

**APPRENTICE TRAINING IN KENTUCKY:
A COMPARISON OF UNION
AND NON-UNION
PROGRAMS IN THE BUILDING TRADES**

prepared for

**Building Trades Apprenticeship Coordinators/Directors
Association of Kentucky, Inc.**

and

**Greater Louisville Building and Construction
Trades Council, AFL-CIO**

prepared by

William J. Londrigan, M.P.A.

and

Joseph B. Wise, III, M.B.A.

March 1997

Executive Summary

In recent years, much of the attention of the construction industry has focused on the need for apprentice training.¹ Driving this focus are concerns about “skills shortages,”² the role of building trades unions in apprentice training³ and the debate over how to fund and implement non-union apprentice training on a large scale.⁴

It is generally acknowledged that many aspects of the construction industry, including apprentice training, are divided according to the labor relations policies of individual employers - whether they are “union” or “non-union.”⁵ By comparing union and non-union building trades apprenticeship programs in Kentucky over a nine-year period, we endeavored to determine which sector was most effective at supplying skilled journeymen⁶ to the construction industry. As concerns over skills shortages continue, and new approaches to training are designed and tested, the facts about the relative performance of union and non-union apprentice training are critically needed so that resources are directed to the more efficient training model.

Our findings revealed that 82% of all building trades apprenticeship programs registered in Kentucky during the study period were non-union. Yet, 69% of all apprentices were in union programs, and 75% of those who became journeymen were also in union programs.

Our analysis also revealed that union programs train across a broader range of apprenticeable occupations in the building trades. In contrast, 64% of non-union apprentices were registered in electrical apprenticeship programs and non-union programs failed to train any apprentices in several key building trades occupations.

Union programs were more diverse in race and gender than non-union programs and reported a higher percentage (16% vs. 8%) of minority and female apprentices registered during the period. Union programs graduated 84% of all minority and female apprentices becoming journeymen during the period.

Based on these findings, we conclude that Kentucky’s union building trades apprentice training programs have outperformed non-union apprentice training in every critical measure of program success. Furthermore, additional resources should be directed to union apprentice training so that craft shortages do not become more serious and the construction industry continues to provide viable career opportunities for a diverse workforce.

Table of Contents

EXECUTIVE SUMMARY	i
TABLE OF CONTENTS	ii
LIST OF CHARTS & TABLES	iii
ACKNOWLEDGMENTS	iv
INTRODUCTION	1
DATA AND METHOD	1
FINDINGS	3
REVIEW AND ANALYSIS	13
CONCLUSION	15
ENDNOTES	16
REFERENCES	20
APPENDIX I	21
AUTHORS	22

List of Charts & Tables

Chart 1: Number of Building Trades Apprenticeship Programs: Union v. Non-Union	3
Chart 2: Percent of Building Trades Apprenticeship Programs: Union v. Non-Union	3
Chart 3: Number of Registered Apprentices: Union v. Non-Union	4
Chart 4: Percent of Registered Apprentices: Union v. Non-Union	4
Chart 5: Number of Apprentices Achieving Journeyman Status: Union v. Non-Union	5
Chart 6: Percent of Apprentices Achieving Journeyman Status: Union v. Non-Union	5
Chart 7: Completion Rates: Union v. Non-Union	6
Chart 8: Percent of Apprentices By Top Ten Building Trades Occupations: National Averages	7
Chart 9: Percent of Union Apprentices By Top Ten Building Trades Occupations: Kentucky	8
Chart 10: Percent of Non-Union Apprentices By Top Ten Building Trades Occupations: Kentucky	8
Chart 11: Number of Male Minority & Female Apprentices: Union v. Non-Union	9
Chart 12: Percent of Male Minority & Female Apprentices: Union v. Non-Union	9
Chart 13: Number of Male Minority & Female Apprentices Achieving Journeyman Status: Union v. Non-Union	10
Chart 14: Percent of Male Minority & Female Apprentices Achieving Journeyman Status: Union v. Non-Union	10
Chart 15: Percent of Total Male Minority & Female Apprentices Achieving Journeyman Status: Union v. Non-Union	11
Chart 16: Percent of Male Minority & Female Apprentices by Program: Union	12
Chart 17: Percent of Male Minority & Female Apprentices by Program: Non-Union	12
Table A: Percent of Appretices by Top Ten Occupations	7 & 13

Acknowledgments

We wish to thank the members of the Building Trades Apprenticeship Coordinators/Directors Association of Kentucky, Inc. and the affiliates of the Greater Louisville Building and Construction Trades Council, AFL-CIO, for co-sponsoring, funding and supporting this study. Also, thanks to the Kentucky Labor Cabinet for providing the data which made this study possible and the following individuals for their valuable comments, suggestions and criticisms: Steve Barger; David Britt, Ph.D.; Carrie Donald, J.D.; Jerry Hammond; Charles E. McCoy; Peter Philips, Ph.D.; and John Remington, Ph.D. A special thanks to University of Louisville Graduate Intern Dorothea Muller, M.P.A., for her painstaking efforts during the early stages of this study.

Introduction

Apprentice training⁷ has become an issue in the debate over the role and function of trade unions in the construction industry.⁸ Underlying this debate is the question of whether non-union contractors and their associations can devise, fund and implement training programs able to produce a reliable supply of skilled construction workers.⁹

Such a debate exists, in part, due to fundamental differences in structure, administration and labor relations practices between union and non-union programs. Union apprenticeship programs function within the parameters of collective bargaining agreements as a partnership between building trades unions and signatory contractors. They are governed by joint committees of representatives from labor and management and funded by mutual agreement. Union apprentice training programs have operated for decades in the U.S. and are considered a modern adaptation of training methodologies originating with ancient craft guilds.¹⁰

Non-union apprentice training is governed unilaterally, with individual employers or employer associations controlling and administering registered apprentice training programs. Non-union programs are smaller in size and lack the longevity exhibited by union programs. The absence of collective bargaining and a cooperative relationship between management and labor lies at the core of the debate over which model is more effective at providing apprentice training in the building trades.

The purpose of this study is to compare union and non-union building trades apprentice training programs, according to a variety of measures, to determine the relative effectiveness of these training models in supplying skilled workers for Kentucky's construction industry.

Data and Method

The primary source of data was the Kentucky Labor Cabinet, Division of Employment Standards and Mediation, responding to a request filed under Kentucky's Open Records Act by the Building Trades Apprenticeship Coordinators/Directors Association of Kentucky, Inc. The data was provided to the Association in the form of a computer list, including the period January, 1985 through January, 1994.

Since this study concentrates exclusively on registered apprenticeship programs in the building trades occupations, it was necessary to eliminate from consideration all non-building trades registered apprenticeship programs contained on the computer list provided by the Kentucky Labor Cabinet. This was accomplished by sorting apprenticeship programs according to occupational codes provided by the Kentucky Labor Cabinet and eliminating non-building trades apprenticeship programs [Appendix I: List of Building Trades Occupational Codes].

Once segregated, data on apprenticeship programs in the building trades occupations were entered into a spreadsheet software program for analysis.

For a comparative analysis of union versus non-union, it was necessary to identify and segregate the remaining programs into union or non-union categories. Since the source data did not specifically identify a field for union or non-union status, it was necessary to sort the data according to whether or not programs were identified with a “JAC” (Joint Apprenticeship Committee) designation.

This identification provided the information needed to delineate programs as “union” or “non-union” because programs are designated as “JAC” when they are administered “jointly” by an equal number of representatives from labor (unions) and management (employers). Thus, only programs sponsored jointly by unions and employers, party to collective bargaining agreements, use such designations to identify their apprenticeship programs. Conversely, non-union programs have no such “joint” relationship and are unilaterally sponsored and administered by employers without any union participation. Therefore, only programs with the “JAC” designation were counted as “union” and all others as “non-union.”

The Kentucky Labor Cabinet data contained both active and inactive programs. Active programs were those that had registered apprentices in training at the end of the study period. Inactive programs had been deactivated by the Kentucky Labor Cabinet, either voluntarily or involuntarily, at some time during the study period. Data from both active and inactive programs was analyzed and no attempt made to sort the data based on whether programs were active or inactive. This study is concerned with aggregate data from all building trades apprenticeship programs operating in Kentucky within the study period.

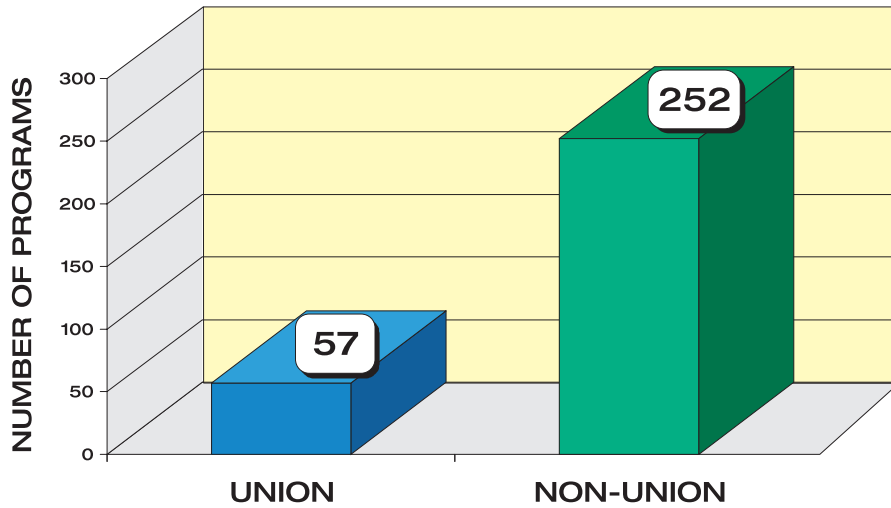
The primary source of national apprenticeship data was the 1992 U.S. General Accounting Office (GAO) report entitled, “Apprentice Training: Administration, Use, and Equal Opportunity.”¹¹ The GAO report utilizes the most complete source of national apprenticeship data from the Federal Bureau of Apprenticeship and Training Apprenticeship Management System, which includes data on all states except California, Hawaii, Rhode Island and the District of Columbia. Due to the significant role of California in apprenticeship, the GAO report also includes data from California’s Department of Industrial Relations.

Similar to the data provided by the Kentucky Labor Cabinet, the GAO report also included data on non-building trades occupations. To determine national averages, occupational titles were utilized to segregate building trades occupations from other apprenticeable occupations contained in the GAO data.

Findings

Chart 1

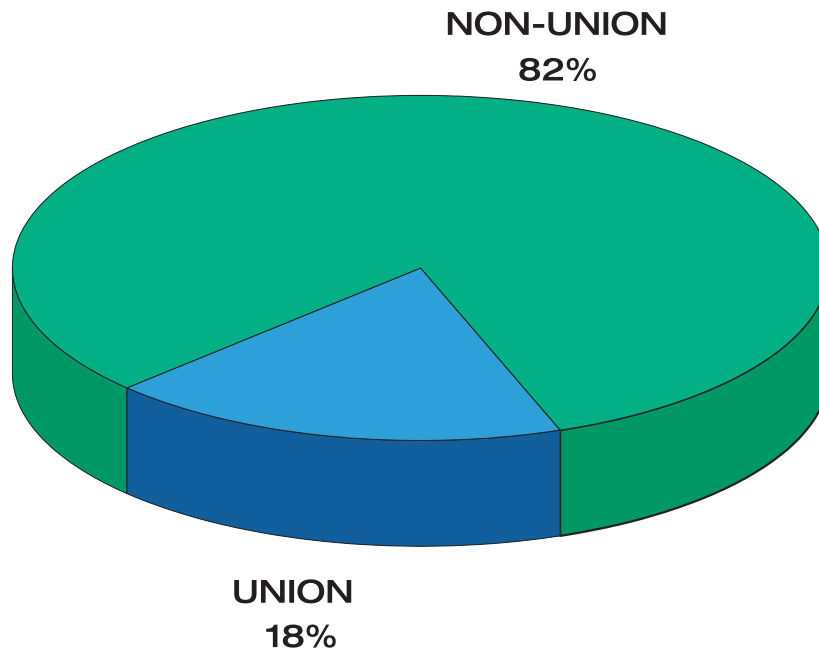
Number of Building Trades Apprenticeship Programs: Union v. Non-Union



The total number of building trades apprenticeship programs in the Commonwealth of Kentucky during the study period was 309. Of these, 57 were union and 252 non-union.

Chart 2

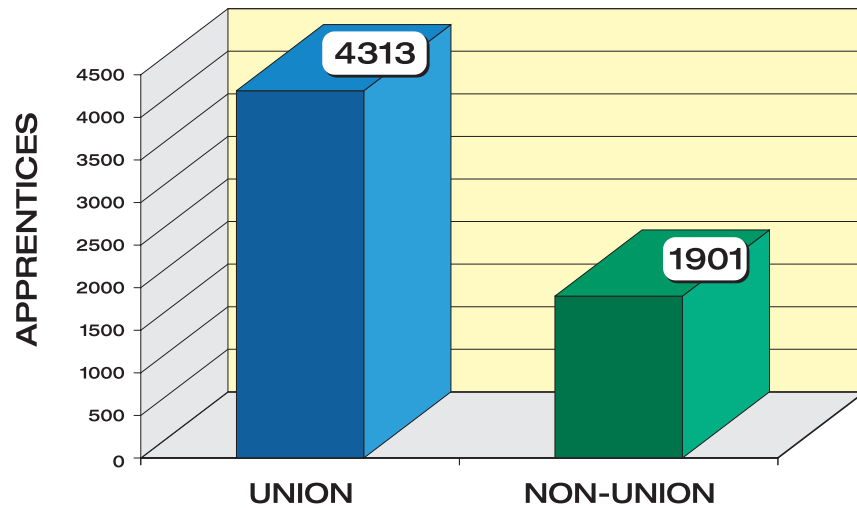
Percent of Building Trades Apprenticeship Programs: Union v. Non-Union



As a percentage, 18% of the programs were union and 82% non-union.

Chart 3

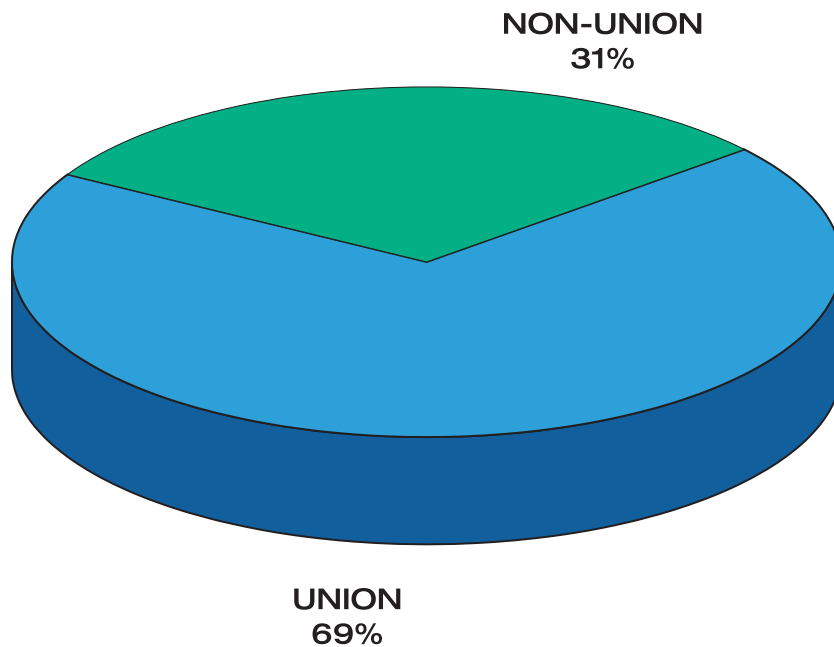
Number of Registered Apprentices: Union v. Non-Union



The total number of registered apprentices in building trades occupations during the study period was 6214. Of these, 4313 were in union programs and 1901 in non-union programs.

Chart 4

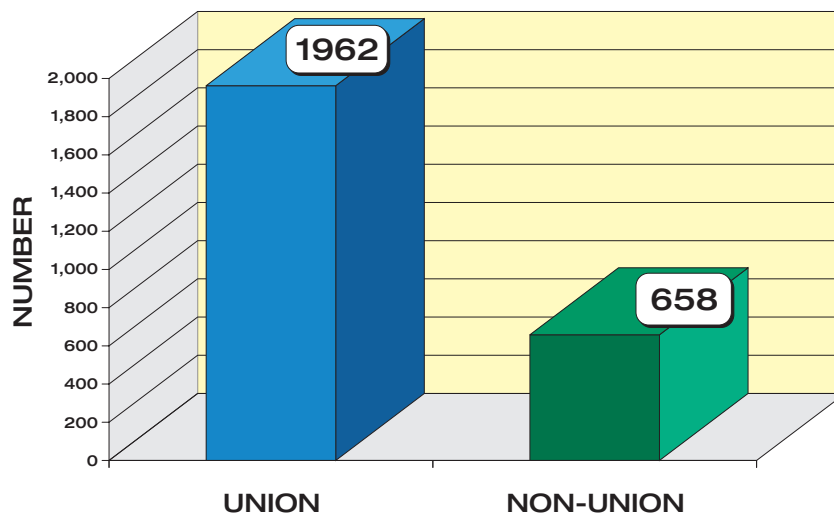
Percent of Registered Apprentices: Union v. Non-Union



As a percentage, 69% were union and 31% non-union.

Chart 5

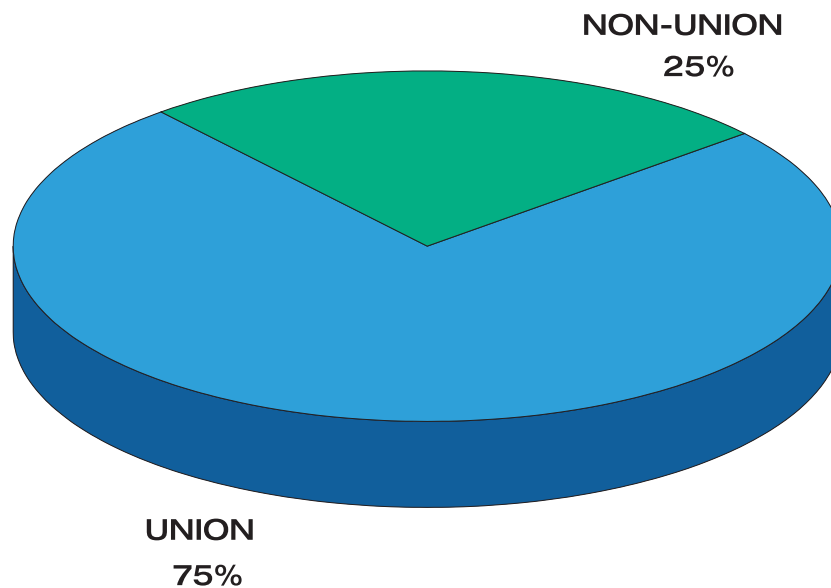
Number of Apprentices Achieving Journeyman Status: Union v. Non-Union



The total number of registered apprentices achieving journeyman status during the study period was 2620. Of these, 1962 were union and 658 non-union.

Chart 6

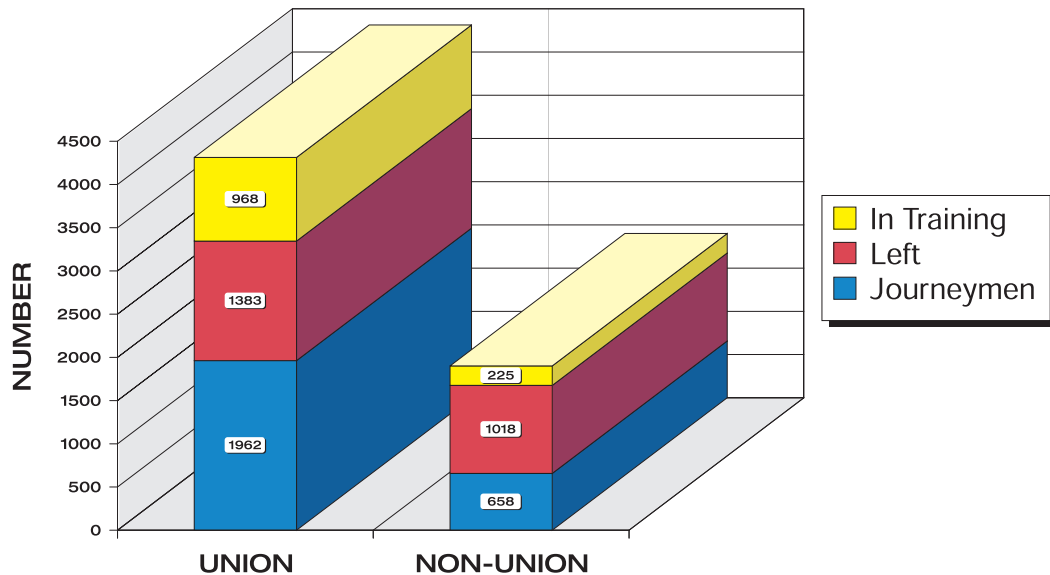
Percent of Apprentices Achieving Journeyman Status: Union v. Non-Union



As a percentage, 75% were union and 25% non-union.

Chart 7

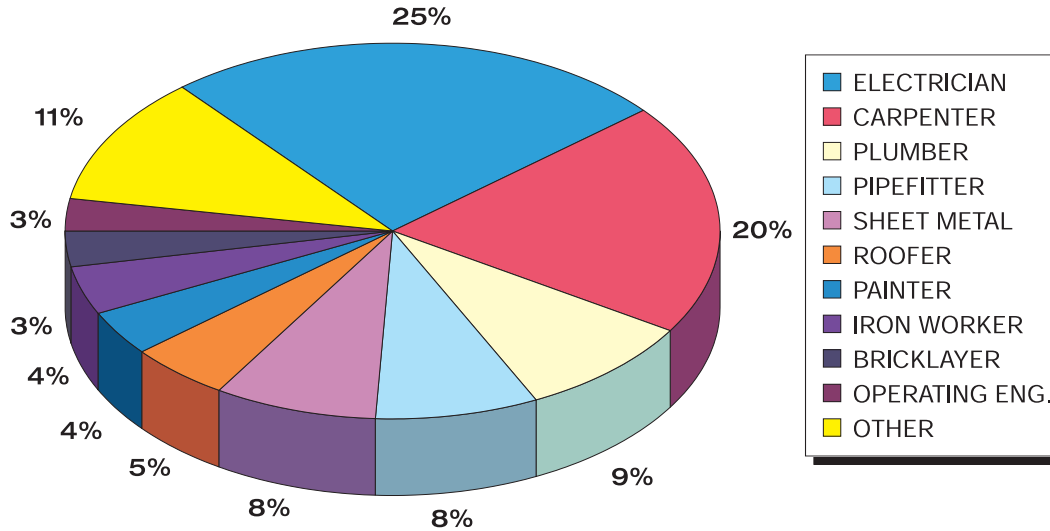
Completion Rates: Union v. Non-Union



Completion rates are a valid measure of apprenticeship program success and are based on the percent of apprentices who become journeymen following the typical 3-4 year apprentice training process. In determining completion rates of union and non-union programs, the following statistics were compared: union programs graduated 1962 apprentices, 1383 left union programs prior to graduation and 968 were still in training at the end of the study period. Non-union programs graduated 658 apprentices, 1018 left non-union programs prior to graduation and 225 were still in training at the end of the study period. Based on these statistics, the completion rates for union programs was 59% compared to 39% for non-union.¹²

Chart 8

Percent of Building Trades Apprentices By Top Ten Occupations: National



In 1992, the U.S. General Accounting Office published a report on apprentice training in the U.S. entitled, “Apprentice Training: Administration, Use, and Equal Opportunity.” Using the GAO data, building trades occupations were segregated and analyzed to determine national averages for the top ten occupations. Using these national averages as a benchmark, union and non-union apprenticeship programs in Kentucky were analyzed to determine how they compared with national averages [see Table A.]

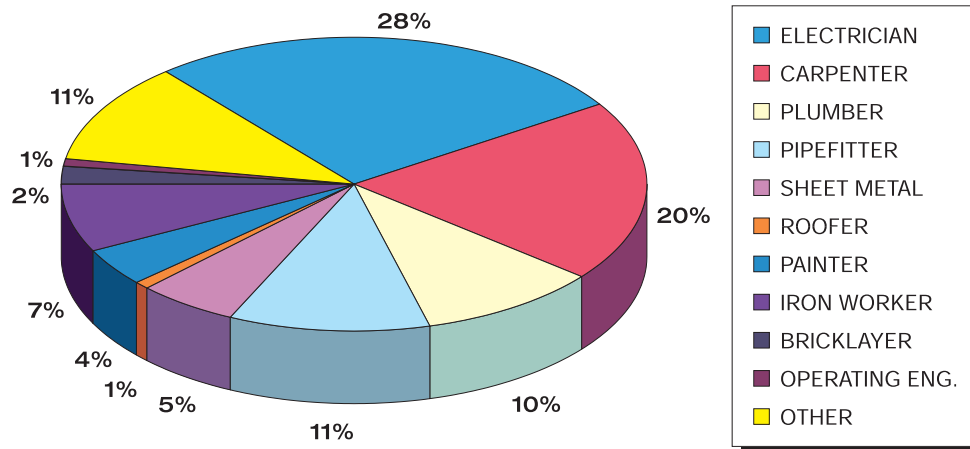
Table A

Percent of Apprentices By Top Ten Occupations

	Electrician	Carpenter	Plumber	Pipefitter	Sheet Metal	Roofer	Painter	Ironworker	Bricklayer	Operating Engineer	Other
National	25%	20%	9%	8%	8%	5%	4%	4%	3%	3%	11%
KY Union	28%	20%	10%	11%	5%	1%	4%	7%	2%	1%	11%
KY Non	64%	8%	5%	3%	3%	0%	1%	0%	1%	0%	15%

Chart 9

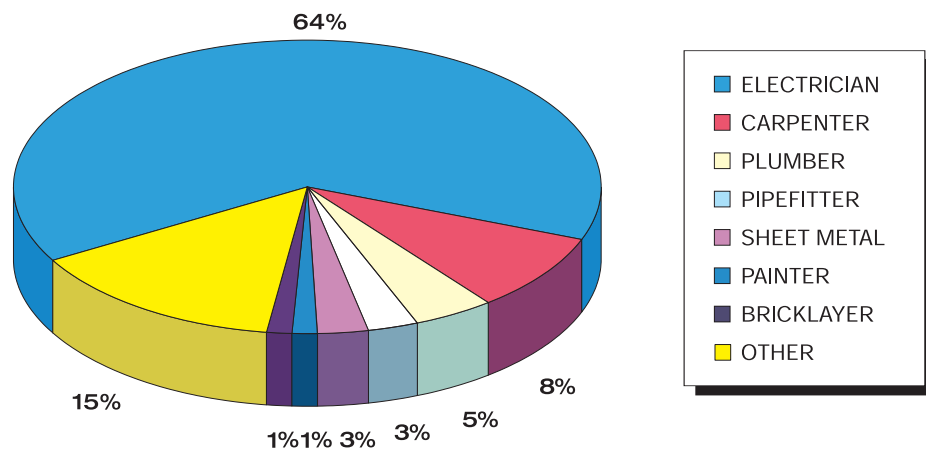
Percent of Union Building Trades Apprentices By Top Ten Occupations: Kentucky



The distribution of apprentices among the top ten union building trades occupations in Kentucky closely correlates with the national distribution in Chart 8.

Chart 10

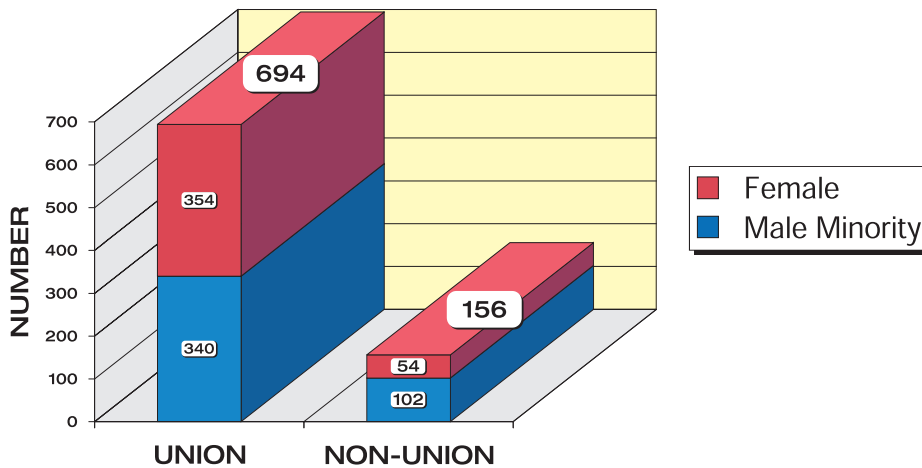
Percent of Non-Union Building Trades Apprentices By Top Ten Occupations: Kentucky



Non-union building trades apprenticeship programs in Kentucky are heavily concentrated in the electrical occupation and several of the top ten occupations have zero apprentices.

Chart 11

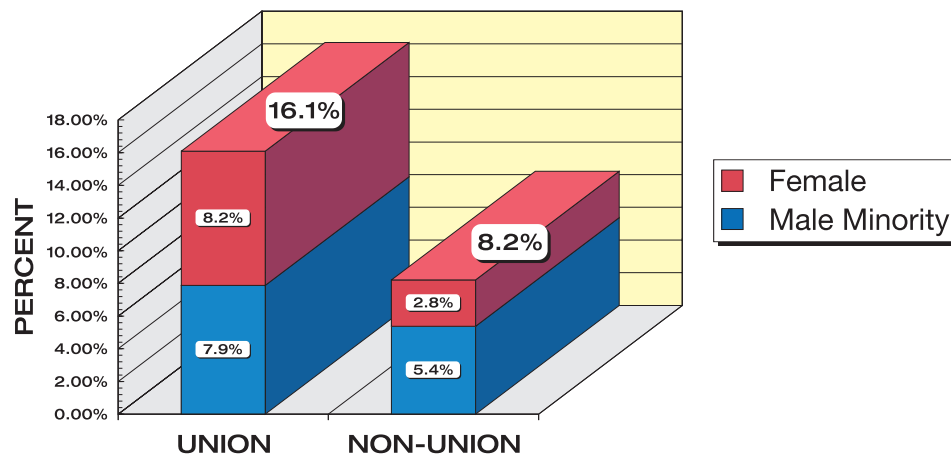
Number of Male Minority & Female Apprentices: Union v. Non-Union



Of the 6214 apprentices registered in Kentucky during the study period, a total of 850 were male minorities and females.¹³ Union programs had 340 male minorities and 354 females, while non-union programs had 102 male minorities and 54 females.

Chart 12

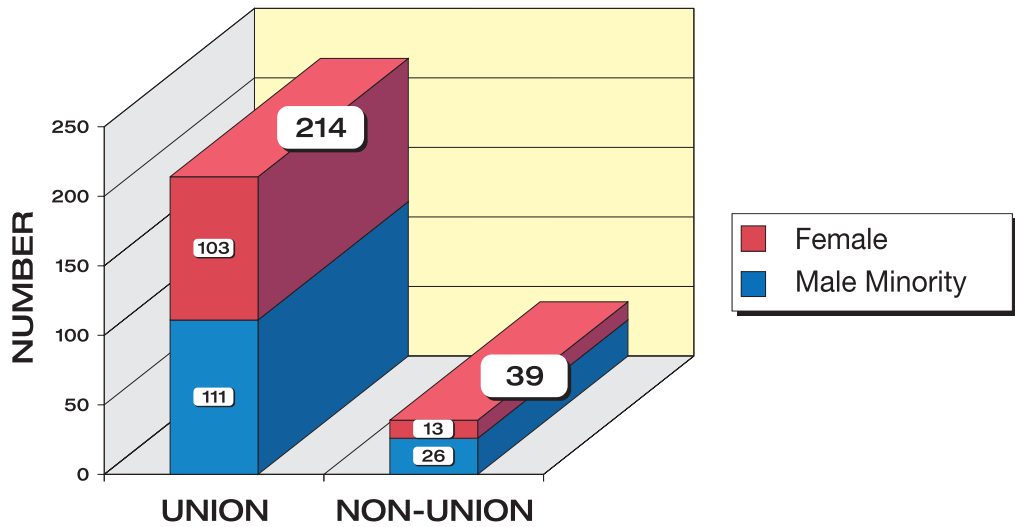
Percent of Male Minority & Female Apprentices: Union v. Non-Union



As a percentage, union programs had 7.9% male minorities and 8.2% females, for a total of 16.1%. Non-union programs had 5.4% male minorities and 2.8% females, for a total of 8.2%.

Chart 13

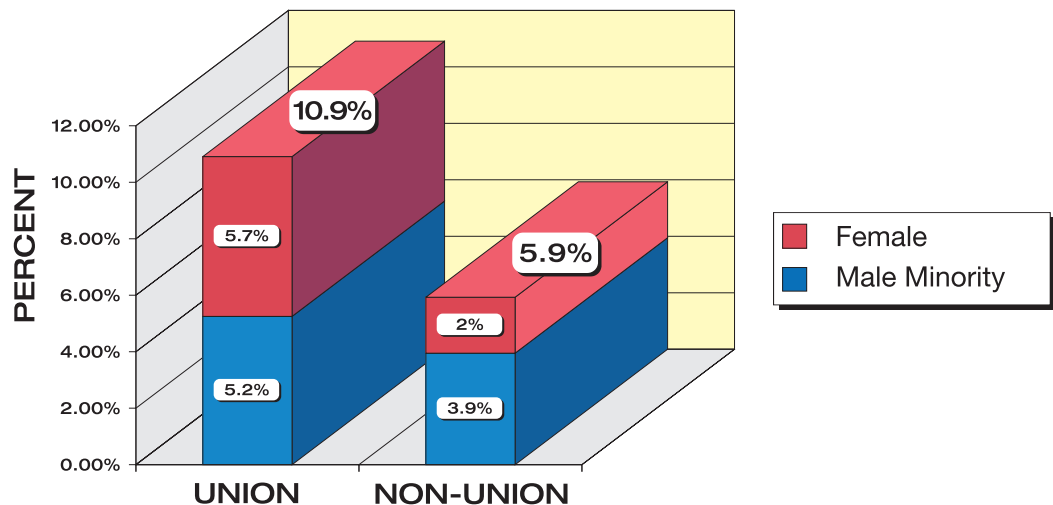
Number of Male Minority & Female Apprentices Achieving Journeyman Status: Union v. Non-Union



The total number of male minority and female apprentices achieving journeyman status during the study period was 253. Of these, 214 were in union programs and 39 non-union.

Chart 14

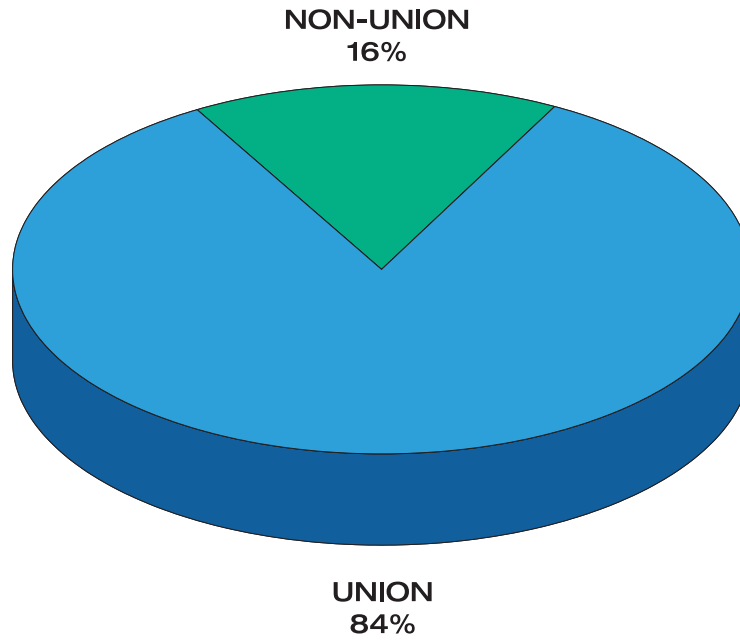
Percent of Male Minority & Female Apprentices Achieving Journeyman Status: Union v. Non-Union



As a percentage, 10.9% of all union apprentices becoming journeymen were male minorities and females, while 5.9% of non-union apprentices becoming journeymen were male minorities and females.

Chart 15

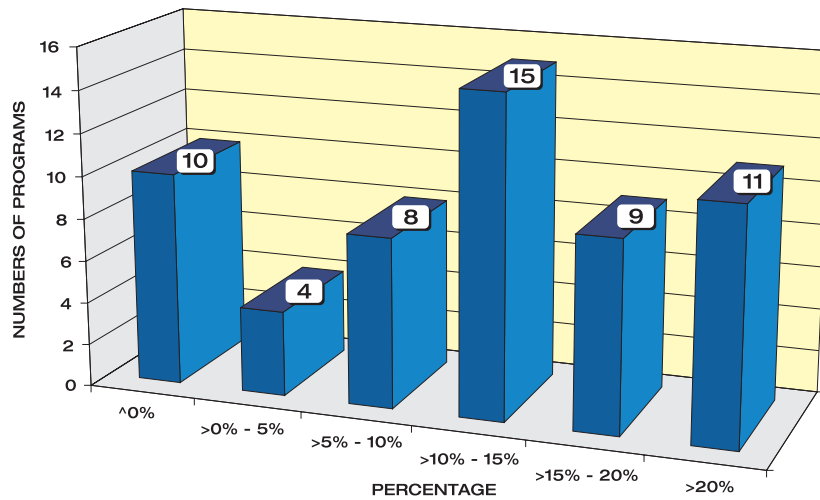
Percent of Total Male Minority & Female Apprentices Achieving Journeyman Status: Union v. Non-Union



Of all male minorities and females achieving journeyman status in Kentucky during the period, 84% graduated from union programs and 16% from non-union programs.

Chart 16

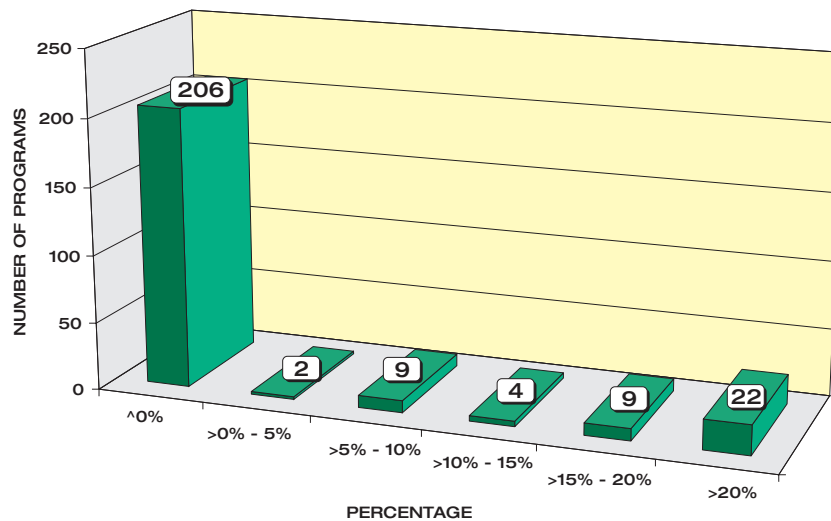
Percent of Male Minority & Female Apprentices by Program: Union



Of the 57 union apprenticeship programs, 10 or 17% reported zero male minority or female apprentices. The 10 union programs with zero male minority or female apprentices were all inactive by the end of the study period. Thirty-five, or 62% of union programs had greater than 10% male minority and female apprentices.

Chart 17

Percent of Male Minority & Female Apprentices by Program: Non-Union



Of the 252 non-union apprenticeship programs, 206 or 82% reported zero male minority or female apprentices. Of the 206 non-union programs with zero male minority or female apprentices, 162 of these were deactivated by the end of the study period leaving 44 programs with zero male minority or female apprentices.

Review and Analysis

Aggregate Program Comparisons:

While non-union programs accounted for 82% of the 309 building trades apprenticeship programs registered in Kentucky during the study period, union programs enrolled 69% of the 6,214 registered apprentices. Union programs also graduated 75% of all apprentices who became journeymen, with a 59% completion rate, compared to 39% for non-union programs. Also, union programs averaged 75.66 apprentices per program, while non-union programs averaged 7.54 apprentices per program.

Occupational Code Comparisons:

Safe and efficient completion of construction projects requires an array of trades and specialties working in concert and sequence. The list of building trades occupational codes in Appendix I contains 30 separate building trades occupations.

The occupational code analysis reveals that the distribution of union apprentices in Kentucky closely mirrors the distribution of national averages (Charts 8 and 9) and demonstrates that the union sector has trained across the spectrum of occupations and crafts in response to industry manpower demands. Conversely, non-union apprentice training has been concentrated in the electrical trade, with 64% of all non-union apprentices registered in this occupation. The analysis also reveals that non-union apprentice training failed to include several other necessary building trades occupations [see Table A].

Table A

Percent of Apprentices By Top Ten Occupations

	Electrician	Carpenter	Plumber	Pipefitter	Sheet Metal	Roofer	Painter	Ironworker	Bricklayer	Operating Engineer	Other
National	25%	20%	9%	8%	8%	5%	4%	4%	3%	3%	11%
KY Union	28%	20%	10%	11%	5%	1%	4%	7%	2%	1%	11%
KY Non	64%	8%	5%	3%	3%	0%	1%	0%	1%	0%	15%

Minority & Female Participation Analysis:

The lack of entry and participation of minorities and females in building trades occupations and union apprenticeship programs has been a subject of concern. Most studies on this issue are dated and provide little information on diversity in apprentice training during the last decade.¹⁴ Union apprenticeship programs in Kentucky exhibited a much better record of diversity than programs sponsored by Kentucky's non-union contractors and associations:

- 694 or 16.1% of all union apprentices were male minorities and females, compared to only 156 or 8.2% male minorities and females in non-union programs (Charts 11 and 12);
- Union programs reported 8% male minority apprentices, mirroring the percentage of male minorities in the general population of Kentucky¹⁵ (Chart 12);
- 10.9% of all union apprentices becoming journeymen were male minorities and females (Chart 14);
- 82% of male minorities and females registered in Kentucky during the study period were in union programs;
- 84% of male minorities and females who became journeymen during the period were enrolled in union programs (Chart 15);
- 206 or 82% of non-union programs did not have a single male minority or female apprentice registered during the study period (Chart 16).

The absence of male minority and female apprentices in 206 non-union programs may be explained by the fact that affirmative action requirements do not apply to apprenticeship programs with fewer than five registered apprentices.¹⁶ Since the average size of non-union programs is 7.54 apprentices, many non-union programs have less than five apprentices and are exempt from affirmative action requirements. While efforts to improve diversity must be on-going, data on union apprenticeship programs reveals positive results of long-term efforts to improve diversity in race and gender.

Conclusion

Construction is a labor intensive industry requiring a wide range of specialized skills and training. In response, a unique training methodology has evolved, known as apprenticeship. Apprentice training combines on-the-job training under the guidance of skilled journeymen with classroom training in the technical aspects of the building trades. This combination of on-the-job and classroom training has been an effective mechanism for reproducing the skills and knowledge needed by the construction industry.

This study compared union and non-union building trades apprentice training programs in Kentucky to determine the relative effectiveness of each in producing a diverse supply of skilled journeymen. Our findings dramatically emphasize the difference in results produced by union vs. non-union apprentice training. The union sector had more registered apprentices, higher completion rates, produced a much higher number of skilled journeymen, and were more diverse in race and gender. The findings also demonstrate that the vast majority of non-union apprentice training has been concentrated in the electrical occupation. Conversely, union apprenticeship programs have trained across a broader range of apprenticeable occupations and in proportion to the range of building trades occupations found on the national level.

As demand for skilled journeymen continues to increase, resources must be allocated to the training method which is more effective at meeting this demand. The union apprentice training method, encompassing joint administration by labor and management, has been demonstrated as the more effective training method in the Commonwealth of Kentucky. To verify these results beyond Kentucky, additional studies of this kind should be conducted.

Endnotes

- 1) Note: *Engineering News-Record*, or *ENR*, is considered the premier publication on the construction industry and, as such, has been cited extensively to chronicle issues and events involving apprentice training, skills shortages and labor relations in the construction industry.

Bradford, Hazel, ed. "Reich Takes Aim At National Apprenticeship..." *Engineering News-Record*, March 1, 1993, p. 5.

Bradford, Hazel, and William G. Krizan, "Building Trade Unions Cleaning Up In Environmental Business Push," *Engineering News-Record*, November 21, 1994, pp. 58-60.

Engineering News-Record, "Coalition Formed For Union Manpower Needs," October 26, 1989, p. 5.

Engineering News-Record, Editorial, "Workforce Foundation Is Dead, But Issues Are Alive and Growing," November 7, 1994, p. 82.

Krizan, William G., "Big Business Targets Training," *Engineering News-Record*, November 27, 1995, pp. 6-7.

Krizan, William G., "AGC Joins Training Center," *Engineering News-Record*, March 11, 1996, p. 13.

Powers, Mary Buckner, "Groups Grapple With Training," *Engineering News-Record*, February 26, 1996.

Schriener, Judy, "Ganging Up On Work Force Problems," *Engineering News-Record*, January 11, 1990, pp. 38-42.

Engineering News-Record, "Southern Group Solos, Tackles Labor Shortage," April 27, 1989, p. 16.

- 2) *Engineering News-Record*, "Manpower Issues Come Of Age As Industry Tries To Compete," January 1, 1990, pp. 64-65.

Fox, Arthur, "Looming People Shortages Put Industry On Alert," *Engineering News-Record*, October 20, 1988, pp. 24-25.

Krizan, William G., "Craft Labor Shortages On The Horizon," *Engineering News-Record*, March 23, 1989, p. 39.

Krizan, William G., "Skill Shortage Saps Rebound," *Engineering News-Record*, June 14, 1990, pp. 15-16.

Krizan, William G., "Craft Shortages Creeping In," *Engineering News-Record*, December 25, 1995, pp. 34-35.

- Lockett, Brian, ed., "Skilled Labor Shortages In Construction: Real or Imagined?," *Bureau of National Affairs*, Construction Labor Report, December 21, 1994.
- Moskal, Brian S., "Apprenticeships: Old Cure For New Labor Shortage?," *Industry Week*, May 6, 1991, pp. 30-35.
- Setzer, Steven W., "Labor Shortages Grip Several Cities," *Engineering News-Record*, September 25, 1986, pp. 10-11.
- Setzer, Steven W., et. al., "Craft Shortages Hitting Productivity and Costs," *Engineering News-Record*, December 14, 1989, p. 72.
- Tomsho, Robert, "Labor Squeeze: With Housing Strong, Builders Often Find Skilled Help Lacking," *The Wall Street Journal*, January 27, 1994, p. 1.
- U.S. Department of Labor, "Labor Market Shortages," Report of the Secretary of Labor, January, 1989.
- 3) Associated Builders and Contractors, Inc., "Training Issues Within The U.S. Construction Industry: A Special Report To The President of the United States," Washington, D.C., January 29, 1993, p. 3.
- Bourdon, Clinton C. and Raymond E. Levitt, *Union and Open-Shop Construction: Compensation, Work Practices and Labor Markets*, D.C. Heath and Company, Lexington, MA, 1980, pp. 68-77.
- Bradford, Hazel, ed., "Apprenticeship Rules Getting An Overhaul," *Engineering News-Record*, September 27, 1990, p. 11.
- Bradford, Hazel, "Apprentice Rules Polarize Industry," *Engineering News-Record*, December 3, 1990, p. 11-13.
- Bureau of National Affairs, "Open Shop, Union Sectors Promote Training Programs Among Owners," *Construction Labor Report*, November 25, 1992, vol. 38, No. 1907, pp. 1068-1070.
- Business Roundtable (The)*, "Government Limitations On Training Innovations," New York, NY, Report D-2, March, 1982.
- Foster, Howard G., "Industrial Relations In Construction: 1970 - 1977," *Industrial Relations*, Vol. 17, No. 1, February, 1978, pp. 7-8.
- Northrup, Herbert R., *Open Shop Construction Revisited*, The Wharton School, Industrial Research Unit, University of Pennsylvania, Philadelphia, PA, 1984, pp. 463 465.
- 4) Angelo, William J., "Training Talks Crawl Along," *Engineering News-Record*, October 23, 1995, p. 7.

Business Roundtable (The), "Training Problems In Open Shop Construction," New York, NY, Report D-4, September, 1982.

Engineering News-Record, "Open Shop Moves Beyond Quick-Fix Training," September 2, 1982, pp. 24-26.

Engineering News-Record, "Nonunion Training Plan Approved," March 9, 1990, p.13.

Engineering News-Record, "Training Not A Priority If Money Is A Measure," April 19, 1990, p. 18-19.

Engineering News-Record, Editorial, "Giving Non-Union Workers Decent Wages and Benefits," February 11, 1991, p. 56.

Engineering News-Record, Editorial, "Owners Can Lead The Way To Better Training," December 2, 1996.

Krizan, William G., "Contractors Jockey For Training Support," *Engineering News-Record*, November 30, 1992.

Krizan, William G., et. al. "Open Shop At Critical Stage," *Engineering News-Record*, February 5, 1996, p. 30-32.

Krizan, William G., "Model Agreement Penned For Funding Nonunion Training," *Engineering News-Record*, October 21, 1996, p. 11.

Krizan, William G., "Training Prequalification Nears," *Engineering News-Record*, November 25, 1996, p. 8.

Rosenbaum, David B., "Training Plan Hinges On Owners," *Engineering News-Record*, December 2, 1991, p. 7.

- 5) See, for example, op. cit., Bourdon and Levitt, Foster, and Northrup. Note: Many authors use the term "open-shop" to indicate that employers are not unionized nor party to collective bargaining agreements. For simplicity, we use the term "non-union" synonymously with the term "open-shop" to indicate that employers and apprenticeship programs are not affiliated with labor unions nor party to collective bargaining agreements. In their analysis of union and non-union (open-shop) training, Bourdon and Levitt also use "joint" and "non-joint" to indicate whether programs are sponsored jointly by labor and management (union), or unilaterally by non-union employers, and referred to as non-joint.
- 6) Note: While the term journeyman and journeymen are not gender neutral they are still widely used and accepted in reference to apprentice training. For example, *Kentucky Revised Statutes* (KRS Chapter 343) references journeyman and journeymen. Furthermore, there does not appear to be a consistent gender neutral substitute since

the U.S. Department of Labor sometimes uses journeyworker, while the *U.S. Code of Federal Regulations* uses journeyperson. *Webster's Dictionary* also uses journeyman or journeymen (plural).

- 7) A good description of apprentice training can be found in: "The National Apprenticeship Program," U.S. Department of Labor, Manpower Administration, Washington, D.C., 1968, p.6: "...a schedule of work processes in which an apprentice is to receive training and experience on the job with organized instruction designed to provide the apprentice with knowledge in technical subjects related to the trade."
 - 8) op. cit., endnote 3
 - 9) op. cit., endnote 4
 - 10) *U.S. Department of Labor*, "Apprenticeship Past And Present," Employment and Training Administration, Washington, D.C., Revised 1991, p. 18.
 - 11) *U.S. General Accounting Office*, "Apprenticeship Training: Administration, Use, and Equal Opportunity," Washington, D.C., March 1992, GAO/HRD-92-43.
 - 12) Completion rates are computed using the following formula:
Completion rates = number completing / (number completing + number leaving program).
 - 13) Includes: male African Americans, Hispanics, Asian and Pacific Islanders, American Indians and all females regardless of ethnicity.
 - 14) Marshall, Ray F. and Vernon M. Briggs, Jr., "Equal Apprenticeship Opportunities: The Nature of the Issue and the New York Experience," The University of Michigan, Wayne State University, Institute of Labor and Industrial Relations and National Manpower Policy Task Force, Washington, D.C., November 1968.
- Rowan, Richard L., and Lester Rubin, "Opening the Skilled Construction Trades to Blacks: A Study of the Washington and Philadelphia Plans for Minority Employment," The Wharton School, Industrial Research Unit, University of Pennsylvania Press, Philadelphia, PA, 1972.
- Segal, Ben D., "Equal Employment Opportunity In Metropolitan Washington: The Role of the Unions," Community Advisors on Equal Employment, Washington, D.C., October 1970.
- 15) *Census of the United States 1990*.
 - 16) *U.S. Code of Federal Regulations* 29 CFR 30.4 (f).

References

- Berry, S. L., "Apprenticeships: A Medieval Idea Wins A 20th Century Edge," *Management Review*, August 1991, pp. 41-44.
- Bourdon, Clinton C., and Raymond E. Levitt *Union and Open-Shop Construction: Compensation, Work Practices, and Labor Markets*, Massachusetts, D.C. Heath and Company, Lexington, MA, 1980.
- Bureau of National Affairs, *Special Report: Skilled Labor Shortages In Construction: Real Or Imagined?*, Washington, D.C., December 21, 1994.
- Echikson, William, "Europe's Lessons For The U.S.," *Fortune*, December 14, 1992, pp. 158-160.
- Foster, Howard G., "Industrial Relations in Construction: 1970-1977," *Industrial Relations*, Vol. 17, No. 1, February 1978, p. 1-17.
- Guzda, Henry P., "Unions Active In Joint Training Programs," *American Workplace*, U.S. Department of Labor, Volume 3, Issue 1, January 1995.
- Kinzer, Stephen, "Germans' Apprentice System Is Seen As Key To Long Boom," *The New York Times*, February 6, 1993, pp. 1 & 5.
- Northrup, Herbert R., *Open Shop Construction Revisited*, The Wharton School, Industrial Research Unit, University of Pennsylvania, Philadelphia, PA: 1984.
- Occupational Outlook Quarterly*, "Apprenticeship," Winter 1991/92, vol. 35 number 4, pp. 27-31.
- Roth, Terence, "German Industrial Boom Is Threatened By A Dearth of New Skilled Apprentices," *The Wall Street Journal*, August 8, 1989.
- Salwen, Kevin G., "Clinton Dream of Apprenticeship Aims To Give High Schoolers High Skills," *The Wall Street Journal*, Feb. 22, 1993.
- Tomsho, Robert, "Labor Squeeze: With Housing Strong, Builders Often Find Skilled Help Lacking," *The Wall Street Journal*, January 27, 1994.
- U.S. Department of Labor, "Apprenticeship 2000," Employment Training Administration, Bureau of Apprenticeship and Training, Washington, D.C., August, 1987.
- U.S. Department of Labor, "Apprenticeship Past And Present," Employment and Training Administration, Bureau of Apprenticeship and Training, Washington, D.C., Revised 1991.
- U.S. Department of Labor, "National Apprenticeship Program," Employment Training Administration, Washington, D.C., Revised 1991.
- U.S. Department of Labor, "Work-Based Learning: Training America's Workers," Employment and Training Administration, Washington, D.C., November 1989.
- U.S. General Accounting Office, "Apprenticeship Training: Administration, Use, and Equal Opportunity," March 1992, GAO/HRD-92-43.

APPENDIX I

LIST OF BUILDING TRADES OCCUPATIONAL CODES

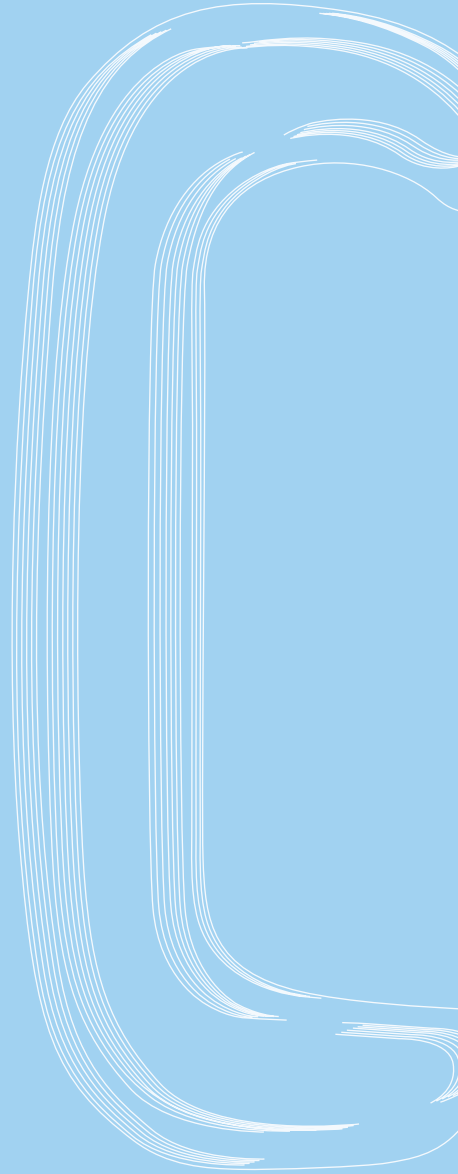
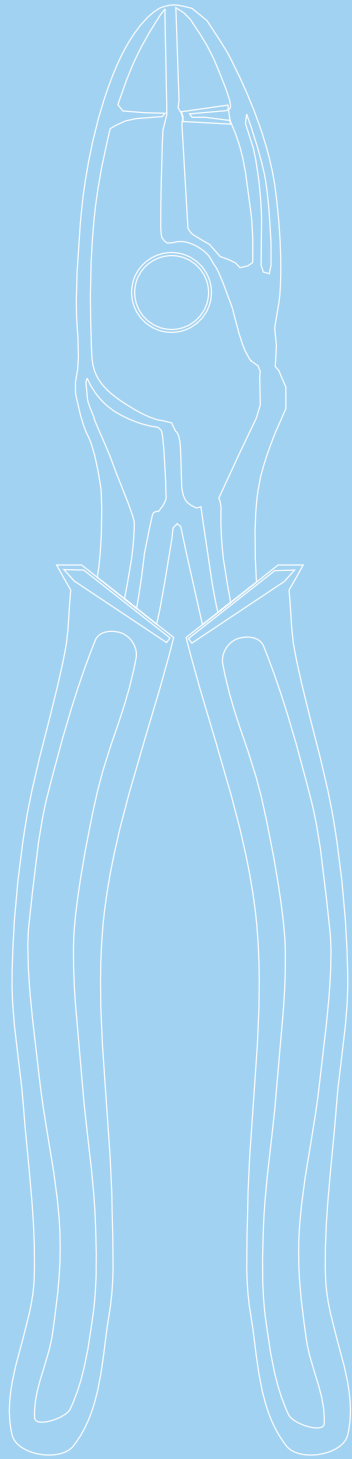
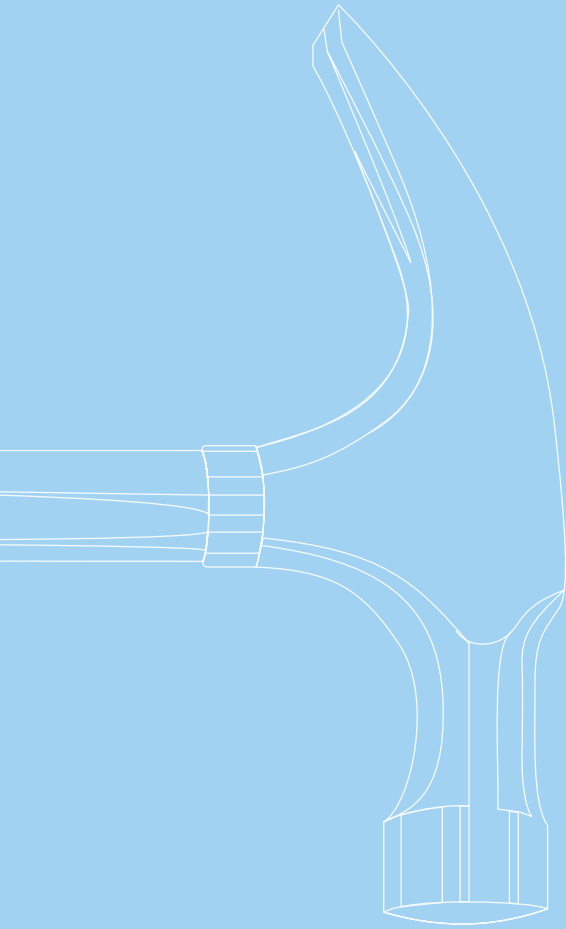
DOT NUMBER	OCCUPATION
2	A/C INSTALLER
52	BRICKLAYER
67	CARPENTER
68	MAINTENANCE CARPENTER
71	CARPET LAYER
75	CEMENT MASON
159	ELECTRICIAN
199	FLOORLAYER
221	GLAZIER
257	A/C MECHANIC
313	MARBLE SETTER
335	MILLWRIGHT
365	OPERATING ENGINEER
373	ORNAMENTAL IRON WORKER
379	PAINTER
414	PIPEFITTER
423	PLUMBER
432	PLASTERER
480	ROOFER
510	SHEET METAL WORKER
536	STATIONERY ENGINEER
568	TERRAZZO WORKER
573	TILE SETTER
627	WELDER
637	ENVIRONMENTAL CONTROL SYSTEM WORKER
643	MAINTENANCE ELECTRICIAN
661	CONSTRUCTION CRAFT LABORER
669	STRUCTURAL STEEL WORKER (IRON WORKER)
909	INSULATION WORKER
1009	PILED RIVER CARPENTER

Authors

William J. Londrigan holds a B.A. in Labor Studies from the Pennsylvania State University and a Master of Public Administration from the University of Louisville. Mr. Londrigan is currently a doctoral student in Urban Policy and Public Affairs at the University of Louisville and Secretary/Treasurer of the Greater Louisville Building and Construction Trades Council, AFL-CIO.

Joseph B. Wise, III holds a B.S. in Business Administration from Spalding University, Louisville, Kentucky and Master of Business Administration from Bellarmine College, Louisville, Kentucky. Mr. Wise is currently a doctoral student in Business Administration and Management Theory at Nova Southeastern University. Mr. Wise is a lecturer at Spalding University and provides consulting services for various organizations.

Graphic Art and Book Design by Syd Weedon, WordWorks, Louisville, Kentucky.



**Building Trades Apprenticeship Coordinators/Directors
Association of Kentucky, Inc.**

and

Greater Louisville Building and Construction Trades Council, AFL-CIO

