CONSTRUCTION APPRENTICESHIP AND TRAINING IN PENNSYLVANIA

Capital Area Labor-Management Council, Inc.
Construction Partnership Coordination Project

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Prepared for the

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By

David H. Bradley, Ph.D.
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Keystone Research Center

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The Capital-Area Labor-Management Council, Inc.

The Capital Area Labor Management Council's (CALM) mission is to enhance economic growth in Central Pennsylvania through cooperation between labor and management. CALM serves as a clearinghouse for businesses and unions alike to learn, share, network, and grow into a strong healthy business community. CALM's Construction Partnership Coordination Project (CP2) aims to inform middle school students, teachers, guidance counselors, parents, and the public about the careers and opportunities that are available through joint labor-management apprenticeship and training programs. Go on line to www.constructionapprenticeships.org to learn more about these programs and how to link up with them.

Acknowledgements

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Keystone Research Center

The Keystone Research Center (www.keystoneresearch.org) was founded in 1996 to broaden public discussion on strategies to achieve a more prosperous and equitable Pennsylvania economy. Since then, KRC has become a leading source of independent analysis of Pennsylvania's economy and public policy. KRC is a national authority on the changing economy and its implications for workforce training and careers. Center projects on workforce development have been funded by the Allegheny Commission for Workforce Excellence, Annie E. Casey Foundation, Industrial Relations Research Association, International Labor Organization, Heinz Endowments, National Governors Association, Russell Sage Foundation, Southcentral Pennsylvania Workforce Investment Area, and U.S. Department of Labor.

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EXECUTIVE SUMMARY

In recent years, the U.S. construction industry has faced a shortage of skilled craft workers. This shortage could grow more severe in the years ahead due to an aging construction workforce, leading to high rates of retirement. Since the late 1980s, the share of Pennsylvania construction industry workers aged 40 and over has risen from just under a third to nearly half.

In light of potential shortages, this report evaluates the role of apprenticeship training in meeting Pennsylvania's need for skilled construction workers, relying primarily on official U.S. Department of Labor data. The report highlights the distinction between union and non-union apprenticeship programs. The former are governed by joint committees of labor and management, the latter unilaterally by individual employers or employer associations.

- *Union programs account for over four out every five active construction apprentices in Pennsylvania.* In 2002, union programs had 10,163 active apprentices (85 percent of the total), compared to 1,731 in non-union programs (15 percent of the total).

- *Higher shares of minority and female apprentices participate in union than non-union programs*. In 2001, union apprenticeship programs in Pennsylvania registered 319 additional male minorities and 76 female apprentices. Non-union programs registered 33 male minorities and five women.

- *Graduation rates are higher in union apprenticeship programs than in non-union programs.* The most recent data on this issue show that 65 percent of union apprentices in Pennsylvania had completed their programs five or six years after enrolling. By contrast, only 50 percent of non-union apprentices had completed their programs.

- *For minorities and women, dropout rates are especially high in non-union programs.* In Pennsylvania, five to six years after enrolling, the dropout rate for non-union minority apprentices is nearly three out of five, compared to two out of five for union programs.

- *In the late 1990s, facing potentially worsening skill shortages, union programs expanded to meet employers' workforce needs.* From 1997 to 2001 in Pennsylvania, the number of construction apprentices completing union apprenticeship programs jumped 607, while the number completing non-union programs increased by only 39.

Despite higher enrollment, the number of individuals completing Pennsylvania construction trade apprenticeships each year remains low (1,674 in 2001) compared to the annual number of job openings projected in construction occupations (5,550 per year until 2008). This underscores the importance of maintaining and possibly expanding enrollment in construction apprenticeship programs, especially if economic growth and construction demand rebound strongly. Since union apprenticeship programs have outperformed non-union ones on every measure of program success, further bolstering union apprenticeship programs appears the most promising route to meeting future construction industry skill needs. This report highlights three ways to bolster union apprenticeships.

1. To make construction careers more attractive to young people and more acceptable to their parents, *apprenticeship should be made easier to combine with a college degree.* This would build on a recent trend which shows that more unionized construction workers are already combining apprenticeship and post-secondary education.

    - The share of unionized Pennsylvania construction workers with some post-high school education has risen from 16 percent in the mid-1980s (1983-85) to 28 percent in the late 1990s (1999-2001). This compares with an increase from 12 to 15 percent among non-union construction workers.

    - Construction unions have facilitated access to higher education for their members by negotiating agreements that provide some college credit for the classroom component of apprenticeship. In addition, many joint apprenticeship training funds pay for workers to continue on after apprenticeship to acquire a college degree.

While the college route once siphoned off a traditional source of young construction workers – the offspring of prior generations of trades workers – access to free or heavily subsidized college education could, in the future, help replenish the supply of new apprentices.

2. *Improve the marketing of union apprenticeship programs.*

At present, many high-school graduates go straight to a four-year college without ever considering unionized construction. More students, parents, and guidance counselors might consider unionized construction if they understood two changing dimensions: its increasingly high-tech character and the opportunities that exist to combine apprenticeship with college, opening up careers in management and engineering. Access to a free or low-cost college education should be especially effective at attracting highly qualified students from low-income and working families, including minorities.

3. *Invest in best-practice pre-apprenticeship and mentoring programs.*

In some cases, interested individuals cannot meet union apprenticeship entry standards and/or drop out of apprenticeship without graduating. High-quality pre-apprenticeship training and post-entry mentoring could increase the number of individuals who can enter and succeed in construction. In particular, with union apprenticeships increasingly enrolling minorities and women, an opportunity exists to refine and spread best practice mentoring and pre-apprenticeship training that serve these groups. As a first step to capitalizing on this opportunity, the next Governor should commission an assessment of Pennsylvania and national pre-apprenticeship and mentoring programs. Based on the assessment, recommendations should be made on how to strengthen such programs, including by linking high-school school-to-career programs with unionized apprenticeships.

Investing in non-union construction training would not be a wise investment of public funds. Non-union employers themselves underinvest in training and offer workers relatively low wages and benefits at the end of training. Non-union programs also waste more training dollars because of low completion rates, and enroll especially low numbers of minorities and women.

INTRODUCTION

Apprenticeship training is at the heart of the debate over the role and value of trade unions in the construction industry. A central questions in this debate is whether non-union contractors and their associations can devise, fund, and implement training programs that produce a reliable supply of skilled construction workers.

The funding of training is especially problematic in the construction industry because of the tendency of many workers to change companies frequently. This movement is generated by the unstable and project-based nature of construction demand, and reinforced by the small size of many companies and competitive nature of the industry. For companies, the ability to shrink the workforce when a project has been completed helps ensure that workers are only employed when fully utilized.[1] With regard to the generation of transferable skills, however, labor mobility creates a challenge. Why should any individual employer pay for training when workers may soon deploy their skills at another company? This so-called "free rider" problem can lead companies to chronically underinvest in training, with the result that the construction industry as a whole faces a shortage of critical skills.

The unionized sector of the construction industry solves this problem through arrangements by which all contractors and workers equitably finance skill development. In each geographical area, industry associations (of electrical contractors, general contractors, mechanical contractors, and so on) negotiate collective agreements with the relevant building trade union or unions. These union contracts establish the amount of money per hour worked to be contributed to the joint apprenticeship and training fund governed by labor and management. Contributions to joint apprenticeship funds typically range from 20 cents to a dollar per hour worked. New hires earn during their apprenticeship a gradually increasing fraction of the experienced journeyperson rate (e.g., 50 percent initially and 100 percent upon completion of the apprenticeship).

The non-union sector has found it difficult to devise an alternative to collective bargaining as a solution to the reluctance of individual employers to pay for the development of portable skills. As this report documents, the non-union sector trains relatively few apprentices. Among the small number of non-union programs that do train substantial numbers of apprentices, questions remain regarding the quality of the training. In the union sector, union members, in coordination with training directors hired by the joint fund, take much of the responsibility for ensuring quality training, in part through participation in work site mentoring. Helping new workers achieve a high level of craftsmanship upholds workers' craft identity and sustains the competitiveness of union employers. In non-union programs, the experienced workers who do most mentoring have no role in governing the apprenticeship and may not see any benefit of helping new workers. (Box 1 profiles one union apprenticeship program in Pennsylvania.)

In the last decade, increasing skill shortages have made the issue of investment in training increasingly pivotal. These shortages reflect the failure of the non-union sector to invest more in training even as its market share expanded rapidly after 1970.[2] Non-union expansion also led to wage and benefit losses, leading more experienced workers to leave the field and making it harder to attract young workers.

An independent factor contributing to the challenge the construction industry faces replenishing its skill base is the tendency since the 1960s for the children of prior generations of building trades workers to pursue a college education, rather than follow in their father's footsteps. The Vietnam War contributed to this trend because attending college also allowed young men to avoid the draft.[3]

Box 1. The Local 520 Plumbers and Pipefitters Joint Apprenticeship Program

Construction sites can be disorderly, chaotic, and dangerous settings. To get things done efficiently and safely requires workers with training and experience, initiative and judgement. Skilled trades workers must cooperate and communicate among themselves and with managers and engineers. They must know what to do when the blueprint is incomplete or contradictory, what must be finished today and what can wait, when a scaffold is safe and whether an excavated trench is likely to fall in (with potentially fatal consequences). The demands of much construction work resemble those of high-level professional work settings, except that mistakes can be more hazardous and expensive, and much harder to cover up.

Yet despite the premium placed on workers' knowledge, the unstable and competitive nature of construction can undermine employers' willingness to develop the skills on which the industry and its customers depend.

Unions contribute to solving this challenge in several ways. They negotiate with contractors to ensure adequate investment in training. They oversee apprenticeship programs that integrate work-based training with classroom learning, a far more effective approach than classroom training alone. They also negotiate wages and benefits high enough to encourage workers to make construction a career; because of high quit rates, non-union firms that pay less well must continually retrain novices.

All these features can be seen in practice in one of Pennsylvania's most highly regarded training programs, Plumbers and Pipefitters Local Union 520. First organized in 1914, Local 520 (of the United Association (UA) of Journeyman and Apprentices of the Plumbing and Pipefitting Industry of the United States and Canada) now has approximately 1500 members covering a 23-county area in Central Pennsylvania. To ensure that its members are trained and prepared to install, operate, and maintain all types of state-of-the art equipment, Local 520 works closely with the Mechanical Contractors Association of Central Pennsylvania. A Joint Apprenticeship Training Committee ensures that apprentices and journeymen receive the most up-to-date training available in the industry. Thus by choosing a UA member, contractors are assured high quality craftsmanship and safe working practices.

In 2002, the Joint Apprenticeship Training Committee enrolled 31 new apprentices, bringing the total number of active apprentices to 130. During the five-year program, apprentices receive 216 hours of classroom training each year, as well as 2000 hours of on-the-job training. Classroom instructors are experienced Local 520 journeymen, many still practicing their craft, who have also completed Instructor Training sponsored by the UA nationally. At present, Local 520 has 14 full- and part-time instructors.

To provide on-the-job mentoring, a journeyman while on the construction site accompanies an apprentice. Since experienced workers have different specialties, apprentices ordinarily gain mentoring from many different journeymen. Union training experts believe that joint programs gain an advantage because mentoring is not sabotaged by work site politics surrounding pay rates and competition for jobs and promotions. Another advantage is that apprentices indenture with the Joint Training Committee, not with a single employer as is usually the case with non-union apprenticeships. With joint multi-employer programs

such as Local 520's, if apprentices no longer have work at one contractor, they may continue their apprenticeship at a second contractor. Working across multiple employers can also create opportunities to learn new skills and from different groups of mentors.

By the end of their apprenticeship, Local 520 graduates become a licensed plumber, certified in at least one welding area, and having a range of legally required certifications – e.g., in valve repair, backflow prevention, refrigerant recovery, and to deal with medical gases in hospitals.

For this training, workers pay nothing out of pocket. Costs are covered by a $0.34 cents per hour payroll deduction. At the beginning of their apprenticeship (as of summer 2002), workers earn $11.24. At the end, they make the full journeyman rate of $24.93 per hour, with a $10.24 per hour benefit package.

Through an articulation agreement with the Harrisburg Area Community College, a graduate of Local 520's apprenticeship program will receive six credits per year. This adds up to 30 credits in five years, nearly halfway to a 64-credit Associates Degree. Through distance learning and a video teleconference capability in the union hall, again at no cost to the worker, union members can get the additional credits necessary to complete an Associates Degree in construction management from Washentaw Community College, Ann Arbor, Michigan. They may also continue on to obtain a Bachelor's Degree virtually for free, paying up front but then being reimbursed upon successful completion of each course.

In addition to apprenticeship training, Local 520 provides training each year to about 30 percent of its journeymen, everything from basic math and computer courses to computer-aided design, welding, and the full spectrum of specialized certifications. Often demand for certification training is driven by current employer needs and provides a "just-in-time" component to training that helps avoid skill bottlenecks.

With the advent of computers, technological change has been an accelerating aspect of the plumbing and pipefitting trade. According to Local 520's Apprenticeship Training Coordinator, "Nothing stays the same in this local for more than five years."

Training today is high-tech, including precision orbital welding, which requires tolerances of up to 1/10,000th of an inch — to ensure air-tight clean rooms in computer chip plants that are 100 times cleaner than a hospital operating room. By developing these types of skills, UA apprenticeships can help attract and grow high-tech industry.

Union business managers and apprenticeship training coordinators are hooked into national networks that help identify emerging trends even before contractors have a need for new skills. In the case of orbital welding, for example, Local 520 bought the necessary equipment – costing as much as $45,000 for a single machine – shortly before demand was seen in the field.

More generally, the union and joint training fund allows the purchase of new equipment, such as a computer lab and the videoconferencing technology, which carries a high price tag and would be unaffordable for most individual employers. Such equipment keeps training technologically current. It also cuts costs through distance learning and videoconference delivery of courses from anywhere in the national network of UA training centers.

The responsibility the non-union sector bears for the skill shortages of the 1990s is widely acknowledged in the industry. For example, Theodore C. Kennedy, a former national head of the non-union industry association, the Associated Builders and Contractors, (ABC), in a 1993 speech to the American Institute of Chemical Engineers:

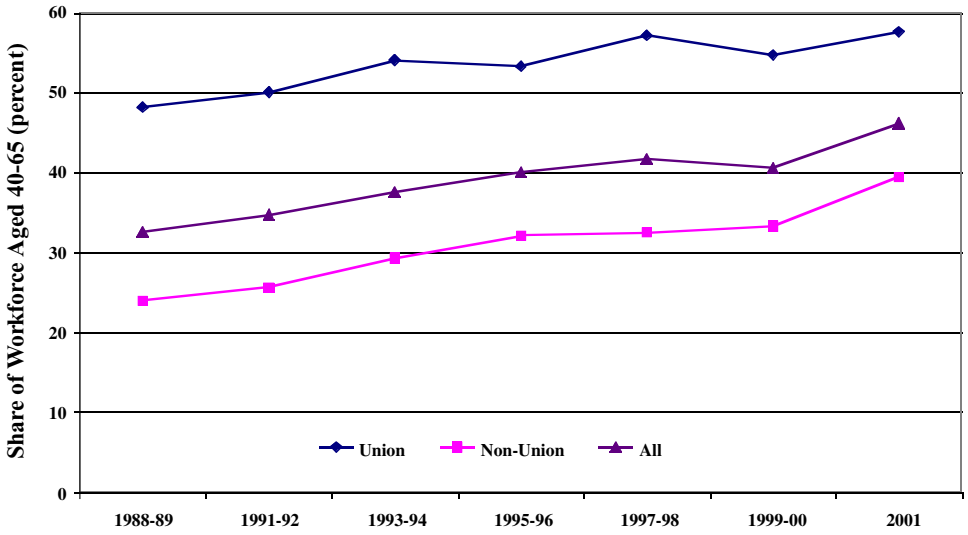
> "[Y]our conference is 'Managing Change in the 21st Century.' My talk would … be better titled 'Managing Change … Using 19th Century Concepts.' … We eliminate any wage increases … Few craftsmen have any kind of meaningful retirement program. Fewer still have any kind of medical … And on we go to the 21st century … You owners are sitting there watching us degrade what is supposed to be our most valuable commodity – our people. And as the wages fall, the benefits disappear, and more and more leave the industry, you take refuge by saying, 'It's the American way, the competitive marketplace at work, the free enterprise system in action' … You'll never convince me that our current approach is cost effective."[4]

Even the Business Roundtable, which was earlier instrumental in reducing union influence, now recognizes the important contribution of joint apprenticeship programs to meeting construction industry skill needs.[5]

Today, the construction industry also has an aging workforce, especially within the union sector.[6] Figure 1 shows that, since the late 1980s, the share of the construction workforce over 40 has risen from just under a third to nearly half.

Partly as a result of a rapidly aging workforce, the Pennsylvania Department of Labor and Industry estimates that construction occupations in Pennsylvania will generate over 5,500 openings per year between now and 2008. Sources for all figures are in the List of Figures at the start of the report.

Figure 1. Union Workforce in Construction Occupations Older than Non-Union



In the context of current and potential future skill shortages, this report examines the contribution of joint apprenticeship and training programs to meeting construction industry workforce needs. Virtually all of the joint programs in the United States include the participation of one of 15 trade unions listed in Box 2.

BOX 2. Building Trade Unions that Co-Manage Joint Apprenticeship Programs

The 15 unions that co-manage joint building trades apprenticeship programs are listed below.

- International Union of Bricklayers and Allied Craftworkers (BAC)
- International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers, and Helpers (Boilermakers)
- United Union of Roofers, Waterproofers and Allied Workers (Roofers)
- International Brotherhood of Electrical Workers (IBEW)
- International Association of Heat and Frost Insulators and Asbestos Workers (Asbestos Workers)
- International Association of Bridge, Structural, Ornamental, and Reinforcing Iron Workers (Iron Workers)
- International Union of Operating Engineers (IUOE)
- Laborers' International Union of North America (LIUNA)
- Sheet Metal Workers' International Association (SMWIA)
- Operative Plasterers' and Cement Masons' International Association of the United States and Canada (OP&CMIA)
- United Association of Journeyman and Apprentices of the Plumbing and Pipefitting Industry of the United States and Canada (United Association or UA)
- International Union of Elevator Constructors (Elevators)
- International Union of Painters and Allied Trades (IUPAT)
- International Brotherhood of Teamsters (Teamsters)
- United Brotherhood of Carpenters and Joiners of America (UBC)

DATA AND METHOD

Data in this report come primarily from official U.S. Department of Labor and U.S. Census Bureau sources.

- The U.S. Department of Labor's Office of Apprenticeship Training, Employer and Labor Services (OATELS) collects data on union and non-union apprenticeship programs. In response to a written request, OATELS provided raw data on Pennsylvania apprenticeship programs, breaking down figures by race, gender, occupation (i.e., trade), and union status.[7]

- For our analysis of apprentice program graduation and dropout rates, we relied on data provided by Professor Cihen Bilginsoy of the University of Utah. Professor Bilginsoy's data base, constructed from U.S. Department of Labor data, tracks individuals who entered apprenticeship in 1989 or 1990 to see if they had completed their apprenticeship by 1995. No more recent data that tracks the same individuals is available.

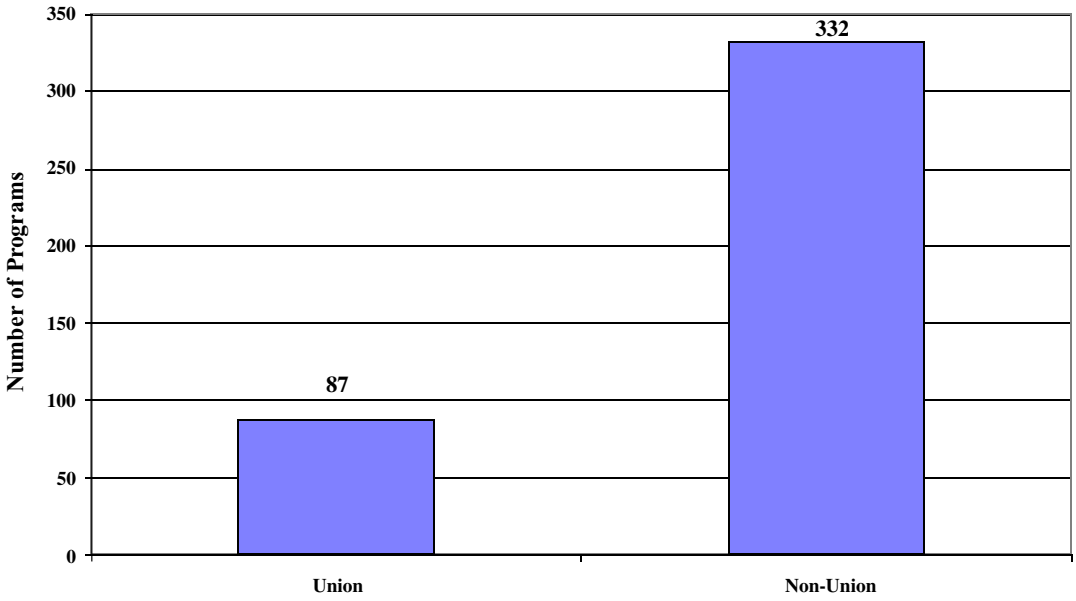
- For our analysis of employment, demographic, and education trends in the Pennsylvania construction trades, we used the U.S. Census Bureau's Current Population Survey (CPS). The CPS is a monthly household survey conducted by the Census Bureau. It is the standard source for data on economic and demographic characteristics, including but not limited to wage, employment, and education data.[8]

- Finally, our data on projected job openings in the construction industry comes from the Pennsylvania Department of Labor and Industry.

The quantitative data presented in the text and figures below were supplemented with interviews with state and federal apprenticeship program experts.

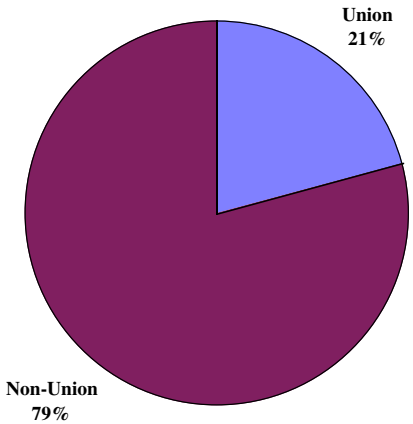
FINDINGS

Figure 2. Total Number of Active Apprenticeship Programs in PA Construction Trades, 2002



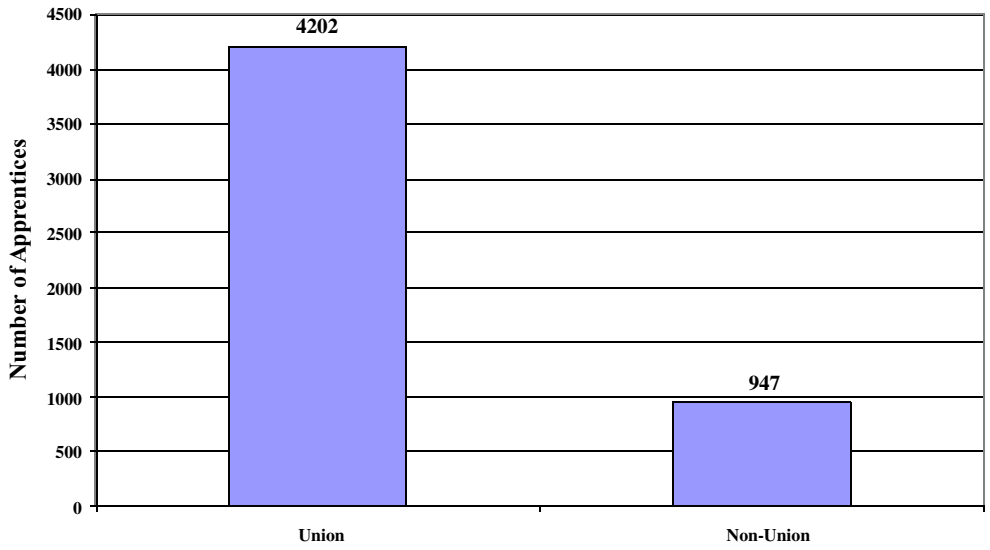
Most construction trades apprenticeship *programs* in Pennsylvania are non-union. Of 419 programs in existence in 2002, 87 were union and 332 were non-union.[9]

Figure 3. Share of PA Construction Trades Apprenticeship Programs, Union and Non-Union, 2002 (percent)



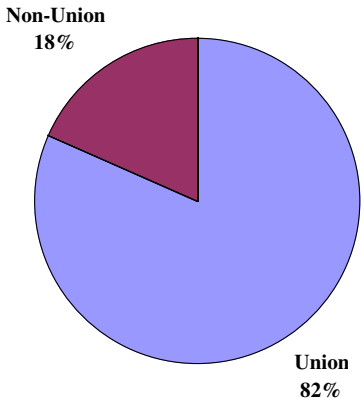
As a share, 21 percent of the programs were union and 79 percent non-union.

Figure 4. Average Annual Number of Apprentices Registered in PA Construction Trades, 1997-2001



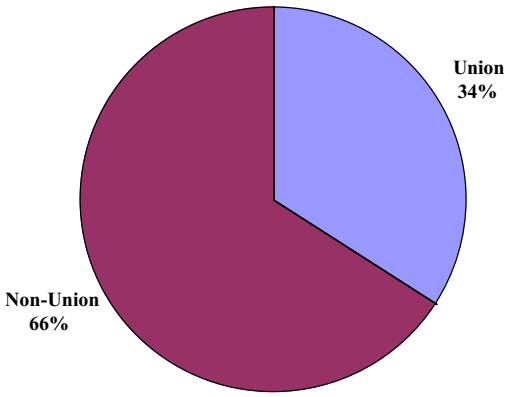
Most *apprentices* in building trades apprenticeship programs in Pennsylvania are entrolled in union programs. Out of an average of 5,249 apprentices registered from 1997 through 2001, 4,202 apprentices registered were enrolled in union programs and 947 in non-union programs.

Figure 5. Share of Apprentices Registered in PA Construction Trades, Union and Non-Union, 1997-2001 (percent)



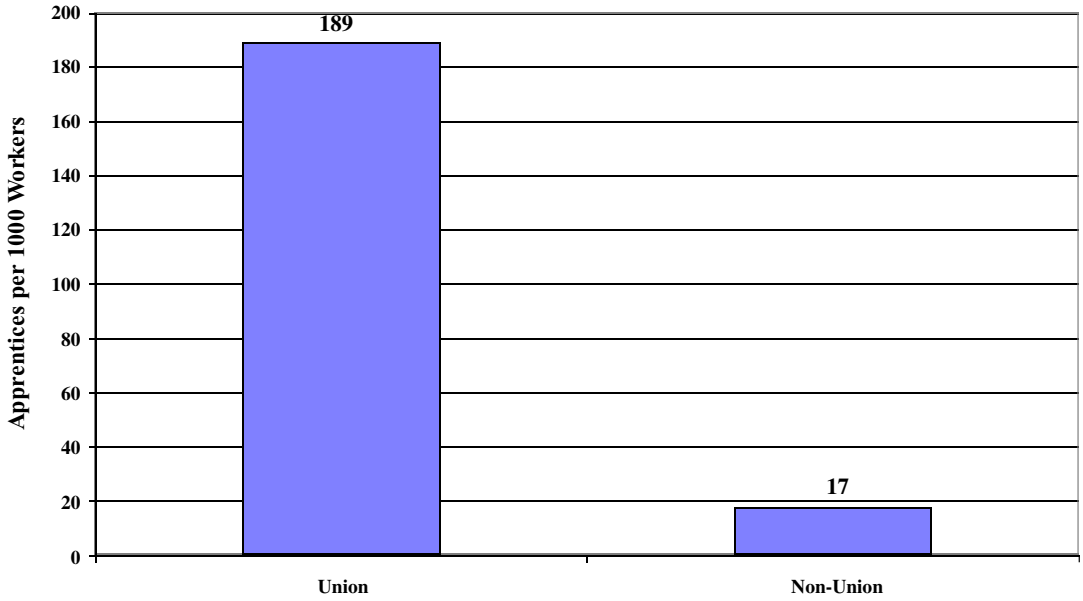
Eighty-two percent of all construction apprentices registered were in union programs and 18 percent in non-union programs.

Figure 6. Union and Non-Union Share of Workers in Construction Occupations in PA, 2001 (percent)



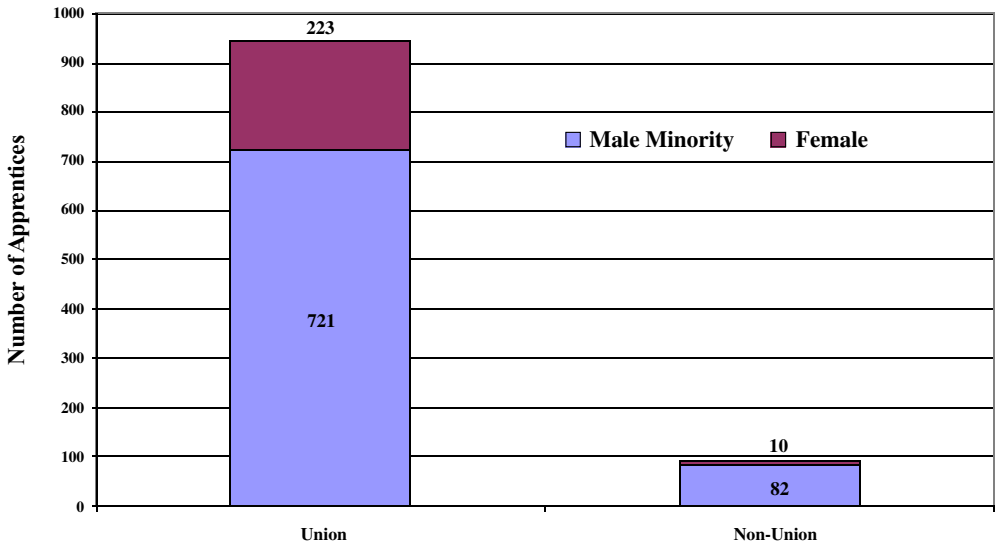
There are more union apprentices despite the fact that employment in the Pennsylvania non-union sector is higher than in the union sector. Just over one out of every three workers in construction occupations in Pennsylvania is unionized.[10]

Figure 6a. Number of PA Construction Apprentices Per 1000 Construction Workers, 2001



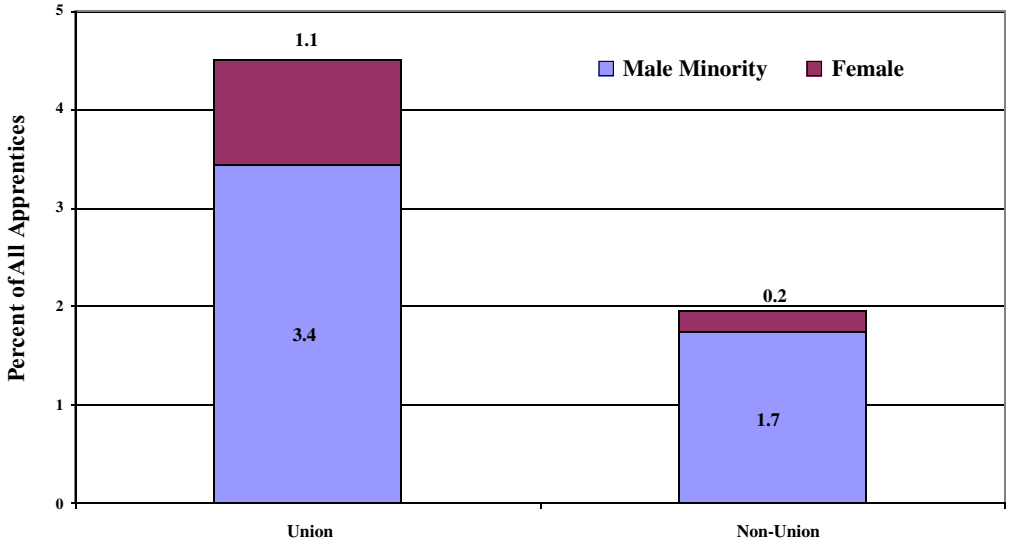
There are 189 union apprentices per 1000 unionized construction workers in Pennsylvania, versus 17 non-union apprentices per 1000 non-union construction workers. Therefore, relative to its share of employment, the union sector registers 11 times as many apprentices as the non-union sector.

Figure 7. Number of Female and Male Minority Construction Apprentices in PA, 1997-2001



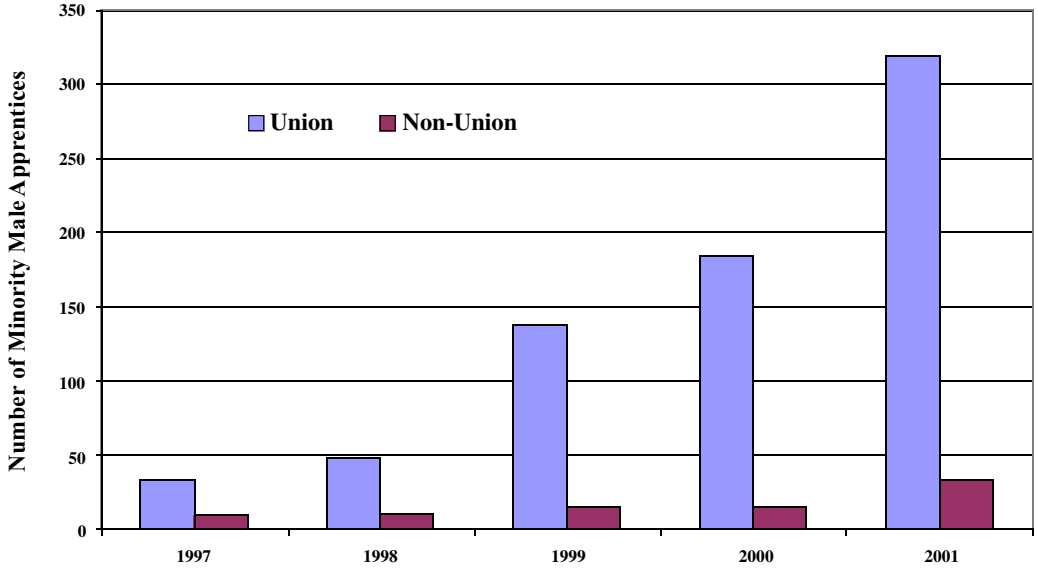
The numbers of female and minority apprentices in the union sector are much higher than the same numbers in the non-union sector. In Pennsylvania from 1997 to 2001, 223 females and 721 male minorities registered in union apprenticeship programs. Ten females and 82 males registered in non-union programs.

Figure 8. Female and Minority Male Share of Registered Construction Apprentices in PA, 1997-2001



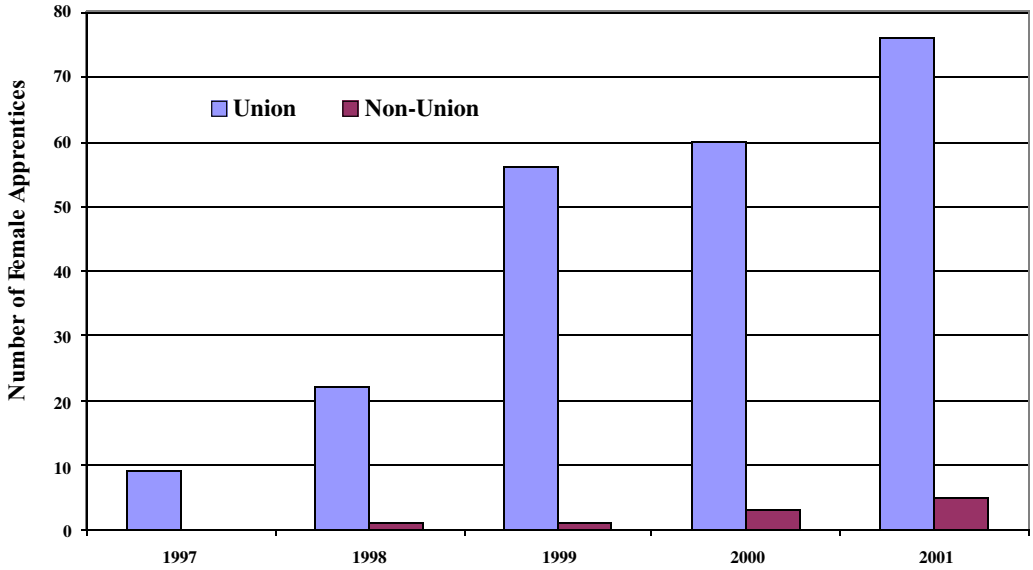
Of union apprentices registered from 1997 to 2001, 4.5 percent were females or male minorities. Women and male minorities comprised 1.9 percent of the non-union apprentices registered in this period.

Figure 9. Minority Males Registered in PA Union Construction Apprenticeships Rises from 1997 to 2001



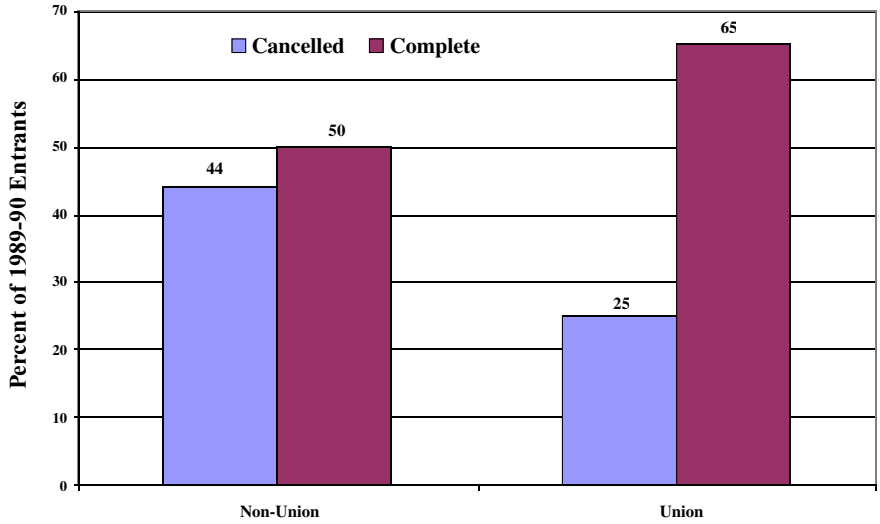
In the 1997 to 2001 period, joint apprenticeship programs increasingly tapped the minority and female labor supply to help meet skill shortages. In 2001, 319 male minorities were registered for union programs compared to 33 in 1997, a nearly 10-fold increase. Non-union programs increased minority registrations from nine to 33. Thus, there are now 10 times as many minority male apprentices registering annually in union programs as in non-union, compared with four times as many five years ago.

Figure 10. Females Registered in PA Union Construction Apprenticeships Rises Sharply from 1997-2001



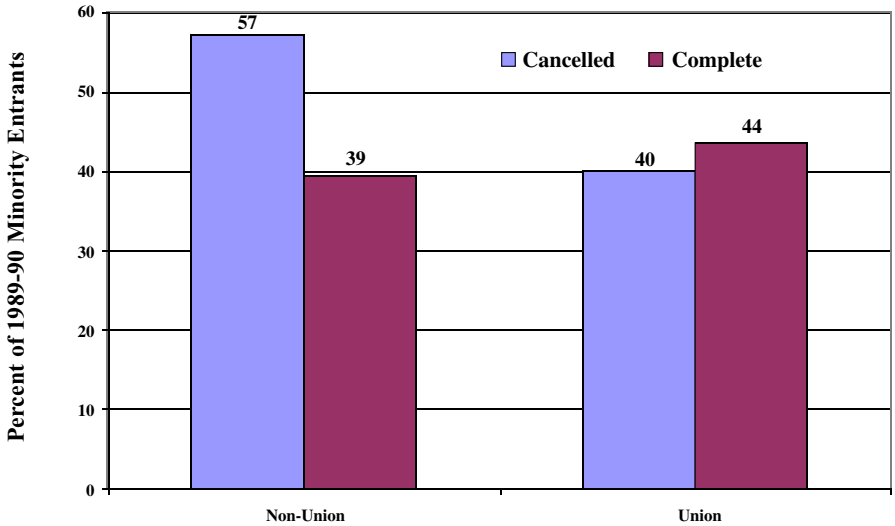
In 1997, U.S. Department of Labor data indicate that only nine females were registered for union apprenticeship programs in Pennsylvania and none for non-union. By 2001, union programs registered 76 females, while non-union programs registered five.[11]

Figure 11. Status in 1995 of 1989-90 Entrants into PA Construction Apprenticeships



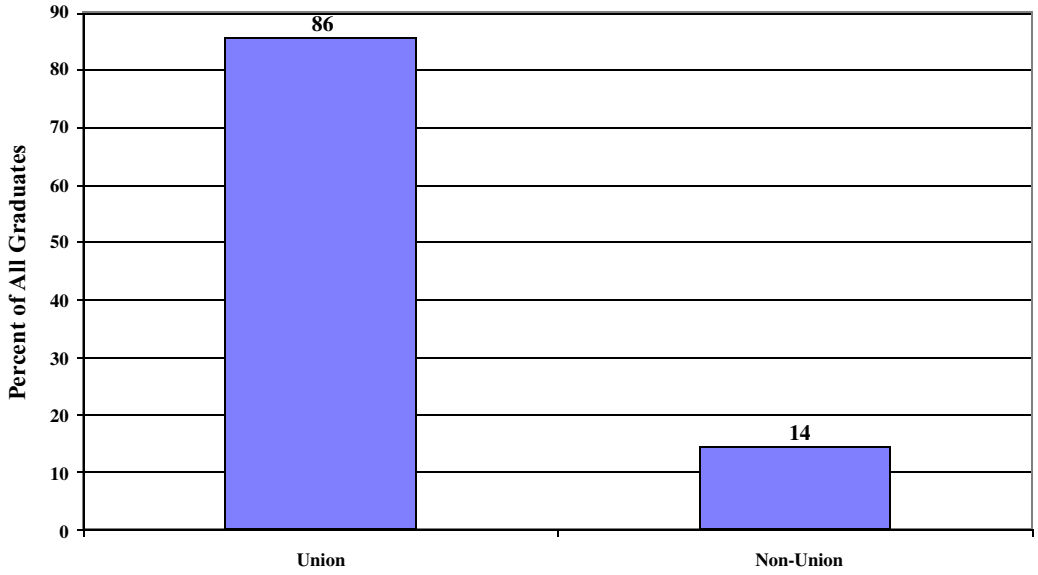
Apprentice program graduation – or "completion" – rates are higher in the union than non-union sector. Among individuals who first enrolled in 1989 or 1990, two-and-a-half times as many union apprentices had completed their program by 1995 as had dropped out. By contrast, almost as many non-union apprentices had dropped out as had completed. (In the figure above, the share who cancelled plus the share who completed does not add to 100 percent because some apprentices are still active but have not completed.)

Figure 12. Status in 1995 of 1989-90 Minority Entrants into PA Construction Apprenticeships



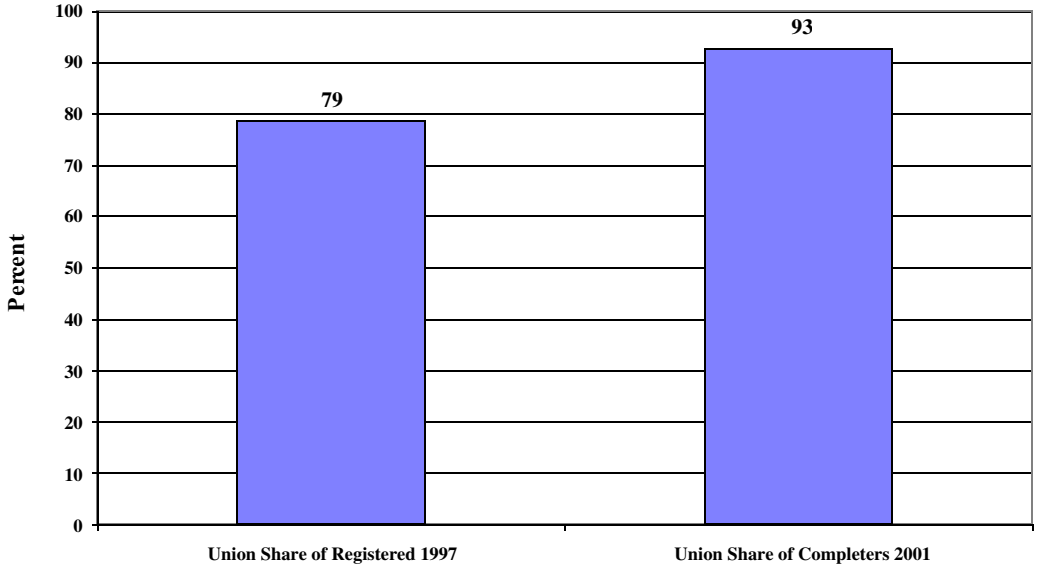
Union construction apprenticeship programs also have higher completion rates, and lower dropout rates, for females and male minorities than do non-union programs.[12] In Pennsylvania, 57 percent of non-union minority construction apprentices who entered programs in 1989-90 had cancelled by 1995, while only 40 percent of minority union apprentices had cancelled. For the U.S. in 1995, 43 percent of female apprentices in union programs who entered in 1989-90 had completed their apprenticeship; by contrast, only 11.5 percent of non-union female apprentices had completed. (Sample sizes for Pennsylvania are too small to provide reliable estimates of completion rates for female apprentices.)

Figure 13. Graduates from PA Construction Apprentice Programs, Union and Non-Union, 2001



Our more recent data does not track the same individuals over time and whether they have completed their apprenticeship. Indirect evidence, however, suggests that union apprenticeship programs continue to have higher graduation rates. Unions accounted for 86 percent of union apprenticeship program graduates in 2001. This is well above the 82 percent union share of new apprentice registrations over the 1997-2001 period (Figure 5).

Figure 14. Union Share of Male Minorities Registered for PA Construction Apprenticeships in 1997 and Completing in 2001



Additional evidence is available by looking at trends in male minority apprenticeship. In 1997, 79 percent of registered male minority apprentices were union. In 2001, 93 percent of male minority completers were in union programs.

Figure 15. Share of Union Apprentices by Top Construction Trades Occupations in PA, 2002

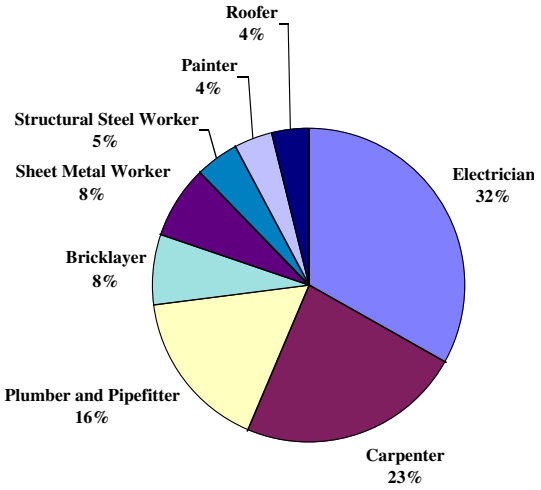
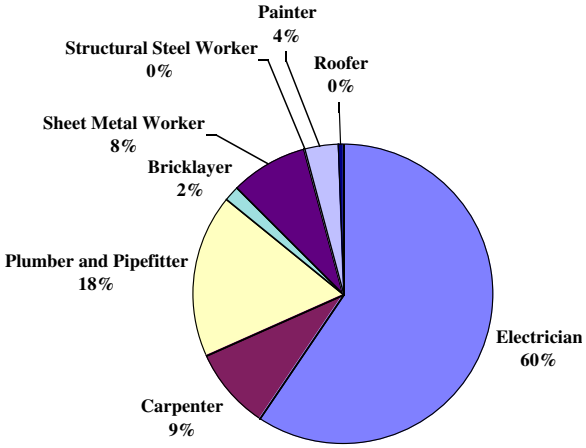


Figure 16. Share of Non-Union Apprentices by Top Construction Trades Occupations in PA, 2002



Figures 15 and 16 show the share of construction trades apprentices in the major construction occupations (totals in pie charts may not add to 100 because of rounding).

- Two-thirds of union construction trade apprentices are in three trades – electrician, carpenter, and plumber/pipefitter. Sheet metal workers and bricklayers each account for between 7 and 8 percent of union construction trade apprentices.

- Of non-union construction apprentices, 60 percent are electricians, followed by 18 percent in plumbing and pipefitting, and 9 percent in carpentry.

CONCLUSION

Union apprenticeship programs have outperformed non-union ones on all critical measures of program success that we have examined: enrollment levels, graduation rates, enrollment and graduation rates for minorities and females, increases in enrollment levels to meet expanding industry needs. In light of this, further bolstering union apprenticeship programs appears the most promising route to meeting future construction industry skill needs. We recommend three ways to do this.

1. *Make it easier to combine apprenticeship with a college degree.*

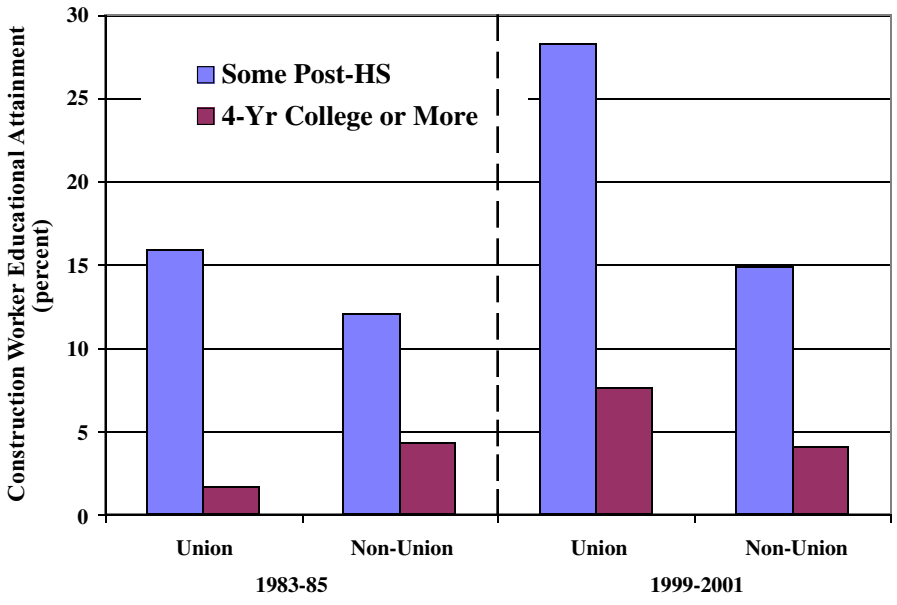
In the past, construction apprenticeships and college education have been seen as alternatives. From the 1960s to the 1990s, this view contributed to the emergence of a construction industry skill shortage. More and more high school graduates, including individuals from families and neighborhoods in which previous generations often worked in construction, chose to enter college.

Since the mid-1980s, however, Pennsylvania data reveal a new trend among unionized construction workers: there has been a near doubling, to 28 percent, in the share of workers who have some post-secondary education (Figure 17). Apprentice program coordinators attribute this jump to several causes.

- While rising shares of high-school graduates, facing intensifying parental and peer pressure, go to college, they do not all last there. Whether for financial reasons, because college does not suit them, or both, many students drop out of four-year programs. Partly as a result, more of those entering unionized construction apprenticeship have already had some college courses.

- Second, more older workers with postsecondary education now enter union apprenticeships. Such individuals may have been layed off in their first career or seek a career change. In either case, especially when full-time, full-year work is available, high wages and benefits in union construction make it an attractive new career.

Figure 17. Educational Attainment Rises Among Unionized PA Construction Workers, 1983-85 to 1999-2001



- Third, construction unions have facilitated access to higher education for their members by reaching articulation agreements that provide college credit for the classroom component of apprenticeship. The IBEW Local 5 program covering western Pennsylvania provides 40 community college credits for electrical courses taken as part of the apprenticeship; apprentices are required to get an additional 24 credits so that they receive an Associates Degree in Electrical Construction Technology at the same time as a journeyman's card. Many joint apprenticeship funds also help journeyman pay college tuition to acquire a Bachelors Degree.

For middle and high school students, and for their parents, the ability to combine apprenticeship with college – at no or much-reduced cost to the worker-student — could make union construction very attractive. For this reason, union construction programs should continue to build collaborations with colleges to give construction workers easier and cheaper access to post-secondary degrees.

2. *Improve the marketing of union apprenticeship programs.*

At present, many high-school graduates go straight to a four-year college without ever considering unionized construction. In some cases, this decision reflects outdated conceptions.

- These conceptions fail to recognize that much construction is increasingly high tech.
- They also ignore expanding opportunities to combine apprenticeship with college, opening up careers in management and engineering.

These features and other advantages of construction should be marketed energetically to middle- and high-school students, their parents, and guidance counselors. Access to a free or low-cost college education should be especially effective at attracting highly qualified students from low-income and working families, including minorities. Such students often go heavily into debt paying for college.

3. *Invest in best-practice pre-apprenticeship and mentoring programs.*

In some cases, interested individuals cannot meet union apprenticeship entry standards or drop out of apprenticeship without graduating. High-quality pre-apprenticeship training and post-entry mentoring could increase the number of individuals who can enter and succeed in construction.

- In particular, with union programs enrolling more minorities and women, an opportunity exists to refine and spread best practice mentoring and pre-apprenticeship training that serves these groups.
- To seize this opportunity, the next Governor should commission an assessment of Pennsylvania and national mentoring and pre-apprenticeship programs that target minorities and women.
- This assessment should include an evaluation of the potential of linking high-school school-to-career programs with unionized apprenticeships.

Compared with strengthening joint apprenticeships, investing in non-union construction apprenticeships would not be a wise use of public funds. Non-union employers themselves underinvest in training and offer workers relatively low wages and benefits at the end of training. Non-union programs also enroll low numbers of minorities and women, and waste training dollars because of low completion rates.

ENDNOTES

[1] According to the U.S. Bureau of Labor Statistics (BLS), workers' median tenure with the current employer was 3.5 years in 2000. For manufacturing, median years of tenure with the current employer was five years, while for the construction trades, it was 3.1 years. See BLS at http://www.bls.gov/news.release/tenure.toc.htm, Tables 5 and 6.

[2] See, for example, Construction Cost Effectiveness Task Force, *Confronting the Skilled Construction Work Force Shortage: A Blueprint for the Future* (Washington, D.C.: The Business Roundtable, 1997).

[3] Based on his unpublished research on the Syracuse construction industry, Michael Belzer (personal communication) hypothesizes that rising college attendance rates among the sons of trades workers first contributed to a skills shortage in construction in the late 1960s.

[4] Cited in Stephen A. Herzenberg, John A. Alic, and Howard Wial, "New Unions for a New Economy," *The New Democrat*, Volume 10, Number 2, p. 9.

[5] See Construction Cost Effectiveness Task Force, *Confronting the Skilled Construction Work Force Shortage*.

[6] Part of the explanation for a relatively older workforce in the unionized sector of the construction occupations is the greater availability of health and pension benefits. This allows unionized workers to make a career out of construction. In the United States in 2000, 82 percent of unionized construction workers obtained health insurance from their employer, compared to only 48 percent of non-unionized construction workers. Pension coverage displays a similar split: 83 percent of U.S. unionized construction workers had access to a pension plan in 2000, compared to only 40 percent of non-union.

[7] Mr. Thomas Bydlon, in response to a written request from the Keystone Research Center, obtained the apprenticeship data from the USDOL OATELS. In part of the data provided, apprenticeship programs for the main construction occupations were classified as union, non-union, or unkown. Based on his knowledge of apprenticeship programs in Pennsylvania, Mr. Bydlon reclassified some of the data in the "unknown" category to either "union" or "non-union."

[8] For a more extensive example of CPS use, see David H. Bradley and Stephen A. Herzenberg, *The State of Working Pennsylvania 2002* (Harrisburg: Keystone Research Center, 2002).

[9] The USDOL OATELS data show a third category of apprenticeships, "unknown." Programs and apprentices in this category will not be reported here. The share of unknown programs/apprentices is not large (e.g. 3.5 percent of all programs were classified as unknown).

[10] We define workers in construction occupations to include workers across all industries who are in trades occupations or who are first-line supervisors in the trades (these two groups include CPS codes 553 through 599). Since we include all industries, a substantial number of our "workers in construction occupations" are in residential construction, which is mostly non-union. If we could exclude residential construction from our sample, and if we could examine commercial and industrial construction only, the share of workers in construction occupations who are unionized would be roughly 50 percent (for the reasoning behind this rough estimate, contact the Keystone Research Center). Unfortunately, the CPS does not include separate codes for residential, commercial, and industrial construction, making it impossible to generate precise estimates of the share of workers in these industries who are unionized.

[11] When presented with the low female registration number in Figure 10, a group of 25 Pennsylvania joint apprenticeship program coordinators felt that the numbers, especially for 1997, might partly reflect incomplete records.

[12] The data in this figure are for the following construction occupations - bricklayer, carpenter, electrician, plumber and pipefitter - which account for 80 percent of union and 90 percent of nonunion construction occupations.

Capital Area Labor-Management Council, Inc.
Construction Partnership Coordination Project