

# Apprenticeship

## Program Details

Apprenticeship combines classroom studies with extensive on-the-job training under the supervision of a journey-level craft person or trade professional. Apprentices receive wages and may receive health, pension, and other benefits while learning occupational skills. This “earn while you learn” model has proven successful across a range of industries—from asbestos workers to tile layers. Apprenticeships require applicants be at least 16 years old (18 for construction trades), and most require at least a high school diploma or GED for entrance. Apprenticeship in Washington is governed by the Washington State Apprenticeship and Training Council and administered by the Department of Labor and Industries.<sup>1</sup>

*Every year, the Workforce Board measures the performance of key workforce programs. In this report, you'll find out more about the program and who is served, the metrics used to measure performance and how the program performed.*

## Participant Profile

For this 2013 report, researchers studied the results of 3,424 apprentices who left an apprenticeship program during the most recent reporting year.<sup>2</sup> Apprentices reflect the racial and ethnic diversity of the state population. African Americans, whites, and Native Americans are represented above their proportions of the state population. However, Native Americans and Asians do not complete the apprenticeship programs at the same rates as they enroll, with relatively fewer reaching the finish line in their apprenticeships than those of other backgrounds. Asians and those with a multiracial background enroll in apprenticeship programs in lower numbers than their share of the state population.<sup>3</sup>

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<sup>1</sup> This report focuses solely on Washington apprenticeships. More information at the federal level is available at [www.doleta.gov/oa/](http://www.doleta.gov/oa/).

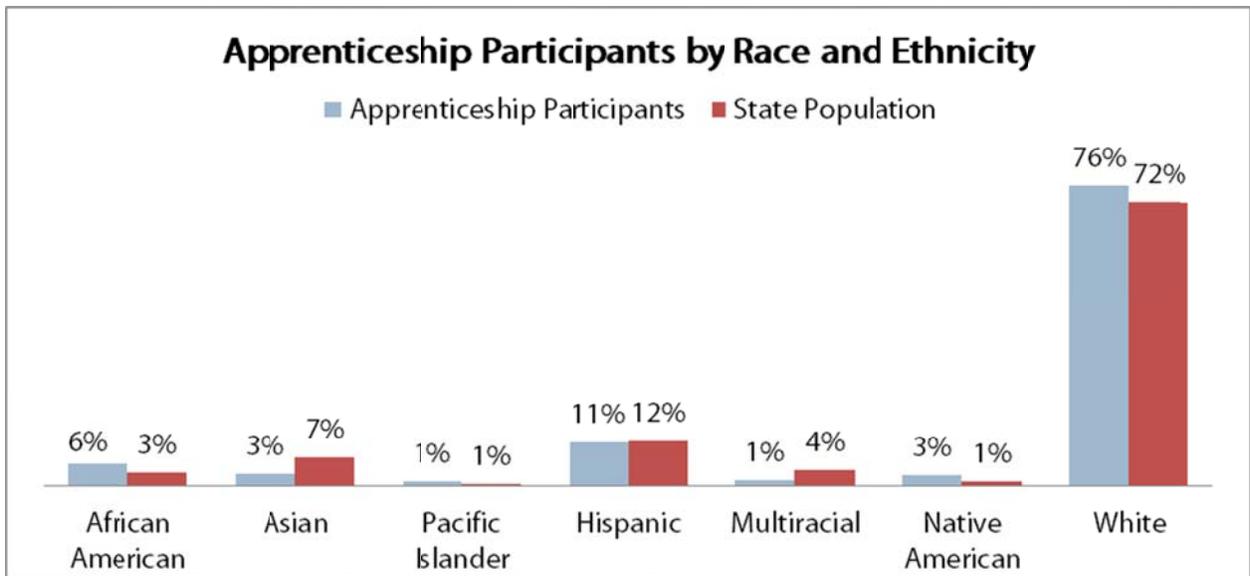
<sup>2</sup> The 2013 Workforce Training Results reports are based on data observed in 2011-12 for individuals exiting programs during 2010-11.

<sup>3</sup> In this report, unless otherwise stated, racial and ethnic minority groups are mutually exclusive; that is, an individual belongs to one group only. The groups include the following: Hispanics of any race (also referred to as Hispanics); non-Hispanic African Americans (also referred to as African Americans); non-Hispanic Asians (also referred to as Asians); non-Hispanic Pacific Islanders (also referred to as Pacific Islanders); non-Hispanic Native Americans and Alaskan Natives (also referred to as Native Americans); non-Hispanic multiracial (also referred to as multiracial); and non-Hispanic whites (also referred to as whites). According to the 2011 U.S. Census Bureau estimates for Washington from the American Community Survey, 72 percent of state residents are white; 3 percent are African American; 1 percent are Native American; 7 percent are Asian; 1 percent are Pacific Islander; 4 percent are multiracial; and 12 percent are Hispanic.

## 2013 Workforce Training Results

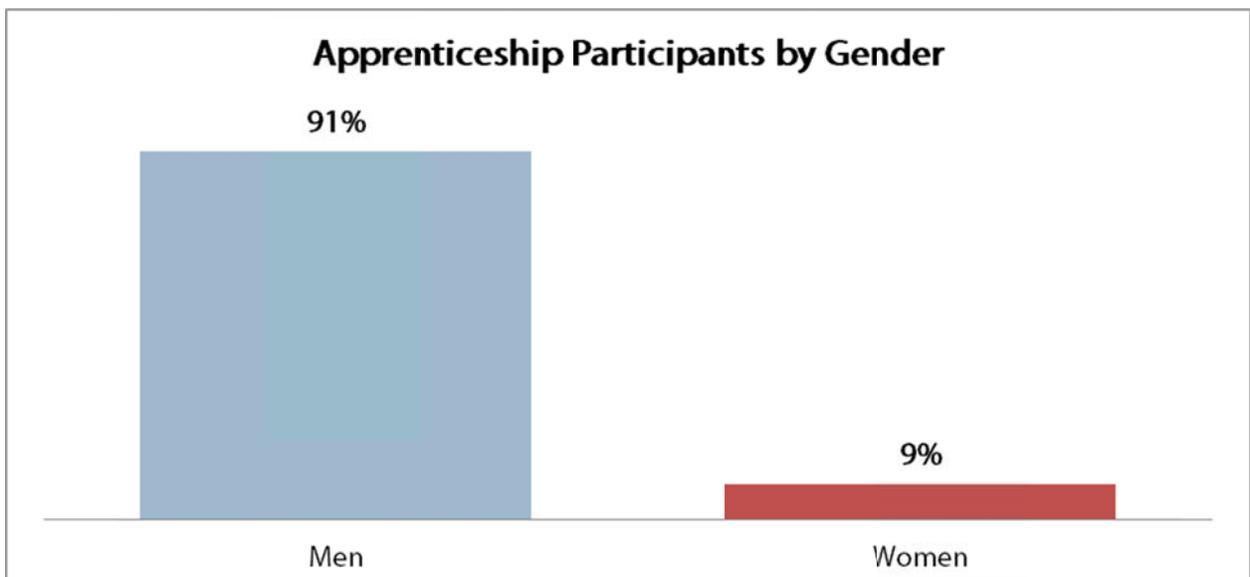
### Apprenticeship

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Source: 2011-12 Apprenticeship Administrative Data, Department of Labor and Industries, Washington State Office of Financial Management and 2011 U.S. Census Data from the American Community Survey.

Relatively few women enter apprenticeship programs compared to men. Just 9 percent of apprentices were women in the current study. This is a lower percentage than the last study; women comprised 14 percent of apprentices in the 2012 report.



Source: 2010-11 Apprenticeship Administrative Data, Department of Labor and Industries.

The median age at program exit was 30. One quarter of those enrolled in apprenticeship programs were under age 26, and another quarter were age 37 or older.

## Completion Rates

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Overall, apprentices spent a median of 36 months in their program. This is an increase of 8 months over the 2012 cohort of apprentices, which was in turn 10 months longer than the 2011 cohort. Among apprenticeship completers, the median program length was 46 months. Among apprentices leaving their program in the most recent program year, slightly more than half (51.5 percent) completed their program, up 1 percentage point from the prior report. However, the length of participation varied widely. The number of years spent in apprenticeship programs is reflected in the following table, comparing those who completed with those who did not complete.

It's worth noting that apprenticeship programs cover a broad array of occupations, from construction trades and early learning to dispensing optician and cosmetologist. Not only are apprenticeship occupations wide-ranging, the length of time it takes to complete a program varies considerably. For example, a Washington resident training to become a construction electrician can expect an apprenticeship to last at least five years to reach journey level status, while those training to become an esthetician require 2,000 hours, or approximately one year, to complete.

<b>Number of Years Apprentices Participated in their Program</b>		
<b>Years in Program</b>	<b>Completers</b>	<b>Non Completers</b>
less than 1	0.0%	0.0%
1-2	9.6%	30.3%
2-3	6.4%	20.5%
3-4	15.4%	21.1%
4-5	24.7%	15.2%
5-6	26.0%	8.0%
6-7	14.2%	2.3%
7-8	2.4%	1.0%
8-9	0.6%	0.5%
9-10	0.3%	0.1%
more than 10	0.2%	1.1%

*Source: 2010-11 Apprenticeship Administrative Data, Department of Labor and Industries.*

Because apprenticeship programs can last many years, a significant number of people do not reach the finish line. However, even those who exit early still show wage gains from the skills they acquired.

## **Tracking Apprenticeship Progress**

The Workforce Board routinely measures the performance of our state's largest workforce programs. As a customer-focused advocate for Washington's workers and employers, the Workforce Board strives to provide performance accountability, verifying whether worker education and training programs provide a return on investment for participants and taxpayers.

The Workforce Training Results report seeks to answer five core questions:

- Did participants get the skills they needed?
- Did participants get a job and how much were they paid?
- Were employers satisfied with the preparation workers received?
- Has the program made a difference in the participant's success?
- Did participants and the public receive a return on their investment?

## **Data Comes From State Wage Files & Employer Survey**

The 2013 Workforce Training Results includes information obtained from Employment Security Department wage files in Washington, Idaho, and Oregon, and federal employment records for 2011-12. Information on employer satisfaction among firms that hired new employees who recently exited an apprenticeship program was assessed through the Workforce Board's 2012 Employer Survey.

## **Net Impact Study Adds More Insight into Program Performance**

In addition, the report includes a comprehensive Net Impact Study. Conducted every four years, this study provides a head-to-head comparison of participants and non-participants to help answer a central question: How much of a workforce participant's success in obtaining a job, or a higher wage, is due to the workforce program? By comparing program participants with similar individuals who did not participate in a workforce training program, the Net Impact Study indicates whether employment and earnings gains are due to the workforce program, or if workers could have made this progress on their own. This research also allows for a more detailed analysis as to whether the participant and the public received a return on their investment in the program.

*Turn to page 21 for the Net Impact Study. Conducted every four years, this in-depth report adds extra value to the 2013 Workforce Training Results. The study provides a side-by-side comparison of participants vs. similar non-participants, answering the question of whether the program is making a difference.*

## **2013 Workforce Training Results**

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## Did Participants Have a Job and How Much Were They Paid?

To determine the employment rate and earnings of apprenticeship participants, their records were matched with Employment Security Department wage files from Washington and neighboring states.<sup>4</sup> Labor market outcomes for apprenticeships are significantly higher than for other programs the Workforce Board studies. The quality of apprenticeship training, the higher wage levels of many apprenticeship-related occupations, and the typically long length of training are factors.

Record matches found 69 percent of apprentices had reported employment during the third quarter after they left the program. This is 4 percentage points above that observed in the last report. Their median wage was \$29.92 per hour—up \$.81 from \$29.11 the prior year—and annualized earnings were \$47,115, a decrease of \$1,615 from the 2012 Workforce Training Results report.<sup>5</sup> Although the median wage of apprentices is high, there is considerable variation in how much apprentices earn, as can be seen in the table below. When looking only at those who had completed their apprenticeship program, rather than at all exiters, the outcomes are even better. The median earnings of completers was \$63,141. These results illustrate the value of completing an apprenticeship program.

Hourly Wages of Apprentices Third Quarter After Leaving Program (Quartiles)	
Quartile	Hourly Wage
Highest	Above \$38.70
Third	\$29.93-\$38.69
Second	\$18.53-\$29.92
Lowest	Below \$18.52

*\*This table excludes those enrolled in higher education.*

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<sup>4</sup> These files contain quarterly earnings and hours worked information on those individuals with employment reported for unemployment insurance (UI) benefits purposes (approximately 90 percent of in-state employment, with self-employment, active duty military, and those working for religious nonprofit organizations being the major groups of employers not included).

<sup>5</sup> Annual earnings are calculated as third quarter earnings multiplied by four. Quarterly earnings are the result of hourly wage rates and the number of hours worked in a calendar quarter. All wages and earnings are stated in first quarter 2012 dollars.

## Employment and Earnings for Apprentices, 2013

Performance Measure	Results
Employment Rate*	69%
Employment Rate* (Completers)	83%
Full Time Employment **	65%
Median Quarterly Hours	472
Median Hourly Wage***	\$29.92
Median Annualized Earnings***	\$47,115
Median Annualized Earnings (Completers)	\$63,141

\* These figures apply to those with employment reported to state employment agencies six to nine months after leaving the program. Rate does not include self-employment, employment outside the Northwest or military service and thus understates total employment by approximately 10 percent.

\*\* Full-time employment averages 30 or more hours per week.

\*\*\* Earnings/wages expressed in first quarter 2012 dollars to account for inflation.

## Earnings of Apprenticeship Participants

To better gauge the financial effectiveness of Washington's workforce programs, it helps to frame income levels. One common yardstick is the federal poverty level. In 2012, the federal poverty level for one person was \$11,170 per year.<sup>6</sup>

In 2013, Apprenticeship participants were able to support a median 10.1 people at the poverty level—meaning they could support themselves plus just over 9 other people. They could support 4.2 people, including themselves, at 200 percent, or double, the poverty level.

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<sup>6</sup> Poverty levels from 2012 were used in this edition of Workforce Training Results to measure the results of workforce programs on participants observed in 2011-12. The federal poverty level is determined by the Department of Health and Human Services. The level varies according to family size. The number is adjusted for inflation and reported annually in the form of poverty guidelines. Public assistance programs typically define eligibility income limits as some percentage of the federal poverty level.

### Number of People Supported at Poverty Level by Participant Income

	2006		2008		2010		2011		2012		2013	
	Completers	All	Completers	All								
Number of people supported at poverty level	12.4	8.1	13.8	9.5	14.6	9.7	13.4	8.5	13.4	10.5	14.1	10.1
Number of people supported at 200 percent poverty	5.3	3.2	6.0	3.9	6.4	4.0	5.8	3.4	5.8	4.4	6.2	4.2

### Apprentices Receiving Benefits from Employers

Performance Measure	2006	2008	2010*	2011	2012*	2013*
Self-Reported Medical Benefits from Employer	83%	81%	N/A	85%	N/A	N/A
Self-Reported Retirement Benefits from Employer	82%	68%	N/A	81%	N/A	N/A

\*Due to budget limitations, the Workforce Board's Participant Survey was not conducted for the 2010, 2012, or 2013 reports.

The next table shows employment and earnings information over six study periods.

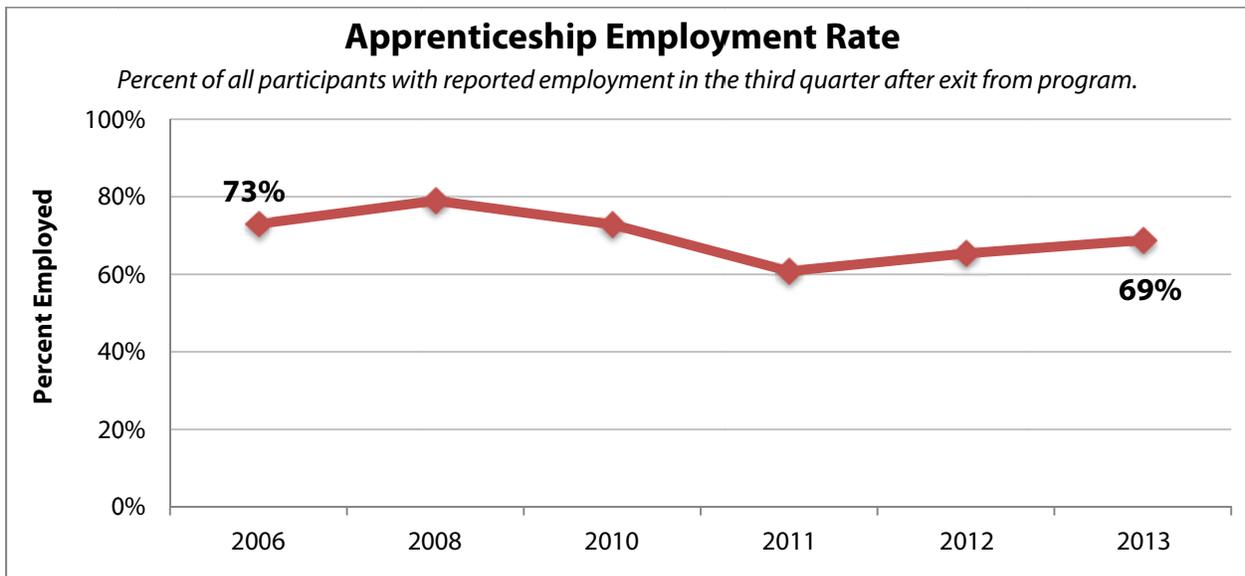
### Employment and Earnings Trends for Apprentices

Performance Measure	2006	2008	2010	2011	2012	2013
Employment Rate (Self-Reported)	87%	91%	N/A	78%	N/A	N/A
Employment Rate* (State Records)	73%	79%	73%	61%	65%	69%
Full Time Employment**	61%	69%	65%	59%	64%	65%
Median Quarterly Hours	451	476	465	444	468	472
Median Hourly Wage***	\$25.91	\$26.42	\$26.85	\$26.03	\$29.11	\$29.92
Median Annualized Earnings***	\$39,214	\$44,864	\$45,572	\$40,759	\$48,730	\$47,115

*\*These figures apply to those with employment reported to the state's Employment Security Department six to nine months after leaving program for all Apprenticeship participants, and are not limited to those who completed a program. Rate does not include self-employment, employment outside the Northwest or military service and thus understates total employment by approximately 10 percent.*

*\*\*Full-time employment averages 30 or more hours per week.*

*\*\*\*Earnings/wages expressed in first quarter 2012 dollars to account for inflation.*



Source: Workforce Training Results 2006-13. Rate does not include self-employment, employment outside the Northwest or military service and thus understates total employment by approximately 10 percent.

Employment has increased for apprenticeship participants for the last two years; employment has increased to 69 percent from a low of 61 percent in 2011. Median annual earnings fell slightly to \$47,115 on this report, following last year's dramatic jump from \$40,759 to \$48,730.



Source: Workforce Training Results 2006-13. Note: This chart shows annualized earnings in 2012 first quarter dollars to account for inflation.

## Apprenticeship Employment by Industry

The majority of Apprenticeship program participants who were reported to be employed held jobs in construction (49.1 percent), services (17.8 percent), public administration (11.2 percent), manufacturing (7.6 percent) and retail trade (5 percent) industries. The percentage of apprentices working in public administration dropped 7 percentage points. The percentage of apprentices working in construction increased nearly 5 percentage points.

Industry Group	
49.1%	Construction <i>(see breakout below)</i>
17.8%	Services <i>(see breakout below)</i>
11.2%	Public Administration
7.6%	Manufacturing
5.0%	Retail Trade
4.4%	Transportation and Warehousing and Utilities
2.5%	Wholesale Trade
1.1%	Financial Services
1.0%	Natural Resources and Mining
0.3%	Information
Breakout of Construction Industry	
21.0%	Building Equipment Contractors
6.8%	Construction of Buildings
6.1%	Foundation, structure & Building Exterior Contractors
6.0%	Heavy & Civil Engineering Construction
5.7%	Building Finishing Contractors
3.5%	All Other Specialty Contractors
Breakout of Services Industry	
6.4%	Administrative and Support and Waste Management and Remediation Services
3.1%	Professional, Scientific, and Technical Services
2.6%	Education Services
2.2%	All Other Services
1.4%	Health Care
0.9%	Arts, Entertainment, and Recreation
0.6%	Accommodation and Food Services
0.5%	Social Assistance

Source: Matches with Employment Security Department data in third quarter after exiting program. Industry groups based on North American Industry Classification System codes.

## Relationship of Training to Employment

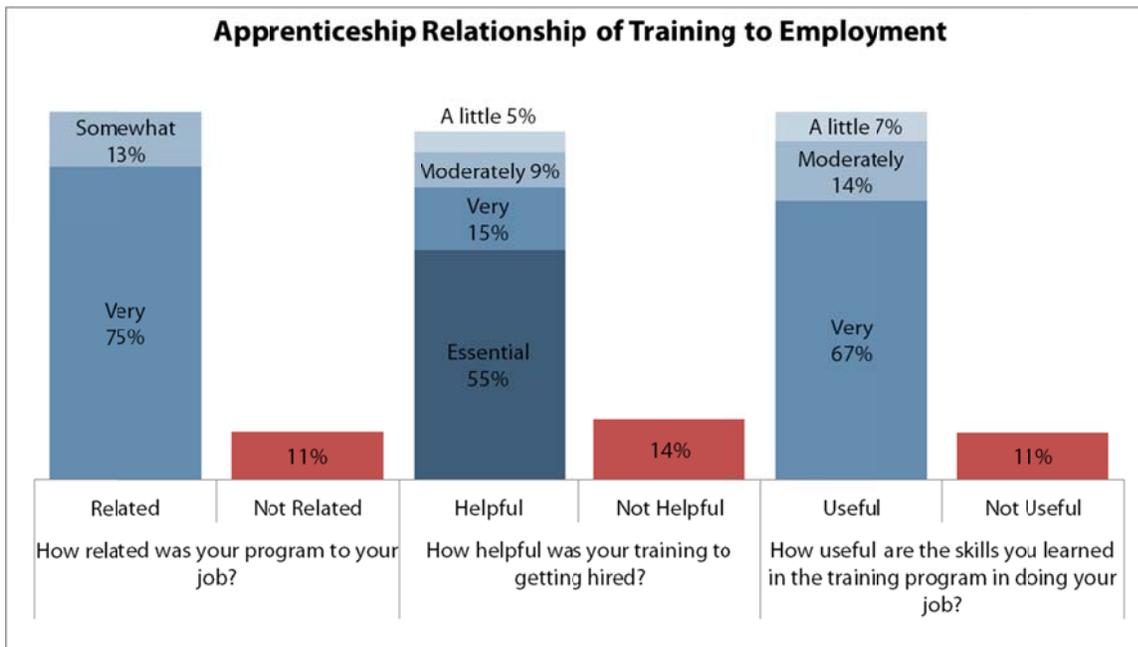
In 2011 the Workforce Board surveyed Apprentices who had left their program in 2009-10. The survey provided data on employment and participant satisfaction with the training. The survey was conducted by telephone and was completed by 317 participants.

To measure the extent to which a participant’s education program and training related to employment, we asked participants three questions:

1. How related was the program to their job?
2. How important was the training in getting hired?
3. Are the skills they learned useful in their job?

Asking about the relationship between training and employment in different ways can produce more complete information. For example, some participants said their training was not related to their job, but nevertheless found the skills acquired were useful on the job.

Among apprenticeship participants employed seven to nine months after leaving a program, 75 percent said their training was “very related” to their job. A further 13 percent reported the training was “somewhat related” to their job. Just 11 percent indicated that the training was not related to their job. In 2008, employed participants reported lower rates of training related to employment; only 72 percent indicated their training was either “very” or “somewhat” related to their job.



Source: Workforce Board’s Participant Satisfaction Survey 2011.

Apprenticeship participants surveyed in 2011 also indicated the training was helpful to them in getting their job. Of those participants, 55 percent indicated their training was an “essential requirement,” another 15 percent indicated it was “very important,” and 9 percent

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reported it was “moderately important.” Only 14 percent indicated their training was “not important at all” to getting their job.

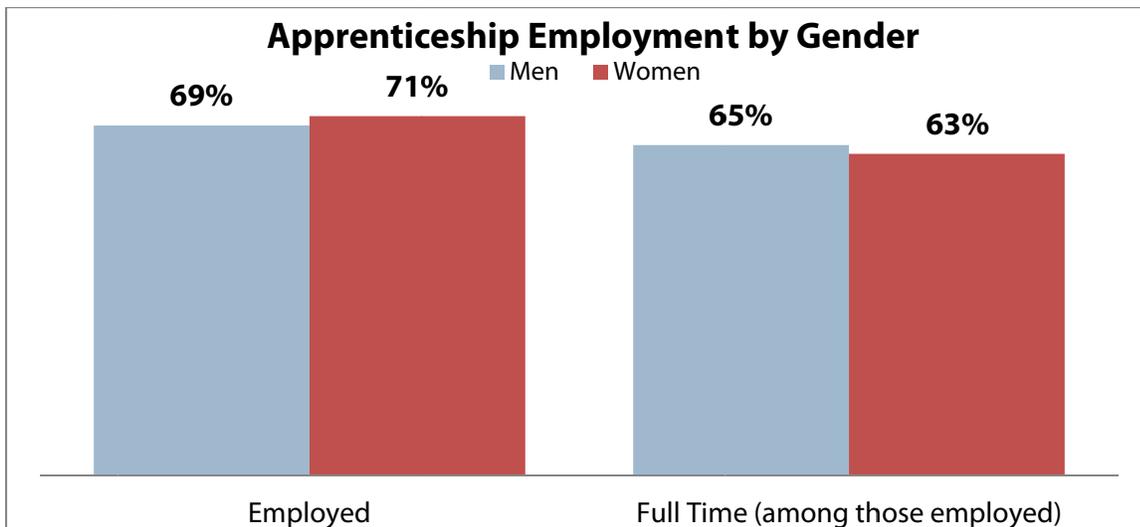
Nearly 90 percent of participants said the skills they learned in their training program were useful in doing their job. Some 67 percent of participants indicated the skills were “very useful,” 14 percent said “moderately useful,” and 7 percent “a little useful.” The remaining 11 percent of participants who were employed indicated the skills were “not useful at all.”

*Apprenticeship programs have very large, positive impacts on employment, wages, hours worked, and earning. Training substantially increases the lifetime earnings of apprentices.*

When combining two of the questions about the program’s relationship to the job and about whether the skills acquired were helpful, a small percentage of participants answer negatively to both. Just 7 percent of participants employed the third quarter after exit said the training they received was *neither* helpful in their job nor related to the job they obtained.

### Wages and Employment Results Vary by Population

Wages and employment results can vary by gender, race and ethnicity, and disability.<sup>7</sup> Men and women were just as likely to be employed in the third quarter after leaving their apprenticeship (69 percent compared to 71 percent), and were just as likely to be employed full-time (65 percent versus 63 percent). Of those employed, women had median hourly wages (\$22.33), which was 72 percent of men’s wages (\$30.93). Women had median annualized earnings that were also 72 percent of males (\$35,276 compared to \$48,788).



Source: 2010-11 Apprenticeship Administrative Data, Department of Labor and Industries.

<sup>7</sup> Apprenticeship administrative records do not include information on disability status.

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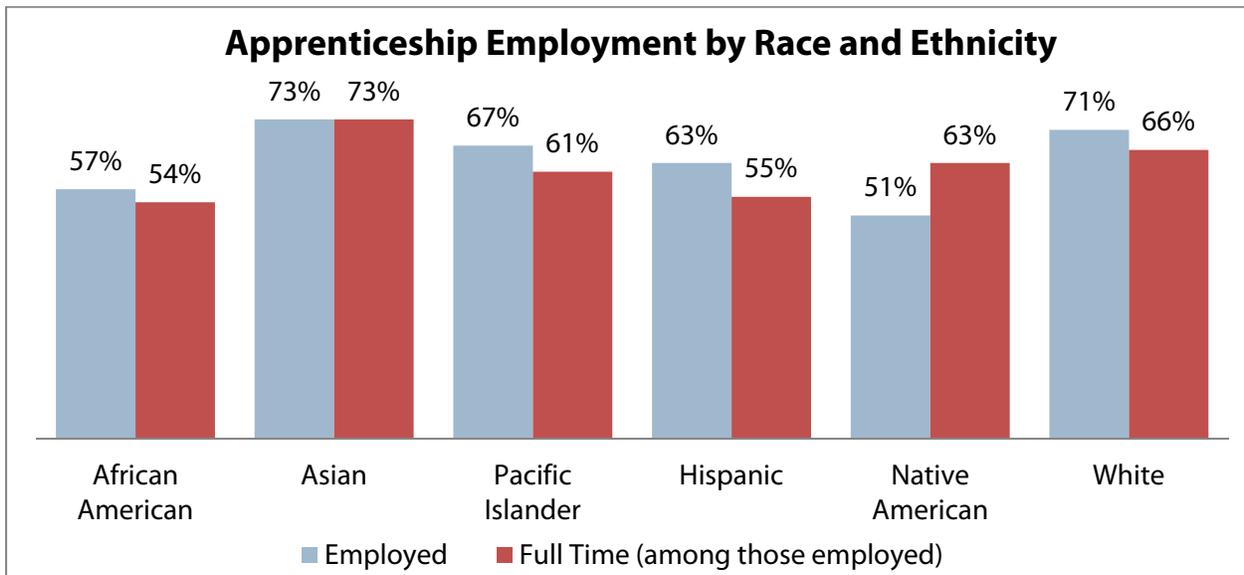
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## Race/Ethnicity Plays Role

Native American apprentices were less likely than others to be employed in the third quarter after leaving their programs (51 percent). This employment rate compares to 73 percent for Asians, 71 percent for whites, 67 percent for Pacific Islanders, and 63 percent for Hispanics. Asians were most likely to be employed full time at 73 percent, followed by whites (66 percent), Native Americans (63 percent), Hispanics (55 percent), and African Americans (54 percent).

For those employed, Pacific Islanders had the highest median hourly wage at \$32.02, followed by whites at \$31.70. The median hourly wage for African American apprentices was 66 percent of whites (\$20.96), 73 percent for Hispanics (\$23.14), 84 percent for Native Americans (\$26.52), and 87 percent for Asians (\$27.54).

In terms of median annualized earnings, Native Americans earned the most (\$50,918) followed by whites (\$50,547), Asians (\$44,354), Pacific Islanders (\$40,853), Hispanics (\$33,164), and African Americans (\$29,780).



Source: 2010-11 Apprenticeship Administrative Data, Department of Labor and Industries.

## Were Employers Satisfied with the Preparation Workers Received?

The Workforce Board's Employer Survey, administered during 2012, asked firms to evaluate new employees who had recently completed an apprenticeship program. Some 91 percent of employers said they were either "somewhat satisfied" or "very satisfied" with the overall work quality of these new employees.

Employer satisfaction is broken down into three categories: Basic Skills, Job Skills and Work Place Skills. Basic skills refer to reading, writing, math, communication and computer skills.

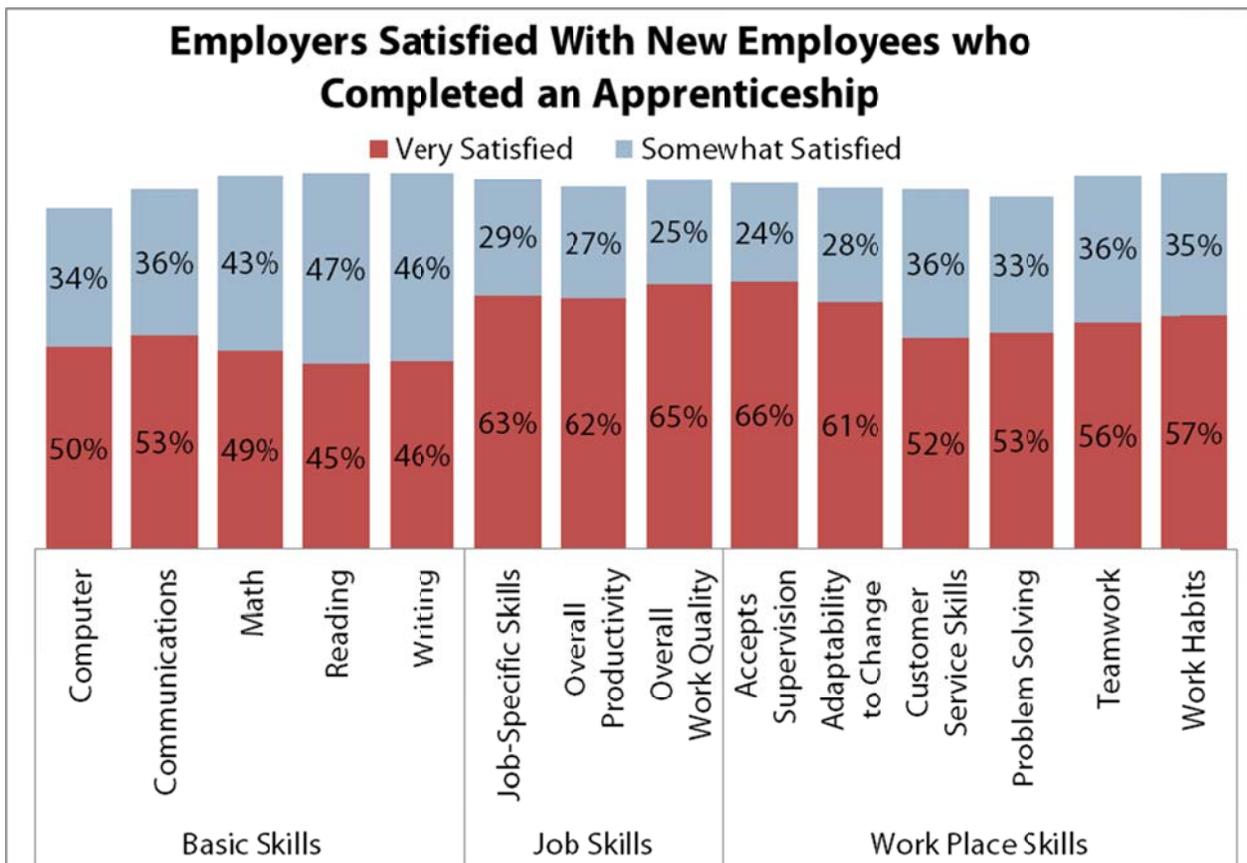
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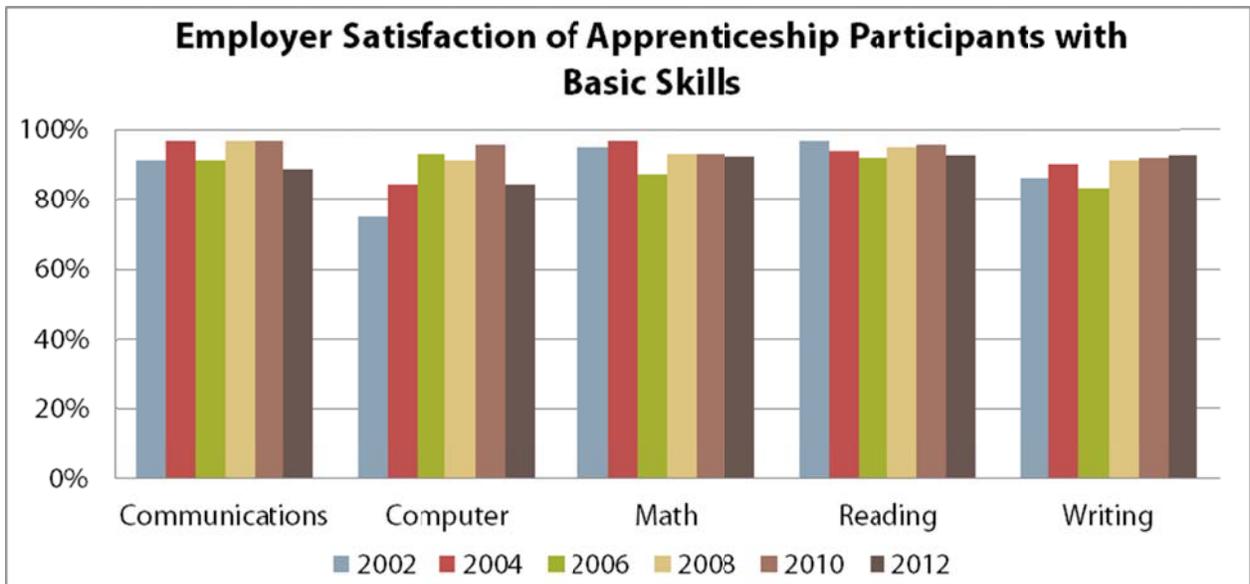
Job skills refer to skills specific to the job, as well as overall work quality and productivity. Work place skills refer to the skills necessary to get along in the workplace such as the ability to accept supervision, the ability to adapt to changes in duties and responsibilities, teamwork, customer service, problem solving or critical thinking skills, and having positive work habits and attitudes.

In 2012, employers were most likely to report they were very satisfied with the overall work quality, productivity, and job specific skills of apprentices. Employers were least likely to be very satisfied with the basic skills of reading, writing, and math, although nearly half of employers were very satisfied with the basic skills and almost all the remainder were somewhat satisfied.

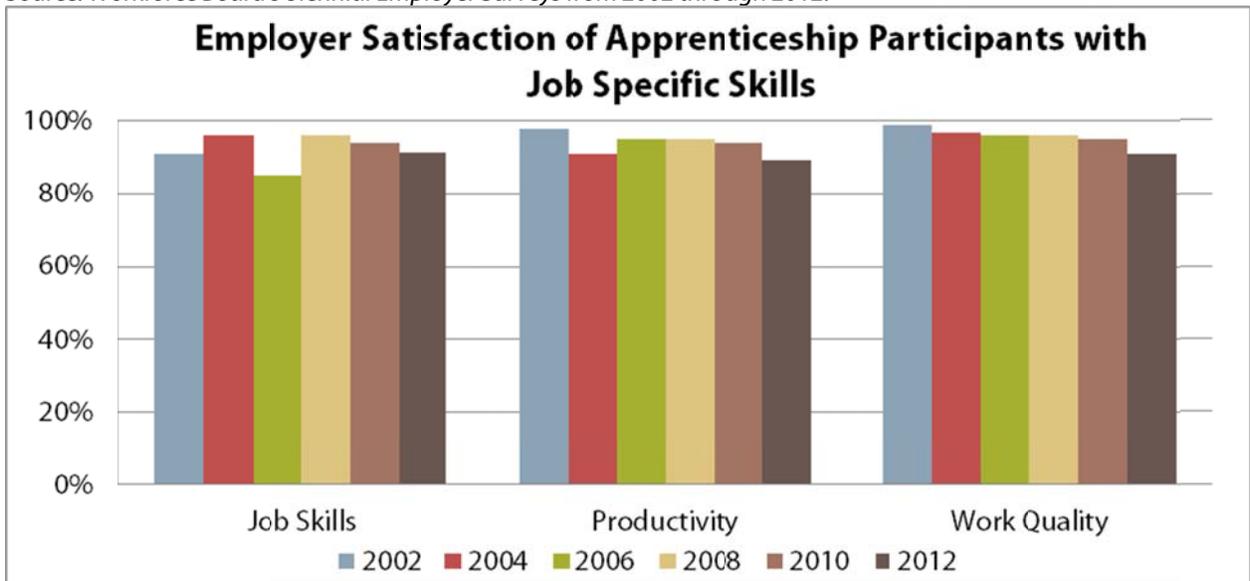


Source: Workforce Board Employer Survey conducted in 2012.

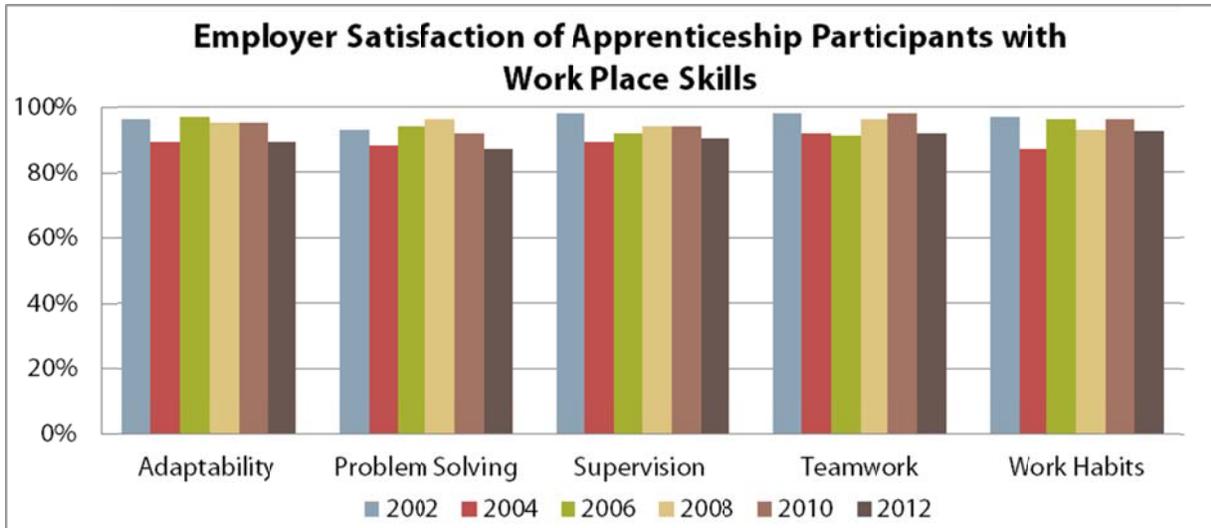
The following three charts show the trends in satisfaction of employers with new employees who recently completed an apprenticeship program.



Source: Workforce Board's biennial Employer Surveys from 2002 through 2012.



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## Participant Survey - Did Participants Get the Skills They Needed?

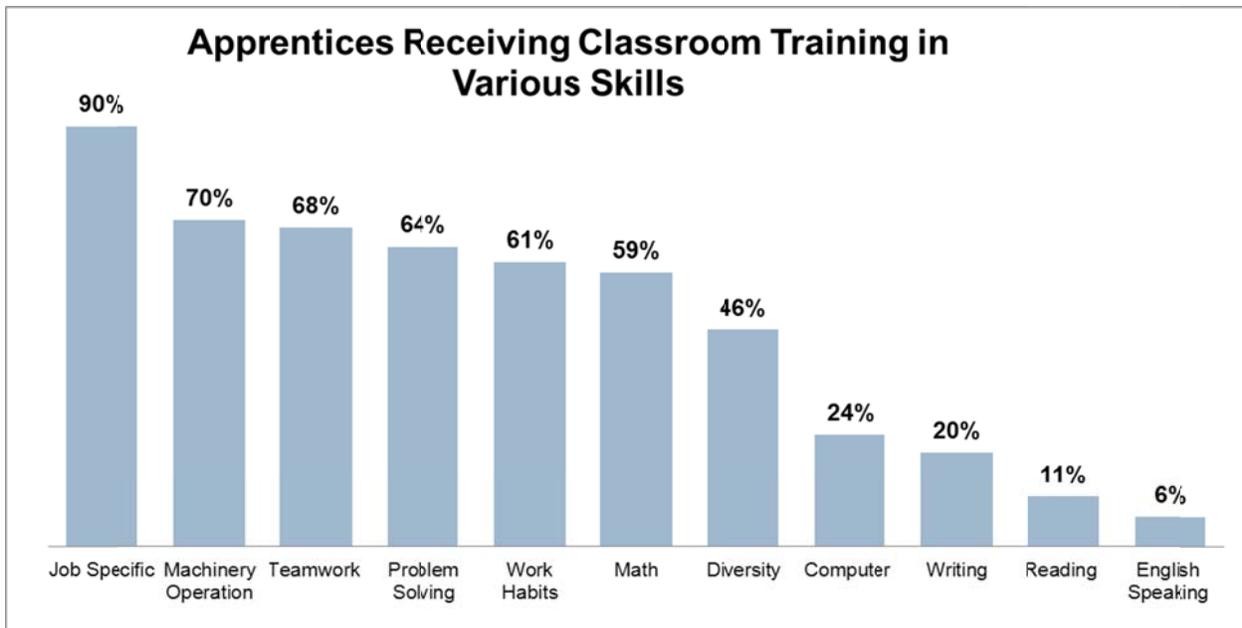
Of the apprentices leaving their program who answered questions for the 2011 Participant Survey, 37 percent completed their apprentice program, which is a decrease of 5 percentage points from the previous survey conducted in 2008.

By definition, people enter an apprenticeship program to acquire occupation or industry-specific training. As they gain these skills, they are paid to work and hold down jobs that both bolster their resume and pay the bills. Many apprentices also receive training in general workplace skills such as teamwork and problem solving. They receive both on-the-job training and classroom training.<sup>8</sup>

## Classroom Training

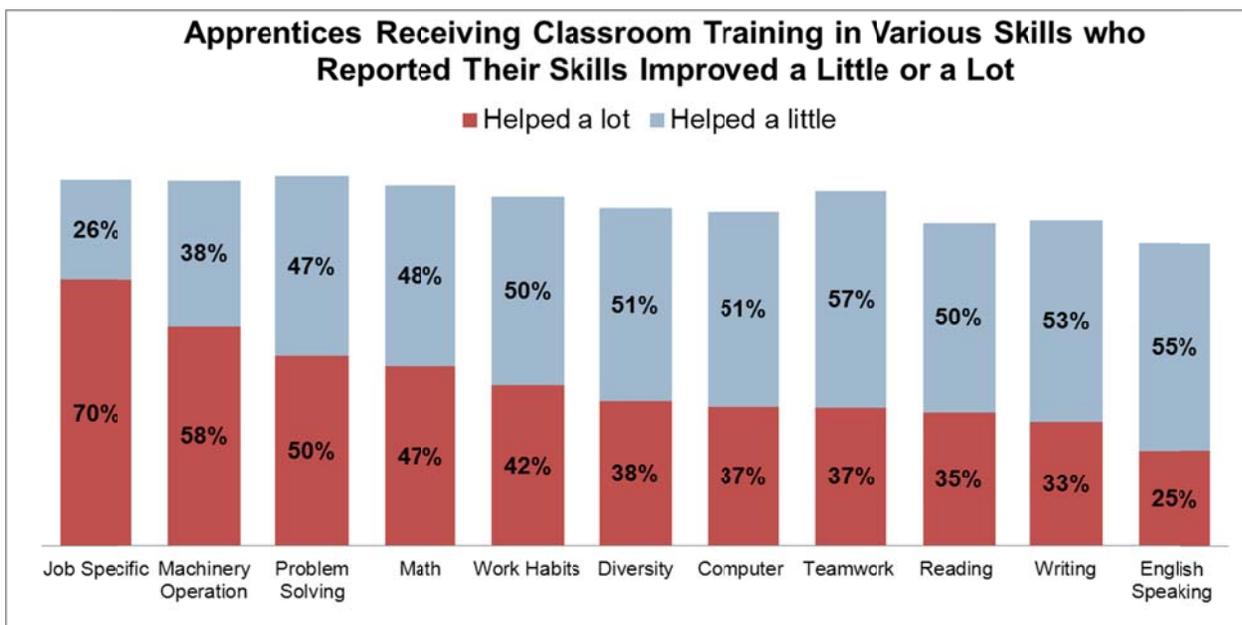
Apprentices receive various skills training, both in the classroom and during on-the-job training. During classroom training, apprentices were least likely to receive basic skills training such as English speaking, reading, and writing skills. One exception is the 59 percent of apprentices who received math skills training. Apprentices were most likely to receive training in job specific skills (90 percent). These results are similar to surveys completed in previous years.

<sup>8</sup> Apprentices are required to participate in at least 144 hours of classroom training annually.



Source: Workforce Board's Participant Satisfaction Survey 2011.

In both the previous and current studies, apprentices reported their skills in many areas improved as a result of classroom training. The apprentices from the 2011 survey indicated similar levels of improvement overall when compared with apprentices from 2008. However, compared to 2008, fewer apprentices reported the training they received in problem-solving, math and job specific skills helped "a lot." An increasing number reported that training in those areas helped "a little." One significant drop was in work habits. Apprentices reporting that work habits training helped "a lot" dropped by 9 percentage points.



Source: Workforce Board's Participant Satisfaction Survey 2011.

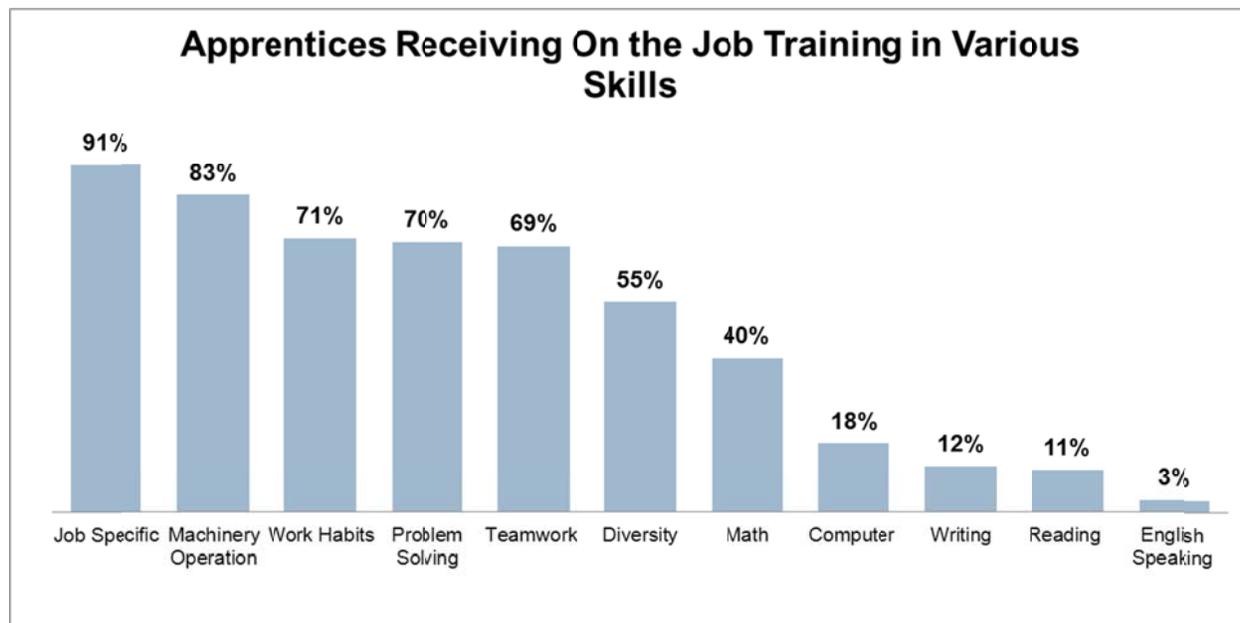
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## On-the-Job Skills Training

As in the previous survey, high percentages of apprentices reported receiving on-the-job training in job-specific skills, machinery operations, work habits, and teamwork. The percentage of apprentices receiving training in various skills has remained mostly the same between 2008 and 2011. The exceptions are the level of apprentices receiving training in work habits and math skills, both of which increased 7 and 6 percentage points respectively. However, the number of apprentices receiving training in problem solving skills declined 10 percentage points in the same time period.

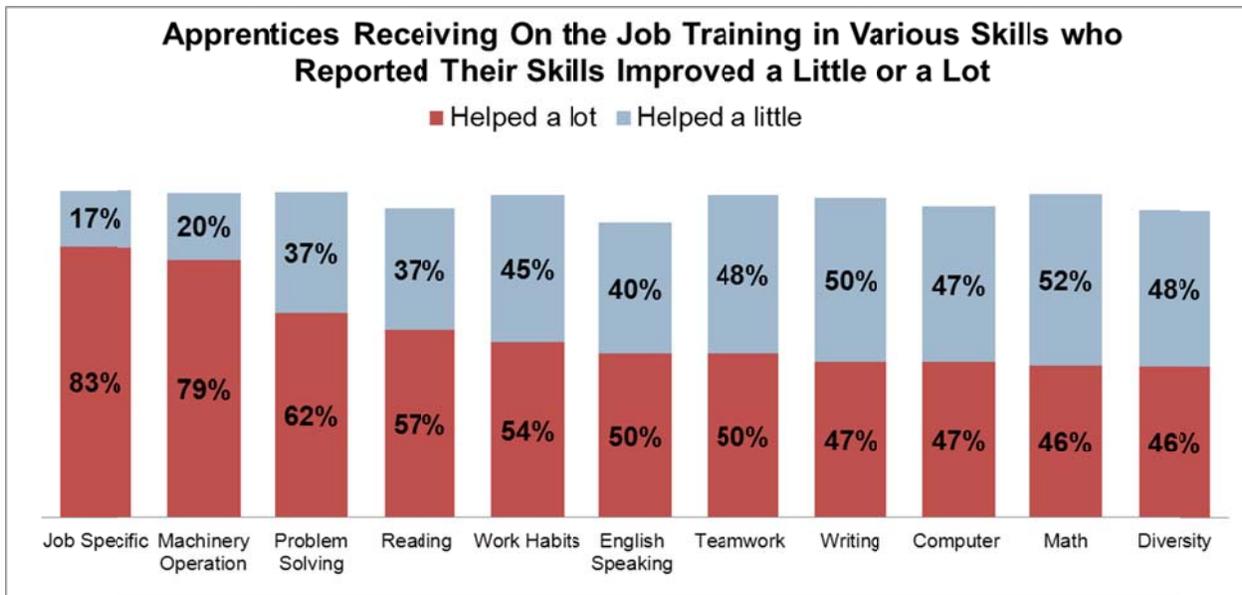


Source: Workforce Board's Participant Satisfaction Survey 2011.

Apprentices continue to highly rate the skills received from on-the-job training. As expected, the highest percentages indicated "a lot" of improvement in their job-specific and machinery operation skills. In fact, the percentage of apprentices who indicated their job-specific skills improved "a lot" increased by 7 percentage points.

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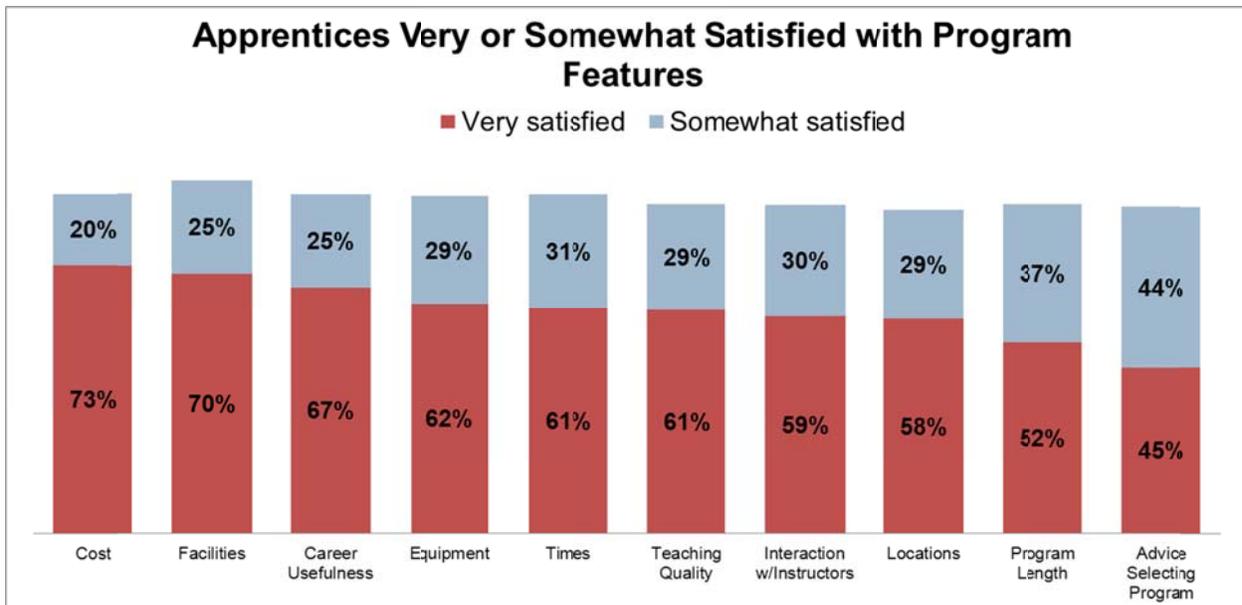
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Source: Workforce Board's Participant Satisfaction Survey 2011.

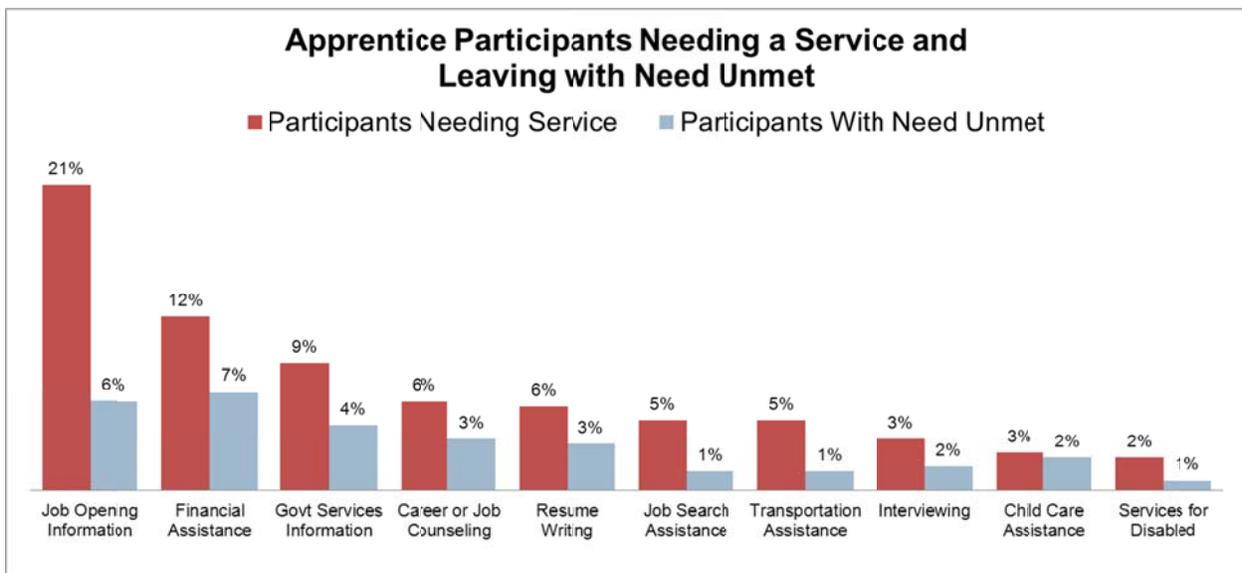
### Participant Satisfaction

The apprentices surveyed in 2011 expressed high levels of overall satisfaction that was similar to the previous study: 90 percent expressed satisfaction with their classroom training and another 88 percent with their on-the-job training. Some 86 percent met their educational objectives by participating in the training, up from the 75 percent of the apprentices in the 2008 survey. Overall satisfaction with program features has increased in every category. The largest gains in satisfaction have been in cost ("very satisfied" up 15 percentage points) and in location ("very satisfied" up 15 percentage points). However, apprentices reporting that they are "very satisfied" with program facilities and career usefulness has dropped 9 percentage points in both categories.



Source: Workforce Board's Participant Satisfaction Survey 2011.

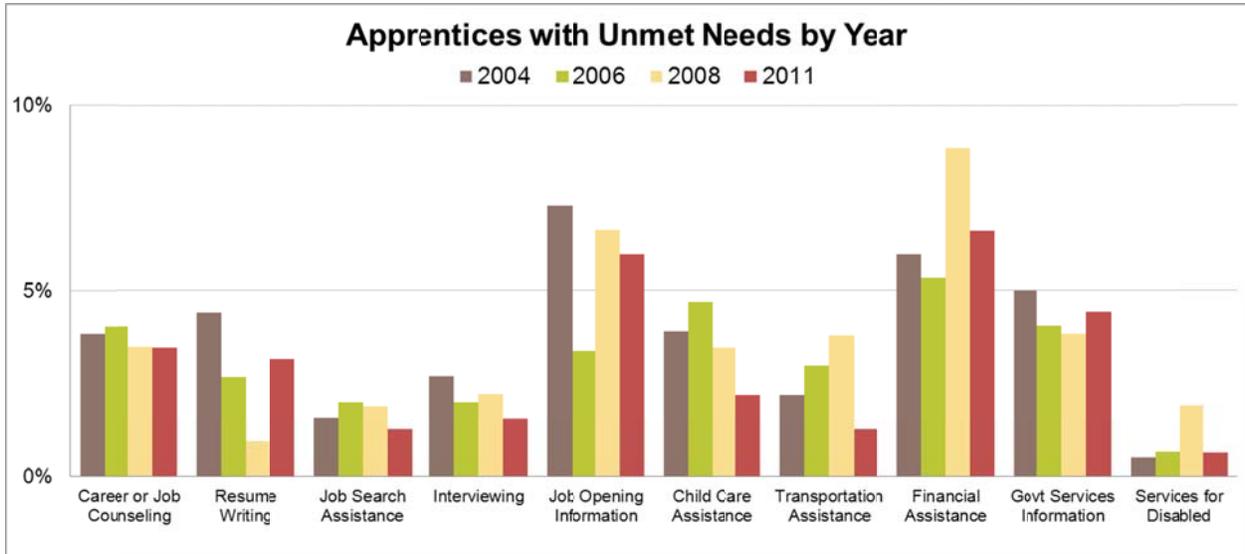
Apprentices reported a much lower need for support services than participants in the other programs included in the survey. Their greatest needs were for information on job openings, financial assistance, and government services information. In some cases their needs were not met. Of apprentices leaving their program, 7 percent left with an unmet need<sup>9</sup> for financial assistance, and 6 percent left with an unmet need for job opening information.



Source: Workforce Board's Participant Satisfaction Survey 2011.

<sup>9</sup> Unmet need refers to cases where the student reports that either they did not receive the required service or what was provided did not meet their needs.

The percentage of apprentices with unmet needs has dropped in nearly every category since the last survey. However, the percentage reporting unmet needs for government services information and resume writing has increased since 2008.



Source: Workforce Board's Participant Satisfaction Survey 2011.

### Net Impact – Did Program Make a Difference in Participant Success

Every four years the Workforce Board conducts net impact and cost-benefit analyses of workforce development programs. This detailed study compares participants and non-participants. The net impact part of this study attempts to measure whether the program made a difference in the participant's success. Washington is the only state to periodically conduct rigorous net impact evaluations of its workforce programs.

The net impact analysis was conducted by the W.E. Upjohn Institute for Employment Research (Upjohn), a national leader in evaluating training programs. To do the analysis, Upjohn studied program participants to see what results they achieved and compared these results with a control group. Individuals who participated in an Apprenticeship program were compared to individuals who had similar demographic characteristics, but who did not participate in any of the programs included in the study. The comparison group members were selected from among those who registered with WorkSource, Washington's one-stop career center system.

The most recent net impact analyses examined experiences of participants who left the Apprenticeship training program through 2009. The short-term impact (Program Year 2007-08) was observed in 2008-09, while the long-term impact (Program Year 2005-06) was observed from 2006-07 through 2008-09.

Apprenticeship	All Apprenticeship		Completers	
	Short Term <sup>^</sup>	Long Term <sup>^</sup>	Short Term <sup>^</sup>	Long Term <sup>^</sup>
Net Employment Impact*	7.80 percentage points	9.80 percentage points	24.70 percentage points	24.00 percentage points
Net Hourly Wage Impact**	\$8.39	\$9.33	\$14.12	\$15.50
Net Hours Employed per Quarter Impact	46.9	26.4	71.8	43.0
Net Annualized Earnings Impact**	\$19,742	\$18,819	\$34,474	\$32,114

<sup>^</sup>Short-term is three quarters after program exit; Long-term is average across three years since program exit.

\*Percentages listed are employment percentage points above those of the control group of non-participants.

\*\*Wages and earnings, expressed in first quarter 2012 dollars, represent the average difference between Apprenticeship participants who got jobs and those in the control group who were employed.

As can be seen above, apprenticeship programs had significant positive net impacts on employment, wages, hours worked, and annualized earnings when apprenticeship participants are compared with non-participants. These impressive results get even stronger for those who complete an apprenticeship, yielding nearly twice as much in annualized earnings, hourly wages and employment compared with those apprenticeship program participants who exited a program early. The benefits of not only starting but completing an apprenticeship program are clear.

### Costs and Benefits

The cost-benefit analysis estimates the value of the net impact on earnings, employee benefits (estimated at 25 percent of earnings), UI benefits, and certain taxes.<sup>10</sup> Program costs include both direct program costs and support payments borne by taxpayers and the tuition paid by participants, as well as the earnings participants would have otherwise received had they continued working.

<sup>10</sup> Upjohn estimated the impact of the net change in earnings on social security, Medicare, federal income, and state sales taxes.

Benefits and costs are calculated for both the observed period of time and based upon a statistical model that estimated the benefits and costs out to age 65. To compare benefits and costs in terms of net present values, post-program benefits and costs are discounted by 3 percent per year and all figures are stated in 2012 Q1 dollars to control for inflation. The benefits and costs presented here are based on impacts estimated for apprentices leaving programs in 2005-2006 (observed from 2006-07 through 2008-09), because a longer-term follow-up is required for this analysis.

### Participant and Public Benefits and Costs per Apprentice

Benefit/Cost	First 2.5 years		Lifetime (until 65)		Sum of Costs and Benefits
	Participant	Public	Participant	Public	
<b>Benefits</b>					
Earnings	\$37,614	\$0	\$322,058	\$0	
Fringe Benefits	\$7,523	\$0	\$64,411	\$0	
Taxes	-\$9,867	\$9,867	-\$84,476	\$84,476	
Transfers					
UI	\$879	-\$879	\$1,573	-\$1,573	
<b>Costs</b>					
Foregone net comp.	\$23,148	\$6,147	\$23,148	\$6,147	
Program costs	-\$1,832	-\$3,564	-\$1,832	-\$3,564	
Benefits	\$36,150	\$8,987	\$303,567	\$82,902	
Costs	\$21,316	\$2,584	\$21,316	\$2,584	
<b>Total (Net)</b>	<b>\$57,466</b>	<b>\$11,571</b>	<b>\$324,883</b>	<b>\$85,486</b>	<b>\$410,369</b>

Note: Benefits and costs are expressed in 2012 first quarter dollars.

For each apprentice in training, the public (taxpayer) cost is \$3,564 over the length of their enrollment, and the participant cost is \$1,832 in tuition. By definition, apprentices work during their program participation and their net earnings during training was \$23,148 higher than those who were not in training. During the course of working life to age 65, the average apprentice will gain about \$345,206 in net earnings (net impact earnings plus earnings while in apprenticeship training) and about \$64,411 in employee benefits.<sup>11</sup> These are net gains compared to the earnings of similar individuals who did not participate in a program included in this study. Including program costs and the net impacts on taxes and unemployment insurance benefits, the total net benefit per participant is \$324,883.

<sup>11</sup> This employee benefits amount does not account for the employee benefits associated with the earnings during participation. If the same benefit percentage (20 percent) were applied to such earnings, the gain in employee benefits in the longer term would be about \$50,000.

### 2013 Workforce Training Results

Apprenticeship

Workforce Training and Education Coordinating Board

Projected participant net benefits to age 65 far outweigh public investment in apprenticeship training by a ratio of \$91 to 1, or \$324,883 to \$3,564.

From the time of leaving training to age 65, the public is expected to gain about \$84,476 per apprentice in net additional Social Security, Medicare, federal income, and state sales taxes. The estimated lifetime net benefit to taxpayers is \$85,486 per participant.

Projected taxpayer net benefits to age 65 outweigh public costs invested in apprenticeship training by a ratio of \$23 to 1 or \$82,902 to \$3,564.

### **Summary and Areas for Improvement**

Apprenticeship is an extremely successful training program with strong net impacts on employment and earnings. Moreover, the cost to the public is very low as the bulk of the costs are covered by the trust funds established by employers and workers. Employers report high levels of satisfaction with the skills of those who completed an apprenticeship program, and participants report their satisfaction with the program.

This evaluation does find some areas that could be stronger. The median age of those leaving apprenticeships is 30. More should be done to enroll younger people into apprenticeships. Only 9 percent of apprentices are women, and this figure has been declining. Also, the hourly wages and annual earnings of women are only 72 percent those of men. More should be done to enroll women in apprenticeships, especially in higher paying fields. Finally, while Washington's apprenticeship program continues to enroll people of color at rates similar to their population in the state, there continues to be disparities between the post-program wages and earnings for people of color compared to whites. This suggests that minority groups may not be enrolling in the higher paying fields. This issue should be examined and addressed.