IOWA COMMUNITY COLLEGES
EMPLOYMENT OUTCOMES
Noncredit Career and Technical Education (CTE) Programs

MAY 2019

ACADEMIC YEAR
2016-2017

COMMUNITY COLLEGES & WORKFORCE PREPARATION
PROSPERITY THROUGH EDUCATION
Noncredit Career and Technical Education (CTE) Program Outcomes

State of Iowa
Department of Education
Grimes State Office Building
400 E. 14th Street
Des Moines, IA  50319-0146

State Board of Education
Brooke Axiotis, Des Moines
Michael Bearden, Gladbrook
Betti Bolar, Marshalltown
Joshua Byrnes, Osage
Angela English, Dyersville
Michael L. Knedler, Council Bluffs
Mike May, Spirit Lake
Mary Ellen Miller, Wayne County
Kimberly Wayne, Des Moines
Fez Zafar, Student Member, Clive

Administration
Ryan M. Wise, Director and Executive Officer
of the State Board of Education

Division of Community Colleges
and Workforce Preparation
Jeremy Varner, Division Administrator

Bureau of Community Colleges
Barbara Burrows, Bureau Chief
Paula Nissen, Lead Education Program Consultant
Vlad Bassis, Lead Education Program Consultant

It is the policy of the Iowa Department of Education not to discriminate on the basis of race, creed, color, sexual orientation, gender identity, national origin, sex, disability, religion, age, political party affiliation, or actual or potential parental, family or marital status in its programs, activities, or employment practices as required by the Iowa Code sections 216.9 and 256.10(2), Titles VI and VII of the Civil Rights Act of 1964 (42 U.S.C. § 2000d and 2000e), the Equal Pay Act of 1973 (29 U.S.C. § 206, et seq.), Title IX (Educational Amendments, 20 U.S.C. §§ 1681 – 1688), Section 504 (Rehabilitation Act of 1973, 29 U.S.C. § 794), and the Americans with Disabilities Act (42 U.S.C. § 12101, et seq.). If you have questions or complaints related to compliance with this policy by the Iowa Department of Education, please contact the legal counsel for the Iowa Department of Education, Grimes State Office Building, 400 E. 14th Street, Des Moines, IA 50319-0146, telephone number: 515-281-5295, or the Director of the Office for Civil Rights, U.S. Department of Education, Citigroup Center, 500 W. Madison Street, Suite 1475, Chicago, IL 60602-5544, telephone number: 312-730-1560, FAX number: 312-730-1576, TDD number: 877-521-2172, email: OCR.Chicago@ed.gov.
Iowa Community Colleges Employment Outcomes: Noncredit Career and Technical Education (CTE) Programs

A statewide overview of education and employment outcomes of individuals enrolled in community college noncredit programs.

Prepared by

Iowa Department of Education
Division of Community Colleges and Workforce Preparation
Grimes State Office Building
400 E. 14th Street
Des Moines, IA 50319-0146

Phone: 515-281-8260
Fax: 515-242-5988
www.educateiowa.gov

Jeremy Varner
Division Administrator
515-281-8260
jeremy.varner@iowa.gov

Barbara Burrows
Chief, Bureau of Community Colleges
515-281-0319
barbara.burrows@iowa.gov

Paula Nissen
Consultant, Bureau of Community Colleges
515-418-8273
paula.nissen2@iowa.gov

Vladimir Bassis
Consultant, Bureau of Community Colleges
515-281-3671
vladimir.bassis@iowa.gov

Iowa Workforce Development
Labor Market Information Division
1000 E. Grand Avenue
Des Moines, IA 50319

Phone: 515-725-3860
Fax: 515-281-9656
www.iowaworkforcedevelopment.gov

Ryan West
Deputy Director
515-725-3896
ryan.west@iwd.iowa.gov

Ryan Murphy
Chief, Labor Market Information Division
515-281-7505
ryan.murphy@iwd.iowa.gov

Jason Crowley
Research Economist
515-281-7124
jason.crowley@iwd.iowa.gov

Kiyo Matsuyama
Research Economist
515-281-8118
kiyokazu.matsuyama@iwd.iowa.gov
Dear Education Stakeholders,

One of the critical functions of the Iowa Department of Education is to provide and interpret educational data. We do this to support accountability, transparency, and the ongoing improvement of our educational institutions. Staff in the Division of Community Colleges and Workforce Preparation continue to refine and improve the methods in which we collect, analyze, and report data to ensure that it is both meaningful and easily understood. We trust the reader will find that to be the case in this, the second edition of *Iowa’s Community Colleges: Noncredit Career and Technical Education (CTE) Employment Outcomes Report*.

The Department has published numerous education outcomes reports for credit-bearing CTE programs, but we continue to break new ground nationally with this study of noncredit programs designed to improve Iowa’s talent pipeline to meet future employment demands. These programs often lead to state licensure, industry certification, or further postsecondary training in related credit programs. In all such cases, they help Iowa achieve Governor Kim Reynolds’ Future Ready Iowa goal of having 70 percent of Iowans in the workforce with postsecondary education or training by 2025.

In this report, you will find information about noncredit CTE program enrollment, completion, continuation into further education and training, employment, wages, and in- and out-of-state migration. It also provides a mapping from each of the 16 CTE career clusters to the industry of employment for those students enrolled in noncredit training programs in Academic Year (AY) 2016-2017.

Thank you for taking the time to review this report and for your ongoing support of CTE in Iowa. I look forward to working with you on statewide collaborative efforts to provide quality education and training programs designed to equip Iowans with the skills and knowledge to meet their career and educational goals. Only through the success of our students will Iowa’s workforce be ready for future jobs and economic prosperity.

Sincerely,

Ryan M. Wise, Ed.L.D.
Director
Iowa Department of Education
# Table of Contents

- Report Highlights ................................................................. vii
- Introduction .............................................................................. 1
- Future Ready Iowa .............................................................. 2
- Iowa’s CTE Programs .............................................................. 3
- Overview of the Research ...................................................... 5
- Demographics of Noncredit CTE Students ............................ 6
- Noncredit CTE Programs by Gender and Age ...................... 7
- Pursuing Credit-Bearing Education ........................................ 10
- Education Retention and Migration ....................................... 13
- Workforce Cohort ................................................................. 14
- Employment and Wages by State ............................................ 16
- Employment and Wages by Age and Gender ......................... 17
- Employment and Wages by Age and Race/Ethnicity .............. 18
- Employment and Wages by Industry Sector ......................... 19
- Employment and Wages by Contact Hours and CIP ............. 20
- Career Clusters ..................................................................... 24
  - Enrollment by Career Cluster .............................................. 25
  - Transition into the Workforce .............................................. 26
  - Cluster to Industry .............................................................. 28
  - Employment by Career Cluster .......................................... 28
- Methodology and Research Limitations ................................. 30
  - Noncredit Cohort Formation .............................................. 30
  - Data Fields Formation (for calculated fields) ..................... 30
  - Employment and Wage Records ......................................... 31
- References .............................................................................. 33
- Appendix A—Contents .......................................................... 34
Programs Benefit Individuals, Employers, and the State

The noncredit career and technical education (CTE) programs offered by Iowa’s 15 community colleges provide targeted pathways that expedite the attainment of marketplace skills that benefit individuals, employers, and the state.

These market-driven programs are highly responsive to regional workforce needs. They provide a starting point for individuals to acquire skills needed for high-demand job opportunities as well as satisfy continuing education units (CEUs) required of certain occupations. These programs also offer continuing education for individuals to stay current in their jobs, meet local employer needs with custom job training designed for workplace preparation, and provide a pathway to further postsecondary education.

Student Demographics

As compared to credit-bearing students, noncredit CTE students at Iowa community colleges tend to be male, older, and more racially diverse.

55.3% of noncredit students were male compared to 56.0% of credit students.

61.3% of noncredit students were 25 years or older compared to 20.4% of credit students.

22.7% of noncredit students were of a racial or ethnic minority group compared to 21.0% of credit students.

Continue Education

Noncredit CTE programs often lead to enrollment in credit programs, support credit students on their educational journeys, and help degree holders build and enhance current marketplace skills.

21.7% of noncredit students continue into credit-bearing programs.

Of those who continue into credit programs, 83.6% did so at an Iowa college or university.

10.9% of noncredit students hold previously earned postsecondary degrees.

Top 10 Noncredit Programs

Transportation and Health Care programs comprise the highest noncredit CTE enrollments at Iowa community colleges.

2,248 Commercial Vehicle Operator

600 EMT Paramedic

526 Medication Aide

391 Engineering Technology

357 Fire Science

310 Welding Technology

267 Office Technology

159 Industrial Mechanics

137 OSHA Technology
The National Career Clusters Framework organizes CTE programs into 16 career clusters. The top career clusters by noncredit enrollment are health science and transportation, distribution, and logistics.

**Top Career Clusters**

41.3% Health Science (3,905)
26.5% Transportation, Distribution & Logistics (2,502)
8.5% Manufacturing (807)
7.5% Architecture & Construction (707)
5.8% Business, Management & Administration (547)
4.6% Law, Public Safety, Corrections & Security (431)

**Top Industries for Employment**

Of the noncredit students employed the year following program exit, over 70 percent work in the following top six industries:

- 30.3% Health Care
- 14.5% Manufacturing
- 8.5% Transportation
- 7.3% Construction
- 6.7% Retail Trade
- 5.6% Public Administration

**Employment**

The majority of students in noncredit CTE programs stay in Iowa and are employed the first year following exit from their programs.

91.0% of noncredit students were employed in the first year following exit from their programs.

83.3% of noncredit students were employed in the state of Iowa.

**Earnings**

Earnings in the first year following program completion vary based on a variety of factors, including the number of contact hours required by the program, employer demand, and whether or not the programs were for continuing education credits. The following examples provide median annual wages for in-demand occupations by number of required contact hours.

<table>
<thead>
<tr>
<th>Occupation</th>
<th>32 to 99 Contact Hours</th>
<th>100 to 200 Contact Hours</th>
<th>200+ Contact Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication Aide</td>
<td>$29,716</td>
<td>$41,576</td>
<td>$68,160</td>
</tr>
<tr>
<td>HVAC Installation/Repair</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrial Maintenance Technology</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Read the full report:**

Iowa Community Colleges Employment Outcomes: Noncredit Career and Technical Education Programs
Introduction

Iowa’s Community Colleges: Noncredit Career and Technical Education (CTE) Employment Outcomes Report (second edition), is a statewide attempt to analyze data and report on the outcomes of students enrolled in community college noncredit programs and provide institutional data for college administrators and policymakers as they engage in planning and program approval. According to the Community College Research Center (CCRC):

“Substantive information is needed on outcomes to assess fully the contributions of noncredit workforce education to students, employers, and the community…it is crucial to document the value of noncredit workforce education for individuals and to determine which recorded outcomes have the most value for individuals in different occupations, industries, and labor markets,”[1] (pg. 4, CCRC, 2008).

In this report, employment and wages are analyzed to illustrate the important impact that the noncredit education and training provided by Iowa’s community colleges have on the state’s economy. Following students on the individual level is the preferred method of reporting education outcomes by program. Confidentiality laws, however, restrict the ability to link individual student records to employment and wages for most researchers. In addition, educational records and employment records are held in two different state agencies, the Iowa Department of Education (Department) and the Iowa Workforce Development (IWD).

The Department and IWD have overcome this hurdle by forming a partnership dedicated to evaluating and reporting education outcomes (i.e., continued education, employment, and wages) for community college credit certificate, diploma, and associate degree awards, as well as noncredit programs through strict data sharing agreements and confidentiality agreements.

Future Ready Iowa

“Future Ready Iowa” is Governor Kim Reynolds’ initiative designed to build Iowa’s talent pipeline for the careers of tomorrow. The initiative was created after Iowa received a National Governors’ Association grant in 2014 to develop strategies to improve the educational and training attainment of its citizens and to align degree and credential programs with employer demand.

Education and training beyond high school have become the new minimum threshold for Americans to earn a living wage and attain middle-class status. In 1973, only 28 percent of U.S. jobs required education beyond a high school diploma; by 2025, almost two out of three jobs in the nation are projected to require at least some postsecondary education or training [2]. Iowa’s economy reflects this national trend and has seen a steady increase in the demand for postsecondary education and training in the industries that form the mainstay of the economy.

To address the demand for a more skilled workforce, Future Ready Iowa set a goal for 70 percent of Iowa’s workforce to have education or training beyond high school by 2025. In 2016, a Future Ready Alliance was formed to develop a strategic plan for meeting this goal. After meeting over the course of a year, the alliance of business, education, and community leaders, released its recommendations in 2017.

In 2018, the Future Ready Iowa Act, which addresses the Alliance’s recommendations, was signed by Governor Reynolds via House File 2458. This act is designed to strengthen Iowa’s talent pipeline by establishing a registered apprenticeship development program, a volunteer mentoring program, summer youth internships, summer postsecondary courses for high school students aligned with high-demand career pathways, an employer innovation fund, and skilled workforce scholarship and grant programs.

Iowa’s CTE Programs

A study published by the American Association of Community Colleges (AACC) [3] indicates that the following overarching issues affect community college noncredit workforce education:

1. the extent to which noncredit workforce education and state policies play a role in workforce development, provide disadvantaged groups with access to higher education, and generate revenue for colleges;

2. how colleges organize their noncredit workforce programs to balance the tradeoffs between the desired flexibility of noncredit education and the integration of credit and noncredit programs; and

3. the extent to which noncredit workforce education provides recorded outcomes for students, such as transcripts or industry certifications, and the extent to which outcome data are available.

Iowa community colleges offer both credit-bearing and noncredit CTE programs throughout the state. Programs vary based on the demand for particular skill sets identified through sector boards, employer relationships, and local labor market data. In some portions of the state, noncredit enrollment represents the highest percentage of all CTE enrollment. Figure 1, on the following page, illustrates the percentage of noncredit enrollments (including those less than 32 contact hours) as it relates to total credit and noncredit CTE enrollment by college. For example, the number of total credit and noncredit CTE enrollments during AY 2016-2017, for Kirkwood Community College (KCC), was 7,742 students, and noncredit CTE enrollments represented 15.9 percent of that total whereas the noncredit enrollments for North Iowa Area Community College (NIACC) represented 54.7 percent of the total CTE enrollments.

Such high percentages may relate directly to the rural versus urban setting. Des Moines Area Community College (DMACC), located in the Des Moines metropolitan statistical area (MSA), and Kirkwood Community College (KCC), in the Iowa City/Cedar Rapids MSA, have a higher number of CTE enrollments overall, but have fewer noncredit CTE enrollments as a percentage, than the more rural areas of the state served by NIACC and Northeast Iowa Community College (NICC).

In summation, more populated areas of the state may have more educational choices than less populated areas. In less populated areas, where there are fewer choices related to training options, the responsive development of noncredit programs to address the needs of local employers seems to have a greater impact on CTE enrollment.

Figure 1 Abbreviation Key:

KCC - Kirkwood Community College
DMACC - Des Moines Area Community College
EICC - Eastern Iowa Community Colleges
HCC - Hawkeye Community College
IWCC - Iowa Western Community College
IHCC - Indian Hills Community College
WITCC - Western Iowa Tech Community College
NICC - Northeast Iowa Community College
ICCC - Iowa Central Community College
NIACC - North Iowa Area Community College
ILCC - Iowa Lakes Community College
SCC - Southeastern Community College
SWCC - Southwestern Community College
IVCCD - Iowa Valley Community College District
NCC - Northwest Community College
Overview of the Research

Noncredit coursework/programs are in high demand in Iowa, yielding 214,817 enrollments in the 2016-2017 academic year (AY 2016-2017). Of those, there were 103,013 noncredit career and technical education (CTE) enrollments (48.0 percent).

For data consistency, criteria were established, as in the previous initial study, to define noncredit programs [4]. Thirty-two (32) contact hours was determined to be comparable to two credits, which is the equivalent of the shortest credit certificate program in Iowa with proven labor market value. Additionally, programs were grouped by those containing 32 to 99, 100 to 200, and more than 200 contact hours to further distinguish among programs and their impact on the workforce. All data were extracted from the Management Information System (MIS) based on this criteria.

Compared to credit enrollment, noncredit students are more likely to enroll in multiple programs and less likely to provide personal identification such as social security number (SSN), race/ethnicity, or date of birth. Therefore, prior to following the students into the workforce and further education, students without SSNs and/or birthdates were excluded from the analysis due to matching restrictions. SSNs are needed to match to Unemployment Insurance (UI) wage records and birthdates are needed to match to the National Student Clearinghouse (NSC). This process limited the analysis to 9,409 out of the 9,454 students enrolled in noncredit CTE programs with at least 32 contact hours in AY 2016-2017.

Once extracted, data were sent to the NSC to identify students who enrolled in credit-bearing programs after their noncredit CTE programs at the community colleges. These individuals may have transferred from one community college to another, continued education at their current locations, or transferred to four-year institutions. Transfer students were analyzed by college type (two- or four-year, and private or public) and by transfer location, allowing for the study of graduate out-migration (leaving Iowa).

Next, data were sent via secure file transfer to IWD to match to the UI wage records for employment, wage, and industry data by quarter using the following timeframes:

- Quarter 1: January 1 to March 31
- Quarter 2: April 1 to June 30
- Quarter 3: July 1 to September 30
- Quarter 4: October 1 to December 31

Both the AY 2015-2016 and AY 2016-2017 cohorts were analyzed over three periods of time in this report:

- Year Prior to Enrollment in Noncredit - The four full quarters prior to the quarter in which the individual started his or her earliest noncredit course.
- During Enrollment in Noncredit - All quarters, including and between the quarter in which the individual started his or her earliest noncredit course and exited his or her latest noncredit course.
- Year Following Enrollment in Noncredit - The four full quarters following the quarter in which the individual exited his or her last noncredit course.

Due to the confidentiality of the wage record data, IWD processed the records and returned aggregate data for the Department to analyze and use in this report. Data was thoroughly scrutinized, and all rules, regulations, and restrictions for each of the data sources was strictly followed. Additionally, data-sharing agreements have gone through comprehensive legal review.

[4] Iowa Department of Education, Division of Community Colleges and Workforce Preparation, Methodology and Research Limitations, Data Field Formation, Program of Study (POS).
Demographics of Noncredit CTE Students

This second annual report, in part, contains two cohorts of data to longitudinally study students from AY 2015-2016 forward. Of the 20,005 noncredit CTE students in aggregate studied, 55.3 percent were male (N=10,795) and 44.7 percent were female (N=8,734). Additionally, there was a small number of students who did not indicate gender (N=476).

The students were divided into two age groups, under 25 years of age and 25 years or older. Nearly two-thirds (61.3 percent) of noncredit students were age 25 years or older (N=12,262) and over one-third (38.7 percent) were under the age of 25 (N=7,743)

While race/ethnicity was also identified, a significant number of students (N=7,685) did not report race/ethnicity. Of the 12,320 who did report, 77.3 percent were white/non-Hispanic (N=9519), and 22.7 percent were minority students (N=2,801).
Noncredit CTE Programs by Gender and Age

Classification of Instructional Program (CIP) codes reported through the MIS are six digits in length and used to categorize programs. These codes, for purposes of simplicity, have been aggregated to the first two digits (series), which represents the overarching program title.

Figure 4 illustrates the noncredit CTE programs by two-digit CIP, with the number of students in each, reported by gender and age. The largest program by enrollment encompasses training in the Health Professions and Related (N=8,543), followed by Transportation and Materials Moving (N=4,422).

<table>
<thead>
<tr>
<th>CIP Description</th>
<th>Under Age 25</th>
<th>Age 25 and Older</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Unknown</td>
</tr>
<tr>
<td>Health Professions and Related</td>
<td>730</td>
<td>3,872</td>
<td>149</td>
</tr>
<tr>
<td>Transportation and Materials Moving</td>
<td>1,274</td>
<td>81</td>
<td>9</td>
</tr>
<tr>
<td>Business Management, Marketing, and Related</td>
<td>97</td>
<td>85</td>
<td>7</td>
</tr>
<tr>
<td>Mechanics and Repairers, General</td>
<td>274</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>Engineering Technologies and Engineering Related</td>
<td>185</td>
<td>24</td>
<td>1</td>
</tr>
<tr>
<td>Precision Production Trades</td>
<td>291</td>
<td>35</td>
<td>9</td>
</tr>
<tr>
<td>Homeland Security, Law Enforcement, Firefighting, and Related Protective Services</td>
<td>311</td>
<td>38</td>
<td>11</td>
</tr>
<tr>
<td>Construction Trades</td>
<td>100</td>
<td>9</td>
<td>-</td>
</tr>
<tr>
<td>Family and Consumer Sciences/Human Sciences</td>
<td>7</td>
<td>21</td>
<td>-</td>
</tr>
<tr>
<td>Computer and Information Sciences and Support Services</td>
<td>16</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>Education</td>
<td>3</td>
<td>16</td>
<td>2</td>
</tr>
<tr>
<td>Agriculture</td>
<td>16</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Communications Technologies/Technicians and Support Services</td>
<td>8</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td>Personal and Culinary Services</td>
<td>10</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Foreign Languages, Literatures, and Linguistics</td>
<td>-</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Visual and Performing Arts</td>
<td>7</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Communication, Journalism, and Related Programs</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Parks, Recreation, Leisure, and Fitness Studies</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Engineering</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>3,330</td>
<td>4,223</td>
<td>190</td>
</tr>
</tbody>
</table>

RESEARCH HIGHLIGHT

**High Program Enrollment**

Of the 20,005 students (AY 2015-2016 and 2016-2017) who were matched through the National Student Clearinghouse, 42.7 percent were enrolled in health-related noncredit CTE programs, followed by 22.1 percent in noncredit CTE transportation and materials moving programs.
Females dominate enrollment in the health profession programs (78.8 percent), whereas males represent 90.2 percent in the transportation-related CIPs. Interestingly, enrollment quadruples for females entering transportation programs when looking at the age group of those who are 25 years of age or over (N=81 to N=354).

An additional point that is noteworthy is the difference in number of enrollments by program for the younger students versus older students. Higher numbers of students 25 or older enrolled in business management and engineering technology programs, and more students under 25 enrolled in a variety of high-demand occupational training programs, such as precision trades, transportation, mechanics, and law enforcement.

Figure 5 illustrates the proportion of noncredit students by age group for each college. In four colleges, over 70 percent of the students enrolled in noncredit programs were age 25 years or older. The distribution of age does not seem to be contingent on geography as there are both urban and rural colleges that enrolled high proportions of noncredit students over the age of 25.

**FIGURE 5: PROPORTION OF NONCREDIT STUDENTS BY AGE GROUP AND BY COLLEGE**

---

**Note:** College abbreviations are defined under Figure 1, Page 4.
Additional analysis was conducted to determine whether age played a role in relation to the length of the program in which the noncredit students enrolled. There was little difference in the percentage of enrollees when cross-tabulated by age (Figure 6). Two-thirds (65.1 percent) of those under the age of 25 were enrolled in programs with 32 to 99 contact hours, 25.0 percent in 100 to 200 contact hours, and 9.9 percent in programs that were over 200 contact hours. Similarly, 61.9 percent of those 25 years of age or older enrolled in programs that were 32 to 99 contact hours, 23.9 percent enrolled in 100 to 200 contact hours, and 14.2 percent in programs that were over 200 contact hours in length.

**FIGURE 6. CONTACT HOURS BY AGE GROUP**

<table>
<thead>
<tr>
<th>Student Age Group</th>
<th>32 to 99 Contact Hours</th>
<th>100 to 200 Contact Hours</th>
<th>Over 200 Contact Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
<td>#</td>
</tr>
<tr>
<td>Under 25 Years of Age</td>
<td>5,042</td>
<td>65.1</td>
<td>1,937</td>
</tr>
<tr>
<td>25 Years of Age and Older</td>
<td>7,588</td>
<td>61.9</td>
<td>2,930</td>
</tr>
<tr>
<td>Total</td>
<td>12,630</td>
<td>63.1</td>
<td>4,867</td>
</tr>
</tbody>
</table>
Pursuing Credit-Bearing Education

Using the NSC database, the Department was able to identify whether noncredit students transferred to or continued at postsecondary institutions that were in- or out-of-state, two- or four-year, or private or public. Figure 7 illustrates the distribution of students from the AY 2016-2017 cohort who enrolled in credit programs the first year following exit from their noncredit program (N=2,059). This distribution includes students who were enrolled in credit programs previously, during, and following their noncredit program enrollment.

The majority of students (72.4 percent) who continued their education were under age 25. Most of this group (85.7 percent) went on to credit-bearing programs at an in-state institution, while only 14.3 percent of students continued their education at out-of-state institutions.

<table>
<thead>
<tr>
<th>Characteristics of Institution</th>
<th>Continued Education In-State</th>
<th>Continued Education Out-of-State</th>
</tr>
</thead>
<tbody>
<tr>
<td>2yr/4yr Public/Private</td>
<td># %</td>
<td># %</td>
</tr>
<tr>
<td>Under 25 Years of Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 yr</td>
<td>Private</td>
<td>0 0.0%</td>
</tr>
<tr>
<td></td>
<td>Public</td>
<td>872 58.5%</td>
</tr>
<tr>
<td>4 yr</td>
<td>Private</td>
<td>176 11.8%</td>
</tr>
<tr>
<td></td>
<td>Public</td>
<td>230 15.4%</td>
</tr>
<tr>
<td>Total 2017 Cohort Under 25</td>
<td></td>
<td>1,278 85.7%</td>
</tr>
<tr>
<td>25 Years of Age and Older</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 yr</td>
<td>Private</td>
<td>0 0.0%</td>
</tr>
<tr>
<td></td>
<td>Public</td>
<td>374 65.8%</td>
</tr>
<tr>
<td>4 yr</td>
<td>Private</td>
<td>36 6.3%</td>
</tr>
<tr>
<td></td>
<td>Public</td>
<td>33 5.8%</td>
</tr>
<tr>
<td>Total 2017 Cohort 25 and Older</td>
<td></td>
<td>443 78.0%</td>
</tr>
</tbody>
</table>

Of those under age 25 who continued their education in-state, 872 (58.5 percent) continued their education at a two-year public college and 15.4 percent transferred to public four-year institutions.
The out-of-state enrollment of students, age 25 and over, is greater than that of students under age 25, with 22.0 percent of students continuing their education at out-of-state institutions in aggregate. However, when analyzing the in-state data for students 25 years of age or older, 374 (65.8 percent) continued their education at one of Iowa’s community colleges, and only 5.8 percent transferred to a public four-year institution.

Overall, the majority of noncredit students (83.6 percent) who continued their education in credit-bearing programs, did so in Iowa.

Noncredit students fall into multiple categories when it comes to engagement with educational opportunities at Iowa’s community colleges. There are those who were enrolled in a credit program prior to enrollment in the noncredit program, those who enrolled in noncredit while in credit programs (concurrently), and those who continued their education by entering a credit program following their experience with a noncredit program.

There are many reasons for the variety of enrollment patterns when it comes to noncredit CTE. Some students attend a noncredit program for continuing education credits or to gain additional skills during enrollment in a credit program, while others enroll to prepare for employment in a specific field.

Figure 8 shows that in AY 2016-2017 there were 2,137 students enrolled in a credit program compared to AY 2015-2016 which had 2,470 students enrolled in a credit program the year prior to enrolling in their noncredit program. Additionally, there were fewer students enrolled during their noncredit program in AY 2016-2017 (2,130 compared to 2,443), and the same decline in those who enrolled the year following the completion of their noncredit program (2,059 compared to 2,273). There were 1,257 students enrolled in credit programs both preceding and following their noncredit enrollment in AY 2016-2017 and an additional 340 were neither enrolled in credit programs before nor during their noncredit experience yet enrolled in a credit program following completion.
Figure 9 shows the top 15 noncredit programs that this group of students completed before continuing with their credit-bearing program. The plurality (N=218) of noncredit students were enrolled in health profession-related programs, with 156 of them in the nursing assistant/aide program, and another 30 in the medication aide program.

Supplementary data were collected regarding previous credit-bearing education completed by noncredit students. Overall, there were 1,023 students in the AY 2016-2017 cohort who had previous awards/degrees. Of those students who had degrees, there were 411 (40.2 percent) who had a bachelor’s degree and 612 (59.8 percent) had a two-year degree, certificate, or diploma. More information regarding students who had prior degrees is available in Appendix A (data tables) and can be accessed through the Department’s website at: https://www.educateiowa.gov/iowa-community-college-program-outcomes.

**Figure 9. Top 10 Noncredit Programs Completed by Those Who Continued Credit-Bearing Programs, Not Previously Enrolled**

<table>
<thead>
<tr>
<th>Program Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
</tr>
<tr>
<td>Nursing Assistant/Aide and Patient Care Assistant/Aide</td>
</tr>
<tr>
<td>Medication Aide</td>
</tr>
<tr>
<td>Truck and Bus Driver/Commercial Vehicle Operator and Instructor</td>
</tr>
<tr>
<td>Emergency Medical Technology/Technician (EMT Paramedic)</td>
</tr>
<tr>
<td>Civil Engineering Technology/Technician</td>
</tr>
<tr>
<td>Business/Office Automation/Technology/Data Entry</td>
</tr>
<tr>
<td>Fire Science/Fire-Fighting</td>
</tr>
<tr>
<td>Practical Nursing, Vocational Nursing and Nursing Assistants, Other</td>
</tr>
<tr>
<td>Welding Technology/Welder</td>
</tr>
<tr>
<td>Administrative Assistant and Secretarial Science, General</td>
</tr>
<tr>
<td>Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician</td>
</tr>
<tr>
<td>Machine Tool Technology/Machinist</td>
</tr>
<tr>
<td>Business Administration and Management, General</td>
</tr>
<tr>
<td>Electrical/Electronics Equipment Installation and Repair, General</td>
</tr>
<tr>
<td>Health and Medical Administrative Services, Other</td>
</tr>
</tbody>
</table>
Education Retention and Migration

Figure 10 represents aggregate numbers for those who continued their education either in- or out-of-state one year after exit (AY 2016-2017 only).

The vast majority (83.6 percent) of noncredit students who enrolled in a credit-bearing program after exiting their noncredit program remained in Iowa (N=1,716). Of those students who continued their education at an institution outside of Iowa, most enrolled in one of Iowa’s contiguous states such as Illinois (N=81), Nebraska (N=77), or Minnesota (N=30). For those who ventured farther away, the highest concentrations of migrating students enrolled at institutions in Arizona (N=11), California (N=7), or Colorado (N=7) within one year after exiting their noncredit program.

When looking at migration patterns, whether it be students who transferred to an out-of-state college or sought employment outside of Iowa, percentages are relatively small (16.7 and 16.9 percent respectively). Those employed are studied in subsequent sections of this report.

**Note:** If students were enrolled in different colleges at the same time, they were reported based on hierarchy with preference to four-year institutions.

**FIGURE 10. AY 2016-2017 COHORT EDUCATIONAL MIGRATION,**

States not shown on map:
Alaska - 0
Hawaii - 0
Puerto Rico - 0
When analyzing wage and employment data, it is important to note the restrictions and limitations of the Iowa UI and Wage Record Interchange System (WRIS) data, as explained in the Methodology and Research Limitations section of this report. Two important factors that impact the data are: (1) the wage data only represents employees of companies that pay UI tax; and (2) the number of hours worked are not reported within the data, making it impossible to identify part- versus full-time employment.

Both in- and out-of-state employment data were gathered using the UI database and the WRIS. Unfortunately, out-of-state wage data were not available prior to the first quarter of 2016 (January-March 2016) for the initial AY 2015-2016 cohort due to the timing of the study. Data were available for all quarters pertaining to the AY 2016-2017 cohort.

Iowa UI records were available to identify in-state employment for all periods of time. However, WRIS records, used to measure out-of-state employment, are only available for up to two years. The unmatched records from both data sources encompass graduates employed by employers that do not pay UI tax or those who were unemployed for the described periods of time.

Some noncredit students were employed prior to, during, or after enrolling in their programs. In order to measure the increase of employment percentage and overall wages, Figures 11 and 12 were created to illustrate the overall impact of noncredit training. Since students enter and complete noncredit programs at different times throughout the academic year, their wages were captured based on their college start and exit date independently, then aggregated relative to those dates.

The AY 2015-2016 cohort has a total of 10,551 students, but 90 of those students were enrolled while incarcerated and in AY 2016-2017 there were an additional 45 students. Therefore, all 135 were removed for employment and wage calculations based on their inability to be employed during incarceration.

Using the adjusted total of 9,409 students in the AY 2016-2017 cohort, a total of 7,530 (80.0 percent) matched employment in the year prior to enrollment in noncredit programs while 8,564 students (91.0 percent) matched employment in the year following exit. This represents a 13.7 percent (or 11.0 percentage point) increase in employment. Figure 11 illustrates these percentages of students who matched employment prior to, during, and following enrollment in noncredit programs. This current (AY 2016-2017) data and the wage and employment data for the AY 2015-2016 cohort can be accessed on the Iowa Department of Education’s website: https://www.educateiowa.gov/iowa-community-college-program-outcomes.
In order to compare and aggregate wages across the quarters being analyzed, a cost of living adjustment was applied to quarterly median wages and documented as the Adjusted Median Wage in Figure 12 (a detailed explanation is contained in the Methodology and Research Limitations section of this report). This adjustment is used to standardize wages in order to determine whether “real” wages have increased over the study period. The primary reason for utilizing the median quarterly wage for analysis (rather than mean) is that it mitigates the effects of outliers to provide a more accurate representation of the typical employee’s wages.

Figure 12 provides wage data from the first year following completion of the cohort. The adjusted median quarterly wage increased from $6,622 in the year prior to enrollment in noncredit CTE programs to $7,495 in the year following exit for the AY 2016-2017 cohort, which represents a 13.2 percent increase in median wages. This data is reflective of the cohort in its entirety and will vary based on the program completed, which is studied further in the following pages.
Employment and Wages by State

The WRIS was used to identify individuals who were employed out-of-state the year following exit from their noncredit program based on primary employment. Though the records do not identify hours worked (i.e., full- or part-time), overtime, or occupation, they do identify the number of graduates working in other states.

Figure 13 illustrates that the majority of those who exited a noncredit CTE program in AY 2016-2017 and matched to employment data in the first year following exit, remained in Iowa (83.1 percent). Similar to those who continued their education, most graduates who were employed outside of Iowa were employed in bordering states, such as Nebraska and Illinois. There were, however, notable numbers of students who were employed in Texas (N=71), Arkansas (N=29), and Pennsylvania (N=28) the first year following exit.

**RESEARCH HIGHLIGHT**

**Employment in Iowa**

83.1 percent of individuals matched to employment records in the first year following exit from a noncredit program were employed in Iowa.

---

**FIGURE 13. PRIMARY EMPLOYMENT BY STATE, FIRST YEAR FOLLOWING COMPLETION: AY 2016-2017 COHORT**

States not shown on map:
- Alaska - 3
- Hawaii - ***
- Puerto Rico - ***

*** Suppressed due to small cell size
Employment and Wages by Age and Gender

Previously reported, there were more males enrolled in noncredit programs in Iowa community colleges than females. Similarly, of the students eligible for employment analysis that reported their gender in the AY 2016-2017 cohort, 57.1 percent identified themselves as male (Figure 14).

Figure 15 provides the employment and wages of AY 2016-2017 exiters by age group and gender. Females under 25 years of age matched employment at a higher rate (95.4 percent) than males in the same age group (90.6 percent), but their adjusted quarterly median wage was much lower than that of the males, ($4,182 to $8,117, respectively). Also noted in Figure 15, 22.6 percent of males under 25 years of age held a previously earned degree.

When analyzing the gender disparity for the 25 years and older group who had previous degrees (N=426, 9 unknown gender), a smaller proportion of males held previous degrees (6.3 percent) than females (10.2 percent). However, the wage disparity between females and males still exists, with women earning $4,118 per quarter less than males.

To do a more in-depth analysis of the gender wage gap among recent Iowa community college noncredit exiters, other factors would need to be controlled, such as program and industry type. Industry of employment by gender data is available in Appendix A (data tables) and can be accessed through the Department’s website at: [https://www.educateiowa.gov/iowa-community-college-program-outcomes](https://www.educateiowa.gov/iowa-community-college-program-outcomes).

---

**FIGURE 14. PERCENT OF STUDENTS BY GENDER: AY 2016-2017 COHORT**

<table>
<thead>
<tr>
<th>Gender</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>42.9%</td>
</tr>
<tr>
<td>Male</td>
<td>57.1%</td>
</tr>
</tbody>
</table>

**FIGURE 15. EMPLOYMENT AND WAGES BY AGE & GENDER, FIRST YEAR FOLLOWING EXIT: AY 2016-2017 COHORT**

<table>
<thead>
<tr>
<th>Age</th>
<th>Gender</th>
<th>Number in Cohort</th>
<th>Previous Degree</th>
<th>Matched to Employment</th>
<th>Adjusted Quarterly Median Wage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>#</td>
<td>%</td>
<td>#</td>
<td>%</td>
</tr>
<tr>
<td>Under 25</td>
<td>Female</td>
<td>1,971</td>
<td>187</td>
<td>9.5%</td>
<td>1,880</td>
</tr>
<tr>
<td>Under 25</td>
<td>Male</td>
<td>1,760</td>
<td>397</td>
<td>22.6%</td>
<td>1,594</td>
</tr>
<tr>
<td>Under 25</td>
<td>Unknown/Not Reported</td>
<td>131</td>
<td>13</td>
<td>9.9%</td>
<td>118</td>
</tr>
<tr>
<td>25 and Over</td>
<td>Female</td>
<td>1,945</td>
<td>199</td>
<td>10.2%</td>
<td>1,756</td>
</tr>
<tr>
<td>25 and Over</td>
<td>Male</td>
<td>3,447</td>
<td>218</td>
<td>6.3%</td>
<td>3,077</td>
</tr>
<tr>
<td>25 and Over</td>
<td>Unknown/Not Reported</td>
<td>155</td>
<td>9</td>
<td>5.8%</td>
<td>139</td>
</tr>
</tbody>
</table>

*Note: 2017 wages defined as October 1, 2017, through September 30, 2018.*
Employment and Wages by Age and Race/Ethnicity

Figure 16 shows the breakdown of those who identified their race/ethnicity for the AY 2016-2017 cohorts. Over four-fifths (81.2 percent) of the noncredit students identified themselves as white/non-Hispanic, while 18.8 percent identified themselves in a racial/ethnic minority category. There were 4,041 students who did not report this data element and were excluded from Figure 16.

Figure 17 probes into the data further by breaking out the employment and wages associated with these groups by age. As illustrated below, wages vary substantially for those students over the age of 25 when the race/ethnicity cross-tabulation is applied. The white/non-Hispanic group earned an adjusted quarterly median wage of $10,167, whereas the racial/ethnic minority group had an adjusted quarterly median wage of $7,104 per quarter (30.1 percent less). The disparity is smaller for the under 25 age group, but the white/non-Hispanic group ($5,885) still has a higher quarterly median wage than those in the racial/ethnic minority group ($5,221).

Previous degrees held, for both age groups, were higher for white/non-Hispanic students than the racial/ethnic minority students, which could account for a portion of the wage disparity.

---

**FIGURE 16. PERCENT OF ENROLLMENTS BY RACE/ETHNICITY: AY 2016-2017 COHORT**

**FIGURE 17. EMPLOYMENT AND WAGES BY AGE AND RACE/ETHNICITY, FIRST YEAR FOLLOWING EXIT: AY 2016-2017 COHORT**

<table>
<thead>
<tr>
<th>Age</th>
<th>Race/Ethnicity</th>
<th>Number in Cohort</th>
<th>Previous Degree #</th>
<th>Matched to Employment #</th>
<th>Adjusted Quarterly Median Wage $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 25</td>
<td>Racial/Ethnic Minority</td>
<td>395</td>
<td>48</td>
<td>377</td>
<td>95.4% $5,221</td>
</tr>
<tr>
<td>Under 25</td>
<td>White/Non-Hispanic</td>
<td>1,789</td>
<td>335</td>
<td>1,682</td>
<td>94.0% $5,885</td>
</tr>
<tr>
<td>Under 25</td>
<td>Unknown/Not Reported</td>
<td>1,678</td>
<td>214</td>
<td>1,533</td>
<td>91.4% $4,814</td>
</tr>
<tr>
<td>25 and Over</td>
<td>Racial/Ethnic Minority</td>
<td>613</td>
<td>37</td>
<td>557</td>
<td>90.9% $7,104</td>
</tr>
<tr>
<td>25 and Over</td>
<td>White/Non-Hispanic</td>
<td>2,571</td>
<td>235</td>
<td>2,333</td>
<td>90.7% $10,167</td>
</tr>
<tr>
<td>25 and Over</td>
<td>Unknown/Not Reported</td>
<td>2,363</td>
<td>154</td>
<td>2,082</td>
<td>88.1% $9,031</td>
</tr>
</tbody>
</table>
Employment and Wages by Industry Sector

Figure 18 shows the number of students, percentage of employment, and quarterly median wages by industry sector for the AY 2016-2017 cohort in the first year prior to entry and the first year after completion of a noncredit CTE program. The industry sectors displayed are from the North American Industry Classification System (NAICS) code included in the Iowa UI and WRIS wage data.

Industry sectors are defined by the type of business that an employer engages in, not the occupation of an employee (defined by the day-to-day tasks the employee performs). Occupational data are not included in the UI wage records, so there is no way to determine whether a student actually acquired or transferred to a job which matched her or his training, but assumptions can be made by industry staffing patterns and wages. The shaded boxes in Figure 18 represent the highest increase (blue) and decrease (orange) of employment in each industry in the year following noncredit enrollment.

<table>
<thead>
<tr>
<th>Industry Sector of Employment</th>
<th>Year Prior to Noncredit Enrollment</th>
<th>Year Following Noncredit Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Matched to Employment</td>
<td>Adjusted Quarterly Median Wage</td>
</tr>
<tr>
<td>------------------------------</td>
<td>----------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>#</td>
<td>%</td>
<td>$</td>
</tr>
<tr>
<td>Health Care and Social Assistance</td>
<td>1,659</td>
<td>22.0%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>1,269</td>
<td>16.9%</td>
</tr>
<tr>
<td>Transportation and Warehousing</td>
<td>183</td>
<td>2.4%</td>
</tr>
<tr>
<td>Construction</td>
<td>573</td>
<td>7.6%</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>880</td>
<td>11.7%</td>
</tr>
<tr>
<td>Public Administration</td>
<td>398</td>
<td>5.3%</td>
</tr>
<tr>
<td>Administrative and Support Services</td>
<td>526</td>
<td>7.0%</td>
</tr>
<tr>
<td>Wholesale Trade</td>
<td>379</td>
<td>5.0%</td>
</tr>
<tr>
<td>Accommodation and Food Services</td>
<td>553</td>
<td>7.3%</td>
</tr>
<tr>
<td>Educational Services</td>
<td>256</td>
<td>3.4%</td>
</tr>
<tr>
<td>Professional, Scientific, and Technical Services</td>
<td>153</td>
<td>2.0%</td>
</tr>
<tr>
<td>Finance and Insurance</td>
<td>117</td>
<td>1.6%</td>
</tr>
<tr>
<td>Other Services</td>
<td>122</td>
<td>1.6%</td>
</tr>
<tr>
<td>Agriculture, Forestry, Fishing, and Hunting</td>
<td>136</td>
<td>1.8%</td>
</tr>
<tr>
<td>Mining</td>
<td>58</td>
<td>0.8%</td>
</tr>
<tr>
<td>Information</td>
<td>90</td>
<td>1.2%</td>
</tr>
<tr>
<td>Arts, Entertainment and Recreation</td>
<td>76</td>
<td>1.0%</td>
</tr>
<tr>
<td>Utilities</td>
<td>37</td>
<td>0.5%</td>
</tr>
<tr>
<td>Management of Companies and Enterprises</td>
<td>23</td>
<td>0.3%</td>
</tr>
<tr>
<td>Unknown</td>
<td>5</td>
<td>0.1%</td>
</tr>
<tr>
<td>Real Estate, Rental, and Leasing</td>
<td>37</td>
<td>0.5%</td>
</tr>
</tbody>
</table>
The industry sector that employed the largest number of the noncredit students in the AY 2016-2017 cohort was the Health Care and Social Assistance industry. Health Care and Social Assistance showed a gain in the number of employees (1,659 to 2,591), followed by Transportation and Warehousing (183 to 729). Conversely, the Retail Trade and Accommodation and Food Services industries show the largest loss of employees (880 employed to 571 in retail and 553 employed to 308 in food service).

The industries with the highest quarterly median wages in the year following completion with more than 100 employed were Manufacturing ($12,841), Public Administration ($12,655), and Professional, Scientific, and Technical Services ($11,386).

Some of the quarterly median wages show a slight decrease following the completion of the program. However, this is most likely explained by new employment and starting wages, which are less than wages of experienced workers. This is especially true when the number of those with new employment is dramatically larger (i.e., Transportation and Warehousing).

A link to complete industry employment and wage data can be found in Appendix A.

---

### Employment and Wages by Contact Hours and CIP

Figures 19 reflects the employment and wages, by number of contact hours for those in the AY 2016-2017 cohort who were employed in the year following graduation. For example, of the 5,937 students who enrolled in 32 to 99 contact hours of noncredit courses and exited in AY 2016-2017, 91.2 percent matched employment records within the year following exit and earned a quarterly median wage of $7,879.

Additionally, 11.0 percent had previously earned a degree prior to enrolling in the noncredit program. Those with 100 to 200 contact hours matched employment at a rate of 91.7 percent, which was the second highest of the categories listed. However, this group had the lowest quarterly median wage.

---

### Figure 19. Employment, Wages, and Previous Degree Earned by Contact Hour, First Year Following Completion: AY 2016-2017 Cohort

<table>
<thead>
<tr>
<th>Size of Award</th>
<th>Number in Cohort</th>
<th>Previous Degree</th>
<th>Matched to Employment</th>
<th>Adjusted Quarterly Median Wage</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 to 100 Contact Hours</td>
<td>5,937</td>
<td>654 11.0%</td>
<td>5,416 91.2%</td>
<td>$7,879</td>
</tr>
<tr>
<td>100 to 200 Contact Hours</td>
<td>2,219</td>
<td>229 10.3%</td>
<td>2,034 91.7%</td>
<td>$5,970</td>
</tr>
<tr>
<td>Over 200 Contact Hours</td>
<td>1,253</td>
<td>140 11.2%</td>
<td>1,114 88.9%</td>
<td>$8,886</td>
</tr>
</tbody>
</table>
Noncredit Career and Technical Education (CTE) Program Outcomes

Employment First Year Following Exit

More than 95 percent of individuals in the following noncredit programs, requiring between 32 and 99 contact hours, were employed the year following program completion:
- Civil Engineering Technology/Technician
- Medication Aide
- Practical Nursing, Vocational Nursing, and Nursing Assistant, Other
- Occupational Safety and Health Technology/Technician
- EMT/Paramedic
- Business Administration and Management, General

RESEARCH HIGHLIGHT

Figure 20 illustrates the employment and wages by CIP for the ten largest programs (by enrollment) consisting of 32 to 99 contact hours.

The bar in the figure represents the percentage of those who matched employment within the first year following program exit and the dot illustrates the quarterly median wage.

The highest percentage of employment (99.1) was for those who exited from the civil engineering technology/technician noncredit program (CIP 150201). This group earned a quarterly median wage of $14,525. The highest quarterly median wage ($16,305) was earned by students who exited from the occupational safety and health technology/technician program (CIP 150701). This group had an employment match rate of 96.3 percent the first year following exit.

**FIGURE 20. EMPLOYMENT AND WAGES BY PROGRAM BETWEEN 32 AND 99 CONTACT HOURS, FIRST YEAR FOLLOWING EXIT: AY 2016-2017 COHORT**

<table>
<thead>
<tr>
<th>Program Code</th>
<th>Program Name</th>
<th>Percent Matched to Employment</th>
<th>Median Quarterly Wage Year After Exit</th>
</tr>
</thead>
<tbody>
<tr>
<td>513902</td>
<td>Nursing Assistant/Aide and Patient Care Assistant/Aide</td>
<td>93.9%</td>
<td>$3,613</td>
</tr>
<tr>
<td>490205</td>
<td>Truck and Bus Driver/Comm. Vehicle Operator/Instructor</td>
<td>83.1%</td>
<td>$8,921</td>
</tr>
<tr>
<td>512603</td>
<td>Medication Aide</td>
<td>98.8%</td>
<td>$7,429</td>
</tr>
<tr>
<td>150201</td>
<td>Civil Engineering Technology/Technician</td>
<td>99.1%</td>
<td>$14,525</td>
</tr>
<tr>
<td>430203</td>
<td>Fire Science/Fire-Fighting</td>
<td>89.0%</td>
<td>$10,756</td>
</tr>
<tr>
<td>520407</td>
<td>Business/Office Automation/Technology/Data Entry</td>
<td>77.3%</td>
<td>$6,752</td>
</tr>
<tr>
<td>513999</td>
<td>Practitioner, Vocat. Nursing and Nursing Assit.</td>
<td>96.6%</td>
<td>$11,180</td>
</tr>
<tr>
<td>150701</td>
<td>Occupational Safety and Health Technology/Technician</td>
<td>96.3%</td>
<td>$16,305</td>
</tr>
<tr>
<td>510904</td>
<td>Emergency Medical Technology/Technician (EMT Paramedic)</td>
<td>96.0%</td>
<td>$12,006</td>
</tr>
<tr>
<td>520201</td>
<td>Business Administration and Management, General</td>
<td>95.1%</td>
<td>$16,150</td>
</tr>
</tbody>
</table>

Program Legend:

513902: Nursing Assistant/Aide and Patient Care Assistant/Aide
490205: Truck and Bus Driver/Comm. Vehicle Operator/Instructor
512603: Medication Aide
150201: Civil Engineering Technology/Technician
430203: Fire Science/Fire-Fighting
520407: Business/Office Automation/Technology/Data Entry
513999: Practitioner, Vocat. Nursing and Nursing Assit., Other
150701: Occupational Safety and Health Technology/Technician
510904: Emergency Medical Technology/Technician (EMT Paramedic)
520201: Business Administration and Management, General
Figure 21 shows the outcomes by CIP for the 10 largest programs (by enrollment) consisting of 100 to 200 contact hours. The employment percentages ranged from 75.6 percent (business/office automation/technology program - CIP 520407), to 94.2 percent (emergency medical technology/technician [EMT paramedic] program - CIP 510904) and engineering technology (CIP 150201).

A complete listing of programs containing wage and employment data can be found in Appendix A.

Note: Some of the noncredit programs have enrollment primarily from established professionals in need of continuing education credits which may skew median wages.

**RESEARCH HIGHLIGHT**

**Employment First Year Following Exit**

More than 94 percent of individuals in the following noncredit programs, requiring between 100 and 200 contact hours, were employed the year following program completion:

- Emergency Medical Technology/Technician (EMT Paramedic)
- Civil Engineering Technology/Technician

**FIGURE 21. EMPLOYMENT AND WAGES BY PROGRAM BETWEEN 100 AND 200 CONTACT HOURS, FIRST YEAR FOLLOWING EXIT: AY 2016-2017 COHORT**
The programs consisting of 200 or more contact hours are illustrated in Figure 22. The employment percentage for those who exited from the electrical/electronic equipment installation/repair program (CIP 470101), the pharmacy technician/assistant program (510805), and the fire science/fire-fighting program (430203) was the highest at 100.0 percent. The highest quarterly median wage of $17,040 was earned by those who exited from the industrial mechanic and maintenance technology program (CIP 470303), which had 94.9 percent employment in the first year following exit.
Career Clusters

Career and technical education (CTE) in Iowa consists of educational programs offering courses designed to prepare individuals for immediate employment in current or emerging occupations. These programs consist of competency-based, applied learning opportunities that contribute to a student’s academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability, and occupational-specific skills.

CTE programs at the community college level can be presented as a part of the national career cluster framework. Each career cluster represents a distinct grouping of occupations and industries based on the knowledge and skills required. The following 16 career clusters and related career pathways provide an important organizing tool for schools to develop more effective programs of study and curriculum.

**Agriculture, Food, and Natural Resources:** Producing, processing, marketing, distribution, financing, and development of agricultural commodities and resources.

**Architecture and Construction:** Designing, planning, managing, building, and maintaining the built environment.

**Arts, A/V Technology, and Communications:** Designing, producing, exhibiting, performing, writing, and publishing multimedia content.

**Business, Management, and Administration:** Planning, organizing, directing, and evaluating business functions essential to efficient and productive business operations.

**Education and Training:** Planning, managing, and providing education, training, and related learning support services.

**Finance:** Planning and related services for financial and investment planning, banking, insurance, and business financial management.

**Government and Public Administration:** Planning and executing government functions at the local, state, and federal levels.

**Health Science:** Planning, managing, and providing therapeutic and diagnostic services, health informatics, and biotechnology research and development.

**Hospitality and Tourism:** Preparing individuals for employment related to restaurant and food/beverage services, lodging, travel and tourism, recreation, amusement, and attractions.

**Human Services:** Preparing individuals for employment that relates to families and human needs such as counseling and mental health services, family and community services, personal care, and consumer services.

**Information Technology (IT):** Building linkages in IT occupations for entry level, technical, and professional careers related to the design, development, support, and management of hardware, software, multimedia, and systems integration services.

**Law, Public Safety, Corrections, and Security:** Planning, managing, and providing legal, public safety, protective services, and homeland security.

**Marketing:** Planning, managing, and performing marketing activities to reach organizational objectives such as brand management, professional sales, merchandising, marketing, communications, and market research.

**Manufacturing:** Planning, managing, and performing the processing of materials into intermediate or final products and related professional and technical support activities.

**Science, Technology, Engineering, and Mathematics (STEM):** Planning, managing, and providing scientific research and professional and technical services, including laboratory and testing, and research and development services. Please note that most STEM occupations are embedded in other career clusters.

**Transportation, Distribution, and Logistics:** Planning, managing, and moving people, materials, and goods by road, pipeline, air, rail, and water, and related professional and technical support services such as transportation infrastructure planning, management, logistics services, mobile equipment, and facility maintenance.
Enrollment by Career Cluster

Career clusters represent groupings of occupational programs designed to prepare students for success in the workforce by developing particular skill sets required of the trade or profession. However, when researching career clusters, it is important to note that each cluster represents multiple industries and a variety of occupations within those industries.

Another challenge of researching outcomes based on career clusters is that when a student continues his or her education into a credit-bearing program after completing a noncredit program, there is not always a clear or direct path. Additionally, many of the noncredit programs are designed to enhance skills for reemployment opportunities, not necessarily for transfer to credit-bearing programs.

Figure 23 below, illustrates the number of students in noncredit programs by career cluster (indicated by number) in both the AY 2015-2016 and AY 2016-2017 cohorts in aggregate, and the subsequent enrollment in credit-bearing programs the year following completion. For example, the majority of students who continued education in credit programs were in the noncredit health science cluster (N=1,888). However, only 974 (51.6 percent) of these remained in the health science cluster upon enrolling in a credit program. The remaining were sprinkled across other credit

<table>
<thead>
<tr>
<th>Noncredit Cluster</th>
<th>Credit Cluster</th>
</tr>
</thead>
<tbody>
<tr>
<td>AY 2015-2016 and AY 2016-2017</td>
<td>1</td>
</tr>
<tr>
<td>1 - Agriculture, Food and Natural Resources</td>
<td>0</td>
</tr>
<tr>
<td>2 - Architecture and Construction</td>
<td>2</td>
</tr>
<tr>
<td>3 - Arts, Audio/Video Technology and Communications</td>
<td>0</td>
</tr>
<tr>
<td>4 - Business Management and Administration</td>
<td>1</td>
</tr>
<tr>
<td>5 - Education and Training</td>
<td>0</td>
</tr>
<tr>
<td>6 - Finance</td>
<td>0</td>
</tr>
<tr>
<td>7 - Government and Public Administration</td>
<td>0</td>
</tr>
<tr>
<td>8 - Health Science</td>
<td>4</td>
</tr>
<tr>
<td>9 - Hospitality and Tourism</td>
<td>0</td>
</tr>
<tr>
<td>10 - Human Services</td>
<td>0</td>
</tr>
<tr>
<td>11 - Information Technology</td>
<td>0</td>
</tr>
<tr>
<td>12 - Law, Public Safety, Corrections and Security</td>
<td>4</td>
</tr>
<tr>
<td>13 - Manufacturing</td>
<td>3</td>
</tr>
<tr>
<td>14 - Marketing</td>
<td>0</td>
</tr>
<tr>
<td>15 - STEM</td>
<td>0</td>
</tr>
<tr>
<td>16 - Transportation, Distribution and Logistics</td>
<td>77</td>
</tr>
<tr>
<td>Total</td>
<td>91</td>
</tr>
</tbody>
</table>
clusters such as education and training (N=546), STEM (N=163), or human services (N=79).

One notable limitation to identifying the path to a credit program is that there are a number of colleges that do not report the credit program CIP code in the NSC system. Though the institution name, type, and state are contained in the data, the CIP code, and/or program title variables are often left empty, therefore unknown. Of the 4,332 students who were enrolled in credit-bearing programs following completion of the noncredit program, 1,702 did not have a record that contained CIP data for the credit program and are not included in this table.

Note: The national career cluster system identifies liberal arts programs as a part of the education and training career cluster.

Transition into the Workforce

In the previous sections, career clusters and primary industry sectors of employment were analyzed independently. However, of particular interest, is the cross-tabulation of these two variables, accomplished by tracking exiters within each career cluster to the industry sectors in which they secured employment.

Figure 24 provides a visualization used to relate these two variables. Circos, software that uses polar coordinate mapping to illustrate data relationships, maps the career clusters to primary industry employment information for each graduate in the study.

The colored bars on the left side of the circle represent the career clusters for the noncredit program in the study. Each colored bar corresponds to one of the 16 career clusters listed on the left. The gray bars on the right side represent the industry sectors in which the exiters secured employment. Each gray bar corresponds to one of the 20 industry sectors listed on the right.

Figure 25 illustrates the relationship between career clusters and industry sectors for the AY 2016-2017 cohort via hundreds of ribbons connecting the career cluster exiters (left bars) to their industry sector of employment (right bars). The width of the bars on each side depicts the overall number of exiters in each cluster and those employed within each sector. When the number of students was too low for reporting, the ribbons associated with them were removed from Figure 25, resulting in fewer ribbons.

Another significant limitation to consider is that this data show the industry sectors in which exiters were primarily employed, not their actual occupations. For instance, a health science exiter may be a pharmaceutical technician employed by a pharmacy within a large retail store. While they are doing work related to health care, they are reported as employed in the retail trade sector. This distinction between occupation and industry sector is important to note when analyzing the flow from education to industry as illustrated in Figures 24 and 25.
Noncredit Career and Technical Education (CTE) Program Outcomes

FIGURE 24. CIRCOS VISUALIZATIONS

Career Cluster
Agriculture, Food, and Natural Resource
Architecture and Construction
Arts, Audio/Video Technology, and Communications
Business, Management, and Administration
Education and Training
Finance
Government and Public Administration
Health Science
Hospitality and Tourism
Human Services
Information Technology
Law, Public Safety, Corrections, and Security
Manufacturing Career
Marketing Sales and Service
Science, Technology, Engineering, and Mathematics
Transportation, Distribution, and Logistics

Industry Cluster
Accommodation and Food Services
Admin, Support, Waste Mgmt., and Remediation
Agriculture, Forestry, Fishing, and Hunting
Arts, Entertainment, and Recreation Construction
Educational Services
Finance and Insurance
Health Care and Social Assistance
Information Technology
Management of Companies and Enterprises
Manufacturing
Mining
Other Services
Professional, Scientific, and Tech. Services
Public Administration
Real Estate, Rental, and Leasing Retail Trade
Transportation and Warehousing Utilities

FIGURE 25. CLUSTER TO INDUSTRY MAPPING FOR AY 2016-2017 NONCREDIT EXITERS

Note: Ribbons representing cells that are suppressed in the data are not shown in this visualization.
Cluster to Industry

As mentioned previously, students enrolled in the health science career cluster represent the largest portion of the AY 2016-2017 cohort, which explains why the aqua (mid left) sector of Figure 25 is so wide. All exiters are graphically represented in this figure, with the “No Match” (mid-bottom) section corresponding to those exiters who did not match UI wage records. This diagram illustrates that the majority of health science exiters obtained employment within the health care and social assistance industry; however, this career cluster provided workers in nearly every industry. The transportation and logistics completers were largely disbursed as well, with their largest industry sectors of employment being transportation and warehousing, wholesale trade, and manufacturing.

Employment by Career Cluster

Figure 26 illustrates the employment and wage outcomes of the AY 2016-2017 noncredit students by career cluster in the first year following exit. The 707 exiters in the architecture and construction cluster had the highest employment match rate with 97.2 percent and earned a median quarterly wage of $13,013. The next highest employment percentage was achieved by the 137 students in the government and public administration career cluster (96.4 percent) who earned a median quarterly wage of $16,274. In the most popular health science cluster, 94.4 percent of the 3,905 exiters matched employment and earned a quarterly median wage of $5,436, which is less than half of those in the construction and government clusters.

One of the lowest rates of matching employment was for students from the agriculture, food, and natural resources cluster (72.4 percent). For this cluster, it is important to keep the limitations of the UI wage data in mind, as most family farming operations do not pay UI tax and therefore are not included. More specifics on the UI wage records can be found in methodology section of this report.
FIGURE 26. EMPLOYMENT AND WAGES BY CAREER CLUSTER, FIRST YEAR FOLLOWING EXIT: AY 2016-2017 COHORT

Noncredit Career and Technical Education (CTE) Program Outcomes
Methodology and Research Limitations

Noncredit Cohort Formation

1. Starting Cohort: Iowa Community College Management Information Systems (MIS) data base of Noncredit Enrollments for AY 2016-2017 - The latest available data that allows for at least 12 months past enrollment for tracking students into further education and/or employment one year after finishing cohort formation year was used.

2. Exclude students without valid SSNs, first and last names, and dates of birth (DOB) - Research was limited to students with valid SSNs, first and last names, and DOBs, since tracking students into the workforce involves SSNs and tracking students to further education involves names and DOBs as required data elements.

3. Identify Career and Technical Education (CTE) enrollees - CTE enrollees were identified utilizing data codes for Career/Vocational Training and Upgrading and Economic Development programs with National Center for Educational Statistics (NCES) Classification of Instructional Program codes (CIP) listed under Advance CTE 16 National Career Clusters®.

4. Establish CTE enrollees with sizable CTE education, resulting in labor market value credential/experience - The minimum acceptable noncredit educational level is established at 32 CTE contact hours. This threshold is established to match the minimum existing CTE credit credential approved for Iowa community colleges. This threshold allows for justified comparability of the value of noncredit CTE education to corresponding credit CTE education, thus providing comparable material for measuring educational and employment outcomes. The same logic is being used in the MIS data reporting manual and, subsequently, for data reporting to third parties (e.g., Voluntary Framework of Accountability).

Data Fields Formation (for calculated fields)

Some data fields are reported at face value, as they were reported to us in the MIS (e.g., gender, race/ethnicity), and some data fields contain imputed values. Below is the description of calculation methods for such fields:

1. Program of Study (POS) - POS is established based on students’ enrollment CIP codes. If a student has been reported under more than one CIP code during the cohort formation year, his or her POS determination is based on the POS with the majority of contact hours. In cases of multiple CIP codes of enrollments obtained from external sources (e.g., National Student Clearinghouse [NSC], for previous, concurrent, or subsequent credit enrollments), a method of random CIP number selection has been applied.

2. Age - The categories of “under 25” and “25 and older” were used based on each student’s age as of the middle of the AY 2015-2016 (January 1, 2016) year.

3. Correctional Facilities - MIS data codes were used to establish whether a noncredit student was enrolled while in a correctional facility.

4. Previously Received Credit Award - A five-year timeframe and NSC data were utilized to establish if a student has been enrolled in noncredit education with an existing postsecondary credit award.

5. POS Length - As the length of POS in noncredit enrollments vary from a couple of weeks to a full year, we explored preceding and consecutive credit and noncredit enrollments based on a full preceding or following academic year, regardless of the length of noncredit enrollments within cohort year.
Employment and Wage Records

» All wages for this report originate either from the Iowa Unemployment Insurance (UI) wage database, or the Wage Record Interchange System (WRIS) network of state UI wage databases (see Appendix B for a description and the limitations of UI wages).

» There are three periods of time being analyzed in this report (defined below). For each of these time periods, the ‘% Matched to Employment’ is counting the percentage of the cohort that matched to UI wages in any of the quarters being analyzed. The ‘Quarterly Median Wage’ is the median of each individual’s median gross wages across the quarters being analyzed.

» Year Prior to Enrollment in Noncredit - The four full quarters prior to the quarter in which the individual started his or her earliest noncredit course.

» During Enrollment in Noncredit - All quarters including and between the quarter in which the individual started his or her earliest noncredit course and exited his or her latest noncredit course.

» Year Following Enrollment in Noncredit - The four full quarters following the quarter in which the individual exited his or her last noncredit course.

» Both the actual wage earned (“Unadjusted Median Wage”) and the wage adjusted for inflation (“Adjusted Median Wage”) are included in all tables. Wages were adjusted for inflation to 2018Q4 (July 2018 - September 2018) levels (CPI-u = 252.197) in order to make longitudinal comparisons more legitimate using the Consumer Price Index (CPI-u) as calculated by the U.S. Bureau of Labor Statistics. The formula used for adjusting wages is as follows:

$$W_{adj} = \frac{CPI_t}{CPI_{base}} \times W_t$$

where $CPI_{base}$ is the CPI value of the base time period (2018Q3), $CPI_t$ is the CPI value of the time period being adjusted from, and $W_t$ is the wage of the time period being adjusted from. Wages are adjusted after they have been aggregated by academic year (using academic year average CPI values).

» The aggregate wages reported throughout this report do not include those graduates who did not match the UI wage database (i.e., the median wages only include those who had wages covered by UI tax during that period of time). The UI wage records do not cover those employers exempt from paying UI tax such as federal employees, members of the armed forces, the self-employed, proprietors, unpaid family workers, church employees, railroad workers covered by the railroad unemployment insurance system, and students employed at a college or university as part of a financial aid package.

» All wage estimates in the report include ALL wages in the UI wage database for that person in that year. Each individual is associated with just one industry sector and state in each time period, and that assignment is based on the industry sector/state of the employer they earned the most wages within that period. So, for example, if Lincoln earned $5,000 in the manufacturing industry sector and $2,000 in the retail trade industry sector per quarter following enrollment, Lincoln would be included in the overall employment and wages table with a gross wage of $7,000 per quarter. In the employment and wages by industry sector table, he would be included under the manufacturing industry sector with a gross wage of $7,000 per quarter (he would not be counted in retail trade, but the wages he earned in that sector would still be counted).
» Median wages are used in this report rather than average wages to mitigate the effect of outliers. Wage distributions are typically right-skewed and so the median is a better measure of center than the mean which is pulled in the direction of the skew (and is more affected by outliers, particularly with small sample sizes).

» To protect individual identities, some cells in this report are suppressed due to small cell size using the following rules:
   » Suppress the cell if number of employed in cell is less than three.

» If the sum of employed individuals across all suppressed subgroups is less than three, suppress the next smallest subgroup (to ensure the number of suppressed individuals is three or greater).

» Individuals who were identified as being in a correctional facility while taking noncredit courses are excluded from analysis due to a lack of information on when they exited the facility.

» Out-of-state wage data is not available prior to 2016Q1.
References


Appendix A—Contents

Below is a list of the detailed data tables for this report which can be accessed at:

Table 1 - Overall Employment and Wages
Table 2 - Overall Employment and Wages by State of Employment
Table 3 - Overall Employment and Wages by State of Employment (Combined)
Table 4 - Overall Employment and Wages by Industry Sector of Employment
Table 5 - Employment and Wages by Gender
Table 6 - Employment and Wages by Gender by State of Employment
Table 7 - Employment and Wages by Gender by State of Employment (Combined)
Table 8 - Employment and Wages by Gender by Industry Sector of Employment
Table 9 - Employment and Wages by Gender by Age
Table 10 - Employment and Wages by Age
Table 11 - Employment and Wages by Age by State of Employment
Table 12 - Employment and Wages by Age by State of Employment (Combined)
Table 13 - Employment and Wages by Age by Industry Sector of Employment
Table 14 - Employment and Wages by Race/Ethnicity
Table 15 - Employment and Wages by Race/Ethnicity by State of Employment
Table 16 - Employment and Wages by Race/Ethnicity by State of Employment (Combined)
Table 17 - Employment and Wages by Race/Ethnicity by Industry Sector of Employment
Table 18 - Employment and Wages by Race/Ethnicity by Age
Table 19 - Employment and Wages by Size of Award
Table 20 - Employment and Wages by Size of Award by State of Employment
Table 21 - Employment and Wages by Size of Award by State of Employment (Combined)
Table 22 - Employment and Wages by Size of Award by Industry Sector of Employment
Table 23 - Employment and Wages by Career Cluster
Table 24 - Employment and Wages by Career Cluster by State of Employment
Table 25 - Employment and Wages by Career Cluster by State of Employment (Combined)
Table 26 - Employment and Wages by Career Cluster by Industry Sector of Employment
Table 27 - Employment and Wages by Program
Table 28 - Employment and Wages by Program by State of Employment
Table 29 - Employment and Wages by Program by State of Employment (Combined)
Table 30 - Employment and Wages by Program by Industry Sector of Employment
Appendix B - Unemployment Insurance (UI) Records Description and Limitations
The Division of Community Colleges and Workforce Preparation within the Iowa Department of Education administers a variety of diverse programs that enhance Iowa’s educational system and help to prepare a skilled and knowledgeable workforce. Divided between two bureaus — the Bureau of Community Colleges and the Bureau of Career and Technical Education — the Division is committed to providing and supporting opportunities for lifelong learning. In addition to working with Iowa’s 15 public community colleges on state accreditation, program approval, equity review, and data reporting, guidance is also provided in the areas of career and technical education, workforce training and economic development, adult education and literacy, military education, the state mandated OWI education program, the GAP Tuition and PACE programs, Senior Year Plus, the National Crosswalk Service Center, and the Statewide Intermediary Network program.