwage.mit.edu/metros/35620

[4] Kolakowski, N. (2020, July 16). How much will certifications and skills boost your pay? Dice. Retrieved May 2025, from https://www.dice.com/career-advice/how-much-will-certifications-skills-boost-your-pay

Three current trends underline the need for worker upskilling:



The Rise of Artificial Intelligence

AI is transforming the ways companies operate, and there is an increasing demand for workers who can use and program AI tools effectively.[5] Upskilling for AI not only prepares individuals to meet current market needs, but also places upskillers at the forefront of technological innovation, where they can contribute to optimizing productivity and driving business success.



Demand for Intermediate-Level Talent

Employers increasingly seek talent with more than basic capabilities.[6] They are looking for ready-to-work professionals adept at managing complex projects and adaptable to change. Upskilling can equip lower-level workers with more specialized knowledge, skills, and stackable credentials that are aligned with their industries and employer talent needs. Moreover, hiring a new, intermediate-level worker is 1.5x-5x more expensive than upskilling an existing one.[7]



Advancement Without Leaving the Workforce

Most early career tech workers cannot afford to take extensive time away from their jobs to build new skills.[8] They seek upskilling opportunities that will fit their busy schedules, rather than the other way around.

TAKEAWAYS

For new tech professionals, especially those emerging from accelerated training programs like Per Scholas, upskilling offers a pathway to enhanced wages, career advancement, and the skills needed to meet rapidly changing work demands in a technology-driven world. For employers seeking intermediate-level talent, upskilling is a much more cost-effective strategy than trying to find it externally.

---

[5] Galeano, S.; Hodge, N.; & Ruder, A. (2025, May 21). By degree(s): Measuring employer demand for AI skills by educational requirements (Workforce Currents No. 2025-01). Federal Reserve Bank of Atlanta. Retrieved May 2025, from https://www.atlantafed.org/cweo/workforce-currents/2025/05/21/by-degrees-measuring-employer-demand-for-ai-skills-by-educational-requirements

[6] Indeed Hiring Lab (2024, May). Experience Required: The New Reality of Entry-Level Jobs. Indeed. Retrieved May 2025, from https://www.indeed.com/career-advice/news/entry-level-jobs-prior-work-experience

[7] Quinn, H.; & Malone, K. (2024, May 3). Tech leaders should upskill, not hire new, to build expertise at an affordable rate. Technical.ly. Retrieved May 2025, from https://technical.ly/professional-development/tech-leaders-should-upskill-not-hire-new-to-build-expertise-at-an-affordable-rate/

[8] Ellingrud, K.; Gardner, N.; Le Barbenchon, C.; Du, J.; & Luby, R. (2025, May 13). The upskilling imperative: Required at scale for the future of work. McKinsey & Company. Retrieved May 2025, from https://www.mckinsey.com/industries/public-sector/our-insights/the-upskilling-imperative-required-at-scale-for-the-future-of-work

Career Accelerator: The Per Scholas Upskilling Program

Nearly half of full-time workers in the U.S. do not earn a living wage.[9] Per Scholas is a 30-year-old national nonprofit organization that addresses this disparity by training motivated learners for high-demand careers in technology. Since 1995, Per Scholas has trained more than 30,000 learners in bootcamp-style immersive courses, both in-person and remote. 85% complete their training, and more than 75% of graduates attain jobs. As this report was written, learners who enrolled in 2024 were attaining jobs that paid 2.6 times their average pre-training income.

However, in recent years, an increasing proportion of the entry-level tech jobs that Per Scholas learners fill after graduation have not paid a living wage to start, especially in higher-cost metropolitan regions, matching the broader trends already noted. This challenge has grown as the cost of living has risen considerably faster than entry-level wages for both tech and many non-tech roles. In fact, in 2023 and 2024, entry-level salaries for tech professionals declined slightly, according to Dice.[10] For these reasons especially, Per Scholas does not consider it realistic that early career graduates should shoulder the financial responsibility for upskilling themselves. But not all their employers (especially small to medium-sized businesses that employ a sizable number of Per Scholas graduates) have the capacity to provide effective upskilling internally.

Per Scholas launched Career Accelerator as a major new program in 2021, and has prioritized its growth ever since. Career Accelerator's goal is to provide more robust pathways for early career tech workers to increase their earnings and advance their careers. To these ends, Per Scholas designed the program to reflect a true career pathways[11] approach, identifying discrete skills and credentials "road maps" for individual Per Scholas graduates to pursue, based on their career goals.

Per Scholas also designed Career Accelerator with close attention to the busy lives of working professionals. For example, the course mix includes a variety of "micro" trainings that learners can complete relatively quickly, alongside longer courses leading to major new certifications. Nearly all offerings are remote.

Career Accelerator has grown popular with graduates. As of September 2025, it was on track to enroll at least 2,500 unique alumni participants for the year, and its offerings included all the courses listed on the next page.

---

[9] Mayer, K. (2024, September 16). Nearly half of full-time workers aren't making a living wage. SHRM. Retrieved May 2025, from https://www.shrm.org/topics-tools/news/benefits-compensation/nearly-half-of-full-time-workers-aren-t-making-a-living-wage

[10] DHI Group, Inc. (2025). 2025 Dice tech salary report: Salary trends – experience [Report section]. Dice. Retrieved May 2025, from https://www.dice.com/technologists/ebooks/tech-salary-report/salary-trends.html#experience-trends

[11] In a workforce development context, "career pathways" refers to a coordinated system of education, training, and support services that enable individuals, especially those with barriers to employment, to advance through a series of connected education and employment steps, with each step increasing their skills, credentials, and earning potential.

Per Scholas Career Accelerator Courses, September 2025

AI
- AI Prompt Engineering
- AI Fundamentals with Capstone
- AI Practitioner
- Azure AI Fundamentals
- IBM AI Fundamentals

Cloud
- Azure Cloud Practitioner
- IBM Cloud Advocate

Data Analysis
- Business Intelligence Analyst
- Data Analyst Core
- Data Analytics with Power BI
- Google Data Analytics

Cybersecurity
- Endpoint Security
- Ethical Hacker
- Google Cybersecurity
- IBM Cybersecurity Analyst
- IBM QRadar SIEM Fundamentals
- Network Defense
- Powershell
- Security Analyst

IT and Systems Support
- Google IT Automation with Python
- Google IT Support
- IBM IT Technician
- CompTIA A+
- Linux Essentials
- Network Analysis
- Network Technician
- ServiceNow Certified System Administrator
- Splunk Core
- Windows Server Administrator

Project Management
- Google Project Management

Software Engineering
- Google UX Design
- IBM Software Engineering for Web Developers
- Javascript Essentials
- MERN Stack
- Python Essentials
- ServiceNow Certified Application Developer
- Web Design Essentials
- Web Development

Significant features of Career Accelerator include:

Short-Term Industry-Aligned Courses
Per Scholas tailors Career Accelerator courses to align with current employer needs, focusing on specialized skills that are in high demand. Courses as of September 2025 covered AI, cybersecurity, data center, cloud, and many other cutting-edge skills. As much as possible, Career Accelerator offerings also provide the opportunity to earn third-party, stackable credentials from CompTIA, IBM, Google, Microsoft, ServiceNow, and other professional certification providers. Per Scholas pays the costs for certification exams.

Flexible Access and Delivery
Per Scholas designed Career Accelerator to afford maximum access and flexible delivery. Career Accelerators can choose remote instructor-led formats during evenings and weekends, or opt for asynchronous learning. Per Scholas graduates can even access selected asynchronous course titles from other providers like Coursera, and Per Scholas will pay the cost. This flexibility makes it possible for more learners to engage in upskilling without compromising their employment or other commitments. Please note that this report addresses outcomes from instructor-led upskilling; a future analysis will include asynchronous course outcomes.

Alumni Access With Future Expansion
As of this report, Career Accelerator is available to alumni of Per Scholas' initial immersive tech training courses, However, the organization designed Career Accelerator with an eye toward expansion. In particular, Career Accelerator can now accommodate upskilling for incumbent workers for major employers: an urgent and growing need in the age of AI.

Utilization
All told, as of September 2025, Per Scholas had enrolled 4,458 unique Career Accelerators since the beginning of 2021. They were responsible for an average of 1.5 course starts apiece.

Study Design and Methodology

In early 2025, Per Scholas' internal Research and Evaluation team, led by Angelica Thompson, PhD, set out to learn more about Career Accelerator's outcomes and impacts. The team retained Shelby Roberts, PhD, an expert in impact measurement, to work on the new study, and Dr. Maggie Schultz contributed to analysis. Their primary aim was to evaluate whether and how Career Accelerator helps power the career trajectories of its participants, as measured by earnings gains. But the researchers also wanted to learn more about who uses Career Accelerator, as well as develop findings that were controlled for possible confounding variables.

The study addressed three research questions:

1) What Are Wage Gains Post-Upskillings?
By examining the financial outcomes for participants, researchers hoped to quantify Career Accelerator's immediate outcomes, with an intensive focus on wages after upskilling.

2) How Do Upskillers Compare to Peers Who Did Not Participate?
The study additionally compared the earnings trajectories of Career Accelerators who completed instructor-led courses with the experiences of alumni who never engaged in the program, providing insights into the added value and competitive advantages that upskillers can gain through Career Accelerator.

3) Who Enrolls in Career Accelerator?
The researchers hoped to learn more about the learner characteristics of Career Accelerators in relation to Per Scholas's larger alumni population.

Dataset and Statistical Analysis

Researchers compiled a dataset comprising the training and work histories of more than 17,000 Per Scholas alumni from multiple courses and training cohorts. The sheer size of the dataset ensured that the analysis could provide comprehensive insights into participant experiences and outcomes.

The researchers gathered wage data for alumni in the dataset at multiple time points, both after immersive training and post-upskilling, for those who participated in Career Accelerator. The longitudinal nature of the data allowed for an examination of both immediate and sustained upskilling impacts.

Finally, the Per Scholas researchers employed several statistical methods to analyze the data, including logistic regression, repeated measures Analysis of Covariance (ANCOVA), and bootstrapped multiple linear regression. These techniques provided a nuanced understanding of the factors influencing upskilling outcomes, while adjusting for potential confounders such as race, age, gender, education level, certification status, and timing of wage updates.

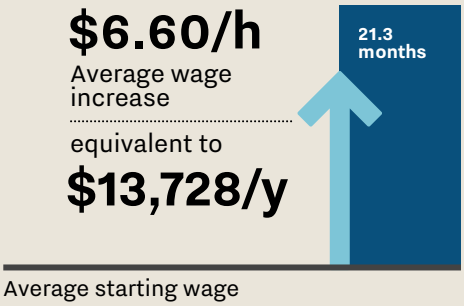
Wage Gains From Upskilling

The Per Scholas study revealed significant wage gains for alumni who participated in Career Accelerator. As noted earlier, this report focuses on outcomes for instructor-led participants; a future report will address findings concerning asynchronous cohorts.

Overall Wage Gains

Per Scholas Alumni who completed at least one instructor-led Career Accelerator upskilling course experienced an average wage increase of $6.60/hour in comparison with the average starting wage. Further, the average time to achieve this increase was 21.3 months. For a full-time worker, this gain translates to $13,728/year. This substantial increase underscores the program's effectiveness in elevating participants' earnings and enhancing their economic mobility.

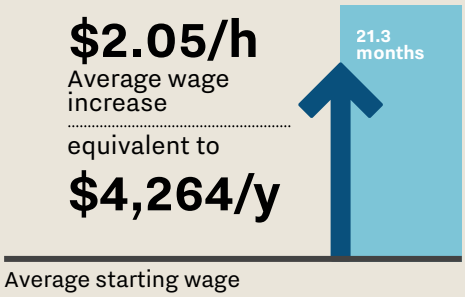
Overall Wage Gains

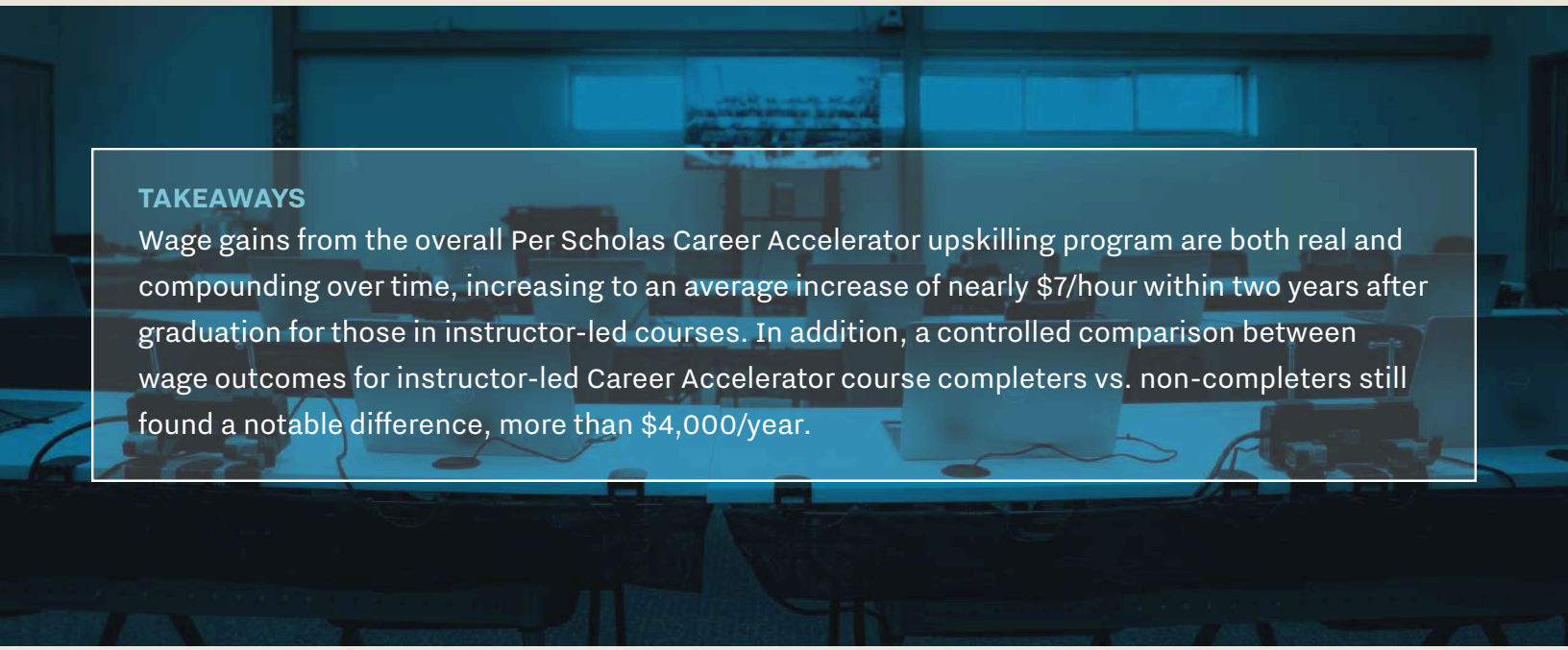


Controlled Analysis Wage Gains

After controlling for learner and program characteristics, the researchers found a significant wage difference between these two groups: $2.05 more per hour for Career Accelerator instructor-led course completers versus non-completers. For a full-time worker, this difference translates to an additional $4,264 annually.

Controlled Analysis Wage Gains





TAKEAWAYS

Wage gains from the overall Per Scholas Career Accelerator upskilling program are both real and compounding over time, increasing to an average increase of nearly $7/hour within two years after graduation for those in instructor-led courses. In addition, a controlled comparison between wage outcomes for instructor-led Career Accelerator course completers vs. non-completers still found a notable difference, more than $4,000/year.

Upskilling Timing, Format, and Learner Characteristics

The Career Accelerator study offered additional valuable insights into the timing of Career Accelerator application by Per Scholas graduates and the format of courses (instructor-led vs. asynchronous) that appeared to be preferred within various demographic groups.

Timing of Career Accelerator Enrollment

95% of upskilling participants enrolled within three years of completing their initial immersive training at Per Scholas, with the average enrollment occurring just over one year after completion. The one-year delay likely reflects that most graduates' immediate priority is to attain their first jobs.

Learner Demographics and Course Format Preferences

Researchers found that the demographics of Career Accelerator participants in instructor-led courses differed from those of all Per Scholas graduates in the research sample, including a large majority who had never enrolled in Career Accelerator. The table on the following page illustrates the principal differences. Among all the graduates included in the sample, women were more likely to apply to participate in instructor-led upskilling than men, as were those who did not earn at least one exam-based certification, had earned a Bachelor's degree, were 35 or older, or were employed. As for course format preferences, women; those who had not yet earned at least one exam-based certification; those whose highest educational attainment was high school, along with those who had a Bachelors degree or higher; and those who were not Black or Hispanic all tended to enroll in instructor-led upskilling in proportions that were higher than in the sample, although in some cases the degree of preference was small. Women, those whose highest educational attainment was high school, those who were older than 35, and those who were not Black or Hispanic were more likely to enroll in instructor-led courses. By contrast, men, those who had already earned an exam-based certification, those who were under 35, those who were Black or Hispanic, and those who were employed did not participate in instructor-led upskilling in proportion to their representation in the entire research sample.



Figure 3:

Learner Demographics and Format Choices

Demographic category	% of total research sample (including non-participants in Career Accelerator)	% of Career Accelerator learners in instructor-led courses
Men	64.5%	60.4%
Women	35.5%	50.5%
Earned at least one exam-based certification	50.5%	38.6%
Did not earn at least one exam-based certification	49.5%	66.5%
High school education only	49.6%	60.0%
Bachelors or higher	36.9%	51.7%
Under 35	66.0%	58.0%
35 and older	34.0%	52.0%
Black or Hispanic	62.9%	58.5%
Not Black or Hispanic	37.1%	52.0%
Employed	69.3%	58.9%

Lower % than in total research sample Higher % than in total research sample (or equal)

TAKEAWAYS

The average Career Accelerator enrollment occurred approximately one year after completing an initial immersive training. The demographics of all the Per Scholas graduates in the study sample differed in significant ways from the demographics of instructor-led upskilling participants. Understanding these differences can help providers better target and implement upskilling initiatives.

From Layoff to Mentor: Kenetra's Tech Transformation

When Kenetra Woods lost her job, she had just purchased her first home and became deeply worried about her future. She had always been curious about tech roles but didn't know much about them. "I thought IT was just fixing computers," she said. But after deciding to attend Per Scholas Indianapolis, Kenetra's training opened her eyes, making clear that many skills she had used in her former job were transferable.

Even so, the pace was demanding and the content unfamiliar. But Kenetra kept up: "Learning about time management was huge for me," she said. "I had to learn how to show up every day, stay focused, and believe I belonged."

After graduating, Kenetra landed her first tech job at a payment processing provider for credit unions. The work was intimidating at first. But Kenetra applied for upskilling through Career Accelerator, and quickly gained new traction. She earned both her ITIL 4 Foundation and CompTIA Security+ certifications through the program – credentials that deepened her understanding of systems, governance, and cybersecurity. Just as important, she received continued coaching and support that helped her grow into a more confident, capable professional. "They didn't have to do that. But they did," she said of the continued support from Per Scholas.

Today, Kenetra is a System Administrator, earning 20 percent more than she did in her first tech role. She's thriving in a job she never imagined was for her – and giving back by mentoring current Per Scholas learners. "I never thought of myself as a mentor," she confided recently. But now, she helps others navigate the very path she once found so daunting.



From left to right
TOMMY ARVO
Technical Instructor, Per Scholas Indianapolis
KENETRA WOODS, PER SCHOLAS ALUMNA
System Administrator Associate at Indiana Office of Technology
THERON WILSON
Managing Director, Per Scholas Indianapolis

Recommendations for Employers, Funders, and Policymakers

To maximize the impact of upskilling initiatives, stakeholders should consider the following recommendations:

Funders and policymakers should prioritize investment in instructor-led upskilling that targets working adults.

Instructor-led courses demonstrated strong outcomes for participants. By investing in structured learning formats, employers and funders can be better assured of efficacy and a sound return on investment. This may be an especially potent recommendation in light of widespread AI upskilling needs for incumbent workers today.

Employers should build internal mobility strategies for their employees that emphasize upskilling, preferably instructor-led.

Many employers can retain, develop, and advance existing employees through upskilling more cheaply than by hiring new workers. Further, while asynchronous upskilling options are less expensive than instructor-led options, the strong wage gains that occurred for Career Accelerators in instructor-led classes suggests that this investment is worthwhile.

Support long-term outcomes tracking, including wage status and job advancement.

Continuous tracking of participants' wage gains and career progression can provide valuable insights into the effectiveness of upskilling programs. It can also help inform program improvements and demonstrate the return on investment for stakeholders.

Invest in innovation and rapid adaptation, including agile curriculum development tied to real-time labor market changes.

Tech jobs are evolving rapidly, necessitating continuous updates to training curricula. By investing in agile development, stakeholders can ensure that upskilling offerings remain relevant and aligned with current labor market demands.

Implementing these recommendations can likely enhance the effectiveness of upskilling initiatives and promote sustainable career advancement for early career tech workers, not to mention those in other fields. Moreover, by fostering an environment that prioritizes continuous learning and adaptability, organizations can better equip and inspire all of their people to succeed.

PER SCHOLAS

development@perscholas.org

