

Construction Apprenticeship in Oregon:
An Analysis of Data on Union and Non-Union
Apprenticeship Programs
(Update of a 2005 Study)

Prepared for the Oregon State Building and Construction Trades Council

by
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Table of Contents

	Page Number
Charts and Tables	2
Introduction	3
I. Apprenticeship Training in Oregon	4
II. Structure of the Report	4
Key Findings	5
Data and Methodology	6
Findings and Analysis	7
I. Current Enrollment	7
II. Occupational Distribution	8
III. Graduation Rates	10
Access for Women and Minorities to Construction Apprenticeship	12
I. Female Enrollment and Graduation Rates	15
II. Minority Enrollment and Graduation Rates	16
Conclusion	19
Appendices	20-28
References	29

Charts and Tables

	Page Number
Table 1: Active Construction Apprentices in Oregon, 2004 and 2007	7
Figure 1: Non-union Construction Apprentices by Trade (trades with more than 50 apprentices)	8
Figure 2: Union Construction Apprentices by Trade, 2007 (trades with more than 50 apprentices statewide)	9
Figure 3: Graduation Rates by Trade	11
Figure 4: Female and Minority Enrollment, 2007	13
Figure 5: Apprenticeship Enrollment Compared to Population Figures	13
Figure 6: Apprentice Diversity in Union Programs	14
Figure 7: Apprentice Diversity in Non-Union Programs	14
Figure 8: Female Graduation Rates by Trade	15
Figure 9: Minority Graduation Rates by Trade	16
Figure 10: Number of Minority Graduates by Trade	17

Introduction

In March 2005, we published a comparison of the outcomes of union and non-union apprenticeship training in Oregon.¹ At that time, Oregon was experiencing a 6.5% unemployment rate, and employment in construction was growing.

Today, the state's economy is experiencing a deep recession, and Oregon's unemployment rate is over 12% and climbing. The Oregon Employment Department predicts that unemployment will continue to rise till mid-2010, with the construction sector particularly hard hit and likely to contract by 16%.²

In response to this crisis, the Oregon legislature and U.S. Congress have allocated billions of dollars to fund construction projects, both traditional (e.g., highways and bridges and public building renovation and repair) and "green" (e.g., energy efficiency projects for public buildings and low-income residences, and "smart grid" projects). Estimates are that ___ new construction jobs could be created in Oregon over the coming year thanks to these initiatives. In addition to direct job creation, additional millions of dollars have been allocated for training for these jobs. The result will be a renewed focus on putting skilled construction workers back to work, training additional workers, and recruiting women and minority men to enter the trades.

The sheer size of the construction piece of stimulus-related projects has raised questions about training for construction occupations. Will we need to train additional workers to augment the existing construction workforce? How can we assure access for women and minorities to the jobs and the training opportunities? How can we make sure that the jobs created by stimulus projects will lead to long-term construction careers rather than dead-end short-term positions?

Furthermore, the demographics of the construction industry are such that over the longer term, the retirement of the "baby boomers" will produce a demand for replacements. The Oregon Employment Department predicts an increase of approximately 15% in the number of construction jobs between now and 2016, with over half of those coming in the form of replacement workers.³

It is appropriate, then, to revisit the hard questions about construction apprenticeship training programs in our state. Issues related to training for construction jobs, including cost effectiveness and access, are crucial to consider as Oregon lawmakers go about the work of rebuilding Oregon's economy in this difficult time.

¹ Byrd and Weinstein, *Construction Apprenticeship in Oregon: An Analysis of Data on Union and Non-union Apprenticeship Programs*, March 2005.

² Amy Vander Vliet, *Oregon's Employment Forecast: A Tough Year Ahead*, OLMIS/WorkSource Oregon, March 9, 2009; <http://www.qualityinfo.org/olmisj/ArticleReader?itemid=00006386>

³ Michael Meyers, "Construction Losing Jobs at Fastest Rate Since Early 2002," Oregon Labor Market Information System, November 10, 2008. <http://www.qualityinfo.org/olmisj/ArticleReader?itemid=00005457>

I. Apprenticeship Training in Oregon

Many construction workers enter the industry through apprenticeship programs, which provide an opportunity “learn while you earn.” Apprentices typically work alongside journey level craft workers while enrolled in classroom training programs that last from two to five years, depending on the occupation. In Oregon, apprenticeship programs are certified by the Apprenticeship and Training Division of the Bureau of Labor and Industries (BOLI). BOLI approves standards for these programs, and monitors their operations, including their efforts to provide access to women and minorities.

Union apprenticeship programs in construction are administered by Joint Apprenticeship Training Committees composed of employer and union representatives and funded by training trust funds established through collective bargaining agreements. Non-union programs are managed by individual contractors or contractor associations like Associated General Contractors or Associated Builders and Contractors.

II. Structure of the Report

The report presents an analysis of data on Oregon construction apprenticeship programs. As in the 2005 study, the analysis is limited to data on enrollment and completion rates. It is possible, using this data, to consider the contribution of training programs to the state’s pool of skilled construction workers, and to analyze the enrollment and progress of women and minority men in these programs.

A note about the calculation of graduation rates: In this report, as in the previous report, graduation rates are for apprentices who started their training between 1995 and 2002, and completed by the end of 2007.

Findings reflect two important features of state and national apprenticeship training. First, graduation rates vary greatly by trade due to academic difficulty, wage rates, working conditions, and licensing. Thus, this report includes a trade-by-trade analysis for several of the larger construction trades. Second, a growing body of literature indicates that a large source of variation among programs is rooted in the union or non-union status of those programs (see References). Thus this report focuses on comparing data on the two types of systems in Oregon.

Data analyzed in this report was supplied by Oregon’s Bureau of Labor and Industries. The work was funded by the Oregon State Building and Construction Trades Council.

Key Findings

The findings outlined in this report reveal that the number of construction apprentices in the state grew by approximately 25% between 2004, when the previous analysis was conducted, and the end of 2007. The data suggest that, in general, union apprenticeship programs continue to do a better job than non-union programs in establishing large and stable training centers and in recruiting a diverse workforce. Furthermore, on a trade-by-trade basis, women and minorities in union programs tend to have higher graduation rates.

- In 2007, union apprenticeship programs were training an even higher percentage of total construction apprentices in the state than in 2004: 62%, or 3,461 apprentices as compared to 2,127 apprentices in non-union programs.
- Union programs are twice as big, on average than non-union programs – an average size of 138 apprentices per program as compared to 48.
- Union programs continue to train for a much greater variety of occupations. Non-union programs are increasingly concentrated in the licensed electrical and plumbing trades.
- Unions do a better job recruiting women applicants to their training programs. In 2007, three times as many women were enrolled in union programs as in non-union programs. Women were 7% of union apprentices in 2007 compared to 4% of non-union apprentices.
- In 2007, union programs were training more than twice as many minority males as non-union programs. Minority males were 16% of union apprentices compared to 12% of non-union apprentices. African-American apprentices represented 4% of union apprentice enrollment, as compared to 2.3% of non-union apprentice enrollment, and Hispanics were 9.2% of union apprentices as compared to 4.7% of non-union apprentices.

Completion rates in this report were calculated based on the proportion of those who began their training between 1995-2002 inclusive, and successfully completed their training by the end of 2007.

- Union programs graduated more apprentices than non-union programs: fifty-seven percent of all graduates came from union programs.
- On a trade-by-trade basis, union programs had higher completion rates than their non-union counterparts.
- As in 2004, union programs graduated almost twice as many minorities and more than twice as many females as did non-union programs. And consistent with 2004 findings,

women graduated at a consistently higher rate in the unionized trades, and minorities graduated at a higher rate in more than half the unionized trades.

Data and Methodology

The data analyzed in this report were provided by the Apprenticeship and Training Division of the Bureau of Labor and Industries (BOLI) in the form of computer files spanning the period 1995-2007. Data included demographic information on apprentices who entered registered apprenticeship programs during that period.

This study surveyed construction apprenticeship programs as defined by BOLI.⁴ A list of these programs can be found in Appendix I. The list includes programs in existence during the 1995-2002 time frame, some of which have since been dissolved or merged with other programs.

Oregon recognized “mixed” as well as strictly union and non-union programs. In most cases, mixed programs include primarily either union or non-union apprentices. In this analysis, mixed programs that are predominantly union are included with union programs, and mixed programs that are predominantly non-union are included with non-union programs. Identification was made with the assistance of BOLI staff.

Trades were grouped according to industry practice. In this state, for example, a number of large and small trades are included under the “carpenter” heading because their training programs are typically merged into one administrative entity, and they share instructional staff and resources. Appendix II lists individual trade names that were combined to form larger trade categories.

Data were analyzed using Microsoft Excel 2008.

⁴ State of Oregon, Bureau of Labor and Industries, Apprenticeship Training Division, *Oregon Apprenticeship Guide*, on-line version, 2009.

http://www.oregon.gov/BOLI/ATD/A_AG_CTRADES.shtml

Findings and Analysis

I. Current Enrollment

Between 2004, when the previous study was completed, and 2007, enrollment in construction apprenticeship programs has increased substantially, rising from 4,497 to 5,588.⁵ The gains have been more dramatic for union programs, as is evident in Table 1 below.

In 2007, there were a total of 3,461 apprentices in union construction programs. In non-union programs, the figure was 2,127 (see Appendices III and IV). As Table 1 illustrates, this translates into 62% union, and 38% non-union. In 2004, the comparable figures were 57% and 43%.

There were 42 non-union apprenticeship programs and only 25 union programs in Oregon in 2007. Union programs were much larger in general, with an average enrollment of 138 apprentices compared to an average of only 48 enrollees in non-union apprenticeship programs. Most of the union programs operate their own training centers, using funds generated by negotiated training trusts. Some non-union programs have their own centers (especially in the licensed trades). Others use community college facilities. Several have recently combined to create the Northwest College of Construction with its own facility in Portland.

	2004	2007	% Change
Union programs	2,571	3,461	+ 35%
Non-union programs	1,926	2,127	+ 10%

Table 1: Active Construction Apprentices in Oregon, 2004 and 2007.

⁵ Enrollments have continued to rise. Approximately 1,700 apprentices entered the system in the nine months following July 1, 2008.

II. Occupational Distribution

As Figures 1 and 2 make clear, union apprenticeship in Oregon covers a much wider range of occupations than does non-union apprenticeship.

The majority of non-union programs are found in the licensed electrical and plumbing trades. Workers entering these trades are required under Oregon law to complete an apprenticeship program, so employers have a major incentive to participate as training agents. State licensing is not a factor in other trades, so that employers in these other trades appear to be less willing to invest in the training of apprentices. Union employers, however, are compelled by negotiated agreements to become training agents and contribute to training trusts, which in large part accounts for the greater diversity of crafts represented among union programs.

Figures 1 and 2 below compare, for the union and non-union sectors, the distribution of apprentices by trade for which they are being trained, for all programs with 50 or more enrolled apprentices statewide.

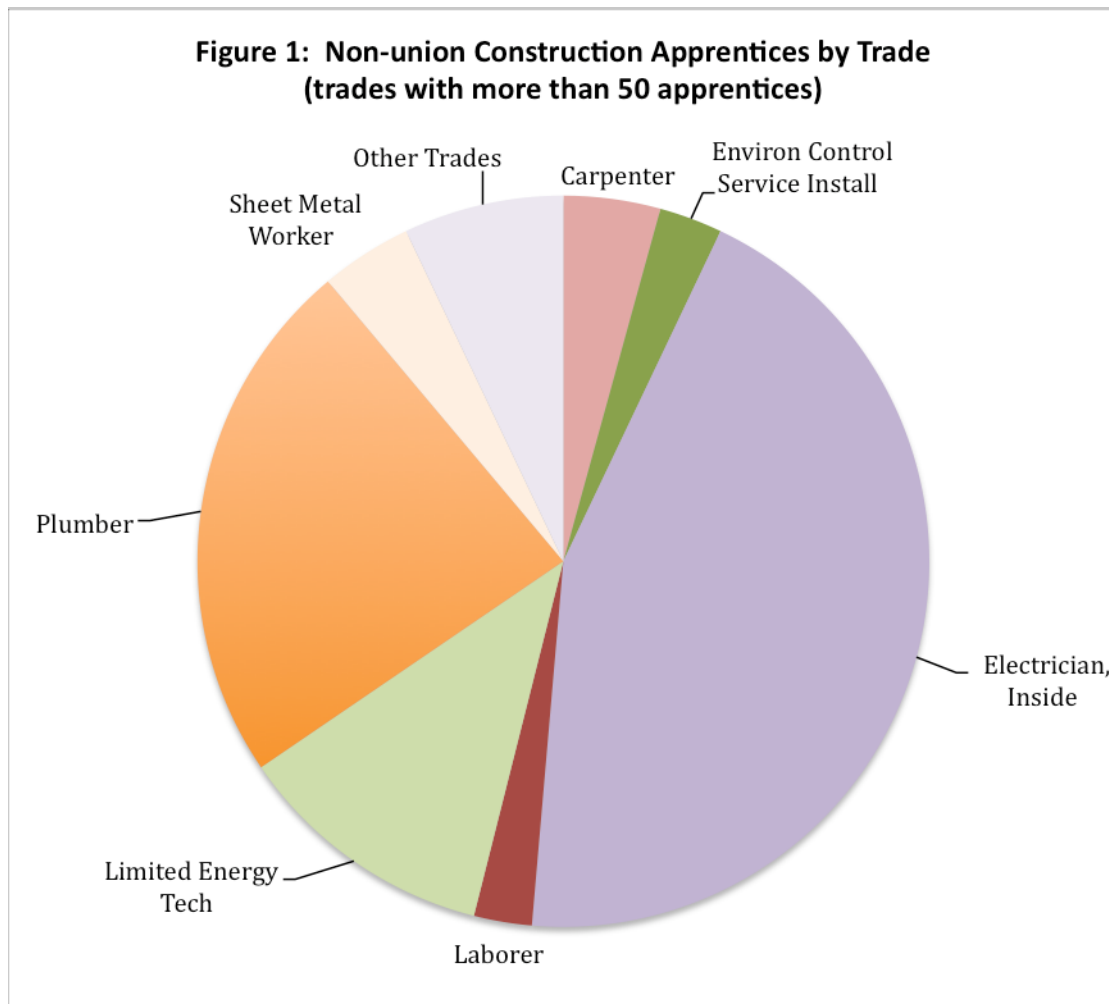
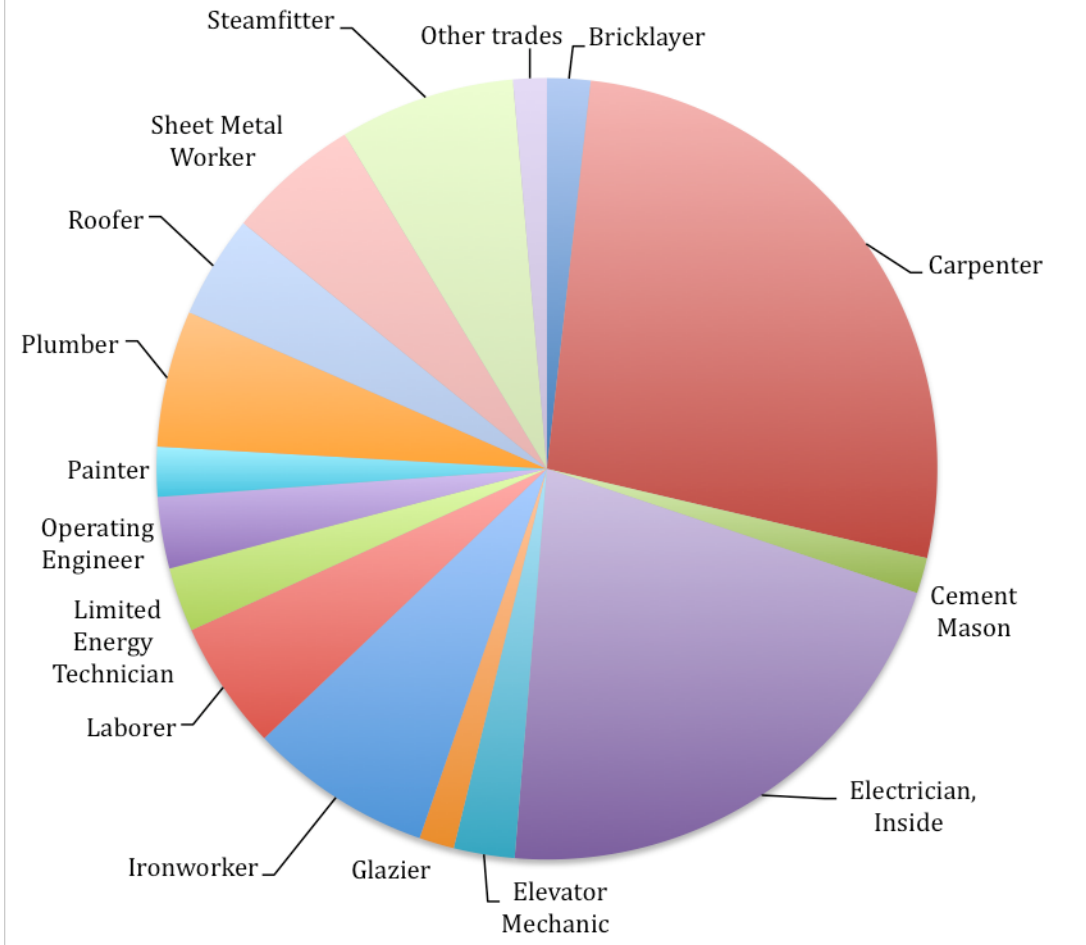


Figure 2: Union Construction Apprentices by Trade, 2007
(trades with more than 50 apprentices statewide)



III. Graduation Rates

An important measure of the effectiveness of apprenticeship training is the extent to which enrollees actually complete their training. In this report, graduation rates equal the percentage of apprentices who started their training between 1995 and 2002, and graduated (“turned out”) by the end of 2007. (NOTE: This figure may understate the actual graduation rate for 5-year training programs, since apprentices who enrolled in 2002 may not have completed by late 2007. The time it takes to complete a program varies, depending on the economy and availability of work.)

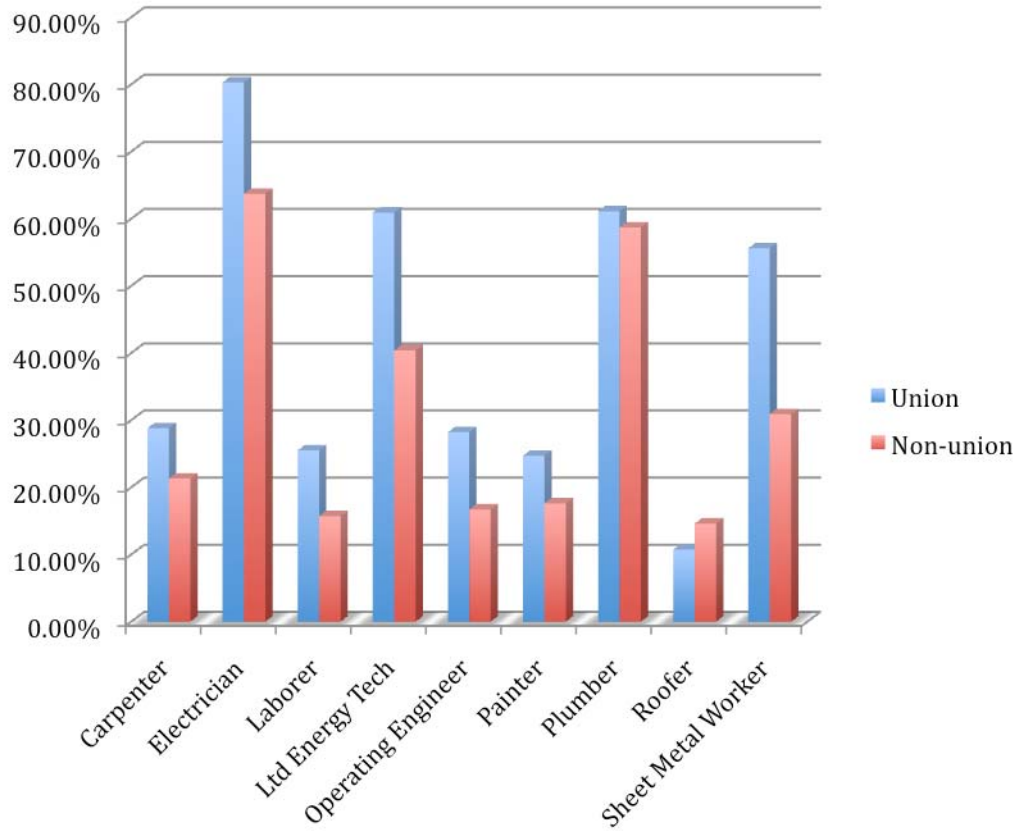
Graduation rates vary greatly by trade due to academic difficulty, wage rates, working conditions, and licensing. Graduation rates from apprenticeship programs in Oregon are much higher in the licensed trades, for example, which in our state require completion of an apprenticeship program of those who seek licensing. The NECA/IBEW Electrical JATC, for example, has a graduation rate of 85%, the highest of any program in the state. Other trades, like roofing, have much lower graduation rates. This may reflect the reality of the industry, where acquiring a certain level of skills makes it possible to earn a living in the trade even without a journey level certificate. It may also be related to the extremely difficult working conditions (e.g. lack of continuous employment due to weather) and relatively lower pay of that trade. The figures in Oregon (see Appendices V and VI) are comparable to national averages.⁶

Also comparable to national findings is the fact that on a trade-by-trade basis, union apprenticeship programs do better than non-union programs in assuring that apprentices actually complete their training.⁷ Complete data for Oregon programs is available in Appendices V and VI. Below in Figure 3 are comparisons for those nine trades in which parallel union and non-union programs exist. In all but one, the union programs have higher graduation rates than the non-union.

⁶ See for example Cihan Bilginsoy, *Apprenticeship Training in the U.S. Construction Industry*, CPWR Pilot Study Grant (#97-3-PS), September 1998.

⁷ Cihan Bilginsoy, “The Hazards of Training: Attrition and Retention in Construction Industry Apprenticeship Programs,” *Industrial and Labor Relations Review*, 2003, vol. 57, issue 1, pages 54-67.

Figure 3: Graduation Rates by Trade



Access for Women and Minorities to Construction Apprenticeship

A recent study examined the participation of women and minorities in the construction labor market in the largest twenty-five metropolitan areas in the country. The author found that both African-Americans and women were employed in construction at rates well below their participation in the overall workforce at the national level. He also found that women held only between 1 and 9 percent of construction jobs. . On the other hand, his data showed that Hispanics were employed in construction at rates higher than their percentage in the overall workforce.⁸

The Portland metro area (Multnomah and Washington Counties) was one of the regions examined in the report. It found that women were 3% of the construction workforce in the region; but it also found that Portland metro has the lowest employment gap (the difference between participation in the workforce and participation in construction jobs) of any major metropolitan area in the country for African-American workers. This is a surprising but encouraging finding, given past reports and common conceptions.⁹

Past studies have shown that pre-apprenticeship and apprenticeship training play a major role for women and minorities in gaining them access to construction jobs.¹⁰ Thus recruitment of women and minorities into apprenticeship programs, and helping them to graduate, is crucial for increasing occupational diversity in the construction trades.

The 4 charts below (Figures 4 through 7) provide a summary of minority and female enrollment in construction apprenticeship programs in Oregon as of the end of 2007. Figure 4 compares minority enrollment in union vs. non-union programs. In every category but one (Asian American), union programs have substantially more apprentices than do non-union programs. Figure 5 compares the percentage enrollment to the overall population percentages in the state. For African American and American Indian apprentices, their representation is greater than their proportion of the population in all programs, and for Hispanic and Asian American apprentices, their representation is somewhat less than their representation in the population as a whole.

⁸ Todd Swanstrom, *The Road to Good Jobs: Patterns of Employment in the Construction Industry*, Public Policy Research Center, University of Missouri, St. Louis, September 30, 2008, p. 36

⁹ See for example *Oregon Regional Consortium Disparity Study, Is It Working in Oregon's Construction Industry?* May 1996, Mason Tillman Associates, Ltd.

¹⁰ See for example Susan Eisenberg, *We'll Call You If We Need You: Experiences of Women Working Construction* (Ithaca, NY: Cornell University Press, 1998) and Wendy Johnson, "Model Programs Prepare Women for the Skilled Trades," in Leslie R. Wolfe, Ed., *Women, Work, and School: Occupational Segregation and the Role of Education*, ED341321, Jan. 1991.

Figure 4: Female and Minority Enrollment, 2007

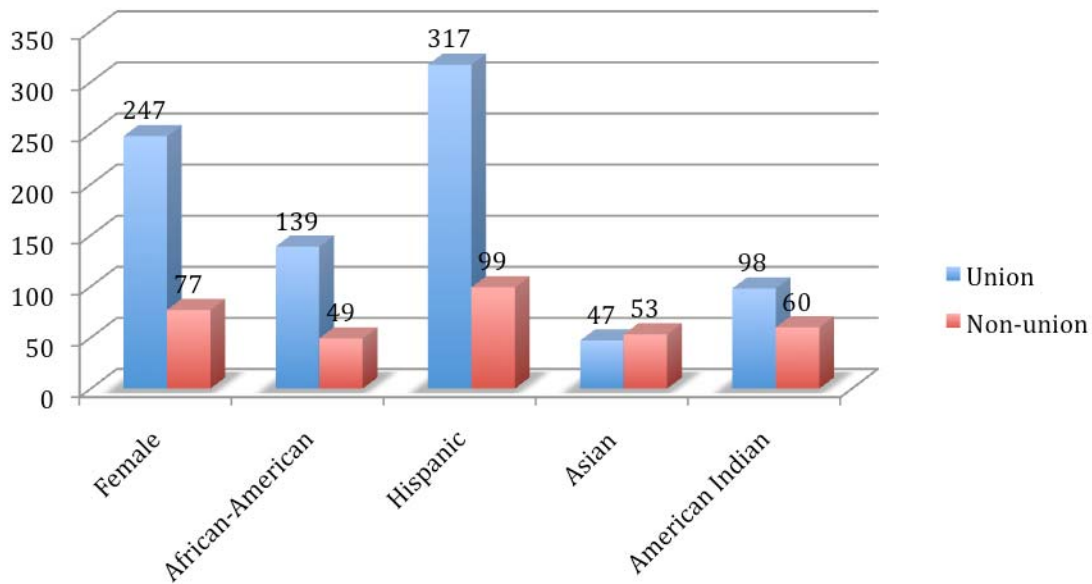
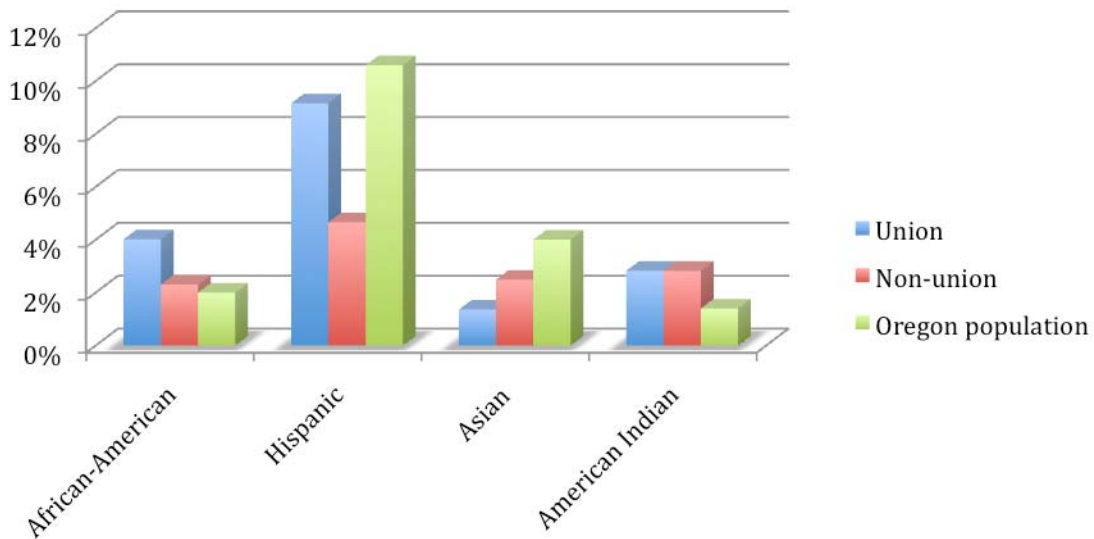


Figure 5: Apprenticeship Enrollment Compared to Population Figures



The final two charts (Figures 6 and 7) show that in 2007, union programs had higher proportions of women and minorities enrolled as apprentices than did non-union programs. The proportion of minorities has grown in both since 2004 – from 10 to 12% in non-union programs and 14 to 16% in union programs. The proportion of females has remained approximately the same.

Figure 6: Apprentice Diversity in Union Programs

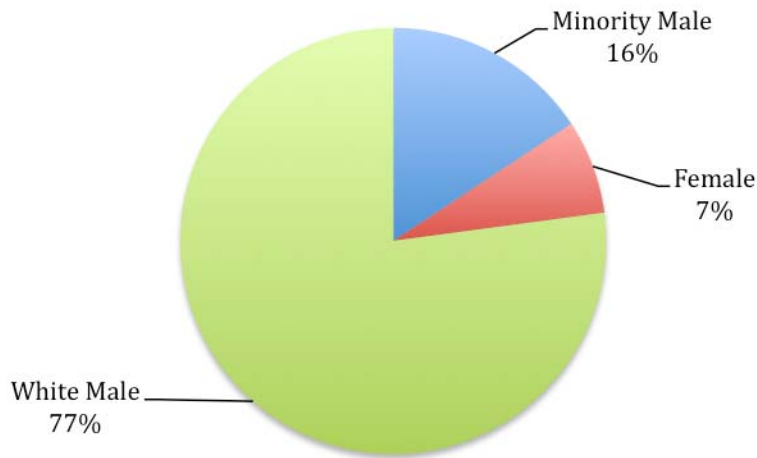
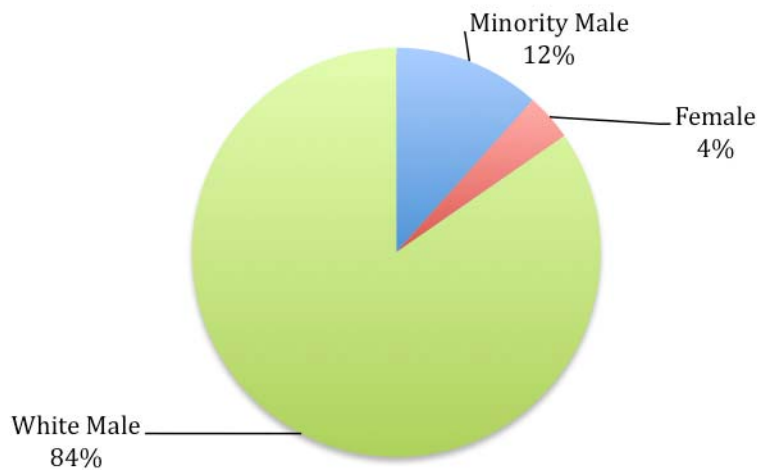


Figure 7: Apprentice Diversity in Non-union Programs

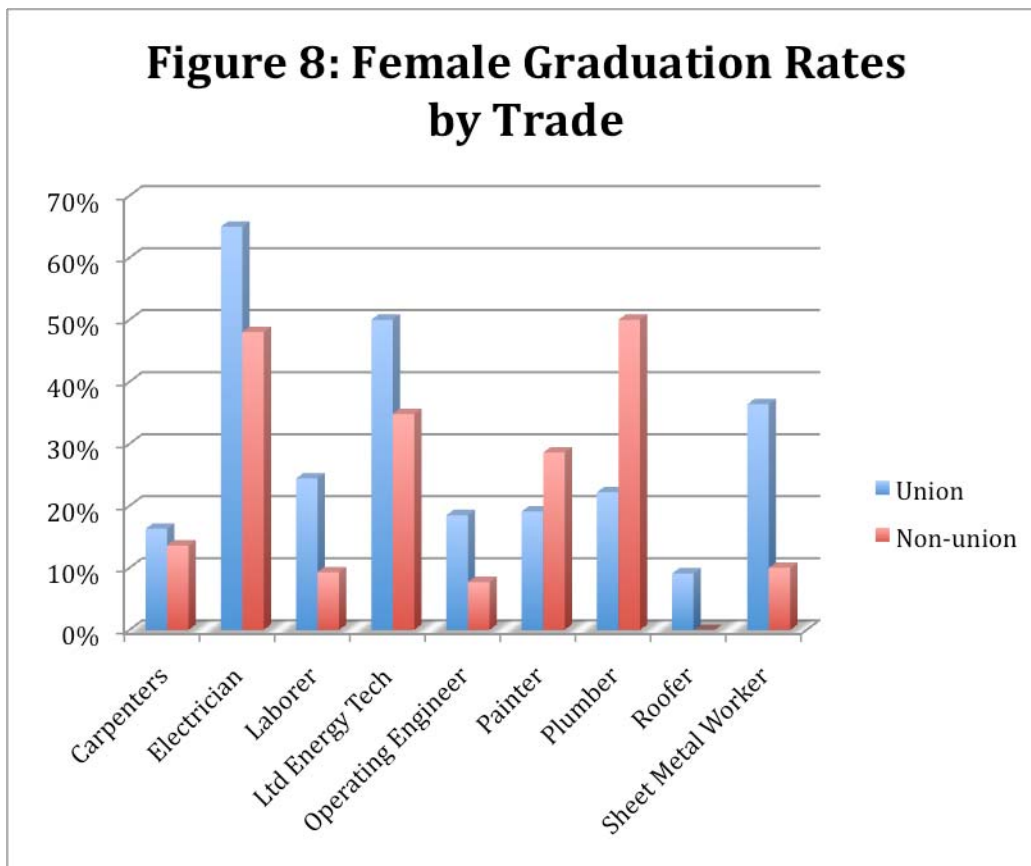


I. Female enrollment and graduation rates

The data on female enrollment and graduation demonstrates that union apprenticeship programs out-perform non-union programs in this area.

As detailed in Appendices III and IV, more than three times as many women are enrolled in union programs (247) as in non-union programs (77). Moreover, women represent a higher *proportion* of apprentices in union programs (7.1%) than in non-union (3.6%).

Overall, the graduation rate for women in union programs was 31%, compared to 27% for non-union programs. The differences are even more dramatic on a trade-by-trade basis, as shown in the chart below (Figure 8) For example, in the electrical trade, the graduation rate for women from union programs is 65%, while the rate for women in non-union programs is only 45%. For Laborers, the rates are 24% and 9%, respectively; for Sheet Metal Workers, 36% and 10%. In two trades, the non-union graduation rates were higher for women: 28.6% and 19.1% (Painters), and 50.0% and 22.2% (Plumbers).



II. Minority Enrollment and Graduation Rates

As we saw above in Figures 4 and 5, minority enrollment in union programs outpaces minority enrollment in non-union programs for every group except Asian Americans, where the numbers are quite close. Similar to data on the Portland metropolitan area (see above), African-American enrollment in union apprenticeship programs outpaces African-American population percentages statewide.

Minority graduation rates from union apprenticeship programs are higher in 5 of the trades where there are parallel union and non-union programs; they are higher in 4 of the non-union programs (see Figure 9). However, because union apprenticeship programs span so many more trades than non-union programs, union programs graduate almost twice as many minority apprentices in absolute numbers as do non-union programs – 477 compared to 250 (see Appendices V and VI).

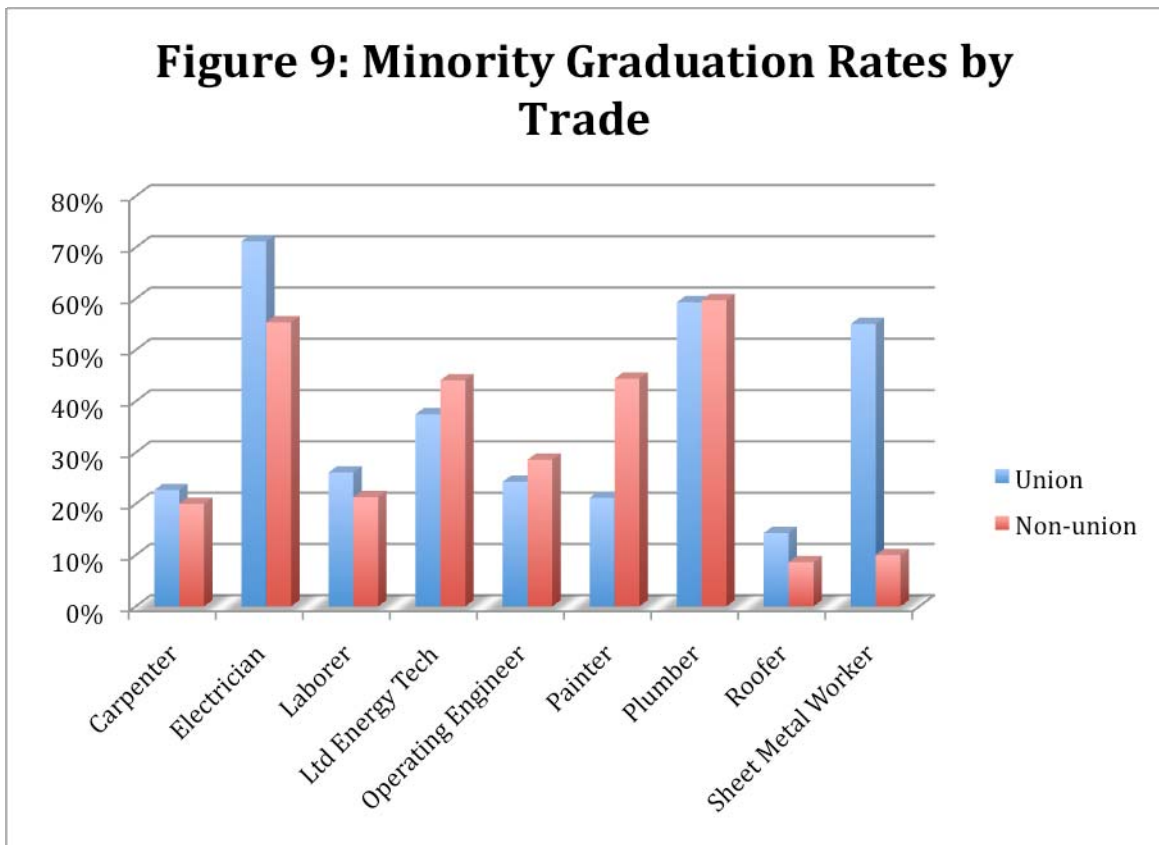
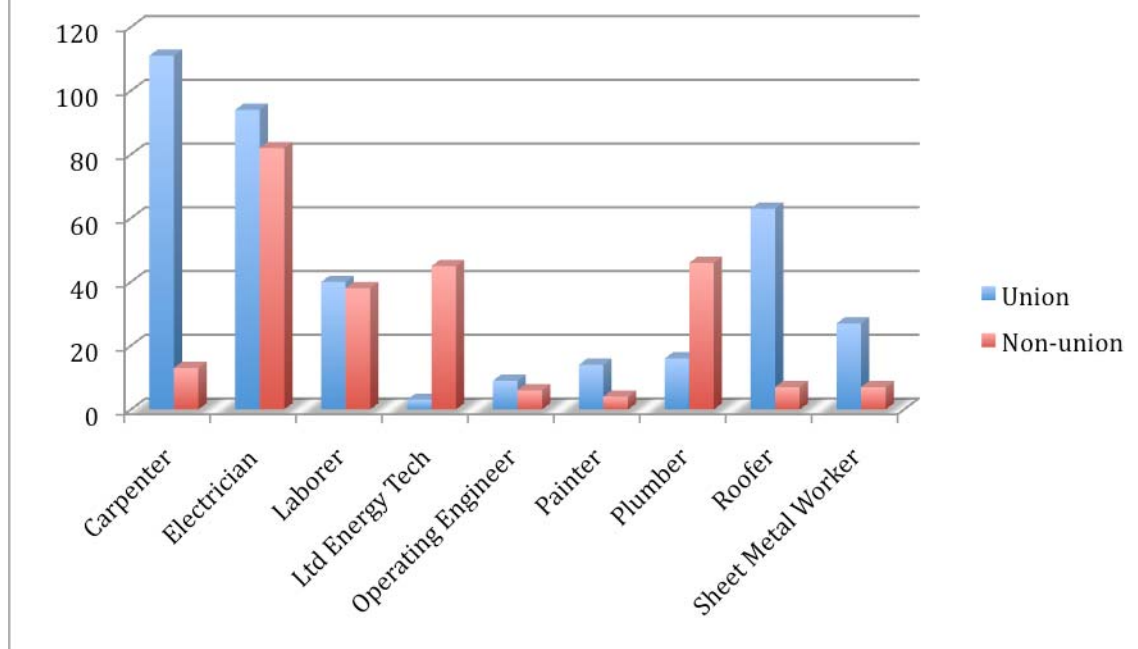


Figure 10: Number of Minority Graduates by Trade



The actual numbers of minorities and women enrolled in and graduating from the trades tends to be small, and therefore the percentage differences are not always helpful. What is significant is the growth in minority enrollment over time, and the innovative measures taken by apprenticeship programs to recruit and retain minority and women apprentices. A few examples were provided for this study by Connie Ashbrook, Director of Oregon Tradeswomen.¹¹ Union apprenticeship programs invest heavily in the work of Oregon Tradeswomen, which focuses on support and pre-apprenticeship training for women and minorities interested in trades careers. Unions contribute the bulk of funding and hands-on workshop staff and materials for the Women in Trades Career Fair, which a nationally recognized annual program for women from middle-school to adult age. They hire minority/female outreach specialists to assist in improving their performance – the union plumbers and union electricians programs both employ such individuals, whose efforts have begun to pay off in terms of recent minority enrollment increases.

Ashbrook also points to important partnerships that link pre-apprenticeship training to union apprenticeship programs via direct entry agreements. As an example, she references the relationship between the union carpenter program and the Evening Trades Apprenticeship Program (ETAP) that was created by the Housing Authority of Portland and is now housed at Portland Community College. Graduates of that program are offered

¹¹ Connie Ashbrook, Interview with the author, April 17, 2009.

automatic enrollment in the carpenters apprenticeship program. This has resulted in large increases in the African-American enrollment in and graduation rates from the program over the past several years.

Other recent studies confirm the finding that both minorities and women tend to fare better in union programs in Oregon. Berek, Bilginsoy and Williams studied the amount of training received by apprentices who left apprenticeship programs before completion. They found that:

Program sponsorship type is a robust predictor of the quantity of training. Apprentices in union programs receive, on average, 1,000 to 1,200 hours of more training than those in nonunion programs, and women and minorities benefit disproportionately more from union sponsorship.... The most important finding of the paper is that union programs deliver more skills in comparison with the nonunion and mixed programs, and that the union effect is felt most strongly on the nontraditional workers.¹²

¹² Berek, Gunseli, Cihan Bilginsoy and Larry Williams, *Gender and Racial Training Gaps in Oregon Apprenticeship Programs*, University of Utah, Department of Economics, Working Paper No: 2008-15, September 2008, pp. 27, 30.

Conclusion

This report examined data on registered apprentices between the years 1995-2007. This data shows that union programs have grown more rapidly than non-union programs. Average program size has also grown for union programs.

Union programs continue to demonstrate far broader occupational diversity than non-union programs.

There are nine “parallel” programs in the state. Union completion rates are greater in eight of these programs. Completion rates for women are greater in 7 and for minorities, in 5.

As pointed out in the Conclusion to the 2005 report, quantitative data alone cannot fully account for differences in program effectiveness and quality. A complete picture would include an evaluation of the quality of in-class training and expertise of instructors, the range of on-the-job experience provided to apprentices, the relative proportions of public dollars that subsidize the training, and the amount paid by individual apprentices in the form of tuition and other costs. Similarly, efforts made by individual apprenticeship programs to recruit and retain apprentices would be documented. Such considerations are unfortunately beyond the scope of this study.

However, the numbers are compelling. As stated in the Introduction, if the goal of state officials is to promote effective construction training, and encourage diversity goals, then it is crucial to learn from the work of apprenticeship training centers with superior graduation rates and diversity records. In most cases, these are the union training centers.

Appendix I: Construction Apprenticeship Programs in Oregon, 1995-2007

Open Shop (or mixed, predominantly open shop)

1003 Clatsop County TAC
1033 Tillamook/Clatsop County TAC
1038 Area I Plumbers JATC
1046 Area I Inside Electrical JATC
1056 Area I Painters JATC
1060 Area I NW Sheet Metal JAC
1062 Ad Display Sign Makers
1065 Oregon Columbia Masons TATC
1074 Portland Metro-Salem and Vicinity Carpenters JATC
1077 Oregon & SW-WA Sprinkler Fitters JATC
1080 Area I HVAC JATC
1099 Limited Energy Electrician JATC
1100 Protective Signaling JATC
1175 OR/Columbia Heavy Equipment Operator JATC
1277 Sheet Metal JATC
2015 Area II Plumbers JATC
2016 Area II Inside Electrical JATC
2020 Area II Limited Energy Electrical
2022 Mid-Valley Steamfitters/Pipefitters JATC
2023 Oregon Laborers JATC
2035 Morse Brothers Operators JAC
3002 Central Sign Hanger JATC
3003 Eugene Construction Trades JATC
3015 Area III Plumbers JATC
3019 Area III Inside Electrical JATC
3022 So. Willamette Valley Ltd. Energy Electrical JATC (mixed; predom. non-union)
3025 Area III Sheet Metal/HVAC Environmental Service JATC
3036 Greater Oregon Roofers JATC
3038 Lane County Carpenters JATC
3040 Lane County Painters and Decorators JATC
4012 Roseburg TAC
4015 Area IV (Coos Bay) Independent TAC
4016 Area IV Inside Electrical JATC
5004 Rogue Valley Trades ATC
5006 South Central OR Sheet Metal JATC
5009 Area V Inside Electrical JATC
5012 Area V (Rogue Valley) Plumbers JATC
5025 Klamath Basin Plumbers JATC
6008 Ontario TATC
6011 Blue Mountain TATC
6013 Area VI Inside Electrical JATC

6023 Greater Eastern Oregon Carpenters JATC
7001 Area VII Inside Electrical JATC
7005 Area VII Plumbers JATC
7010 Burns-Hines TATC
7012 Warm Springs TATC
7013 Central Oregon Sheet Metal JATC
7024 Klamath Basin Inside Electrician JATC
7026 Central Oregon Limited Energy Electrical

Union (or mixed, predominantly union)

1004 NECA-IBEW Electrical JATC
1008 Oregon SW-WA Mason Trades JATC
1013 Pacific NW Ironworker and Employer ATC #29
1014 Portland Carpenters JATC
1015 Oregon & SW-WA Cement Masons JATC
1016 Portland Drywall Finishers JATC
1017 Portland/Salem Glassworkers JATC
1019 Northern Oregon SW-WA Plasterers JATC
1020 NW Oregon SW-WA Resilient Floor/Decorative Cover JATC
1024 Western Oregon SW-WA Painters JATC
1028 Portland Sheet Metal Worker JATC
1041 Oregon SW-WA IUOE Local #701 & AGC JATC (mixed, predom. Union)
1043 OR SW-WA NW-CA Metal Trades Pipefitter JATC
1047 Oregon-SW Washington Elevator Industry JATC
1050 Greater Portland Roofers JATC
1052 Oregon SW-WA Heat/Frost Insulators/Asbestos Workers JATC
1053 Limited Energy Technicians JATC
1055 Exterior/Interior Specialties JATC
1057 Oregon SW-WA Carpenters JATC
1058 Oregon SW-WA Laborers JATC
1059 Portland Area Limited Residential Electrical JATC
1070 Oregon SW-WA NW-CA Plumbers JATC
1071 Oregon SW-WA NW-CA Steamfitters JATC
1118 NW Line Constructors JATC
2004 Linn/Benton Carpenters JATC
2024 Marion/Polk Carpenters JATC
3001 Central Electrical JATC
3021 Southwestern Oregon Roofers JATC
4009 Pacific Inside Electrical JAC
4017 Coos-Curry Sheet Metal JATC
5001 Crater Lake Electrical JATC
5018 Southern Oregon Carpenters JATC (mixed; predom. union)
6010 Eastern Oregon Carpenters JATC
6022 NE Oregon Sheet Metal Workers JATC

Appendix II: Trade Categories

<u>Trade Designation</u>	<u>Other Trades Included</u>
Bricklayer	Tilesetter Finisher Marble Setter Caulker
Carpenter	Millwright Interior/Exterior Specialist Scaffold Erector Pile Driver Dry Wall Applicator Cabinetmaker
Cement Mason	
Electrician, Inside	Limited Residential Electrician
Limited Energy Technician, 2 or 4 years	Limited Energy Technician Restricted Energy Technician Limited Energy Tech A & B
Elevator Mechanic	
Environmental Control Service Installer	HVAC Technician
Floor Coverer	
Glazier	
Insulator, Heat & Frost	
Ironworker, Structural	
Laborer	
Operating Engineer	Heavy Truck Driver Technical Engineer Light Grade/Paving Operator
Painter	Taper Traffic Painter Painter/Decorator Drywall Finisher

Pipefitter	
Plasterer	
Plumber	
Roofer	
Sheet Metal Worker	Sheet Metal Worker Service Systems Tech
Sign Fabricator/Erector	Sign Maker/Erector Sign Assembler/Fabricator Sign Electrician
Sprinkler Fitter	
Steamfitter	

Appendix III: Active Apprentices in Union Programs, 2007

MA Number	Total Apprentices	Total Male	Male %	Total Female	Female %	Total Amer. Indian	AI %	Total Asian	AS %	Total Black	BL %	Total Hispanic	HI %	Total White	WH %
1004	448	405	90.4%	43	9.6%	9	2.0%	10	2.2%	10	2.2%	18	4.0%	401	89.5%
1008	62	60	96.8%	2	3.2%	1	1.6%		0.0%		0.0%	7	11.3%	54	87.1%
1013	262	259	98.9%	3	1.1%	10	3.8%	4	1.5%	3	1.1%	50	19.1%	195	74.4%
1015	51	46	90.2%	5	9.8%	4	7.8%		0.0%	7	13.7%	4	7.8%	36	70.6%
1016	30	28	93.3%	2	6.7%		0.0%		0.0%	4	13.3%	8	26.7%	18	60.0%
1017	50	47	94.0%	3	6.0%	1	2.0%	1	2.0%	5	10.0%	5	10.0%	38	76.0%
1019	12	12	100.0%		0.0%		0.0%	1	8.3%	2	16.7%	1	8.3%	8	66.7%
1020	15	12	80.0%	3	20.0%		0.0%	3	20.0%		0.0%		0.0%	12	80.0%
1024	41	34	82.9%	7	17.1%	3	7.3%		0.0%	2	4.9%	5	12.2%	31	75.6%
1028	202	184	91.1%	18	8.9%	2	1.0%	1	0.5%	1	0.5%	8	4.0%	190	94.1%
1041	97	84	86.6%	13	13.4%	6	6.2%		0.0%	3	3.1%	8	8.2%	80	82.5%
1043	1		0.0%	1	100.0%		0.0%		0.0%		0.0%		0.0%	1	100.0%
1047	87	86	98.9%	1	1.1%	1	1.1%	2	2.3%	1	1.1%	4	4.6%	79	90.8%
1050	136	131	96.3%	5	3.7%	1	0.7%	2	1.5%	6	4.4%	45	33.1%	82	60.3%
1052	20	18	90.0%	2	10.0%	1	5.0%		0.0%	1	5.0%	1	5.0%	17	85.0%
1053	59	41	69.5%	18	30.5%	5	8.5%	2	3.4%		0.0%	3	5.1%	49	83.1%
1057	927	867	93.5%	60	6.5%	26	2.8%	12	1.3%	45	4.9%	112	12.1%	732	79.0%
1058	184	160	87.0%	24	13.0%	12	6.5%	3	1.6%	36	19.6%	22	12.0%	111	60.3%
1070	195	187	95.9%	8	4.1%	3	1.5%	1	0.5%	3	1.5%	4	2.1%	184	94.4%
1071	251	240	95.6%	11	4.4%	3	1.2%	3	1.2%	8	3.2%	3	1.2%	234	93.2%
3001	220	207	94.1%	13	5.9%	6	2.7%	2	0.9%	2	0.9%	5	2.3%	205	93.2%
3021	11	11	100.0%		0.0%		0.0%		0.0%		0.0%	1	9.1%	10	90.9%
4009	36	35	97.2%	1	2.8%	1	2.8%		0.0%		0.0%	2	5.6%	33	91.7%
5001	59	55	93.2%	4	6.8%	3	5.1%		0.0%		0.0%	1	1.7%	55	93.2%
7019	5	5	100.0%		0.0%		0.0%		0.0%		0.0%		0.0%	5	100.0%
TOTAL	3461	3214	92.9%	247	7.1%	98	2.8%	47	1.4%	139	4.0%	317	9.2%	2860	82.6%

Appendix IV: Active Apprentices in 2007, Non-Union Programs

MA Number	Total Apprentices	Total Male	Male %	Total Female	Female %	Total Amer. Indian	AI %	Total Asian	AS %	Total Black	BL %	Total Hispanic	HI %	Total White	WH %
1033	16	14	87.5%	2	12.5%		0.0%		0.0%		0.0%	2	12.5%	14	87.5%
1038	179	178	99.4%	1	0.6%	5	2.8%	3	1.7%	1	0.6%	8	4.5%	162	90.5%
1046	388	376	96.9%	11	2.8%	10	2.6%	11	2.8%	1	0.3%	15	3.9%	351	90.5%
1056	4	2	50.0%	2	50.0%		0.0%		0.0%		0.0%	1	25.0%	3	75.0%
1060	30	30	100.0%		0.0%	1	3.3%	1	3.3%		0.0%	1	3.3%	27	90.0%
1062	13	13	100.0%		0.0%		0.0%	1	7.7%		0.0%		0.0%	12	92.3%
1065	21	20	95.2%	1	4.8%	1	4.8%	2	9.5%	1	4.8%	2	9.5%	15	71.4%
1074	76	70	92.1%	6	7.9%	4	5.3%	2	2.6%	17	22.4%	8	10.5%	45	59.2%
1077	37	37	100.0%		0.0%		0.0%		0.0%	1	2.7%	2	5.4%	34	91.9%
1080	60	58	96.7%	2	3.3%		0.0%	2	3.3%	2	3.3%	4	6.7%	52	86.7%
1099	104	100	96.2%	4	3.8%		0.0%	5	4.8%	3	2.9%	1	1.0%	95	91.3%
1100	69	68	98.6%	1	1.4%	1	1.4%	5	7.2%		0.0%	4	5.8%	59	85.5%
1175	24	19	79.2%	5	20.8%		0.0%	1	4.2%		0.0%	2	8.3%	21	87.5%
1277	26	25	96.2%	1	3.8%		0.0%	2	7.7%	1	3.8%	1	3.8%	22	84.6%
2015	120	117	97.5%	3	2.5%	1	0.8%	5	4.2%	1	0.8%	6	5.0%	107	89.2%
2016	164	160	97.6%	4	2.4%	3	1.8%	2	1.2%	2	1.2%	12	7.3%	145	88.4%
2020	14	13	92.9%	1	7.1%	3	21.4%		0.0%		0.0%	1	7.7%	11	78.6%
2022	13	13	100.0%		0.0%		0.0%		0.0%		0.0%	1	7.7%	12	92.3%
2023	55	41	74.5%	14	25.5%	6	10.9%	1	1.8%	13	23.6%	2	3.6%	33	60.0%
2035	4	1	25.0%	3	75.0%		0.0%		0.0%		0.0%		0.0%	4	100.0%
3002	14	14	100.0%		0.0%		0.0%		0.0%		0.0%	1	7.1%	13	92.9%
3015	56	56	100.0%		0.0%	1	1.8%		0.0%	1	1.8%	2	3.6%	52	92.9%
3019	130	128	98.5%	2	1.5%	12	9.2%	2	1.5%	1	0.8%	3	2.3%	112	86.2%
3022	37	36	97.3%	1	2.7%		0.0%	1	2.7%		0.0%	1	2.7%	35	94.6%
3025	11	11	100.0%		0.0%		0.0%		0.0%	1	9.1%		0.0%	10	90.9%
3038	14	13	92.9%	1	7.1%		0.0%		0.0%	1	7.1%		0.0%	13	92.9%
4015	25	25	100.0%		0.0%		0.0%		0.0%		0.0%	2	8.0%	23	92.0%
4016	37	36	97.3%	1	2.7%	2	5.4%		0.0%		0.0%		0.0%	35	94.6%
5006	14	14	100.0%		0.0%		0.0%		0.0%		0.0%	1	7.1%	13	92.9%
5009	54	53	98.1%	1	1.9%		0.0%	3	5.6%		0.0%	3	5.6%	48	88.9%
5012	33	33	100.0%		0.0%	2	6.1%	1	3.0%		0.0%	3	9.1%	27	81.8%
5025	11	11	100.0%		0.0%		0.0%		0.0%		0.0%		0.0%	11	100.0%
6008	20	20	100.0%		0.0%		0.0%	1	5.0%		0.0%	2	10.0%	17	85.0%
6011	19	18	94.7%	1	5.3%		0.0%		0.0%	1	5.3%		0.0%	18	94.7%
6013	36	34	94.4%	2	5.6%	5	13.9%		0.0%		0.0%	3	8.3%	28	77.8%
7001	99	92	92.9%	7	7.1%		0.0%		0.0%		0.0%	4	4.0%	95	96.0%
7005	46	46	100.0%		0.0%		0.0%		0.0%		0.0%	1	2.2%	45	97.8%
7010	7	7	100.0%		0.0%		0.0%		0.0%		0.0%		0.0%	7	100.0%
7012	2	2	100.0%		0.0%	2	100.0%		0.0%		0.0%		0.0%		0.0%
7013	6	6	100.0%		0.0%		0.0%	1	16.7%		0.0%		0.0%	5	83.3%
7024	18	18	100.0%		0.0%	1	5.6%		0.0%	1	5.6%		0.0%	16	88.9%
7026	21	21	100.0%		0.0%		0.0%	1	4.8%		0.0%	1	4.8%	19	90.5%
Total	2127	2049	96.3%	77	3.6%	60	2.8%	53	2.5%	49	2.3%	99	4.7%	1866	87.7%

Appendix V: Graduation Rates by Trade, Union Programs

Trade Name	Total New Apprentices, 1995-2002	Completed by end of 2007	Completion Rate	Total Minority	Minority Completed	Minority Completion Rate	Total Female	Female Completed	Female Completion Rate
Bricklayer/Masonry	408	160	39.22%	54	19	35.19%	20	4	20.00%
Carpenter	2,752	793	28.82%	488	111	22.75%	172	28	16.28%
Cement Mason	250	60	24.00%	45	9	20.00%	31	2	6.45%
Electrician, Inside	1,747	1,403	80.31%	132	94	71.21%	123	80	65.04%
Elevator Mechanic	105	80	76.19%	4	3	75.00%	3	3	100.00%
Floor Coverer	106	50	47.17%	9	4	44.44%	4	0	0.00%
Glazier	111	66	59.46%	10	7	70.00%	4	1	25.00%
Heat/Frost Insulator	58	40	68.97%	6	4	66.67%	4	2	50.00%
Inside Electrician	1,747	1,403	80.31%	132	94	71.21%	123	80	65.04%
Ironworker	532	242	45.49%	73	34	46.58%	13	4	30.77%
Laborer	550	140	25.45%	153	40	26.14%	78	19	24.36%
Limited Energy Technician, 2 or 4 Years	257	161	62.65%	26	14	53.85%	34	23	67.65%
Operating Engineer	287	81	28.22%	37	9	24.32%	65	12	18.46%
Painter	360	89	24.72%	66	14	21.21%	47	9	19.15%
Pipefitter	21	9	42.86%	3	2	66.67%	2	0	0.00%
Plasterer	107	22	20.56%	21	2	9.52%	5	0	0.00%
Plumber	386	236	61.14%	27	16	59.26%	9	2	22.22%
Roofer	1,619	174	10.75%	440	63	14.32%	22	2	9.09%
Sheet Metal Worker	619	344	55.57%	49	27	55.10%	22	8	36.36%
Steamfitter	565	299	52.92%	44	16	36.36%	36	14	38.89%
TOTAL	12,587	5,852	46.49%	1,819	582	32.00%	817	293	35.86%

Appendix VI: Graduation Rates by Trade, Non-Union Programs

Trade Name	Total New Apprentices, 1995-2002	Completed by end of 2007	Completion Rate	Total Minority	Minority Completed	Minority Completion Rate	Total Female	Female Completed	Female Completion Rate
Carpenter	601	128	21.30%	65	13	20.00%	59	8	13.56%
Env Con Serv Install	142	53	37.32%	8	2	25.00%	0	0	0.00%
Electrician, Inside	2227	1419	63.72%	148	82	55.41%	75	36	48.00%
Electrician, Ltd. Energy Tech.	1402	566	40.37%	102	45	44.12%	66	23	34.85%
Laborer	478	75	15.69%	178	38	21.35%	86	8	9.30%
Operating Engineer	72	12	16.67%	21	6	28.57%	13	1	7.69%
Painter	108	19	17.59%	9	4	44.44%	7	2	28.57%
Pipefitter	30	14	46.67%	2	0	0.00%	1	1	100.00%
Plumber	1135	666	58.68%	77	46	59.74%	18	9	50.00%
Roofer	260	38	14.62%	81	7	8.64%	0	0	0.00%
Sheet Metal Worker	586	181	30.89%	34	7	20.59%	10	1	10.00%
Sign Maker/Hanger	115	21	18.26%	3	0	0.00%	2	0	0.00%
Sprinkler Fitter	98	35	35.71%	6	0	0.00%	1	1	100.00%
TOTAL	7254	3227	44.49%	734	250	34.06%	338	90	26.63%

Appendix VII: Graduation Rates, Associated Builders and Contractors Programs in Oregon

	MA Number	Total 1995-2002	Completed by end of 2007	Grad rate	Total Minority	Minority Completed	Grad rate	Total Female	Female Completed	Grad rate
Sheet Metal	1060	357	92	25.8%	23	4	17.4%	4	0	0.0%
Sprinkler Fitters	1077	88	31	35.2%	6	0	0.0%	1	1	100.0%
HVAC	1080	142	53	37.3%	8	2	25.0%	0	0	0.0%
Ltd Energy	1099	891	344	38.6%	72	29	40.3%	48	12	25.0%
Total		1478	520	35.2%	109	35	32.1%	53	13	24.5%

Appendix VIII: Graduation Rates, Associated General Contractors Programs in Oregon

	MA Number	Total 1995-2002	Completed by end of 2007	Grad rate	Total Minority	Minority Completed	Grad rate	Total Female	Female Completed	Grad rate
Carpenters/Portland	1074	260	57	21.9%	33	7	21.2%	28	4	14.3%
Heavy Equip Operator	1175	49	3	6.1%	10	1	10.0%	8	0	0.0%
Laborers	2023	478	75	16.7%	178	38	21.3%	86	8	9.3%
Sign Hangers	3002	46	8	17.4%	1	0	0.0%	2	0	0.0%
Carpenters/Lane Co.	3038	126	20	15.9%	3	0	0.0%	1	0	0.0%
Total		959	163	17.0%	225	46	20.4%	125	12	9.6%

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