

The Economic Benefits of Career and Technology Education in the State of Oklahoma

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Final Report

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Executive Summary

For more than 100 years, Oklahoma's system of career and technology education has provided specialized curriculum and education as well as training opportunities to ensure students have the knowledge and abilities to be valued members of the workforce. Career and technology education is provided by 397 PK-12 comprehensive school districts, 29 Technology Centers, 16 Skills Centers, and 32 adult education and family literacy (AEFL) providers.

The purpose of this study is to quantify the economic benefits of career and technology education in the State of Oklahoma by examining the projected earnings profile, increase in tax revenue, and return on investment for completers in fiscal year 2023. Additionally, the economic and fiscal impact of the expenditures necessary to provide career and technology education are quantified. This study focuses on Technology Centers, Skills Centers, and AEFL providers. The Oklahoma Department of Career and Technology Education will be able to utilize the findings in this study to communicate the value of career and technology education to students, the community, and other stakeholders.

Benefits of Career and Technology Education for Students

Technology Centers

Technology Centers provide specialized career training for full-time secondary and adult students and provide skills training through short-term courses. Technology Centers also serve business and industry stakeholders by encouraging business and job growth as well as providing education, skills, and training necessary for individuals. A total of 20,084 secondary students were enrolled in full-time programs at Technology Centers during the 2022-23 academic year. Therapeutic and support services programs were the largest program among secondary students, representing 12.0 percent of enrollment. Six other programs represented more than 5.0 percent of secondary student enrollment. These programs were engineering (9.6%), automotive service (7.0%), web/digital design and communication (7.0%), welding and metal fabrication (6.9%), personal care services (6.2%), and biomedical science/medicine/biotechnology (5.2%). Collectively, these seven programs represented more than half (53.9%) of secondary student enrollment during the 2022-23 academic year.

On average, the present value of cumulative earnings over five years is approximately \$149,900 for secondary students employed in a related field. This represents cumulative earnings over five years that exceed a high school graduate by \$51,900. The present value of cumulative earnings over 10 years is approximately \$289,300 for secondary students employed in a related field, which is more than \$86,100 more than cumulative earnings for a high school graduate. Collectively, secondary students employed in a related field are estimated to have cumulative earnings that exceed the earnings of a high school graduate by \$231.6 million over five years and \$373.6 million over 10 years.

Secondary students incur no tuition costs for enrollment in career and technology education in the State of Oklahoma. Additionally, secondary students would otherwise be attending high school full time, therefore, there are no opportunity costs in the form of lost wages. This means there is no quantifiable investment by secondary students to enroll in career and technology education. Therefore, the return on investment for secondary students is not able to be calculated.

The career and technology education pursued by secondary students leads to a higher earnings potential, on average, compared to individuals with at most a high school diploma or equivalent. The additional earnings potential generates fiscal impacts for state and local governments through increased income tax revenue resulting from higher earnings and increased sales tax revenue resulting from the spending of earnings. The net present value of the additional tax revenue generated by secondary

students in the 2022-23 academic year who are employed in a related field is \$11.7 million over five years and \$19.2 million over 10 years.

A total of 9,820 adult students were enrolled in full-time programs at Technology Centers during the 2022-23 academic year. Licensed practical nurse programs were the largest program among adult students, representing 15.9 percent of enrollment. Five other programs represented more than 5.0 percent of adult student enrollment. These programs were personal care services (7.9%), therapeutic and support services (7.5%), network systems/information support (5.7%), aerospace maintenance (5.3%), and transportation operations (5.1%). Collectively, these six programs represented nearly half (47.4%) of adult student enrollment during the 2022-23 academic year.

On average, the present value of cumulative earnings over five years is approximately \$190,500 for adult students employed in a related field. This represents cumulative earnings over five years that exceed a high school graduate by more than \$68,600. The present value of cumulative earnings over 10 years is approximately \$362,300 for adult students employed in a related field, which is \$115,000 more than cumulative earnings for a high school graduate. Collectively, adult students employed in a related field are estimated to have cumulative earnings that exceed the earnings of a high school graduate by \$387.3 million over five years and \$674.2 million over 10 years.

Full-time programs at Technology Centers averaged 1,041 hours, which is approximately two years assuming 525 hours of instruction per year. The average in-district tuition for full-time programs at Technology Centers was \$2,566, while the average financial aid awarded to adult students was \$2,545. The return on investment of career and technology education incorporates the benefits in the form of additional earnings and financial aid awarded as well as the costs in the form of tuition and opportunity costs. On average, career and technology education for adult students in Oklahoma has a return on investment of 1,382.1 percent after five years and 2,362.4 percent after 10 years.

The career and technology education that adult students receive leads to a higher earnings potential, on average, compared to individuals with at most a high school diploma or equivalent. The net present value of the additional tax revenue generated by adult students in the 2022-23 academic year who were employed in a related field is \$21.2 million over five years and \$36.6 million over 10 years.

Through their workforce and economic development (WED) programs, Technology Centers provide safety training, industry-specific training, and adult and career development training. During the 2022-23 academic year, Technology Centers had 309,399 enrollments in WED programs. More than half (53.7%) of enrollments were in safety-related programs. Industry programs represented 32.5 percent of enrollments, while adult and career development programs represented 13.8 percent of enrollments in the 2022-23 academic year.

Because of their customized nature, WED programs are varied in their length of time and intended outcome. This variability, in combination with data limitations, means the Economics Center is unable to quantify a monetary benefit associated with the WED programs offered by Technology Centers. However, prior research indicates that investments in health and safety training for workers reduces workplace injuries and illnesses, resulting in positive returns.¹

¹ (U.S. Occupational Safety and Health Administration 2012); (Liberty Mutual Insurance Group 2005) as quoted in (National Safety Council 2013); (Huang, et al. 2009)

Skills Centers

Skills Centers manage career and technology education full-time programs and short-term training opportunities for incarcerated inmates and juveniles in Oklahoma. Additionally, Skills Centers are responsible for dropout recovery initiatives across the State of Oklahoma. A total of 1,026 incarcerated individuals were enrolled in programs at Skills Centers during fiscal year 2023. Of the incarcerated individuals enrolled in programs at Skills Centers during fiscal year 2023, 586 inmates were enrolled in programs that prepared them for careers, while the remaining 440 inmates were enrolled in general career readiness programs. Of those enrolled in specific career programs, 472 inmates (80.5%) completed their program. Approximately 89.6 percent of inmates who completed their program had an unknown status during the follow-up period. Of the 49 completers with a known follow-up status, 33 completers were employed in a related field and nine completers were employed in an unrelated field during the follow-up period.

On average, the present value of cumulative earnings over five years is approximately \$129,400 for Skills Center completers who are employed in a related field. This represents cumulative earnings over five years that exceed a high school graduate who had been previously incarcerated by nearly \$41,000. The present value of cumulative earnings over 10 years is approximately \$244,600 for Skills Center completers who were employed in a related field, which is nearly \$77,800 more than cumulative earnings for a high school graduate who had been previously incarcerated. Collectively, Skills Center completers who are employed in a related field are estimated to have cumulative earnings that exceed the earnings of a high school graduate who had been previously incarcerated by \$3.3 million over five years and \$6.2 million over 10 years.

The career and technology education that Skills Center completers receive leads to a higher earnings potential for those employed in related fields, on average, compared to formerly incarcerated individuals with, at most, a high school diploma or equivalent. The net present value of the additional tax revenue generated by Skills Center completers in fiscal year 2023 who were employed in a related field is \$151,000 over five years and \$297,700 over 10 years.

While the increased tax revenue associated with released inmates employed in a related field is marginal, there are substantial benefits to the State of Oklahoma from the reduced recidivism associated with the career and technology education provided by Skills Centers. Based on the difference in the estimated recidivism rates statewide in Oklahoma and among Skills Center completers in fiscal year 2023, it is estimated that 32 individuals will avoid reincarceration as a result of completing career and technology education at Skills Center. Over 10 years, the 32 individuals who will avoid reincarceration as a result of completing career and technology education at Skills Center in fiscal year 2023 are estimated to generate cost savings that total \$8.1 million, of which \$1.7 million are incarceration costs and \$6.4 million are crime costs.

Adult Education and Family Literacy Providers

AEFL programs provide adults with literacy education, employment knowledge and skills, and skills necessary to improve their economic opportunities. AEFL programs offer classes in high school equivalency preparation, English as a second language, citizenship, English literacy and civics education, and correctional/institutional education.

In fiscal year 2023, 9,865 students were enrolled in AEFL programs across the State of Oklahoma and 918 high school equivalencies were earned. The economic benefit of the high school equivalencies earned represents the additional earnings potential for these students relative to individuals with less

than a high school diploma.² It is estimated that an additional 107 students are employed as a result of receiving a high school equivalency. Based on the difference in median annual earnings by educational attainment, the additional students who are employed as a result of receiving a high school equivalency will earn an additional \$6.5 million in earnings per year.

The high school equivalencies earned lead to a higher earnings potential, on average, compared to individuals with less than a high school diploma. The additional tax revenue generated by students who earned a high school equivalency in fiscal year 2023 is approximately \$438,200 per year.

Benefits of Expenditures to Provide Education

Technology Centers, Skills Centers, and AEFL programs incur expenditures related to operations and capital improvements in order to provide career and technology education. In fiscal year 2023, the operations and capital expenditures of Technology Centers, Skills Centers, and AEFL programs directly generated \$530.0 million in economic output, which resulted in an additional \$430.0 million in indirect economic output. Technology Centers, Skills Centers, and AEFL programs directly supported 4,803 jobs with \$295.1 million in wages and indirectly supported an additional 3,851 jobs with \$161.1 million in wages.³ In total, the operations and capital expenditures of Technology Centers, Skills Centers, and AEFL programs generated \$960.0 million in economic output and supported 8,654 jobs with \$456.2 million in wages in the State of Oklahoma in fiscal year 2023.

Additionally, Technology Centers, Skills Centers, and AEFL programs created a total of \$29.3 million in income and sales tax revenue in fiscal year 2023 as a result of their operations and capital expenditures. The wages supported by the operations and capital expenditures generated a total of \$18.5 million in income tax revenue for the State of Oklahoma in fiscal year 2023. Additionally, the spending of the wages resulted in approximately \$10.9 million in sales tax revenue, of which the State of Oklahoma received \$5.8 million, cities in Oklahoma received \$4.4 million, and counties in Oklahoma received \$701,600.

Leveraging of State Funding

To contextualize the benefits of career and technology education as well as adult and family literacy education in the State of Oklahoma, the state and local investment in these educational programs are compared to the returns to the State of Oklahoma. The State of Oklahoma appropriated \$109.6 million in funding to Technology Centers, Skills Centers, and AEFL programs in fiscal year 2023, representing approximately 14.2 percent of revenue.

In fiscal year 2023, the operations and capital expenditures of Technology Centers, Skills Centers, and AEFL programs generated a total of \$960.0 million in economic output in the State of Oklahoma in fiscal year 2023. This means that every dollar in state funding resulted in \$8.76 in economic output in the State of Oklahoma in fiscal year 2023 as a result of the expenditures to provide career and technology education as well as adult and family literacy education.

The career and technology education as well as adult and family literacy education provided to students in the 2022-23 academic year/2023 fiscal year are estimated to generate earnings that exceed that of the comparison group by an average of \$111.9 million per year. Overall, this means that every dollar in state funding is estimated to generate \$1.02 in earnings for students per year. Specifically, every dollar in state funding is estimated to generate \$1.05 in earnings for Technology Center students, \$0.07 in

² The economic benefits described reflect overall characteristics by educational attainment among individuals aged 25 years and over.

³ The jobs supported by AEFL programs do not include the instructional staff of the education providers due to data limitations.

earnings for Skills Center completers, and \$9.95 in earnings for AEFL students. However, the benefits to students have a compounding effect by continuing to generate additional benefits after the completion of career and technology education. Specifically, every dollar in state funding for Technology Centers is estimated to result in \$10.48 in earnings for secondary and adult students over 10 years.

Introduction

For more than 100 years, Oklahoma’s system of career and technology education has provided specialized curriculum and education as well as training opportunities to ensure students have the knowledge and abilities to be valued members of the workforce. Career and technology education is provided by PK-12 comprehensive school districts, Technology Centers, Skills Centers, and adult education and family literacy (AEFL) providers. Across all delivery arms, Oklahoma’s career and technology education system had approximately 490,000 enrollments in fiscal year 2023.⁴

With a hands-on learning environment, PK-12 comprehensive school districts provide students in grades six through 12 with one period of career and technology education programs. These programs are designed for students to increase technological proficiency, develop entrepreneurial skills, and gain practical experience. Furthermore, students in grades six through 10 are able to explore potential careers. Programs are offered in seven content areas including agriculture; business and information technology; family and consumer sciences; health careers; marketing; science, technology, engineering, and mathematics; and trade and industrial education. There are 397 PK-12 comprehensive school districts in the State of Oklahoma.

Technology Centers provide specialized career training for full-time secondary and adult students and provide skills training through short-term courses. Technology Centers also serve business and industry stakeholders by encouraging business and job growth as well as providing education, skills, and training necessary for individuals. There are 29 Technology Centers operating on more than 60 campuses across the State of Oklahoma.

Skills Centers manage “the delivery of career and technology education to inmates under the supervision of the Oklahoma Department of Corrections and juveniles under the supervision of the Oklahoma Office of Juvenile Affairs” and are responsible for dropout recovery initiatives across the State of Oklahoma.⁵ Full-time programs and short-term training opportunities are offered at 16 Skills Centers within facilities operated by the Oklahoma Department of Corrections.

AEFL programs ensure that “Oklahomans have the opportunity to be fully participating workers, parents and citizens” by providing adults with literacy education, employment knowledge and skills, and skills necessary to improve their economic opportunities.⁶ AEFL programs offer classes in high school equivalency preparation, English as a second language, citizenship, English literacy and civics education, and correctional/institutional education. There are 32 AEFL providers with more than 100 sites across the State of Oklahoma including 19 Department of Corrections sites.

The purpose of this study is to quantify the economic benefits of career and technology education in the State of Oklahoma by examining the projected earnings profile, increase in tax revenue, and return on investment for completers in fiscal year 2023. Additionally, the economic and fiscal impact of the expenditures necessary to provide career and technology education are quantified. This study focuses on Technology Centers, Skills Centers, and AEFL providers. The Oklahoma Department of Career and Technology Education will be able to utilize the findings in this study to communicate the value of career and technology education to students, the community, and other stakeholders.

⁴ (Oklahoma Department of Career and Technology Education 2023)

⁵ (Oklahoma Department of Career and Technology Education 2024)

⁶ (Oklahoma Department of Career and Technology Education 2022)

Literature

Vocational education in the United States can be traced back to the 19th century with the establishment of the first manual training school in 1879 in St. Louis, Missouri. Vocational education gained momentum with the passage of the Smith-Hughes Act in 1917, which was the first federal legislation to provide funding for vocational education. Over the decades, vocational education has evolved with societal and economic changes to prepare students for success in a diverse range of career pathways.

The Carl D. Perkins Vocational and Applied Technology Education Act Amendments of 1990 marked the start of modern vocational education by focusing on alignment between secondary and postsecondary education, academic integration, and business partnerships.⁷ In the 2000s, a terminology shift from “vocational education” to “career technical education (CTE)” occurred, reflecting a broader approach to integrating academic and technical content that not only prepares students for specific occupations but also emphasizes college and career readiness.

Modern CTE programs focus on providing students with hands-on learning experiences, fostering 21st-century skills, and aligning curriculum with industry needs. The emphasis is on preparing students for both college and careers, with public-private partnerships playing a crucial role in ensuring the relevance of CTE to the workforce. Additionally, advancements in technology have become integral to CTE classrooms by incorporating state-of-the-art equipment and tools relevant to various industries. This section will highlight an overview of the extensive research on the benefits of CTE on educational and labor market outcomes, focusing on high school students and incarcerated individuals.

High School Students

Sneed (2006) conducted a lifetime earnings analysis of secondary and adult students completing full-time CTE programs at technology centers in Oklahoma in fiscal year 2002. Lifetime earnings comprised the entry wage gain, earned income over the work life, non-earned income over the work life, and retirement earnings. Specifically, the earned income gains represent the entry wage gain and the earned income over the work life, discounted to the present value using a rate of 3.0 percent. Secondary students completing full-time CTE programs at technology centers were estimated to have earned income gains that total \$119,800 for the duration of their work life. The earned income gains for adult students were estimated to total \$113,900 for the duration of their work life, assuming an average age of 30 years at the completion of CTE. Based on the distribution of completers in fiscal year 2002, secondary and adult CTE completers were estimated to have earned income gains that collectively total \$1.4 billion.

Based on a 15-year random assignment study by MDRC, Kemple and Willner (2008) evaluated labor market and postsecondary educational outcomes for a cohort of 1,400 students with an offer to attend urban Career Academies. Career Academies are small learning environments that combine academic and CTE curriculum for approximately 150 to 200 high school students. Approximately 85.0 percent of participating students were Hispanic or African American. Over the eight-year follow-up period, Career Academy students experienced earnings that were 11.0 percent higher per year than students who did not receive an offer to attend a Career Academy. These effects were concentrated on male students of Career Academies, who experienced earnings that were 17.0 percent higher per year than students who did not receive an offer to attend a Career Academy. Specifically, Career Academy students experienced earnings gains of \$16,704 over the eight-year follow-up period, with males experiencing large earnings gains of \$29,848. There was no evidence that Career Academies improved postsecondary educational outcomes relative to students who did not receive an offer to attend a Career Academy.

⁷ (Association for Career & Technical Education 2021)

Utilizing the same 15-year random assignment study as Kemple and Willner, Page (2012) built upon prior research on the effects of an offer to attend a Career Academy by evaluating the casual effect of enrolling in a Career Academy. The analysis focuses on a subset of Career Academies with programs spanning 10th through 12th grade. For male students who were enrolled for all three years, the estimated casual effect on average monthly earnings was an increase of \$588 during the last four years of the follow-up period. These results suggest a larger effect on earnings for males than those found in Kemple and Willner, which equated to an increase in average monthly earnings of \$311.

Updating a prior analysis from 2006, Snead (2013) estimated that secondary and adult CTE completers were estimated to have earned income gains that collectively total \$2.3 billion in fiscal year 2011, assuming a discount rate of 3.0 percent. Secondary students completing CTE at technology centers were estimated to have earned income gains that total \$148,200 for the duration of their work life. Assuming an average age of 29 years at the completion of CTE, the earned income gains for adult students were estimated to total \$139,300 for the duration of their work life.

Utilizing data on more than 100,000 eighth grade through high school students in Arkansas, Dougherty (2016) explored the education and employment outcomes among students with greater exposure to CTE. On average, high school students in Arkansas took an average of 4.9 CTE courses. One additional CTE course above the average was associated with a 3.2 percentage point increase in the probability of graduating from high school, a 0.6 percentage point increase in the probability of enrolling in a two-year college, a 1.5 percentage point increase in the probability of being employed the year after graduation, and 3.0 percent increase (or \$28) in expected quarterly wages the year after graduation. Nearly 30.0 percent of high school students in Arkansas chose to concentrate on a CTE field, defined as taking three or more courses in a related program of study. Compared to non-concentrators, high school students who concentrate in a CTE field were 21.0 percentage points more likely to graduate from high school, 1.3 percentage points more likely to be enrolled in a two-year college, and 0.9 percentage points more likely to be employed the year after graduation, with males and lower-income students experiencing larger benefits.

Dougherty (2018) evaluated the casual impact of CTE provided by regional vocational and technical high schools (RVTSS) in Massachusetts on education outcomes for approximately 500,000 students in first through 12th grade between 2001 and 2015. Students in RVTSS alternate weekly between full-time academic coursework and full-time CTE work, meaning that all students participate in CTE. Participation in CTE through RVTSS is associated with a higher probability of persisting to 11th grade, graduating within four years, completing an industry-recognized certificate, and passing both exams required to graduate. Specifically, the probability of graduating high school within four years increases by 7.0 to 10.0 percentage points.

Gottfried and Plasman (2018) utilized data from the Educational Longitudinal Study of 2002, which followed a nationally representative cohort of students enrolled in 10th grade, to evaluate the role of CTE on high school outcomes and college-going behaviors. Overall, one additional CTE unit completed in high school decreased the probability of dropping out of high school by 1.2 percent and increased the probability of completing high school within four years by 1.6 percent. There were no significant effects of CTE completion in 9th grade on high school outcomes. One additional CTE unit completed in 10th grade had no significant effect on dropping out of high school but increased the probability of completing high school within four years by 0.7 percent. The probability of dropping out of high school decreased by 1.6 percent per additional CTE unit completed in 11th or 12th grade. Similarly, the probability of completing high school within four years increased by 1.5 percent per additional CTE unit completed in 11th grade and increased by 1.6 percent per additional CTE unit completed in 12th grade. Additionally, there were

no significant effects of CTE completion on enrolling in postsecondary education immediately after high school.

Utilizing data on high school students in Nebraska and South Dakota, Brodersen, et al. (2021) evaluated the educational outcomes of CTE concentrators, defined as a student who takes a series of at least two CTE courses aligned to a specific career cluster. Compared to non-CTE concentrators, CTE concentrators were 7.0 percentage points more likely to graduate high school on time, were 10.0 percentage points more likely to enroll in postsecondary education within two years of expected graduation, and were 2.0 percentage points more likely to earn a postsecondary award within two years of expected graduation. Within five years of expected graduation, CTE concentrators were 8.0 percentage points more likely to enroll in postsecondary education and were 3.0 percentage points more likely to earn a postsecondary award compared to non-CTE concentrators. The highest postsecondary enrollment rates were observed for CTE concentrators in finance, marketing, health sciences, and government and public administration career clusters.

Utilizing data from Massachusetts, Ecton and Dougherty (2023) evaluated the outcomes associated with CTE concentration in high school for students expected to graduate between 2009 and 2017. CTE concentration is defined as enrolling in CTE courses for at least two years. Overall, CTE concentration was not associated with any statistically significant impacts on attending college. However, CTE concentration increased the likelihood of attending college by 3.8 percentage points for female students, 8.9 percentage points for Black and Latino students, and 5.4 percentage points for students with free or reduced-price lunch compared to non-CTE concentrators. CTE concentration was also associated with an overall increase of \$3,359 in annual earnings seven years after expected high school graduation. The impacts varied by student population with CTE concentrators who did not attend college in the follow-up period experiencing the largest increase in annual earnings of \$6,053 seven years after expected high school graduation followed by male students (\$4,584), students with disabilities (\$4,011), students with free or reduced-price lunch (\$3,528), Black or Latino students (\$3,496), and female students (\$1,844). Additionally, CTE concentrators were 7.8 percentage points less likely to be disengaged from the workforce and postsecondary education as well as 8.4 percentage points more likely to avoid poverty seven years after expected high school graduation compared to non-CTE concentrators.

Lindsay, et al. (2024) conducted a meta-analysis of 28 research studies examining the casual effects of CTE on students' secondary, postsecondary, and labor market outcomes. Overall, CTE had significant and positive impacts for six of the 13 outcome measures analyzed. CTE positively impacted high school academic achievement, employability skills, college readiness, the likelihood of graduating from high school, the likelihood of enrolling in a two-year college, and the likelihood of employment after high school.

Incarcerated Individuals

Gordon and Weldon (2003) evaluated the impact of correctional education on recidivism rates for adult inmates at the Huttonsville Correctional Center in West Virginia. During 1999 and 2000, 300 inmates received vocational education training and 50 inmates completed their GED. Of the 169 inmates that received vocational education training and were released, 11 inmates violated their parole. Of the 24 inmates that completed their GED and were released, two inmates violated their parole. This indicates that the recidivism rate among inmates that received vocational education training and GED training was approximately 8.8 percent and 6.7 percent, respectively. In comparison, inmates who did not participate in vocational education training had a recidivism rate of 26.3 percent.

Ely (2012) evaluated the impact of participation in CTE programs offered in Oklahoma prisons on recidivism rates. Between 2003 and 2008, 2,772 inmates participated in CTE programs prior to their

release from prison. Within three years of their release, 651 offenders returned to prison resulting in a recidivism rate of 23.5 percent. Specifically, offenders between the ages of 18 and 29 years had a recidivism rate of 36.0 percent, while offenders 30 years of age and older had a recidivism rate of 20.7 percent. Additionally, male offenders had a higher recidivism rate (24.6%) compared to female offenders (13.3%).

Davis, et al. (2013) conducted a meta-analysis of research studies released between 1980 and 2011 that examined the impact of correctional education programs on recidivism and post-release employment for incarcerated adults. Correctional education for incarcerated adults is defined as basic education, high school equivalency education, vocational, or postsecondary education. On average, adult inmates participating in correctional education programs had 43 percent lower odds of recidivating which translates into a 13-percentage point lower risk of recidivating. Additionally, adult inmates participating in correction education had 13 percent higher odds of post-release employment compared to adult inmates who did not participate in correctional education programs, with vocational education resulting in 28 percent higher odds of post-release employment.

Duwe and Clark (2014) evaluated the impact of earning a secondary or postsecondary degree while incarcerated on recidivism and post-release employment for incarcerated adults released from Minnesota prisons between 2007 and 2008. Relative to the comparison group, correctional education resulted in a statistically significant decrease in recidivism for incarcerated adults who earned a postsecondary degree while incarcerated. Specifically, the hazard ratio decreased by 14.0 percent for rearrest, 15.6 percent for reconviction, and 24.1 percent for new offense reincarceration. Earning a secondary degree while incarcerated resulted in a statistically significant increase of 58.7 percent in the odds of employment within the first two years after release. There were no statistically significant effects of earning a secondary degree while incarcerated on recidivism or of earning a postsecondary degree while incarcerated on post-release employment.

Based on inmates released between 2004 and 2011, Hill, Scaggs, and Bales (2017) evaluated the impact on recidivism and post-release employment of a vocation work program offered in 12 state prisons in Florida. Earning a certificate through Florida's vocational work program in prison, referred to as the Specter program, did not have a statistically significant effect on post-release employment within three months of release. However, earning a certificate through the Specter program while incarcerated resulted in a 14.0 percent decrease in the rate of rearrest within three years, a 30.8 percent decrease in the rate of reconviction within three years, and a 26.9 percent decrease in the rate of reincarceration within three years.

Lopez (2020) evaluated the effect of correctional education programs provided to incarcerated adults in Texas by the Windham School District, a statewide school district operating independently from the Texas Department of Criminal Justice, for inmates released between 2011 and 2013. Participation in correction CTE resulted in statistically significant increases in the odds of employment in the first year after release. Specifically, earning an industry certification increased the odds of employment by 1.58 in the first year after release. Completing a CTE course but not receiving a certification increased the odds of employment by 1.44 in the first year after release, while participation in a CTE course but not completing it increased the odds of employment by 1.11 in the first year after release.

Stickle and Sprick Schuster (2023) also conducted meta-analysis of research studies published between 1980 and 2023 that examined the impact of adult basic education, secondary, vocational, and college education for incarcerated adults on recidivism, post-release employment, and post-release wages. Overall, participation in correctional education decreased the odds ratio of recidivism by 18.8 percent, increased the odds ratio of employment by 13.5 percent, and increased quarterly earnings by \$141,

reported in 2020 dollars. However, the impact of participating in correctional education varied by the type of education. The odds ratio of recidivism decreased by 11.0 to 12.0 percent for participation in adult basic education and secondary education, 15.6 percent for vocational education, and 41.5 percent for college programs. The odds ratio of employment increased by 11.8 percent for vocational education and increased by 20.7 percent for college programs. Participating in adult basic education or secondary education did not have a statistically significant effect on employment. The estimated total cost of correctional education was \$1,987 for adult basic education and secondary education, \$2,126 for vocational education, and \$10,467 for college programs, reported in 2020 dollars. Given the costs and benefits outlined, the authors estimate a return on investment of 106.3 percent for adult basic education, 124.4 percent for secondary education, 205.1 percent for vocational education, and 61.2 percent for college programs.

Methodology

Benefits of Career and Technology Education

The Oklahoma Department of Career and Technology Education provided detailed data on enrollment and follow-up results by school year, program, and Technology Center or Skills Center. Additionally, program specific data such as tuition costs and program hours were provided. The Economics Center categorized programs into broad categories that generally follow the state's pathway or program name.

Earnings Profiles

Earnings profiles represent the economic benefit of career and technology education. Using reported wages during the follow-up period and projected annual growth rates for relevant occupations across Oklahoma, the earnings for each program were projected and compared to the baseline earnings for a high school graduate or equivalent. The difference in earnings represents the additional earnings potential for a program completer or course concentrator of each program. The earnings profiles assume full-time employment and continued employment in a related field for the duration of the analysis period.

Historical median annual earnings by educational attainment were obtained from the American Community Survey of the U.S. Census Bureau. Median annual earnings represent the adult, working-age population in the State of Oklahoma. Median annual earnings by educational attainment were forecasted to estimate projected earnings starting in 2023. The historical and projected earnings for a high school graduate or equivalent represent the earnings expected for individuals who did not pursue career and technology education, and therefore, represent the baseline earnings profile.

To account for the varying age of students completing career and technology education, the baseline earnings profile was adjusted to match the median age of students enrolled in each program. Data on median weekly earnings by age was retrieved from the U.S. Bureau of Labor Statistics. A ratio was constructed of the median earnings by age relative to the median earnings for all workers 16 years of age and older. This ratio was then applied to the median earnings by educational attainment in Oklahoma to approximate earnings by age and educational attainment.

Adult students pursuing additional education are likely required to reduce the number of hours they work in order to attend classes. The necessary reduction in full-time work required of adult students means that these students are foregoing a portion of the earnings they would have received in order to pursue their education, representing an opportunity cost. To estimate the foregone earnings, the length of each program and the time to complete the program in years was compared to full-time employment to create a percent that represents the required reduction in full-time employment necessary to complete each program. Full-time employment assumes 2,080 hours of work per year, based on 40

hours of work per week for 52 weeks per year. This percentage was then multiplied by the annual earnings for high school graduates for the year(s) that the adult student was enrolled in a certificate program. This represents the foregone earnings for adult students. The annual earnings for high school graduates minus the foregone earnings of adult students represents the estimated earnings for adult students during their career and technology education program.

To determine the earnings potential associated with career and technology education, each program was matched to relevant occupations using the classification of instructional program (CIP) to standard occupational classification (SOC) crosswalk published by the U.S. Department of Education. Program groups were formed for programs with similar relevant occupations and generally follow the pathway or state program utilized by the Oklahoma Department of Career and Technology Education. The top 20 program groups based on enrollment are analyzed in detail. The analysis for the full list of programs is contained in the Appendix.

Information on the typical entry-level education, work experience, on-the-job training, and the distribution of employment by education level for each occupation in 2022 was retrieved from the Employment Projections programs of the U.S. Bureau of Labor Statistics. It is assumed that differences in typical entry-level education and the distribution of employment by education level are endogenized in the median annual earnings data for each occupation. However, the typical work experience required for each occupation informed the earnings potential of each program.

The historical earnings for each occupation in the State of Oklahoma between 2005 and 2022 were obtained from Lightcast, a third-party provider of labor market data. Earnings were then forecasted to estimate projected future earnings. For programs with multiple relevant occupations, a weighted average based on each occupation's employment share was utilized. If a program grouping represented multiple programs, a weighted average of earnings was calculated based on enrollment. If a relevant occupation requires work experience, then that occupation is only included after the required work experience was attained. Future earnings were discounted to the present value using the three-month treasury bill rate of 5.07 percent.

Formerly incarcerated individuals face many difficulties in the labor force including significantly higher unemployment rates and considerably lower wages.⁸ Craige, Grawert, and Kimble (2022) found that formerly incarcerated individuals made approximately 52.0 percent of expected earnings, on average. Therefore, the earnings profiles for the Skills Center analysis incorporate this discriminatory factor for both Skills Center completers and high school graduates to create an appropriate comparison group.

Return on Investment

Obtaining career and technology education has both explicit and implicit costs that are often incurred at the beginning of the program, while the benefits are not immediate. Therefore, obtaining career and technology education is often considered an investment that delivers future returns in the form of additional earnings.

The return on investment (ROI) for each program is calculated by comparing the cumulative gain of each program with the costs of the program. The annual gain for each program represents the annual difference between the baseline earnings for high school graduates and the estimated earnings for program completers and course concentrators after subtracting the costs incurred to complete the program. The cumulative gain in a given year is the sum to date of the annual gains.

⁸ (Coulette and Kopf 2018); (Craige, Grawert and Kimble 2022)

The total cost of each program includes the explicit cost of tuition as well as the implicit opportunity costs of pursuing career and technology education in the form of foregone earnings. The Oklahoma Department of Career and Technology Education provided the tuition costs by program.

Financial aid data for the 2022-2023 academic year was provided by the financial aid staff of each Technology Center. After matching the financial aid and enrollment data, the Economics Center calculated the average financial aid award by program. Secondary students attend Technology Centers tuition free, whereas adult students are charged tuition. Therefore, the average financial aid award by program was incorporated as a benefit in the ROI analysis for adult students.

Fiscal Impact

The fiscal impact of career and technology education represents the additional tax revenue generated as a result of the additional earnings potential of career and technology education completers and course concentrators relative to the baseline of high school graduates. The fiscal impact comprises state income tax revenue resulting from the additional earnings as well as state, county, and city sales tax revenue resulting from the spending of earnings.

The Economics Center retrieved the state income tax bracket as well as the sales tax rates from the Oklahoma Tax Commission. A blended sales tax rate was calculated for counties and cities in Oklahoma. The blended county sales tax rate was calculated by weighting each county's tax rate with the estimated taxable spending occurring in each county utilizing sales data from Lightcast. The blended city sales tax rate was calculated by utilizing a straight average of city tax rates for each county and then weighting the tax rates by county with the estimated taxable spending occurring in each county. To estimate the sales tax revenue generated, the Bureau of Labor Statistics' Consumer Expenditure Survey for the South was utilized to determine what portion of average annual wages were used to make taxable purchases. Taxable spending was then factored for economic leakage, and the applicable sales tax rates were applied.

The current tax rates are assumed to remain unchanged in the future throughout the 20 years for which future earnings are projected. For years in which the projected earnings for a completer or course concentrator do not exceed the baseline for a high school graduate, the fiscal impact is zero.

Benefits of Expenditures to Provide Education

Economic Impact

An economic impact analysis measures the effect of an organization's expenditures on its surrounding community. The total economic impact is the sum of the direct and indirect impacts. The direct impact is the amount spent directly by the organization that is retained within the local economy. The indirect impact is the additional economic impact resulting from increased demand, income, and jobs within other industries, or the inter-industry linkages. The direct impact has ripple effects due to increased household income and spending, which are referred to as induced impacts. Induced impacts are reported within indirect impacts for the entirety of this report.

Operations and capital expenditure data for fiscal year 2023 were provided by Technology Centers and/or the Oklahoma Department of Career and Technology Education. Expenditure data were then factored for economic leakage to represent only the economic impact of money retained in the State of Oklahoma. Economic leakage refers to the percentage of purchases for products and services that cannot be met immediately within the local economy, and thus must be imported from outside the local economy. Leakage estimates were obtained from Lightcast.

The post-leakage expenditures were used in an input-output model that uses multipliers to represent the inter-industry linkages and household economic relationships. Multipliers are used to determine the total economic impact when applied to the direct impact. This means that multipliers reflect how many additional dollars will be spent in a local economy by other businesses and households for every dollar spent by an organization. These multipliers are location and industry specific and were obtained from Lightcast.

Fiscal Impact

The fiscal impact analysis estimates the subsequent impact on state and local tax revenue. State income tax revenue was calculated for the wages, directly and indirectly, supported, as well as the state, county, and city sales tax revenue resulting from the spending of those wages.

The Economics Center obtained the state income tax bracket from the Oklahoma Tax Commission. Approximately half of the Technology Centers provided the income tax withholdings for their employees. For all other Technology Centers as well as the Skills Centers and Adult Education and Family Literacy providers, the Economics Center estimated the income tax revenue generated utilizing the average wages per job.

The Economics Center retrieved sales tax rates from the Oklahoma Tax Commission and calculated a blended sales tax rate for counties and cities in Oklahoma. The blended county sales tax rate was calculated by weighting each county's tax rate with the estimated taxable spending occurring in each county utilizing sales data from Lightcast. The blended city sales tax rate was calculated by utilizing a straight average of city tax rates for each county and then weighting the tax rates by county with the estimated taxable spending occurring in each county. To estimate the sales tax revenue generated, the Bureau of Labor Statistics' Consumer Expenditure Survey for the South was utilized to determine what portion of average annual wages were used to make taxable purchases. Taxable spending was then factored for economic leakage, and the applicable sales tax rates were applied.

Technology Centers

The Technology Centers division of the Oklahoma Department of Career and Technology Education provides specialized career training for full-time secondary and adult students in more than 90 instructional areas as well as provides skills training through short-term courses. Technology Centers also serve business and industry stakeholders through their workforce and economic development (WED) programs by encouraging business and job growth as well as providing education, skills, and training necessary for individuals. High school students attend Technology Centers tuition free, while adult students pay nominal tuition to attend Technology Centers. Additionally, students may earn transferable college credits in many career majors at an affordable cost. Currently, there are 29 Technology Centers operating on more than 60 campuses across the State of Oklahoma. This section explores the value of career and technology education for secondary and adult students as well as individuals enrolled in WED programs at Technology Centers across the State of Oklahoma.

Benefits of Career and Technology Education for Secondary Students Overview

As detailed in Table 1, a total of 20,084 secondary students were enrolled in full-time programs at Technology Centers during the 2022-23 academic year. White students represented approximately half (49.9%) of secondary student enrollment. Hispanic or Latino students represented 18.3 percent of secondary student enrollment, while American Indian or Alaskan Native students represented 10.1 percent of secondary student enrollment. The remaining 21.8 percent of secondary students enrolled in

full-time programs at Technology Centers were of two or more races (9.7%), Black or African American (6.0%), Asian (2.5%), Native Hawaiian or Other Pacific Islander (0.2%), or were of an unknown race/ethnicity (3.3%).

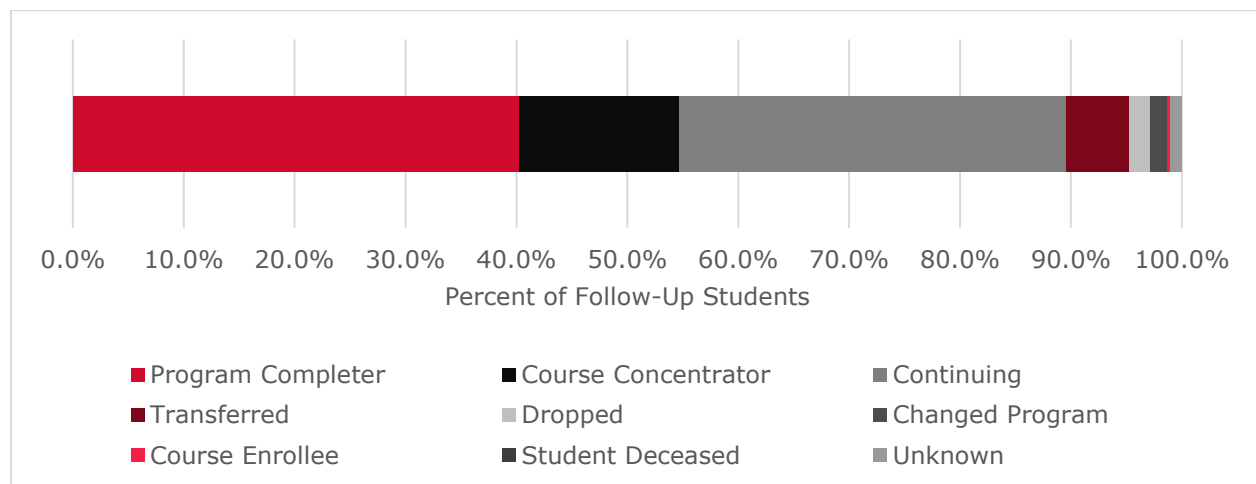
Table 1: Secondary Student Enrollment at Technology Centers by Race/Ethnicity, 2022-23

Race/Ethnicity	Enrollment
American Indian or Alaskan Native	2,025
Asian	508
Black or African American	1,204
Hispanic or Latino	3,666
Native Hawaiian or Other Pacific Islander	41
White	10,021
Two or More Races	1,950
Unknown	669
Total	20,084

Source: Data provided by the Oklahoma Department of Career and Technology Education.

Figure 1 illustrates the follow-up type among secondary students enrolled in full-time programs at Technology Centers during the 2022-23 academic year. Approximately 40.2 percent of secondary students were program completers, meaning the students completed all requirements set forth by the Technology Center. An additional 14.5 percent were course concentrators, indicating the students did not complete the entire program but did complete 240 or more hours of the program. Approximately 34.9 percent of secondary students were continuing in their program the following school year. The remaining 10.4 percent of secondary students either transferred to another school (5.7%), dropped the program and are no longer in school (1.9%), changed programs (1.6%), were enrolled in a course but not the program (0.3%), were deceased (>0.0%), or had an unknown follow-up type (1.0%).

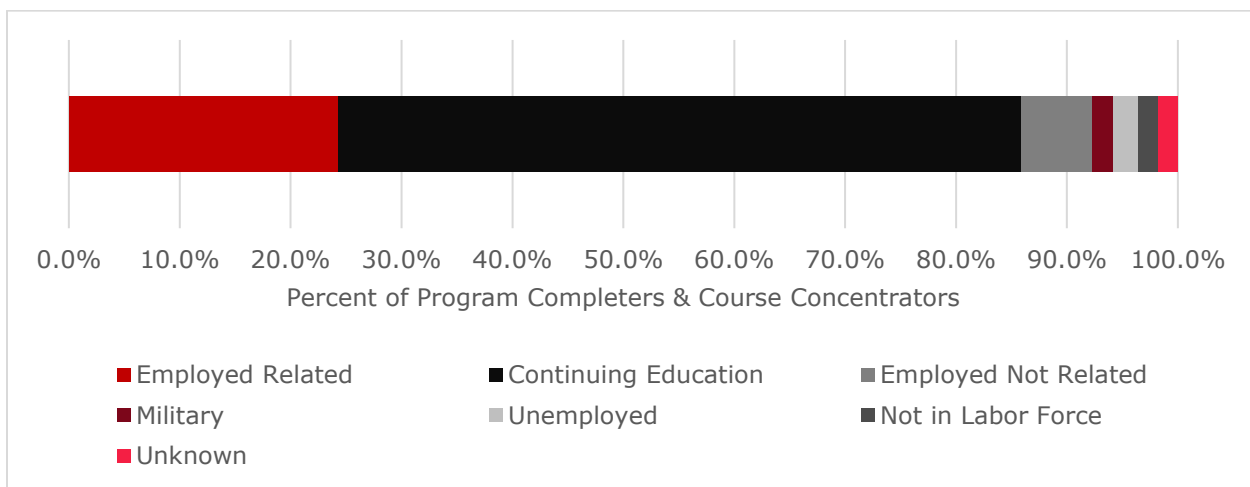
Figure 1: Secondary Student Enrollment at Technology Centers by Follow-Up Type, 2022-23



Source: Data provided by the Oklahoma Department of Career and Technology Education.

Of the secondary students enrolled in full-time programs at Technology Centers during the 2022-23 academic year, 11,025 secondary students, or approximately 54.7 percent, were either program completers or course concentrators. Figure 2 illustrates the follow-up results for these students. The Oklahoma Department of Career and Technology Education defines a positive placement as students who are employed, continuing their education, or in the military. Approximately 94.1 percent of secondary students who were program completers or course concentrators in the 2022-23 academic year had a positive placement. Specifically, approximately 24.3 percent were employed in a related field, 61.6 percent were continuing their education, 6.4 percent were employed in an unrelated field, and 1.8 percent were in the military. For the remaining 5.9 percent of program completers and course concentrators, approximately 2.3 percent were unemployed, 1.8 percent were not in the labor force, and 1.8 percent had an unknown follow-up result.

Figure 2: Secondary Student Program Completers and Course Concentrators at Technology Centers by Follow-Up Results, 2022-23



Source: Data provided by the Oklahoma Department of Career and Technology Education.

For secondary students enrolled in full-time programs at Technology Centers in the 2022-23 academic year, Table 2 details the enrollment and follow-up overview for the top 20 programs based on enrollment. Therapeutic and support services programs represented the largest program among secondary students, representing 12.0 percent of enrollment. Six other programs represented more than 5.0 percent of secondary student enrollment. These programs were engineering (9.6%), automotive service (7.0%), web/digital design and communication (7.0%), welding and metal fabrication (6.9%), personal care services (6.2%), and biomedical science/medicine/biotechnology (5.2%). Collectively, these seven programs represented more than half (53.9%) of secondary student enrollment during the 2022-23 academic year.

Follow-up results varied drastically by program. Overall, approximately 94.1 percent of secondary students who were program completers or course concentrators in the 2022-23 academic year had a positive placement. The programs with the highest percentage of secondary students that were continuing their education were health studies (95.8%), biomedical science/medicine/biotechnology (95.4%), engineering (95.2%), programming and software development (84.2%), and web/digital design and communication (70.9%). The programs with the highest percentage of secondary students that were employed in a related field were medium/heavy diesel repair (57.5%); restaurant, food, and beverage services (50.0%); welding and metal fabrication (45.6%); heating, ventilation, and air conditioning (44.1%); and automotive service (42.1%).

Table 2: Secondary Student Enrollment and Follow-Up Overview at Technology Centers by Program, 2022-23

Program	Enrollment	Program Completers & Course Concentrators	Percent Positive Placement	Percent Continuing Education	Percent Employed in a Related Field
Therapeutic & Support Services	2,405	2,031	96.3%	66.9%	25.4%
Engineering	1,935	810	97.9%	95.2%	1.0%
Automotive Service	1,409	705	93.0%	38.6%	42.1%
Web/Digital Design & Communication	1,404	667	89.4%	70.9%	7.2%
Welding & Metal Fabrication	1,382	634	92.7%	31.4%	45.6%
Personal Care Services	1,244	577	92.2%	42.1%	41.6%
Biomedical Science/ Medicine/Biotechnology	1,039	518	98.8%	95.4%	1.7%
Network Systems/Information Support	775	372	87.9%	62.9%	11.6%
Construction	734	395	95.9%	63.0%	23.8%
Restaurant, Food, & Beverage Services	536	248	88.7%	33.5%	50.0%
Electrical Trades	520	255	89.8%	45.1%	33.7%
Criminal Justice	512	269	93.3%	59.9%	17.8%
Heating, Ventilation & Air Conditioning	511	204	96.1%	35.8%	44.1%
Automotive Collision Repair	488	224	96.4%	48.7%	32.1%
Medical Assisting	468	373	92.2%	54.2%	30.0%
Early Childhood Development & Services	447	287	94.4%	55.4%	34.1%
Programming & Software Development	348	158	98.1%	84.2%	5.1%
Health Studies	347	306	99.3%	95.8%	3.3%
Medium/Heavy Diesel Repair	329	153	94.8%	21.6%	57.5%
Building & Grounds Maintenance	292	159	81.1%	36.5%	39.0%
Other	2,959	1,680	93.8%	64.2%	20.0%
Total	20,084	11,025	94.1%	61.6%	24.3%

Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education.

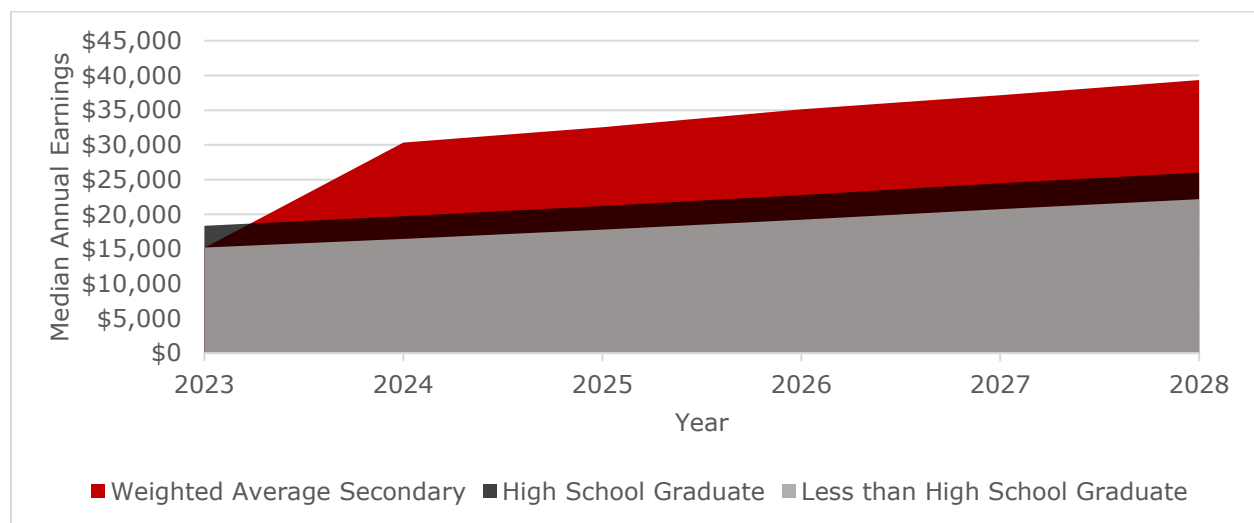
Earnings

Earnings profiles represent the economic benefit of career and technology education. Using reported wages during the follow-up period and projected annual growth rates for relevant occupations across Oklahoma, the earnings for each program were projected and compared to the baseline earnings for a high school graduate or equivalent. The difference in earnings represents the additional earnings potential for a program completer or course concentrator of each program. It was assumed that

secondary students were 18 years of age at the time they became employed in a field related to their program, and it was also assumed that secondary students entered employment immediately following high school graduation. Therefore, annual earnings for secondary students in year 0 (2023) represent only half a year of earnings. Additionally, the comparison earnings for high school graduates are based on estimates for individuals 18 years of age during year 0 (2023).

Figure 3 illustrates the average earnings profile over five years for secondary students in the 2022-23 academic year who were employed in a related field compared to the average earnings profile for individuals with a high school diploma or equivalent as well as individuals with less than a high school diploma. In the first full year after entering employment in a related field (2024), secondary students reported median annual earnings of approximately \$30,300. This represents median annual earnings of approximately \$10,600 more than a high school graduate. By year five (2028), the median annual earnings for secondary students are estimated to increase to \$39,300, which is approximately \$13,300 more than a high school graduate.

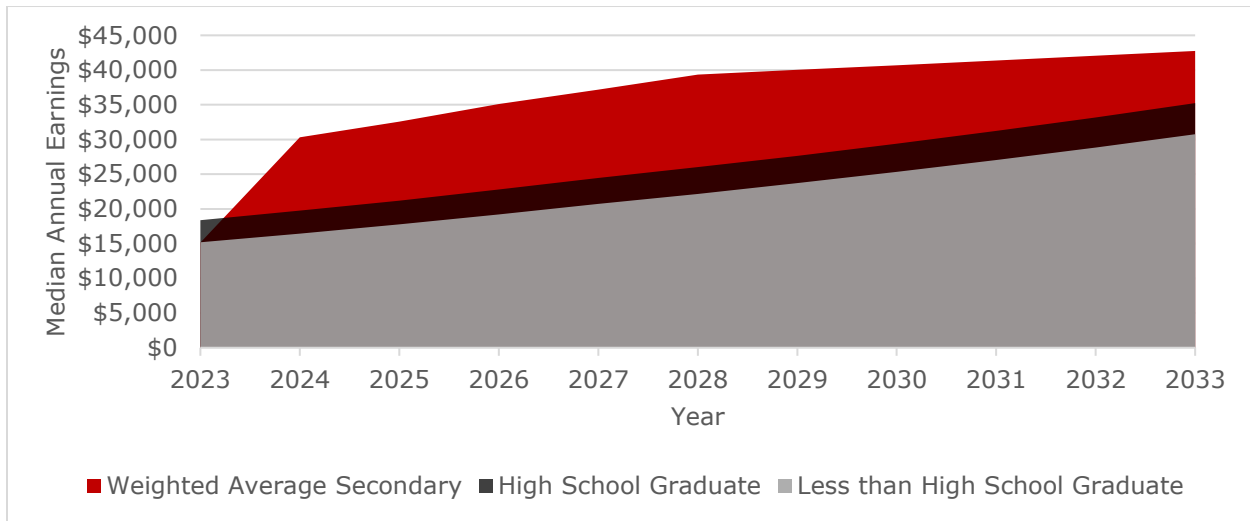
Figure 3: Average 5-Year Earnings Profile for Secondary Students Employed in a Related Field, 2022-23 (Nominal\$)



Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education and data retrieved from Lightcast, the U.S. Census Bureau, and the U.S. Bureau of Labor Statistics.

Figure 4 extends the average earnings profile through year 10 for secondary students in the 2022-23 academic year who were employed in a related field. The median annual earnings for secondary students are estimated to increase to \$42,800 in year 10 (2033), which is \$7,500 more than a high school graduate. It is important to note that the further into the future the earnings projections are the less accurate they become due to the numerous unknown factors that impact earnings such as job hopping, upward mobility into higher-paying occupations, the return to school, movement into an occupation in another field, and/or separation from and reattachment to the labor force.

Figure 4: Average 10-Year Earnings Profile for Secondary Students Employed in a Related Field, 2022-23 (Nominal\$)



Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education and data retrieved from Lightcast, the U.S. Census Bureau, and the U.S. Bureau of Labor Statistics.

Table 3 details the median annual earnings for secondary students employed in a related field by program for the top 20 programs based on enrollment. More than 95.0 percent of program completers and course concentrators in engineering programs; biomedical science/medicine/biotechnology programs; and health studies programs were continuing their education. Therefore, earnings profiles were not constructed for these three programs.

All other programs in the top 20 had annual earnings among secondary students employed in a related field that are estimated to exceed that of the annual earnings for the comparison group in both year one and year five. In the first full year after entering employment in a related field, the programs with the highest reported annual earnings are welding and metal fabrication (\$37,292), medium/heavy diesel repair (\$35,074), and electrical trades (\$34,179). In the fifth year after entering employment in a related field, the programs with the highest projected annual earnings are electrical trades (\$61,261), criminal justice (\$54,559), and heating, ventilation, and air conditioning (\$51,697). Eleven programs have annual earnings among secondary students employed in a related field that are estimated to exceed that of the annual earnings for the comparison group in year 10. The programs with the highest projected annual earnings in year 10 are electrical trades (\$66,060), criminal justice (\$59,753), and heating, ventilation, and air conditioning (\$56,098).

Table 3: Median Annual Earnings for Secondary Students Employed in a Related Field by Program, 2022-23 (Nominal\$)

Program	Enrollment	Year 1	Year 5	Year 10
Therapeutic & Support Services	2,405	\$29,528	\$31,365	\$33,661
Engineering	1,935	N/A	N/A	N/A
Automotive Service	1,409	\$29,833	\$43,601	\$47,590
Web/Digital Design & Communication	1,404	\$26,894	\$28,327	\$30,118
Welding & Metal Fabrication	1,382	\$37,292	\$50,627	\$55,474
Personal Care Services	1,244	\$30,883	\$33,810	\$37,469
Biomedical Science/ Medicine/Biotechnology	1,039	N/A	N/A	N/A
Network Systems/Information Support	775	\$29,707	\$32,307	\$35,557
Construction	734	\$30,094	\$44,885	\$48,834
Restaurant, Food, & Beverage Services	536	\$25,495	\$32,460	\$35,203
Electrical Trades	520	\$34,179	\$61,261	\$66,060
Criminal Justice	512	\$29,738	\$54,559	\$59,753
Heating, Ventilation & Air Conditioning	511	\$30,178	\$51,697	\$56,098
Automotive Collision Repair	488	\$30,956	\$44,453	\$48,160
Medical Assisting	468	\$29,627	\$31,717	\$34,329
Early Childhood Development & Services	447	\$24,767	\$26,516	\$28,702
Programming & Software Development	348	\$28,236	\$30,595	\$33,512
Health Studies	347	N/A	N/A	N/A
Medium/Heavy Diesel Repair	329	\$35,074	\$46,490	\$50,710
Building & Grounds Maintenance	292	\$27,385	\$49,962	\$53,508
Weighted Average Secondary	20,084	\$30,327	\$39,336	\$42,753
High School Graduate	N/A	\$19,734	\$26,010	\$35,237

Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education and data retrieved from Lightcast, the U.S. Census Bureau, and the U.S. Bureau of Labor Statistics.

Table 4 details the net present value of cumulative earnings for secondary students employed in a related field for the top 20 programs based on enrollment. On average, the present value of cumulative earnings over five years is approximately \$149,900 for secondary students employed in a related field. This represents cumulative earnings over five years that exceed a high school graduate by approximately \$51,900. The present value of cumulative earnings over 10 years is approximately \$289,300 for secondary students employed in a related field, which is more than \$86,100 more than cumulative earnings for a high school graduate. The program with the highest cumulative earnings is electrical trades, with cumulative earnings of \$199,100 over five years which increases to \$415,200 over 10 years. Collectively, secondary students employed in a related field are estimated to have cumulative earnings that exceed the earnings of a high school graduate by \$231.6 million over five years and \$373.6 million over 10 years, after factoring for the employment rate of high school graduates. This equates to an average of \$37.4 million per year for 10 years.

Table 4: Net Present Value of Cumulative Earnings for Secondary Students Employed in a Related Field by Program, 2022-23 (NPV\$)

Program	Enrollment	Year 5	Year 10
Therapeutic & Support Services	2,405	\$131,366	\$241,700
Engineering	1,935	N/A	N/A
Automotive Service	1,409	\$165,841	\$320,781
Web/Digital Design & Communication	1,404	\$119,154	\$218,247
Welding & Metal Fabrication	1,382	\$187,435	\$367,763
Personal Care Services	1,244	\$139,460	\$260,713
Biomedical Science/Medicine/Biotechnology	1,039	N/A	N/A
Network Systems/Information Support	775	\$133,708	\$249,089
Construction	734	\$158,829	\$318,023
Restaurant, Food, & Beverage Services	536	\$118,211	\$233,115
Electrical Trades	520	\$199,084	\$415,202
Criminal Justice	512	\$175,448	\$369,723
Heating, Ventilation & Air Conditioning	511	\$171,495	\$354,560
Automotive Collision Repair	488	\$165,090	\$322,352
Medical Assisting	468	\$132,314	\$244,456
Early Childhood Development & Services	447	\$110,611	\$204,367
Programming & Software Development	348	\$126,825	\$235,778
Health Studies	347	N/A	N/A
Medium/Heavy Diesel Repair	329	\$177,871	\$343,013
Building & Grounds Maintenance	292	\$161,071	\$336,608
Weighted Average Secondary	20,084	\$149,855	\$289,282
High School Graduate	N/A	\$97,997	\$203,137

Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education and data retrieved from Lightcast, the U.S. Census Bureau, and the U.S. Bureau of Labor Statistics.

Return on Investment

Secondary students incur no tuition costs for enrollment in career and technology education in the State of Oklahoma. Additionally, secondary students would otherwise be attending high school full time, therefore, there are no opportunity costs in the form of lost wages. This means there is no quantifiable investment by secondary students to enroll in career and technology education; therefore, the return on investment for secondary students is not able to be calculated.

Fiscal Impact

The career and technology education pursued by secondary students leads to a higher earnings potential, on average, compared to individuals with at most a high school diploma or equivalent. The additional earnings potential generates fiscal impacts for state and local governments through increased income tax revenue resulting from higher earnings and increased sales tax revenue resulting from the spending of earnings.

The net present value of the additional tax revenue generated by secondary students in the 2022-23 academic year who are employed in a related field is \$11.7 million over five years and \$19.2 million over 10 years, as detailed in Table 5. This translates into an average of approximately \$1.9 million per year over 10 years. The fiscal impact per secondary student employed in a related field is \$4,400 over five years and \$7,200 over 10 years, or approximately \$720 per year over 10 years. Income tax revenue comprises 86.7 percent of the total fiscal impact, while sales tax revenue comprises the remaining 13.3 percent.

Table 5: Fiscal Impact of Secondary Students Employed in a Related Field, 2022-23 (NPV\$)

Tax Type	Total (5 Years)	Total (10 Years)
Income Tax Revenue	\$10,194,404	\$16,630,020
Sales Tax Revenue	\$1,538,534	\$2,597,025
Total Tax Revenue	\$11,732,938	\$19,227,045

Source: Economics Center analysis.

Benefits of Career and Technology Education for Adult Students

Overview

As detailed in Table 6, a total of 9,820 adult students were enrolled in full-time programs at Technology Centers during the 2022-23 academic year. White students represented approximately half (49.4%) of adult student enrollment. Hispanic or Latino students represented 15.5 percent of adult student enrollment, while American Indian or Alaskan Native students represented 10.0 percent of adult student enrollment. The remaining 25.2 percent of adult students enrolled in full-time programs at Technology Centers were Black or African American (9.0%), of two or more races (7.5%), Asian (1.8%), Native Hawaiian or Other Pacific Islander (0.3%), or were of an unknown race/ethnicity (6.6%).

Table 6: Adult Student Enrollment at Technology Centers by Race/Ethnicity, 2022-23

Race/Ethnicity	Enrollment
American Indian or Alaskan Native	983
Asian	178
Black or African American	883
Hispanic or Latino	1,518
Native Hawaiian or Other Pacific Islander	26
White	4,849
Two or More Races	738
Unknown	645
Total	9,820

Source: Data provided by the Oklahoma Department of Career and Technology Education.

Table 7 details adult student enrollment in full-time programs at Technology Centers by age range. Approximately 63.7 percent of adult students were between the ages of 18 and 25 years, while an additional 20.7 percent of adult students were between the ages of 26 and 35 years. The remaining adult students were between the ages of 36 and 45 years (8.5%), between the ages of 46 and 55 years

(3.8%), 56 years of age and older (1.2%), or had an unknown age (2.2%). The average age of adult students enrolled in full-time programs at Technology Centers was 22 years of age.

Table 7: Adult Student Enrollment at Technology Centers by Age Range, 2022-23

Age Range	Enrollment
Ages 18 to 25	6,253
Ages 26 to 35	2,028
Ages 36 to 45	834
Ages 46 to 55	376
Ages 56 to 65	95
Ages 65 and over	21
Unknown	213
Total	9,820

Source: Data provided by the Oklahoma Department of Career and Technology Education.

As detailed in Table 8, approximately 61.5 percent of adult students enrolled in full-time programs at Technology Centers had a high school diploma or equivalent. An additional 19.6 percent of adult students had some college experience but no degree. Approximately 8.8 percent of adult students had an associate’s degree or higher, while 3.9 percent of adult students had a technical diploma. Approximately 1.3 percent of adult students had less than a high school diploma, while the education attainment was unknown for 4.7 percent of adult students.

Table 8: Adult Student Enrollment at Technology Centers by Educational Attainment, 2022-23

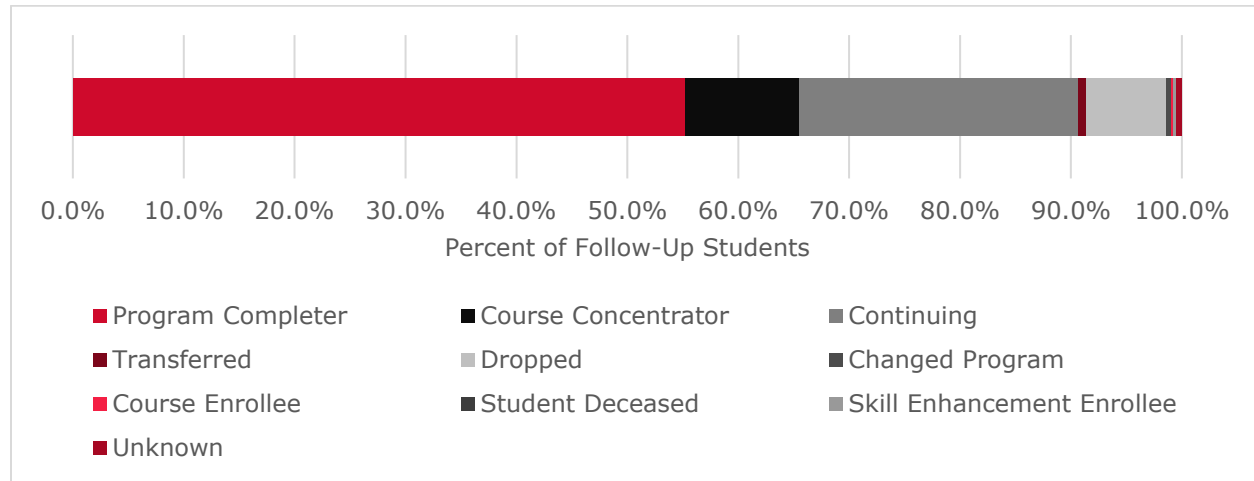
Educational Attainment	Enrollment
Less than High School Diploma	130
High School Diploma or Equivalent	6,044
Technical Diploma	383
Some College, No Degree	1,929
Associate’s Degree	538
Bachelor's Degree	299
Master's Degree	25
Doctorate Degree	6
Unknown	466
Total	9,820

Source: Data provided by the Oklahoma Department of Career and Technology Education.

Figure 5 illustrates the follow-up type among adult students enrolled in full-time programs at Technology Centers during the 2022-23 academic year. Approximately 55.2 percent of adult students were program completers, meaning the students completed all requirements set forth by the Technology Center. An additional 10.3 percent were course concentrators, indicating the students did not complete the entire

program but did complete 240 or more hours of the program. Approximately 25.1 percent of adult students continued in their program the following school year. The remaining 9.4 percent of adult students either dropped the program and are no longer in school (7.2%), transferred to another school (0.7%), changed programs (0.5%), enrolled in and completed a specific set of course work within a course to enhance skills (0.2%), were enrolled in a course but not the program (0.1%), were deceased (0.1%), or had an unknown follow-up type (0.5%).

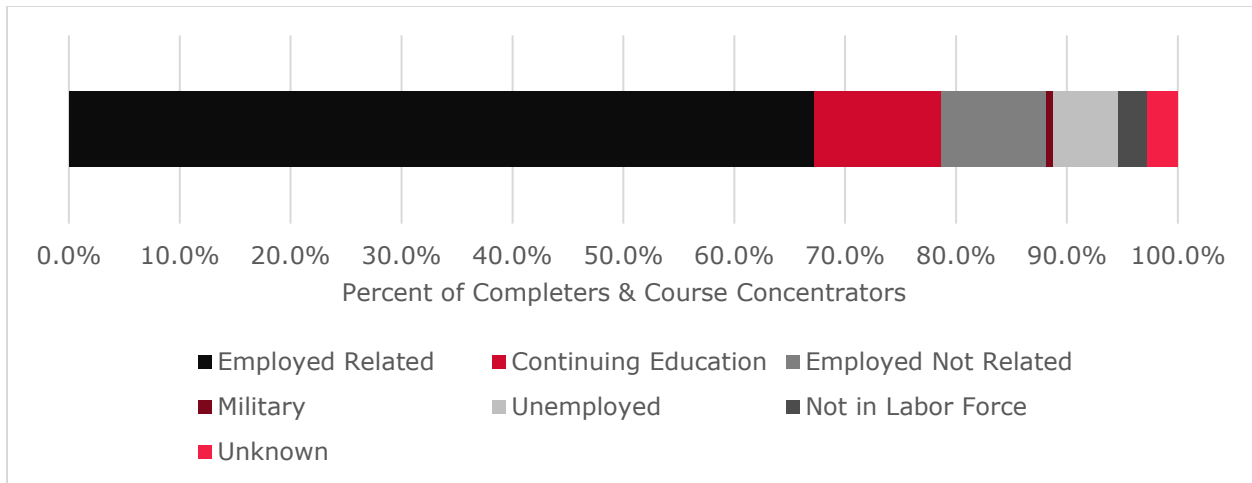
Figure 5: Adult Student Enrollment at Technology Centers by Follow-Up Type, 2022-23



Source: Data provided by the Oklahoma Department of Career and Technology Education.

Of the adult students enrolled in full-time programs at Technology Centers during the 2022-23 academic year, 6,474 adult students, or approximately 65.9 percent, were either program completers or course concentrators. Figure 6 illustrates the follow-up results for these students. The Oklahoma Department of Career and Technology Education defines a positive placement as students who are employed, continuing their education, or in the military. Approximately 88.8 percent of adult students who were program completers or course concentrators in the 2022-23 academic year had a positive placement. Specifically, approximately 67.2 percent were employed in a related field, 11.4 percent were continuing their education, 9.5 percent were employed in an unrelated field, and 0.6 percent were in the military. For the remaining 11.2 percent of program completers and course concentrators, approximately 5.9 percent were unemployed, 2.6 percent were not in the labor force, and 2.8 percent had an unknown follow-up result.

Figure 6: Adult Student Program Completers and Course Concentrators at Technology Centers by Follow-Up Results, 2022-23



Source: Data provided by the Oklahoma Department of Career and Technology Education.

For adult students enrolled in full-time programs at Technology Centers in the 2022-23 academic year, Table 9 details the enrollment and follow-up overview for the top 20 programs based on enrollment. Licensed practical nurse programs represented the largest program among adult students, representing 15.9 percent of enrollment. Five other programs represented more than 5.0 percent of adult student enrollment. These programs were personal care services (7.9%), therapeutic and support services (7.5%), network systems/information support (5.7%), aerospace maintenance (5.3%), and transportation operations (5.1%). Collectively, these six programs represented nearly half (47.4%) of adult student enrollment during the 2022-23 academic year.

Follow-up results varied by program. Overall, approximately 88.8 percent of adult students who were program completers or course concentrators in the 2022-23 academic year had a positive placement. The programs with the highest percentage of adult students that were continuing their education were web/digital design and communication (36.2%), network systems/information support (25.4%), medical administrative support/information management (15.9%), welding and metal fabrication (14.9%), and medical assisting (14.6%). The programs with the highest percentage of adult students that were employed in a related field were transportation operations (98.5%), diagnostic services (97.4%), licensed practical nurse (88.5%), production (77.1%), and heating, ventilation, and air conditioning (75.7%).

Table 9: Adult Student Enrollment and Follow-Up Overview at Technology Centers by Program, 2022-23

Program	Enrollment	Program Completers & Course Concentrators	Percent Positive Placement	Percent Continuing Education	Percent Employed in a Related Field
Licensed Practical Nurse	1,560	913	93.6%	4.1%	88.5%
Personal Care Services	777	464	82.8%	9.1%	62.1%
Therapeutic & Support Services	735	522	86.8%	12.3%	68.2%
Network Systems/Information Support	556	389	82.3%	25.4%	37.0%
Aerospace Maintenance	522	307	87.3%	10.7%	61.2%
Transportation Operations	505	404	99.5%	1.0%	98.5%
Welding & Metal Fabrication	489	322	86.3%	14.9%	58.1%
Automotive Service	439	288	93.4%	13.9%	67.7%
Heating, Ventilation & Air Conditioning	400	280	91.4%	5.7%	75.7%
Paramedic/EMT	361	245	91.8%	9.4%	69.8%
Web/Digital Design & Communication	351	218	85.8%	36.2%	26.6%
Electrical Trades	287	204	87.3%	6.4%	65.2%
Restaurant, Food, & Beverage Services	260	166	81.9%	6.0%	65.1%
Medical Assisting	239	178	87.1%	14.6%	60.7%
Construction	231	165	86.7%	11.5%	58.2%
Mechatronics/Electronics	205	133	88.7%	12.0%	69.2%
Production	201	144	88.9%	4.9%	77.1%
Medical Administrative Support/Information Management	185	107	77.6%	15.9%	52.3%
Automotive Collision Repair	176	130	89.2%	8.5%	71.5%
Diagnostic Services	167	78	100.0%	0.0%	97.4%
Other	1,174	817	87.4%	16.6%	57.9%
Total	9,820	6,474	88.8%	11.4%	67.2%

Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education.

Table 10 summarizes the program details such as hours, tuition costs, and financial aid for the top 20 programs based on adult enrollment in full-time programs during the 2022-23 academic year. Full-time programs at Technology Centers averaged 1,041 hours, which is approximately two years assuming 525 hours of instruction per year. The average in-district tuition for full-time programs at Technology Centers was \$2,566, while the average financial aid awarded to adult students was \$2,545.

The programs with the shortest length were transportation operations (283 hours), medical assisting (785 hours), and restaurant, food, and beverage services (835 hours). Similarly, two of these programs

had the lowest in-district tuition for the 2022-23 academic year as well as the lowest average financial aid awarded. The programs with the lowest in-district tuition were transportation operations (\$674), medical assisting (\$1,824), and automotive collision repair (\$2,044). The programs with the lowest financial aid awarded were restaurant, food, and beverage services (\$1,102), transportation operations (\$1,266), and mechatronics/electronics (\$1,289).

Diagnostic services, licensed practical nurse, and aerospace maintenance programs had the longest length, highest in-district tuition, and the highest average financial aid awarded. Diagnostic services programs had both the longest length of 2,379 hours and the highest in-district tuition of \$6,655, whereas licensed practical nurse program had the highest financial aid award of \$4,096.

Table 10: Program Overview for Adult Students at Technology Centers by Program, 2022-23 (Nominal\$)

Program	Average Program Hours	Average In-District Tuition	Average Financial Aid
Licensed Practical Nurse	1,450	\$3,243	\$4,096
Personal Care Services	1,034	\$2,855	\$1,964
Therapeutic & Support Services	1,055	\$2,679	\$2,125
Network Systems/Information Support	919	\$2,208	\$2,186
Aerospace Maintenance	1,334	\$3,807	\$3,473
Transportation Operations	283	\$674	\$1,266
Welding & Metal Fabrication	927	\$2,383	\$2,654
Automotive Service	954	\$2,181	\$2,098
Heating, Ventilation & Air Conditioning	999	\$2,445	\$2,653
Paramedic/EMT	843	\$3,063	\$1,413
Web/Digital Design & Communication	874	\$2,161	\$2,654
Electrical Trades	855	\$2,096	\$2,025
Restaurant, Food, & Beverage Services	835	\$2,112	\$1,102
Medical Assisting	785	\$1,824	\$2,890
Construction	870	\$2,180	\$2,197
Mechatronics/Electronics	1,015	\$2,323	\$1,289
Production	920	\$2,505	\$2,340
Medical Administrative Support/ Information Management	931	\$2,407	\$2,985
Automotive Collision Repair	855	\$2,044	\$1,895
Diagnostic Services	2,379	\$6,655	\$3,608
Other	899	\$2,085	\$2,379
Total	1,041	\$2,566	\$2,545

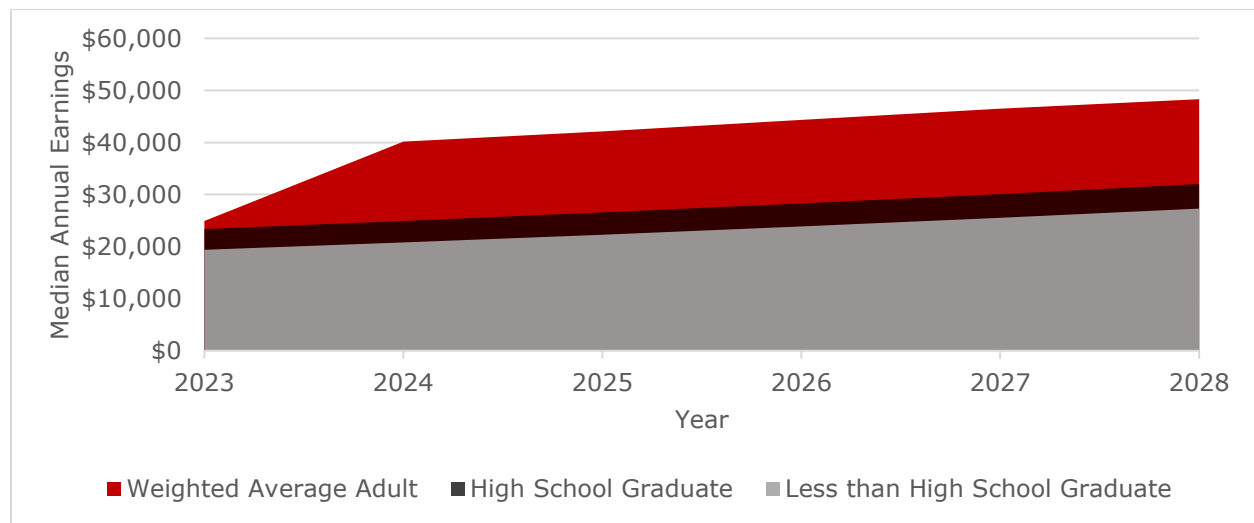
Source: Economics Center analysis of data provided by Oklahoma Technology Centers and the Oklahoma Department of Career and Technology Education.

Earnings

Earnings profiles represent the economic benefit of career and technology education. Using reported wages during the follow-up period and projected annual growth rates for relevant occupations across Oklahoma, the earnings for each program were projected and compared to the baseline earnings for a high school graduate or equivalent. The difference in earnings represents the additional earnings potential for a program completer or course concentrator of each program. The average age of adult students enrolled in full-time programs at Technology Centers was 22 years of age. The overall comparison group assumes the same age as all adult students. However, the analysis for each program reflects the average age of adult students enrolled in each respective program.

Figure 7 illustrates the average earnings profile over five years for adult students in the 2022-23 academic year who were employed in a related field compared to the average earnings profile for individuals with a high school diploma or equivalent as well as individuals with less than a high school diploma. In the first full year after entering employment in a related field (2024), adult students reported median annual earnings of approximately \$40,200. This represents median annual earnings of approximately \$15,200 more than a high school graduate. By year five (2028), the median annual earnings for adult students are estimated to increase to \$48,300, which is approximately \$16,300 more than a high school graduate.

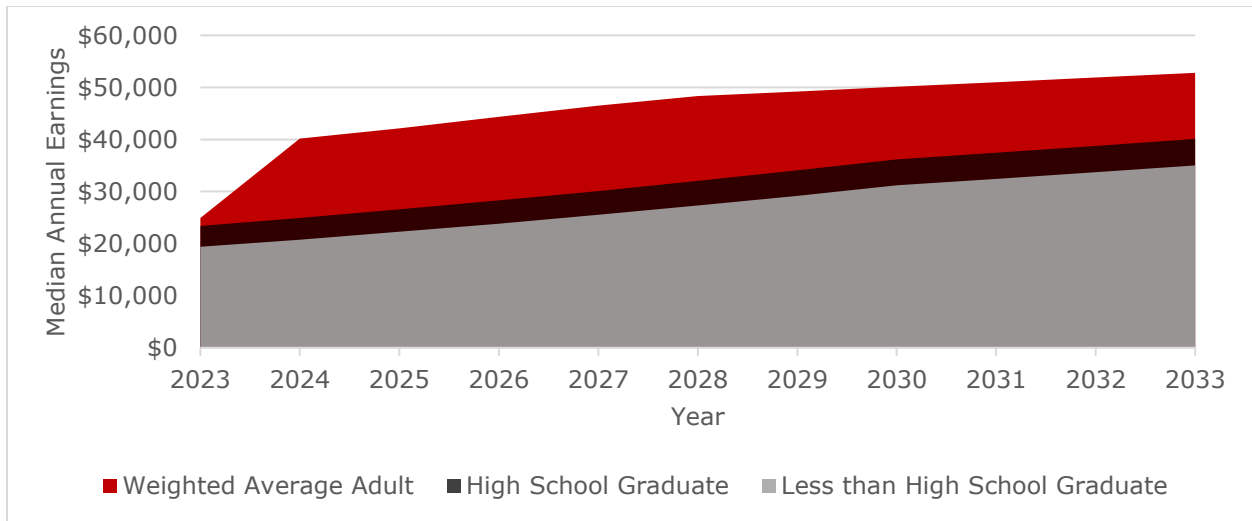
Figure 7: Average 5-Year Earnings Profile for Adult Students Employed in a Related Field, 2022-23 (Nominal\$)



Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education and data retrieved from Lightcast, the U.S. Census Bureau, and the U.S. Bureau of Labor Statistics.

Figure 8 extends the average earnings profile through year 10 for adult students in the 2022-23 academic year who were employed in a related field. The median annual earnings for adult students are estimated to increase to \$52,800 in year 10 (2033), which is \$12,700 more than a high school graduate. It is important to note that the further into the future the earnings projections are the less accurate they become due to the numerous unknown factors that impact earnings such as job hopping, upward mobility into higher-paying occupations, the return to school, movement into an occupation in another field, and/or separation from and reattachment to the labor force.

Figure 8: Average 10-Year Earnings Profile for Adult Students Employed in a Related Field, 2022-23 (Nominal\$)



Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education and data retrieved from Lightcast, the U.S. Census Bureau, and the U.S. Bureau of Labor Statistics.

Table 11 details the median annual earnings for adult students employed in a related field by program for the top 20 programs based on enrollment. The annual earnings among adult students employed in a related field are estimated to exceed that of the annual earnings for the comparison group in both year one and year five for all programs in the top 20. In the first full year after entering employment in a related field, the programs with the highest reported annual earnings are diagnostic services (\$51,293), licensed practical nurse (\$47,655), and therapeutic and support services (\$47,414). In the fifth year after entering employment in a related field, the programs with the highest projected annual earnings are mechatronics/electronics (\$69,430), aerospace maintenance (\$64,980), and electrical trades (\$61,261). Similarly, the programs with the highest projected annual earnings in year 10 are mechatronics/electronics (\$75,117), aerospace maintenance (\$69,152), and electrical trades (\$66,060). In year 10, 15 programs have annual earnings among adult students employed in a related field that are estimated to exceed that of the annual earnings for the comparison group.

Table 11: Median Annual Earnings for Adult Students Employed in a Related Field by Program, 2022-23 (Nominal\$)

Program	Enrollment	Year 1	Year 5	Year 10
Licensed Practical Nurse	1,560	\$47,655	\$51,623	\$56,583
Personal Care Services	777	\$32,613	\$35,554	\$39,231
Therapeutic & Support Services	735	\$47,414	\$51,304	\$56,167
Network Systems/Information Support	556	\$36,463	\$39,640	\$43,612
Aerospace Maintenance	522	\$41,422	\$64,980	\$69,152
Transportation Operations	505	\$47,057	\$50,960	\$55,839
Welding & Metal Fabrication	489	\$40,933	\$50,606	\$55,448
Automotive Service	439	\$32,765	\$43,739	\$47,747
Heating, Ventilation & Air Conditioning	400	\$34,194	\$51,697	\$56,098
Paramedic/EMT	361	\$40,319	\$43,801	\$48,154
Web/Digital Design & Communication	351	\$30,777	\$32,442	\$34,522
Electrical Trades	287	\$35,649	\$61,261	\$66,060
Restaurant, Food, & Beverage Services	260	\$30,288	\$32,540	\$35,355
Medical Assisting	239	\$32,611	\$34,912	\$37,787
Construction	231	\$35,042	\$53,713	\$58,436
Mechatronics/Electronics	205	\$35,778	\$69,430	\$75,117
Production	201	\$41,108	\$44,998	\$48,163
Medical Administrative Support/ Information Management	185	\$33,121	\$36,151	\$39,938
Automotive Collision Repair	176	\$33,930	\$44,453	\$48,160
Diagnostic Services	167	\$51,293	\$55,140	\$59,949
Weighted Average Adult	9,820	\$40,162	\$48,316	\$52,795
High School Graduate	N/A	\$24,940	\$32,026	\$40,117

Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education and data retrieved from Lightcast, the U.S. Census Bureau, and the U.S. Bureau of Labor Statistics.

Table 12 details the net present value of cumulative earnings for adult students employed in a related field for the top 20 programs based on enrollment. On average, the present value of cumulative earnings over five years is approximately \$190,500 for adult students employed in a related field. This represents cumulative earnings over five years that exceed a high school graduate by more than \$68,600. The present value of cumulative earnings over 10 years is approximately \$362,300 for adult students employed in a related field, which is \$115,000 more than cumulative earnings for a high school graduate. The program with the highest cumulative earnings after 10 years is mechatronics/electronics, with cumulative earnings of \$217,800 over five years which increases to \$463,200 over 10 years. Collectively, adult students employed in a related field are estimated to have cumulative earnings that exceed the earnings of a high school graduate by \$387.3 million over five years and \$674.2 million over 10 years, after factoring for the employment rate of high school graduates. This equates to an average of \$67.4 million per year for 10 years.

Table 12: Net Present Value of Cumulative Earnings for Adult Students Employed in a Related Field by Program, 2022-23 (NPV\$)

Program	Enrollment	Year 5	Year 10
Licensed Practical Nurse	1,560	\$214,072	\$397,982
Personal Care Services	777	\$146,967	\$274,141
Therapeutic & Support Services	735	\$212,872	\$395,517
Network Systems/Information Support	556	\$164,085	\$305,626
Aerospace Maintenance	522	\$234,008	\$461,449
Transportation Operations	505	\$211,354	\$392,867
Welding & Metal Fabrication	489	\$196,189	\$376,437
Automotive Service	439	\$170,553	\$325,995
Heating, Ventilation & Air Conditioning	400	\$181,762	\$364,826
Paramedic/EMT	361	\$181,375	\$337,702
Web/Digital Design & Communication	351	\$136,410	\$249,956
Electrical Trades	287	\$202,931	\$419,049
Restaurant, Food, & Beverage Services	260	\$135,503	\$250,819
Medical Assisting	239	\$145,641	\$269,079
Construction	231	\$187,625	\$378,124
Mechatronics/Electronics	205	\$217,755	\$463,178
Production	201	\$186,150	\$344,190
Medical Administrative Support/Information Management	185	\$149,341	\$278,744
Automotive Collision Repair	176	\$170,948	\$328,209
Diagnostic Services	167	\$229,542	\$425,024
Weighted Average Adult	9,820	\$190,518	\$362,313
High School Graduate	N/A	\$121,899	\$247,363

Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education and data retrieved from Lightcast, the U.S. Census Bureau, and the U.S. Bureau of Labor Statistics.

Return on Investment

The benefits and costs of career and technology education are combined to determine the return on investment. The benefits refer to the increased earnings potential that results from attaining additional education relative to individuals with a high school diploma or equivalent. The costs include the cost of tuition as well as the opportunity costs of pursuing a certificate. Opportunity costs refer to the earnings a student foregoes as a result of the decrease in hours worked in order to pursue career and technology education. Additionally, financial aid is incorporated into the return on investment as a benefit which offsets the costs incurred by students.

Table 13 summarizes the return on investment for adult students enrolled in the top 20 programs based on enrollment. On average, career and technology education for adult students in Oklahoma has a return on investment of 1,382.1 percent after five years and 2,362.4 percent after 10 years. Transportation operations programs had the highest return on investment of 8,021.3 percent after five years and 13,186.7 percent after 10 years. Transportation operations programs were the shortest in duration at

283 hours and had the lowest in-district tuition of \$674. Additionally, the reported median wages of adult students employed in a related field were approximately \$47,100. The short program duration, low program cost, and higher reported earnings among adult students employed in a related field contribute to the high return on investment for transportation operations programs. Other programs with the highest return on investment after 10 years are electrical trades (3,595.2%), welding and metal fabrication (2,977.3%), construction (2,876.9%), and mechatronics/electronics (2,130.0%).

Web/digital design and communication programs as well as medical administrative support/information management programs have a declining return on investment over 10 years. These programs are influenced by low wages. During the follow-up period, the reported median wages of adult students employed in a related field were \$30,800 for web/digital design and communication programs and \$33,100 for medical administrative support/information management programs. In comparison, the reported median wages across all adult students employed in a related field were approximately \$40,200.

This means that reported median wages for these programs were between approximately \$7,000 and \$9,400 less than the median wages of all adult students. Additionally, web/digital design and communication programs had only 26.6 percent of completers and course concentrators that were employed in a related field compared to more than half for medical administrative support/information management programs.

Table 13: Return on Investment for Adult Students Employed in a Related Field by Program, 2022-23

Program	Enrollment	Year 5	Year 10
Licensed Practical Nurse	1,560	396.5%	739.8%
Personal Care Services	777	269.5%	390.1%
Therapeutic & Support Services	735	532.1%	934.0%
Network Systems/Information Support	556	829.2%	1,235.9%
Aerospace Maintenance	522	864.5%	1,693.4%
Transportation Operations ⁹	505	8,021.3%	13,186.7%
Welding & Metal Fabrication	489	1,680.7%	2,977.3%
Automotive Service	439	860.4%	1,486.8%
Heating, Ventilation & Air Conditioning	400	713.6%	1,468.4%
Paramedic/EMT	361	364.0%	607.8%
Web/Digital Design & Communication	351	522.7%	508.0%
Electrical Trades	287	1,723.1%	3,595.2%
Restaurant, Food, & Beverage Services	260	374.4%	390.8%
Medical Assisting	239	571.2%	595.9%
Construction	231	1,452.0%	2,876.9%
Mechatronics/Electronics	205	912.7%	2,130.0%
Production	201	1,204.3%	1,884.6%
Medical Administrative Support/Information Management	185	33.2%	2.8%
Automotive Collision Repair	176	1,105.7%	1,884.6%
Diagnostic Services	167	216.7%	416.9%
Weighted Average Adult	9,820	1,382.1%	2,362.4%

Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education and Oklahoma Technology Centers as well as data retrieved from Lightcast, the U.S. Census Bureau, and the U.S. Bureau of Labor Statistics.

Fiscal Impact

The career and technology education that adult students receive leads to a higher earnings potential, on average, compared to individuals with at most a high school diploma or equivalent. The additional earnings potential generates fiscal impacts for state and local governments through increased income tax revenue resulting from higher earnings and increased sales tax revenue resulting from the spending of earnings.

The net present value of the additional tax revenue generated by adult students in the 2022-23 academic year who were employed in a related field is \$21.2 million over five years and \$36.6 million over 10 years, as detailed in Table 14. This translates into an average of approximately \$3.7 million per year over 10 years. The fiscal impact per adult student employed in a related field is \$4,900 over five years

⁹ The average financial aid awarded per student exceeded the cost of tuition for transportation operations programs, and there were no opportunity costs in the form of lost wages for adult students due to the short length of the program. Therefore, the return on investment for transportation operations programs does not include financial aid.

and \$8,400 over 20 years, or approximately \$840 per year over 10 years. Income tax revenue comprises 83.9 percent of the total fiscal impact, while sales tax revenue comprises the remaining 16.1 percent.

Table 14: Fiscal Impact of Adult Students Employed in a Related Field, 2022-23 (NPV\$)

Tax Type	Total (5 Years)	Total (10 Years)
Income Tax Revenue	\$17,692,439	\$30,885,023
Sales Tax Revenue	\$3,511,461	\$5,731,821
Total Tax Revenue	\$21,203,900	\$36,616,844

Source: Economics Center analysis.

Benefits of Workforce and Economic Development Programs

Through their workforce and economic development (WED) programs, Technology Centers provide safety training, industry-specific training, and adult and career development training. As detailed in Table 15, Technology Centers had 309,399 enrollments in WED programs during the 2022-23 academic year. More than half (53.7%) of enrollments were in safety-related programs. Industry programs represented 32.5 percent of enrollments, while adult and career development programs represented 13.8 percent of enrollments in the 2022-23 academic year.

Table 15: WED Enrollment at Technology Centers by Program, 2022-23

Program	Enrollment
Adult & Career Development	42,756
Industry	100,561
Safety	166,082
Total	309,399

Source: Data provided by the Oklahoma Department of Career and Technology Education.

Table 16 details the safety courses with the highest levels of enrollment during the 2022-23 academic year. Safety courses about personal protective equipment including blood borne pathogens as well as hand, foot, eye, and ear protection represented approximately 13.9 percent of enrollments in safety programs. Courses on basic life support, first aid, and/or CPR accounted for an additional 13.1 percent of enrollments in safety programs. Equipment operations and safety courses related to forklift, boom lifts, scissor lifts, skid steers, and front loaders, among other things, represented 9.2 percent of enrollments in safety courses. Hazard communication and safety courses accounted for 8.4 percent of enrollments, while fire safety accounted for 6.9 percent of enrollments in safety courses. All other safety related courses comprised the remaining 48.5 percent of enrollments in safety courses during the 2022-23 academic year.

Table 16: WED Enrollment in Safety Programs at Technology Centers by Course, 2022-23

Course Classification	Enrollment
Personal Protective Equipment	23,032
Basic Life Support/First Aid/CPR	21,823
Equipment Operations & Safety	15,308
Hazard Communication & Safety	13,909
Fire Safety	11,519
Other	80,491
Total Safety	166,082

Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education.

Table 17 details the industry courses with the highest levels of enrollment during the 2022-23 academic year. Courses related to professional development, soft skills, or organizational optimization represented 19.4 percent of enrollments in industry programs. Industry-specific safety courses accounted for 17.5 percent of enrollments in industry programs. Police, fire, and first responder courses represented 10.2 percent of enrollments in industry programs. Truck, bus, and van driver courses, including safety-related courses, accounted for 6.5 percent of enrollments, while computer skills and information technology courses accounted for 5.5 percent of enrollments in industry programs during the 2022-23 academic year.

Table 17: WED Enrollment in Industry Programs at Technology Centers by Course, 2022-23

Course Classification	Enrollment
Professional Development/Soft Skills/Organizational Optimization	19,467
Safety	17,635
Police/Fire/First Responder	10,241
Truck/Bus/Van Driver	6,565
Computer Skills/Information Technology	5,535
Other	41,118
Total Industry	100,561

Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education.

Table 18 details the adult and career development courses with the highest levels of enrollment during the 2022-23 academic year. Enrollments in medical related courses such as medication administration, nursing, or phlebotomy accounted for 23.6 percent of adult and career development program enrollments. Courses related to professional development, soft skills, or organizational optimization represented 15.5 percent of enrollments in adult and career development programs. Courses on basic life support, first aid, and/or CPR accounted for an additional 11.9 percent of enrollments in career and development programs. Enrollments in office and administrative related courses such as legislative updates, insurance, legal topics, or accounting accounted for 6.4 percent of adult and career development program enrollments. Police, fire, and first responder courses represented an additional

4.4 percent of enrollments in adult and career development programs during the 2022-23 academic year.

Table 18: WED Enrollment in Adult and Career Development Programs at Technology Centers by Course, 2022-23

Course Classification	Enrollment
Medical	10,071
Professional Development/Soft Skills/Organizational Optimization	6,619
Basic Life Support/First Aid/CPR	5,094
Office/Administrative	2,742
Police/Fire/First Responder	1,871
Other	16,359
Total Adult and Career Development	42,756

Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education.

Because of their customized nature, WED programs are varied in their length of time and intended outcome. This variability, in combination with data limitations, prevented the Economics Center from quantifying a monetary benefit associated with the WED programs offered by Technology Centers. However, prior research indicates that investments in health and safety training for workers reduces workplace injuries and illnesses, resulting in positive returns.

In a 2012 report, the U.S. Occupational Safety and Health Administration found that health and safety programs decrease work related injuries and may lead to increased productivity, decreased turnover, decreased workers' compensation costs, and increased employee satisfaction. For employers who do not have a health and safety program, implementing such a plan could reduce injuries and illnesses by between 15.0 and 35.0 percent.¹⁰

In a 2005 survey of chief financial officers (CFOs), more than 60.0 percent of surveyed CFOs indicated that \$2 or more in benefits were returned for every \$1 invested in injury prevention.¹¹ Additionally, 40.0 percent of surveyed CFOs indicated that productivity was the main benefit of effective safety programs.¹² Another survey of 231 financial executives or managers found that the perceived return on investment of workplace safety was an average of \$4.41 per dollar invested in safety.¹³

Benefits of Expenditures to Provide Education

Operations Expenditures

Operations expenditures represent the day-to-day expenses incurred to provide career and technology education such as salaries, academic support, facilities operations, and supplies, among other items. Technology Centers incurred operations expenditures of \$585.7 million during fiscal year 2023. After accounting for economic leakage, approximately \$433.0 million was retained as economic output in the State of Oklahoma. This led to further indirect economic output of \$352.7 million as a result of the inter-industry and household economic relationships. Technology Centers directly employed 4,360 individuals with wages of \$264.0 million. This equates to an average annual wage of \$60,540. An additional 3,323

¹⁰ (U.S. Occupational Safety and Health Administration 2012)

¹¹ (Liberty Mutual Insurance Group 2005) as quoted in (National Safety Council 2013)

¹² (Liberty Mutual Insurance Group 2005) as quoted in (National Safety Council 2013)

¹³ (Huang, et al. 2009)

jobs with wages of \$137.7 million were indirectly supported throughout the State of Oklahoma by the operations expenditures of Technology Centers. In fiscal year 2023, the operations expenditures of Technology Centers generated a total of \$785.7 million in economic output and supported 7,683 jobs with wages of \$401.7 million across the State of Oklahoma, as detailed in Table 19.

Table 19: Economic Impact of the Operations Expenditures of Technology Centers on the State of Oklahoma, FY 2023 (Nominal\$)

Impact Type	Output	Employment	Wages
Direct	\$433,048,848	4,360	\$263,950,439
Indirect	\$352,685,235	3,323	\$137,719,516
Total	\$785,734,083	7,683	\$401,669,955

Source: Economics Center analysis of data provided by Oklahoma Technology Centers and the Oklahoma Department of Career and Technology Education.

In addition to the economic impacts, fiscal impacts in the form of income and sales tax revenue are created for state and local jurisdictions. The wages supported by the operations expenditures of Technology Centers generated a total of \$16.0 million in income tax revenue for the State of Oklahoma in fiscal year 2023. Additionally, the spending of the wages resulted in approximately \$9.6 million in sales tax revenue, of which the State of Oklahoma received \$5.1 million, cities in Oklahoma received \$3.9 million, and counties in Oklahoma received \$618,500. As detailed in Table 20, the operations expenditures of Technology Centers created a total of \$25.6 million in income and sales tax revenue in fiscal year 2023.

Table 20: Fiscal Impact of the Operations Expenditures of Technology Centers, FY 2023 (Nominal\$)

Jurisdiction	Income Tax Revenue	Sales Tax Revenue	Total Tax Revenue
City	N/A	\$3,854,347	\$3,854,347
County	N/A	\$618,473	\$618,473
State	\$16,046,445	\$5,127,886	\$21,174,331
Total	\$16,046,445	\$9,600,706	\$25,647,151

Source: Economics Center analysis.

Capital Expenditures

In addition to the day-to-day expenses, Technology Centers also incur expenses related to capital projects such as renovations, building expansion, equipment, and/or information technology upgrades. These expenditures are associated with a specific project and are generally a one-time expenditure, as opposed to ongoing. In fiscal year 2023, Technology Centers incurred capital expenditures totaling \$154.2 million. After accounting for economic leakage, approximately \$85.7 million was retained as economic output in the State of Oklahoma. The capital expenditures of Technology Centers directly supported 385 jobs with wages of \$28.1 million. As a result of the capital expenditures of Technology Centers, an additional \$68.0 million in economic output was indirectly generated in the State of Oklahoma, which supported 486 jobs with wages of \$21.8 million. As detailed in Table 21, the capital expenditures of Technology Centers generated a total of \$153.6 million in economic output and supported 871 jobs with wages of \$49.8 million across the State of Oklahoma in fiscal year 2023.

Table 21: Economic Impact of the Capital Expenditures of Technology Centers on the State of Oklahoma, FY 2023 (Nominal\$)

Impact Type	Output	Employment	Wages
Direct	\$85,688,098	385	\$28,055,682
Indirect	\$67,961,493	486	\$21,792,113
Total	\$153,649,591	871	\$49,847,795

Source: Economics Center analysis of data provided by Oklahoma Technology Centers and the Oklahoma Department of Career and Technology Education.

The wages supported by the capital expenditures of Technology Centers generated a total of \$2.2 million in income tax revenue for the State of Oklahoma in fiscal year 2023. Additionally, the spending of the wages resulted in approximately \$1.2 million in sales tax revenue, of which the State of Oklahoma received \$625,900, cities in Oklahoma received \$470,400, and counties in Oklahoma received \$75,500. As detailed in Table 22Table 20, the capital expenditures of Technology Centers created a total of \$3.4 million in income and sales tax revenue in fiscal year 2023.

Table 22: Fiscal Impact of the Capital Expenditures of Technology Centers, FY 2023 (Nominal\$)

Jurisdiction	Income Tax Revenue	Sales Tax Revenue	Total Tax Revenue
City	N/A	\$470,443	\$470,443
County	N/A	\$75,488	\$75,488
State	\$2,203,496	\$625,885	\$2,829,381
Total	\$2,203,496	\$1,171,816	\$3,375,312

Source: Economics Center analysis.

Total

As detailed in Table 23, the operations and capital expenditures of Technology Centers directly generated \$518.7 million in economic output, which resulted in an additional \$420.6 million in indirect economic output. Technology Centers directly supported 4,745 jobs with \$292.0 million in wages and indirectly supported an additional 3,809 jobs with \$159.5 million in wages. In total, the operations and capital expenditures of Technology Centers generated \$939.4 million in economic output and supported 8,554 jobs with \$451.5 million in wages in the State of Oklahoma in fiscal year 2023.

Table 23: Total Economic Impact of Technology Centers on the State of Oklahoma, FY 2023 (Nominal\$)

Impact Type	Output	Employment	Wages
Direct	\$518,736,946	4,745	\$292,006,121
Indirect	\$420,646,728	3,809	\$159,511,629
Total	\$939,383,674	8,554	\$451,517,750

Source: Economics Center analysis of data provided by Oklahoma Technology Centers and the Oklahoma Department of Career and Technology Education.

As detailed in Table 24, Technology Centers created a total of \$29.0 million in income and sales tax revenue in fiscal year 2023 as a result of their operations and capital expenditures. The wages supported by Technology Centers generated a total of \$18.2 million in income tax revenue for the State of Oklahoma in fiscal year 2023. Additionally, the spending of the wages resulted in approximately \$10.8 million in sales tax revenue, of which the State of Oklahoma received \$5.8 million, cities in Oklahoma received \$4.3 million, and counties in Oklahoma received \$694,000.

Table 24: Total Fiscal Impact of Technology Centers, FY 2023 (Nominal\$)

Jurisdiction	Income Tax Revenue	Sales Tax Revenue	Total Tax Revenue
City	N/A	\$4,324,790	\$4,324,790
County	N/A	\$693,961	\$693,961
State	\$18,249,941	\$5,753,771	\$24,003,712
Total	\$18,249,941	\$10,772,522	\$29,022,463

Source: Economics Center analysis.

Skills Centers

The Skills Center division of the Oklahoma Department of Career and Technology Education manages “the delivery of career and technology education to inmates under the supervision of the Oklahoma Department of Corrections and juveniles under the supervision of the Oklahoma Office of Juvenile Affairs” and is responsible for dropout recovery initiatives across the State of Oklahoma.¹⁴ Currently, the Skills Center division offers full-time programs and short-term training opportunities at 16 sites within facilities operated by the Oklahoma Department of Corrections. This section explores the value of career and technology education for incarcerated individuals across the State of Oklahoma.

Benefits of Career and Technology Education for Incarcerated Students

Overview

As detailed in Table 25, a total of 1,026 incarcerated individuals were enrolled in programs at Skills Centers during fiscal year 2023. White inmates represented approximately half (51.7%) of total enrollment. Black or African American inmates represented 25.5 percent of Skill Center enrollments, while Native Hawaiian or Other Pacific Islanders represented 9.6 percent of enrollment. The remaining 13.2 percent of inmates enrolled in programs at Skill Centers were Hispanic or Latino (5.7%), American Indian or Alaskan Native (1.4%), Asian (0.3%), or of an unknown race/ethnicity (5.8%).

¹⁴ (Oklahoma Department of Career and Technology Education 2024)

Table 25: Enrollment at Skills Centers by Race/Ethnicity, Fiscal Year 2023

Race/Ethnicity	Enrollment
American Indian or Alaskan Native	14
Asian	3
Black or African American	262
Hispanic or Latino	58
Native Hawaiian or Other Pacific Islander	99
White	530
Unknown	60
Total	1,026

Source: Data provided by the Oklahoma Department of Career and Technology Education.

Table 26 details enrollment in programs at Skills Centers in fiscal year 2023 by age range. Approximately 30.3 percent of inmates enrolled in programs at Skills Centers were between the ages of 26 and 35 years, while an additional 44.2 percent of inmates were between the ages of 36 and 45 years. Approximately 16.6 percent of inmates were between the ages of 46 and 55 years. The remaining inmates enrolled in programs at Skills Centers were between the ages of 18 and 25 years (2.9%), 56 years of age and older (5.9%), or had an unknown age (0.1%). In fiscal year 2023, the average age of inmates enrolled in programs at Skills Center was 39 years of age.

Table 26: Enrollment at Skills Centers by Age Range, Fiscal Year 2023

Age Range	Enrollment
Ages 18 to 25	30
Ages 26 to 35	311
Ages 36 to 45	453
Ages 46 to 55	170
Ages 56 to 65	57
Ages 65 and over	4
Unknown	1
Total	1,026

Source: Data provided by the Oklahoma Department of Career and Technology Education.

As detailed in Table 27, approximately 57.6 percent of inmates enrolled in programs at Skills Centers had a high school diploma or equivalent. An additional 7.0 percent of inmates had less than a high school diploma. Approximately 5.0 percent of inmates had some college experience but no degree, while 0.8 percent of inmates had a technical diploma. Approximately 3.6 percent of inmates had an associate's degree or higher, while the education attainment was unknown for 26.0 percent of inmates.

Table 27: Enrollment at Skills Centers by Educational Attainment, Fiscal Year 2023

Educational Attainment	Enrollment
Less than High School Diploma	72
High School Diploma or Equivalent	591
Technical Diploma	8
Some College, No Degree	51
Associate's Degree	18
Bachelor's Degree	14
Master's Degree	3
Doctorate Degree	2
Unknown	267
Total	1,026

Source: Data provided by the Oklahoma Department of Career and Technology Education.

Of the incarcerated individuals enrolled in programs at Skills Centers during fiscal year 2023, 586 inmates were enrolled in programs that prepared them for careers, while the remaining 440 inmates were enrolled in general career readiness programs. Of those enrolled in specific career programs, 472 inmates (80.5%) completed their program. Approximately 89.6 percent of inmates who completed their program had an unknown status during the follow-up period. Of the 49 completers with a known follow-up status, 33 completers were employed in a related field and nine completers were employed in an unrelated field during the follow-up period.

For incarcerated individuals enrolled in programs at Skills Centers in fiscal year 2023, Table 28 details the enrollment and follow-up overview by program. Construction programs represented the largest program with 28.3 percent of Skills Center enrollment in fiscal year 2023. Five other programs represented more than 5.0 percent of Skill Center enrollment. These programs were transportation operations (22.9%); welding and metal fabrication (17.2%); heating, ventilation, and air conditioning (8.9%); electrical trades (8.4%); and automotive service (5.1%). Collectively, these six programs represented more than 90.0 percent of enrollment in programs at Skills Centers during fiscal year 2023.

Formerly incarcerated individuals face many difficulties in the labor force including significantly higher unemployment rates and considerably lower wages.¹⁵ As a result, no program completers were confirmed to be employed in a related field for culinary arts, production, or meat processing programs. The programs with completers that were employed in a related field were electrical trades (15.8%); pet services (14.3%); transportation operations (10.6%); automotive service (7.1%); construction (6.0%); heating, ventilation, and air conditioning (4.8%); and welding and metal fabrication (4.2%). Completers of pet services programs that were employed in a related field reported no wages during the follow-up period; therefore, these students are excluded from the earnings profile and fiscal impact analysis.

¹⁵ (Coulette and Kopf 2018); (Craig, Grawert and Kimble 2022)

Table 28: Enrollment and Follow-Up Overview at Skills Centers by Program, Fiscal Year 2023

Program Grouping	Enrollment	Program Completers	Percent Employed in a Related Field
Construction	166	133	6.0%
Transportation Operations	134	123	10.6%
Welding & Metal Fabrication	101	96	4.2%
Heating, Ventilation & Air Conditioning	52	21	4.8%
Electrical Trades	49	19	15.8%
Automotive Service	30	28	7.1%
Culinary Arts	22	22	0.0%
Production	16	15	0.0%
Pet Services	14	14	14.3%
Meat Processing	2	1	0.0%
Total	586	472	7.0%

Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education.

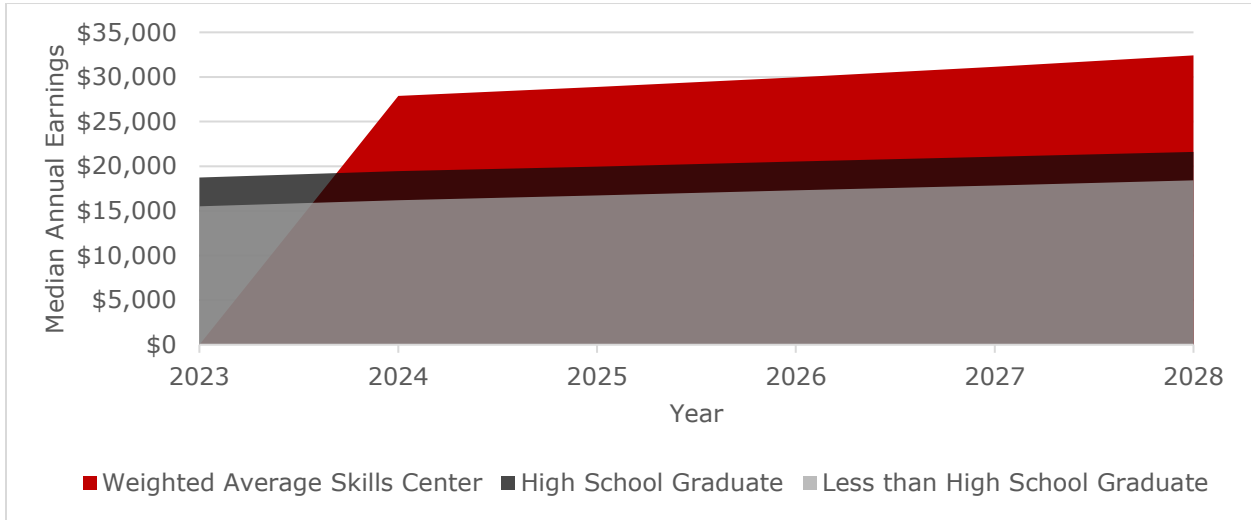
Earnings

Earnings profiles for Skills Center completers represent the economic benefit of career and technology education received by inmates. Using reported wages during the follow-up period and projected annual growth rates for relevant occupations across Oklahoma, the earnings for each program were projected and compared to the baseline earnings for a high school graduate or equivalent. Craige, Grawert, and Kimble (2022) found that formerly incarcerated individuals made approximately 52.0 percent of the earnings expected, on average. Therefore, the earnings profiles for Skills Center completers incorporate this discriminatory factor for both Skills Center completers and high school graduates to create an appropriate comparison group. The difference in earnings represents the additional earnings potential for a program completer of each program if they were to be employed in a job related to the program.

Figure 9 illustrates the average earnings profile over five years for Skills Center completers in fiscal year 2023 who were employed in a related field compared to the discrimination-adjusted average earnings profile for individuals with a high school diploma as well as individuals with less than a high school diploma. The average age of inmates enrolled in programs at Skills Centers was 40 years of age. The overall comparison group assumes the same age as all enrolled inmates. However, the analysis for each program reflects the average age of inmates enrolled in each respective program.

In the first full year after entering employment in a related field (2024), Skills Center completers reported annual earnings that averaged \$27,900. This represents median annual earnings of approximately \$8,400 more than a high school graduate who has previously been incarcerated. By year five (2028), the median annual earnings for Skills Center completers are estimated to increase to \$32,400, which is approximately \$10,800 more than a high school graduate who has previously been incarcerated.

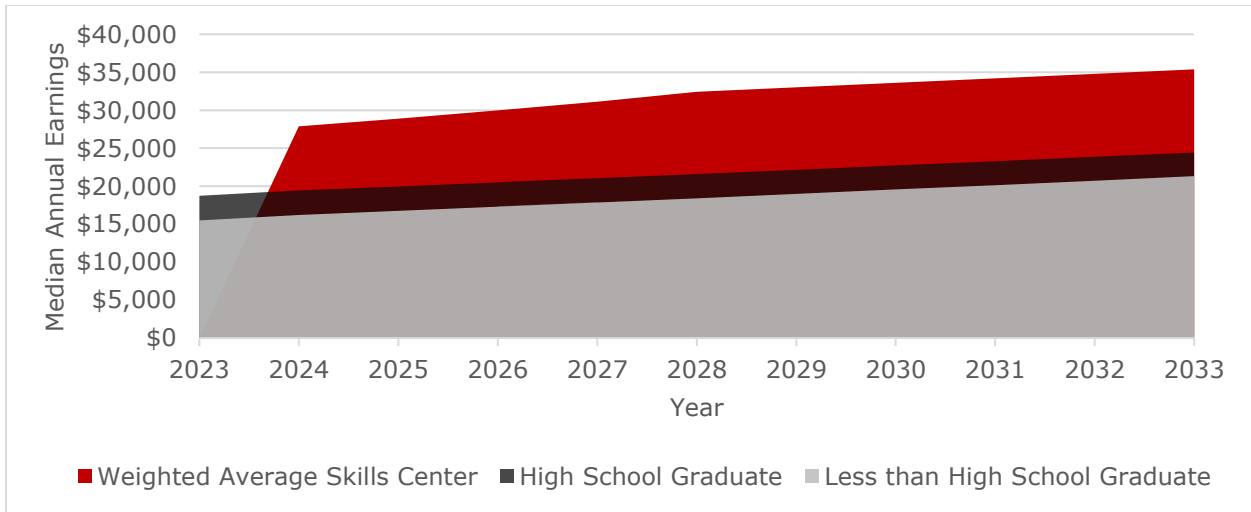
Figure 9: Average 5-Year Earnings Profile for Skills Center Completers Employed in a Related Field, Fiscal Year 2023 (Nominal\$)



Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education and data retrieved from Lightcast, the U.S. Census Bureau, the U.S. Bureau of Labor Statistics, and Craige, Grawert, and Kimble (2022).

Figure 10 extends the average earnings profile through year 10 for Skills Center completers in fiscal year 2023 who were employed in a related field. The median annual earnings for Skills Center completers are estimated to increase to \$35,400 in year 10 (2033), which is \$11,000 more than a high school graduate who has previously been incarcerated.

Figure 10: Average 10-Year Earnings Profile for Skills Center Completers Employed in a Related Field, Fiscal Year 2023 (Nominal\$)



Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education and data retrieved from Lightcast, the U.S. Census Bureau, the U.S. Bureau of Labor Statistics, and Craige, Grawert, and Kimble (2022).

Table 29 details the median annual earnings for Skills Center completers who were employed in a related field by program. In the first full year after entering employment in a related field, the programs with the highest reported annual earnings were transportation operations (\$39,840), construction (\$24,661), and welding and metal fabrication (\$24,055). In the fifth year after entering employment in a related field, the programs with the highest projected annual earnings are transportation operations (\$43,145), electrical trades (\$31,856), and construction (\$29,533). These programs continue to have the highest earnings potential throughout the remaining years of the forecast. By year five, all programs with completers employed in a related field have estimated annual earnings that are projected to exceed that of the annual earnings for a high school graduate who had been previously incarcerated.

Table 29: Median Annual Earnings for Skills Center Completers Employed in a Related Field by Program, Fiscal Year 2023 (Nominal\$)

Program	Enrollment	Year 1 ¹⁶	Year 5	Year 10
Construction	166	\$24,661	\$29,533	\$32,074
Transportation Operations	134	\$39,840	\$43,145	\$47,275
Welding & Metal Fabrication	101	\$24,055	\$26,328	\$28,848
Heating, Ventilation & Air Conditioning	52	\$20,800	\$26,882	\$29,171
Electrical Trades	49	\$15,253	\$31,856	\$34,351
Automotive Service	30	\$20,800	\$22,446	\$24,502
Culinary Arts	22	N/A	N/A	N/A
Production	16	N/A	N/A	N/A
Pet Services ¹⁷	14	N/A	N/A	N/A
Meat Processing	2	N/A	N/A	N/A
Weighted Average	586	\$27,866	\$32,418	\$35,388
Previously Incarcerated High School Graduate	N/A	\$19,437	\$21,604	\$24,436

Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education and data retrieved from Lightcast, the U.S. Census Bureau, the U.S. Bureau of Labor Statistics, and Craige, Grawert, and Kimble (2022).

Table 30 details the present value of cumulative earnings for Skills Center completers who were employed in a related field by program. On average, the present value of cumulative earnings over five years is approximately \$129,400. This represents cumulative earnings over five years that exceed a high school graduate who had been previously incarcerated by nearly \$41,000. The present value of cumulative earnings over 10 years is approximately \$244,600 for Skills Center completers who were employed in a related field, which is nearly \$77,800 more than cumulative earnings for a high school graduate who had been previously incarcerated. The program with the highest cumulative earnings is transportation operations, with cumulative earnings of \$178,900 over five years, increasing to \$332,600 over 10 years.

Skills Center completers who are employed in a related field are estimated to have cumulative earnings that exceed the earnings of a high school graduate who had been previously incarcerated by \$3.3 million

¹⁶ The annual earnings detailed for year one reflect the average earnings reported by completers employed in a related field due to the prevalence of missing data for reported median earnings.

¹⁷ There were two completers who were employed in a related field; however, there were no reported earnings.

over five years and \$6.2 million over 10 years, after factoring for the employment rate of previously incarcerated individuals.¹⁸ This equates to an average of \$621,700 per year for 10 years.

Table 30: Present Value of Cumulative Earnings for Skills Center Completers Employed in a Related Field by Program, Fiscal Year 2023 (NPV\$)

Program	Enrollment	Year 5	Year 10
Construction	166	\$116,332	\$220,965
Transportation Operations	134	\$178,940	\$332,616
Welding & Metal Fabrication	101	\$108,557	\$202,334
Heating, Ventilation & Air Conditioning	52	\$101,951	\$197,145
Electrical Trades	49	\$96,750	\$209,132
Automotive Service	30	\$93,259	\$173,027
Culinary Arts	22	N/A	N/A
Production	16	N/A	N/A
Pet Services ¹⁹	14	N/A	N/A
Meat Processing	2	N/A	N/A
Weighted Average	586	\$129,389	\$244,596
Previously Incarcerated High School Graduate	N/A	\$88,418	\$166,826

Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education and data retrieved from Lightcast, the U.S. Census Bureau, the U.S. Bureau of Labor Statistics, and Craige, Grawert, and Kimble (2022).

Fiscal Impact

The career and technology education that Skills Center completers receive leads to a higher earnings potential for those employed in related fields, on average, compared to formerly incarcerated individuals with, at most, a high school diploma or equivalent. The additional earnings potential generates fiscal impacts for state and local governments through increased income tax revenue resulting from higher earnings and increased sales tax revenue resulting from the spending of earnings.

The net present value of the additional tax revenue generated by Skills Center completers in fiscal year 2023 who were employed in a related field is \$151,000 over five years and \$297,700 over 10 years, as detailed in Table 31. This translates into an average of approximately \$29,800 per year over 10 years. The fiscal impact per Skills Center completer employed in a related field is \$4,600 over five years and \$9,000 over 10 years, or roughly \$960 per year over 10 years. Income tax revenue comprises 90.8 percent of the total fiscal impact, while sales tax revenue comprises 9.2 percent.

¹⁸ (Carson, et al. 2021)

¹⁹ There were two completers who were employed in a related field; however, there were no reported earnings.

Table 31: Fiscal Impact of Skills Center Completers Employed in a Related Field, Fiscal Year 2023 (NPV\$)

Tax Type	Total (5 Years)	Total (10 Years)
Income Tax Revenue	\$139,294	\$266,373
Sales Tax Revenue	\$11,753	\$31,352
Total Tax Revenue	\$151,047	\$297,725

Source: Economics Center analysis.

Reduced Recidivism

While the increased tax revenue associated with released inmates employed in a related field is marginal, there are substantial benefits to the State of Oklahoma from the reduced recidivism associated with the career and technology education provided by Skills Centers. The Oklahoma Department of Corrections reported a three-year recidivism rate of 21.2 percent based on prison releases in fiscal year 2010.²⁰ Because the follow-up results for the majority of inmates enrolled in programs at Skills Centers are unknown, it was assumed that they have not been reincarcerated in Oklahoma. However, the possibility remains that they may have been incarcerated in another state. A special report from the U.S. Department of Justice found that 11.0 percent of released prisoners were arrested outside of the state during the five years after release.²¹ Therefore, the estimated recidivism rate among Skills Center completers was approximately 10.0 percent in the year following release, which is measured as completers who were reincarcerated in Oklahoma plus 11.0 percent of the completers with unknown follow-up status.

A study by the U.S. Department of Justice reports the recidivism rate for inmates in state prisons who were released in 2008 across 18 states using follow-up data over 10 years.²² Using the year-over-year growth rates calculated from this study, it is estimated that the recidivism rate in Oklahoma was 13.4 percent in the first year following release and increased to 26.5 percent by the tenth year following release, as detailed in Table 32. Applying the same growth rates to the estimated one-year recidivism rate for Skills Center completers, the recidivism rate is estimated to increase to 19.8 percent by the tenth year following release. The difference in the estimated recidivism rates statewide and among Skills Center completers was applied to the 472 inmates who completed career and technology education in fiscal year 2023 to estimate the inmates who will avoid reincarceration. In the 10 years following release, it is estimated that 32 individuals will avoid reincarceration as a result of completing career and technology education at Skills Center.

²⁰ (Oklahoma Department of Corrections 2014)

²¹ (Durose and Antenageli 2021)

²² (Antenageli and Durose 2021)

Table 32: Estimated Recidivism Rates in Oklahoma by Year Following Release

Year Following Release	Statewide Recidivism Rate	Skills Center Completer Recidivism Rate	Cumulative Reincarcerations Avoided
Year 1	13.4%	10.0%	16
Year 2	18.7%	13.9%	22
Year 3	21.2%	15.8%	25
Year 4	22.8%	17.0%	27
Year 5	24.0%	17.9%	29
Year 6	24.8%	18.5%	30
Year 7	25.5%	19.0%	30
Year 9	25.9%	19.3%	31
Year 9	26.2%	19.6%	31
Year 10	26.5%	19.8%	32

Source: Economics Center calculations utilizing data from Oklahoma Department of Corrections (2014), Antenangeli and Durose (2021), and Durose and Antenangeli (2021).

The avoided costs of reincarceration and crime were calculated based on the estimated 32 individuals who will avoid reincarceration as a result of completing career and technology education at Skills Center. According to the Oklahoma Department of Corrections, the daily cost of incarceration was \$16.90 in fiscal year 2021.²³ After adjusting for inflation and converting to 2023 dollars, this equates to a daily cost of approximately \$19.00, or an annualized cost of \$6,936. In fiscal year 2021, inmates in Oklahoma state prisons had an average sentence of 19.5 years and a median sentence of 13.0 years.²⁴

To estimate the benefits to society of reduced crime, the distribution of post-release arrests by offense was combined with the cost per crime for each offense to estimate the expected costs avoided due to reduced recidivism. A 2010 RAND study estimated the cost per crime was \$8.6 million for murder, \$217,866 for rape, \$87,238 for aggravated assault, \$67,277 for robbery, \$13,096 for burglary, \$2,139 for larceny, and \$9,079 for motor-vehicle theft, reported in 2007 dollars.²⁵ An analysis of state prisoners released from 24 states in 2008 indicates that approximately 1.2 percent of released prisoners were arrested for homicide, 2.5 percent were arrested for rape or sexual assault, 7.4 percent were arrested for violent robbery, 31.3 percent were arrested for assault, and 28.9 percent were arrested for larceny or motor vehicle theft, among other offenses, in the 10 years following release.²⁶ By incorporating the distribution of post-release arrests by offense with the cost per crime, each avoided crime has an average cost of \$144,628 in 2007 dollars, which is \$215,539 after converting to 2023 dollars.

The 10-year cost savings due to reduced recidivism for Skills Center completers by program are detailed in Table 33. The 32 individuals who will avoid reincarceration as a result of completing career and technology education at Skills Center in fiscal year 2023 are estimated to generate cost savings that total nearly \$8.1 million over 10 years. Approximately \$1.7 million in incarcerations costs will be avoided and \$6.4 million in crime costs will be avoided.

²³ (Oklahoma Office of Management & Enterprise Services 2022)

²⁴ (FWD.us 2023)

²⁵ (Heaton 2010)

²⁶ (Antenangeli and Durose 2021)

Table 33: Present Value of 10-Year Cost Savings Due to Reduced Recidivism for Skills Center Completers by Program, (NPV\$)

Year Following Release	Avoided Incarceration Costs	Avoided Crime Costs	Total Avoided Costs
Year 1	\$109,092	\$3,342,718	\$3,451,810
Year 2	\$148,693	\$1,288,063	\$1,436,756
Year 3	\$164,849	\$602,813	\$767,662
Year 4	\$173,060	\$375,148	\$548,208
Year 5	\$177,452	\$266,924	\$444,376
Year 6	\$178,941	\$183,087	\$362,028
Year 7	\$178,979	\$140,859	\$319,838
Year 8	\$177,085	\$82,352	\$259,437
Year 9	\$174,868	\$71,323	\$246,191
Year 10	\$172,076	\$52,118	\$224,194
Total	\$1,655,095	\$6,405,405	\$8,060,500

Source: Economics Center analysis.

Benefits of Expenditures to Provide Education

Operations Expenditures

Operations expenditures represent the day-to-day expenses incurred to provide career and technology education such as salaries, books, and supplies. Skills Centers incurred operations expenditures of \$8.6 million during fiscal year 2023. After accounting for economic leakage, approximately \$5.9 million was retained as economic output in the State of Oklahoma. This led to further indirect economic output of \$4.8 million as a result of the inter-industry and household economic relationships. Skills Centers directly employed 53 individuals with wages of \$2.9 million. This equates to an average annual wage of \$53,800. An additional 40 jobs with wages of \$1.5 million were indirectly supported throughout the State of Oklahoma by the operations expenditures of Skills Centers. In fiscal year 2023, the operations expenditures of Skills Centers generated a total of \$10.7 million in economic output and supported 93 jobs with wages of \$4.3 million across the State of Oklahoma, as detailed in Table 34.

Table 34: Economic Impact of the Operations Expenditures of Skills Centers on the State of Oklahoma, FY 2023 (Nominal\$)

Impact Type	Output	Employment	Wages
Direct	\$5,875,277	53	\$2,851,767
Indirect	\$4,784,965	40	\$1,487,946
Total	\$10,660,242	93	\$4,339,713

Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education.

In addition to the economic impacts, fiscal impacts in the form of income and sales tax revenue are created for state and local jurisdictions. The wages supported by the operations expenditures of Skills Centers generated a total of \$188,500 in income tax revenue for the State of Oklahoma in fiscal year 2023. Additionally, the spending of the wages resulted in approximately \$110,000 in sales tax revenue, of which the State of Oklahoma received \$58,700, cities in Oklahoma received \$44,100, and counties

in Oklahoma received \$7,100. As detailed in Table 35, the operations expenditures of Skills Centers created a total of \$298,500 in income and sales tax revenue in fiscal year 2023.

Table 35: Fiscal Impact of the Operations Expenditures of Skills Centers, FY 2023 (Nominal\$)

Jurisdiction	Income Tax Revenue	Sales Tax Revenue	Total Tax Revenue
City	N/A	\$44,146	\$44,146
County	N/A	\$7,084	\$7,084
State	\$188,530	\$58,732	\$247,262
Total	\$188,530	\$109,962	\$298,492

Source: Economics Center analysis.

Capital Expenditures

In addition to the day-to-day expenses, Skills Centers also incur expenses related to capital projects such as construction or equipment upgrades. These expenditures are associated with a specific project and are generally a one-time expenditure, as opposed to ongoing. In fiscal year 2023, Skills Centers incurred capital expenditures totaling \$314,200. After accounting for economic leakage, approximately \$185,200 was retained as economic output in the State of Oklahoma. The capital expenditures of Skills Centers directly supported one job with wages of \$50,000. As a result of the capital expenditures of Skills Centers, an additional \$153,300 in economic output was indirectly generated in the State of Oklahoma, which supported one job with wages of \$48,600. As detailed in Table 36, the capital expenditures of Skills Centers generated a total of \$338,400 in economic output and supported two jobs with wages of \$98,700 across the State of Oklahoma in fiscal year 2023.

Table 36: Economic Impact of the Capital Expenditures of Skills Centers on the State of Oklahoma, FY 2023 (Nominal\$)

Impact Type	Output	Employment	Wages
Direct	\$185,181	1	\$50,043
Indirect	\$153,260	1	\$48,615
Total	\$338,441	2	\$98,658

Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education.

The wages supported by the capital expenditures of Skills Centers generated a total of \$4,300 in income tax revenue for the State of Oklahoma in fiscal year 2023. Additionally, the spending of the wages resulted in approximately \$2,300 in sales tax revenue, of which the State of Oklahoma received \$1,200, cities in Oklahoma received \$930, and counties in Oklahoma received \$150. As detailed in Table 37, the capital expenditures of Skills Centers created a total of \$6,700 in income and sales tax revenue in fiscal year 2023.

Table 37: Fiscal Impact of the Capital Expenditures of Skills Centers, FY 2023 (Nominal\$)

Jurisdiction	Income Tax Revenue	Sales Tax Revenue	Total Tax Revenue
City	N/A	\$928	\$928
County	N/A	\$149	\$149
State	\$4,341	\$1,235	\$5,576
Total	\$4,341	\$2,312	\$6,653

Source: Economics Center analysis.

Total

As detailed in Table 38, the operations and capital expenditures of Skills Centers directly generated \$6.1 million in economic output, which resulted in an additional \$4.9 million in indirect economic output. Skills Centers directly supported 54 jobs with \$2.9 million in wages and indirectly supported an additional 41 jobs with \$1.5 million in wages. In total, the operations and capital expenditures of Skills Centers generated \$11.0 million in economic output and supported 95 jobs with \$4.4 million in wages in the State of Oklahoma in fiscal year 2023.

Table 38: Total Economic Impact of Skills Centers on the State of Oklahoma, FY 2023 (Nominal\$)

Impact Type	Output	Employment	Wages
Direct	\$6,060,458	54	\$2,901,810
Indirect	\$4,938,225	41	\$1,536,561
Total	\$10,998,683	95	\$4,438,371

Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education.

As detailed in Table 39, Skills Centers created a total of \$305,100 in income and sales tax revenue in fiscal year 2023 as a result of their operations and capital expenditures. The wages supported by Skills Centers generated a total of \$192,900 in income tax revenue for the State of Oklahoma in fiscal year 2023. Additionally, the spending of the wages resulted in approximately \$112,300 in sales tax revenue, of which the State of Oklahoma received \$60,000, cities in Oklahoma received \$45,100, and counties in Oklahoma received \$7,200.

Table 39: Total Fiscal Impact of Skills Centers, FY 2023 (Nominal\$)

Jurisdiction	Income Tax Revenue	Sales Tax Revenue	Total Tax Revenue
City	N/A	\$45,074	\$45,074
County	N/A	\$7,233	\$7,233
State	\$192,871	\$59,967	\$252,838
Total	\$192,871	\$112,274	\$305,145

Source: Economics Center analysis.

Adult Education and Family Literacy Providers

The Adult Education and Family Literacy (AEFL) division of the Oklahoma Department of Career and Technology Education “ensures that Oklahomans have the opportunity to be fully participating workers, parents and citizens” by providing adults with literacy education, employment knowledge and skills, and skills necessary to improve their economic opportunities.²⁷ The AEFL Division acts as the pass-through agency for federal grants available through the Adult Education Family Literacy Act, a component of the Workforce Innovation and Opportunity Act. The AEFL Division also administers state allocations for adult education. AEFL funding is utilized for classes in high school equivalency preparation, English as a second language, citizenship, English literacy and civics education, and correctional/institutional education. Currently, there are 32 AEFL providers with more than 100 sites across the State of Oklahoma including 19 Department of Corrections sites. This section explores the value of adult education and family literacy programs for individuals across the State of Oklahoma.

Benefits of Adult Education and Family Literacy Programs

Earnings

In fiscal year 2023, 9,865 students were enrolled in AEFL programs across the State of Oklahoma and 918 high school equivalencies were earned. The economic benefit of the high school equivalencies earned represents the additional earnings potential for these students relative to individuals with less than a high school diploma. Data was not available on the age or outcomes of students; therefore, the Economics Center supplemented the data provided by the Oklahoma Department of Career and Technology Education with publicly available data in the State of Oklahoma. Therefore, the increased earnings as a result of earning a high school equivalency does not include projections for future years. The economic benefits described reflect overall characteristics by educational attainment among individuals aged 25 years and over.

According to the U.S. Census Bureau’s American Community Survey, the employment to population ratio in the State of Oklahoma in 2022 was 53.5 percent for individuals with less than a high school diploma and 65.2 percent for individuals with a high school diploma or equivalent. This means that individuals with a high school diploma or equivalent had an employment to population ratio that was 11.7 percentage points higher than individuals without a high school diploma.

Prior to receiving a high school equivalency, it is estimated that 491 of the students who earned a high school equivalency in fiscal year 2023 would have been employed. After receiving a high school equivalency, it is estimated that 599 of the students who earned a high school equivalency in fiscal year 2023 would have been employed. This represents an additional 107 students who are estimated to be employed as a result of receiving a high school equivalency.

In the State of Oklahoma, the median annual earnings for individuals 25 years of age and older were \$28,933 for individuals with less than a high school diploma and \$35,412 for individuals with a high school diploma or equivalent in 2022, according to the U.S. Census Bureau’s American Community Survey. Based on historical data, the Economics Center projected median annual earnings in 2023 to be \$27,954 for individuals with less than a high school diploma and \$33,777 for individuals with a high school diploma or equivalent. This decrease in earnings in 2023 relative to 2022 reflects a mediating effect for the higher-than-normal growth experienced in recent years due to high levels of inflationary growth.

²⁷ (Oklahoma Department of Career and Technology Education 2022)

Based on the median annual earnings in 2023, the 491 students who would have been employed prior to receiving a high school equivalency are estimated to have annual earnings that total \$13.7 million. The 599 students who are estimated to be employed after receiving a high school equivalency have annual earnings that total approximately \$20.2 million. This indicates that the 918 students who earned a high school equivalency in fiscal year 2023 are estimated to increase their collective earnings by \$6.5 million per year, as detailed in Table 40.

Table 40: Annual Earnings Overview for AEFL High School Equivalencies, FY 2023 (Nominal\$)

Educational Attainment	Employment to Population Ratio	Median Annual Earnings	Estimated Employment	Cumulative Median Annual Earnings
Less than high school graduate	53.5%	\$27,954	491	\$13,729,180
High school graduate or equivalency	65.2%	\$33,777	599	\$20,216,543
Difference	11.7%	\$5,822	107	\$6,487,363

Source: Economics Center analysis of data retrieved from the U.S. Census Bureau’s American Community Survey 2022 5-year estimates and data provided by the Oklahoma Department of Career and Technology Education.

Fiscal Impact

The high school equivalencies earned lead to a higher earnings potential, on average, compared to individuals with less than a high school diploma. The additional earnings potential generates fiscal impacts for state and local governments through increased income tax revenue resulting from higher earnings and increased sales tax revenue resulting from the spending of earnings.

The additional tax revenue generated by students who earned a high school equivalency in fiscal year 2023 is approximately \$438,200 per year, as detailed in Table 41. This translates into an average of approximately \$350 per student per year. Income tax revenue comprises 65.7 percent of the total fiscal impact, while sales tax revenue comprises the remaining 34.3 percent.

Table 41: Annual Fiscal Impact for AEFL High School Equivalencies, FY 2023 (Nominal\$)

Tax Type	Annual Total
Income Tax Revenue	\$288,130
Sales Tax Revenue	\$150,117
Total Tax Revenue	\$438,247

Source: Economics Center analysis.

Benefits of Expenditures to Provide Education

Operations Expenditures

Operations expenditures represent the day-to-day expenses incurred to provide adult education and family literacy courses. AEFL programs incurred operations expenditures of \$8.9 million during fiscal year 2023. After accounting for economic leakage, approximately \$5.2 million was retained as economic output in the State of Oklahoma. This led to further indirect economic output of \$4.4 million as a result of the inter-industry and household economic relationships. AEFL programs directly employed four

individuals at the Oklahoma Department of Career and Technology Education.²⁸ It was assumed that the average annual wage of these individuals was approximately \$53,200, resulting in direct estimated wages of \$213,000.²⁹ AEFL programs indirectly supported one additional job with wages of approximately \$34,300. In fiscal year 2023, the operations expenditures of AEFL programs generated a total of \$9.6 million in economic output and supported five jobs with wages of \$247,200 across the State of Oklahoma, as detailed in Table 42.

Table 42: Economic Impact of the Operations Expenditures of AEFL Programs on the State of Oklahoma, FY 2023 (YOE\$)

Impact Type	Output	Employment	Wages
Direct	\$5,182,846	4	\$212,971
Indirect	\$4,448,636	1	\$34,269
Total	\$9,631,482	5	\$247,240

Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education.

In addition to the economic impacts, fiscal impacts in the form of income and sales tax revenue are created for state and local jurisdictions. The wages supported by the operations expenditures of AEFL programs generated a total of \$10,800 in income tax revenue for the State of Oklahoma in fiscal year 2023. Additionally, the spending of the wages resulted in approximately \$5,700 in sales tax revenue, of which the State of Oklahoma received \$3,000, cities in Oklahoma received \$2,300, and counties in Oklahoma received \$370. As detailed in Table 43, the operations expenditures of AEFL programs created a total of \$16,500 in income and sales tax revenue in fiscal year 2023.

Table 43: Fiscal Impact of the Operations Expenditures of AEFL Programs, FY 2023 (YOE\$)

Jurisdiction	Income Tax Revenue	Sales Tax Revenue	Total Tax Revenue
City	N/A	\$2,286	\$2,286
County	N/A	\$367	\$367
State	\$10,830	\$3,041	\$13,871
Total	\$10,830	\$5,694	\$16,524

Source: Economics Center analysis.

AEFL programs did not report capital expenditures for fiscal year 2023. Therefore, the economic and fiscal impacts of AEFL programs represent only the impact of operations expenditures on the State of Oklahoma.

Summary

Benefits of Career and Technology Education for Students

The Oklahoma Department of Career and Technology Education provides career and technology education through multiple delivery arms. The analysis in this report focuses on Technology Centers, Skills Centers, and Adult Education and Family Literacy providers. A total of 20,084 secondary students

²⁸ The direct jobs supported by AEFL programs do not include the instructional staff of the education providers due to data limitations.

²⁹ The average annual wage in Oklahoma for the technical and trade school industry was \$53,200 in 2023, according to Lightcast.

were enrolled in full-time programs at Technology Centers during the 2022-23 academic year. Of the 11,025 secondary students who were either program completers or course concentrators, approximately 24.3 percent were employed in a related field. Secondary students who were employed in a related field are estimated to have cumulative earnings that exceed the earnings of a high school graduate by \$231.6 million over five years and \$373.6 million over 10 years. This equates to approximately \$37.4 million per year over 10 years.

During the 2022-23 academic year, a total of 9,820 adult students were enrolled in full-time programs at Technology Centers. Of the 6,474 adult students who were either program completers or course concentrators, approximately 67.2 percent were employed in a related field. On average, adult students who were employed in a related field are estimated to have cumulative earnings that exceed the earnings of a high school graduate by \$387.3 million over five years and \$674.2 million over 10 years. This equates to approximately \$67.4 million per year over 10 years.

During fiscal year 2023, a total of 1,026 incarcerated individuals were enrolled in programs at Skills Centers. Of the 586 inmates enrolled in specific career programs, 80.5 percent of them completed their program. Approximately 89.6 percent of inmates who completed their program had an unknown status during the follow-up period. Of the 49 completers with a known follow-up status, 33 completers were employed in a related field during the follow-up period. On average, Skills Center completers who were employed in a related field have estimated earnings that exceed the earnings of a high school graduate who has previously been incarcerated by \$3.3 million over five years and \$6.2 million over 10 years. This equates to approximately \$621,700 per year over 10 years.

In fiscal year 2023, 9,865 students were enrolled in AEFL programs across the State of Oklahoma and 918 high school equivalencies were earned. It is estimated that an additional 107 AEFL students who earned a high school equivalency are now employed. Based on characteristics by educational attainment, it is estimated that the 918 students who earned a high school equivalency in fiscal year 2023 are estimated to increase their collective earnings by \$6.5 million per year.³⁰

As detailed in Table 44, the career and technology education as well as adult and family literacy education provided to students in the 2022-23 academic year/2023 fiscal year are estimated to generate earnings that exceed that of the comparison group by more than \$622.1 million over five years and nearly \$1.1 billion over 10 years. On average, \$111.9 million in additional earnings will be generated relative to the comparison group each year over 10 years.

Table 44: Summary of Cumulative Earnings Differential, (NPV\$)

Division	Average Annual	Total (5 Years)	Total (10 Years)
Technology Centers – Secondary Students	\$37,362,703	\$231,607,409	\$373,627,033
Technology Centers – Adult Students	\$67,420,904	\$387,261,569	\$674,209,041
Skills Centers	\$621,712	\$3,271,931	\$6,217,115
Adult Education and Family Literacy Programs	\$6,487,363	N/A	N/A
Cumulative Earnings Differential	\$111,892,682	\$622,140,909	\$1,054,053,189

Source: Economics Center analysis.

³⁰ Data was not available on the age or outcomes of AEFL students; therefore, the increased earnings as a result of earning a high school equivalency does not include projections for future years.

The additional earnings potential generates fiscal impacts for state and local governments through increased income tax revenue resulting from higher earnings and increased sales tax revenue resulting from the spending of earnings. As detailed in Table 45, the additional earnings potential resulting from the career and technology education as well as adult and family literacy education is estimated to result in additional \$6.1 million in state and local tax revenue per year over 10 years. In total, approximately \$33.1 million in additional tax revenue will be generated over five years and \$56.1 million in additional tax revenue will be generated over 10 years.

Table 45: Summary of Cumulative Tax Differential, (NPV\$)

Division	Average Annual	Total (5 Years)	Total (10 Years)
Technology Centers – Secondary Students	\$1,922,705	\$11,732,938	\$19,227,045
Technology Centers – Adult Students	\$3,661,684	\$21,203,900	\$36,616,844
Skills Centers	\$29,772	\$151,047	\$297,725
Adult Education and Family Literacy Programs	\$438,247	N/A	N/A
Cumulative Tax Differential	\$6,052,408	\$33,087,885	\$56,141,614

Source: Economics Center analysis.

The reduced recidivism associated with the career and technology education provided by Skills Centers results in substantial benefits to the State of Oklahoma. Based on the difference in the estimated recidivism rates statewide in Oklahoma and among Skills Center completers, it is estimated that 32 individuals will avoid reincarceration as a result of completing career and technology education at Skills Center. Over 10 years, the 32 individuals who will avoid reincarceration as a result of completing career and technology education at Skills Center in fiscal year 2023 are estimated to generate cost savings that total \$8.1 million, of which \$1.7 million are incarcerations costs and \$6.4 million are crime costs.

Benefits of Expenditures to Provide Education

To provide career and technology education as well as adult education and financial literacy courses, day-to-day operations expenditures totaling \$603.3 million were incurred in fiscal year 2023 by Technology Centers, Skills Centers, and AEFL programs. Additionally, capital expenditures totaling \$154.5 were incurred by Technology Centers and Skills Centers in fiscal year 2023.³¹

As detailed in Table 46, the operations and capital expenditures of Technology Centers, Skills Centers, and AEFL programs directly generated \$530.0 million in economic output, which resulted in an additional \$430.0 million in indirect economic output. Technology Centers, Skills Centers, and AEFL programs directly supported 4,803 jobs with \$295.1 million in wages and indirectly supported an additional 3,851 jobs with \$161.1 million in wages.³² In total, the operations and capital expenditures of Technology Centers, Skills Centers, and AEFL programs generated \$960.0 million in economic output and supported 8,654 jobs with \$456.2 million in wages in the State of Oklahoma in fiscal year 2023.

³¹ AEFL programs did not report any capital expenditures in fiscal year 2023.

³² The jobs supported by AEFL programs do not include the instructional staff of the education providers due to data limitations.

Table 46: Total Economic Impact on the State of Oklahoma, FY 2023 (Nominal\$)

Impact Type	Output	Employment	Wages
Direct	\$529,980,250	4,803	\$295,120,902
Indirect	\$430,033,589	3,851	\$161,082,459
Total	\$960,013,839	8,654	\$456,203,361

Source: Economics Center analysis of data provided by Oklahoma Technology Centers and the Oklahoma Department of Career and Technology Education.

As detailed in Table 47Table 20, Technology Centers, Skills Centers, and AEFL programs created a total of \$29.3 million in income and sales tax revenue in fiscal year 2023 as a result of their operations and capital expenditures. The wages supported generated a total of \$18.5 million in income tax revenue for the State of Oklahoma in fiscal year 2023. Additionally, the spending of the wages resulted in approximately \$10.9 million in sales tax revenue, of which the State of Oklahoma received \$5.8 million, cities in Oklahoma received \$4.4 million, and counties in Oklahoma received \$701,600.

Table 47: Total Fiscal Impact, FY 2023 (Nominal\$)

Jurisdiction	Income Tax Revenue	Sales Tax Revenue	Total Tax Revenue
City	N/A	\$4,372,150	\$4,372,150
County	N/A	\$701,561	\$701,561
State	\$18,453,642	\$5,816,779	\$24,270,421
Total	\$18,453,642	\$10,890,490	\$29,344,132

Source: Economics Center analysis.

Leveraging of State and Local Funding

To contextualize the benefits of career and technology education as well as adult and family literacy education in the State of Oklahoma, the state and local investment in these educational programs are compared to the returns to the State of Oklahoma. As detailed in Table 48, the State of Oklahoma appropriated \$109.6 million in funding to Technology Centers, Skills Centers, and AEFL programs, representing approximately 14.2 percent of revenue. Technology Centers, Skills Centers, and AEFL programs received \$591.4 million in local funding, excluding adult student tuition. Local funding comprised 76.8 percent of revenue. Other funding such as federal funding or adult student tuition totaled \$69.0 million, which represents 9.0 percent of revenue.

Table 48: Revenue by Funding Source and Division, FY 2023 (Nominal\$)

Division	State	Local	Other	Total
Technology Centers	\$100,006,573	\$591,428,422	\$60,705,651	\$752,140,646
Skills Centers	\$8,919,171	N/A	N/A	\$8,919,171
Adult Education and Family Literacy Programs	\$652,210	N/A	\$8,286,032	\$8,938,242
Total Revenue	\$109,577,954	\$591,428,422	\$68,991,683	\$769,998,059

Source: Economics Center analysis.

In fiscal year 2023, the operations and capital expenditures of Technology Centers, Skills Centers, and AEFL programs generated a total of \$960.0 million in economic output in the State of Oklahoma in fiscal year 2023. In comparison, the State of Oklahoma appropriated \$109.6 million in funding to Technology Centers, Skills Centers, and AEFL programs in fiscal year 2023. This means that every dollar in state funding resulted in \$8.76 in economic output in the State of Oklahoma in fiscal year 2023 as a result of the expenditures necessary to provide career and technology education as well as adult and family literacy education.

The career and technology education as well as adult and family literacy education provided to students in the 2022-23 academic year/2023 fiscal year are estimated to generate earnings that exceed that of the comparison group by an average of \$111.9 million per year. Overall, this means that every dollar in state funding is estimated to generate \$1.02 in earnings for students per year. Specifically, every dollar in state funding is estimated to generate \$1.05 in earnings for Technology Center students, \$0.07 in earnings for Skills Center completers, and \$9.95 in earnings for AEFL students. However, the benefits to students have a compounding effect by continuing to generate additional benefits after the completion of career and technology education. Specifically, every dollar in state funding for Technology Centers is estimated to result in \$10.48 in earnings for secondary and adult students over 10 years.

Conclusion

For more than 100 years, Oklahoma's system of career and technology education has provided specialized curriculum and education as well as training opportunities to ensure students have the knowledge and abilities to be valued members of the workforce. Prior research suggests that high school students receiving career and technology education experience positive impacts on high school academic achievement, employability skills, college readiness, the likelihood of graduating from high school, the likelihood of enrolling in a two-year college, and the likelihood of employment after high school.³³ Additionally, correctional education has been found to reduce recidivism rates for incarcerated individuals and may lead to better post-release employment outcomes.³⁴ As a whole, the efforts and activities of the Oklahoma Department of Career and Technology Education increase the earnings potential for students participating in career and technology education, generate increased tax revenue for state and local governments, operate programs with a positive return on investment, and produce cost savings as a result of reduced recidivism rates.

³³ (Lindsay, et al. 2024)

³⁴ (Davis, et al. 2013); (Stickle and Sprick Schuster 2023)

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Appendix

Technology Centers: Secondary Students

Table 49: Secondary Student Enrollment and Follow-Up Overview at Technology Centers by Program, 2022-23

Program	Enrollment	Program Completers & Course Concentrators	Percent Positive Placement	Percent Continuing Education	Percent Employed in a Related Field
Therapeutic & Support Services	2,405	2,031	96.3%	66.9%	25.4%
Engineering	1,935	810	97.9%	95.2%	1.0%
Automotive Service	1,409	705	93.0%	38.6%	42.1%
Web/Digital Design & Communication	1,404	667	89.4%	70.9%	7.2%
Welding & Metal Fabrication	1,382	634	92.7%	31.4%	45.6%
Personal Care Services	1,244	577	92.2%	42.1%	41.6%
Biomedical Science/ Medicine/Biotechnology	1,039	518	98.8%	95.4%	1.7%
Network Systems/Information Support	775	372	87.9%	62.9%	11.6%
Construction	734	395	95.9%	63.0%	23.8%
Restaurant, Food, & Beverage Services	536	248	88.7%	33.5%	50.0%
Electrical Trades	520	255	89.8%	45.1%	33.7%
Criminal Justice	512	269	93.3%	59.9%	17.8%
Heating, Ventilation & Air Conditioning	511	204	96.1%	35.8%	44.1%
Automotive Collision Repair	488	224	96.4%	48.7%	32.1%
Medical Assisting	468	373	92.2%	54.2%	30.0%
Early Childhood Development & Services	447	287	94.4%	55.4%	34.1%
Programming & Software Development	348	158	98.1%	84.2%	5.1%
Health Studies	347	306	99.3%	95.8%	3.3%
Medium/Heavy Diesel Repair	329	153	94.8%	21.6%	57.5%
Building & Grounds Maintenance	292	159	81.1%	36.5%	39.0%
Audio & Video Technology	290	197	93.9%	79.2%	7.1%
Production	283	121	92.6%	47.9%	33.1%
Administrative Support	261	131	93.9%	60.3%	27.5%
Medical Administrative Support/ Information Management	255	113	94.7%	55.8%	34.5%
Computer Aided Drafting	225	129	86.8%	63.6%	15.5%
Mechatronics/Electronics	216	128	90.6%	64.8%	15.6%

Entrepreneurship/Management	194	120	93.3%	69.2%	21.7%
Visual Arts	184	77	98.7%	71.4%	23.4%
Aerospace Maintenance	158	64	85.9%	64.1%	14.1%
Animal Science	126	115	94.8%	68.7%	22.6%
Accounting/Finance	115	77	92.2%	63.6%	20.8%
Marketing Communications	112	54	98.1%	81.5%	14.8%
Business Information Management	111	48	91.7%	72.9%	12.5%
Mobile Equipment Maintenance	90	71	91.5%	66.2%	16.9%
Firefighter	73	47	70.2%	46.8%	6.4%
Paramedic/EMT	62	58	84.5%	34.5%	15.5%
Licensed Practical Nurse	50	23	87.0%	52.2%	30.4%
Lodging	44	31	90.3%	54.8%	35.5%
Plant & Soil Science	41	20	95.0%	50.0%	45.0%
Transportation Operations	34	34	94.1%	88.2%	5.9%
Pipeline Technology	17	8	100.0%	37.5%	37.5%
Event Planning	9	5	80.0%	80.0%	0.0%
Diagnostic Services	7	9	100.0%	77.8%	22.2%
Electrical Lineman	2	0	N/A	N/A	N/A
Total	20,084	11,025	94.1%	61.6%	24.3%

Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education.

Table 50: Median Annual Earnings for Secondary Students Employed in a Related Field by Program, 2022-23 (Nominal\$)

Program	Enrollment	Year 1	Year 5	Year 10
Therapeutic & Support Services	2,405	\$29,528	\$31,365	\$33,661
Engineering	1,935	N/A	N/A	N/A
Automotive Service	1,409	\$29,833	\$43,601	\$47,590
Web/Digital Design & Communication	1,404	\$26,894	\$28,327	\$30,118
Welding & Metal Fabrication	1,382	\$37,292	\$50,627	\$55,474
Personal Care Services	1,244	\$30,883	\$33,810	\$37,469
Biomedical Science/Medicine/Biotechnology	1,039	N/A	N/A	N/A
Network Systems/Information Support	775	\$29,707	\$32,307	\$35,557
Construction	734	\$30,094	\$44,885	\$48,834
Restaurant, Food, & Beverage Services	536	\$25,495	\$32,460	\$35,203
Electrical Trades	520	\$34,179	\$61,261	\$66,060
Criminal Justice	512	\$29,738	\$54,559	\$59,753
Heating, Ventilation & Air Conditioning	511	\$30,178	\$51,697	\$56,098
Automotive Collision Repair	488	\$30,956	\$44,453	\$48,160
Medical Assisting	468	\$29,627	\$31,717	\$34,329
Early Childhood Development & Services	447	\$24,767	\$26,516	\$28,702
Programming & Software Development	348	\$28,236	\$30,595	\$33,512
Health Studies	347	N/A	N/A	N/A
Medium/Heavy Diesel Repair	329	\$35,074	\$46,490	\$50,710
Building & Grounds Maintenance	292	\$27,385	\$49,962	\$53,508
Audio & Video Technology	290	\$24,418	\$26,453	\$28,702
Production	283	\$34,774	\$45,032	\$48,297
Administrative Support	261	\$23,739	\$29,324	\$31,780
Medical Administrative Support/Information Management	255	\$25,107	\$27,431	\$30,336
Computer Aided Drafting	225	\$33,384	\$64,521	\$69,986
Mechatronics/Electronics	216	\$34,490	\$66,178	\$71,553
Entrepreneurship/Management	194	\$28,055	\$29,341	\$30,948
Visual Arts	184	\$31,495	\$34,382	\$37,991
Aerospace Maintenance	158	\$41,457	\$64,980	\$69,152
Animal Science	126	\$21,920	\$23,758	\$26,055
Accounting/Finance	115	\$31,525	\$34,166	\$37,467
Marketing Communications	112	\$25,610	\$29,088	\$31,670
Business Information Management	111	\$22,880	\$24,525	\$26,581
Mobile Equipment Maintenance	90	\$32,074	\$38,979	\$42,372

Firefighter	73	N/A	N/A	N/A
Paramedic/EMT	62	\$31,720	\$34,460	\$37,884
Licensed Practical Nurse	50	\$31,200	\$33,798	\$37,046
Lodging	44	\$25,527	\$27,548	\$30,075
Plant & Soil Science	41	\$9,060	\$9,918	\$10,992
Transportation Operations	34	N/A	N/A	N/A
Pipeline Technology	17	\$36,400	\$39,096	\$42,466
Event Planning	9	N/A	N/A	N/A
Diagnostic Services	7	\$27,040	\$29,299	\$32,122
Electrical Lineman	2	N/A	N/A	N/A
Weighted Average Secondary	20,084	\$30,327	\$39,336	\$42,753
High School Graduate	N/A	\$19,734	\$26,010	\$35,237

Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education and data retrieved from Lightcast, the U.S. Census Bureau, and the U.S. Bureau of Labor Statistics.

Table 51: Net Present Value of Cumulative Earnings for Secondary Students Employed in a Related Field by Program, 2022-23 (NPV\$)

Program	Enrollment	Year 5	Year 10
Therapeutic & Support Services	2,405	\$131,366	\$241,700
Engineering	1,935	N/A	N/A
Automotive Service	1,409	\$165,841	\$320,781
Web/Digital Design & Communication	1,404	\$119,154	\$218,247
Welding & Metal Fabrication	1,382	\$187,435	\$367,763
Personal Care Services	1,244	\$139,460	\$260,713
Biomedical Science/Medicine/Biotechnology	1,039	N/A	N/A
Network Systems/Information Support	775	\$133,708	\$249,089
Construction	734	\$158,829	\$318,023
Restaurant, Food, & Beverage Services	536	\$118,211	\$233,115
Electrical Trades	520	\$199,084	\$415,202
Criminal Justice	512	\$175,448	\$369,723
Heating, Ventilation & Air Conditioning	511	\$171,495	\$354,560
Automotive Collision Repair	488	\$165,090	\$322,352
Medical Assisting	468	\$132,314	\$244,456
Early Childhood Development & Services	447	\$110,611	\$204,367
Programming & Software Development	348	\$126,825	\$235,778
Health Studies	347	N/A	N/A
Medium/Heavy Diesel Repair	329	\$177,871	\$343,013
Building & Grounds Maintenance	292	\$161,071	\$336,608
Audio & Video Technology	290	\$109,812	\$203,478
Production	283	\$174,117	\$332,467
Administrative Support	261	\$115,482	\$219,243
Medical Administrative Support/Information Management	255	\$113,264	\$211,515
Computer Aided Drafting	225	\$202,726	\$431,148
Mechatronics/Electronics	216	\$208,597	\$442,435
Entrepreneurship/Management	194	\$123,870	\$226,026
Visual Arts	184	\$142,022	\$265,110
Aerospace Maintenance	158	\$234,080	\$461,520
Animal Science	126	\$98,493	\$183,160
Accounting/Finance	115	\$141,647	\$263,401
Marketing Communications	112	\$115,722	\$218,932
Business Information Management	111	\$102,246	\$189,030
Mobile Equipment Maintenance	90	\$156,292	\$294,469
Firefighter	73	N/A	N/A

Paramedic/EMT	62	\$142,692	\$265,679
Licensed Practical Nurse	50	\$140,155	\$260,563
Lodging	44	\$114,457	\$212,364
Plant & Soil Science	41	\$40,911	\$76,481
Transportation Operations	34	N/A	N/A
Pipeline Technology	17	\$162,826	\$301,352
Event Planning	9	N/A	N/A
Diagnostic Services	7	\$121,482	\$225,878
Electrical Lineman	2	N/A	N/A
Weighted Average Secondary	20,084	\$149,855	\$289,282
High School Graduate	N/A	\$97,997	\$203,137

Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education and data retrieved from Lightcast, the U.S. Census Bureau, and the U.S. Bureau of Labor Statistics.

Technology Centers: Adult Students

Table 52: Adult Student Enrollment and Follow-Up Overview at Technology Centers by Program, 2022-23

Program	Enrollment	Program Completers & Course Concentrators	Percent Positive Placement	Percent Continuing Education	Percent Employed in a Related Field
Licensed Practical Nurse	1,560	913	93.6%	4.1%	88.5%
Personal Care Services	777	464	82.8%	9.1%	62.1%
Therapeutic & Support Services	735	522	86.8%	12.3%	68.2%
Network Systems/Information Support	556	389	82.3%	25.4%	37.0%
Aerospace Maintenance	522	307	87.3%	10.7%	61.2%
Transportation Operations	505	404	99.5%	1.0%	98.5%
Welding & Metal Fabrication	489	322	86.3%	14.9%	58.1%
Automotive Service	439	288	93.4%	13.9%	67.7%
Heating, Ventilation & Air Conditioning	400	280	91.4%	5.7%	75.7%
Paramedic/EMT	361	245	91.8%	9.4%	69.8%
Web/Digital Design & Communication	351	218	85.8%	36.2%	26.6%
Electrical Trades	287	204	87.3%	6.4%	65.2%
Restaurant, Food, & Beverage Services	260	166	81.9%	6.0%	65.1%
Medical Assisting	239	178	87.1%	14.6%	60.7%
Construction	231	165	86.7%	11.5%	58.2%
Mechatronics/Electronics	205	133	88.7%	12.0%	69.2%
Production	201	144	88.9%	4.9%	77.1%
Medical Administrative Support/Information Management	185	107	77.6%	15.9%	52.3%
Automotive Collision Repair	176	130	89.2%	8.5%	71.5%
Diagnostic Services	167	78	100.0%	0.0%	97.4%
Computer Aided Drafting	165	110	79.1%	24%	45%
Administrative Support	136	95	90.5%	22%	60%
Audio & Video Technology	122	82	95.1%	24%	45%
Medium/Heavy Diesel Repair	121	92	94.6%	10%	75%
Accounting/Finance	113	75	90.7%	16%	59%
Criminal Justice	105	66	90.9%	11%	71%
Programming & Software Development	89	59	83.1%	31%	32%
Firefighter	88	77	87.0%	6%	66%

Early Childhood Development & Services	57	39	92.3%	0%	87%
Building & Grounds Maintenance	40	27	70.4%	15%	52%
Electrical Lineman	37	31	83.9%	0%	65%
Health Studies	16	0	N/A	N/A	N/A
Entrepreneurship/Management	15	9	88.9%	11%	78%
Animal Science	14	11	63.6%	36%	18%
Mobile Equipment Maintenance	13	12	83.3%	50%	25%
Lodging	12	12	66.7%	0%	67%
Plant & Soil Science	10	5	100.0%	0%	100%
Marketing Communications	8	5	100.0%	40%	60%
Pipeline Technology	5	5	80.0%	0%	20%
Visual Arts	5	4	75.0%	25%	25%
Business Information Management	2	1	100.0%	0%	100%
Event Planning	1	0	N/A	N/A	N/A
Total	9,820	6,474	88.8%	11.4%	67.2%

Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education.

Table 53: Program Overview for Adult Students at Technology Centers by Program, 2022-23 (Nominal\$)

Program	Average Program Hours	Average In-District Tuition	Average Financial Aid
Licensed Practical Nurse	1,450	\$3,243	\$4,096
Personal Care Services	1,034	\$2,855	\$1,964
Therapeutic & Support Services	1,055	\$2,679	\$2,125
Network Systems/Information Support	919	\$2,208	\$2,186
Aerospace Maintenance	1,334	\$3,807	\$3,473
Transportation Operations	283	\$674	\$1,266
Welding & Metal Fabrication	927	\$2,383	\$2,654
Automotive Service	954	\$2,181	\$2,098
Heating, Ventilation & Air Conditioning	999	\$2,445	\$2,653
Paramedic/EMT	843	\$3,063	\$1,413
Web/Digital Design & Communication	874	\$2,161	\$2,654
Electrical Trades	855	\$2,096	\$2,025
Restaurant, Food, & Beverage Services	835	\$2,112	\$1,102
Medical Assisting	785	\$1,824	\$2,890
Construction	870	\$2,180	\$2,197
Mechatronics/Electronics	1,015	\$2,323	\$1,289
Production	920	\$2,505	\$2,340
Medical Administrative Support/Information Management	931	\$2,407	\$2,985
Automotive Collision Repair	855	\$2,044	\$1,895
Diagnostic Services	2,379	\$6,655	\$3,608
Computer Aided Drafting	993	\$2,458	\$1,716
Administrative Support	891	\$1,808	\$3,302
Audio & Video Technology	880	\$2,131	\$2,389
Medium/Heavy Diesel Repair	958	\$2,238	\$2,590
Accounting/Finance	779	\$1,718	\$2,101
Criminal Justice	953	\$2,288	\$1,453
Programming & Software Development	872	\$2,262	\$1,284
Firefighter	656	\$1,646	\$1,670
Early Childhood Development & Services	920	\$2,190	\$5,351
Building & Grounds Maintenance	1,004	\$2,236	\$2,988
Electrical Lineman	1,293	\$2,360	\$6,634
Health Studies	763	\$2,204	\$0
Entrepreneurship/Management	985	\$2,692	\$2,087
Animal Science	765	\$1,015	\$521

Mobile Equipment Maintenance	723	\$1,650	\$2,979
Lodging	847	\$2,335	\$224
Plant & Soil Science	877	\$1,058	\$1,236
Marketing Communications	862	\$1,904	\$1,876
Pipeline Technology	1,039	\$1,508	\$3,203
Visual Arts	634	\$1,350	\$1,804
Business Information Management	724	\$1,368	\$0
Event Planning	640	\$1,920	\$1,920
Total	1,041	\$2,566	\$2,545

Source: Economics Center analysis of data provided by Oklahoma Technology Centers and the Oklahoma Department of Career and Technology Education.

Table 54: Median Annual Earnings for Adult Students Employed in a Related Field by Program, 2022-23 (Nominal\$)

Program	Enrollment	Year 1	Year 5	Year 10
Licensed Practical Nurse	1,560	\$47,655	\$51,623	\$56,583
Personal Care Services	777	\$32,613	\$35,554	\$39,231
Therapeutic & Support Services	735	\$47,414	\$51,304	\$56,167
Network Systems/Information Support	556	\$36,463	\$39,640	\$43,612
Aerospace Maintenance	522	\$41,422	\$64,980	\$69,152
Transportation Operations	505	\$47,057	\$50,960	\$55,839
Welding & Metal Fabrication	489	\$40,933	\$50,606	\$55,448
Automotive Service	439	\$32,765	\$43,739	\$47,747
Heating, Ventilation & Air Conditioning	400	\$34,194	\$51,697	\$56,098
Paramedic/EMT	361	\$40,319	\$43,801	\$48,154
Web/Digital Design & Communication	351	\$30,777	\$32,442	\$34,522
Electrical Trades	287	\$35,649	\$61,261	\$66,060
Restaurant, Food, & Beverage Services	260	\$30,288	\$32,540	\$35,355
Medical Assisting	239	\$32,611	\$34,912	\$37,787
Construction	231	\$35,042	\$53,713	\$58,436
Mechatronics/Electronics	205	\$35,778	\$69,430	\$75,117
Production	201	\$41,108	\$44,998	\$48,163
Medical Administrative Support/Information Management	185	\$33,121	\$36,151	\$39,938
Automotive Collision Repair	176	\$33,930	\$44,453	\$48,160
Diagnostic Services	167	\$51,293	\$55,140	\$59,949
Computer Aided Drafting	165	\$39,007	\$64,287	\$69,709
Administrative Support	136	\$27,891	\$35,470	\$38,545
Audio & Video Technology	122	\$37,334	\$40,561	\$43,995
Medium/Heavy Diesel Repair	121	\$42,800	\$46,535	\$50,759
Accounting/Finance	113	\$32,631	\$35,493	\$39,070
Criminal Justice	105	\$38,018	\$56,132	\$61,457
Programming & Software Development	89	\$39,457	\$42,695	\$46,743
Firefighter	88	\$31,919	\$40,595	\$54,827
Early Childhood Development & Services	57	\$25,266	\$27,019	\$29,209
Building & Grounds Maintenance	40	\$26,489	\$49,962	\$53,508
Electrical Lineman	37	\$46,134	\$74,827	\$80,952
Health Studies	16	N/A	N/A	N/A
Entrepreneurship/Management	15	\$28,823	\$30,144	\$31,795
Animal Science	14	\$30,160	\$32,689	\$35,849

Mobile Equipment Maintenance	13	\$36,747	\$39,700	\$43,318
Lodging	12	\$30,160	\$32,413	\$35,229
Plant & Soil Science	10	\$23,928	\$27,292	\$30,102
Marketing Communications	8	\$32,705	\$34,612	\$36,996
Pipeline Technology	5	\$32,240	\$34,628	\$37,613
Visual Arts	5	\$43,680	\$48,056	\$53,525
Business Information Management	2	\$31,200	\$33,443	\$36,247
Event Planning	1	N/A	N/A	N/A
Weighted Average Adult	9,820	\$40,162	\$48,316	\$52,795
High School Graduate	N/A	\$24,940	\$32,026	\$40,117

Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education and data retrieved from Lightcast, the U.S. Census Bureau, and the U.S. Bureau of Labor Statistics.

Table 55: Net Present Value of Cumulative Earnings for Adult Students Employed in a Related Field by Program, 2022-23 (NPV\$)

Program	Enrollment	Year 5	Year 10
Licensed Practical Nurse	1,560	\$214,072	\$397,982
Personal Care Services	777	\$146,967	\$274,141
Therapeutic & Support Services	735	\$212,872	\$395,517
Network Systems/Information Support	556	\$164,085	\$305,626
Aerospace Maintenance	522	\$234,008	\$461,449
Transportation Operations	505	\$211,354	\$392,867
Welding & Metal Fabrication	489	\$196,189	\$376,437
Automotive Service	439	\$170,553	\$325,995
Heating, Ventilation & Air Conditioning	400	\$181,762	\$364,826
Paramedic/EMT	361	\$181,375	\$337,702
Web/Digital Design & Communication	351	\$136,410	\$249,956
Electrical Trades	287	\$202,931	\$419,049
Restaurant, Food, & Beverage Services	260	\$135,503	\$250,819
Medical Assisting	239	\$145,641	\$269,079
Construction	231	\$187,625	\$378,124
Mechatronics/Electronics	205	\$217,755	\$463,178
Production	201	\$186,150	\$344,190
Medical Administrative Support/Information Management	185	\$149,341	\$278,744
Automotive Collision Repair	176	\$170,948	\$328,209
Diagnostic Services	167	\$229,542	\$425,024
Computer Aided Drafting	165	\$217,088	\$444,637
Administrative Support	136	\$138,110	\$263,823
Audio & Video Technology	122	\$168,201	\$311,795
Medium/Heavy Diesel Repair	121	\$192,729	\$358,030
Accounting/Finance	113	\$146,882	\$273,656
Criminal Justice	105	\$199,586	\$399,426
Programming & Software Development	89	\$177,147	\$329,145
Firefighter	88	\$155,182	\$318,853
Early Childhood Development & Services	57	\$112,776	\$208,239
Building & Grounds Maintenance	40	\$158,689	\$334,226
Electrical Lineman	37	\$265,867	\$530,357
Health Studies	16	N/A	N/A
Entrepreneurship/Management	15	\$127,260	\$232,210
Animal Science	14	\$135,518	\$252,013
Mobile Equipment Maintenance	13	\$164,895	\$305,945

Lodging	12	\$134,952	\$249,842
Plant & Soil Science	10	\$110,837	\$208,434
Marketing Communications	8	\$145,238	\$266,702
Pipeline Technology	5	\$144,217	\$266,912
Visual Arts	5	\$197,733	\$370,603
Business Information Management	2	\$139,426	\$257,768
Event Planning	1	N/A	N/A
Weighted Average Adult	9,820	\$190,518	\$362,313
High School Graduate	N/A	\$121,899	\$247,363

Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education and data retrieved from Lightcast, the U.S. Census Bureau, and the U.S. Bureau of Labor Statistics.

Table 56: Return on Investment for Adult Students Employed in a Related Field by Program, 2022-23

Program	Enrollment	Year 5	Year 10
Licensed Practical Nurse	1,560	396.5%	739.8%
Personal Care Services	777	269.5%	390.1%
Therapeutic & Support Services	735	532.1%	934.0%
Network Systems/Information Support	556	829.2%	1,235.9%
Aerospace Maintenance	522	864.5%	1693.4%
Transportation Operations	505	8,021.3%	13,186.7%
Welding & Metal Fabrication	489	1,680.7%	2,977.3%
Automotive Service	439	860.4%	1,486.8%
Heating, Ventilation & Air Conditioning	400	713.6%	1,468.4%
Paramedic/EMT	361	364.0%	607.8%
Web/Digital Design & Communication	351	522.7%	508.0%
Electrical Trades	287	1,723.1%	3,595.2%
Restaurant, Food, & Beverage Services	260	374.4%	390.8%
Medical Assisting	239	571.2%	595.9%
Construction	231	1,452.0%	2,876.9%
Mechatronics/Electronics	205	912.7%	2,130.0%
Production	201	1,204.3%	1,884.6%
Medical Administrative Support/Information Management	185	33.2%	2.8%
Automotive Collision Repair	176	1,105.7%	1,884.6%
Diagnostic Services	167	216.7%	416.9%
Computer Aided Drafting	165	1,691.1%	3,539.4%
Administrative Support	136	285.6%	348.8%
Audio & Video Technology	122	1,154.1%	1,729.2%
Medium/Heavy Diesel Repair	121	1,426.7%	2,312.8%
Accounting/Finance	113	-12.6%	-119.0%
Criminal Justice	105	978.7%	1,991.5%
Programming & Software Development	89	1,060.9%	1,652.8%
Firefighter	88	801.0%	1,605.0%
Early Childhood Development & Services	57	41.3%	-453.9%
Building & Grounds Maintenance	40	515.7%	1,251.5%
Electrical Lineman	37	2,252.9%	4,339.0%
Health Studies	16	N/A	N/A
Entrepreneurship/Management	15	59.4%	-83.6%
Animal Science	14	571.6%	694.2%
Mobile Equipment Maintenance	13	1,579.6%	2,251.1%

Lodging	12	290.2%	298.5%
Plant & Soil Science	10	45.8%	-169.0%
Marketing Communications	8	644.3%	777.7%
Pipeline Technology	5	343.3%	444.9%
Visual Arts	5	2,365.6%	3,731.8%
Business Information Management	2	566.1%	700.0%
Event Planning	1	N/A	N/A
Weighted Average Adult	9,820	1,382.1%	2,362.4%

Source: Economics Center analysis of data provided by the Oklahoma Department of Career and Technology Education and Oklahoma Technology Centers as well as data retrieved from Lightcast, the U.S. Census Bureau, and the U.S. Bureau of Labor Statistics.