



Improving Tech Apprenticeship Retention Outcomes for Small and Medium Businesses

Shruti Nayak and Leslee Haisma

April 2026

Rapidly evolving technology requires skilled workers who can keep up with industry demands. Weathering continued advancements in AI capabilities, machine learning, and cloud computing, the IT sector is an industry in flux, and some companies are laying off thousands of employees in response. Overall, however, tech employment is projected to grow as much as twice the rate of overall employment in the next decade and face a retention problem (CompTIA 2025).

Tech companies regularly see high turnover rates caused by employees switching jobs for higher pay and better conditions. Challenges with diversity and inclusion also affect the IT industry, with women and underrepresented populations confronting discrimination in the workplace and hurdles in pursuing leadership positions.¹ Companies sustaining a supportive, inclusive work environment can foster positive retention outcomes for all tech workers. Small and medium businesses (SMBs), with their modest staff sizes and emphasis on relationship building, are uniquely positioned to provide employees with personalized ongoing support to instill a positive sense of belonging. Registered apprenticeships are one model SMBs can use to grow and sustain a diverse talent pipeline while cultivating a workforce that meets the IT industry's transforming needs.

Since 2023, the Urban Institute has worked alongside Apprenticeship NC² and Apprenticeship Carolina³ through the Small and Medium Business Tech Apprenticeship Project.⁴ This partnership has supported SMBs in building and expanding tech apprenticeship programs to fill their talent needs. Through this work, Urban has guided 15 SMB employers to launch and expand apprenticeship programs, thereby connecting 258 individuals to tech careers.

This brief examines tech workforce and apprenticeship data and incorporates insights from SMB Tech Apprenticeship Project participants to highlight how strong retention practices can improve

diversity and sustain a strong talent pipeline in the tech sector. To foster positive retention outcomes, we recommend four key strategies: (1) provide apprentices with higher compensation when and where possible, (2) foster a sense of belonging and inclusion in the workplace, (3) accommodate flexibility in programming and scheduling, and (4) leverage SMB resources to enhance core elements of the apprenticeship.

The Need for Apprenticeships in IT

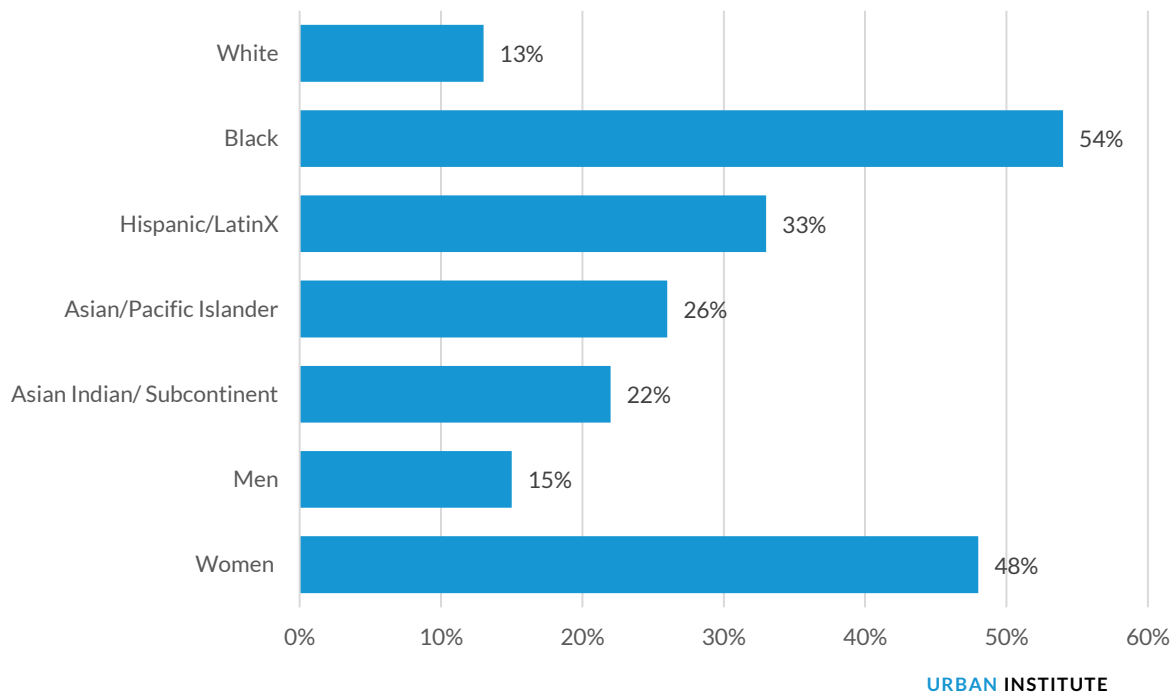
The IT sector is one of the fastest growing sectors in the US. There are estimated to be 585,000 software and IT service companies in the US alone in 2024, with tech jobs representing 6 percent of the overall US workforce.⁵ About 317,700 openings are expected each year over the next decade. Fast-growing IT occupations include data scientists, information security analysts, and computer and information scientists.⁶

Despite a surge in IT layoffs in 2025, the need for a strong tech labor force remains, with 51 percent of technology workers estimated to be employed by companies not based in the tech sector.⁷ Tech roles are expanding into numerous sectors, such as health care, manufacturing, and finance. Continued growth of the IT labor workforce prompts consideration for those who make up that workforce and how they are retained over time. The tech sector, compared with other industries, suffers from a high turnover rate. According to LinkedIn data from 2021 to 2022, “tech and media” possessed the second-highest turnover rate across all industries, at 12.9 percent.⁸ Factors such as a high-stress work environment, minimal opportunity for career advancement, and toxic workplace culture can affect the tech industry’s ability to retain its workers.⁹

With continued reliance on technology across industries, efforts to build a strong tech workforce require recruiting and retaining skilled employees. The IT labor market is predominantly comprised of white male workers. In 2024, only 27 percent of the tech workforce was female, though women made up 49 percent of the labor market. Black and Hispanic/Latino individuals each constituted 8 percent of the tech workforce versus 12 percent and 17 percent of the total labor workforce, respectively (CompTIA 2024). Racial, ethnic, and gender gaps in the IT workforce can, in part, be attributed to a lack of intentional recruitment practices from tech employers.¹⁰ These gaps can also be explained by systemic inequities, including persistent wage gaps and industry culture.¹¹

According to one report from the Equal Employment Opportunity Commission (2024), discrimination charges in the tech sector are more likely based on age, pay, and genetic information than those filed in other sectors. Figure 1 depicts people of color and women experiencing higher rates of discrimination in the tech field, with Black and women tech workers encountering especially high degrees of discrimination.

FIGURE 1

Tech Workers Experiencing Discrimination, by Race, Ethnicity, and Gender, 2023

Source: “Discrimination in Tech,” in *Equality In Tech 2023 Report*, Dice, December 2022,

<https://www.dice.com/recruiting/ebooks/equality-in-tech-report-recruiter/discrimination-in-tech.html>.

Note: Data from online survey of registered Dice job seekers and site visitors.

Retention for populations traditionally underrepresented in the tech sector presents further challenges. Women are underrepresented, especially in senior-level roles. One study finds that women in science, technology, engineering, and mathematics are much more likely to leave the field than women in other professional fields (Glass et al. 2013). Women are also more likely to be laid off than men because women hold positions of less seniority.¹² Similarly, though comprehensive data on retention rates by race and ethnicity are limited for the tech industry, some studies indicate that employees of color might suffer poorer retention rates. According to one survey of Amazon Web Services workers, 47 percent of Black technology professionals “strongly agree” that they must switch jobs more regularly for career growth, compared with just 28 percent of non-Black respondents.¹³ Another survey finds that Black tech workers change jobs every 3.5 years, more frequently than 5.1 years for non-Black workers.¹⁴

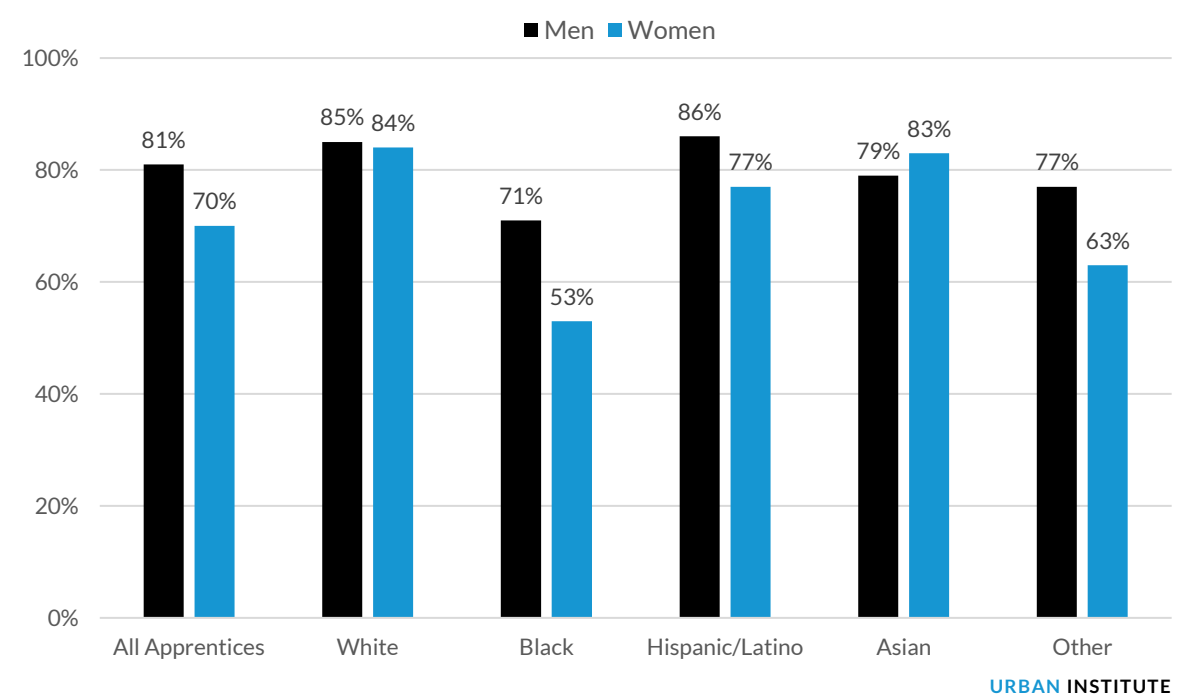
Workforce Retention of IT Apprentices

Apprenticeships, an “earn and learn” workforce pathway, can help mitigate retention barriers that arise in the tech field. By offering nontraditional pathways to quality jobs, apprenticeships are a tool for employers to train and hire diverse populations historically excluded from tech’s reliance on traditional university-driven pathways.¹⁵ The support apprenticeship programs afford—nurturing apprentices

through mentorship, offering flexibility to accommodate various work styles, and providing supportive services such as equipment stipends, transportation, and child care—can help foster better outcomes for apprentices (Hess et al. 2016). Provision of these elements can uplift apprentices from diverse backgrounds and experiences and sustain their participation.

The retention gaps that affect the IT industry also exist in tech apprenticeships, with lower retention for women and Black apprentices (figure 2). According to Urban Institute analysis of Department of Labor data, 77 percent of tech apprentices either completed their apprenticeships or retained apprenticeship participation with their sponsoring companies in 2024, compared with 84 percent of apprentices overall.¹⁶ For apprentices who do successfully complete their programs, employer retention outcomes are positive, with 92 percent of apprentices remaining with their sponsors upon program completion.¹⁷

FIGURE 2
Tech Apprentices Who Completed Apprenticeships or Retained Apprenticeship Participation with Their Sponsoring Companies, by Race, Ethnicity, and Gender, 2024



Source: Urban Institute analysis of Registered Apprenticeship Partners Information Database System, US Department of Labor, 2024, <https://www.apprenticeship.gov/data-and-statistics>.

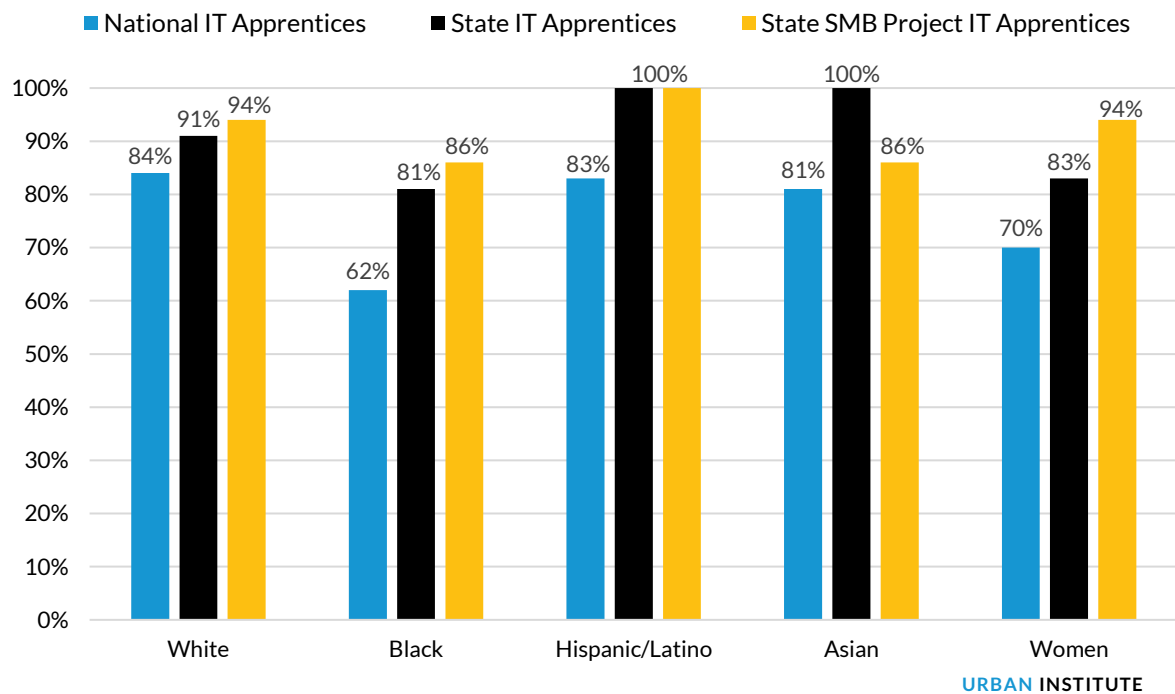
Note: Tech apprentices are defined as apprentices whose occupations were aligned with the Bureau of Labor Statistics standard occupational classifications 15-1, 15-2050, and 15-2051.

State and SMB Tech Apprenticeship Project Data

With a focus on providing apprentices support, the SMB Tech Apprenticeship Project has succeeded in fostering positive retention outcomes, especially for women and Hispanic/Latino apprentices. Figures 3 and 4 compare racial and gender demographics for tech apprentices in the nation, North Carolina, South Carolina, and each state’s SMB tech apprenticeship project specifically. The project-level analysis includes 155 IT apprentices supported by SMBs in North Carolina and 79 IT apprentices supported by SMBs in South Carolina. For these comparisons, state- and programmatic-level apprentice observations are small sample sizes, which can allow individual observations to skew the percentages depicted below.

In North Carolina, the SMB project apprentices across most groups had higher retention rates than tech apprentices in national and state programs (figure 3). Notably, Black and women apprentices in IT had especially high retention rates. Black apprentices supported by SMBs had a 14 percent higher retention rate than Black apprentices nationally, and female apprentices supported by SMBs had a 24 percent higher retention rate compared with female apprentices nationally.

FIGURE 3
North Carolina IT Apprentices Who Completed Apprenticeships or Retained Apprenticeship Participation with Their Sponsoring Companies, by Race, Ethnicity, and Gender, 2024



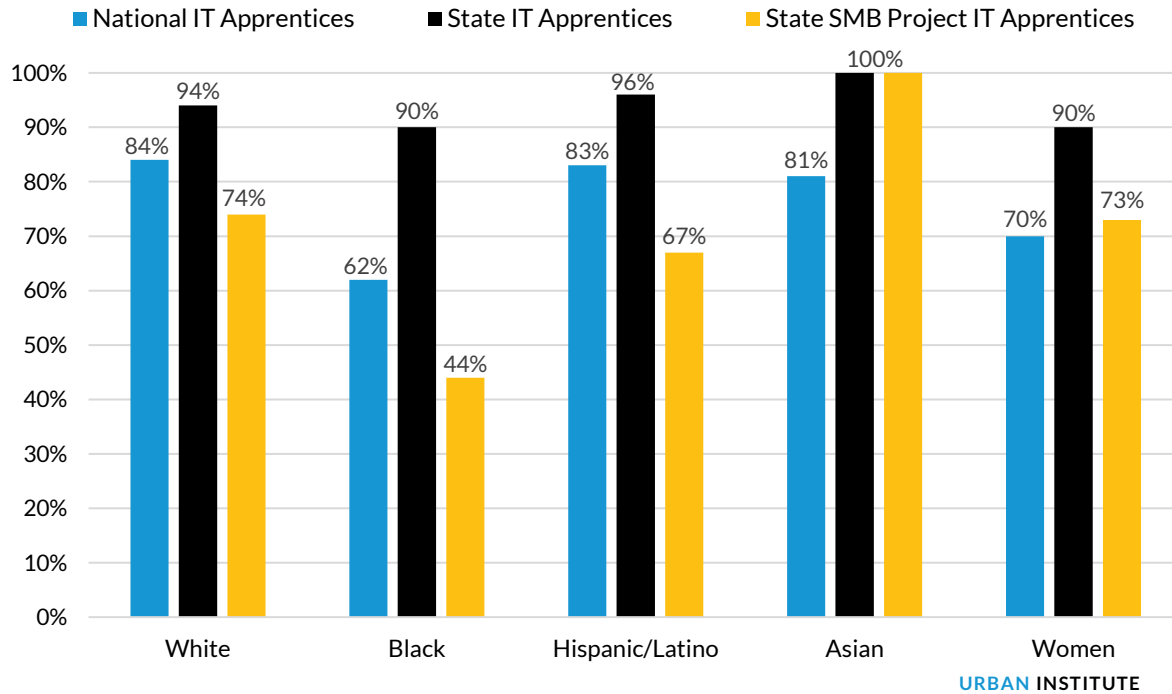
Source: Authors’ analysis of Registered Apprenticeship Partners Information Database System, US Department of Labor, 2024, and US Census Bureau data, 2024.

Notes: SMB Project = Small and Medium Business Tech Apprenticeship Project. Analysis excludes apprentices who did not report on gender, race, and ethnicity indicators.

In South Carolina, women apprentices were retained at a slightly higher rate in the SMB project compared with the national retention rate (figure 4). Notably, Black and Hispanic/Latino apprentices in the SMB project in South Carolina did not experience strong retention rates. Retention of Hispanic/Latino apprentices was more than 30 percent less than the state's retention rate, while Black apprentices were retained at half the rate at the project level as compared to the state level. Two programs accounted for all the Black and Hispanic/Latino apprentice cancellations in the state. The first program was cancelled by the registration agency in April 2025 and predominantly served Black apprentices. Five Black apprentices exited prior to program cancellation and the remaining nine, along with the only two Hispanic/Latino cancellations in the SMB project, were forced to exit when the program was cancelled. The second program accounted for the other five Black apprentices in the SMB project in South Carolina who left their apprenticeship prior to completion. That program hires active-duty military who participate through a transition program and may leave for permanent employment before formal program completion. Of the five who left this program, at least three indicated the reason for their departure was to pursue other employment opportunities. Half of the project-level participants in this program were Black, and the retention rate for the 10 white, non-Hispanic apprentices was 50 percent—notably lower than the program's retention rate of 67 percent for Black apprentices.

At the project level, the majority of apprentices in the two South Carolina programs with low retention were Black. All other programs across both North Carolina and South Carolina, including programs that both served predominantly apprentices of color and programs that did not, experienced better retention outcomes. Three programs that served predominantly white apprentices had high retention rates, including two that had a 100 percent retention rate. Another program that served predominantly apprentices of color in North Carolina and made notable efforts to foster inclusion and combat imposter syndrome in the workplace experienced a 93 percent retention rate. The low retention rates for the two South Carolina programs then raise considerations about program quality and design and how program quality may impact retention for programs that predominately serve apprentices of color. The remaining 17 Black apprentices and four Hispanic/Latino apprentices at the project level in South Carolina SMB programs, except for one suspended Black apprentice, have completed their programs or are still on track for completion.

FIGURE 4
South Carolina IT Apprentices Who Completed Apprenticeships or Retained Apprenticeship Participation with Their Sponsoring Companies, by Race, Ethnicity, and Gender, 2024



Source: Authors' analysis of Registered Apprenticeship Partners Information Database System, US Department of Labor, 2024, and US Census Bureau data, 2024.

Notes: SMB Project = Small and Medium Business Tech Apprenticeship Project. Analysis excludes apprentices who did not report on gender, race, and ethnicity indicators.

These figures reveal somewhat different stories for the Carolinas, with programs in North Carolina successfully retaining over 85 percent of apprentices across all demographic groups, while SMBs in South Carolina had a more difficult time retaining apprentices across most groups due to large cancellation numbers from two programs. In an exit survey of 35 apprentices who successfully participated in the SMB apprenticeship program, we found that only 17 percent encountered challenges with their apprenticeships. Half of these apprentices were people of color and one-quarter were women. Further, only 11 percent of apprentices surveyed said that they considered leaving the program at any point during their apprenticeships.

Potential Barriers to Retaining Apprentices at SMBs

Through the SMB tech apprenticeship project, apprentices and sponsors spoke about how elements of small and medium businesses interplayed with various aspects of the apprenticeship model. To better understand retention for apprentices, in addition to the exit survey, we interviewed 12 program sponsors and 25 apprentices in North and South Carolina who participated in the Small and Medium

Business Tech Apprenticeship Project to learn from both perspectives about challenges to retention and successful strategies. Below, we share their insights.

Compensation

Compensation arose as a common potential factor in motivating apprentices to leave their programs. Apprenticeships offer a lower wage at entry but include progressive wage increases as apprentices gain skills and experience. The national average starting wage for tech apprentices is \$21.41.¹⁸ Even with pay increasing throughout the program, many apprentices experienced difficulty sustaining themselves on apprenticeship pay alone.

Available data from the SMB Tech Apprenticeship Project shows that apprentices earned an average starting wage of \$15. Several took part-time jobs in addition to their apprenticeships to support themselves and their families. One shared they thought about leaving the apprenticeship until they got a second job because the income was insufficient to support their family. Other apprentices attributed financial circumstances, such as income from their partners, disability benefits, and living in low-cost areas or with roommates, to their ability to stay in the apprenticeship despite low compensation.

Both apprentices and sponsors noted that some apprentices left for full-time positions that paid more than the apprenticeship. Even with progressive wage increases, apprentices in the SMB Tech Apprenticeship project earned an average exit wage of \$22.00, compared with an average exit wage of \$26.28 nationally. This indicates that SMBs may offer less competitive wages relative to the overall market, which may incentivize apprentices to jump to larger, better-paying competitors once they have acquired the necessary skills.

Satisfaction with compensation varied across apprentices. Some were fully content with their apprenticeship wages. Others reasoned that, while they would like more pay, the trade-off of learning on the job made lower wages worth it. In contrast, some apprentices felt underpaid for their work, noting that they were being paid half of what non-apprentice employees doing the same work were paid. In an exit survey of apprentices who successfully completed their programs with SMBs, 11 percent voiced that they would have desired higher pay, if possible.

Sponsors echoed apprentices' sentiments about pay, expressing a desire to provide higher wages. One sponsor estimated that over 95 percent of apprentices who do not complete the program leave because of better compensation from a different employer or financial concerns. Though many sponsors we spoke with want to offer better salaries, limited funding stifles their ability to pay higher apprentice wages.

"I knew it wasn't super lucrative, but I knew the point of apprenticeship is to get your foot in the door, so it served that purpose."

—Apprentice, Small and Medium Business Tech Apprenticeship Project

Sense of Belonging

Apprenticeships have the potential to strengthen diversity in the tech workforce, but this requires building an intentional company culture in which women and people of color can succeed. Apprenticeship programs can respond by fostering a climate of inclusion to acknowledge and address systemic inequities and how these inequities may affect apprentices' ability to move through the program.¹⁹ By adopting strategies to address retention and completion gaps within tech apprenticeship programs, employers can cultivate a loyal, skills-oriented workforce to meet their technical needs.

Program Demographics

Many apprentices we spoke with felt a sense of belonging at their SMBs, noting a wide variation in their cohort demographics, including age, educational background, race, and ethnicity. Most apprentices recounted positive experiences with belonging, but some experienced challenges navigating professional dynamics in certain spaces: "I also struggled with not seeing a lot of people who looked like me ... Not a lot of Black people ... Learning how to navigate that in an environment you want to contribute to positively is a challenge sometimes." Sponsors shared that their businesses often aim to recruit populations that reflect the demographics of their geographic area. While this can have a positive outcome in inherently diverse cities, companies based in predominantly white or rural areas can struggle with recruiting diverse talent. Racial makeup of an area and a lack of public transportation can be barriers for potential apprentices.

Even when cohorts possessed strong demographic diversity, some apprentices felt that this did not necessarily extend to leadership positions within their organizations. As previously mentioned, both women and people of color are underrepresented in leadership positions in the tech labor force. Apprentices who observed this dynamic felt wary, fearing it could signal that advancing opportunities for women and people of color was not a priority for the company.

Imposter Syndrome

Feelings of imposter syndrome emerged across most of the focus groups. Imposter syndrome in the tech industry is a common phenomenon. According to one survey, 58 percent of tech workers experience imposter syndrome.²⁰ For those entering the IT industry, imposter syndrome can develop from factors such as identity, amount of experience and knowledge, and career stage. Ever-evolving technology can create persistent anxiety about being underqualified, especially for those entering the industry with little to no experience.²¹ Although apprenticeships are structured for individuals to enter an occupation without prior experience, the pressure of learning an IT job from the ground up led some SMB project apprentices to question whether an apprenticeship was the correct career pathway. Even two and a half years into the apprenticeship, one program participant still confronts these feelings: "If you don't have [imposter syndrome] it means you think you know everything and that you're not willing to learn something new."

Insights from sponsors also confirm that signs of imposter syndrome are discussed in their cohorts. One sponsor could not recall any individuals who considered leaving their company recently but did note prior apprentices who voiced apprehensions and self-doubt about being on the right path. Another

sponsor also highlighted imposter syndrome as a common challenge, with apprentices questioning whether they knew enough and were qualified to be in the program.

Program Structure

Some apprentices attributed the rigid structure of an apprenticeship to retention challenges. Specifically, those within time-based programs struggled with the idea of being locked into an apprenticeship for multiple years, regardless of how quickly they mastered the skills outlined in program standards.²² Time-based apprenticeships allow sponsors to determine the number of hours for the apprenticeship and then allocate hours to each learning objective (Gardiner 2023), meaning apprentices must spend the allocated number of hours on each skill to complete the apprenticeship. This structure does not account for apprentices with prior experience or those who obtain skills more quickly or more slowly than the designated allocation.

Another apprentice expressed frustration with their program's predetermined timetable, which was tied to their progressive wage increase: "You couldn't argue that you're doing something outside of work to advance faster... [I] got told at every evaluation that I was going above and beyond, but it didn't really mean anything." The rigid structure of time-based apprenticeship models caused some apprentices to feel stifled in the advancement of their professional careers, prompting them to consider leaving for alternative employment. Although there has been a push for competency-based apprenticeships in tech, many approved programs remain time based.²³

While most apprentices spoke of positive training experiences, some attested to the lack of structured training on apprenticeship fundamentals within the company. Apprentices expressed a lack of knowledge in the broader organization about apprenticeship, feeling that some project supervisors were unsure of what to do with apprentices. Small staff sizes mean SMBs may be less likely to have a training director or other staff designated for talent development, which can contribute to the lack of broader organizational awareness. This led to some apprentices getting assigned tasks beyond their training and others being looked over. One apprentice also expressed a desire for clearer learning objectives and weekly goals to facilitate better understanding of the skills they should be developing and how to measure their progress.

Life Circumstances

Apprentices shared that personal life circumstances sometimes interfered with their ability to finish an apprenticeship. Circumstances can include familial caretaking obligations, physical and mental health concerns, or other unexpected events. Most apprentices we spoke with were able to navigate external life challenges while managing their apprenticeship responsibilities, but factors such as time, flexibility, and capacity can influence whether an apprentice is able to continue their program when personal challenges arise.

Recommendations to Promote Apprentice Retention and Completion at SMBs

Both apprentices and sponsors highlighted how core programmatic aspects of tech apprenticeship within an SMB, such as flexibility, mentorship, and support, influence experience and contribute to positive retention outcomes.

Program Design

In 2025, more than one in five US-based employees worked remotely, with the tech sector leading in remote work.²⁴ Tech apprenticeships mirror the tech industry in their remote nature and are inherently flexible because tasks can be performed online. Many apprentices we spoke with shared that their tech apprenticeships are mostly remote, with the exception of a few hybrid models in which in-person work is required two or three times per week. For remote apprenticeships, some sponsors require a standard nine-to-five workday, but others allow flexible hours with “core hours” to accommodate life responsibilities such as tending to aging family members or picking up kids from school. By offering flexibility in work hours, companies can retain apprentices who otherwise would not be able to complete training because of conflicting priorities.

“For me, being a mom and having a full-time job that’s remote is the perfect option. I can combine all those things and have time for picking up my kids from school. That’s perfect for me.”

—Apprentice, Small and Medium Business Tech Apprenticeship Project

The flexibility of remote work not only allows apprentices to handle caretaking responsibilities, it is also vital to the retention of apprentices who pursue additional work for supplemental income. One sponsor noted that their small company is advantageous in its ability to build strong relationships, meaning the company is aware of each apprentice’s personal situation and need for flexibility as they progress through the program. That sponsor requires apprentices to work 40 hours a week, and aside from required meetings, the apprentices can set their own work schedule. This flexibility broadens participation and increases retention with those who would otherwise not be able to afford to participate in an apprenticeship. Program flexibility at SMBs appeared especially beneficial for retaining women who have child care responsibilities and apprentices from lower socioeconomic backgrounds.

In addition to offering a flexible base schedule, sponsors can adapt an apprenticeship program to accommodate breaks under special circumstances. SMBs are often aware of apprentices’ life

circumstances thanks to the intimate nature of working with a smaller team. One apprentice benefitted from the option to pause the apprenticeship and return when they were ready: “There was a time when I wasn’t able to keep up with the program, so I needed a break, and [the program] was very supportive. I know people who tried to break for a couple of months, and they were very supported.”

Recommendations for Program Design

- ***Accommodate flexible scheduling.*** SMBs have the advantage of cultivating strong relationships among staff. The close relationships between supervisors and apprentices within SMBs promote awareness of apprentice needs and accommodations to address those needs. Several apprentices we spoke with credited flexibility with their ability to complete the program. With the average tech apprentice in their early 30s, apprentices juggle responsibilities including child care, caretaking for relatives, or supplemental employment. By providing apprentices autonomy to set their working hours and operate in remote or hybrid settings, the fluidity of the tech apprenticeship structure can help sponsors with retention.
- ***Provide higher compensation where possible.*** Both apprentices and sponsors identified compensation as a prominent retention barrier. Apprentices may struggle to meet financial obligations under an apprentice salary, and funding may be tighter for SMBs than for larger businesses. Where possible, we recommend that employers offer competitive salaries to retain apprentice talent. Higher compensation may be especially vital for retention in the tech industry, where apprentices can jump to other opportunities upon acquiring specific skills, even before completing their apprenticeships.
- ***Design programs based on competency.*** Apprentices recommend competency-based apprenticeships to allow apprentices to progress at their own pace. Competency-based programs account for an apprentice’s learning needs, with some apprentices requiring more time to learn specific tasks, while others progress at a quicker rate. These programs provide more personalized flexibility for apprentices than time-based programs
- ***Offer transparency and clear guidelines.*** Some apprentices struggled with unclear programmatic practices and guidelines. Apprentices articulated that sponsors should provide clearly written guidelines and communication, including information such as the timeline for the apprenticeship, learning objectives and milestones, and transparency about pay and other expectations.
- ***Retain a cohort model.*** One apprentice expressed a preference for the cohort model as opposed to each apprentice undergoing the program alone. Another credited the community as the apprenticeship’s most important aspect, providing motivation for completing the curriculum. With the prevalence of imposter syndrome in the tech industry, peer support provided through the cohort model can provide community and a sense of belonging among apprentices.

Mentorships

A mentor who has lived experience and can provide advice and guidance makes apprentices feel more supported and more likely to persist through the apprenticeship. Smaller work environments empower SMBs to be more intentional with their mentorship programming and provide robust mentorship support. Program directors often know everyone within a smaller organization and can assign mentors to apprentices based on representation, personality, career interests, and so on. One South Carolina sponsor stated that they match apprentices based on the apprentices' demographics or career goals. For example, this sponsor strives to pair women with women because of the industry dynamics of the male-dominated tech field. In SMBs, apprentices often work directly with their mentors, allowing for more personalized attention. Several program sponsors interviewed developed mentorship programs in which apprentices have more than one mentor assigned to help guide them.

Mentorship is a key component that separates registered apprenticeship from other forms of training. Apprentices receive guidance throughout their programs on both technical and professional skills from a designated mentor or set of mentors. For many of the SMB programs interviewed, mentors were often alumni of apprenticeships themselves. Their experience gives insight into the occupation as well as the industry as a whole and helps apprentices navigate their day-to-day experiences. Mentors often cover a range of topics with their apprentices, such as technical project concerns and inquiries, workforce planning, responsibility mapping, and navigating workplace dynamics. Apprentices said speaking with a designated person alleviates much of the stress that comes with learning a new skill and decreases burnout.

I think I would've figured it out, but having that go-to person to discuss things was helpful. Those check-ins were helpful, even if it was just feeling supported. Just having or knowing that I'm still supported, that does play into it. Just, like, retention wise, that is the factor.

—Apprentice, Small and Medium Business Tech Apprenticeship Project

Recommendations for Mentorships

- **Instill a sense of belonging.** Tech apprenticeships offer many apprentices a career pivot into an unfamiliar field. This experience can be complicated by apprentices feeling underrepresented in the tech space because of their identity. With apprentices raising imposter syndrome as a common challenge, robust mentorship offerings and a forgiving learning culture can positively affect apprentices' experience. Most sponsors we spoke with highlighted mentorship as an integral component of their programs, and apprentices echoed the benefits of mentorship in navigating challenges, questions, and strategies. According to apprentices, their mentors and

supervisors cultivated a safe learning environment that fostered learning without punishing mistakes.

- ***Be intentional with mentor pairings.*** Mentorship also fostered belonging in the white male-dominated industry by bridging identity gaps, with one sponsor noting that they pair apprentices based on identity, such as pairing women apprentices with women mentors. Intentional mentor pairings can be especially empowering for women and people of color in tech companies. Apprentices value reliable guidance and encouragement from a trusted mentor who has navigated the industry from a similar background or position.
- ***Develop a frequent cadence to mentoring.*** SMBs have the advantage of working with a small team in which apprentices have several touch points with their mentors, often working alongside them on projects and meeting frequently.

Supportive Services

SMBs are often aware of barriers to success their apprentices face. Knowing each apprentice's unique situation, sponsors often offer a range of supportive services to assist apprentices. Most of the sponsors interviewed offered apprentices financial support in the form of tech stipends. These stipends help apprentices build their at-home offices and cover the cost of internet services to support remote work. Some sponsors provided additional stipends to cover the cost of any additional support apprentices may need, such as transportation, day care, and additional certifications. One apprentice used their support stipend to rent a vehicle for their hour-long commute on in-office days. These financial supportive services are helpful to apprentices who are often making lower hourly wages at the start of the program and need assistance.

SMBs may not have the capital to offer as much financial support as larger businesses, but they are often rooted in their communities and can leverage community connections to offer valuable wraparound services beyond financial support. In the aftermath of Hurricane Helene's landing in North Carolina in 2024, some apprentices dealt with mental health challenges. One sponsor was able to connect an apprentice to a mental health clinician through the program's support. Other apprentices expressed valuing the financial literacy courses, many of which were provided through community programming. New to the professional world, one apprentice shared, "I had no idea what a 401(k) was at all, or even the different types of Roth ... I had no idea, and they brought in people to do workshops and basically teach me about that ... and what's the smart way to invest."

Other sponsors were able to fully cover or offer a heavy discount for additional certifications. Apprentices noted that this support was vital to their ongoing professional development throughout the program and allowed them to seek additional certifications specific to their work and interests. In the tech field, an industry that recognizes credentials, additional certifications boost apprentices' qualifications, allowing them to expand their work into more fields and make them more marketable with additions to their resumes.²⁵ Additionally, for those whose lifestyles may not align with the pursuit of a traditional IT degree, such as working parents or those who cannot afford college, certifications can

provide a more accessible, cost-effective, and flexible pathway to gain job-ready expertise in the IT industry.

Recommendations for Supportive Services

- ***Provide more wraparound services.*** Employers expressed a desire to provide additional wraparound services if more funding were made available. One sponsor specifically said they would value funding to provide a safety net for apprentices who do not immediately gain employment after their apprenticeships. Availability of more resources at the registered apprenticeship systems level, SMBs said, would also be beneficial.
- ***Leverage community resources where possible.*** SMB sponsors were able to offer individualized supports for apprentices to set them up for success. SMBs can tap into community connections to provide wraparound services, such as mental health counseling and financial literacy courses. Although programmatic supports may vary by SMB, stakeholders often said that SMBs have the autonomy to tailor their support to meet apprentices' individual needs. This can be notably advantageous for apprentices from underrepresented backgrounds who might require supports that may be overlooked at larger organizations.

Industry-wide Talent Development

Many SMBs benefit from apprenticeships to build their own workforce, with some sponsors aiming to hire nearly all apprentices who complete their program. Other SMBs implement the hire-train-deploy structure, which uses apprenticeships to develop the overall IT workforce. More broadly, SMBs use apprentices as affordable talent to provide IT services for their clients and partner companies. In hire-train-deploy, apprentices receive concentrated, personalized mentorship and training during their programs and are then deployed to work with partner companies. Many tech companies require previous work experience even for entry-level positions, a requirement that SMBs often do not have. The hire-train-deploy model can provide needed experience and support entry into the field. The SMBs interviewed who follow this structure offer support to apprentices as they seek post-apprenticeship employment.

Some SMBs offer apprentices access to their professional networks. These opportunities connect apprentices to companies with IT needs and allow apprentices to develop a relationship and seek guidance on their job searches. Having insight into company needs allows apprentices to better market themselves for post-apprenticeship employment. Other SMBs weave personal development workshops into their apprenticeship programs. Career coaches and other professional staff assist apprentices in developing resumes and an online presence and preparing for interviews. One apprentice noted that applying for jobs can often feel like a full-time occupation, but having dedicated time to prepare during the paid apprenticeship is helpful: "That paid time is awesome; really helps get over the barriers that come with applying for a job in this market with a nontraditional background."

Recommendations for Talent Development

- **Create more partnerships with organizations.** Several apprentices recommended that sponsors expand partnerships with other organizations to provide more networking opportunities for post-program employment. Employer partnerships can expand job opportunities, assuring apprentices of strong employment prospects upon program completion and increasing their incentive to finish. This could prevent apprentices being unable to find work after program completion, as experienced by a few apprentices supported by the SMB project.
- **Offer opportunities to explore work and build skills.** Apprentices value the opportunity to explore different career interests through their apprenticeships. They recommend that programs maintain flexibility for apprentices to explore different pathways and pursue work that interests them. Apprentices also said they would value additional professional development allocated throughout the apprenticeship to build skills.

Conclusion

Programmatic data and apprentices' insights suggest that apprenticeships with SMBs can drive better retention outcomes for workers from diverse backgrounds. Specifically, in North Carolina, Black, Hispanic/Latino, and female tech apprentices exhibited high retention rates within their programs, relative to the national and state averages. Based on insights from apprentices and sponsors, drivers of high retention at the program design level included flexible scheduling, strong mentorship pairings, and a safe environment to learn and grow. SMBs enhance the provision of these elements, providing a relationship-centered approach to meet apprentices' specific needs. The organizational culture at SMBs allows for intentional mentor pairings, open discussions about imposter syndrome, and adaptability in apprentices' schedules to accommodate challenges that arise in their personal lives.

The apprenticeship model is a helpful tool as companies strive to develop a skilled tech workforce. For SMBs that choose this model, we find that apprenticeships can be even more beneficial when employers adopt best practices to improve retention and completion outcomes. By focusing on intentional elements to enhance program design, mentorship, supportive services, and talent development, apprenticeship programs can yield a more stable and loyal workforce than existing talent development pipelines in the tech industry.

Notes

- ¹ Jasmine Diaz, "Gender Discrimination Persists at Alarming Rates in Tech," Women Tech Network, November 4, 2025, <https://www.womentech.net/blog/gender-discrimination-persists-alarming-rates-in-tech>.
- ² Learn more about ApprenticeshipNC at <https://www.nccommunitycolleges.edu/businesses/apprenticeships>.
- ³ See <https://www.apprenticeshipcarolina.com> for more about Apprenticeship Carolina.
- ⁴ To learn more about Urban Institute's Small and Medium Business Tech Apprenticeship Project, see <https://www.urban.org/projects/small-and-medium-business-tech-apprenticeship-project>.

- ⁵ “Software and Information Technology Industry,” International Trade Administration, accessed December 14, 2025, <https://www.trade.gov/selectusa-software-and-information-technology-industry>.
- ⁶ “Fastest Growing Occupations,” US Bureau of Labor Statistics, August 28, 2025, <https://www.bls.gov/ooh/fastest-growing.htm>.
- ⁷ Andrea Hsu, “Have Tech Skills, Will Work. Why IT Jobs Remain Hot Despite Mass Layoffs,” NPR, April 28, 2023, <https://www.npr.org/2023/04/26/1170522239/tech-job-openings-mass-layoffs-workers-silicon-valley-google-meta-amazon>.
- ⁸ Greg Lewis and Joseph Soroñgon, “Industries with the Highest (and Lowest) Turnover Rates,” Talent Blog, LinkedIn, August 11, 2022, <https://www.linkedin.com/business/talent/blog/talent-strategy/industries-with-the-highest-turnover-rates>.
- ⁹ Jessica Kozak, “Cracking the Code: Fixing the Retention Problem in the Tech Industry,” HR Executive, January 6, 2025, <https://hrexecutive.com/cracking-the-code-fixing-the-retention-problem-in-the-tech-industry>.
- ¹⁰ Summer R. Jackson and James W. Riley, “Despite DEI Outcry, an Industry Has Grown to Diversify Tech Firms,” Harvard Business School, October 15, 2025, <https://www.hbs.edu/bigs/despite-dei-outcry-industry-has-grown-to-diversify-tech-firms>.
- ¹¹ “People of Color in Tech: Empowering Diversity,” Per Scholas, December 11, 2023, <https://perscholas.org/new/people-of-color-in-tech-empowering-diversity>.
- ¹² “Women In Tech Stats 2025,” WomenTech Network, accessed December 14, 2025, <https://www.womentech.net/women-in-tech-stats>.
- ¹³ “Diversity in Tech: How Diverse Is the Tech Industry in 2023?,” Tenth Revolution (blog), Jefferson Frank, accessed December 14, 2025, <https://www.jeffersonfrank.com/insights/diversity-in-tech>.
- ¹⁴ Ryan Golden, “Black Tech Workers See Shorter Tenures Than Their Peers, Report Says,” HRDrive, February 8, 2022, <https://www.hrdrive.com/news/black-tech-workers-experience-shorter-average-tenures-than-their-peers-report-says/618475>.
- ¹⁵ Fernando Hernandez-Lepe and John Marotta, “Three Ways to Improve Inclusion and Equity in Tech Through Apprenticeship,” Urban Wire (blog), Urban Institute, February 1, 2021, <https://www.urban.org/urban-wire/three-ways-improve-inclusion-and-equity-tech-through-apprenticeship>.
- ¹⁶ Registered Apprenticeship Partners Information Database System, US Department of Labor, 2024, <https://www.apprenticeship.gov/data-and-statistics>.
- ¹⁷ Apprenticeship USA, “Explore Apprenticeship,” accessed January 5, 2026, <https://www.apprenticeship.gov/employers/explore-apprenticeship>.
- ¹⁸ Urban Institute analysis of Registered Apprenticeship Partners Information Database System, US Department of Labor, 2024, <https://www.apprenticeship.gov/data-and-statistics>.
- ¹⁹ Jennifer Carlson and Maileen Hamto, “The Role of Apprenticeship in Advancing Diversity, Equity, Inclusion, and Accessibility,” Washington Technology Industry Association, February 2023, <https://www.washingtontechnology.org/the-role-of-apprenticeship-in-advancing-diversity-equity-inclusion-and-accessibility>.
- ²⁰ “58 Percent of Tech Workers Feel Like Impostors,” Blind Workplace Insights (blog), Blind, September 5, 2018, <https://www.teamblind.com/blog/58-percent-of-tech-workers-feel-like-impostors>.
- ²¹ “Mental Health and Imposter Syndrome in the Tech Industry,” Nordcloud, January 17, 2024, <https://www.nordcloud.com/blog/mental-health-tech-imposter-syndrome>.
- ²² Apprenticeships can be structured in three ways: time based, competency based, and hybrid. For time-based apprenticeships, progress is measured based on completing a minimum number of on-the-job hours. Competency-based apprenticeships are measured based on completion of skills or competencies. Hybrid apprenticeships combine the two approaches, requiring both a certain number of hours and demonstrated ability in skills or competencies. See Katie Carnevale, “What Do Time, Competency, and Hybrid Apprenticeships

Mean?,” WorkHands, March 18, 2025, <https://workhands.com/blog/what-do-time-competency-hybrid-apprenticeships-mean>.

²³ Carnevale, “Time, Competency, and Hybrid Apprenticeships.”

²⁴ “The State of Remote Work: 2025 Statistics,” Neat, May 13, 2025, <https://us.neat.no/resources/the-state-of-remote-work-2025-statistics>.

²⁵ “26 Technology Certifications That Can Boost Your Career and Salary in 2026,” Robert Half, October 15, 2025, <https://www.roberthalf.com/us/en/insights/career-development/which-it-certifications-are-most-valuable>.

References

CompTIA. 2024. [State of the Tech Workforce](#). Downers Grove, IL: CompTIA, Inc.

CompTIA. 2025. [State of the Tech Workforce](#). Downers Grove, IL: CompTIA, Inc.

EEOC (US Equal Employment Opportunity Commission). 2024. *High Tech, Low Inclusion: Diversity in the High-Tech Workforce and Sector from 2014–2022*. Washington, DC: EEOC.

Gardiner, Karen. 2023. “[Time-Based, Competency-Based, or Hybrid Programs?](#)” Washington, DC: Urban Institute.

Glass, Jennifer L., Sharon Sassler, Yael Levitte, and Katherine M. Micheltore. 2013. “[What’s So Special About STEM? A Comparison of Women’s Retention in STEM and Professional Occupations](#).” *Social Forces* 92 (2): 723–756.

Hess, Cynthia, Emma Williams-Baron, Barbara Gault, and Ariane Hegewisch. 2016. “[Supportive Services in Workforce Development Programs: Administrator Perspectives on Availability and Unmet Needs](#).” Washington, DC: Institute for Women’s Policy Research.

About the Authors

Shruti Nayak is a policy analyst in the Work, Education, and Labor division at the Urban Institute, where she focuses on workforce development and apprenticeships. Nayak graduated summa cum laude and with honors from the Ohio State University, earning a BA in political science and public policy analysis.

Leslee Haisma is a training and technical assistance specialist in the Work, Education, and Labor division, where she focuses on apprenticeships and workforce development. Haisma holds an undergraduate degree in education from Grand Valley State University and a master’s degree in urban education from Davenport University.

Acknowledgments

This brief was funded by Google.org. We are grateful to them and to all our funders, who make it possible for Urban to advance its mission.

The views expressed are those of the authors and should not be attributed to the Urban Institute, its trustees, or its funders. Funders do not determine research findings or the insights and recommendations of Urban experts. Further information on the Urban Institute's funding principles is available at urban.org/fundingprinciples.



500 L'Enfant Plaza SW
Washington, DC 20024
www.urban.org

ABOUT THE URBAN INSTITUTE

The Urban Institute is a nonprofit research organization founded on one simple idea: To improve lives and strengthen communities, we need practices and policies that work. For more than 50 years, that has been our charge. By equipping changemakers with evidence and solutions, together we can create a future where every person and community has the opportunity and power to thrive.

Copyright © April 2026. Urban Institute. Permission is granted for reproduction of this file, with attribution to the Urban Institute.