Community and Technical Colleges Professional-Technical Education

Program Details

Washington's 34 community and technical colleges offer professional technical training that provides participants with skills required for specific occupations. Community and Technical Colleges (CTC) Professional-Technical Education training covers a broad range of occupational fields and credentials, from one-year certificates to two-year technical degrees. However, it does not include participants who intend to transfer to a four-year college or university; participants who enroll in a program to raise their basic skills to a high school level; or working adults who take a few classes to improve skills for their current jobs.[1]

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 2012 report, researchers examined 32,879 CTC Professional-Technical participants who completed or left the community or technical college system.[2] These participants comprise the Professional-Technical cohort included in this study.[3] The median length of enrollment for these participants was nine months.

Participants from racial and ethnic minority backgrounds continue to be well represented among CTC Professional-Technical participants, especially among African Americans whose participation rate was nearly twice their representation in the state population. Native Americans are also slightly overrepresented in this program in comparison to their state population representation.[4]

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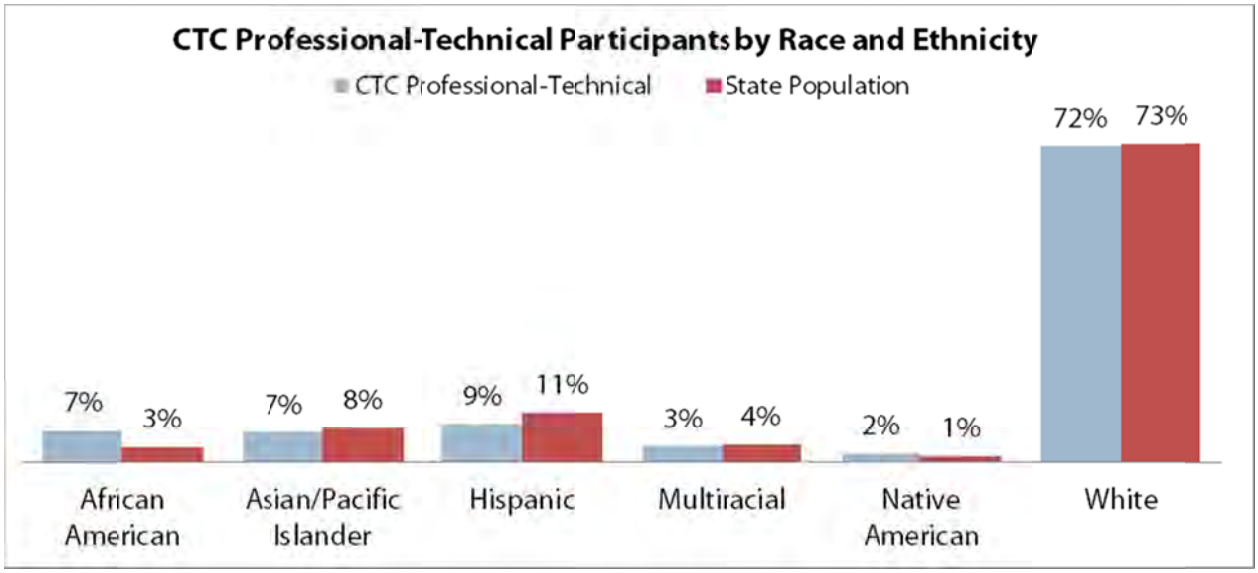
[1] While the Worker Retraining program at the community and technical colleges also provides occupational training, the results for participants who participated in this program are evaluated separately.

[2] CTC Professional-Technical Education participants identified themselves as vocational participants and have either enrolled for six or more vocational credits or have completed three or more vocational credits. Additionally, the participants included in this study exited their program during the academic year and did not enroll in a community or technical college for a period of one full year.

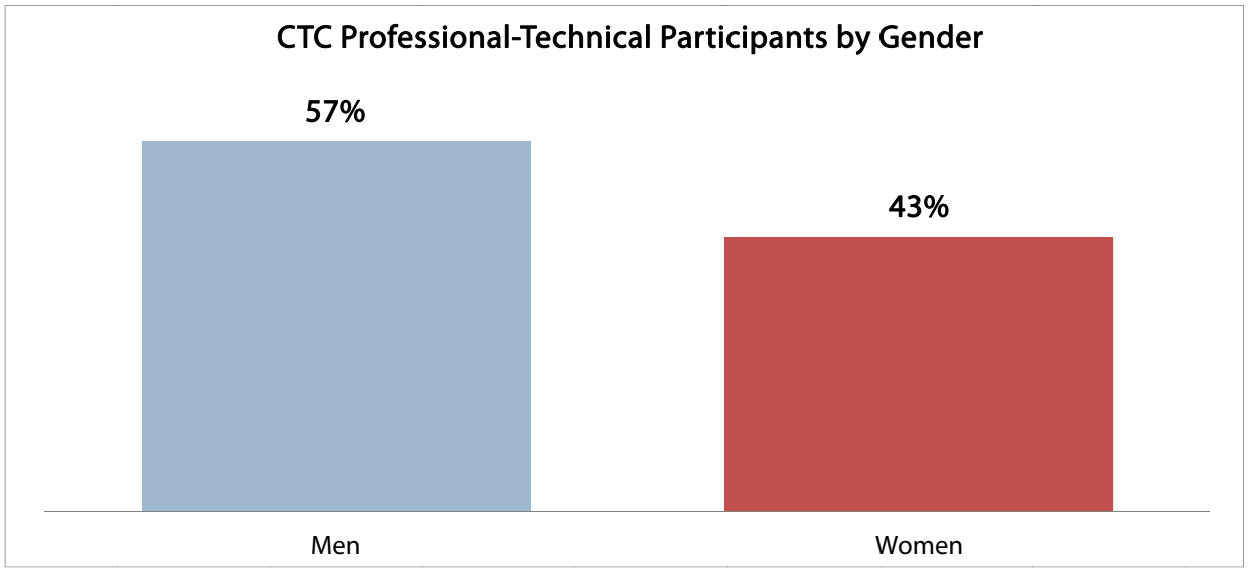
[3] The 2012 Workforce Training Results reports are based on data observed in 2010-11 for individuals exiting programs during 2009-10.

[4] 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/Pacific Islanders (also referred to as Asians/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 2010 U.S. Census Bureau estimates of Washington's population from the American Community Survey, 73 percent are white; 3 percent are African American; 1 percent are Native American; 8 percent are Asian/Pacific Islander; 4 percent are multiracial; and 11 percent are Hispanic.



Source: Community and Technical Colleges Administrative Data. (Data Linking for Outcomes Assessment) and 2010 U.S. Census Data from the American Community Survey.

Gender differences were also examined. Among CTC Professional-Technical participants, 43 percent were women—a substantial decrease from the previous report when 59 percent of participants were women. Looking at completion rates, however, slightly more women completed their programs compared to men (57 percent versus 54 percent).



Source: Community and Technical Colleges Administrative Data. (Data Linking for Outcomes Assessment)

When they enrolled, 52 percent of the participants had not previously attended college; 21 percent had attended college without receiving a credential; 12 percent had a certificate or associate's degree; and 11 percent had a baccalaureate or higher degree, and 5 percent had some other credential.

The median age in the last quarter of training was 29, with one quarter of the participants under age 23, and another quarter of the participants over age 39.

State Core Measures: Tracking CTC Professional-Technical 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 2012 Workforce Training Results includes information obtained from Employment Security Department (ESD) wage files in Washington, Idaho, and Oregon, and federal employment records for 2010-11. Information on employer satisfaction among firms that hired new employees who recently completed a CTC Professional-Technical program was assessed through the Workforce Board's 2012 Employer Survey.

Net Impact Study Adds More Insight into Program Performance

In addition, this year's report includes a comprehensive Net Impact Study. To assess both short- and long-term employment and earnings trends, data on participant experiences through 2009 is used in the 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.

Did Participants Get the Skills They Needed?

As a measure of whether participants received the skills they needed, this study tracks the credentials and degrees earned by participants. Among CTC Professional-Technical participants leaving programs:

- 19 percent received an associate's degree.
- 19 percent received a vocational certificate.
- 13 percent were deemed ready for work because they completed 45 or more credits.
- 4 percent completed a non-credit vocational program that led to a certificate.

Taken together, 56 percent of participants earned a credential.[5]

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

To find out whether participants obtained jobs and how much they earned, participant records were matched with Employment Security Department wage files from Washington and neighboring states.[6] The study looks at employment and earnings three calendar quarters after the participant left the CTC Professional-Technical program. The table below displays the employment and earnings of participants who exited the program during the prior year. Nearly 63 percent of the CTC Professional-Technical participants were employed. Of those who were working, 54 percent were employed full time. The median hourly wage was $14.92 and participants had median annualized earnings of $24,413.[7]

Turn to page 16 for the Net Impact Study. Conducted every four years, this in-depth report adds extra value to 2012 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.

Compared to employment and earnings data for CTC Professional-Technical participants from prior years, the Great Recession may well have negatively impacted the ability of program completers to thrive in the current economic situation. Given this context, the median wage of Professional-Technical participants, at $14.92 an hour is only slightly less than the prior year, which was $15.21. This is $6.25 per hour more than Washington's minimum wage of $8.67 an hour in 2011. However, there is considerable variation in wages. While one quarter earned more than $20.01 an hour, another quarter had jobs that paid less than $10.39 an hour.

[5] Upon exiting a college, the system determines whether the participant is considered to have completed the program. The percentages do not sum to 56 percent due to rounding.

[6] 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).

[7] All wages and earnings are stated in first quarter 2011 dollars.

Employment and Earnings for Community and Technical College Professional-Technical Education Participants, 2012

Performance Measure	Results
Employment Rate* (State Records)	63%
Full Time Employment **	54%
Median Hours Worked Quarterly	416 hours
Median Hourly Wage***	$14.92
Median Annualized Earnings***	$24,825

** 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 2011 dollars in order to account for inflation.*

Earnings of CTC Professional-Technical 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 2011, the federal poverty level for one person was $10,890 per year.[8]

In 2012, CTC Professional-Technical participants were able to support a median 4.5 people at the poverty level—meaning they could support themselves plus three and a half other people. They could support just slightly more than themselves (1.3) at 200 percent of the poverty level.

Number of People Supported at Poverty Level by Participant Income

Performance Measure	2004	2006	2008	2010	2011	2012
Number of people supported at the poverty level	4.9 people	4.9 people	5.1 people	5.5 people	4.9 people	4.5 people
Number of people supported at 200 percent poverty	1.5 people	1.5 people	1.6 people	1.8 people	1.5 people	1.3 people

[8] Poverty levels from 2011 were used in this edition of Workforce Training Results to measure the results of workforce programs on participants observed in 2010-11. 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.

CTC Professional-Technical Participants Receiving Benefits from Employers

Performance Measure	2004	2006	2008	2010*	2011	2012*
Self-Reported Medical Benefits from Employer	71%	72%	62%	N/A	55%	N/A
Self-Reported Retirement Benefits from Employer	48%	52%	42%	N/A	44%	N/A

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

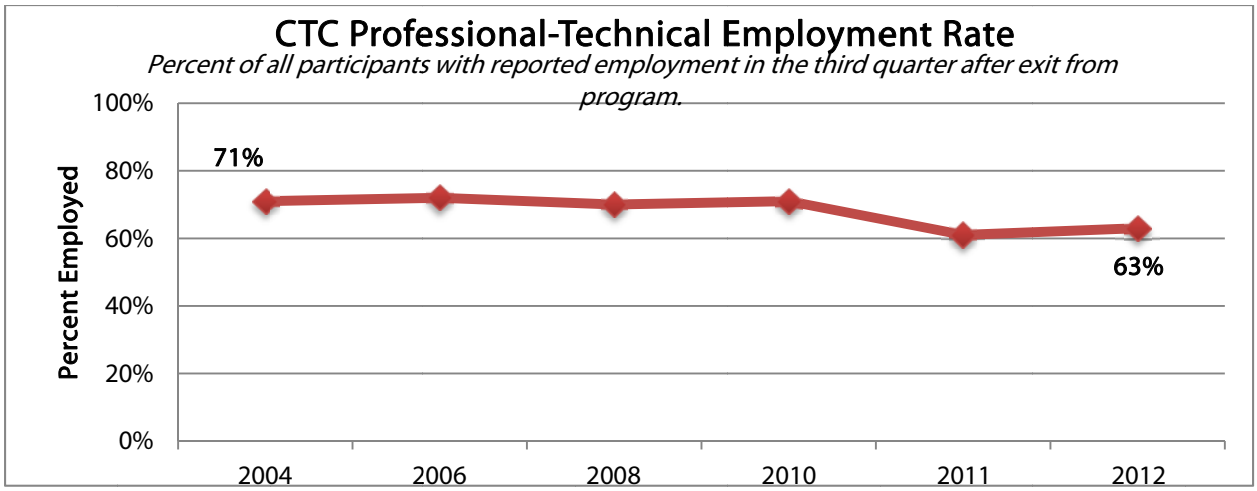
The following table shows employment and earnings information over the course of six study periods. Performance results are shown for *all* CTC Professional-Technical participants and broken down further to focus on program completers.

Employment and Earnings Trends for Community and Technical College Professional-Technical Education Participants

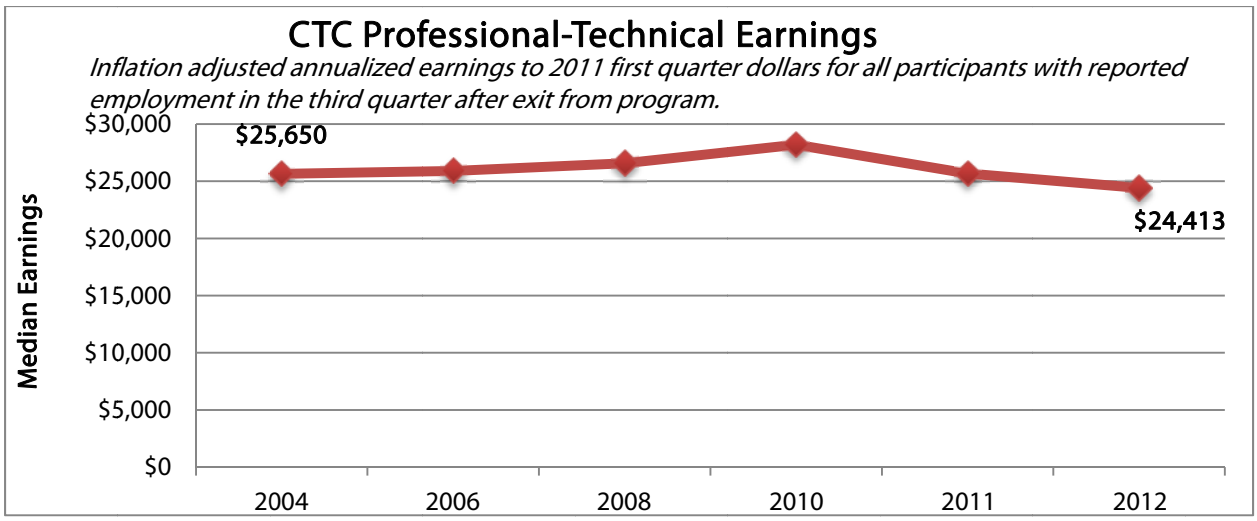
Performance Measure	2004		2006		2008		2010		2011		2012	
	All	Comp.	All	Comp.	All	Comp.	All	Comp.	All	Comp.	All	Comp.
Employment Rate (Self-Reported)	82%	-	81%	-	84%	-	N/A	N/A	76%	-	N/A	N/A
Employment Rate* (State Records	71%	74%	72%	75%	70%	74%	71%	77%	61%	65%	63%	69%
Full Time Employment**	62%	64%	62%	63%	63%	66%	65%	67%	59%	60%	54%	56%
Median Quarterly Hours	455	455	450	451	455	468	455	455	429	442	416	429
Median Hourly Wage***	$15.01	$15.38	$15.07	$15.42	$15.46	$15.96	$15.85	$16.52	$15.21	$16.08	$14.92	$15.70
Median Annualized Earnings***	$25,650	$26,755	$25,905	$27,094	$26,569	$28,322	$28,196	$30,308	$25,679	$27,810	$24,413	$26,726

Source: Matches of Community and Technical College Administrative data with employment wage files.
**These figures apply to those with employment reported to ESD six to nine months after leaving program for all CTC Professional-Technical participants, and is 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 2011 dollars in order to account for inflation.*

The program results in the table above indicate that employment among all CTC Professional-Technical participants remained stable between 2004 and 2010, and declined in 2011 before increasing to 63 percent in 2012. In terms of earnings, all CTC Professional-Technical participants experienced increases from 2004 to 2010, after which earnings declined the following two study periods.



Source: Workforce Training Results 2004-12.



Source: Workforce Training Results 2004-12.

CTC Professional-Technical Participant Employment by Industry

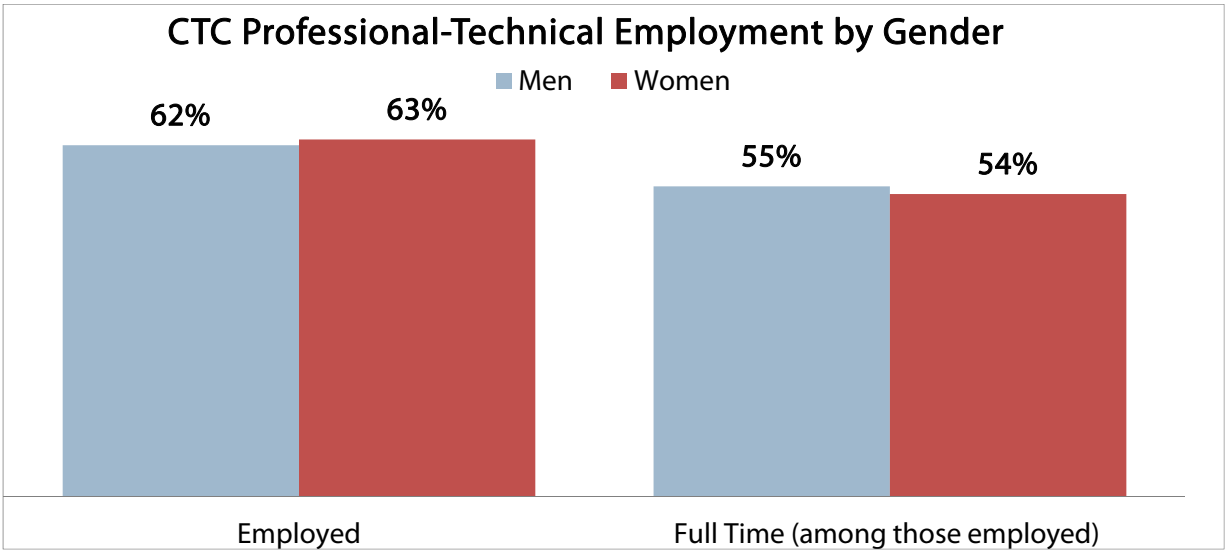
CTC Professional-Technical participant employment is concentrated in the services industry followed by retail trade, public administration, and manufacturing. Compared to employment in the prior report, this report identified higher percentages were employed in these top industries—services, retail trade, and public administration—while the percentages working in industries such as construction, manufacturing, natural resources and mining, transportation and wholesale trade decreased.

Industry Group	
57.3%	Services (See Breakout)
12.8%	Retail Trade (See Breakout)
9.5%	Public Administration
3.4%	Financial Services
3.3%	Construction
3.2%	Manufacturing
2.7%	Transportation and Warehousing and Utilities
2.6%	Wholesale Trade
1.6%	Aerospace
1.3%	Information
1.2%	Natural Resources and Mining
0.8%	Food & Beverage
0.3%	Correctional Facilities
Breakout of Services Industry	
24.7%	Health Care
8.3%	Administrative and Support and Waste Management and Remediation Services
6.2%	Education Services
5.5%	Social Assistance
4.8%	All Other Services
3.8%	Professional, Scientific, and Technical Services
2.2%	Arts, Entertainment, and Recreation
1.7%	Accommodation and Food Services
Breakout of Retail Trades Industry	
3.3%	Department and Warehouse Stores
2.4%	Food and Liquor Stores
1.6%	Vehicle Sales
1.4%	Clothing and Accessories Stores
1.0%	Miscellaneous Store Retailers
0.8%	Hardware, Garden and Farm Supplies
0.7%	Health Care and Beauty Products
0.7%	Books, Music and Hobbies Sales
0.5%	Gasoline Stations
0.3%	Home Furnishings Sales

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

Wages and Employment Results Vary by Population

Wage and employment results may vary by gender, race and ethnicity, and disability. However, female participants (63 percent) were just as likely to be employed in the third quarter after leaving their programs as male participants (62 percent). Women and men were also just as likely to be employed full time (54 percent and 55 percent).



Source: Matches with Community and Technical Colleges Administrative Data and Employment Security Department data.

Among employed participants, women's median annual earnings were $23,373, or 90 percent of what men earned ($26,052). Women's median hourly wages were $14.69, or 96 percent of men's hourly wages ($15.28) –a 2 percentage point increase from the prior year. Despite the narrowing disparity in earnings between men and women, an earnings gap persists. One possible reason is that women and men tend to enroll in different types of programs, which lead to jobs that pay different amounts.

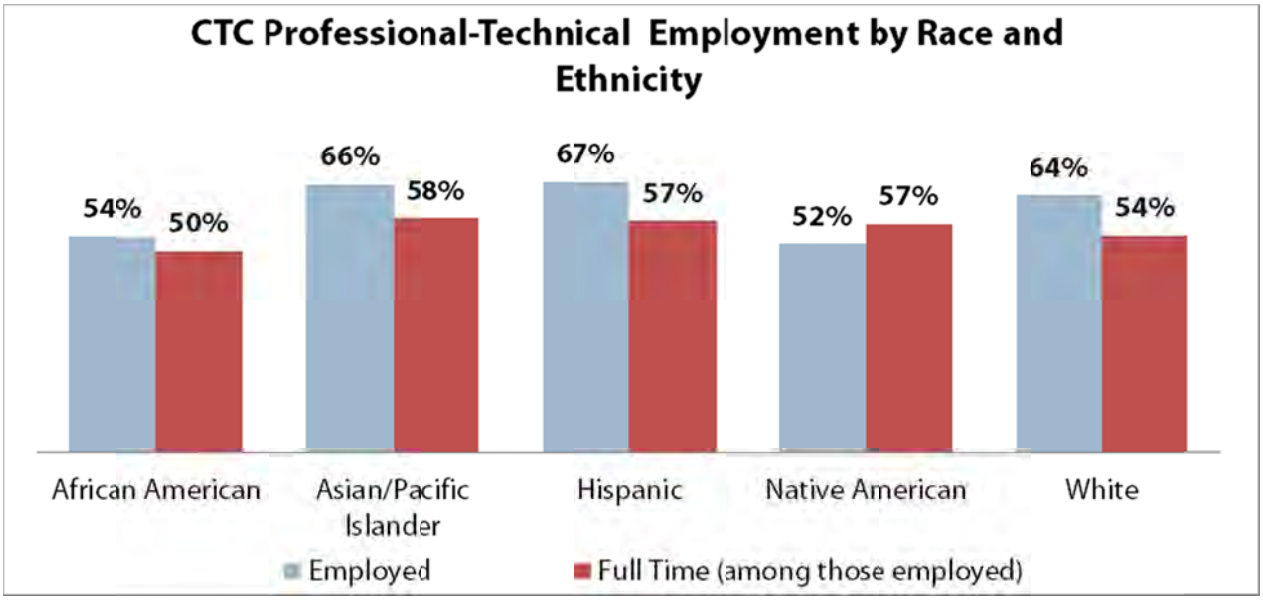
The service industry, for example, has a heavily female workforce. Some 71 percent of women CTC Professional-Technical participants obtained work in the service industry compared to 39 percent of men. Conversely, 10 percent of men obtained work in manufacturing while 3 percent of women obtained manufacturing jobs. Slightly more men than women work in retail trades. However, men were more likely to work in such jobs as vehicle sales while women were more likely to work in clothing and health care and beauty products stores.

Race and Ethnicity Play Roles

Native Americans (52 percent) were the least likely racial and ethnic group to be employed in the third quarter after leaving their programs. This compares to employment rates of 67 percent for Hispanics, 66 percent for Asian/Pacific Islanders, 64 percent for whites, and 54 percent for African Americans. Among those employed, the percent employed full time was slightly higher for Asian/Pacific Islanders (58 percent), Hispanics (57 percent) and Native Americans (57 percent), and slightly lower for the other groups (50 percent for African Americans and 54 percent for whites).

Of those employed the median hourly wages were $15.14 for whites, with African Americans ($14.12), Hispanics ($13.13) and Native Americans ($14.70) all earning on average less than whites. Asian/Pacific Islanders' median hourly wage, $15.61, was the highest among the racial and ethnic groups.

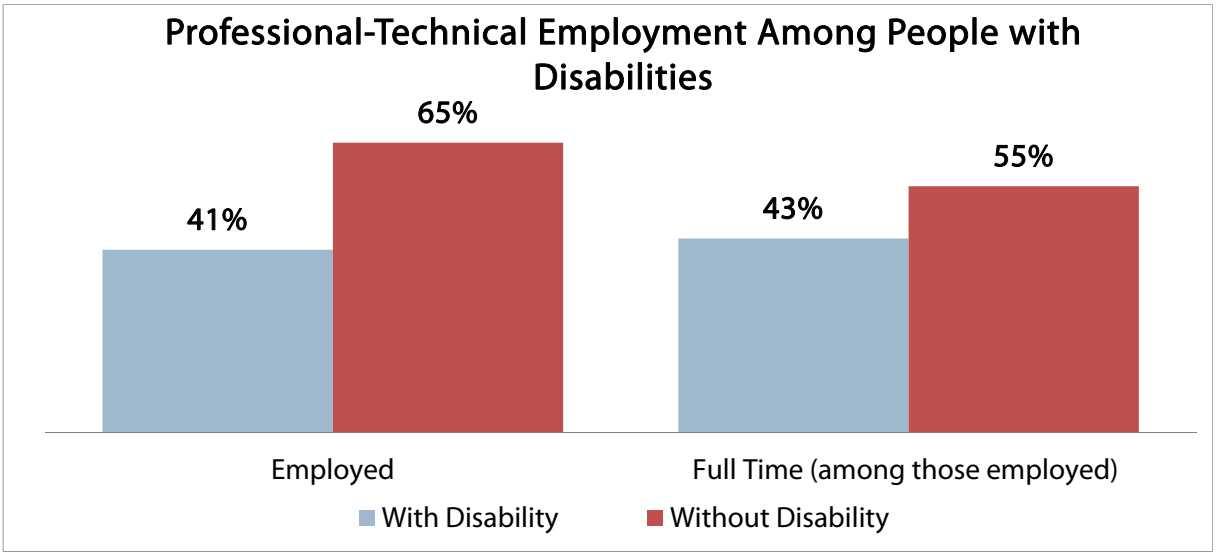
The same pattern among racial and ethnic groups was found when focusing on median annual earnings, with Asian/Pacific Islanders earning the most ($28,314). Earnings for whites were $24,463, while median annual earnings were lower for African Americans ($23,191), Hispanics ($22,258) and Native Americans ($22,034).



Source: Matches with Community and Technical Colleges Administrative Data and Employment Security Department data.

Disability Impacts Employment and Earnings

Employment outcomes and earnings also varied by disability status. College records indicate that 6 percent of the participants included in this study had a disability. These participants were less likely to have employment during the third quarter after exit (41 percent versus 65 percent of those without a disability). This is similar to the prior year, in which 42 percent of disabled participants were employed, compared to 62 percent of the non-disabled. Disabled participants were also less likely to work full time (43 percent versus 55 percent for non-disabled). Among those working, the median hourly wage rate of those with a disability ($12.74) was 85 percent of those without a disability ($15.06), and their median annual earnings ($17,305) were 70 percent of those with no reported disability ($24,723).



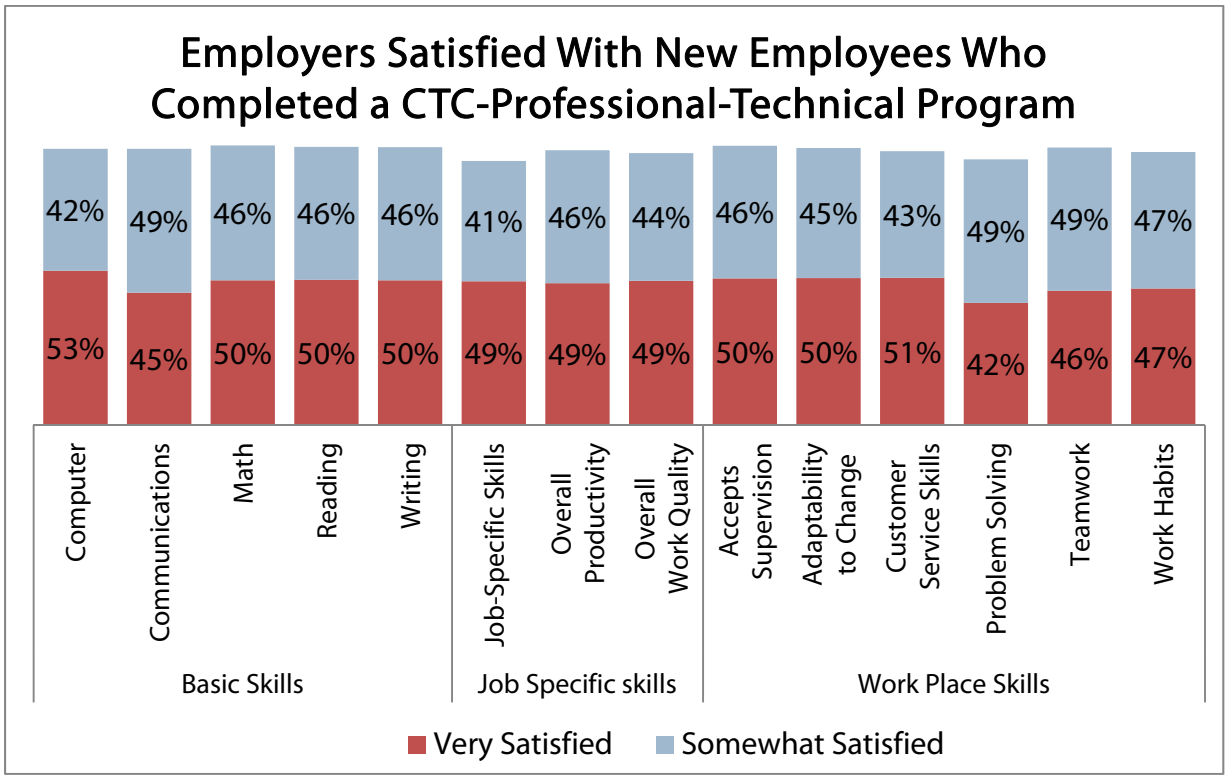
Source: Matches with Community and Technical Colleges Administrative Data and Employment Security Department data.

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 a CTC Professional-Technical program. Some 93 percent of employers said they were either "somewhat satisfied" or "very satisfied" with the overall work quality of these new employees.

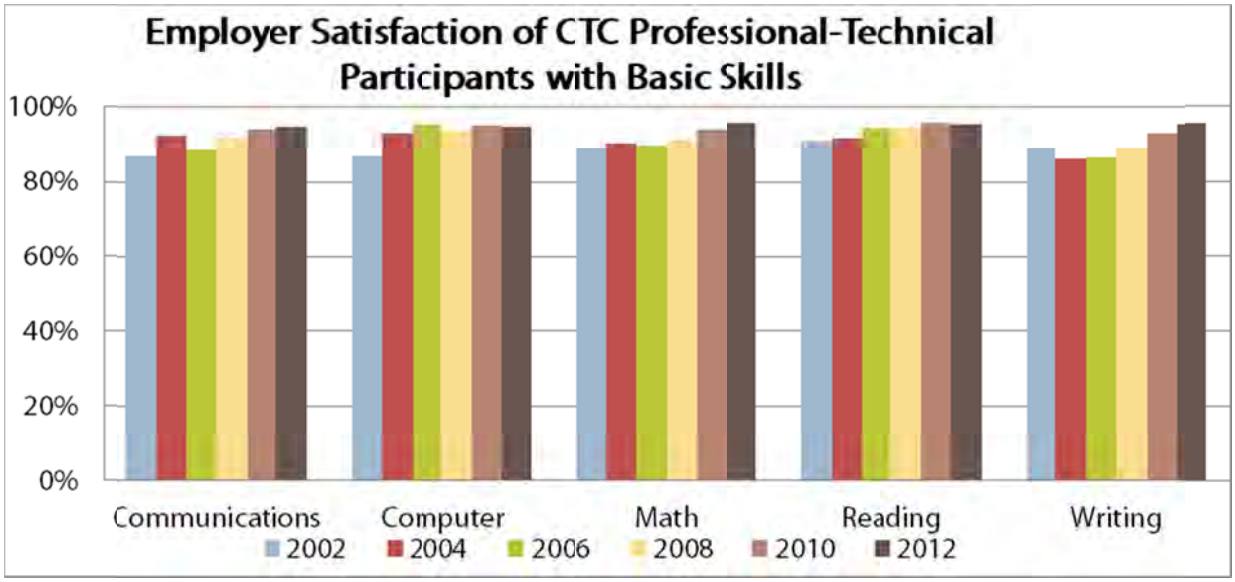
Employer satisfaction is broken down into three categories: Basic Skills, Job Skills and Work Place Skills. Basic skills refer to reading, writing, math, communication and computer skills. Job skills refer to skills specific to the job, as well as overall work quality and productivity. Work place skills 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 report highest overall satisfaction in the basic skills category with math. For job skills, employer's highest overall satisfaction was with productivity. Among work place skills, employers were most satisfied with participant's ability to accept supervision.

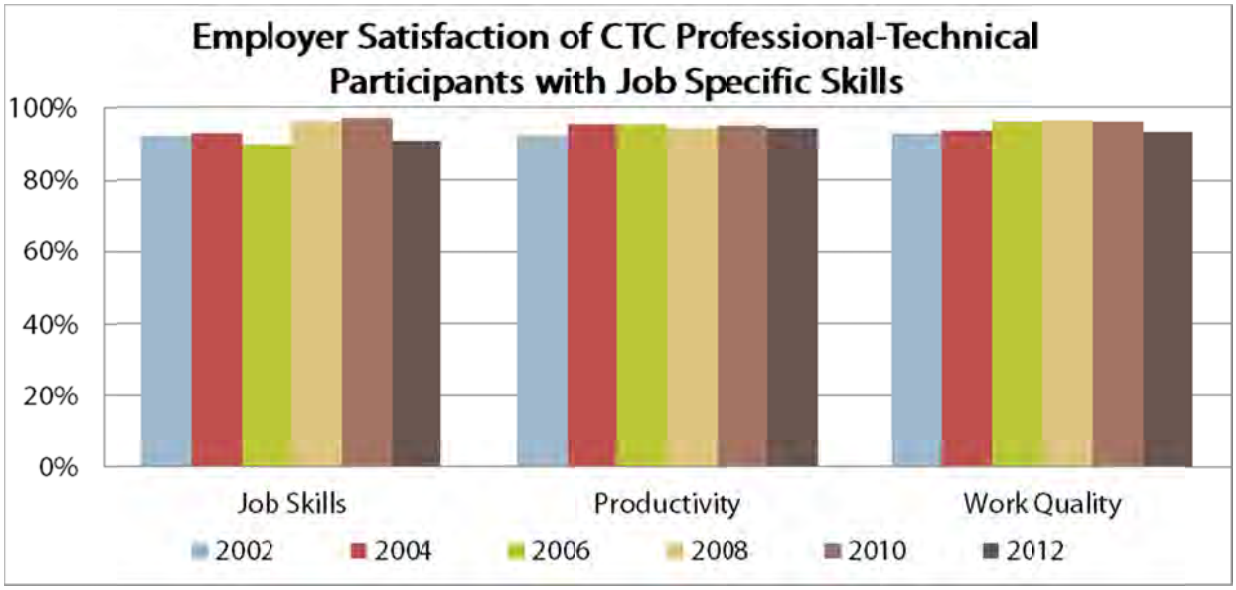


Source: Workforce Board Employer Survey conducted in 2012.

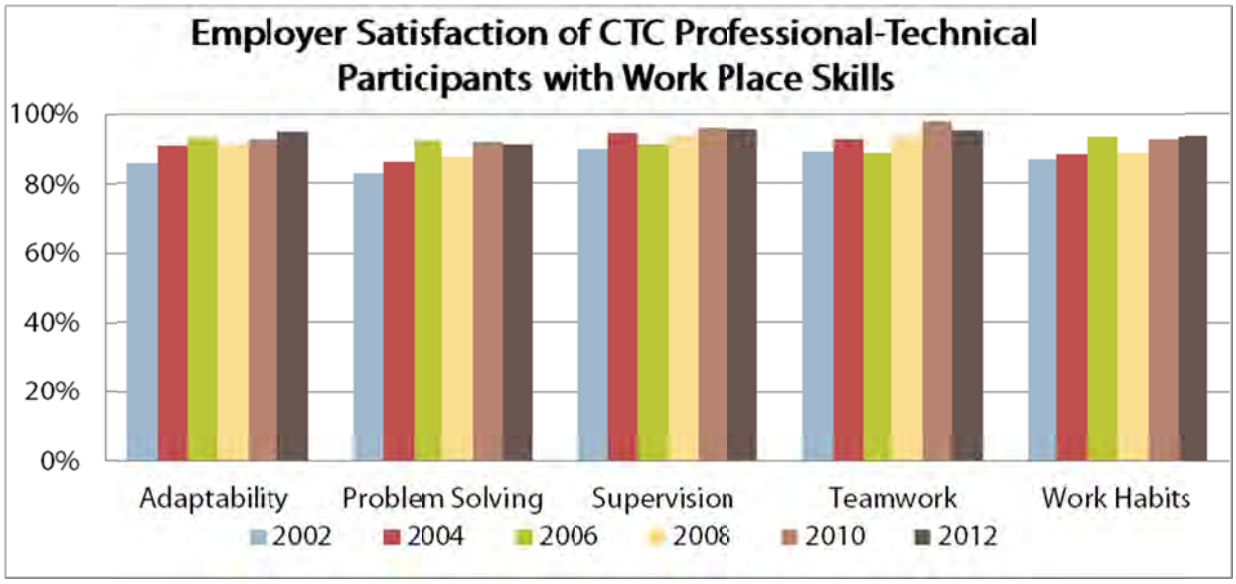
Overall, employer satisfaction has increased in most categories over the last decade, and has remained stable since the last survey. The following three charts show the overall satisfaction of employers with new employees who recently completed a CTC Professional-Technical program.



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



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



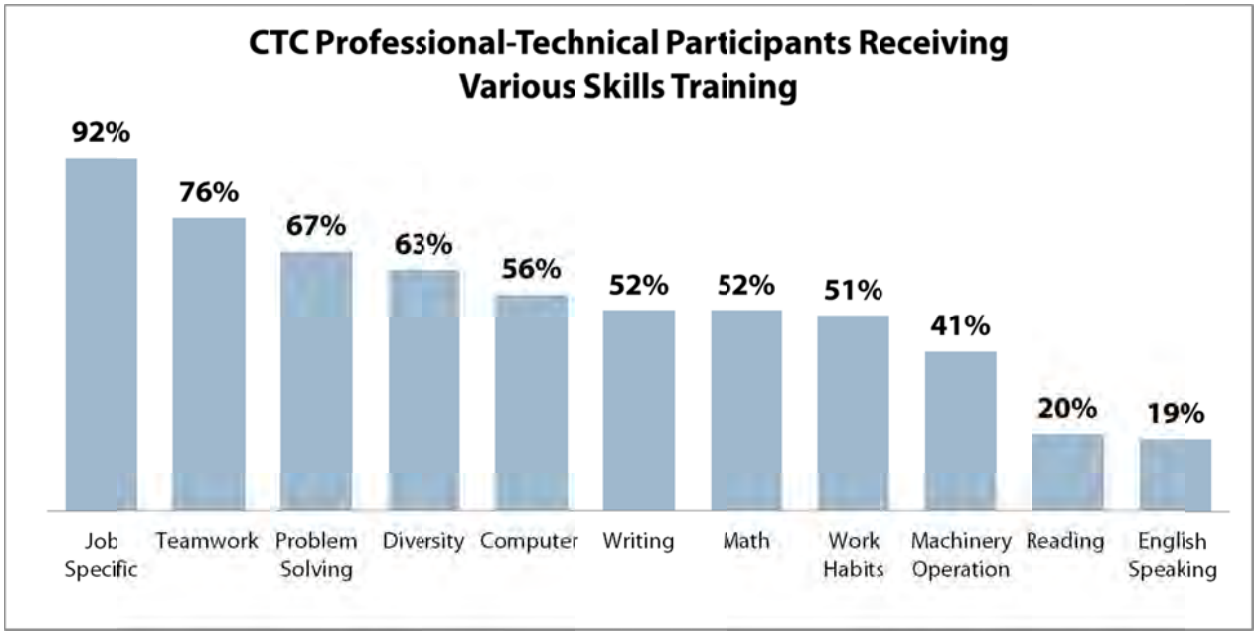
Source: Workforce Board's biennial Employer Surveys from 2002 through 2012.

Competency Gains

In 2011, the Workforce Board surveyed CTC Professional-Technical Education Participants 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 379 participants.

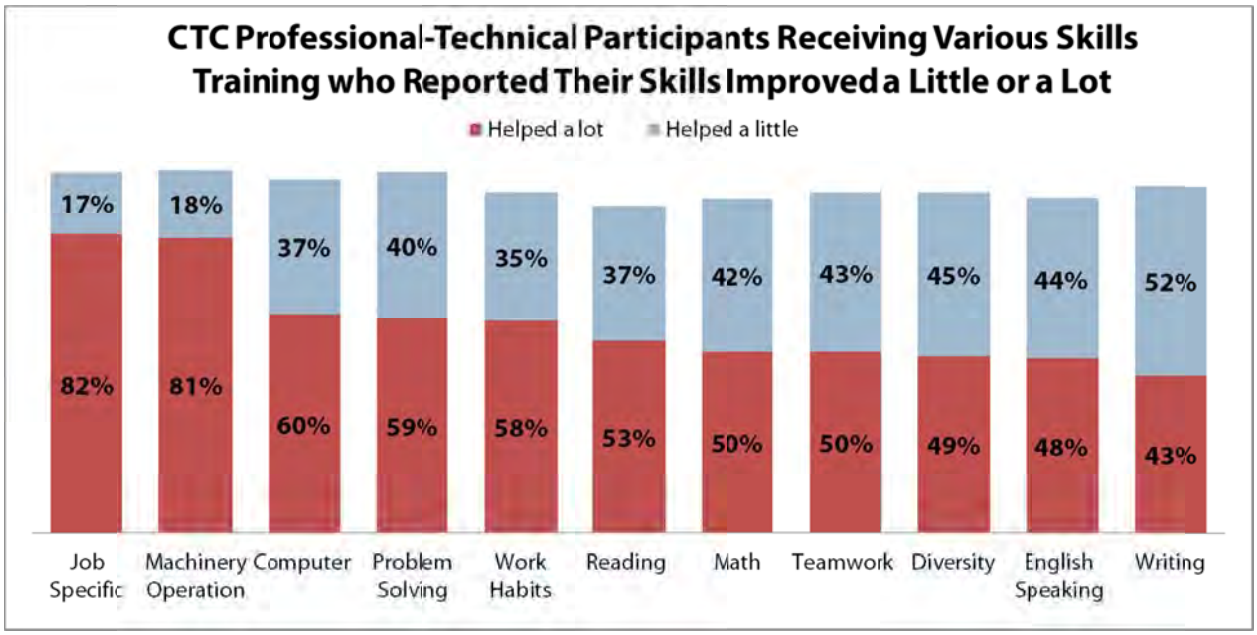
The primary goal of workforce training and education is to provide individuals with the skills and abilities required in the workplace. CTC Professional-Technical participants appear to agree: 86 percent of the participants surveyed for the 2011 Workforce Board Participant Survey indicated that they enrolled in college to learn skills for a new job, which is similar to participants in the previous study. At 87 percent, the number one reason participants decided to enroll was to either obtain or finish a degree or certificate.

In addition to learning job-specific skills, CTC Professional-Technical participants also receive other types of training. Over 76 percent received training in teamwork, and 67 percent received training in problem solving. In comparison to the 2008 study, participants from 2011 appear to have received a wider variety of skills training. The percentage of participants indicating they received training increased in the areas of machinery operation, diversity, teamwork and problem solving. However, the percentage of participants indicating they received training in English speaking dropped 5 percentage points.



Source: Workforce Board's Participant Satisfaction Survey 2011.

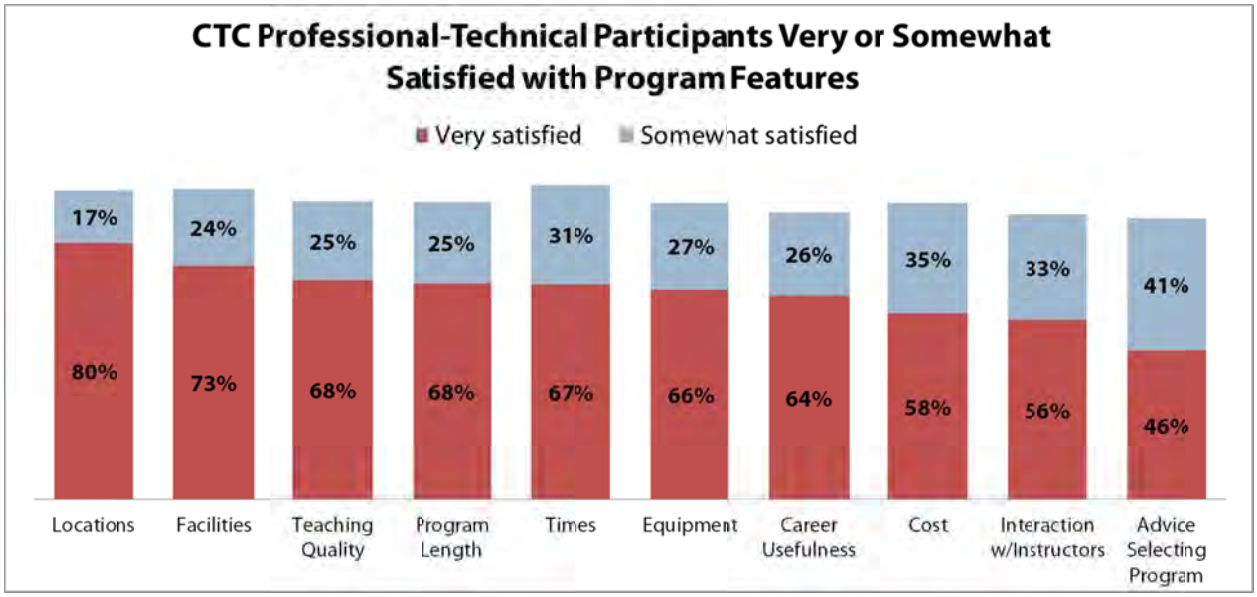
As in the previous study, most participants reported their skills improved as a result of training, and higher percentages reported substantial improvements in their job specific skills than in their workplace or basic skills. Compared with the study in 2008, slightly higher or similar percentages of participants this year reported their skills improved "a lot" across most skills training. However, participants indicating that the training improved their writing and diversity skills "a lot" decreased by around 7 percentage points.



Source: Workforce Board's Participant Satisfaction Survey 2011.

Participant Satisfaction

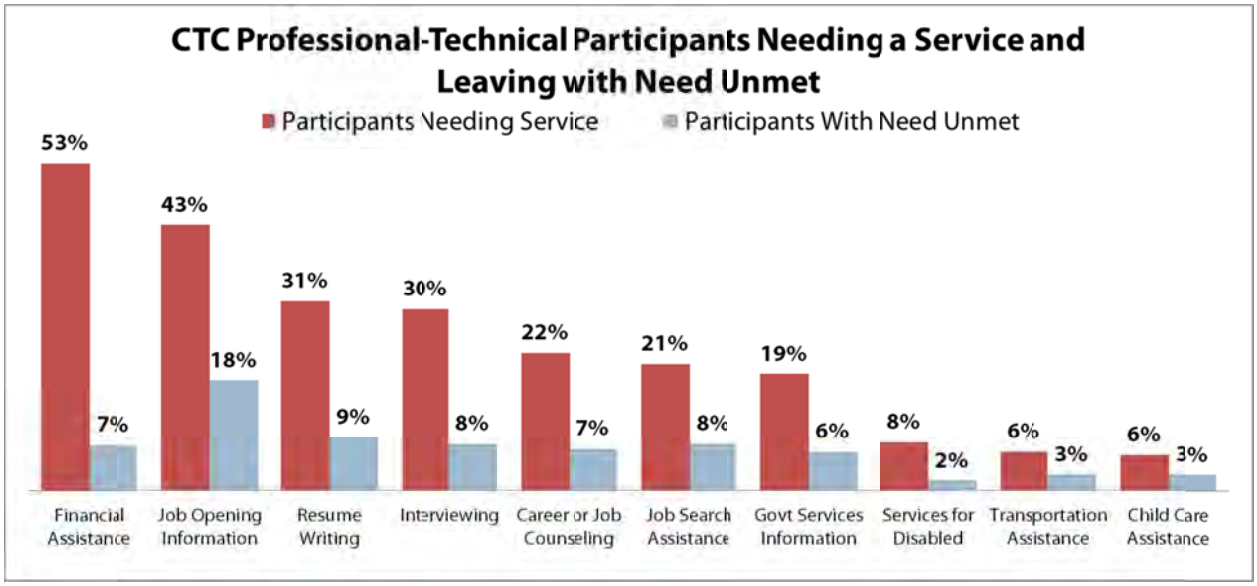
In the 2011 Workforce Board Participant Satisfaction Survey participants expressed high levels of satisfaction, similar to previous studies. Some 96 percent of participants reported they had met their educational objectives. And 91 percent reported they were "very satisfied" or "somewhat satisfied" with the program as a whole. Participants tended to be "very satisfied" with various features of their programs including location, facilities, quality of teaching, times offered, and usefulness of the program to their career. They were less satisfied with advice on selecting a training program.



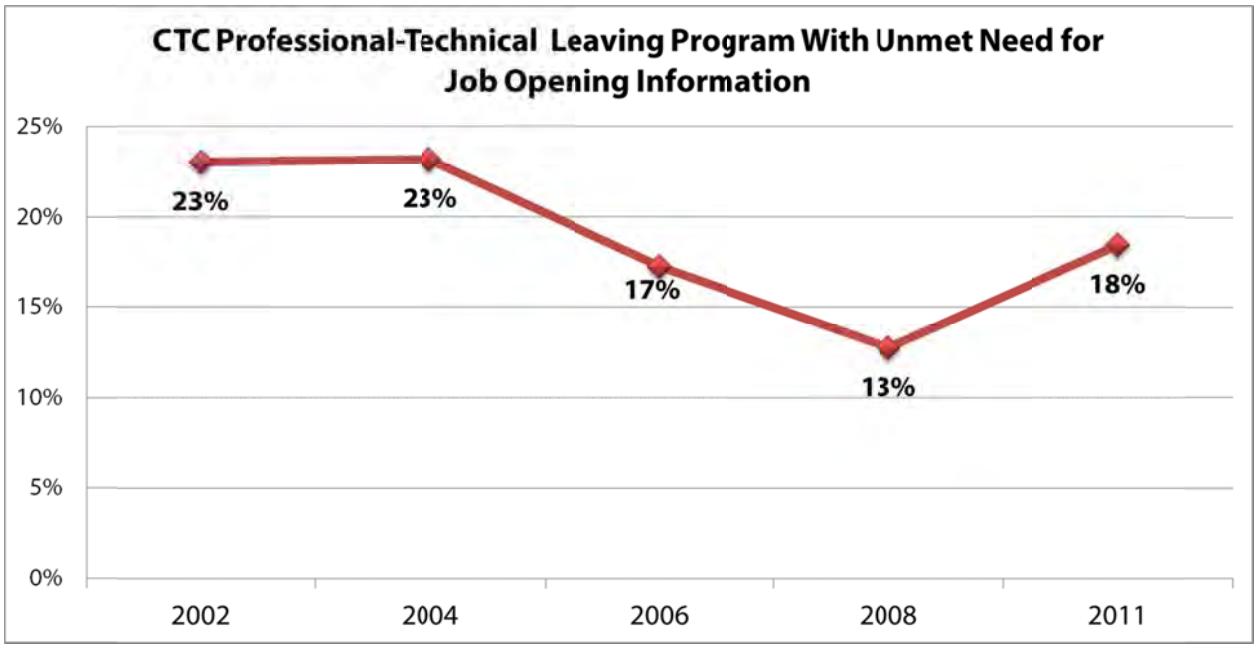
Source: Workforce Board's Participant Satisfaction Survey 2011.

Similar to previous studies, participants indicated financial assistance and information about job openings as the support services they most needed while enrolled. Fewer participants needed transportation or child care assistance. Participants tended to receive the support services they needed; the exception continues to be information about job openings. In 2011 an increased percentage of participants reported leaving the program with an unmet need in this area.[9]

[9] 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.

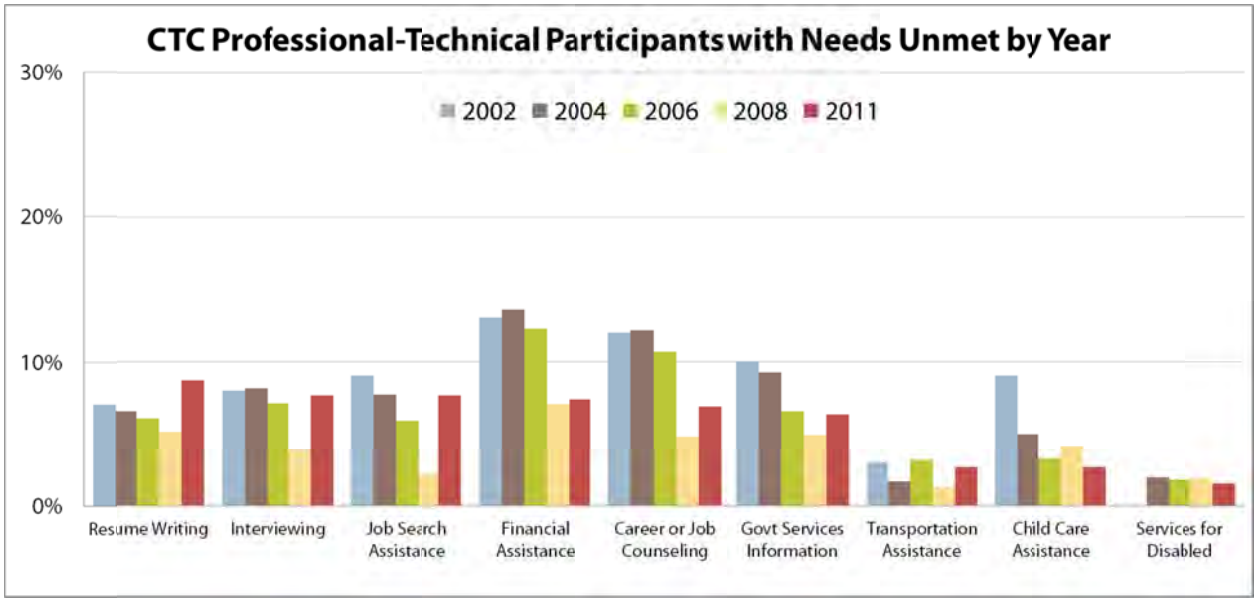


Source: Workforce Board's Participant Satisfaction Survey 2011.



Source: Workforce Board's Participant Satisfaction Survey 2011.

After a nearly a decade of declines in unmet needs, the percentage of participants reporting that they left the program with an unmet need has increased in nearly every category. The largest jumps in unmet need were in job opening information, interviewing and job search assistance, all of which increased by 6 percentage points. However, one program reported a decline in the percentage of participants indicating they left with an unmet need: child care assistance, which dropped slightly to 2.6 percent from 4.1 percent in 2008 and 9 percent in 2002.



Source: Workforce Board's Participant Satisfaction Surveys 2002-2011.

Relationship of Training to Employment

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.

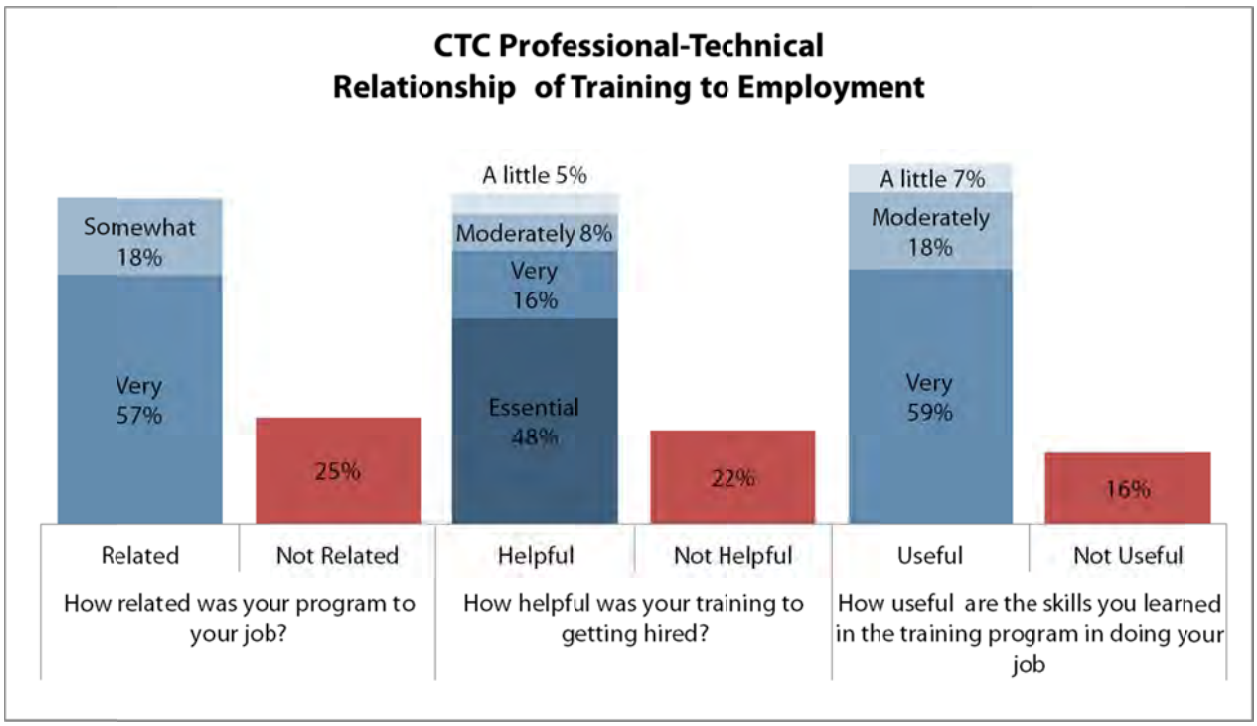
Among CTC-Professional-Technical participants employed seven to nine months after leaving a program, 57 percent said their training was "very related" to their job. A further 18 percent reported the training was "somewhat related" to their job. Only 25 percent said that the training was "not related at all" to their job. In 2008, employed participants reported slightly higher rates of training related to employment (79 percent reported training was related to their job, versus 75 percent this year).

Participants interviewed in 2011 also indicated the training was helpful to them in getting their job. Of those participants, 48 percent indicated their training was an "essential requirement," another 16 percent indicated it was "very important," and 8 percent reported it was "moderately important." Five percent said it was "a little helpful." Only 22 percent indicated their training was "not important at all" to getting their job.

Most participants said the skills they learned in their training program were useful in doing their job. Some 59 percent of participants indicated the skills were "very useful," 18 percent

said "moderately useful," and 7 percent "a little useful." The remaining 16 percent of participants who were employed indicated the skills were "not useful at all."

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 14 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.



Source: Workforce Board's Participant Satisfaction Survey 2011.

Net Impact – Did the Program Make a Difference in Participant Success?

Every four years the Workforce Training and Education Coordinating Board conducts a net impact analysis 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 a Community or Technical College Professional-Technical Education program were compared to

CTC Professional-Technical training has strong positive net impacts on employment, wages, hours worked, and earnings. Training substantially increases the lifetime earnings of participants.

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 CTC Professional-Technical 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.

Impact on Employment and Earnings: Participants vs. Control Group

Community and Technical College Professional-Technical Education	Short-term^	Long-term^
Net Employment Impact*	6.6 percentage points	10.1 percentage points
Net Hourly Wage Impact**	$3.15	$3.33
Net Quarterly Hours Impact	59.8	59.5
Net Annualized Earnings Impact**	$8,496	$9,045

^Short-term is 3 quarters after program exit; Long-term is average across 3 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 2011 dollars, represent the average difference between CTC Professional-Technical participants who got jobs and those in the control group who were employed.

As can be seen above, Community and Technical College Professional-Technical Education participants fared better in both the short- and long-term in employment, hourly wages, hours worked and annualized earnings than those with similar demographic characteristics who did not participate in a workforce program. In particular, those who exited a CTC Professional-Technical program in 2005-2006, experienced significant gains in employment when compared to the control group.

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.[10] Program costs include both direct program costs and support payments borne by taxpayers and the tuition and foregone earnings borne by program participants.

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. In order 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 2011 Q1 dollars to control for inflation. The benefits and costs presented here are based on impacts estimated for students 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 Participant in Community and Technical Colleges Professional-Technical Programs

Benefit/Cost	First 2.5 years		Lifetime (until 65)		Sum of Costs and Benefits
	Participant	Public	Participant	Public	
Benefits					
Earnings	$15,405	$0	$140,810	$0	
Fringe Benefits	$3,851	$0	$35,202	$0	
Taxes	-$3,181	$3,181	-$29,077	$29,077	
Transfers					
UI	-$996	$996	-$900	$900	
Costs					
Foregone net earnings	-$3,243	-$641	-$3,243	-$641	
Program costs	-$5,317	-$10,652	-$5,317	-$10,652	
Benefits	$15,079	$4,177	$146,035	$29,977	
Costs	-$8,560	-$11,293	-$8,560	-$11,293	
Total (Net)	**$6,519**	**-$7,116**	**$137,475**	**$18,684**	**$156,159**

Note: Benefits and costs are expressed in 2011 first quarter dollars.

For each student in CTC Professional-Technical Education, the public (taxpayer) cost is $10,652 over the length of their enrollment, and the student cost is $5,317 in tuition and $3,243 in foregone earnings while training. During the first two and one-half years after leaving college, the average student will gain $15,405 in earnings. During the course of working life to age 65, the average student will gain about $137,567 in net earnings (earnings minus foregone earnings) and about $35,202 in employee benefits. These are net gains

[10] Upjohn estimated the impact of the net change in earnings on social security, Medicare, federal income, and state sales taxes.

compared to the earnings of similar individuals who did not receive the training. Including program costs and the net impacts on taxes and unemployment insurance benefits, the total net benefit per participant is $137,475.

Projected participant net benefits to age 65 outweigh public costs invested in college training by a ratio of about $13 to 1, or $137,475to $10,652.

From the time of leaving training to age 65, the public is forecasted to gain about $29,077 per participant in net additional Social Security, Medicare, federal income, and state sales taxes and to save $900 in UI benefits—far greater than the direct cost of college training. The estimated lifetime net benefit to taxpayers is $18,684 per participant.

Projected taxpayer net benefits to age 65 outweigh public costs invested in college training by a ratio of $3 to 1, or $29,977 to $10,652.