
Diversity, Equity, and Inclusion Initiatives in the Construction Trades

The Institute for Construction Employment Research

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Executive Summary

- In 2021, NABTU commissioned ICERES to conduct a study of female and minority participation in the U.S. construction industry, with particular focus on historical trends in participation, successful initiatives to increase female and minority participation, and opportunities for future growth.

Chapter 1: Union DEI Programs

- There are many successful and fully developed diversity, equity, and inclusion initiatives in the union sector, from pre-apprenticeship programs for those new to the trades to policies supporting experienced journeyworkers.
- Many union programs to improve diversity in the trades feature substantial partnerships with community-based organizations, industry leaders, and government agencies. Community organizations are particularly important in helping identify, recruit, and support interested workers from historically underrepresented groups.
- Pre-apprenticeship training programs represent an effective means for unions to promote diversity in the building trades. These programs are important for improving diversity in the industry, as this often represents a first exposure to the skilled trades for many from historically underrepresented groups.
- Union-supported pre-apprenticeship programs have established a significant track record of actively promoting diversity in the trades. Pre-apprenticeship enrollments using the Multi-Craft Core Curriculum (MC3) reflect considerable diversity and arguably constitute the largest pre-apprenticeship program in any industry in the US.
- Successful strategies for increasing completion rates typically include non-traditional means of support for pre-apprenticeship participants, including transportation assistance; case management for legal, housing and employment issues; mentoring from other people of color and women in the trades; tool and clothing vouchers; and referrals to, if not financial support for, child care services that feature early start times.

Chapter 2: Non-Union DEI Programs

- There are firms and individuals strongly committed to DEI in the non-union sector, consciously engaging in actions to improve diversity and make the work culture more equitable and inclusive, but the authors highlight that current DEI practices in the non-union sector are best characterized as “efforts, not programs,” and that there is space for further development of diversity, equity and inclusion initiatives.
- The recruitment and hire of diverse candidates was the primary DEI initiative engaged by the firms that were interviewed; this often included outreach to local schools and colleges, the armed services and various community organizations.

Recruiting female applicants was seen as particularly challenging, and some respondents used creative means to motivate interested candidates (e.g., internships, scholarships at local community colleges).

- Diversity, equity, and inclusion initiatives in the non-union sector are generally less developed when it comes to employee retention and promotion. Retaining employees in the non-union sector has long been a challenge, and it appears to represent an obstacle to create effective DEI strategies in these areas.
- Diversity, equity and inclusion initiatives in the non-union sector appear to nearly always be a top-down directive issued by the chief executive of the company.

Chapter 3: Registered Apprenticeship Programs

- Joint [labor-management] apprenticeship programs accounted for 75% of all construction apprenticeship registrations between 1999 and 2019.
- Apprenticeship programs sponsored jointly by unions and contractors register far more female, Black, Hispanic and “other race” workers than non-joint programs.
- While this is expected given that joint programs are much bigger overall, it is perhaps more notable that female, Black, Hispanic and “other race” apprentices also account for a greater proportion of all joint apprentices than their non-joint counterparts, both historically (1999-2019) and in the most recent year of the data (2019). In terms of both levels and proportions, these results suggest that union-based apprenticeship programs feature greater gender and racial diversity than their non-union counterparts.
- The most dramatic demographic transformation in apprenticeship programs has been the sharp increase in the Hispanic proportion of registrations, especially in union apprenticeship programs.
- Although there has been modest growth over the last 10 years, women continue to constitute a small fraction of incoming classes of apprentices in both joint and non-joint programs.
- There is a strong negative correlation between the median national wage within an occupation and the proportion of Hispanic participants in the trade, both in the aggregate and separately in the joint and non-joint programs. This suggests that, independent of being union or non-union, Hispanic apprentices are disproportionately enrolled in programs for lower-paying trades.
- More than half of apprentices leave their respective training programs prior to completion regardless of race, gender, or the joint/non-joint status of the program. Women exhibit lower completion rates and higher cancellation rates than men; among those who exit, women also drop out earlier than men.

Introduction

There are many reasons to explain the historical and present-day underrepresentation of female and Black workers in the construction industry, and numerous studies have capably explored these issues in depth. Our task is different. Improving diversity and making the skilled trades a more equitable and inclusive work environment is a challenge that requires conscious efforts and initiatives that track outcomes which improve access to these jobs and provide support for workers from historically underrepresented groups. This study attempts to facilitate the strengthening of these initiatives in all parts of the sector by providing perspectives on the current state of diversity, equity, and inclusion (DEI) programming in the construction industry—highlighting some of the best and most innovative practices—and offering insight on recent trends in the traditional pipeline to the skilled trades: registered apprenticeship training programs.

The Institute of Construction Economic Research has brought together scholars from three of the nation's leading research universities to produce a three-chapter volume on DEI efforts in the U.S. construction industry. The first and second chapters highlight a sample of the best practices of DEI initiatives in the union and non-union sector, respectively. To be clear, this study does not feature a census of programs and, as a result, it does not touch upon all current initiatives or make estimates of how many programs exist or the number of workers directly affected by such efforts. Instead, this study aims to inform industry stakeholders of some of the most innovative, well-known and progressive actions taken by employers, unions, and others invested in the construction sector.

Reviews of union and non-union DEI practices are presented in separate chapters to acknowledge that the structure of employment is different in each sector of construction. Non-union contractors can unilaterally shape diversity and inclusion outcomes in their firm via their employment policies and practices; this includes, but is not limited to, hiring and compensation decisions. In contrast, DEI in the union sector is influenced by both union leaders and their signatory contractors: while unions and their signatory contractors are jointly responsible for who they admit to their apprenticeship programs, employers have discretion about who is hired on each project. Although collective bargaining agreements improve DEI outcomes by ensuring equal pay and benefits, they do not necessarily guarantee equal treatment or assignments.

The third chapter of this study offers a comprehensive analysis of construction apprenticeship registrations and completions among workers from historically underrepresented groups. Apprenticeship training is critical for many reasons, but of most significance to this study is that these programs represent an important access point for new tradespeople into the construction industry. Apprentices represent the next generation of skilled trades workers, and efforts taken today to recruit and support apprentices from underrepresented groups will have considerable effects in reshaping the makeup of the construction workforce for decades to come. To those ends, this third chapter uses apprenticeship data from 34 states between 1999 and 2019 to examine trends among female, Black and Hispanic workers and make quantitative comparisons between the effectiveness of programs sponsored cooperatively by unions and employers

(joint programs) and unilaterally by employers (non-joint programs) in promoting diversity in the industry.

*Chapter 1: Union DEI Programs
(Amy Tracy Wells, Rutgers University)*

This chapter highlights an array of the largest, most successful, and most promising programs supported by or affiliated with the union construction sector to recruit, train and employ workers from historically underrepresented groups. Efforts were taken to feature impactful initiatives from many different regions of the country, with the analysis including programs ranging from those that have started in the last few years to those that have been around for decades. While most efforts are exclusive to the union sector, some described programs support both union and non-union workers. The chapter was constructed via a review of annual reports, articles, and communications with program leaders. The findings of this chapter reveal the following:

- There are many successful and fully developed diversity, equity, and inclusion initiatives in the union sector, from pre-apprenticeship programs for those new to the trades to policies supporting experienced journeyworkers. Programs range from relatively small efforts that respond to local needs, to vast initiatives that are organized and administered on a national basis. Some policies are restricted to a single trade while others support the entire industry. And while many programs are the result of top-down initiatives of regional building trades councils and national organizations, others are grassroots, bottom-up programs initiated by workers themselves (e.g., Oregon Tradeswomen).
- Many union programs to improve diversity in the trades feature substantial partnerships with community-based organizations, industry leaders, and government agencies. Community organizations are particularly important in helping identify, recruit, and support interested workers from historically underrepresented groups.
- Pre-apprenticeship training programs represent an effective means for unions to promote diversity in the building trades. These multi-week initiatives prepare participants to apply for, enter, and successfully complete a registered apprenticeship program in the skilled trades. These programs are important for improving diversity in the industry, as this often represents a first exposure to the skilled trades for many from historically underrepresented groups.
 - Union-supported pre-apprenticeship programs have established a significant track record of actively promoting diversity in the trades. As one example, Building Pathways in Boston was launched in 2011 by the Building and Construction Trades Council of the Metropolitan District. Since that time, it has conducted 25 training cycles, with people of color accounting for 90% of enrollees while women represented 43%; like many others, it also takes efforts

to place its participants, with 80% landing in apprenticeship programs or industry employment. As another example, a Helmets to Hardhats program run through the Augusta (Georgia) Building Trades Council for the Vogtle Electric Generating Plant included a graduate composition that was majority people of color and 32% female.

- Pre-apprenticeship enrollments using the North America’s Building Trades Unions (NABTU) Multi-Craft Core Curriculum (MC3) reflect considerable diversity and arguably constitute the largest pre-apprenticeship program in any industry in the United States. Since 2016, ARPs using the MC3 have enrolled on average 80% participants from communities of color and 18% women. Overall, these initiatives are among the most effective programs in improving access to careers in the skilled trades for those from historically underrepresented groups.
- While the specifics of pre-apprenticeship initiatives differ from city to city, this chapter identifies some best practices of effective programs. In general, successful strategies for increasing completion rates typically include non-traditional means of support for pre-apprenticeship participants. Examples include transportation assistance; case management for legal, housing and employment issues; mentoring from other people of color and women in the trades; tool and clothing vouchers; and referrals to, if not financial support for, child care services that feature early start times.
- The chapter also outlines numerous union programs designed to retain and develop diverse apprentices and journeyworkers. Mentoring from more experienced tradespeople from the same underrepresented group is considered essential as younger workers come across work-related issues and opportunities for professional growth. Careful monitoring and tracking of work hours (including overtime) and training opportunities are seen as imperative to ensure the equality of opportunities, the retention of existing employees, and continued growth of diversity on the jobsite. Policies such as the Ironworkers’ paid maternity leave benefit—which includes six months of pre-delivery and six-to-eight weeks of post-delivery support—also increases the viability of retaining skilled journeywomen. Finally, decisive action in investigating and adjudicating discrimination and harassment complaints is considered central to the retention of a diverse workforce.

Chapter 2: Non-Union DEI Programs
(David Bullock and Roland Zullo, University of Michigan)

The second chapter offers perspective on the policies and practices of non-union employers who have reputations as being leaders in the area of diversity, equity, and inclusion. To examine the frontier of DEI initiatives in the non-union sector, the authors interviewed business owners, human resources managers, and industry professionals involved with these efforts. Respondents were from large and small firms across multiple

states and trades, featuring companies in both the construction and energy utility sectors; employers with double-breasted operations (a singular ownership group overseeing both a union firm and a non-union firm) and regional training centers were also interviewed. Interviews focused on contractors' diversity goals, mechanisms, policy compliance, and an assessment of effectiveness. The outcomes of this chapter suggest the following:

- The chapter highlights that there are firms and individuals strongly committed to DEI in the non-union sector, consciously engaging in actions to improve diversity and make the work culture more equitable and inclusive. But the authors highlight that current DEI practices in the non-union sector are best characterized as “efforts, not programs,” and that there is space for further development of diversity, equity and inclusion initiatives.
- The term “diversity” was more broadly interpreted by non-union employers than is more commonly used when considering groups protected by employment discrimination law. In addition to issues of race, gender and ethnicity, interviewees also considered diversity to include initiatives that supported veterans, the formerly incarcerated, former drug addicts, and Green Card holders.
- The recruitment and hire of diverse candidates was the primary DEI initiative engaged by the firms that were interviewed; this often included outreach to local schools and colleges, the armed services and various community organizations. Recruiting female applicants was seen as particularly challenging, and some respondents used creative means to motivate interested candidates (e.g., internships, scholarships at local community colleges). Recruiting efforts were typically matched with practices meant to instill a fair and tolerant work environment; for some contractors, this included educating existing employees in order to reduce bullying and harassment on the worksite.
- Diversity, equity, and inclusion initiatives in the non-union sector are generally less developed when it comes to employee retention and promotion. Retaining employees in the non-union sector has long been a challenge, and it appears to represent an obstacle to create effective DEI strategies in these areas. But some firms have advanced progressive approaches, including some who take strides to assign new workers to jobs and crafts that better fit their interests and skill sets. Other firms engage in mentoring of new employees, but the intensity and formality of these efforts varied considerably.
- As highlighted in Chapter 1, non-union entities also benefit from programs administered by public and non-profit agencies. In terms of training, larger construction firms typically use state-certified apprenticeship programs, whereas smaller firms often rely on on-the-job training and programs from community-based organizations. While respondent firms did not direct the training, several played a supporting role by donating to the organization, participating in some leadership capacity (e.g., board member), and serving as an ad hoc presenter or teacher. Community-based

organizations and institutions—including churches, schools, and clubs—also play an important role to identify recruits.

- Diversity, equity and inclusion initiatives in the non-union sector appear to nearly always be a top-down directive issued by the chief executive of the company. The strength of the commitment at the top of the organization and effective communication to the rest of the organization are seen as critical components of successful initiatives, with some firms incorporating DEI goals into employees' annual performance reviews.
- Several factors motivate non-union firms to prioritize diversity, equity, and inclusion. Many firms cited ideology—it represents the “right thing to do”—with some considering racial uplift as a critical part of their organizational mission. Outside influences, however, also play an important role. This includes institutional factors, such as the effect of large firms that communicate their DEI commitment to subcontractors and, in some cases, incorporate diversity objectives into bid criteria. Joining major industry associations that promote DEI and recognize individual firms as leaders was also mentioned. Beyond employers' legal obligations of adhering to Equal Employment Opportunity law, firms are also motivated by requirements built into government contracts that require a diverse workforce. Finally, there were perceived business benefits of building goodwill in a local area with both workers and community organizations.

Chapter 3: Registered Apprenticeship Programs
(Cihan Bilginsoy, University of Utah)

The third chapter represents a comprehensive quantitative analysis of the traditional pipeline to the skilled construction trades: registered apprenticeship training programs. The analysis features 21 years of data (1999-2019) on construction apprenticeships made available across 34 states, with most coming from the Registered Apprenticeship Partners Information Management Data System (RAPIDS) administered by the U.S. Department of Labor. The de-identified, worker-level data offers details on the occupation and sponsor of the program, whether the participant completed the program, and each apprentice's gender and race/ethnicity (note: Hispanic is treated as a separate racial category in the data); it is the most comprehensive individual-level database on registered construction trades apprentices compiled to date for research purposes. This information allowed the author to directly compare apprenticeship registrations and completions among workers from underrepresented backgrounds based on whether the program was a joint union-management initiative or a non-joint (unilateral employer) program. The findings of this chapter reflect the following:

- Joint apprenticeship programs accounted for 75% of all construction apprenticeship registrations between 1999 and 2019. On an annual basis, this reached as high as 80% (2007) before the Great Recession and as low as 67% (2010) in the immediate years

afterwards. In 2019, union-management apprenticeship programs accounted for 73% of all construction apprenticeships in these 34 states.

- As highlighted in Table A1 (below), apprenticeship programs sponsored jointly by unions and contractors register far more female, Black, Hispanic and “other race” workers than non-joint programs. While this is expected given that joint programs are much bigger overall, it is perhaps more notable that female, Black, Hispanic and “other race” apprentices also account for a greater proportion of all joint apprentices than their non-joint counterparts, both historically (1999-2019) and in the most recent year of the data (2019). In terms of both levels and proportions, the results in Table A1 suggest that union-based apprenticeship programs feature greater gender and racial diversity than their non-union counterparts.

Table A1. Number of New Registrations and Proportion of All New Registrations, Joint vs. Non-Joint Construction Apprenticeship Programs, 34 States, 1999-2019

Year(s)	2019		1999-2019	
Category	Joint	Non-Joint	Joint	Non-Joint
<i>Total</i>				
Registrations	79,709	29,266	1,181,403	388,851
<i>Female</i>				
Registrations	3,828	717	44,004	7,666
% of Total Registrations	4.8%	2.4%	3.7%	2.0%
<i>Black</i>				
Registrations	7,643	2,306	109,595	29,216
% of Total Registrations	9.6%	7.9%	9.3%	7.5%
<i>Hispanic</i>				
Registrations	23,473	6,573	284,340	76,256
% of Total Registrations	29.4%	22.5%	24.1%	19.6%
<i>Other Race</i>				
Registrations	2,569	640	37,801	11,092
% of Total Registrations	3.2%	2.2%	3.2%	2.9%

- The most dramatic demographic transformation in apprenticeship programs has been the sharp increase in the Hispanic proportion of registrations, especially in union apprenticeship programs. In 1999, Hispanic workers accounted for approximately the same proportion of new registrations in joint (16.9%) and non-joint (16.5%) programs. While Hispanic representation in both programs fell sharply during the Great Recession, there has been substantial increases in their participation over their last 10 years, especially in union-backed programs. As of 2019, Hispanic registrants accounted for 29.4% of joint programs and 22.5% of non-joint initiatives.
- Although there has been modest growth over the last 10 years, women continue to constitute a small fraction of incoming classes of apprentices in both joint and non-joint programs. There has been no discernible trend in the proportion of Black registrants in joint programs over the last 20 years, as annual rates have stayed between 8.5% and

10.2%. Within non-joint programs, the share of Black registrants fell from 20-year highs of 9% prior to the Great Recession to nearly 6% afterwards and has yet to fully recover. There has been no discernible trend in the proportion of registrants from other races in either joint or non-joint programs since 1999.

- The geographic distribution of minority apprentices largely reflect the demographic composition of the labor force. The proportion of Black registrants is highest in the Southeast, whereas the share of Hispanic registrants is highest in the Southwest and in California.
- There is a strong negative correlation between the median national wage within an occupation and the proportion of Hispanic participants in the trade, both in the aggregate and separately in the joint and non-joint programs. This suggests that, independent of being union or non-union, Hispanic apprentices are disproportionately enrolled in programs for lower-paying trades. Such a relationship between wages and apprenticeship registrations was not observed for women, Black, or “other race” workers.
- More than half of apprentices leave their respective training programs prior to completion regardless of race, gender, or the joint/non-joint status of the program. Women exhibit lower completion rates and higher cancellation rates than men; among those who exit, women also drop out earlier than men. Minority apprentices exhibit the same patterns when compared to white apprentices. However, outcomes are uniformly better across all racial and gender lines in joint programs compared to non-joint programs.

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Diversity, Equity, and Inclusion Initiatives in the Union Trades

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Introduction

This text seeks to highlight some of the largest, most successful, and promising initiatives to recruit, train and employ people of color and/or women in the construction trades. As such, it focuses on pre-apprentice, apprenticeship, and post-apprenticeship activities across the U.S. from those begun thirty and forty years ago to contemporary initiatives. While the goal of these initiatives has been to develop and maintain a qualified construction workforce, the secondary goal has been to provide people of color and women with access to family-sustaining compensation including guaranteed equal pay and benefits. The initiatives presented—20 in all—were developed by a review of program data including annual reports and/or discussions with their program leaders. The programs themselves range from initiatives at the:

- Local level (e.g., Moore Community House),
- Regional level (e.g., St. Louis Building and Construction Trades Council), or
- National level (e.g., SMART's Maternity Provision Policy).

The initiatives are a result of:

- Local needs (e.g., Building Pathways) or
- National programming (e.g., Helmets to Hardhats).

Further, while all the initiatives are collaborative efforts with community-based organizations (CBOs), some involve:

- One skilled trade union (e.g., The International Association of Bridge, Structural, Ornamental and Reinforcing Iron Workers) or
- Multiple skilled trade unions (e.g., ANEW).

Finally, the funding mechanisms included:

- Federal or state funding (e.g., Department of Labor),
- Project labor agreements (PLAs),
- Community workforce agreements,
- Joint labor-management construction training programs, and
- Community-based organizations.

Review of Diversity Initiatives

The 20 initiatives offered in this chapter are either exclusive to the union sector or support both union and non-union workers.

ANEW

<https://anewaop.org/>
(Washington State)

ANEW, the oldest, continuously running pre-apprenticeship program for women in the United States, was founded in 1980 to improve the access and advancement of women and people of color in construction and manufacturing career pathways. It runs two 280-hour, 12-week pre-apprenticeship construction training programs: the Trades Rotation Program (TRP), which is women only, and the Pre-Apprenticeship Construction Education (PACE), which is co-ed. The training includes being paired with a construction worker with a similar background, often ANEW alumni, to support the student's journey throughout training and their early career. In addition, there is a mobile 160-hour, four-week Construction Boot Camp (CBC), which is co-ed, for people living outside of the service area of Seattle-Tacoma-Bellevue metropolitan area.

To support retention, ANEW provides financial aid to reduce barriers to entering and/or completing an apprenticeship program as well as career navigation, coaching, and mentoring for up to two years. Financial support includes tool purchases, union dues and transportation assistance, among other needs. This initiative ensures those with barriers to employment are not disincentivized from pursuing a career with a family-supporting wage due to upfront costs or are forced to leave the industry early in their new career.

Since 2018, ANEW has enrolled 1,390 students into these pre-apprenticeship construction training programs and placed 919 people in a registered apprenticeship (RA). Approximately 34% of the trainees were women. The demographics further breakdown as follows: 22% African American/Black, 4% Asian, 42% Caucasian, 10% Hispanic or Latino, 5% Native American or Alaskan Native, 3% Pacific Islander, 11% multi-race, and 3% not reported. When combining all those who have enrolled in ANEW's training and support programs, ANEW has an 82% retention rate, double that of what other local pre-apprenticeship programs report.¹ Each year ANEW trains approximately 200 apprenticeship ready individuals. In the pandemic truncated year of 2020, ANEW still trained 120 people.

Building Union Diversity (BUD) Program

<https://budprogram.com/>
(St. Louis, MO)

In 2014, the St. Louis Building and Construction Trades Council (BCTC) in conjunction with eight (and eventually ten) cooperating joint labor-management construction training

programs (JATCs) implemented a pre-apprenticeship training program for St. Louis metropolitan residents known as the Building Union Diversity (BUD) program. Participants are identified by local agencies such as the United Way, Fathers Support Center or the Center for Women in Transition and screened to determine fit.

BUD is a five-week union construction pre-apprenticeship program that is typically offered four times per year with 15-16 individuals. BUD seeks to offer “enrollees a comprehensive introduction to construction employment and provides relevant national skills certification training, with a particular focus on job safety. During the program, several local unions also open their training centers to give participants some hands-on experience and a feel for each of the trades.”² Participants also meet with potential mentors who are people of color and/or women. However, BUD only offers training to those trades that have entry-level jobs are available. To provide additional support, individuals are provided with transportation assistance, a weekly stipend, working clothing and safety equipment and a \$150 tool allowance once they begin an apprentice program.

When a participant completes their first week, the referring entity receives a \$200 check and when a participant completes the full five weeks, the referring entity receives a second \$800 check. Following the training, successful participants are entered into the BCTC employer/contractor database, which is then used to identify pre-qualified workers for construction work. Additional discretionary monies for housing and minor car repairs are available as necessary. Lastly, if needed, short-term transportation assistance is provided (i.e., up to one month of transportation to and from the job site via Lyft) along with guidance from the St. Louis Credit Union on how to improve one’s credit scores and access to a used car loan from pre-screened reliable dealerships.³

As of March 2021, 272 individuals have begun the BUD program, with 245 individuals completing the program and 201 people either beginning an apprenticeship or being placed with a construction employer. Though COVID-19 has negatively impacted placement numbers, this is a success rate of 82% placement. Of these individuals, 81% are minority and 24% are female.⁴

Policy Trade Group on Tradeswomen’s Issues

<https://policygroupontradeswomen.org/about-pgti/about/>
(Massachusetts)

The Policy Trade Group on Tradeswomen’s Issues (PGTI), which was established in 2008, and is today a collaboration of over 100 industry partners including unions and apprenticeship programs, contractors, developers and community organizations that provides technical assistance on how to increase the percentage of women in Massachusetts’ union apprenticeship programs. Part of this effort focuses on marketing and part on tracking and publicizing data and data trends.

Beginning with the Integrated Science Complex (ISC) at the University of Massachusetts Boston in 2011 to today, PGTI has relied on the Access and Opportunity Committee to track the labor hours needed to complete building projects. Since 2011, the projects—public and

private—have totaled \$6.5 billion in the state and the total hours worked by women has been 8.1% and by people of color has been 27.0% of total hours worked.

The percentage of women apprentices has grown from 4.9% to 2012 to 9.8% at the end of 2020 even though the total number of apprentices in the state has dropped with the economic downturn and the pandemic. However, the highest number of women in apprenticeship programs goes to IUOE Operating Engineers Local 98 out of Western Massachusetts with 27.6% women in its apprenticeship program.⁵

Building Pathways

<https://buildingpathwaysboston.org/building-pathways-gala/>
(Boston, MA)

The Boston-based Building Pathways, a building trades pre-apprenticeship program, was launched in 2011 as one of the first city-wide Apprenticeship Readiness Programs (ARPs), with the goal of 20% tradeswomen by 2020. The ARP is seven weeks long, is run twice a year and includes an overview of the construction industry. The modified MC3 curriculum features at least 20 hours of basic construction math, basic construction skills (e.g., safety, tool recognition and use, measuring, and blueprint reading), job readiness (goal setting, interviewing, budgeting, sexual harassment prevention, etc.), labor history and hands-on experience including field trips to union apprenticeship programs and active construction sites. Programmatic supports include clothing, boots and PPE, transportation vouchers, case management, financial assistance, and childcare referrals (to providers with early start times) and vouchers to help graduates if there is a gap between when they graduate and when their registered apprenticeship starts.

Key to its success is a supply and demand perspective that requires assistance from industry stakeholders, community-based organizations, and government agencies. That is, recruitment efforts and policy/legal frameworks exist together. Just as it is necessary to bring people of color and women into the trades (e.g., through the use of PLAs), it is necessary to make sure that policy/legal frameworks support the graduate's employment (e.g., Access and Opportunity Committees are in place to monitor workforce participation goals).

Since 2011, Building Pathways has conducted 25 training cycles with 390 enrollees and 357 graduates (a 92% graduation rate). Of the enrollees, 90% are people of color and 43% are women with an 80% placement rate in registered apprenticeships or industry-related employment. Despite the impact of the coronavirus, in October 2020, it achieved 20% women apprentices which increased their percentage of women apprentices by 20% in conjunction with:

- Plasterers & Cement Masons Local 534,
- IBEW Local 103,
- Pipefitters Local 537,
- Roofers Local 33, and

- Sheet Metal Workers Local 17.⁶

Chicago Women in the Trades

<https://cwit.org>

(Chicago, IL)

Chicago Women in the Trades (CWIT) began in 1981 to provide economic opportunities for working-class women across the trades. Today, it along with partners, helps women enter the construction trades by supporting, encouraging, and training women in high-skilled, high-wage nontraditional careers. In addition, CWIT also supports women by providing education, support groups and committee development, facilitation, mentoring, resources and guidance in understanding female/worker rights, resolving issues on the job, and advancing into positions of leadership. Originally established by tradeswomen as a support network, CWIT addresses the barriers that prohibit women and girls from entering and succeeding in male-dominated industries by creating opportunities and promoting equitable workplaces and conditions.

CWIT offers two different training programs. The Technical Opportunities Program (TOP) is a 12-week, 180-hour, pre-apprenticeship program that covers different trade options, hands-on skills, job site safety, physical strengthening, and math education. It meets three days a week: two weekday evenings and every Saturday. Women in Welding is a 12-week, 288-hour training program that meets Monday through Thursday that likewise can be taken by someone new to the field. Different welding practices, shop math, blueprint reading, and OSHA-10 safety practices are taught.

Between 2016 and 2019, the pre-apprenticeship programs and women-focused programs directly helped over 800 women to enter apprenticeships, and have paved the way for women to enter the trades indirectly by supporting outreach and trainings on creating more equitable, inclusive, and welcoming work environments.

Flintridge Center

<https://www.flintridge.org/index.htm>

(Pasadena, CA)

The Flintridge Center Apprenticeship Preparation Program (APP), in Pasadena, CA, prepares previously incarcerated and gang-affiliated community members for careers in the construction trades by providing them with access to a 10-week long training program based on the MC3 curriculum and case management services. To prepare participants for obtaining and retaining employment, the program is supplemented with 120 additional hours of life skills training, employability training, hands-on volunteering with Habitat for Humanity, union site visits, and guest speakers that address, amongst others, construction math, careers in construction and work habits.

The APP began in 2005. All staff who facilitate the APP are themselves formerly incarcerated, which means, in part, there is a shared understanding of life experiences

including traumas. There are three classes per year that meet in a beautiful modern facility where class sizes can range from 20 to 25 people.

In 2019 and 2020, 104 formerly incarcerated individuals graduated the APP with 50% being Hispanic or Latino, 25% African American and 12% women. Of these, 4% of APP graduates have returned to incarceration, compared to the Los Angeles County rate as documented by the Data from the California Department of Corrections and Rehabilitation, of 47%. Ninety-four percent of APP graduates gained employment in unionized construction or other sectors throughout Los Angeles.⁷

North America's Building Trades Unions (NABTU) Apprenticeship Readiness Programs (ARPs) in Incarceration Settings (United States)

In recent years, North America's Building Trades Unions, in conjunction with state and local Council leaders, have expanded the implementation of ARPs by incorporating them into corrections institutions' vocational programs with the goal of advancing diversity, promoting anti-recidivism and developing skilled tradesworkers. The first NABTU ARP within a corrections institution was in High Desert State Prison in Nevada, the largest institution in the Nevada Department of Corrections. More recently, NABTU has worked with the California State Building Trades Council, the California Prison Industry Authority (CALPIA) and the California Department of Corrections and Rehabilitation (CDCR) on a plan to implement ARPs in each of California's 33 state prisons. NABTU Council leaders have also instituted ARPs in county jails in LA and the Bay area and at the MacDougall-Walker Corrections Institution in Sheffield, CT. These programs expand on the work Council leaders have done in partnership with programs that primarily serve the formerly incarcerated, including the Flintridge Center (Pasadena CA), Southwest College's Anti-Recidivism Coalition (Los Angeles), Reimagine Reentry (Pittsburgh) and the El Paso Reentry Program in West Texas.⁸

Helmets to Hardhats

<https://helmetstohardhats.org/>

(United States, Augusta (Georgia) Building Trades and New York State)

Helmets to Hardhats (H2H) is a decentralized initiative at the national and regional level that seeks to provide veterans with pre-apprenticeship training that will enable individuals to pursue construction-related opportunities including apprenticeship training within a specific trade.⁹ Since 2003, when the initiative was developed, H2H has referred over 38,000 individuals to regional initiatives near them for actual training in the 15 different skilled trades.¹⁰ H2H does not collect any demographic information at the national level.

However, additional demographics are available at the regional level. For example, the Apprenticeship Readiness Program for H2H run through the Augusta (Georgia) Building Trades Council for the Vogtle Electric Generating Plant (a nuclear power plant) has graduated and placed 59 individuals since 2018 in construction apprenticeships or industry related employment.¹¹ Of these graduates 32% were female and the majority were

people of color. Pre-apprenticeship programs often devote 40+ hours to the math instruction needed in construction as this is routinely an area in which individuals need the most help. While many of the characteristics of this program are standard from providing a weekly stipend to boots and clothing, the math instructor holds a Ph.D. in mathematics and is also a certified electrician. Prior to COVID-19, students were brought out to Plant Vogtle and often paired with a steward who could walk the site with them explaining processes.

Likewise, the New York H2H, which is affiliated with the New York Building Trades Unions, has directed 2,500 individuals into construction pre-apprenticeships via the Apprenticeship Readiness Collective (ARC) or one of 15 construction apprenticeship programs since 2003. New York H2H works to match individuals with veterans in the trade from whom they are interested in being mentored, and when possible, those who have even served in the same service. In 2019 and May 2021, 301 individuals have been placed with roughly 4% of those being female.¹² Though New York H2H does have large numbers of people with Asian and Hispanic backgrounds along with African Americans, records do not indicate workers' ethnic or racial backgrounds for a substantial number of workers, thereby clouding these estimates.

The International Association of Bridge, Structural, Ornamental and Reinforcing Iron Workers (Iron Workers)

<http://www.impact-net.org/news/2020/08/06/paid-maternity-leave-program-proves-to-increase-retention>

(United States and Canada)

In 2017, under Vicki O'Leary's leadership as the District Representative for Safety/Diversity, the Iron Workers began a new program to provide maternity leave for apprentices and journeywomen, which is a first amongst the construction trades. Specifically, the Maternity Provision Policy (MPP) offers qualifying ironworkers with up to six months of pre-delivery and six to eight weeks of postpartum paid leave. This is especially significant given that just nine states offered paid maternity leave.

Per the Ironworker Management Progressive Action Cooperative Trust:

Since its inception in 2017, 56 ironworker women have claimed well over \$500,000 in benefits from the ironworker-employer partnership, IMPACT, under the program. The program not only keeps ironworkers from having to put their unborn children at risk, but also helps the organization retain well-trained workers. A report on the correlation between the MPP and ironworker retention revealed the organization retained 83 percent of the ironworkers who received benefits from 2017 to 2019.

In addition, it has provided some sense of safety to partner contractors, who might otherwise worry about liability. As one employer noted, "It's just good business sense to have a program like it."¹³

Lean In Circles for Union Tradeswomen

<https://leanin.org/circles-for-union-tradeswomen>

(United States and Canada)

The Lean In Circles for Union Tradeswomen includes all 15 skilled trades in the US and Canada and is a joint partnership between North America's Building Trades Unions (NABTU), the AFL-CIO, and Build Together. Initially started by Judaline Cassidy, a tradeswoman of color out of UA Local 1 who sought to change the gap in gender diversity in construction and brought attention to Lean In Circles as a tool. Following a formal pilot in 2019, a first cohort began in 2020 with more than 700 tradeswomen joining in. Each monthly meeting has a specific topic such how to respond when one's abilities are questioned or how to advocate for a leadership role. The virtual meetings allow tradeswomen to learn about other trades, problem solve jointly, strategize, develop leadership skills, etc. Feedback from that cohort indicated that "95 percent of Circle members said they built strong connections, and 90 percent of group moderators reported gaining leadership, facilitation, and organizing skills."¹⁴ In April 2021 a second cohort of tradeswomen started.

Los Angeles/Orange Counties Building & Construction Trades Council (BCTC)

<http://laocbuildingtrades.org/apprenticeship-building-trades/pre-apprenticeship/>

(Los Angeles County and Orange County, CA)

The Los Angeles County and Orange County Building & Construction Trades Council (LAOC BCTC) of California consists of 48 local laborers unions and district councils in 14 trades and covers a geographic area that is larger than size of Washington, D.C., Delaware and Rhode Island combined. The LAOC BCTC has an Apprenticeship Readiness Fund that focuses on recruiting and providing training to people on the construction trades. In 2016, LAOC BCTC created a nonprofit to provide more support for pre-apprentices and to develop additional programs through public and private monies.

Prior to the coronavirus pandemic, there were 19 different program providers throughout Los Angeles and Orange Counties that targeted different populations including women, the homeless, and the recently incarcerated as well as those in high school or a couple of decades post high school. A primary focus of the training, which uses the Multi-Craft Core Curriculum (MC3), is on soft skills such as how to dress, including shoes (and undergarments in case of spills at worksites), the importance of being on time, coming back from breaks on time, etc. Since 2016, 2,350 individuals completed the training, which was an 87% completion rate. Of the 865 graduates who were placed into an apprenticeship, 91% were people of color and 17% were women.¹⁵

LA Metro Transit Construction

<https://www.metro.net/about/placcp/>
(Los Angeles, CA)

Los Angeles or LA Metro, is a transportation planner and coordinator, designer, builder and operator for one of the country's largest, most populous counties in California with more than 9.6 million people. In 2012 and in conjunction with the Los Angeles/Orange Counties Building and Construction Trades Council, LA Metro created a new initiative covering 13 different and substantive construction projects with employment "goals of 6.9% participation by women and 28.3% underrepresented participation in the contractor's workforce."¹⁶

For this initiative, LA Metro used both a project labor agreement and a construction careers policy, which is a local workforce agreement. These different agreements facilitated the employment of different groups including disadvantaged and extremely disadvantaged income groups from different geographic areas, as well as veterans, which, in turn, supported the employment goals. A further specific goal was for 20% of work hours to be completed by apprentices (and not journeyworkers). This was significant, in part, because while the construction workforce as a whole is aging, the average age in Los Angeles is even higher. To assess compliance, LA Metro used certified payroll data collected by LCPTracker (Labor Compliance and Certified Payroll Software), a third-party software, across all the projects. Further, an independent consulting company was retained to track compliance and economic impact.

During the period 2013-2017, LA Metro exceeded its goal of 23.8% minority participation. However, women represented just 3.7% of the total workforce, which was 3.2% below the goal.¹⁷

Moore Community House, Women in Construction

<https://www.moorecommunityhouse.org/winc>
(Biloxi, MS)

In 2008, the Moore Community House, a mission agency of United Methodist Women, began the Women in Construction (WinC) pre-apprenticeship program to assist disadvantaged women primarily in Mississippi in entering construction or advanced manufacturing. WinC requires applicants to complete a 1.5-hour information session; trial workday, overseen by WinC instructors, that takes applicants through basic hands-on tasks and simple construction projects; and a one-on-one interview. A minimum of five training sessions with 30-40 participants are held each year. Key to its success is that Moore Community House provides support for childcare and transportation and the tools needed during the eight-week training program. It also provides case management to help with other needs such as housing or legal issues. Further, those that complete the Apprenticeship Readiness Program and seek work, are enrolled in advanced training, or volunteering, qualify for continued childcare support for up to one full year from program enrollment.

To date, this has led to program completion rates of greater than 70% and placement rates of 75%. In all, there have been 750 WinC graduates some of whom have subsequently began a RA with Ingalls Shipbuilding, a federal contractor, IBEW or UBC; a position with Habitat for Humanity (on the construction crews), local industrial contractors, local commercial and residential contractors, warehouses and loading docks; or started their own contracting companies.¹⁸

NEW: Nontraditional Employment for Women

<https://www.new-nyc.org/>

(New York Metropolitan Area, NY)

NEW or Nontraditional Employment for Women, which was begun in 1978 and covers the New York City metropolitan area, “prepares, trains, and places women in careers in the skilled construction, utility, and maintenance trades, helping women achieve economic independence and a secure future for themselves and their families. To do this, NEW has connections with over 150 employers including 36 unions and apprenticeships. NEW seeks to provide a pipeline of qualified workers to the industries that build, move, power, green, and maintain New York.”¹⁹

NEW runs four different apprenticeship readiness programs that can be completed in anywhere from one to eight weeks, during the day or at night depending on individual needs and typically trains 16 cohorts of 25 people per year. Programmatic supports include current or retired union instructors; having former NEW students who are working in a trade speak to current students; transportation vouchers; work attire and books; legal, housing and childcare referrals; and initial union dues.

In the last ten years, NEW has placed women in over 3,000 industry careers at an average starting salary, in 2021, of \$19 plus per hour. Roughly 85% of these women are people of color and, of those, 50% are Black.²⁰ At the same time, NEW is providing technical assistance to employers on devising, setting and monitoring diversity goals (measured in work hours) in order to grow demand for its graduates.

North America’s Building Trades Unions (NABTU’s) Industry Partnership

<https://nabtu.org/about-nabtu/>

(United States)

In 2016, with funding from the Department of Labor (DOL), the North America’s Building Trades Unions sought to leverage its pre-apprenticeship curriculum and affiliation with 14 building trades and contractors across the US to expand and diversify participants in its Apprenticeship Readiness Program (ARP) with the goal of increasing diversity amongst apprentices and ultimately membership. Joint funding and administration of the 1,600 apprenticeship programs through Joint Apprenticeship and Training Committees (JATC) are the keys to providing the most skilled and safety conscious tradespersons in the construction industry. New contractors (employers) become signatory for the sole purpose of staffing their projects with the best skilled tradespersons the industry has to offer.

This curriculum, the Multi-Craft Core Curriculum consists of nine sections: construction industry orientation (including introduction to Registered Apprenticeship programs), tools and materials, construction health and safety (based, in part, on OSHA guidelines), blueprint reading, basic construction math, green construction, financial responsibility, diversity in the construction industry (including mandatory training in sexual harassment prevention), and the heritage of the American construction worker. In addition, ARPs utilizing the MC3 curriculum typically include hands-on training on job sites with signatory contractors suitable for pre-apprentices to familiarize students with different construction trades.

The DOL Contract has been central to this goal in its support of expanding NABTU's Apprenticeship Readiness Programs (ARPs) across the U.S.²¹ These efforts have yielded results as since 2016, NABTU ARPs have seen 7,300 students successfully complete the MC3 and have placed 2,297 participants in Registered Apprenticeship programs. The pre-apprenticeship enrollments are reflect considerable diversity, having enrolled on average 80% participants from communities of color and 18% women.²²

Oregon Tradeswomen

<https://oregontradeswomen.org/>
(Oregon)

In 1989, the Oregon Tradeswomen was founded by tradeswomen for tradeswomen. The Trades and Apprenticeship Career Class (TACC) is an industry pre-apprenticeship training and job readiness program certified by Oregon's Bureau of Labor and Industries (BOLI). It provides 192 hours of instruction either three full days per week—or in the evenings and on Saturdays—in the skilled trades including manufacturing, industrial fabrication, and environmental remediation. In 2018 it served over 1,000 women through the TACC.

Oregon Tradeswomen attributes its success to several factors including their instructors, curriculum, and case management; communication with employers including regular monthly check-ins with registered apprenticeship programs; programmatic supports including limited monies and childcare referrals; direct entry relationships with both UA Local 290 and NECA/IBEW Electrical Training Center for qualified program graduates; and an administrative rule change in Oregon whereby students in pre-apprenticeship programs receive child care benefits through the state.^{23,24}

Demographically, almost 3 in 4 program participants are very low income and 53% are women of color. In 2018, 78 % of program participants entered a registered apprenticeship program or started employment in the skilled trades.²⁵

SMART Local 28 (Sheet Metal Workers)

https://iwpr.org/wp-content/uploads/2020/10/Sheetmetal-Workers-Best-Practice_Revision1.pdf
(New York County, Suffolk County and Nassau County, NY)

As a result of a court-ordered Action Plan and Consent Order Regarding Structural Changes, SMART Local 28 has been addressing “discriminated against non-white journeypersons on the basis of race” and specifically black and Hispanic workers since 1971.²⁶ Part of addressing inequities has been conduit programs that allow pre-apprentices to test for possible placement into the apprenticeship program with the final selection being lottery-based.

Once in the program and in addition to curricula specific to the trade, apprentices are trained on their rights including how to file a complaint for discrimination and/or harassment and given guidance on how to dress. They are also introduced to mentors. To further support retention, for the first two years, apprentices are kept within their local area, though afterwards, they may have to travel further.

The program has changed the membership, which is now 52% minority. Of the 461 current apprentices, people of color (including women) make up over 75% of the apprentices and women comprise 11% (16% prior to COVID-19) of the total.²⁷ (Prior to COVID-19, women comprised 16% of the total.) Achieving and maintaining these numbers has entailed outreach, training, mentoring, monitoring hours including overtime, referrals from the hiring hall, tracking retention and investigating complaints all the while checking for disparities in outcomes.

San Francisco’s Office of Economic and Workforce Development (OEWD)

<https://oewd.org/>

(San Francisco, CA)

The OEWD Workforce Development Division seeks to create training and employment opportunities for underrepresented and disadvantaged job seekers in San Francisco in construction. To do so, the OEWD created the Local Hiring Policy for Construction (Policy) (i.e., resident-hiring on locally sponsored projects) that includes public works and privately funded projects on City-owned property and the CityBuild Academy, which requires the 50% of the pre-apprenticeships be local.

Results from this Policy have been successful for hiring people of color. From 2011 to 2020, people of color have comprised greater than 73% of the total known workforce.²⁸ However, female residents have comprised more than 4.5% of the workforce.²⁹

The CityBuild Academy has been in operation since 2006 and provides San Francisco residents with 18-week pre-apprenticeship and construction skills training program in San Francisco. The OEWD reports a total of “...1,310 San Francisco residents have graduated from CityBuild Academy and 1,184 graduates have secured employment in various construction trades.”³⁰ This is, in part, because CityBuild has had direct entry agreements with local unions. In July 2020, CityBuild in conjunction with the San Francisco Building and Construction Trades Council agreed that “...all Unions with a state-approved joint apprenticeship program in construction (to) enter into agreements, or modify existing agreements, with CityBuild to ensure that graduates of CityBuild Academy have a pathway for direct entry...” by 2023.³¹ Though CityBuild does not collect race/ethnicity or gender

data, it is possible to infer that the percentages are similar to those the OEWD reports having hired as a result of the Policy.

Seattle Priority Hire

https://www.seattle.gov/Documents/Departments/FAS/PurchasingAndContracting/Labor/PH_Brochure.pdf
(Seattle, WA)

The goal of Seattle’s Priority Hire, which was implemented in 2014, has been to provide employment to city and King County residents and “particularly those who have been underserved and underrepresented—residents of economically distressed ZIP codes, people of color and women.”³² Priority Hire was established through a community workforce agreement (CWA) with the Seattle Building and Construction Trades Council and the Northwest National Construction Alliance II and, to date, has included 39 total public and public-private projects.

To accomplish its multi-year goals, the City of Seattle established benchmarks for the number of projects or construction hours workers living in economically distressed ZIP codes should provide each year, which increases each year. The end goal for 2025 is for 40% of all construction hours to be completed by workers living in economically distressed ZIP codes. To accomplish this, there are interventions or processes at each stage. At the apprentice-level, there might be regular check-ins and case management or mentorship such as connecting them with journey workers who can provide guidance, and financial assistance for tools or work gear. At an organizational level, there is partnering with community-based organizations to “increase awareness, training and access in priority communities;” focus on “acceptable Work Site standards,” which includes training and site visits. At the City level, it also includes allowing site access for monitoring and investigation as needed. At the contractor level, there is a non-retaliation policy; as the City also monitors contractor compliance and interviews workers as needed.^{33,34} Finally, there is a Priority Hire Advisory Committee (PHAC) that advises the City on “...implementation and effectiveness. Members are appointed by the Mayor and represent construction labor unions, training programs, contractors (including at least one women- or minority-owned contractor) and community.”³⁵

Priority Hire has met its goal every year since 2016 except for 2020 during the coronavirus pandemic. At the end of 2020 and after eight years, half of the Priority Hire apprentices have been people of color and close to a quarter of journey workers have been people of color. Since 2016, roughly 200 women were placed into construction training and employment.³⁶ As a whole, 66% of individuals placed in 2018 were still being trained or employed in 2019 and 77% of individuals placed in 2019 were still being trained or employed in 2020.

Tradeswomen Build Nations

(United States)

Tradeswomen Build Nations (TWBN) is a national multi-craft, union-sponsored conference held in the United States that also attracts tradeswomen from Canada. Begun in 1983 by Tradeswomen Inc. (TWI) and though only intermittently held, it was originally designed to provide support to tradeswomen in California who were often isolated at work both physically (i.e., the only woman on a job site) and socially (and under scrutiny) by providing a shared space to discuss issues and strategies. In 2017, to expand this program nationally, NABTU and its Tradeswomen Committee took a larger role in funding and planning this conference along with local tradeswomen's groups. Since then, TWBN has been held in cities outside of California (Chicago, Seattle and Minneapolis) and, prior to Covid-19, the conference has expanded each year. In the last five years, TWBN attendance has grown 83% and is now the largest gathering of building trades members on a yearly basis.

TWBN also promotes retention and networking in the trades as well as advancement by hosting different sessions on developing leadership skills, responding to harassment, organizing women's committees, policy etc. Activities such as TWBN are central to this growth and for providing mentoring and other services designed to keep the influx of new women members in the trades.

Conclusion

Drawn to the trades for various reasons, people of color and/or women are still not always welcomed. Work environments can be isolated, difficult and even hostile; receiving equal and appropriate work assignments along with training can be difficult; though equal pay and benefits are guaranteed under collective bargaining agreements, access to equal overtime is not; and sexual harassment and sexual assault remain issues. While laws and legislation squarely address many of these issues, they nonetheless persist.

But this chapter has highlighted that there are many stakeholders in the industry—including many exclusively working for and with construction unions—that are dedicated to improving diversity, equity and inclusion in the skilled trades. Further, it is reminded that the initiatives identified here represent merely a fraction of all union-backed programs. In order to offer a representative sample, the programs featured in this chapter were chosen for geographic distribution, to the degree possible, so while many are in metropolitan areas with larger and denser populations on the coasts, some are successful initiatives in much smaller communities. As a whole, they suggest specific processes that can attract, train and retain people of color and/or women in the construction trades. Common elements from these successful initiatives include:

- Policy and legal frameworks such as project labor and/or local workforce agreements that support the recruitment and employment of people of color and women;
- Female-only pre-apprenticeship classes where possible;
- Career navigation services;

- Mentoring (in-person and virtual) from similarly situated people in the trades (e.g., other women or veterans);
- Financial assistance or low-value stipends in the form of transportation assistance;
- Lunch/food, help purchasing work clothes including boots and tools and/or dues;
- Case management for legal, housing and employment issues;
- Referrals for childcare including those with early start times;
- Hands-on training to different construction trades;
- Pre-apprenticeship training to trades that have entry-level jobs available as well as direct entry relationships with local unions;
- Partnerships with community-based organizations who can identify meaningful recruits (see BUD) and/or pre-screening of potential applicants via information sessions;
- Partnerships with community-based organizations who can support wrap-around supports;
- Supports that help pre-apprenticeship if there is a gap between when they graduate and when their registered apprenticeship starts;
- Strong construction math instruction to remediate deficiencies and build competencies;
- Regular monthly check-ins in the registered apprenticeship programs;
- Training on harassment and discrimination including options;
- State support whereby students in pre-apprenticeship programs receive childcare benefits;
- Monitoring and tracking the composition of pre-apprenticeships and apprenticeships;
- Tracking hours worked including training and overtime; and
- Having the power to investigate and adjudicate complaints.

Diversity, Equity, and Inclusion Initiatives in the Non-Union Trades

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Introduction

An expanding awareness of the advantages of a workforce that reflects a cultural mosaic, coupled with a moral responsibility to atone for past patterns of unfair discrimination has led many firms and industries to promote workforce diversity, equity and inclusion (DEI). Yet, for historical and institutional reasons, occupations classified as skilled trades (e.g. electricians, plumbers, tool and die makers, etc.) are perceived as late adopters of DEI. Scholarly attention in the skilled trades has so far focused on unionized sectors of the economy (Hill, 1962, 1984; Moccio, 1992; Paap, 2008). Our intent is to shine light on the practices and intentional efforts by non-union firms to recruit, retain and promote persons from historically disadvantaged groups into jobs with certifiable skilled trade credentials.

This is an inductive, ethnographic analysis based on expert interviews with business owners, human resource managers, and industry professionals involved in DEI. The research strategy involved gathering testimony from professionals in the construction and energy utility sectors of the economy that hire skilled tradespersons. Our semi-structured survey probed for DEI innovations along any phase of the employment process, including recruitment, hiring, training, retention and promotion. Most of the data are recorded interviews. An online option was available for prospective participants that did not want a face-to-face interview. Responses were analyzed separately by the researchers for common themes and notable idiosyncrasies to illustrate a range of diversity efforts. In the following sections, the statements in “quotes” were provided by survey respondents.

The next three sections provide details on the research methods, discuss key findings, and draw conclusions. Being an ethnographic study with a limited, non-representative sample, the authors do not claim that the DEI practices described herein represent the average or typical practices in these industries. Rather, the intent was to gain a sense of the frontier of DEI efforts by interviewing principals of firms that had a reputation for making exceptional DEI strides. We synthesize expert testimony in order to report on the diversity policy and practice by a vanguard of non-union firms that employ skilled tradespersons. The concluding section offers testable hypotheses for further study.

Methods

Our data collection strategy was to interview knowledgeable DEI practitioners. We chose a semi-structured survey approach that constrained the discussion enough to cover topic dimensions, while also providing latitude for the researcher and respondent to discuss areas in greater detail, or to explore unanticipated, pertinent tangents. In this regard, semi-structured survey methods are suitable for inductive, exploratory inquiries.

The survey begins with general questions about the firm, and history of efforts to implement DEI before asking about DEI policy at certain phases of the employment relationship. The survey concludes with open-ended questions about the success or failure of aspects of the DEI efforts.

From late February through June, 2021, we contacted and requested interviews from business owners, human resource managers and knowledgeable industry executives from firms that promote diversity. We employed “snowball” sampling to garner a sufficient number of qualified participants. This purposeful sampling method relies on networks of individuals that share ideas and information on the topic. We found online discussions on DEI at industry association websites, such as Associated Builders and Contractors (ABC) and Associated General Contractors (AGC), and reached out to these associations for firm names.^{37,38} We also made efforts to contact industry experts for names of firms that had reputations for making progress on DEI. As we conversed with industry specialists or executives we requested additional leads in order to expand the sample. This sampling approach produced 48 phone or email contacts with firms or industry experts, and of these, six agreed to an interview, and a seventh firm provided a written response. We also had non-recorded conversations with six persons who provided useful background information.

To supplement this count, we drew prospective respondents from the RAPIDS data, which identifies non-union firms with a history of hiring women, African Americans and Latina/o employees with state certified trade credentials.³⁹ We generated two lists from the RAPIDS data, one for individual firms and a second for regional training centers that serve the non-union sector. In the first list, we contacted 15 firms that had a history of hiring African Americans, Latinos or women, to request participation in the study. Several of these firms were on the AGC *Culture of Care* website list. Of the 15 contacts, two agreed to an interview.

In the second RAPIDS data list, we contacted 30 training centers to investigate the extent that DEI occurred at that point of career entry. We surmised that the training centers might admit students independent of the hiring by regional firms, and in this way promote diversity. Unfortunately, not one training center agreed to an interview. In all, we contacted 93 firms or training centers and were able to collect testimony from eight firms.

Of the eight firms who agreed to be interviewed, seven agreed to be recorded. The interviews lasted slightly less than one hour. Conversations included diversity goals, mechanisms, policy compliance and an assessment of effectiveness. The semi-structured

questionnaire was sent to prospective respondents prior to each interview as a way to stimulate respondent thoughts on the topics, and to assuage any concerns about the research objective. Respondents did not decline any of the questions, and nearly all were willing to expand the conversations into tangential, non-scripted areas.

In sum, although we were able to attract only nine participants, these interviewees provided a generous amount of information. The firms were located in seven different states, and had sizes ranging from a low of 20 to over 600 skilled trade hires. Occupations included: laborers, carpenters, concrete finishers, boilermakers, masons, fence installers, heavy equipment operators, welders, truck drivers, crane operators, sprinkler fitters, ironworkers, millwrights, welders and electricians. Several of the respondent firms were “double-breasted,” meaning that they had separate union and non-union operations.⁴⁰ Double-breasting enables firms to bid competitively on projects when labor costs are a critical factor, yet also access skilled union journeymen when bidding on work that is technically challenging or governed by the Davis-Bacon Act or similar state statutes.

Major Themes

Defining Diversity

Originally, our team conceptualized DEI to encompass groups along race, ethnicity, gender, sexual orientation, religion, age and disability. Race, ethnicity and gender were common categories targeted for inclusivity; nearly all respondents shared the objective of creating opportunity for African Americans, Latinos and females to enter the skilled trades. Of these three groups, respondents had the greatest challenge in attracting and retaining women.⁴¹ Respondents attributed difficulties in recruiting women to gender stereotypes and the reputational rigors of the trades. Retaining women depended on worker resiliency to co-worker hostility, in particular sexual harassment, and ability to function in a physically demanding work environment.

Age and disability were indirect DEI targets. Age became an issue for prospective employees approaching mid-life that had a troubled past (e.g. formerly incarcerated). Disability was raised by one firm that made accommodations for a worker with a learning disability. Physical disability was a protected category reserved for senior employees, not new hires. Firms sought to retain senior employees that suffered job-related injuries or illness for two reasons: first, it rewarded loyalty for years of service, and second, senior workers had valuable knowledge for training junior employees. Sexual orientation as a DEI target was offered once by a prospective respondent located in a community with an active LGBTQ population. Religion as a DEI target was never mentioned.

As the research progressed, the testimony led us to broaden our definition of DEI to include veterans, the formerly incarcerated, persons that successfully completed drug rehabilitation programs and recent immigrants. Respondents sought to attract veterans through jobs fairs and referral programs administered by the armed forces. While usually lacking trade skills, one respondent perceived veterans as desirable candidates due to other qualities, such as task discipline.

“I primarily hire from the neighborhoods that I invest in. I’m looking for people who typically aren’t given a shot.”

Another subset of respondents framed their goal as providing a “second chance” for persons with legal histories that might disqualify them from other employment opportunities (e.g. crime or drug abuse). Firms work with the state correctional authorities to hire former inmates that complete adult readiness training. Finally, other firms took pride in offering employment to immigrants with Green Cards. Augmenting the list of disadvantaged groups was necessary to capture the full picture of respondent DEI goals.

“We are DEI... we are Diversity, Equity... we are a minority business. We promote Diversity within our organization with what we call our why. It is not a program it is just how we operate and do business.”

All the responding firms belong to industry associations that define diversity in conventional terms. While the industry networks largely concur with most of the aforementioned targeted DEI groups, we observed that industry associations also consider firms owned by minorities or females as DEI successes. Minority and female owners were aware of their pioneering role in occupations that are historically white and male. An expression of pride was in pointing out that their intent was to not rely on minority set-aside contracts for company success. These owners wanted to be known as capable enterprise managers.

Efforts, Not Programs

Our original survey asked prospective respondents for information on their firm’s diversity *program*. However, numerous persons declined to be interviewed, offering that they could not be helpful because they had no “program” per se. Further, most early survey respondents were reluctant to characterize what they do as an internalized administrative policy and practice. Practices instead reflected “how business was conducted” as an effort to be “fair” or “create opportunity for all.” To reduce the survey refusal rate we edited documents and correspondence requesting an interview by removing the word “diversity program” and replacing it with “diversity efforts.”

“It is not a program, it is just how we operate and do business.”

We underscore the range of DEI motivations in the sample. Most respondents told us that their DEI efforts originated from a heightened awareness of the historic challenges by disadvantaged groups to enter the skilled trades, i.e. that exceptional efforts were the “right thing to do” given the barriers to entry, both historic and contemporary. On the extreme end, one firm internalized DEI as a core mission. In this case, the owner established the enterprise in order to revitalize distressed urban neighborhoods. Hiring workers from those communities and training them in a craft was a means toward that goal.

“People want to see more diversity in the executive team, in the recruitment process, and the hiring process.”

Nearly all respondents report that DEI was an executive initiative. For smaller firms, it was the owners that created and administered the policy. With larger firms, it was the executive suite that was responsible for the DEI inception and direction. Critical was the strength of commitment at the top and communicating the directive to branch subunits. One firm attached monetary bonuses to meeting DEI goals, although more common was to include DEI progress as a factor in annual performance reviews. For larger enterprises, a typical approach was for executives to set a general policy, and then assign a human resource subunit to work out the operational policy.

“Our president is evaluated on diversity and our job is to get in alignment with him. There is a goal out there and it is monitored at the executive level.”

External institutional factors played a positive function in encouraging DEI practices. For instance, it is clear from website postings that major industry associations promote DEI, and that firms gain recognition by signing on to become DEI leaders. Law is an additional factor. Federal Equal Employment Opportunity law imposes obligations, and some state labor departments have additional requirements to follow for firms to be eligible for state contracts. A third institutional factor are the contracts between larger firms and subcontractors. Large firms with a commitment to DEI would communicate these values to subcontractors, and in some cases build DEI efforts into the bid criteria. These institutional forces induce firms to seek and admit minority job applicants.

Finally, a commitment toward diversity can be consistent with business opportunity. Firms, especially those operating within a circumscribed urban area, can earn a measure of goodwill by hiring from a diverse, local workforce. Several firms emphasized their close relations with community and civic organizations, whereby they derived benefits for the supply of labor and contracts. Lastly, the practice of hiring from disadvantaged populations is not inconsistent with a strategy of hiring at a wage and benefit level that is in the lower range for similar types of work. We did not request wage data in the survey, however several respondents complained about current difficulties in attracting and retaining qualified labor.

Recruitment and Pre-hire Period

All respondents testified about their efforts to recruit persons from targeted DEI groups. There were subtle differences between large and small firms. Smaller firms relied more heavily on local and informal family or community connections to recruit eligible candidates for job openings. Community partners included publicly funded training centers, non-profit community organizations (e.g. Urban League), civil rights agencies, schools and churches.

“[We develop a] career path for students, through construction programs [working with] community-based organizations in diverse neighborhoods.”

Larger firms had dedicated staff, and relied more on state agencies and contract authorities, job fairs at colleges, pre-apprenticeship programs and events sponsored by the armed services or correctional authorities. One firm volunteered that they declined to investigate the criminal backgrounds of job applicants in order to promote open opportunity through absolution. Another larger firm used a “blind” resume process that did not ask for age, race, and ethnicity.

“We have three full-time workforce development employees. I think with having three people we are able to focus more on targeted recruiting and finding the right people for the company, but also diversifying.”

Firms generally did not invest in pre-hire training to prepare prospective employees for skilled trade jobs, but rather, relied on local public and non-profit agencies to fill this role. The training at this stage was general in nature, and portable across multiple trades in an industry (e.g. OSHA 10). While the respondent firms did not direct the training, several firms played a supportive role by donating to these organizations, participating in some leadership capacity (e.g. board member), and serving as an ad hoc presenter or teacher.

“Whenever we are going out to the high schools [to recruit]...we try to get other folks [in the DEI targeted group] to go along with us. Just to show others hey look, this young man has made it, he’s a [tradesperson] now.”

Most respondents engage in recruitment through middle, high schools and community colleges. Nearly all attend meetings and give presentations (e.g. junior achievement) in schools that have large minority populations. In order to provide role models for young persons, firms will assign employees to these events that mirror the diverse student populations. Outreach to schools was often paired with social media advertising to spread the word about opportunities for women and people of color in the skilled trades. Any social media visual ad will feature women and people of color to reinforce a commitment to diversity and effort toward equal opportunity.

“For the longest time we were a referral-only company. That means that somebody in our company had to recommend someone else. Now just recently we are going open hire. The trade has become so strapped for tradesmen we have to pull out all the stops to try and find people or else we [will] never be able to maintain the customers that we currently have or expand.”

Respondents indicated that finding highly motivated recruits was difficult in the present labor market conditions. One firm altered their recruitment strategy from a referral-only approach to a broad promotional method to attract a sufficiently large pool of prospective workers. For many, the chief criteria for hiring someone was an eagerness to work in the industry. The initial assessment focused on work ethic and cultural fit; finding recruits with trade skills was preferable, but not necessary.

“For whatever reason, it is hard to keep females.”

Several respondents mentioned the exceptional challenges of persuading women to consider trade occupations as a career. Gender stereotypes, and the history of the trades as a non-traditional path for women lead prospective female employees to self-segregate into other, often less lucrative, jobs. To stimulate interest in the trades, firms provide scholarships for women that enroll in relevant community college programs. An extension of these efforts is to recruit women for summer internships. In addition to providing seasonal employment that help women pay for college, internships serve as a screening method for the individual and the company to assess occupation or industry fit. To further encourage women to consider a career in the trades, firms would communicate that the combined successful internship coupled with graduation from a relevant community college program or technical school were the qualifications for supervisory and management positions.

Probationary Period

Our survey probes for whether firms engaged in special DEI efforts during the probationary phase of employment which, for most firms, was 60 to 90 days from date of hire. Workers in non-union firms are employed-at-will, which means they can be discharged by the employer without cause at any time. Thus, unlike the unionized sectors, passing probation does not mean that a worker transitions into an elevated job security status. Instead, probation was framed by respondents as a trial period to assess skill level, work ethic and resilience to work environmental factors.

“People come online, and we know fairly quickly whether they can hack it or not.”

Many firms reported nothing extra in this phase; for several firms, the DEI efforts essentially stopped with recruitment. However, firms in this category did emphasize equitable treatment, more specifically, guarding against non-meritorious assessments by supervisors. Several stressed the importance of educating existing employees in order to raise sensitivity in handling diverse populations, or situations that require tolerance. Within the trades, it is known that the work environment can be sexist and intimidating. Bullying was a problem mentioned by more than one respondent. Several firms emphasized ongoing internal training so that new hires were welcomed into the field. For instance, firms might invest in sexual harassment training to protect female and LGBTQ employees. Others described pulling offenders aside after any improper incident to coach and communicate good practice. Repeat offenders were occasionally disciplined.

“We have a mandatory all staff harassment training to kind of address the different biases that might occur in the workplace.”

Training supervisors and foremen, for some firms, were viewed as critical to achieve DEI goals due to the pernicious level of abuse that can happen with an authoritative power imbalance. Further, some firms depended on supervisors to defend subordinates when they were abused by employees of general contractors or other subcontractors operating

at the same worksite. This was raised in regard to xenophobic remarks directed at Green Card holders.

“We have a tremendous workforce shortage right now. When there are bodies willing to show up every day and try their best to do what’s expected, then that’s someone I’m going to do whatever I can to keep them around.”

Retaining new hires was a challenge for several firms. Toward that end, several firms described mentoring during the early phase of employment to guide new hires so that they followed work rules, operated safely, and grew their skills. Common was the policy of pairing experienced, seasoned trade workers with new hires. Mentoring intensity varied across firms, from relatively intense on-the-job instruction to less intensive shadowing.

At least one firm described the infeasibility of asking full-time workers to be after-hour mentors. They instead adopted a low-intensity “buddy” partnership, where new hires could confidentially ask an assigned senior employee questions about firm policy or project logistics. A buddy could be anyone in the firm: a fellow tradesperson, staff, or someone from management. The goal was not to impart trade skills, but to lessen any anxiety about working in a new environment.

Retention and Promotion

For most firms, the probationary period included a skill assessment. Once completed, firms determine the entry point for new-hire training. Larger firms are more likely to enroll workers in registered skill training programs, whereas smaller firms favored on-the-job training by supervisors and senior trade workers. Relative new hires move to different skill and pay levels based on proficiency as judged by supervisors and owners. At this stage, respondents often discussed DEI efforts to retain and promote in general terms, such as inculcating a “culture of care.” Respondents offered that the objective was to nurture an environment that is psychologically safe for all workers.

“Creating a culture within the organization that is open, welcoming and fair to all employees.”

For most firms in the study, diligence on the recruitment phase was the primary affirmative DEI effort. Diversity at the hiring phase was then matched with policy to instill a fair and tolerant work environment. Thus, for most, DEI practice during the retention and promotion stages of employment involves policing employee behavior for improper conduct, protecting workers against maltreatment by other contractors, and communicating diversity as a company value. Small policy details matter. For instance, one firm expanded the pronoun options for employees in order to convey acceptance for LGBTQ workers. Creating such a culture of inclusion was described as an ongoing challenge by respondents.

“We might change the path for someone [when the rigors of the job were too stressful], especially with our female population.”

Some firms did take exceptional measures to retain and promote persons from targeted DEI groups. One way this occurs is by a conscious effort to evaluate persons for where they best fit within the organization, and transfer them into positions so they succeed. One firm dedicated to advancing women in the trades has new hires perform traditional tasks, yet upon request and company need move women into less physically demanding jobs. The respondent admitted that this practice can create internal workforce tension because it usually meant bypassing senior employees for assignment transfers. Even in non-union contexts, workers expect seniority to carry weight in promotion or transfer decisions.

“A laborer can become a concrete finisher.”

One type of accommodation was to allow flexibility in assigning persons across crafts. Perhaps here is a critical difference with the union sector. Unions in the skilled trades protect craft jurisdictions. In the non-union sector, firms have few constraints if, for example, it is decided to begin someone as a concrete finisher and move them later to a carpentry position. To retain workers, firms committed to DEI would liberally transfer workers into different skilled trade positions. Respondents positively assessed workers that were motivated to acquire a variety of skills.

“Well, it [the woman’s employee resource groups] was chartered in 2019. So, our executive leadership committee thought it was a good group to have in our company to help recruit, retain and support woman.”

Another innovation was to create support networks for members of DEI targeted groups. The intent of the networks is to stimulate discussion on workplace issues, share resources, and enable employees to connect with peers. Firms might invite guest speakers for presentations before the network, or provide reading lists, web links and other resources that celebrate diversity. One firm created support networks for women, African Americans, Latinx employees, LGBTQ employees, workers with disabilities, veterans, and a global multi-cultural group. Another firm sponsored a support network to retain women.

Finally, one respondent became involved in the personal lives of workers by providing counsel and material support to employees. This firm gave situation-dependent resources to workers to deal with daily living needs, such as car repairs, securing an apartment, buying furniture and household goods, and subsidized legal assistance. Another firm secured workforce grants through “One Stop” workforce development centers to give employees vouchers for transportation, day care, tools, and work clothing. The objective is to avoid losing valuable employees due to resolvable family and life stressors.

What Works and What Doesn’t

To be successful, respondents offered that diversity should be a company goal that is visibly promoted in communities where the firm operates. Some firms achieve this by accepting leadership roles on public and non-profit boards where they spread this message. Intentionally hiring a diverse workforce is half the task, the other half is to

monitor and improve the internal culture of the firm. Firms that want to make progress on DEI must act upon internal stressors that create an unfair and hostile environment in order for the effort to be credible and trusted.

"I found that you have to over-communicate everything. Otherwise, people fill in the blanks, and typically the blanks they fill in the holes with are so far away from the truth."

"Being honest up front to explain minimum expectations is important... including exposing potential hires to the environment."

The survey also asks respondents for insight on the less successful aspects of their DEI efforts, and what needed to be revised. Finding talent was described as challenging. Inexpensive methods (e.g. a job posting on Indeed) are ineffective; active engagement in the community was necessary. Low-cost recruitment enables a firm to amass a large candidate pool, but this meant excessive time and resources to select and train eligible candidates. Resources at the early recruitment stage minimizes the need to discharge new hires for inadequate work performance. One firm described the value of careful pre-hire screening.

"I think what has hurt us in the past was mass hires... (We) would hire a whole group of students out of a high school and not really explain to them what the environment's like... You would have 75%-90% drop out and eventually you're only going to end up with a couple of percentage points of folks who remained with us... we need to be more targeted."

Several respondents commented on the limits of mentoring. The purpose of mentoring is to reduce the rate of new-hire failure. Mentoring was unsuccessful when mentors are full-time employees that are not provided a time allowance to follow-up with mentees. Inadequately resourced mentoring devolves into a less formal program of occasional consultations over a short time frame. On this point, it appears that respondent firms that tried mentoring found it had limited effectiveness. One testified that no amount of encouragement or mentoring reverses a poor work ethic.

Finally, firms commented on the ineffectiveness of "hard" metrics for achieving diversity goals. Larger firms tried to impose quotas on subcontractors, but this policy was rescinded. Instead, the goal of diversification was communicated to subcontractors, and monitored by the general contractor, but the DEI means and pace was open to the discretion of individual firms. Similarly, few firms attached executive pay or evaluations to progress on diversity goals. Rather, most firms in the sample had vaguely defined DEI objectives, and avoided attaching pay or contracts to hard metrics.

Conclusions and Hypotheses

At this stage, diversity in the nonunion trades is understood as an inclusive culture, where a commitment is typically expressed in terms of company values or philosophy. In all cases,

a CEO or company owner championed these values. While an awareness of institutional or structural racism or genderism was present, the intent of DEI practice was not to offset the effects of historic discriminatory barriers to the trades. Respondent firms were instead forward-looking, expressing a robust ideal of meritocracy, which was only achievable in a work environment where there was tolerance for racial, ethnic and gender differences. A common sentiment was that persons willing and able to work should have an equal opportunity; respondents stressed an open door for motivated candidates with a strong work ethic. Thus, with a few notable exceptions, the commitment to diversity was not an effort to correct for standing social inequities.

Affirmative action to diversify the trades, to the extent it was practiced, was primarily reserved for the recruitment phase of employment. All responding firms report that they expend resources on outreach and screening into neighborhoods with large populations of persons that match DEI targeted groups. Outreach involves partnerships with an eclectic range of community institutions, including schools, churches, non-profit community development organizations, local clubs, the armed services, correctional agencies and family or friend networks. These institutions usually served an important screening function for participating firms. A typical approach is to send employees out to recruit that closely identify with the targeted DEI group.

Hiring patterns reflected both the local labor pool and the politics of groups. Smaller firms especially sought to earn community goodwill by recruiting a workforce that resembled proximate societal demographics. Larger firms had a relatively institutionalized method for recruitment (e.g. job fairs sponsored by the state, city or military), yet most nonetheless tapped into informal networks, friendships, and kinships for job candidates. At least one firm provided employees with a modest bonus for recruiting new hires.

"I think we treat everybody [employees] the same. Because hopefully we have done our job or due diligence prior to them coming on ... to identify whether or not they have the skills necessary to go through school and also soft skills in order to be successful out in the field."

Post-hire efforts at DEI centered on fair treatment and mutual respect. This was perceived as a feasible ideal because it was acceptable to both members and nonmembers of DEI targeted groups. An environment free of disparate treatment was viewed as a precondition for meritoriously determined pay, assignments, and promotions. To achieve this condition, principals had to monitor the behavior of employees, especially those in supervisory positions, to guard against the inequitable treatment of workers. Monitoring occurred in tandem with messaging on the value of DEI, communicated through multiple mediums, including social media, company websites, administrative announcements, training materials, and advertising. A few firms reinforce the message with formal diversity training, and fewer still include DEI as a dimension in the performance evaluations of supervisors. Respondents testified that watchful and responsive action to address internal conflict, tension or abuse was critical to make all employees feel welcome and psychologically safe.

In addition to these *internal* efforts, respondents also mentioned the importance of taking action to affect conditions *external* to the firm. In the construction industry, where multiple sub-contractors work under a general contractor, there is a potential for abuse and harassment from the employees of other firms. Firms committed to DEI expected supervisors to intervene when employees were unfairly treated. This might even include demanding that an offending person be removed from the worksite for especially egregious acts. This was one way that firms sought to pressure others to conform to DEI practices. One larger firm with the power to serve as general contractors went a step further by building DEI language into the criteria for sub-contractor bids.

While it appears that the dominant model is as described in the previous paragraphs—an emphasis on recruiting from targeted groups coupled with an equitable and safe work environment—a few firms did make exceptional post-hire strides to retain and promote workers from identified DEI groups. Practices included providing help for personal matters that are typically outside of the employer-employee relationship, such as legal assistance, auto repairs and financial literacy. While diversity was broadly conceptualized, for some firms, recruiting and retaining women was the defining metric of DEI success. A trade workforce that is ten percent female is an exceptional ratio. Firms in this category internalized diversity as a core mission, and tended to be smaller, women or minority owned establishments.

Once hired, trade skill is largely earned through on-the-job training in smaller firms. Large firms use one-the-job instruction combined with supplemental institutionalized training through DOL certified programs. Firms in competitive markets have difficulty retaining skilled workers, and some expressed disappointment at the loss of training investment due to turnover. One firm testified that retaining a new hire for one year is considered a success. Firms used a variety of incentives to persuade workers to stay, occasionally offering modest financial rewards. More common was to hold out the prospect of transitioning senior trained workers to less physically demanding work, into supervisory positions, or even as administrative staff.

As stated at the outset, this method of research is suitable for an exploratory plunge into a topic with the goal of generating testable hypotheses. Respondent testimonials led us to the following:

- **H1: For these industries, DEI programming is presently at an embryonic stage.**

Observations that support this hypothesis include: (1) the newness of DEI awards at major associations, such as the ABC and AGC; (2) that many firms identified as DEI leaders declined to discuss their DEI efforts, and for those firms did agree to an interview, few characterized their efforts as programmatic, (3) the rarity of hard metrics to track DEI progress and that nearly all firms operated with soft DEI goals. We suspect that this hypothesis applies primarily to larger organizations (e.g. the energy sector). There is likely significant variation in DEI efforts among smaller firms (e.g. construction sector). Smaller firms in this study that operationalized DEI as a core mission described exceptional efforts

to create opportunities for historically disadvantaged groups. A question for future research is just how widespread similar DEI efforts take place with smaller establishments.

- **H2: The DEI challenges in unionized sector are different from the non-union sector due to differences in labor supply strategies.**

Union and nonunion firms have slightly different competitive advantages. Unions in the trades deliver value by supplying highly skilled labor that is both productive and technically adept at complicated problem solving. Nonunion firms in the trades deliver value by providing lower-priced labor. Union tradespersons receive more intensive and expensive skill training than their nonunion counterparts, which in turn justifies a higher pay and benefit scales. In the union trades, a major DEI challenge is in overcoming barriers to entry for exclusive job opportunities entailing, among other things, contending with the internal political pressure among members to reserve those opportunities for friends and kin. The nonunion trades, in contrast, face challenges recruiting new hires and retaining experienced persons under conditions where pay is at a sub-premium rate. Thus, the DEI challenge in the competitive nonunion sector is to convince prospective workers to accept strenuous and potentially dangerous work at nonunion pay rates, and then prevent trained workers from leaving elsewhere for slightly higher compensation. Nearly all respondents, yet especially firms in competitive product markets, described the problem of skilled worker turnover. In short, different DEI challenges along the union-nonunion distinction flows from the structural dissimilarities in product markets and skill acquisition systems.

- **H3: Inter-organization institutions facilitate the spread of DEI in the trades.**

Industry associations normatively promote diversity through education and recognition awards for progress on DEI. Because these organizations promulgate DEI policies and “best practices,” it is predicted that DEI practices spread faster and are more successful for firms engaged with these associations. Contracts between firms are a second institution with the potential to facilitate the spread of DEI policy. General contractors are in an especially influential position to induce DEI by including relevant criteria in sub-contractor bids. Likewise, government contracts that include DEI criteria in requests for proposals will serve a similar DEI policy promulgation function.

Diversity in Construction Apprenticeship Programs

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1. Introduction

Racial and ethnic minorities and women were historically underrepresented in the construction labor force, and especially in the higher-paying, higher-skilled trades. Following the passage of Title VII of the Civil Rights Act of 1964, the status of minorities in skilled trades and strategies to increase their participation in these occupations became topics of lively public discussion. In 1965, President Johnson signed Executive Order 11246, which prohibited federal or federally assisted contractors and subcontractors from making employment decisions that discriminated on the basis of race and ethnicity. Later amendments strengthened the order and expanded its scope to include sex as early as 1967. President Carter required written affirmative action programs for women in federally-funded construction projects in 1978. In the same year, the Department of Labor amended equal employment opportunity requirements in apprenticeship and training regulations (29 CFR Part 30).

This chapter will present statistical information on how women and racial minority groups fared subsequently in the construction trade registered apprenticeship programs, and whether these early policy interventions bore fruit decades later, between 1999 and 2019. Section 2 provides a brief description of the registered apprenticeship system in the U.S. Section 3 presents descriptions of the apprenticeship data sources that serve as the foundation of the chapter. Sections 4 and 5 provide background on registered apprentices and the gender and racial diversity in the construction workforce, respectively, over the period under study. The next five sections constitute the core of this chapter. Sections 6, 7, and 8 present the temporal, geographical, and occupational patterns in participation of workers from historically underrepresented gender, race, and ethnic groups in the incoming classes of registered apprenticeship programs. Section 9 focuses on the attrition and retention rates of these apprentices and compares the performances of apprentices by gender and race. Section 10 reports on a set of apprentice characteristics, which are likely to capture their preexisting skill levels: education level, age, veteran status, and on-the-job credit apprentices were awarded at the time of registration.

One of the distinguishing features of apprenticeship training in the U.S. is that in the organized sector of the industry, trade unions, in cooperation with the employers participating in collective bargaining agreements, take an active role in organizing and administering apprenticeship programs. Each section of the chapter will draw attention to

the role of program sponsorship by comparing the performances of the joint union-employer programs and the non-joint unilateral employer programs in expanding demographic diversity in apprenticeship training.

2. The U.S. Registered Apprenticeship System

Apprenticeship is a workforce development strategy which combines on-the-job training (OJT) and related in-class instruction in a specific occupation. The distinguishing feature of apprenticeship is that it is employment: apprentices are paid for the work they perform during training.

The U.S. government created the registered apprenticeship system in 1937 with the passage of the Fitzgerald Act to promote labor standards and to protect the welfare of apprentices. The central administrative units in the registered apprenticeship system are the Office of Apprenticeship (OA) of the Department of Labor (DOL) and federally recognized State Apprenticeship Agencies (SAAs). There are currently 24 states where apprenticeship programs register with the OA (hence, the OA states). The remaining 26 states and the District of Columbia have their own SAAs (hence, the SAA states), which register the apprenticeship programs. The OA and SAAs oversee registered apprenticeship programs. These agencies ensure the quality and credentialing of training by setting and enforcing standards of training, look after the safety and welfare of the apprentices, issue nationally recognized, portable certificates of completion to graduating apprentices, and provide technical assistance to sponsors to develop new programs. They are not directly involved in funding or organizing training.

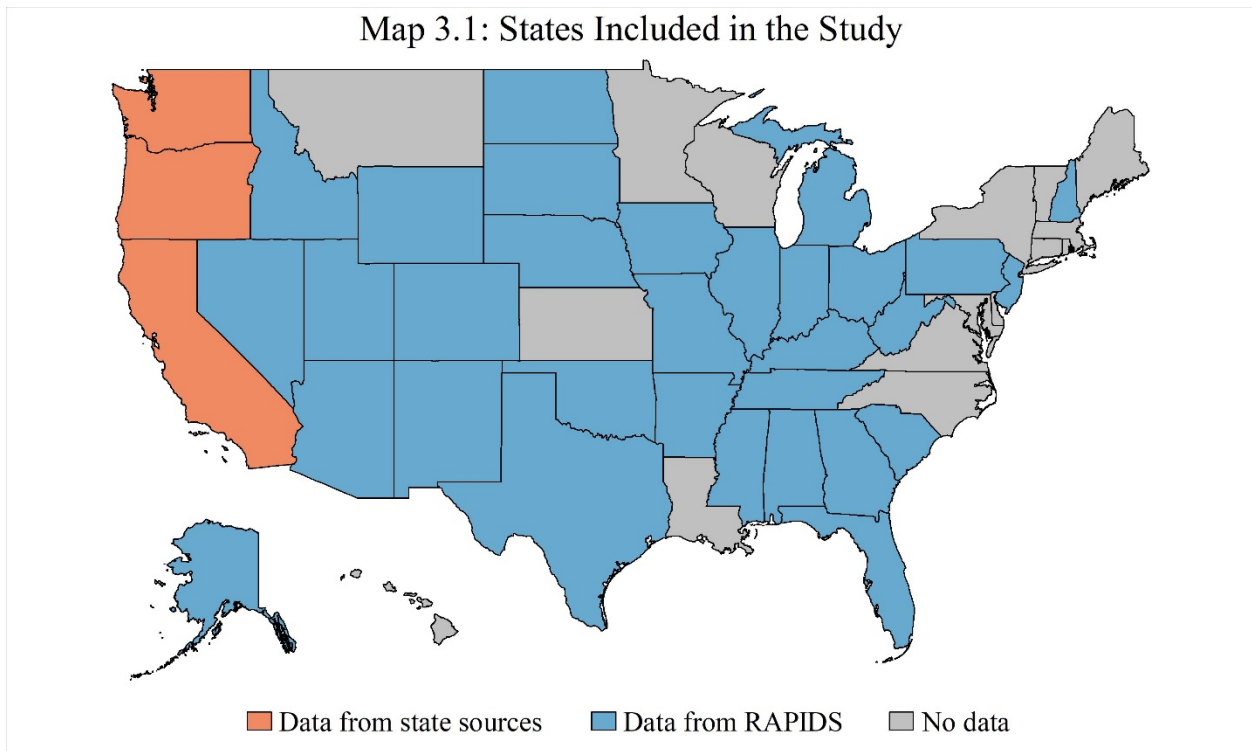
Apprenticeship program sponsors fund and organize training. The dominant form of sponsorship, in terms of the number of registrations, is joint apprenticeship training committees, which are organized cooperatively under the collective bargaining agreement by a trade union and signatory contractors or (in much fewer numbers) a single contractor. We will refer to these programs as “joint programs.” Alternatively, a single employer or a group of employers (often under the aegis of a trade organization) may unilaterally organize training programs. We will call these programs “non-joint programs.”

3. The Data

Apprenticeship program administrators of all federally registered programs and nine SAA states report data on each new apprentice to the OA, which compiles them in the Registered Apprenticeship Partners Information Management Data System (RAPIDS) database. In the remaining 15 states, SAAs collect and compile similar information. These federal and state-level databases are the foundation of this analysis.

The primary limitation of the apprenticeship data is that they are not currently available for all states. Complete RAPIDS data over the 1999-2019 period are available for 31 states. We obtained data from three additional states—California, Oregon, and Washington—separately and appended them to the RAPIDS database. Map 3.1 shows the states covered in this study and data sources. While several populous states, including New York, Massachusetts, and Virginia, are missing, the dataset accounts for three-quarters of the U.S. construction workforce. The missing states notwithstanding, it is the most comprehensive individual-level database on registered construction trades apprentices compiled to date for research purposes.

The subjects of this study are workers training in construction trades. We exclude white-collar, managerial, and non-craft occupations. We also exclude apprentices in the military and in prisons.

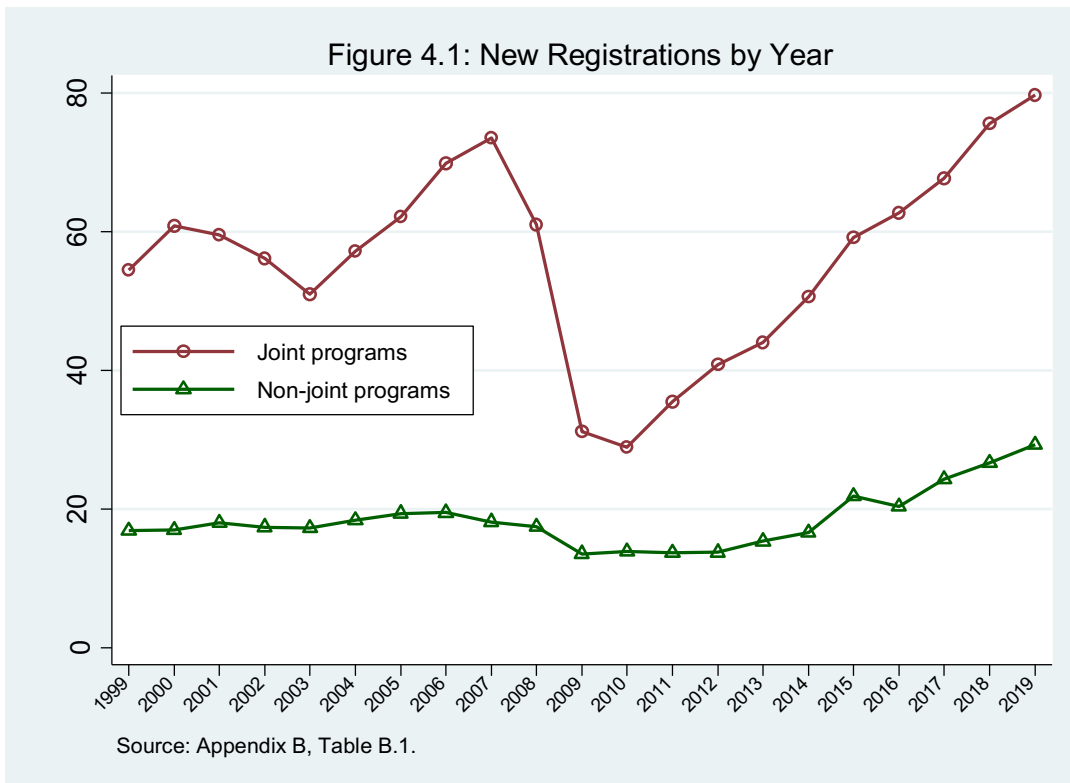


4. The Background: Construction Trades Apprentices in the U.S.

Apprenticeship is the traditional gateway into the skilled trades in construction. Only a fraction of construction workers, however, take this route and become certified journeyworkers. What distinguishes a journeyworker is the demonstration of all-around expertise in all aspects of the occupation. Completion of apprenticeship requirements validates possession of these skills, but it is not necessary for journeyworker certification. It is possible to receive certification, without any or with some apprenticeship training, by passing journeyworker examinations.

In the states covered in this study, on average, about 75,000 workers started training in construction trades apprenticeship programs annually between 1999 and 2019. Figure 4.1 shows annual registrations in the joint and non-joint programs.⁴² There are two striking patterns. First, the overwhelming number of registered apprentices are trained in the union-contractor jointly sponsored programs. The average number of registrations in the joint programs is roughly 56,000 per year, three times larger than the average registrations in the non-joint programs. The disproportionate role of the organized sector of the industry is stark in view of the fact that it accounted for a fraction of the construction workforce. Moreover, dominance of the organized sector in apprenticeship training was sustained while the rate of unionization in the construction craft workforce was declining between 1999 and 2019.

Second, variations in the inflow of new apprentices are closely related to the business cycle. The U.S. experienced two recessions in March-November 2001 and December 2007-June 2009, during which apprenticeship registrations dropped. The decline was especially sharp during the Great Recession. New registrations declined both in the joint and non-joint programs during times of economic contraction, but the impact is greater on the joint programs. Between 2007 and 2010, joint program registrations dropped by 55% while non-joint program registrations dropped by 30%. The share of joint program registrations in the total declined to their lowest levels, 69.7% and 67.5%, in 2009 and 2010, suggesting higher vulnerability of the joint programs to economic contraction.



It is noteworthy that the adverse impact of recessions lingered even after the general economic expansion started. The number of registrations continued falling after the recessions in 2002 and 2003 and 2010. Eventually, however, new registrations recovered steadily over the 2004-2007 and 2011-2019 periods. One reason for the continuing depression in the number of registrations during the post-recession period may be that the construction sector recovery started later than the rest of the economy. The annual value of the non-residential construction put in place, for instance, declined from 2008 to 2011 and increased after 2011. Another reason may be that even while the construction job market improves, apprenticeship program administrators wait for the upswing in economic activity to take root before hiring new apprentices.

5. Gender and Race in Construction Trades

In order to provide a baseline to evaluate diversity gains among construction apprenticeship programs, we start by looking at the gender, racial, and ethnic makeup of the skilled construction trades as a whole—including both new and experienced workers—between 1999 and 2019. Overall, the construction trades workforce is very male. Women’s average shares in the union and non-union workforce between 1999 and 2019 were 2.0% and 2.2%, respectively. Female shares did not exhibit any discernible trends over the two decades.

The most notable demographic transformation in construction workforce has been the explosion of the Hispanic share, which has increased steadily over time. In both the union and non-union construction craft workforces, the Hispanic share doubled from 1999 to 2019. The Hispanic share in construction is substantially higher than their overall share in the U.S. labor force.

The Black share in both union and non-union workforce were around 8% in the early 2000s, but declined after the Great Recession to below 6%. They recovered after 2010 but did not reach their earlier peaks. In 2019, they stood at 6.6% in the union and 7% in the non-union workforce. Non-Black, non-Hispanic minority (“other race”) shares, on the other hand, were on a positive trend, especially in the union workforce.

There are clear geographic patterns by race and ethnicity. The Hispanic shares are the highest along a band in the Southwest: the six states with the largest Hispanic shares in construction are Texas, New Mexico, Arizona, California, Nevada, and Colorado. The highest Black shares, in turn, are in Southern states: District of Columbia, Mississippi, South Carolina, Georgia, Alabama and Maryland. The other race category was most heavily represented in Hawaii, Alaska, and Oklahoma.

6. Gender and Race Diversity in Apprenticeship Registrations over Time

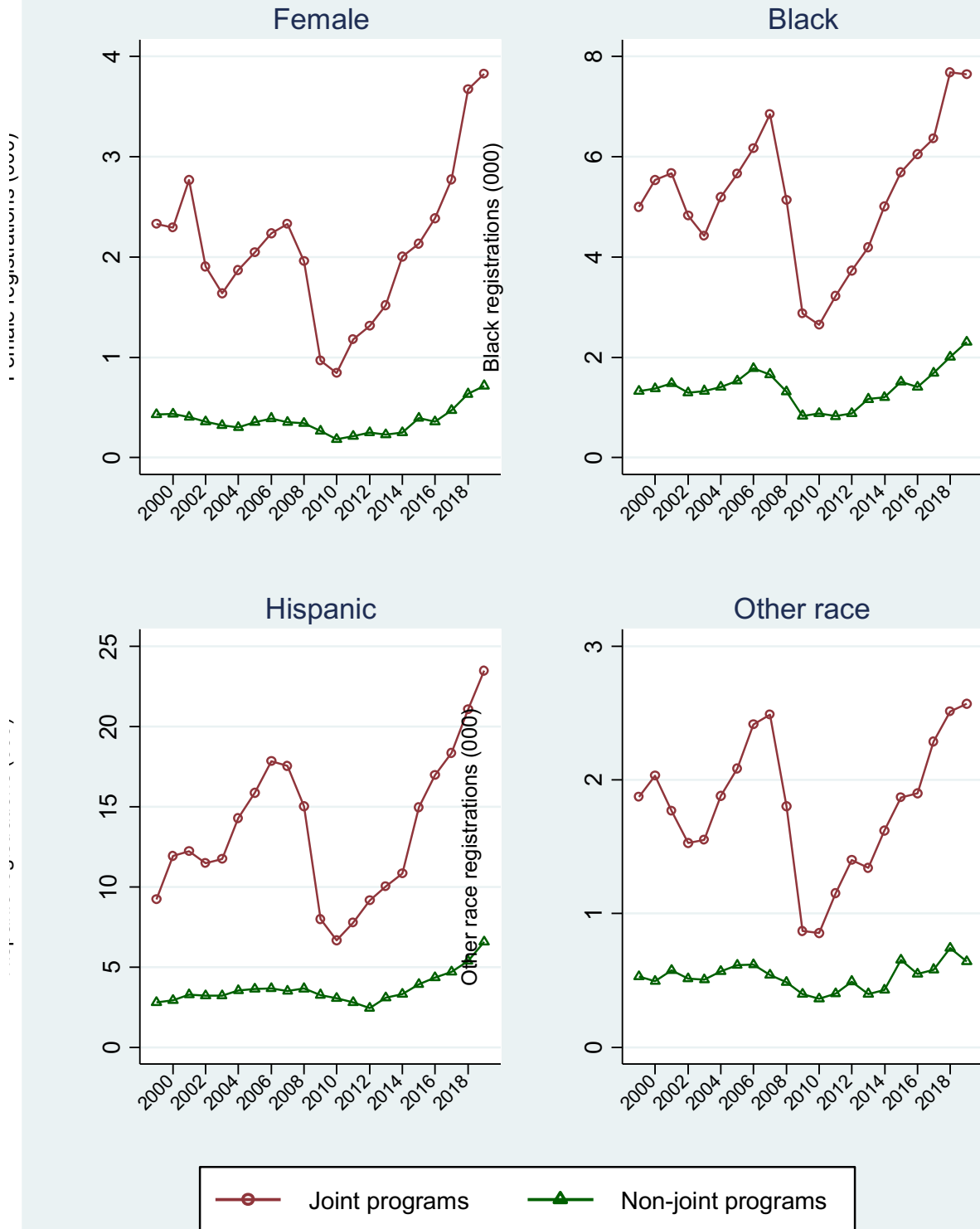
The total number of new registrations in the construction trades apprenticeship programs between 1999 and 2019 was 1,570,302. Apprentices were predominantly male (96.7%)

and White (65.1%). Over the years, however, the racial composition of the apprentice workforce changed and registrations fluctuated with the business cycles.

Figure 6.1 shows the annual female and racial minority registrations by program type; due to statistical limitations, the merged apprenticeship dataset from four sources treats Hispanic ethnicity as equivalent to race. These time-series plots indicate, first, that across gender and race, the overwhelming majority of apprentices are registered in the joint programs. Second, the plots have time profiles that are largely similar to the total registrations in Figure 4.1. Thus, the business cycle had similar effects on women and minorities in both joint and non-joint programs. Economic contractions reduced the number of registrations and expansions boosted them. The impact of the 2001 recession was smaller, especially on Hispanic registrations. The Great Recession, however, led to very sharp declines across the board. Registrations recovered after each recession. Following the 2001 recession, these rebounds were strong for each minority group but somewhat muted for women. After the Great Recession, women and Hispanic apprentices had the strongest rises in registrations. In comparison with the non-joint programs, joint programs responded more sharply to contractions but also recovered more swiftly during expansions.

A striking feature of Figure 6.1 is the explosive increase in the number of Hispanic registrations. The number of Hispanic registrations more than doubled from 1999 to 2019. While apprentices of other minority groups also rose, their growth rates were more modest.

Figure 6.1: New Registrations by Year



Source: Appendix B, Table B.2.

According to Table 6.1, which shows average shares in registrations, women and minorities were better represented in joint programs than in non-joint programs between 1999 and 2019. The average share of women in the joint programs was almost twice as high as that in the non-joint programs. The margins were smaller for racial minorities, but not insignificant for Black and Hispanic participants.

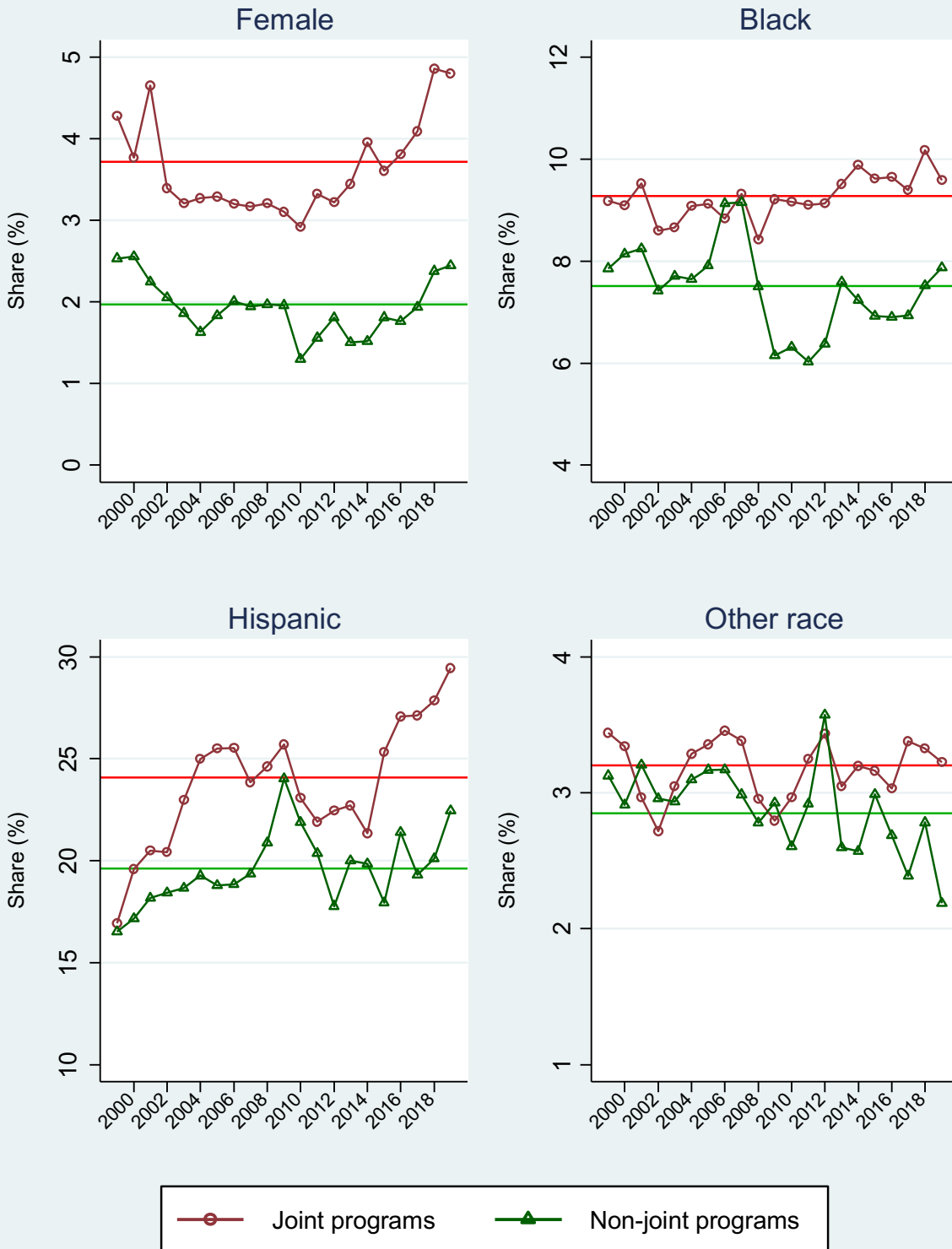
Table 6.1: Female and Minority Shares in New Apprenticeship Registrations 1999-2019

	Joint programs	Non-joint programs
Female share	3.7%	2.0%
Black share	9.3	7.5
Hispanic share	24.1	19.6
Other race share	3.2	2.9

Time-series plots in Figure 6.2 provide further information on the behavior of shares of these groups in registrations over time. Shares of women in construction apprenticeship programs followed U-shaped patterns over time. Starting from a higher level early in the period, they declined after the 2001 recession. The experience of the Great Recession was similar in reducing women’s representation in apprenticeship. This time, economic contraction reduced the female shares to their lowest point in 2010. Thus, recessions reduced the numbers of women and men joining the apprenticeship workforce, but women’s participation dropped relatively more than men’s. Women’s experiences in the two post-recession periods were dissimilar. During the years of recovery from the 2001 recession, women’s share, especially in the joint programs, remained at the recession levels. After 2010, on the other hand, absolute numbers of female registrations were on the rise. More importantly, the female share was also increasing, indicating that the relative share of women, while still low, improved steadily, reaching almost 5% in the joint and 2.5% in the non-joint programs by the end of the decade.

Overall, Hispanic participants had the largest minority share. Although Hispanic workers constituted a larger proportion of the non-union construction workforce, in apprenticeship their share was higher in the joint programs. There are significant differences between the time profiles of the Hispanic registrations in the joint and non-joint programs. First, the Hispanic shares were identical in 1999 across the two program types. Twenty years later, they were 29.5% in the joint and 22.5% in the non-joint programs. Second, the 2001 recession left Hispanic shares largely intact. In the first decade of the 2000s, Hispanic shares in joint and non-joint programs increased by about the same magnitude but initially the rise took place primarily in the joint programs. The organized sector of the construction industry appears to have led the diversification of apprenticeship workforce by recruiting more Hispanic workers and the open-shop sector caught on later. Third, although the number of new Hispanic apprentices started declining in 2007, the Hispanic shares continued rising and peaked in 2009. Thus, at the peak of the recession, other racial groups were relatively more adversely affected than Hispanic workers. Only with a two-year lag, after 2009, the Hispanic share started dropping. This impact was stronger in the non-joint programs.

Figure 6.2: Shares in New Registrations by Year



Source: Appendix B, Table B.2.

Between 2009 and 2012, the Hispanic share in joint programs dropped by 3.2 percentage points; in non-joint programs, the decline was 6.3 points, almost twice as large. Finally, Hispanic shares remained low until 2013 in spite of the fact that their numbers were rising after 2010 in the joint programs and 2012 in the non-joint programs (Figure 6.1). These absolute increases in recruitment merely kept Hispanic shares intact until 2014. Only after 2014 was the recruitment of Hispanic apprentices so large that the Hispanic shares also rose. This eventual recovery was smooth and fast in joint programs but turbulent and slower in non-joint programs.

Both Black workers and those categorized as belonging to a non-Black, non-Hispanic minority community experienced declines in the number of registrations after 2007. Deterioration of their relative positions was modest in comparison with female and Hispanic apprentices. The Black share in non-joint programs declined by 3 percentage points between 2007 and 2009, and stayed low until 2013. Its subsequent recovery was anemic, staying below the pre-2007 levels. In contrast, the joint program Black registration share declined by 0.9 percentage points only in 2008 and followed a positive trend in the following years. Consequently, the Black share in joint programs was substantially higher than that in non-joint programs during and after the Great Recession. The non-Black, non-Hispanic minority share in the non-joint programs, on the other hand, was on a declining trend during the 2010s while the joint program share was steady, although both were volatile. As in the case of the Black shares, the gap between joint and non-joint programs for shares of non-Black, non-Hispanic minority apprentices increased after 2010.

The overall shares of Black and “other race” workers in apprenticeship turned out to be steady over time, but this steadiness is maintained in the latter half of the period by the rising shares of these groups in joint programs that balanced the declines in non-joint programs. This pattern was in contrast to the Hispanic share, which was on the rise at the expense of the White share. The Hispanic share rose in both types of programs and it is led by the joint programs after 2010. A similar pattern is observed in the case of women registrations, although it is clearly less pronounced. It is incontrovertible that the Great Recession reduced registrations across the board, but had a disproportionately larger effect on women and minorities. The impact was longer-lasting in the non-joint programs.

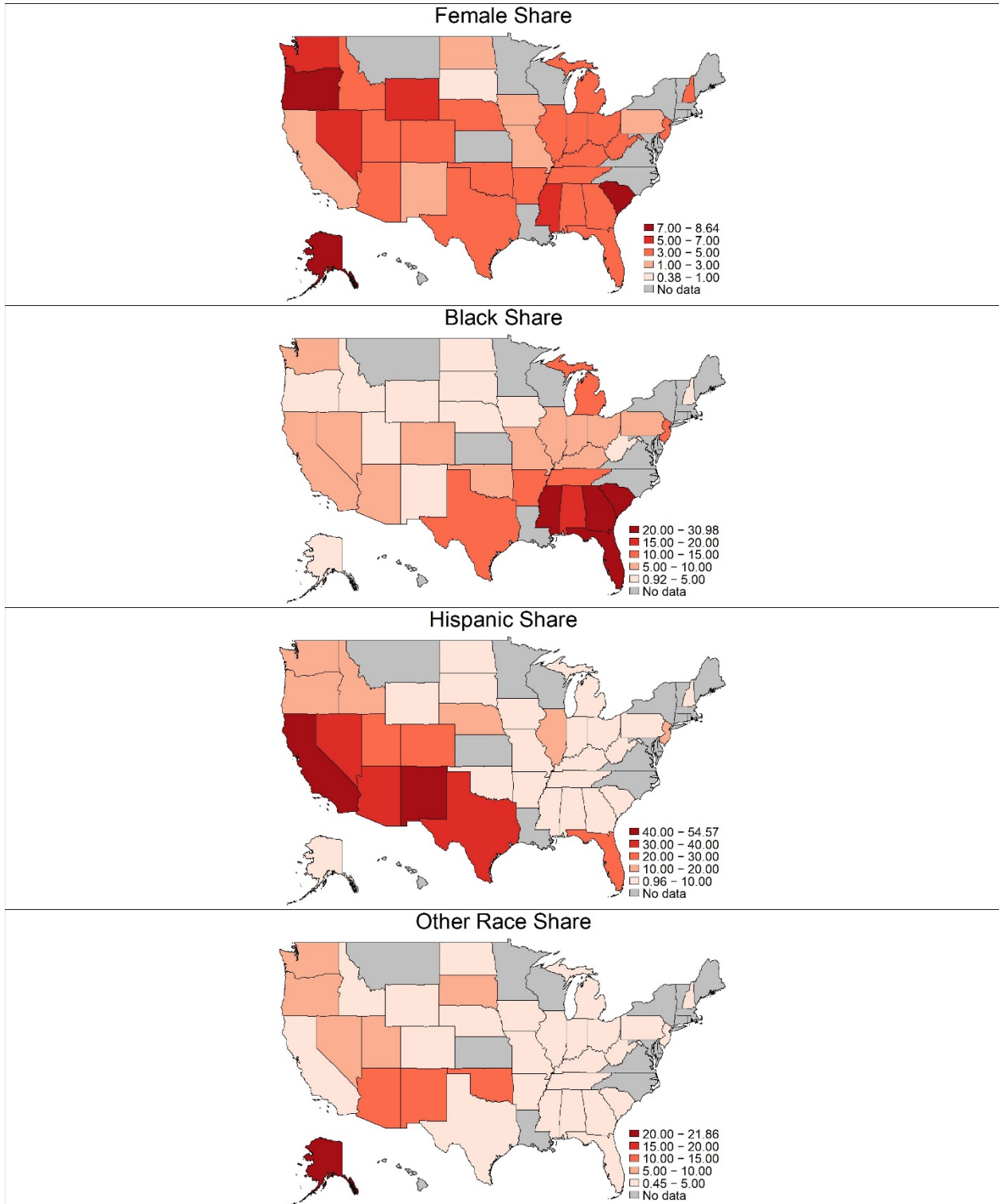
The predominance of joint programs in apprenticeship in combination with larger shares of women and racial and ethnic minorities in joint programs imply that the organized sector is the primary source of gender and racial diversity in the incoming classes of construction apprentices. Overall, joint programs accounted for 85.2% of all female, 79.0% of Black, 78.9% of Hispanic, and 77.3% of other race registrations. The joint program shares were the lowest during the Great Recession, again reflecting the disproportionate impact of the downturn on the number of registrations in these programs. Otherwise, the shares by program type were remarkably consistent across the years. Moreover, this stability persisted in spite of the declining share of unionized labor force in the construction workforce over the years.

7. Gender and Race Diversity in Apprenticeship Registrations by State

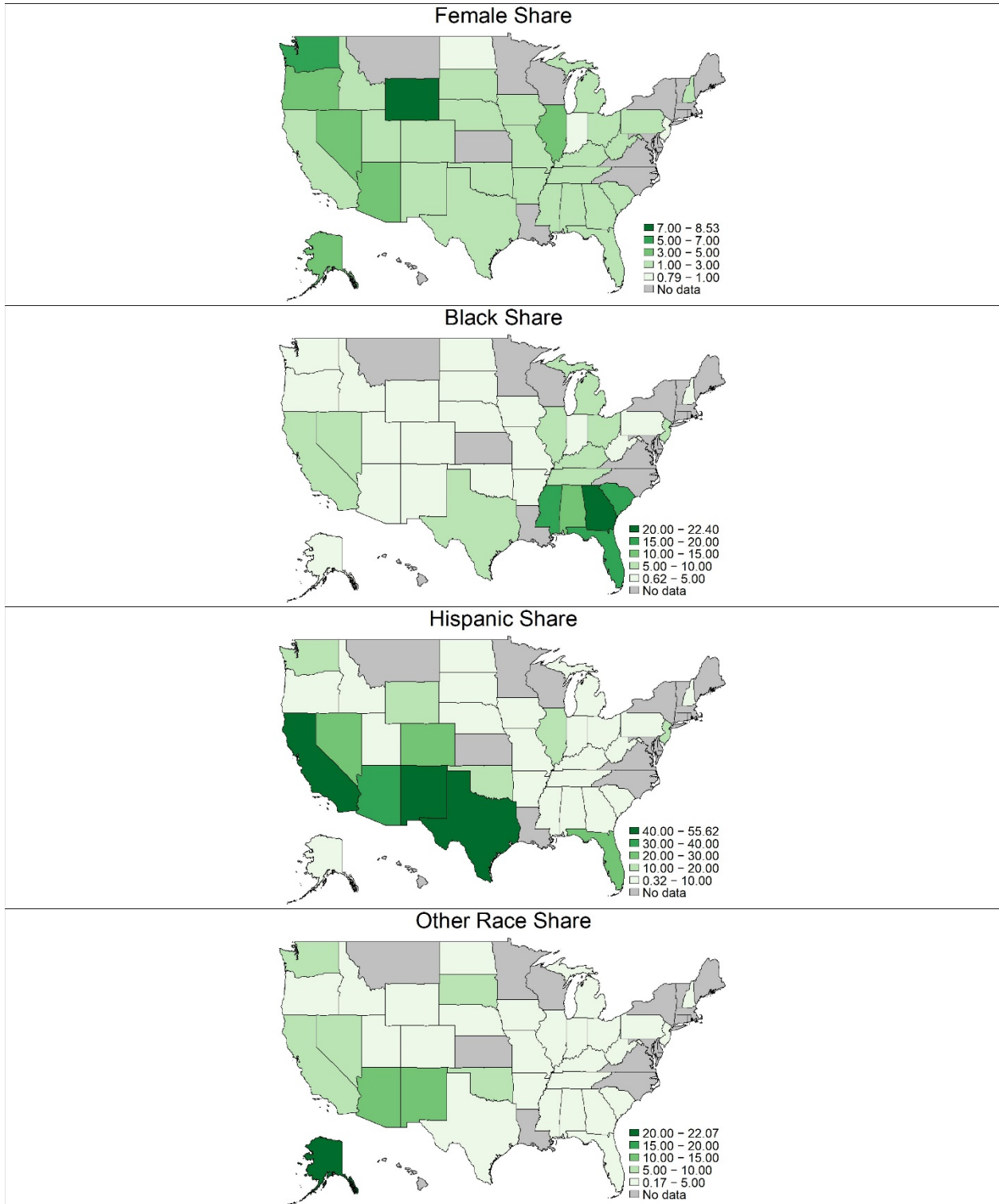
There are clear patterns in geographic distributions of minority apprentices. Maps 7.1 and 7.2 show that Black shares in apprentice registrations in joint and non-joint programs between 1999 and 2019 were the highest in the five Southeastern states: Georgia, Mississippi, Florida, South Carolina, and Alabama. Hispanic representation was the highest in the Southwestern band of states: California, New Mexico, Texas, Arizona, Nevada, and Colorado. Alaska, Arizona, and New Mexico stood out in non-Black, non-Hispanic minority registrations. The composition of registrations by minority status across states largely reflects the demographic composition of the state labor force.

The geographic pattern by gender is not as distinct as that of race. While the female shares are the highest in four Western states—Wyoming, Oregon, Alaska, and Washington—the geographic variability in women’s shares is smaller relative to those of the racial minorities.

Map 7.1 Female and Minority Shares in Joint Programs 1999-2019



Map 7.2 Female and Minority Shares in Non-joint Programs 1999-2019



8. Gender and Race Diversity in Apprenticeship Registrations by Trade

The compiled data also provides insights on the shares of women and minority registrations in apprenticeship programs across construction trades. In total registrations (joint and non-joint combined), women's shares are the highest in operating engineer, laborer, and painter trades. This ranking by trade holds within joint and non-joint programs apprentices as well.⁴³ Indeed, women's shares in apprenticeships by trade are quite similar across the joint and non-joint programs. Women have the lowest representation among power line, HVACR, and elevator apprentices. The operating engineer trade deserves special mention here because it has historically stood apart from all other trades in terms of wide participation of women in both types of programs.

As in the case of women, the shares of Hispanic registrations by trade are also very similar across joint and non-joint programs. Trades with the highest Hispanic registration shares are drywall worker, roofer, mason, painter, and floor layer apprentices. Boilermaker, millwright, and powerline worker apprentices have the lowest shares of Hispanic participants.

Both the female and Hispanic shares by trade exhibit high variability. Deviations of shares by trade, from the mean, are relatively large. In contrast, Black and "other race" shares by trade are less variable, or more closely compacted around the mean share. Five trades with the highest total Black shares are: laborer, boilermaker, mason, roofer, and painter. Thus, there is overlap in the trades in which Black and Hispanic workers are more strongly represented, although the differences across trades are smaller in the case of the Black apprentices. Once apprentices are differentiated by program type, we observe that carpenters and HVACR workers are also strongly represented in the non-joint programs. Power line apprentices, again, have very low Black representation. Non-Black, non-Hispanic minority registrations by trade are similar to the Black registrations in terms of relative evenness of shares across trades. The set of trades with prominent "other race" representation in apprenticeship is very different from those observed for Black and Hispanic workers. Telecom worker, boilermaker, structural steelworker, glazier, and carpentry trades have the highest shares among non-Black, non-Hispanic minority apprentices.

In search of a relationship between the earnings and the shares of women and minorities by trade, we calculated the median real wage by trade using the three-digit occupation code from the Outgoing Rotation File of the Current Population Survey. In the case of Hispanic workers, there is a notable negative relationship between the real wage and the share in trade. The Spearman rank correlation between the median wages and the Hispanic share in the trade is -0.83, which indicates a strong negative relationship between the two variables.⁴⁴ For the joint and non-joint program shares, the coefficients are -0.82 and -0.73. This suggests that Hispanic apprentices are disproportionately concentrated in programs of lower-paying trades. For all other considered groups, we did not observe even a moderate relationship between the median wage and shares in trades.

9. Attrition and Retention of Apprentices

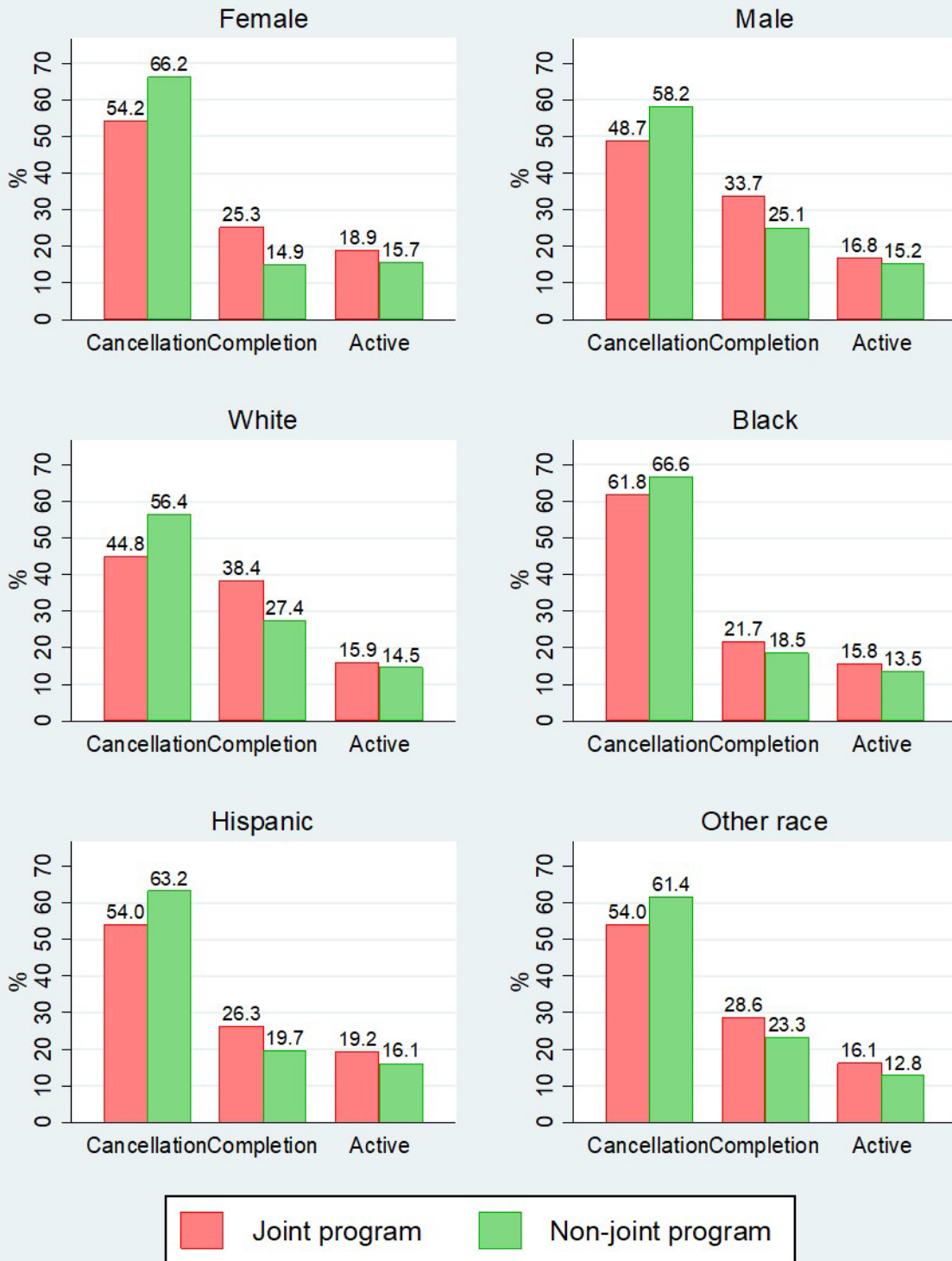
The datasets provide information on each apprentice's exit status as of the last date of data compilation and the date of exit from apprenticeship training. The status is reported as "cancellation" if the apprentice leaves training before completion of requirements, and "completion" if the apprentice completes all of the on-the-job and in-class requirements and receives certification. The status of registrations that are still in training is recorded as "active." There are other forms of exit including suspensions and transfers, but they are not coded uniformly across the datasets. We grouped such status categories under the "other exit" title.

Figure 9.1 compares the status of apprentices by gender and race across joint and non-joint programs. Three important patterns emerge from this diagram. First, across gender and race, most of the apprentices left training prior to completion: in all panels of the figure, the cancellation bars are taller than the completion bars. Second, the top two panels show that women have higher cancellation and lower completion rates than men. The remaining four panels, similarly, show that apprentices of color have higher cancellation and lower completion rates than White apprentices. Third, the percentages of apprentices that cancelled are uniformly lower in joint programs than in non-joint programs.

In joint programs, 54.2% of women apprentices cancelled, which is 5.5 percentage points higher than the cancellation rate of men. The gender gap in cancellations is even higher in the non-joint programs by 8 percentage points. The cancellation rate among women in joint programs, in turn, is lower than that in the non-joint programs by 12 points. These figures are alarming. Women not only make a small fraction of the new registrations, but they are also more likely to drop out and less likely to complete. These negative outcomes are significantly worse in the non-joint programs. Low recruitment and high cancellation rates are complementary in keeping women's representation in the construction trades low.

Among racial groups, Black apprentices have the highest rate of cancellations: 61.8% in the joint and 66.6% in the non-joint programs. These figures are higher than the percentages of White apprentices who cancelled, by 17 and 10.2 percentage points, respectively. The performance of Hispanic and "other race" apprentices are better than that of Black registrants but still lag substantially behind the White apprentices. Thus, while the recruitment of racial minorities in apprenticeship programs is roughly proportional to their shares in the workforce, their likelihood of becoming certified journeyworkers is lower than that of White registrants. Their higher attrition rates hinder improved representation of minorities in the skilled segment of the construction workforce.

Figure 9.1: Apprentice Status by Gender and Race



Note: The 'Other exit' category is not shown.
Source: Appendix B, Table B.5.

Cancellation and completion rates do not fully capture apprentices' performance. An early cancellation probably indicates that the apprentice left training without learning much about the trade. However, it is possible, and perhaps optimal, for an apprentice to exit training prior to completion of all requirements for graduation once a "sufficient" quantity of skills that would ensure high lifetime earnings are accumulated. Continuation of apprenticeship may mean working for training wages without expanding the skills set substantially. Indeed, one of the frequent criticisms of the registered apprenticeship programs has been that they are excessively lengthy and rigid.

We used the duration of apprenticeship—time elapsed between the registration date and the exit date—as a measure of the quantity of skills acquired in order to compare skill levels of the apprentices who cancelled. A longer duration presumably indicates that the apprentice left training with a higher skill level.⁴⁵ Since OJT requirements for completions vary across occupations and programs, and some apprentices receive OJT credit for prior experience, we selected registrations in 8,000-hour OJT programs (which would take about four years of full-time work) and zero hours of OJT credit for this purpose.

Figure 9.2 illustrates the cumulative proportion of cancellations of women against men and each minority group against White apprentices over time. The horizontal axis measures the duration of apprenticeship in days. The vertical axes measure the cumulative percentages or proportions of cancellations. Solid lines denote women or minority results; dashed lines denote men/White outcomes.

The observed patterns across gender and race are largely similar. Therefore, we will discuss only the results of women against men in detail. In the upper left panel of Figure 9.2, we first observe that the solid lines lie above their dashed counterparts: women drop out of training at a faster rate than men regardless of the program type. After one year in apprenticeship, 35.9% of women in the joint and 44.4% of women in the non-joint programs drop out. These figures are lower among men by 6.3 and 7.8 percentage points in the respective program types. The margins between men and women increase until the end of the third year and stabilize around 10 points afterward. Second, the solid green line lies above the solid red line: women in non-joint programs drop out at a faster rate than the women in the joint programs. The cumulative percentage of cancellation of women in non-joint programs is higher by 8.5 points at the end of the first year and rises as high as 14.5 points by the end of the fifth year. Third, the red line overlaps with the dashed green line during the first two years and lies below the latter in the later years. Thus, during the first two years there is no difference between the drop-out rates of men in non-joint and women in joint programs, but afterward, men's attrition in non-joint programs exceeds that of the women in joint programs. Thus, joint programs have lower attrition rates across the board for both men and women.

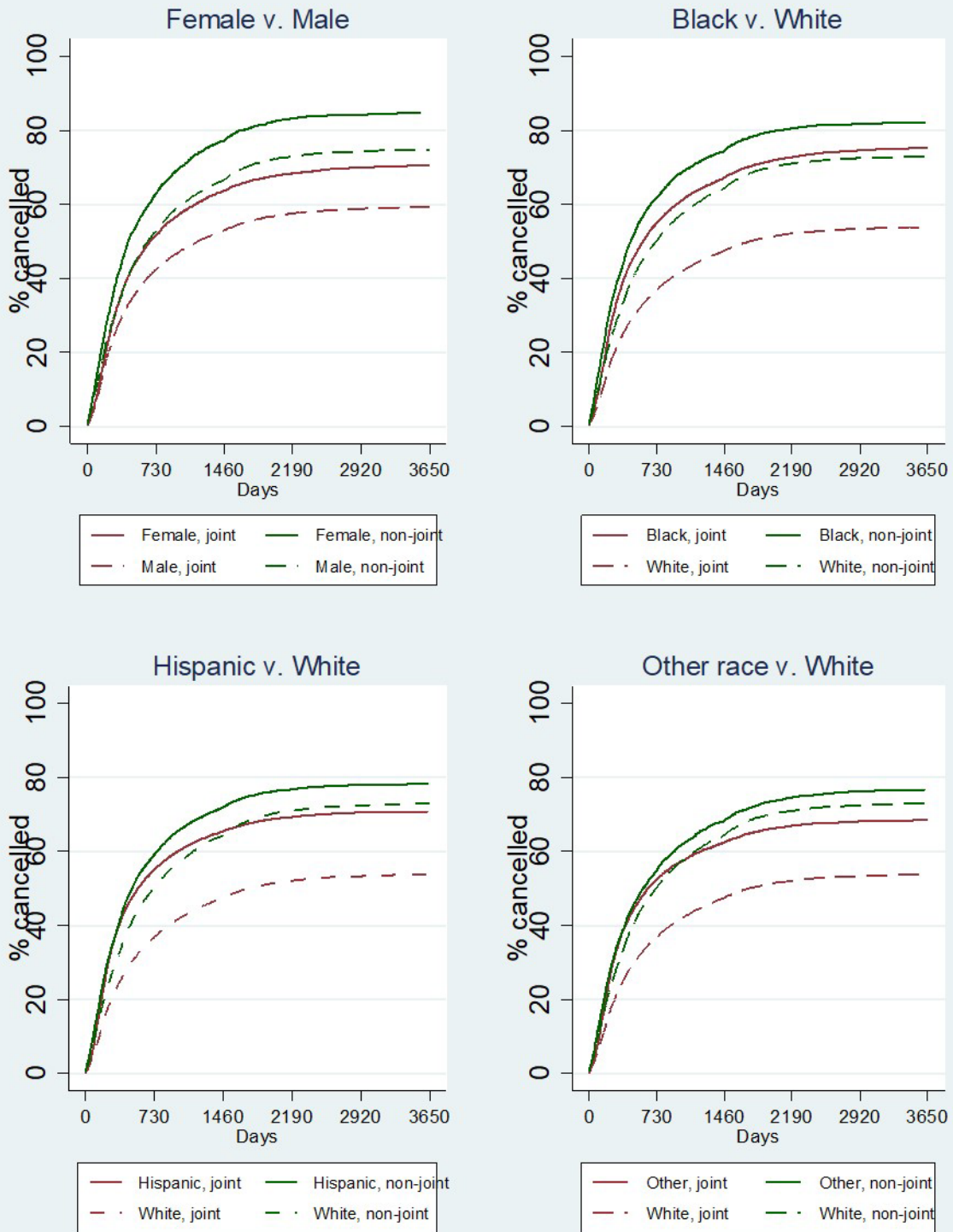
In summary, there is a clear ranking in attrition from apprenticeship: The proportion of cancellations at any point in time is the highest for women in non-joint programs, followed by men in these programs and then women and men in joint programs. The fact that women's probabilities of cancellation are higher than that of men may be indicative of women's relative disadvantages related to prior preparation, information about the trade

and the industry, access to jobs and mentoring, socialization in the workplace, and hostility toward non-traditional workers. While the joint programs seem to have done a better job in mitigating these obstacles, the overall picture is hardly comforting. The attrition rates still indicate that women are massively disadvantaged in training even in the organized sector of construction.

These results largely hold when women and men are replaced by minority groups and White apprentices, respectively. The cancellation probability over time is highest for minority registrants in non-joint programs and lowest for White registrants in joint programs. The experiences of each minority group in joint programs and White apprentices in non-joint programs are more similar.

How plausible is the argument that cancellations reflect optimal separations from training by apprentices who have acquired sufficient skills? Since an overwhelming proportion of apprentices leave four-year apprenticeship programs by the end of the second year, it is doubtful that they have acquired a substantial quantity of skills. Moreover, the first six months of training is usually the probation period, which makes accumulation of notable quantity of skills by many cancelled apprentices even more unlikely.

Figure 9.2: Percentage of Cancellations over Time by Gender and Race



Note: See also Appendix B, Table B.6.

10. The Background of Apprentices

Apprenticeship datasets provide information on the academic, vocational, or experiential qualifications apprentices held at the time they entered training: education, age, veteran status, and the OJT credit awarded at registration. Research on the labor market uses the educational level as an indicator of the level of basic skills. Age in economics is often used as a proxy for experience, although in the present context it may also signal the lack of integration of apprenticeship with secondary education, or a looser job or labor market attachment. Especially for women, entry into apprenticeship may be the outcome of delayed entry into the labor force or limited information about jobs in the trades. Being a veteran may imply possession of basic skills and the discipline that training requires. The OJT credit is a measure of previous experience in the occupation.

10.1. Education

Information on educational level is not highly granular once it is coded uniformly across the four datasets. We can distinguish between four levels of education shown in Table 10.1. The “high school or higher” category, which covers most of the apprentices, includes a wide range of education levels and therefore it is difficult to delineate meaningful differences in education at this level across gender or race. Still, the table reveals, first, that the level of education is lower among Hispanic apprentices: the percentage of Hispanic registrants with a high school education or more is about 10 percentage points below other racial groups. Second, apprentices in joint programs are more likely to have high school or higher level of education than apprentices in non-joint programs.

10.2 Age

In many other industrialized countries where the apprenticeship is closely integrated with the education system and students can move more routinely from high school to apprenticeship training, the median age to join apprenticeship is late teens. In the U.S., workers join apprenticeship at a much later age. For men, the median starting age of registration is 26.⁴⁶ For women, it is even later: 31 years. Participation of women in apprenticeship training at a later age may be the outcome of a combination of factors including the household responsibilities that keep them out of the labor market and late discovery of opportunities of a career in the trades. Minority participants also tend to join apprenticeship at later ages than White registrants. The largest difference is between Black and White apprentices. The median registration age for Black workers is 30 years, while it is 26 for White registrants. The margins are smaller for Hispanic participants and those from the “other” race category, whose median starting ages are 26 and 27 years, respectively.

Table 10.1: Educational Level of Apprentices by Gender and Race

	8th grade or less	9 th -12 th grade	GED	High sc. or more
Female				
Joint program	0.6%	4.6%	10.8%	76.7%
Non-joint program	0.5	6.4	12.5	73.8
Male				
Joint program	1.7	7.0	8.3	78.8
Non-joint program	1.0	7.6	10.1	77.2
Black				
Joint program	0.3	5.3	11.6	79.4
Non-joint program	0.5	9.7	13.3	74.1
Hispanic				
Joint program	6.2	14.9	4.9	71.8
Non-joint program	3.8	14.2	10.7	69.0
Other race				
Joint program	0.5	5.7	8.2	79.8
Non-joint program	0.5	6.6	11.0	78.1
White				
Joint program	0.2	4.2	9.4	81.7
Non-joint program	0.3	5.7	10.0	81.0

Note: Row totals do not sum to 100% due to observations with unknown education data.

10.3. Veteran status

Military veterans constituted 7.3% of all registrations in the apprenticeship programs. Veteran shares were about the same in the joint and non-joint programs. There were more male apprentices than female, by a margin of about 2.5 percentage points. The numbers were comparable for three of the four race categories, but the veteran share among Hispanic apprentices was substantially below that by about 5 points.

10.4 On-the-job Training Credit at Registration

Incoming apprentices may receive OJT credit for previous work experience. Those who are awarded credit then start training at a more advanced level, have fewer hours of OJT training required, and therefore can complete training sooner. The OJT credit hours may signal the skill level of the starting apprentice, but one has to be cautious in attaching this interpretation unequivocally. Whether an apprentice receives a credit and the quantity of credit may as well depend on factors, including how liberally programs grant credit or biases that program administrators may have toward women or minority applicants.

Table 10.2 reports the percentage of registrations that received credit by gender and race. A smaller percentage of women apprentices received credit than men. The gender margin was smaller in the non-joint programs. In non-joint programs, White registrants received

more credit than any minority group. In joint programs, the findings are mixed. Relatively more Hispanic participants, more than a third, received OJT credit than any other racial group while Black apprentices were far behind all others.

The median numbers of hours of OJT credit were 2,000 for all groups except for women in joint programs for whom the median credit was 500 hours lower.

Table 10.2: OJT Credit Hours by Gender/Race and Program Type

	% of registrations awarded OJT credit	
	Joint programs	Non-joint programs
Female	19.8	23.0
Male	28.2	28.3
Black	22.4	24.8
Hispanic	34.5	22.6
Other race	27.3	24.9
White	27.9	28.2

Supporting Organizations

NORTH AMERICA'S BUILDING TRADES UNIONS (NABTU)

<http://nabtu.org/>

North America's Building Trades Unions is a labor organization representing more than 3 million skilled craft professionals in the United States and Canada. NABTU is composed of fourteen national and international unions and over 330 provincial, state, and local building and construction trades councils. NABTU is dedicated to creating economic security and employment opportunities for its construction workers by growing infrastructure investment and union construction jobs, safeguarding workplace, wage, and benefits standards, promoting responsible private capital investments, investing in renowned apprenticeship and training, and creating more middle-class pathways in the construction industry for women, communities of color, military veterans, and the formerly incarcerated.

INSTITUTE FOR CONSTRUCTION ECONOMIC RESEARCH (ICERES)

<http://iceres.org/>

The Institute for Construction Economic Research is a non-profit network of academic faculty and other scholars interested in conducting, collaborating on, and facilitating academic-quality research on construction labor issues. ICERES is committed to being an independent, non-partisan voice on labor market and public policy issues affecting the construction industry with the goal of finding and disseminating pragmatic solutions to problems affecting construction owners, developers, contractors, and workers.

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backgrounds in all stakeholders. Equity: The quality of being fair and impartial and giving everyone opportunities.” <https://diversity.abc.org/>

³⁸ On the AGC website: “AGC fully embraces diversity within its membership. People of diverse backgrounds, opinions, perspectives, experiences, and ideas bring creativity and vitality that maximizes member engagement at all levels of the association. Fostering an environment that is welcoming and inclusive to all individuals is essential to achieving our mission and places our members in a position to contribute to the industry’s future success.” <https://www.agc.org/node/50272/>

³⁹ Registered Apprenticeship Partners Information Management Data System (RAPIDS). The RAPIDS data include participants in state registered apprenticeship programs, and thus exclude the share of the construction industry that does not take part in state registered training. See the Bilginsoy chapter for data description.

⁴⁰ Respondents in non-union firms use the term “merit shop” to refer to their status. Some characterized “right to work” states as a “non-union state.”

⁴¹ Respondents did not specify the race or ethnicity of women, nor did they discuss factors such as age and family structure.

⁴² Henceforth, in graphs and maps we will use (shades of) red for joint programs and green for non-joint programs.

⁴³ Registrations in the non-joint boilermaker trade are minuscule and therefore left out of the discussion.

⁴⁴ Spearman correlation of -1 would indicate a perfect negative association between the median wage and shares by trade.

⁴⁵ Apprenticeship duration is admittedly an imperfect proxy because the pace of training over time is likely to vary with a variety of factors such as the business cycle.

⁴⁶ Reported median ages are identical in the joint and non-joint programs.