Connecticut State Colleges & Universities

Employment & Wage Data by Sector

Graduates from 2009-10 to 2018-19
### Contents

**Introduction** ................................................................................................................................. 3

**Important Notes & Limitations** ........................................................................................................ 4

**Findings** ........................................................................................................................................ 5

*Key Points about Employment* ........................................................................................................... 5
- The majority of CSCU students work in Connecticut shortly after graduation ......................... 5
- More CC and CSU than UConn graduates work in CT in the 3rd quarter after completion .......... 6
- The percent of students employed in Connecticut declines over time. ....................................... 6
- The rate of decline is consistent across sectors and years of graduates ...................................... 7
- Employment rates for major minority groups .............................................................................. 8

*Key Points about Wages* ..................................................................................................................... 9
- CSCU credentials have value in the CT marketplace over time ..................................................... 9
- Wages for graduates increase in the short term .............................................................................. 9
- The higher the credential, the greater the wage .......................................................................... 10
- Sub-baccalaureate credentials provide value over time ............................................................... 10
- Some certificates provide a higher return than an associate degree. ........................................... 11
- Outcomes for certificates at individual colleges can stand out. .................................................... 13
- Program and student body representation are not the same. ...................................................... 13
- Wages over time for graduates of 2009-10 disaggregated by race & ethnicity ............................ 14
- Wages over time for black and Hispanic graduates of 2009-10 ............................................... 15

*Areas for Additional Exploration* ......................................................................................................... 16

**Sources** .......................................................................................................................................... 16

**Methodology and Data Security** ........................................................................................................ 17

**Technical Notes** ................................................................................................................................. 18

**Appendix A** ...................................................................................................................................... 19

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*CSCU Wage & Employment Summary Report - 2020*
**Introduction**

The correlation between education and employment opportunity is undeniable. National advocacy groups promote research findings and policy recommendations with a broad national focus. These are important for understanding trends, yet local administrators and students need information about the outcomes of local education programs. This report and corresponding data visualizations and data stories attempt to fill gaps and support local discussion about employment trends for graduates of academic programs at each institution within Connecticut State Colleges and Universities (CSCU). CSCU includes the twelve Connecticut Community Colleges (CCC or CC), the four Connecticut Universities (CSU) and Charter Oak State College (COSC).

The primary audience for this summary report is CSCU college and university administrators. They will find value in this report and accompanying data tables for program evaluation and improvement purposes. Additional details necessary for accreditation reports or other nuanced purposes can be obtained directly from CSCU Institutional Research Directors who have been provided copies of the detailed data. Most importantly, this report and accompanying on-line interactive data visualizations are designed to help users understand typical outcomes of academic programs and credential types for recent graduates working in Connecticut.

This report shows summary employment and wage data for nine years of graduates from CSCU institutions and demonstrates the value of CSCU credentials and degrees. Data are included for students who graduated during academic years of 2009-10 through 2018-19. There is more employment information about earlier cohorts of graduates than for the more recent years simply because those who graduated earlier have had more time to participate in the workforce. See Appendix A for a chart showing available quarters of wage data. The section on methodology is available for those looking for more the detail. Everyone should review the “Important Notes” section in order to understand the limitations of the data. More data are available than can be completely or adequately captured in this document; therefore, readers are encouraged to visit the website and download the source data tables for further exploration.

Data were obtained through Connecticut’s Preschool through Twenty and Workforce Information Network (P20 WIN), [http://www.ct.edu/p20win](http://www.ct.edu/p20win). P20 WIN is Connecticut’s inter-agency collaborative that links education and workforce data to help improve education programs and workforce alignment in Connecticut. Connecticut agencies participating in P20 WIN include the Office of Early Childhood (OEC), the State Department of Education (SDE), the CT State Colleges and Universities (CSCU), the University of Connecticut (UConn), the Connecticut Conference of Independent Colleges (CCIC), the Connecticut Department of Labor (DOL) and the Office of Policy and Management (OPM). It is through the engagement of staff at these agencies that CSCU is able to provide this information.
Important Notes & Limitations

1. **Who is counted as a graduate:** Individuals are counted as graduates if they completed a credential during academic years 2009-10 through 2018-19. Data for some graduates of the 2019-20 academic year are included; however, the full cohort of graduates from that academic year was not available when data were extracted. The count of graduates includes all students regardless of whether they were enrolled as full-time, part-time, 1st time or any other typical enrollment category. All credentials offered were included: certificates (both undergraduate and graduate), associates, bachelors, masters and doctoral degrees.

2. **Who is counted as employed:** Individuals are counted as employed and appear in the metrics about employment only if they were found to be employed in Connecticut. Individuals who are working out of the state are not included in these data. For institutions that have significant populations of students from other states (e.g. Charter Oak State College, Asnuntuck Community College, Southern and Western State Universities), there is a greater likelihood that these out of state students also find employment outside of Connecticut, and therefore, are not represented in this wage data.

3. **Who is not counted:** The employment and wage record data only include employees who work for employers in CT that are covered by Unemployment Insurance (UI) law. Major exclusions from these data include those who are self-employed, all members of the Armed Forces, elected officials in most states, most agricultural workers on small farms, most employees of railroads, some domestic workers, most student workers at schools and employees of some types of non-profit organizations. According to the DOL, UI covered jobs generally include approximately 95% of wage and salary positions in the labor market.

4. **Employment counts under-represent reality:** Employment counts under-represent the true number of employed graduates for several reasons: 1) Unemployment Insurance data exclude some classes of employees (see note above for ‘Who is not counted’), 2) Unemployment Insurance data to which DOL has access does not include CT residents who work in other states, and 3) matches between education and UI records cannot be made for students who do not have valid Social Security Numbers (SSNs) on file. CSCU System Office staff estimate that 1% of records used for these reports have missing or invalid SSNs.

5. **Level of wages under-represent typical annual salaries:** The wage data DOL receives from employers includes everyone whether they worked full-time, part-time or intermittently (e.g. someone who starts or stops a job mid-quarter), and it does not include the number of hours or weeks individuals worked. Since they cannot be distinguished, employment metrics in this report combine data for everyone employed. Therefore, the total average wages reported for any given quarter are lower than what one would expect to earn if everyone in the calculation worked full-time and for all business days within the quarter.

6. **One cannot calculate ‘Unemployed’ from these data:** It is not accurate to calculate the number of individuals who are unemployed by subtracting the number of employed from the number of graduates. Individuals who are actively working may not be captured as employed because they are either working out of state or because their job is not covered by Unemployment Insurance (UI) law which is the source of wage and employment data for this report. In addition, those not working may be doing so voluntarily and therefore would not be counted in the labor force.

7. **Small variations with IPEDS:** The sources for student data used in these reports were the CCC College Institutional Research Database (IRDB) and the CSU Institutional Research Repository (IR Repository). Occasionally there are minor differences between the number of graduates reported to the Integrated Postsecondary Education Data System (IPEDS) and the number recorded in the IRDB and IR Repository. These differences stem from variations in institutional processes for reporting completion data.

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Findings

These findings are provided to give a broad view into the employment and wage patterns of CSCU graduates from the system level and to pique your interest to look further into the available data. There is considerable value in the underlying data for the individual institutions. Each Institutional Research Director has a copy of the complete data set, and there are interactive visualizations on-line for further exploration and analysis.

Remember, employment data includes only those who work in Connecticut for an employer who is required to report wages to the Department of Labor under Unemployment Insurance law. Those who work for the military, who are self-employed or who work out of state are not included. See item number three under Important Notes and Limitations for additional detail on this point.

Key Points about Employment

- The majority of CSCU students work in Connecticut shortly after graduation. CSU, CC and COSC graduates continue to find employment in CT. The overall employment rates three quarters after graduation are stable for CSU and CC graduates, and the percent of COSC graduates working in CT increased by 10% over the past 9 years. [A1]

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>CC</td>
<td>70%</td>
<td>70%</td>
<td>71%</td>
<td>71%</td>
<td>71%</td>
<td>74%</td>
<td>73%</td>
<td>74%</td>
<td>73%</td>
<td>73%</td>
</tr>
<tr>
<td>COSC</td>
<td>48%</td>
<td>51%</td>
<td>53%</td>
<td>52%</td>
<td>53%</td>
<td>53%</td>
<td>56%</td>
<td>58%</td>
<td>56%</td>
<td>58%</td>
</tr>
<tr>
<td>CSU</td>
<td>74%</td>
<td>75%</td>
<td>75%</td>
<td>75%</td>
<td>74%</td>
<td>76%</td>
<td>74%</td>
<td>75%</td>
<td>75%</td>
<td>74%</td>
</tr>
<tr>
<td>UConn</td>
<td>55%</td>
<td>55%</td>
<td>55%</td>
<td>54%</td>
<td>53%</td>
<td>54%</td>
<td>53%</td>
<td>52%</td>
<td>51%</td>
<td>50%</td>
</tr>
</tbody>
</table>
• **More CC and CSU than UConn graduates work in CT in the 3rd quarter after completion.** The rates of employment for graduates in each of the past eight academic years show that more community college and state university graduates than University of Connecticut graduates were employed in Connecticut in the third quarter after they graduated. The rate of Charter Oak graduates working in Connecticut in the third quarter after graduation increased by eight percentage points over the past academic years to surpass the rate for UConn graduates as well. [A1]

![Graph showing employment rates](image)

- More CC and CSU than UConn graduates work in CT in the 3rd quarter after completion

• **The percent of students employed in Connecticut declines over time.** While the rate of employment at the third quarter after graduation has been consistent, the rate of employment over time declines. For example, of students who completed a credential in the 2009-10 academic year, the percentage working in Connecticut declined between ten and seventeen percent across sectors over the subsequent eight years. [C1]

![Graph showing percent of students employed](image)

- The percent of students employed in Connecticut declines over time

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<thead>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CC</td>
<td>78.9%</td>
<td>78.3%</td>
<td>78.1%</td>
<td>77.3%</td>
<td>75.0%</td>
<td>72.6%</td>
<td>71.2%</td>
<td>68.9%</td>
<td>67.6%</td>
<td>-11.3%</td>
</tr>
<tr>
<td>CSU</td>
<td>84.9%</td>
<td>82.6%</td>
<td>80.4%</td>
<td>78.4%</td>
<td>76.8%</td>
<td>74.5%</td>
<td>73.5%</td>
<td>71.6%</td>
<td>70.1%</td>
<td>-14.8%</td>
</tr>
<tr>
<td>COSC</td>
<td>81.9%</td>
<td>78.8%</td>
<td>78.8%</td>
<td>79.4%</td>
<td>78.2%</td>
<td>75.4%</td>
<td>73.5%</td>
<td>69.2%</td>
<td>67.9%</td>
<td>-14.0%</td>
</tr>
<tr>
<td>UConn</td>
<td>75.8%</td>
<td>72.1%</td>
<td>69.6%</td>
<td>67.0%</td>
<td>64.2%</td>
<td>61.4%</td>
<td>60.2%</td>
<td>58.9%</td>
<td>58.6%</td>
<td>-17.2%</td>
</tr>
</tbody>
</table>
The rate of decline is consistent across sectors and years of graduates. Regardless of the sector, graduates are less likely to be found working in Connecticut with each additional year past graduation. This chart shows the percentage of CC, CSU and COSC students who were found working in Connecticut each calendar year after they graduated, and this rate consistently drops 1% each year for all cohorts and sectors. [C1]
• **Employment rates for major minority groups** These charts show the percentage of graduates from 2009-10 through 2018-19 who were employed in Connecticut during the third quarter after completion who identified as Black or African American, Hispanic/Latino and white. Interestingly, the outcomes are similar for demographic groups across the community colleges and state universities. [A3]
Key Points about Wages

As with the points above, earnings data are only included for those who received wages in Connecticut. The Department of Labor does not have data about wages earned outside of Connecticut, who are self-employed, who work in the military or for a few additional categories of workers. See page four for the full list.

- **CSCU credentials have value in the CT marketplace over time.** Median annual wages for graduates of the 2009-10 academic year increased steadily over the subsequent nine years for each sector. [C2]

  ![Graph showing annual wages for graduates from 2011 to 2019]

<table>
<thead>
<tr>
<th>Year</th>
<th>CC</th>
<th>CSU</th>
<th>COSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>$31,011</td>
<td>$40,250</td>
<td>$57,366</td>
</tr>
<tr>
<td>2012</td>
<td>$34,989</td>
<td>$45,177</td>
<td>$60,084</td>
</tr>
<tr>
<td>2013</td>
<td>$37,833</td>
<td>$50,217</td>
<td>$61,692</td>
</tr>
<tr>
<td>2014</td>
<td>$41,482</td>
<td>$54,591</td>
<td>$68,106</td>
</tr>
<tr>
<td>2015</td>
<td>$46,630</td>
<td>$59,808</td>
<td>$72,031</td>
</tr>
<tr>
<td>2016</td>
<td>$49,394</td>
<td>$62,045</td>
<td>$73,585</td>
</tr>
<tr>
<td>2017</td>
<td>$52,396</td>
<td>$65,691</td>
<td>$76,184</td>
</tr>
<tr>
<td>2018</td>
<td>$55,865</td>
<td>$69,129</td>
<td>$74,410</td>
</tr>
<tr>
<td>2019</td>
<td>$59,108</td>
<td>$72,949</td>
<td>$78,126</td>
</tr>
</tbody>
</table>

- **Wages for graduates increase in the short term.** This chart shows how wages grow over time by comparing median quarterly earnings from before students start their academic program to median quarterly wages earned in the first, third and eighth quarters after completion. This chart shows the incremental increase in median quarterly wages for graduates of the 2017-2018 academic year. [A2]
• **The higher the credential, the greater the wage.** For CSU graduates, credentials that require more time in school provide greater annual return with the exception of an Associate degree which provides mixed returns over the reported years. This chart shows median annual wages earned by CSU graduates of the 2009-10 academic year for the nine calendar years after completion. [C2]

$150,000

$100,000

$50,000

$0


Associate  $131,723

Bachelors  $101,072

Post-BA-Cert  $91,995

Masters Degree  $83,172

Post-MA-Cert  $69,422

PhD-Prof  $68,430

• **Sub-baccalaureate credentials provide value over time.** For CC graduates, the value of certificate and associate credentials continues to climb over the years. This chart shows the median wages earned in each calendar year by individuals who completed a certificate or associate degree in the 2009-10 academic year. [C2]

$50,000

$50,000


$60,633

$58,467

Associate Degree  $30,021  $34,145  $36,639  $40,617  $45,484  $48,649  $51,833  $55,030  $58,467

Certificate  $33,932  $37,251  $40,846  $44,875  $50,007  $51,037  $54,247  $58,817  $60,633
The short-term value of the undergraduate certificate is seen for graduates of additional academic years as well. This chart shows the average quarterly wages earned three quarters after completion for CT community college graduates each year from 2009-10 through 2018-19. [A2]

<table>
<thead>
<tr>
<th>Year</th>
<th>Associate</th>
<th>Certificate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009-10</td>
<td>$6,391</td>
<td>$7,735</td>
</tr>
<tr>
<td>2011-11</td>
<td>$6,625</td>
<td>$7,254</td>
</tr>
<tr>
<td>2011-12</td>
<td>$6,315</td>
<td>$7,079</td>
</tr>
<tr>
<td>2012-13</td>
<td>$6,467</td>
<td>$7,792</td>
</tr>
<tr>
<td>2013-14</td>
<td>$6,470</td>
<td>$7,845</td>
</tr>
<tr>
<td>2014-15</td>
<td>$6,887</td>
<td>$7,673</td>
</tr>
<tr>
<td>2015-16</td>
<td>$7,064</td>
<td>$7,851</td>
</tr>
<tr>
<td>2016-17</td>
<td>$7,216</td>
<td>$8,237</td>
</tr>
<tr>
<td>2017-18</td>
<td>$7,448</td>
<td>$9,218</td>
</tr>
<tr>
<td>2018-19</td>
<td>$8,140</td>
<td>$9,643</td>
</tr>
</tbody>
</table>

There is evidence that undergraduate certificates can provide a valuable initial return to graduates; however, it is important to remember that research shows that credentials requiring more education typically lead to higher wages on average. Over time, earnings of individuals with less education are less likely to keep pace with those who have completed higher degrees, and, historically, individuals with shorter-term credentials have been more susceptible to unemployment when the economy turns down. The report “Five Rules of the College and Career Game” by Anthony P. Carnevale and Ban Cheah, [https://cew.georgetown.edu/cew-reports/5rules/](https://cew.georgetown.edu/cew-reports/5rules/), provides valuable context for understanding this point.

- **Some certificates provide a higher return than an associate degree.** When community college data are aggregated by Classification of Instructional Program Code (CIP) level there are several areas where the median estimated annual wage for certificate completers has regularly been slightly higher than that for an associate degree in the same field: Education (CIP 13), Engineering Technologies & Engineering Related Fields (CIP 15), Homeland Security, Law Enforcement, Fire (CIP 43), Public Admin & Social Service Professions (CIP 44) and the Visual and Performing Arts (CIP 50). The following charts show the median annual wage estimated at two years after completion for community college graduates across the system. Programs were selected only if the median wages were higher for certificate completers than associates in 8 or more of the aggregated time periods. Please note that for this data set, employment data are aggregated across three years to provide greater visibility to small programs. For example, the first data point on each chart shows the median annual earnings of students who completed in academic years 2009-10 through 2011-12. The last data point relates to students who completed in academic years 2016-17 through 2018-19. [B1]
Continued: Some certificates provide a return comparable to an associate degree.
• **Outcomes for certificates at individual colleges can stand out.** The prior point shows outcomes for all community colleges combined. Important distinctions between programs for specific institutions also reveals important information. For example, median quarterly wages at the third quarter after graduation for Asnuntuck Community College certificate completers in the Health Professions (51) and Engineering Technologies & Engineering-related Fields (CIP 15) have also been slightly higher than that for associate completers. [B2]

![Graphs showing median quarterly wages for Asnuntuck Community College certificate completers in Health Professions and Engineering Technologies & Engineering-related Fields.]

• **Program and student body representation are not the same.** These two charts are examples of two programs in the community college system where white students are overrepresented and black and Hispanic students are underrepresented in their enrollment at the program level compared to their representation in the total student body. Program enrollment is based on enrollment in academic years 2016-17 through 2018-19 and the community college enrollment is as of Fall 2019. A full analysis should be completed to look at programs across the board and strategies should be developed to address disparities so that black and Hispanic students are equitably engaged in academic programming. [B2]
- **Wages over time for graduates of 2009-10 disaggregated by race & ethnicity** These three charts show the median of annual wages earned by those who completed a credential in 2009-10 over the next nine years. In general, annual wages for all demographic groups increased over time. [C3]
• **Wages over time for black and Hispanic graduates of 2009-10** These three charts are the same as the prior set; however, outcomes for students who identify as African American or Black, Hispanic/Latino and White are highlighted showing the median annual wages earned during the nine years after graduation for these specific groups. This median includes all types of credentials offered by the given sector. [C3]
Areas for Additional Exploration

The process of improving education programs requires an understanding of student outcomes. For CSCU leadership, this includes analyzing employment and wage outcomes for program graduates. Institutions can review this report and the corresponding data tables to understand employment and wages by institution, by degree level and by education CIP code.

Readers should note that this report provides descriptive statistics about observations within the data. The key points presented are not based on a research program or academic study; therefore, the findings provided do not imply causality or statistical significance. Additional research needs to be conducted before policies are changed because of this information. Additional suggested areas for exploration include the following.

- To what degree are students pursuing continued education while they are working? Analysts could isolate and remove individuals from the data set who are working while in school to better understand employment outcomes based on completed credentials.
- What are the long-term employment and wage outcomes for liberal arts graduates compared to others?
- What is the effect of workplace experience on earnings after graduation?
- What are differences in employee retention over time by program?
- How do students completing non-credit programs, such as advanced manufacturing, fair in the workplace compared to those completing credit-based programs?

Sources

Wage and employment data: The Connecticut Department of Labor Unemployment Insurance Program Data.

Student data: The Connecticut State Colleges and Universities Community College Institutional Research Data Base and the Connecticut State University Institutional Research Repository.

Data from CSCU and CT DOL were linked through the Connecticut Preschool through Twenty and Workforce Information Network (P20 WIN), http://www.ct.edu/p20win.
Methodology and Data Security

The employment and wage outcome reports referenced in this report were produced by CSCU and DOL to provide information about the degree to which students completing credentials from public postsecondary institutions in Connecticut are working in Connecticut during the initial years after program completion. Data show employment rates and wages earned by students completing undergraduate and graduate education programs by institution and by academic program from 2009-2010 through 2018-2019, as data were available when the match occurred.

Data were shared and linked using Connecticut’s Preschool through Twenty and Workforce Information Network (P20 WIN) and the P20 WIN Data Request and Management Procedure. This procedure is a component of the data sharing agreement between BOR and DOL and can be accessed on the P20 WIN website at: http://www.ct.edu/files/pdfs/P20-WIN-Data-Management-Procedure.pdf. Other documents and agreements specific to this analysis are located under ‘Data Request 0014’ at the Requests and Reports page within the P20 WIN website: https://www.ct.edu/p20win/requests#topic, and interactive Tableau visualizations of the same data are here: http://www.ct.edu/p20win/requests#visualizations.

There are three key characteristics of P20 WIN that maximize data security and student privacy. First, there is no centralized data warehouse where linked data are stored; therefore, there is no permanent location where linked data can be breached. Instead, each agency retains ownership of its source data, responsibility for its management and control over how it is used. Second, a two-step process is used for linking data that retains separation between information that might identify an individual (such as name) and information about that individual (such as gender, race or program studied). These different types of data are never brought together during the data exchange, matching or analytical processes; therefore, no one can see identities of specific individuals in the data. Third, there is a high degree of control over data requests. Only designated authorized representatives of state and local educational agencies or other federal officials are approved to conduct analysis on the redacted data. The P20 WIN process for linking data maximizes data security.

In addition to having processes to maintain data security, the Family Education Rights and Privacy Act (FERPA) requires that a written data sharing agreement be established when data from student records are shared. Each of these agreements sets a timeline for data destruction and provides for additional securities such as how data are to be secured and managed. In addition to the restrictions for education data, limitations are also established by state law for wage and employment data obtained through unemployment insurance records (UI). P20 WIN data sharing agreements, procedures and policies are in full compliance with both state and federal law for education and UI data.

CSCU data about graduates were matched to unemployment insurance (UI) data from the Connecticut State Department of Labor (DOL). Graduates were included if they completed a credential or degree at any time during academic years 2009-10 through 2018-19. The data tables and summary analysis contain wage and employment data at the system and institution levels with detailed data by program of study, using the Classification of Instructional Program Codes (CIP codes), and by degree type (e.g. Associates, Bachelor’s, etc.). Additional categories included in the data tables include gender, race and ethnicity, Connecticut residency and whether individuals received a Pell Grant or Governor’s scholarship. Counts of individuals found to be employed in Connecticut, their average quarterly wages and difference in wages over time are provided at four points in time: one quarter prior to the beginning of the program of study (Pre-Q1), one quarter after graduation (PQ1), three quarters after graduation (PQ3) and eight quarters after graduation (PQ8). Wages are available as an estimated annualized wage and as actual wages earned in a calendar year by each cohort of graduates.
It is necessary to keep in mind that these reports provide only a high-level view of CSCU institutions and student outcomes. On their own, this report and the underlying data tables do not justify action. Rather, this information opens the doorway for further discussion and analysis. There are critical limitations to the source data sets that need to be understood and considered when utilizing this report and the underlying source data tables. See section labeled “Important Notes & Limitations” above.

Technical Notes

- Median wages are used instead of average wages (a.k.a. mean wages). The median shows the mid-point of a data set and is considered a better predictor of central tendency. Averages can be skewed higher or lower than the mid-point if there are outliers in the data. For example, if there are a few individuals with very low wages compared to the rest of the graduates in the data set, then these low wages will pull down the overall average. On the other hand, the median provides the middle wage receive regardless of whether there are very high or low earners in the set.

- Counts of graduates are public information; therefore, all counts of graduates are included.

- Employment data are suppressed when the cell size is less than six and in instances where secondary cell suppression is needed to avoid situations where information about individuals may be determined through calculation. This affects the counts of individuals employed and all related wage data that would be calculated from the suppressed cell.

- When a Participant Start Date was not available, when the date is after the student graduation date or when it is earlier than ten years prior, DOL applies a calculated Program Start Date based on the average program length for other students receiving the same credential. The 'Start Date' may be after the 'Graduation Date' in situations where students return to class after the initial graduation. In the 'return' they may actually register for, take and complete additional classes or they may register but drop. This approach is in keeping with the process for prior reports.

- An increased number of community college records did not have a CIP code attached to the degree earned. Manual additions were made based on the description of these programs and their alignment to descriptions of national standard codes and by matching to data from additional system extracts.

- The calculations for Pre-Quarter 1 are affected by the Participant Start Date. For CSU data an improvement was made with this report in how the start date was established which means that all pre-quarter 1 measures of employment or wages may be different in this report from the prior ones.

- Across the community colleges, approximately 10% of records did not have an SSN and were, therefore, unmatchable to wage data.

- There are differences between how the four CT State Universities determine whether a student is a non-resident alien. These distinctions likely result in an undercount of students who have non-resident alien status from ECSU, SCSU and WCSU.
Appendix A

This table provides information about the availability of unemployment insurance data through the Connecticut Department of Labor. Due to the schedule by which employers are required to report employment and wages, data are not immediately available resulting in a lag between when a quarter occurs and when data are available for that quarter. At the time when data were pulled for this report, the data were unavailable for the quarters that are shaded. This is why all of the data for Quarter 8 past graduation is unavailable for graduates from years 2018-2019.