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Alignment Between High School Career and Technical Education and Postsecondary and Workforce Outcomes in Nevada

This research was sponsored by the Institute of Education Sciences.

November 2026

RESEARCH REPORT

In this report, we examine the extent to which Nevada Career and Technical Education (CTE) students pursued a college major or worked in an industry related to their high school CTE program of study. We focus on *CTE concentrators*—defined as students who took two or more courses in a program of study—and find that CTE served as a meaningful college and workforce pipeline for many of these students.

CTE programs provide high schoolers hands-on training and experience in specific fields while also building broader workforce skills (National Center for Education Statistics, undated). CTE programs are available in most high schools in the United States and are widely popular, with more than 8.6 million secondary students enrolled nationally in the 2023–2024 school year (National Center for Education Statistics, undated; U.S. Department of Education, Office of Career, Technical, and Adult Education, undated). Many states view CTE as a promising approach for strengthening individual college and career readiness and as an important part of the pipeline for preparing workers in high-demand fields (Carruthers et al., 2024; Lindsay et al., 2024).

Like many states, Nevada has bolstered its high school CTE programming with the aim of improving individual students' college and career readiness and strengthening workforce pipelines. Research shows that students can benefit from participating in CTE (e.g., Brunner, Dougherty, and Ross, 2023; Dougherty, 2018; Edmunds et al., 2024; Lindsay et al., 2024), but outcomes vary significantly across CTE career clusters and intensity of participation (Ecton and Dougherty, 2023; Kreisman and Stange, 2020; Mihaly et al., 2025; Plasman, 2026; Xu and Backes, 2024).

Little is known about the extent to which CTE facilitates the pursuit of postsecondary education or employment in a related field. Policymakers are increasingly interested in this question as states aim to strengthen workforce pipelines in high-demand sectors and prepare students for high-wage jobs.

We partnered with the Nevada Department of Education (NDE) to examine what CTE students do

KEY FINDINGS

- Among Career and Technical Education (CTE) students, nearly half of *CTE concentrators*—defined as students who took two or more courses in a program of study—who enrolled in a Nevada college declared a major aligned with their CTE program of study, and 20 percent of CTE concentrators who entered the Nevada workforce were employed in an aligned industry two years after high school.
- Workforce alignment rates increased the more years that had elapsed since high school, suggesting that it takes time after high school to find related employment or gain required expertise.
- Across every career cluster, students who completed a program of study or earned a Certificate of Skill Attainment showed higher alignment for both college and workforce outcomes compared with students who concentrated in CTE but did not complete a program of study.
- Alignment varied considerably across career clusters, with Education and Training students most likely to pursue aligned college majors and Hospitality and Tourism students most likely to work in an aligned industry directly after high school.
- For most career clusters, alignment rates were higher for students in urban high schools than for those in rural schools.

after high school, focusing specifically on alignment between their CTE experiences and the college majors, degrees, and industries they subsequently pursue. We look at how the intensity of students' CTE participation relates to aligned college and workforce outcomes, how alignment patterns vary across specific programs of study, and how alignment differs by selected student characteristics. Understanding the opportunities students pursue after high school and the extent to which those opportunities align with their CTE experiences can inform student advising, guide decisions about which programs to expand or adjust, and indicate where such states as Nevada could direct resources to strengthen workforce pipelines. While CTE is an exploratory experience for many students and measuring alignment is inherently challenging, these findings offer meaningful information about program design and state workforce planning.

This report builds directly on our prior research on college enrollment and employment rates for Nevada high schoolers across CTE career clusters (Mihaly et al., 2025). Here, we leverage the state's linked education and workforce data system—the Nevada P-20 to Workforce Research Data System (NPWR)—to examine the college majors, degrees, and industries that Nevada CTE students were most likely to pursue and the extent to which those outcomes aligned with their CTE career clusters and specific programs of study. An annex, available separately at www.rand.org/t/RRA4872-1, provides appendixes with supporting materials for this report, including the policy background, relevant literature, data sources, analytic samples, methodology, and supplementary results.

Data Sources and Alignment Measures

In this report, we examine the high school, college, and workforce experiences of students in Nevada's public high schools who entered 9th grade between the 2015–2016 and 2019–2020 school years and were projected to graduate between 2019 and 2023. When describing cohorts, we refer to the projected year of graduation. We link student-level data on high school graduates from NDE to postsecondary records from the Nevada System of Higher Education (NSHE) and employment and wage records from the Nevada Department of Employment, Training and Rehabilitation (DETR).[1] College enrollment and employment information is available only for students who remain in Nevada; those who enroll out of state, attend private colleges, or work in other states, as well as those in jobs not covered by unemployment insurance records (e.g., self-employment, federal jobs), are not captured in the data. Aggregate data from the National Student Clearinghouse indicate that roughly 25 percent of Nevada high school graduates attend a private or out-of-state college (NDE, undated).

Our primary sample includes roughly 66,000 students in these cohorts who concentrated in a high school CTE program of study by completing at least two full-year courses (labeled as *concentrators*).[2] In some analyses, we also examine patterns for students who completed the full CTE program of study (i.e., three full-year courses, labeled as *completers*) or who earned the Certificate of Skill Attainment (CSA) by earning a 3.0 grade point average in the three full-year courses and passing a state-approved exam (labeled

ABBREVIATIONS

CIP	Classification of Instructional Programs
CSA	Certificate of Skill Attainment
CTE	Career and Technical Education
DETR	Nevada Department of Employment, Training and Rehabilitation
HVAC	heating, ventilation, and air conditioning
IRC	industry-recognized credential
IT	information technology
NAICS	North American Industry Classification System
NDE	Nevada Department of Education
NPWR	Nevada P-20 to Workforce Research Data System
NSHE	Nevada System of Higher Education
STEM	science, technology, engineering, and mathematics

CSA recipients).[3] CTE programs of study are nested within career clusters, and, in many cases, we report patterns for these federal career clusters.[4]

We examine alignment between high school CTE programs of study and college majors or industries of employment. We define alignment between CTE and college majors or degrees based on whether the Classification of Instructional Programs (CIP) code for the high school CTE career cluster matches a related college CIP code, using the rubric from Advance CTE (Advance CTE, undated). All analyses of college alignment are limited to students who enrolled in NSHE and declared a major within two years of graduating high school. We focus on alignment in any college major during the first two years after high school for most analyses. We define workforce alignment based on whether students worked in a Nevada industry that maps to their high school CTE CIP code using the rubric from Odle and Russell (2024). This two-step method maps CIP codes to Standard Occupational Classification codes and to three-digit North American Industry Classification System (NAICS) codes. All analyses of workforce alignment are limited to students who appeared in the Nevada workforce within two years of high school and were not enrolled in college at the same time.

Measuring alignment is challenging, and we acknowledge that any approach will have limitations. We selected our approach as a middle ground between broad definitions of alignment that matched with too many majors or industries and narrow definitions that matched with too few majors or industries. However, our college major alignment measure remains relatively broad, and its breadth may explain higher alignment rates with college than with the workforce.[5] In addition, our workforce alignment measure is based on industry of employment rather than occupation, which means we may over- or underestimate alignment because we cannot observe occupations. For example, information technology (IT) students employed by a hotel will appear to work in hospitality and will not be counted as working in an aligned field. In addition, if CTE is partially intended to provide opportunities to explore potential pathways, we would expect to see some misalignment as students learn that the field they explored in high school is not a good fit for them.

We primarily report descriptive statistics of patterns across programs, clusters, and groups of students. We measure college alignment at the career cluster level. Our measure of workforce alignment is at the program of study level, but we often report average alignment rates across all programs within a career cluster. We also summarize estimates from regression models that show how outcomes differ across levels of CTE participation or career clusters, isolating these associations from other factors that might drive differences in outcomes. Regression models adjust for demographic characteristics, baseline achievement, and high school graduating cohort (see Appendix D for details). All of our estimates reflect associations and should not be interpreted as causal.

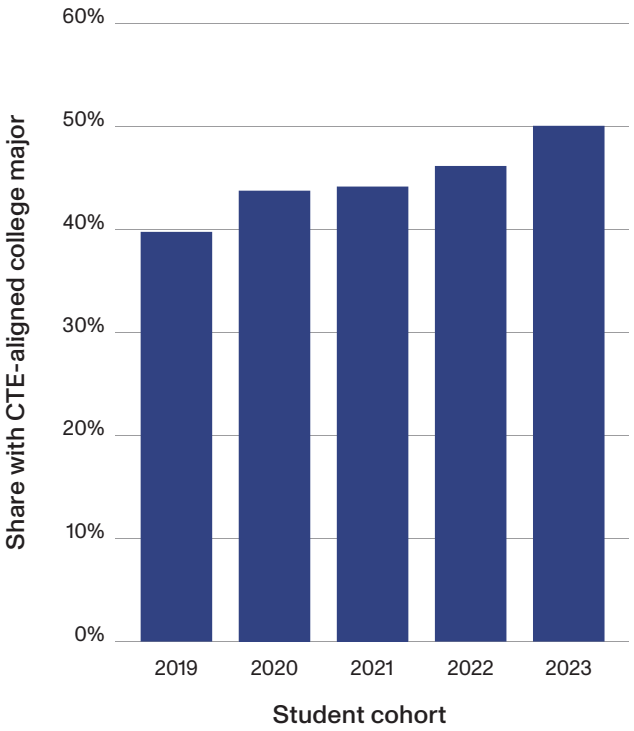
> “ Students who completed a program of study or earned a CSA were more likely to pursue an aligned college major than those who concentrated in CTE but did not complete a program.

Approximately Half of CTE Concentrators Who Enrolled in College Pursued a Major Aligned with Their High School CTE Field

The share of CTE concentrators enrolled in college who declared an aligned major has increased in recent years, from 40 percent for students expected to graduate in 2019 to 50 percent for the 2023 cohort (Figure 1). The increases were gradual and consistent, suggesting a systemic shift rather than a single cohort effect. These patterns could reflect several factors, such as high schools offering more CTE programs of study, improvements in advising that connect CTE course-

FIGURE 1

Share of CTE Concentrators in College Who Had a CTE-Aligned Major, by Student Cohort



SOURCE: Based on NPWR data from 2016 to 2025.

NOTE: CTE concentrators completed two or more courses in a CTE program of study. The sample includes CTE concentrators who enrolled in NSHE and declared a major within two years of on-time high school graduation. Alignment is based on majoring in any aligned field within two years of high school graduation. Cohorts are defined by expected graduation year (2019–2023).

work to specific college pathways, or expanded postsecondary education options.

Students who completed a program of study or earned a CSA were more likely to pursue an aligned college major than those who concentrated in CTE but did not complete a program. We fit regression models accounting for student demographics, baseline achievement, and changes over time to estimate differences in outcomes across concentrators, completers, and CSA recipients (see column 1 in Table E.1 in Appendix E). These models indicate that completing a CTE program of study was associated with an 8-percentage-point higher probability of pursuing an aligned major relative to concentrating but not completing the program. CSA recipients showed even larger gains: They were 22 percentage points more likely to pursue an aligned major than similar concentrators who did not complete a program.

Alignment trends were similar for college credentials. Nearly half of CTE concentrators who earned a college certificate or associate degree within three years of high school earned a credential in an aligned field. Regression models adjusting for student demographics, baseline achievement, and cohort also indicate that alignment between CTE program of study and college credential field was much higher for students who completed a program of study (by 9 percentage points) or earned a CSA (by 30 percentage points). Our prior work also showed that students who completed a CTE program of study or earned a CSA were more likely to enroll in college and earn a college degree than their peers (Mihaly et al., 2025).

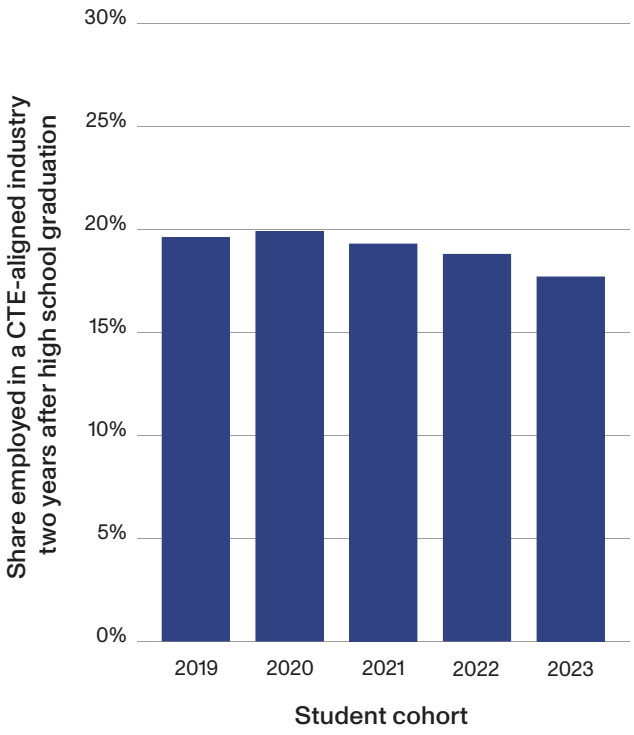
Taken together, these patterns suggest that CTE functioned as a postsecondary pipeline for a substantial share of students. At the same time, roughly half of CTE students who enrolled in Nevada colleges pursued majors outside their CTE field. Students may have used CTE coursework to explore and rule out potential careers or may have developed transferable skills that they applied in a different direction.

Twenty Percent of Employed CTE Concentrators Worked in an Industry Aligned with Their CTE Program of Study Two Years After High School

Alignment between industry of employment and CTE field increased the longer graduates remained in the workforce. For students expected to graduate high school in 2019 and who were employed in Nevada at some point, industry alignment rates rose from 20 percent two years after high school graduation to 32 percent six years out (see Figure 2 and Figure E.2 in Appendix E). This suggests that it may take a few years

FIGURE 2

Share of Employed CTE Concentrators in a CTE-Aligned Industry Two Years After High School Graduation, by Student Cohort



SOURCE: Based on NPWR data from 2016 to 2025.

NOTE: CTE concentrators completed two or more courses in a CTE program of study. The sample includes CTE concentrators who were employed in a quarter in which they were not enrolled in college, measured two years after on-time high school graduation. Industry alignment is based on NAICS sector. Cohorts are defined by expected graduation year (2019–2023).

for students to find opportunities or gain the skills and credentials needed to enter aligned fields.

In addition, measured alignment rates may understate students' career preparation. Many CTE-aligned occupations require a postsecondary credential before direct employment is possible, meaning that students pursuing aligned careers may enter the aligned workforce only after completing their degrees. Early employment for young workers may also be opportunity-driven: Graduates entering the labor market directly from high school may take whatever jobs are available rather than holding out for field-specific roles. It is also worth noting that while most students were not working in aligned industries, some may have worked in aligned occupations in other industries. For example, a heating, ventilation, and air conditioning (HVAC) technician employed by a hotel would not be measured as aligned in our analysis. Unfortunately, we cannot capture this type of alignment in the data.

We also observed small decreases in alignment across cohorts when measuring alignment two years after graduation. Figure 2 shows that alignment two years after high school graduation was highest for the 2019 and 2020 cohorts at 20 percent, then dipped to 18 percent for the 2023 cohort. These patterns may reflect shifts in job openings over time, changes in college enrollment rates, or changes in the types of CTE programs that students pursued. Students enrolled in college are excluded from Figure 2 and these workforce alignment calculations.

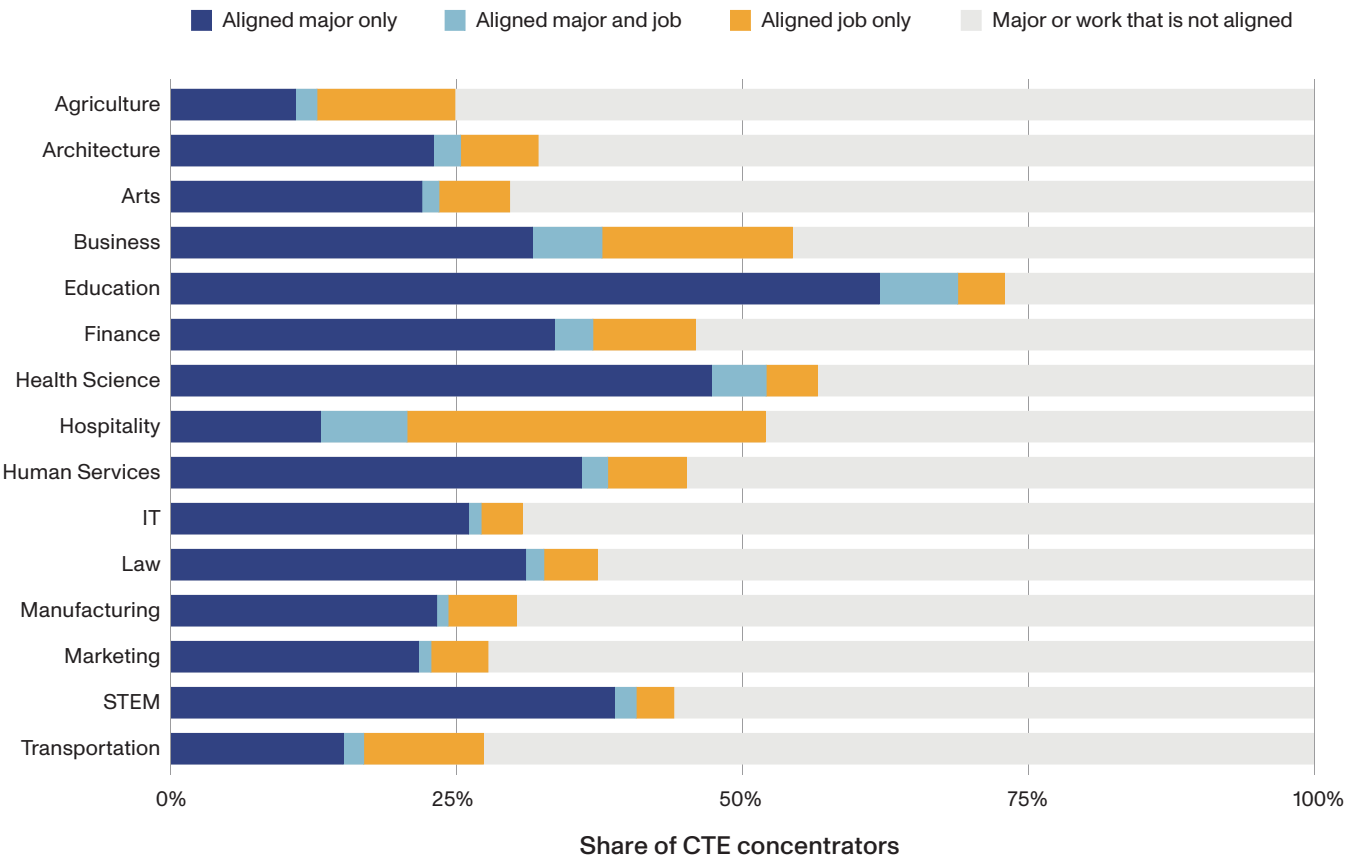
Industry alignment rates were higher for students who completed a program of study or earned a CSA. Completers were 4 percentage points (33 percent) more likely to work in an aligned industry than concentrators who did not complete a program, and CSA recipients were 6 percentage points (43 percent) more likely to work in an aligned industry than students who only concentrated (see column 3 in Table E.1 in Appendix E). Thus, in percentage terms, these findings reflect large shifts in the share of students entering an aligned industry. These estimates come from regression models that account for observable differences in demographics, cohort, and baseline achievement, although the models may not capture all differences in the types of students across these groups. While students who complete a program of study or earn a CSA may differ from students who only took two CTE classes in many ways, these patterns suggest that there may be benefits to increasing the number of CTE courses they take.

College and Workforce Alignment with High School CTE Varied Across Career Clusters

Overall alignment rates varied substantially across CTE career clusters. Figure 3 shows, among CTE concentrators who attended a Nevada college or worked in

FIGURE 3

Share of CTE Concentrators Working or in College Who Are in an Aligned Field, by Career Cluster



SOURCE: Based on NPWR data from 2016 to 2025.

NOTE: The sample includes all CTE concentrators who were enrolled in a Nevada public college or working in a job covered by Nevada's unemployment insurance system within two years of on-time high school graduation. CTE concentrators completed two or more courses in a CTE program of study. Students who are not enrolled in college or working in Nevada are excluded from this figure. "Aligned major only" indicates individuals who declared a college major aligned with their CTE field but were not employed in an aligned industry. "Aligned major and job" indicates individuals who both declared an aligned major and were employed in an aligned industry. "Aligned job only" indicates individuals who were employed in an aligned industry but did not declare an aligned major. "Major or work that is not aligned" indicates individuals who were enrolled in college or working but in a field that is not aligned with program of study. STEM = Science, Technology, Engineering, and Mathematics.

the state, the share who pursued an aligned field. The share of enrolled or employed students who pursued an aligned pathway—in college, work, or both—ranged from roughly 25 percent in Agriculture, Food, and Natural Resources to 73 percent in Education and Training. Career clusters with high overall alignment included Health Science (57 percent), Business Management and Administration (55 percent), and Hospitality and Tourism (52 percent), while Transportation, Distribution, and Logistics (27 percent) and Marketing (28 percent) had lower rates.[6] These differences may reflect how directly a field's CTE curriculum maps to specific postsecondary credentials, occupations, or industries. For example, Education and Training programs are considered aligned with a wide variety of college majors (see Appendix C). These unadjusted rates may also reflect differences in the types of students who enroll in these programs or in college enrollment and employment rates across clusters. Mihaly et al. (2025) provides more information on overall college enrollment and employment rates by career cluster.

Alignment with college or work differed by career cluster. Education and Training students were most likely to align through their college major, whereas

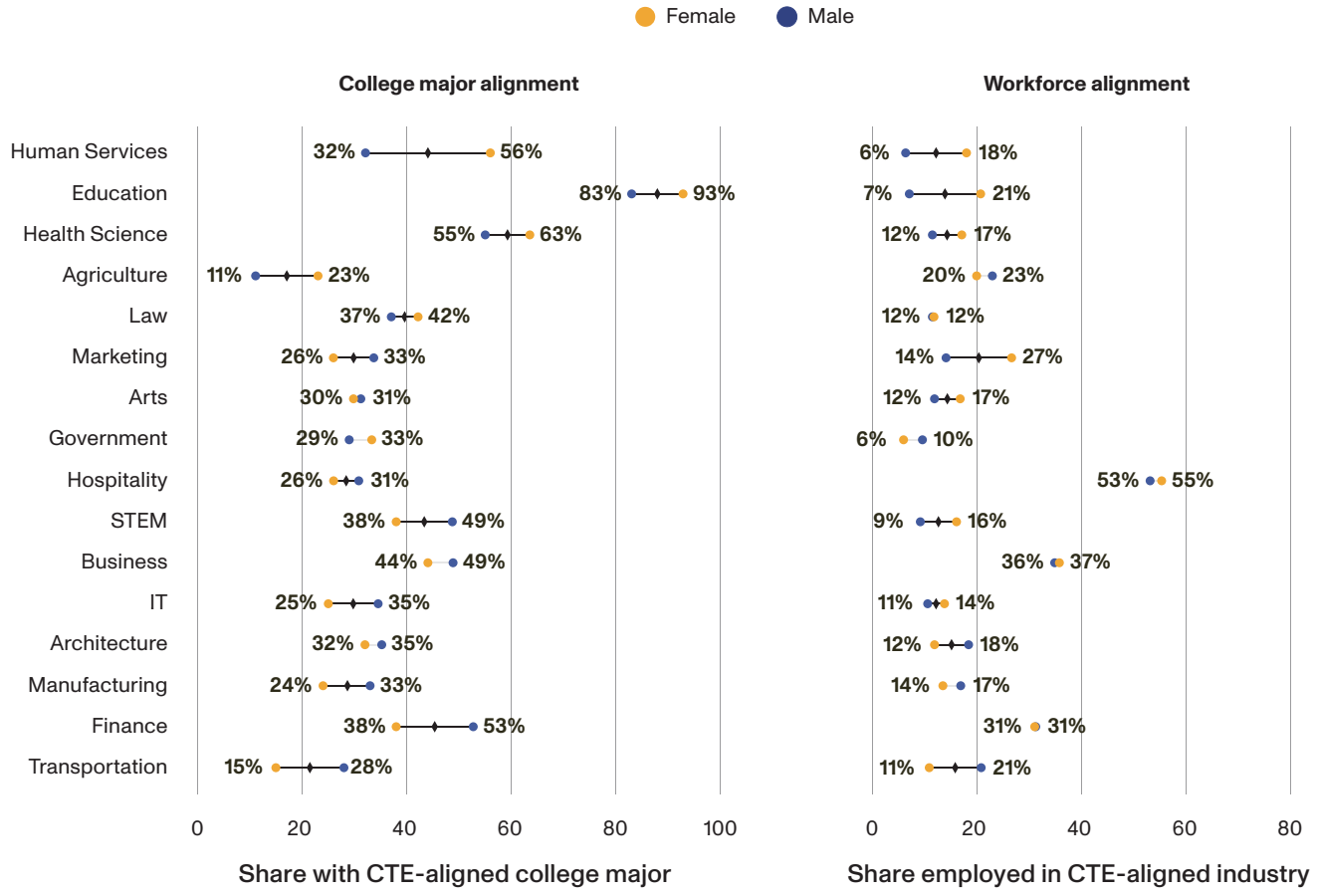
Hospitality and Tourism students were most likely to align through workforce outcomes. Hospitality and Tourism also had the highest share of students aligned in both their college majors and workforce outcomes within two years of on-time high school graduation (8 percent), indicating that it is a career cluster in which graduates could transition between college and career within a short time frame. Students who completed a program of study or earned a CSA had higher alignment rates across every career cluster compared with those who were concentrators only (see Figures E.3 and E.4 in Appendix E).

Alignment Rates Varied by Sex and Urbanicity Across Career Clusters

Differences by sex broadly reflected the composition of each field. Female CTE concentrators had higher college alignment rates in female-dominated fields, such as Education and Training, Health Science, and Human Services, whereas male CTE concentrators had higher alignment rates in such fields as IT, STEM, and Manufacturing (Figure 4). Workforce alignment

FIGURE 4

College Major Alignment and Workforce Alignment for CTE Concentrators, by Career Cluster and Sex



SOURCE: Based on NPWR data from 2016 to 2025.

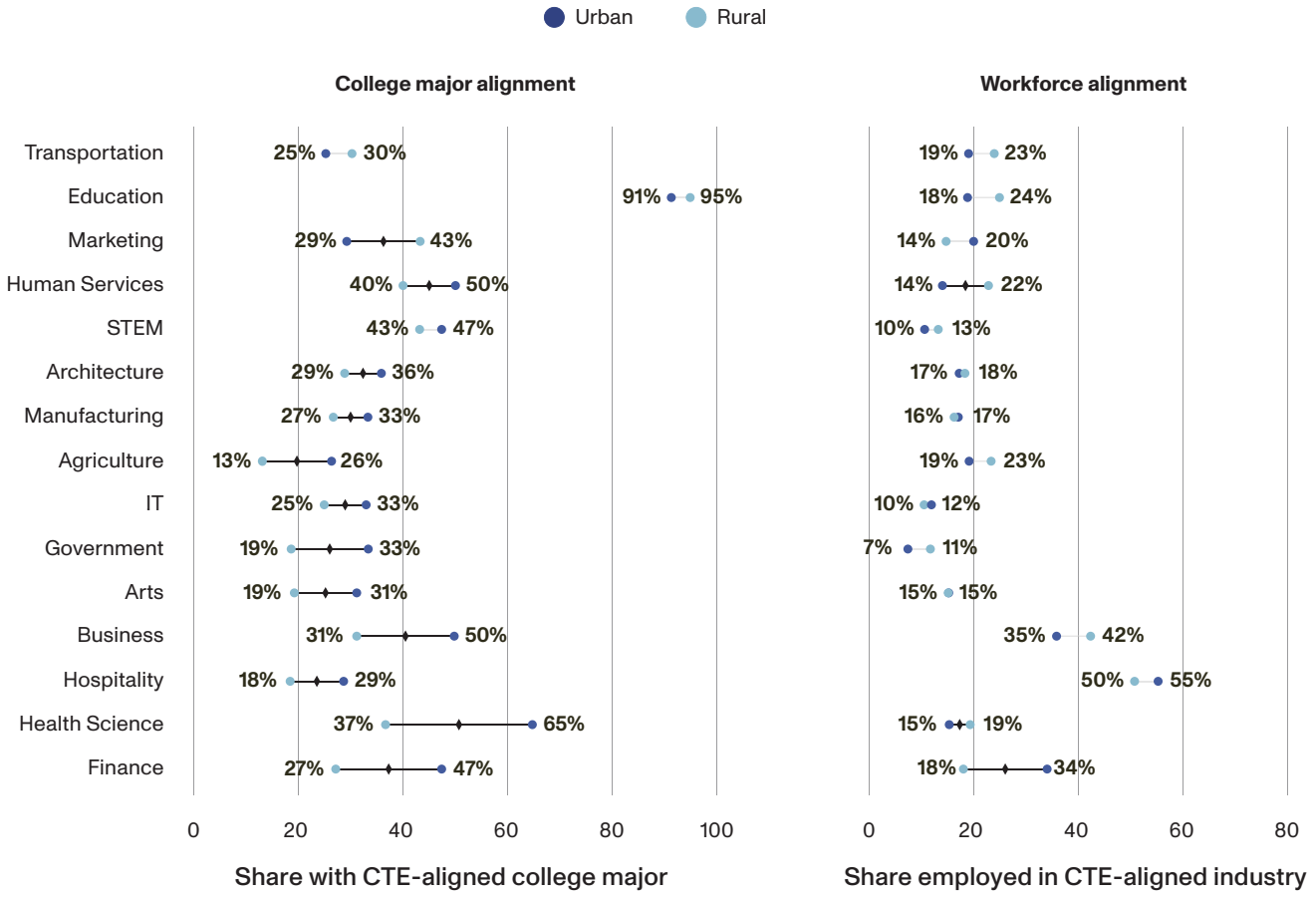
NOTE: CTE concentrators completed two or more courses in a CTE program of study. The college major alignment sample includes concentrators who enrolled in NSHE and declared a major within two years of on-time high school graduation. The workforce alignment sample includes concentrators employed in a quarter in which they were not enrolled in college, two years after on-time high school graduation. Students who were not enrolled in college or working in Nevada are excluded from this figure. Dark connecting lines with a diamond marker (♦) indicate statistically significant differences between groups ($p < 0.05$, two-proportion z-test); light gray lines indicate nonsignificant differences.

followed similar patterns, with women more likely to work in aligned fields in Education and Training, Human Services, and Marketing and men more likely to work in aligned fields in Transportation, Distribution, and Logistics and Architecture and Construction.

Urban CTE concentrators were more likely than rural CTE concentrators to major in aligned fields across most clusters. Differences in alignment rates by urbanicity were particularly large in Health Science (rural 37 percent versus urban 65 percent), Finance (rural 27 percent versus urban 47 percent), and Business Management and Administration (rural 31 percent versus urban 50 percent), as shown in Figure 5. In contrast, rural CTE concentrators were more likely than their urban peers to work in aligned fields. This pattern varied across clusters in ways that likely reflect differences in CTE course offerings and job opportunities in rural versus urban areas—for example, Finance alignment was higher in urban areas, and Agriculture, Food, and Natural Resources alignment was higher in rural areas.

FIGURE 5

College Major Alignment and Workforce Alignment for CTE Concentrators, by Career Cluster and Urbanicity



SOURCE: Based on NPWR data from 2016 to 2025.

NOTE: CTE concentrators completed two or more courses in a CTE program of study. College major alignment sample includes concentrators who enrolled in NSHE and declared a major within two years of on-time high school graduation. The workforce alignment sample includes concentrators employed in a quarter in which they were not enrolled in college, two years after on-time high school graduation. Students who were not enrolled in college or working in Nevada are excluded from this figure. "Urban" includes charter school students. Dark connecting lines with a diamond marker (⧫) indicate statistically significant differences between groups ($p < 0.05$, two-proportion z-test); light gray lines indicate nonsignificant differences.

Among CTE Students Who Enrolled in College, Those in Education and Training and Health Science Career Clusters Were Most Likely to Pursue an Aligned Major

The rate at which CTE students declared an aligned college major varied considerably across programs of study within the same career cluster. Figure 6 shows college major alignment rates for all programs with at least 50 college enrollees across five high-priority career clusters for the state: Education and Training, Health Science, Hospitality and Tourism, Manufacturing, and IT. Programs are sorted within each career cluster from highest to lowest alignment, and the sample is restricted to students enrolled in college within two years of high school. More than 90 percent of students who enrolled in college after participating in Education and Training CTE programs declared an aligned major, whereas roughly one-third of those in Manufacturing and IT programs declared an aligned major.

Students in Education and Training programs showed the strongest college alignment, with nearly all college-going students pursuing a related major. Early Childhood Education (93 percent) and Teaching and Training (90 percent) both exceeded the overall college alignment rate by a substantial margin. The high alignment in Education and Training programs likely reflects the broad definition of postsecondary alignment for these programs. Among Health Science students, alignment rates ranged from 60 to 76 percent, with Nursing Assistant and Dental Science programs showing the highest college alignment rates. IT and Manufacturing students showed more-dispersed postsecondary choices, with alignment rates ranging from 19 to 42 percent—consistent with the broad variety of college majors that build on technical skills without mapping directly to a single field.

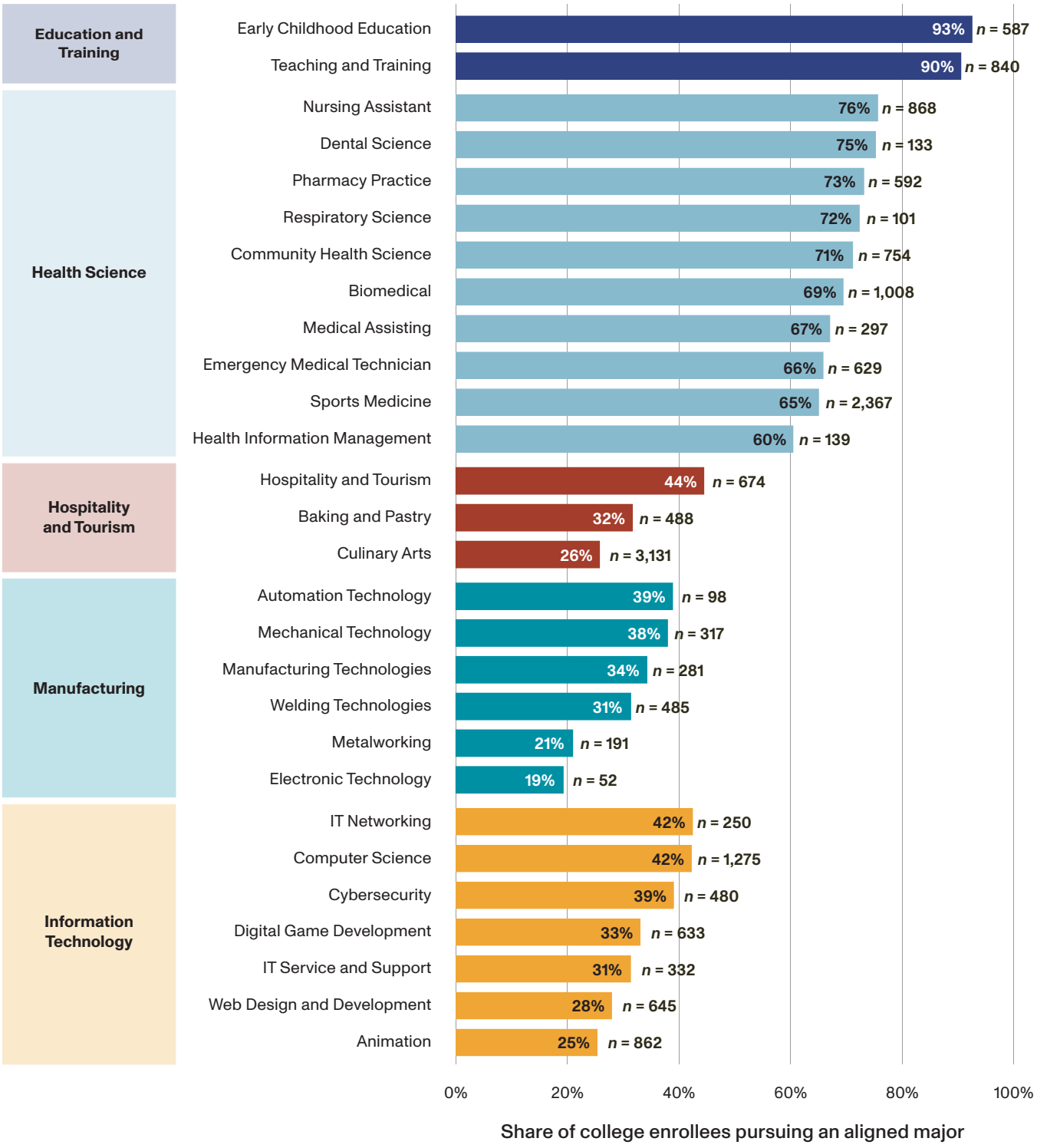
We examine two programs in more detail (Teaching and Training and Sports Medicine) to illustrate the variety of postsecondary pathways that CTE students pursued. Figures 7 and 8 are Sankey diagrams, which show flows from a single origin (CTE students in a given program of study) to multiple "destinations" (college majors, work, or no record). The width of each flow is proportional to the share of students taking that path, making it possible to see both the most common destinations and how dispersed students were across different fields.[7]

Teaching and Training students who enrolled in college showed a strong orientation toward education-related fields (Figure 7). Forty percent of students (675 students) in the Teaching and Training program of study enrolled in a Nevada college. Among these enrollees, 27 percent declared an Education major, the largest single destination. An additional 11 percent chose Health Professions, and 10 percent chose Business and Management, both of which also counted as aligned. Across all CTE engagement levels, 89 percent of concentrators, 91 percent of completers, and 93 percent of CSA recipients who enrolled in college declared an aligned major. While alignment rates were high across all groups and many fields are considered aligned with Teaching and Training, CSA recipients were more likely to major specifically in Education (34 percent) than concentrators (20 percent) or completers (22 percent). Finally, 20 percent of Teaching and Training students were working without enrolling in college, and 40 percent did not appear in our Nevada education or workforce records.

Sports Medicine students enrolled in more-dispersed college majors, although Health Professions was the most common aligned destination (Figure 8). Health Professions was the largest aligned destination, followed by Biological and Biomedical Sciences and Business and Management. A notable share of Sports Medicine students chose Parks, Recreation, and Fitness or Psychology, both of which are considered aligned. Roughly 31 percent did not appear in any Nevada records, and 17 percent were working without enrolling in college.

FIGURE 6

Share of CTE Concentrators in College Pursuing a Major Aligned with Their Program of Study, by Program and Career Cluster

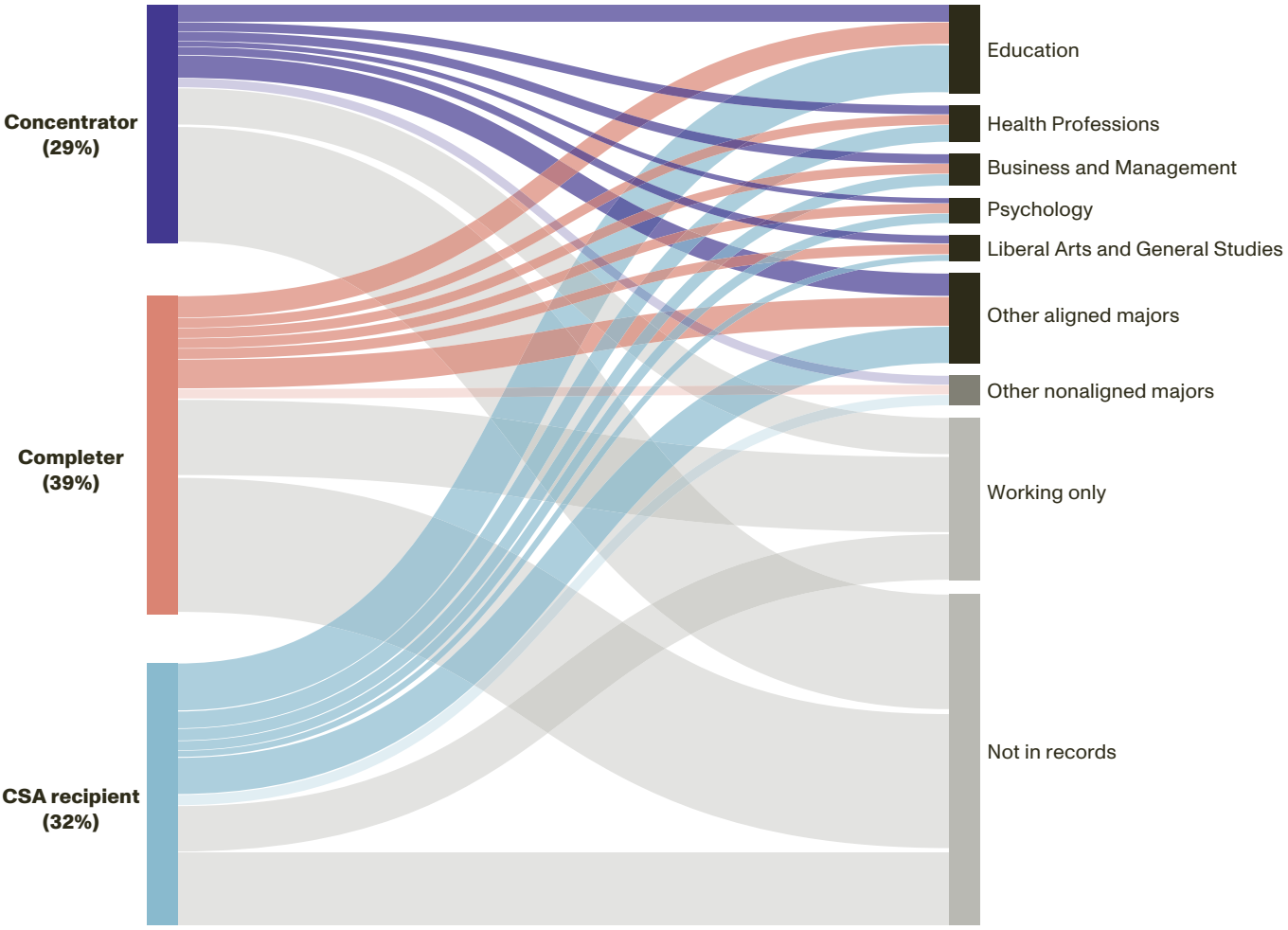


SOURCE: Based on NPWR data from 2016 to 2025.

NOTE: CTE concentrators completed two or more courses in a CTE program of study. The sample includes CTE concentrators who enrolled in NSHE and declared a major within two years of on-time high school graduation. Programs with fewer than 50 college enrollees are excluded.

FIGURE 7

College Major Destinations for Teaching and Training CTE Students, Year 2 After High School

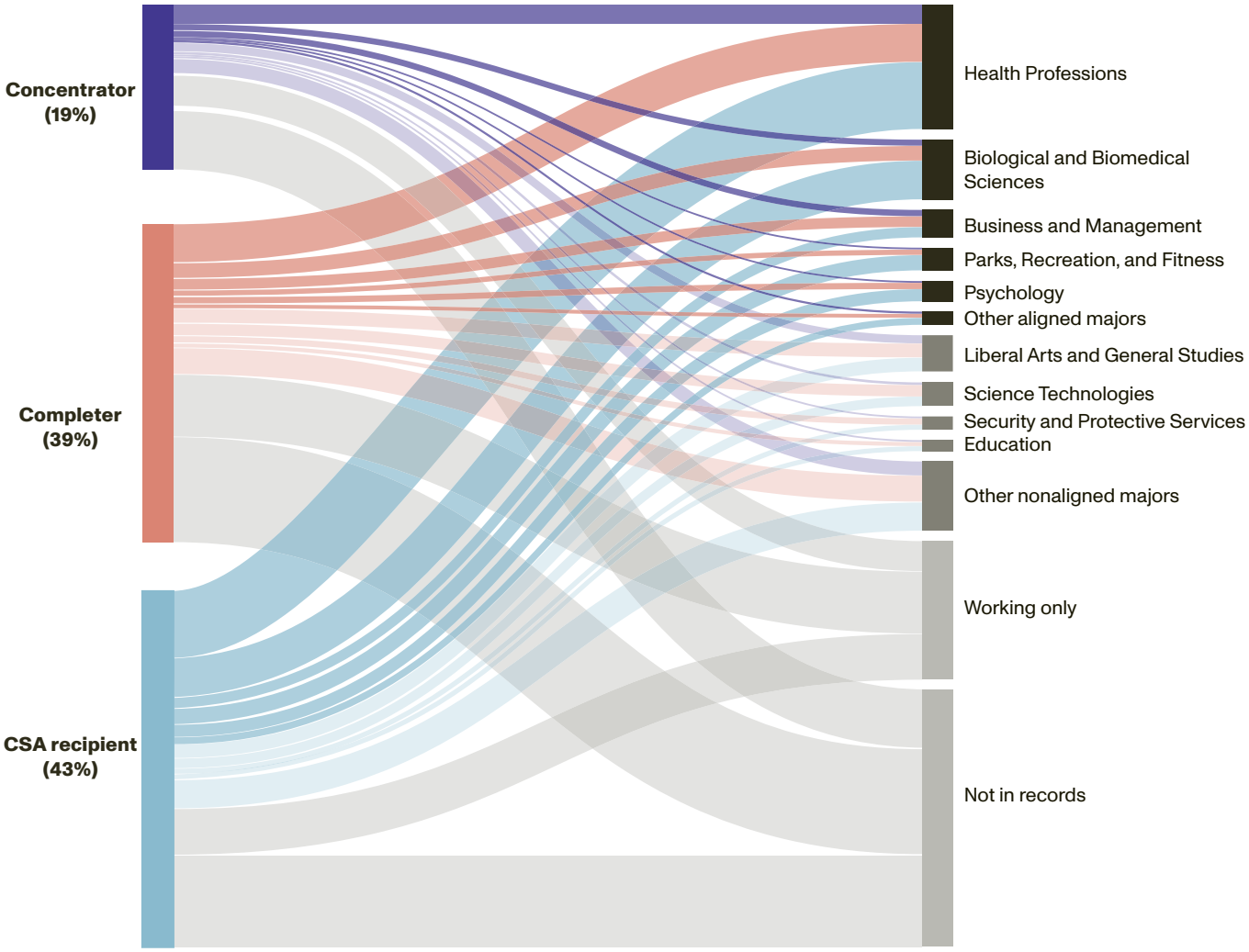


SOURCE: Based on NPWR data from 2016 to 2025.

NOTE: CTE concentrators completed two or more courses in a CTE program of study; completers completed a full program of study; CSA recipients earned a CSA. The sample (*N* = 1,692) includes all Teaching and Training CTE students in year 2 after on-time high school graduation. Darker shading indicates enrollment in an aligned college major. Gray flows indicate students working only or not appearing in records. Small aligned destinations are combined into "Other aligned majors."

FIGURE 8

College Major Destinations for Sports Medicine CTE Students, Year 2 After High School



SOURCE: Based on NPWR data from 2016 to 2025.

NOTE: CTE concentrators completed two or more courses in a CTE program of study; completers completed a full program of study; CSA recipients earned a CSA. The sample (*N* = 3,824) includes all Sports Medicine CTE students in year 2 after on-time high school graduation. Darker shading indicates enrollment in an aligned college major. Gray flows indicate students working only or not appearing in records. Small aligned destinations are combined into "Other aligned majors."

Workforce Alignment Was Highest in Hospitality Programs and Lowest in Manufacturing and Information Technology

This section examines the industries in which CTE students worked two years after projected high school graduation, focusing on students employed in Nevada who were not simultaneously enrolled in college. Figure 9 shows workforce alignment rates for all programs with at least 50 students in the workforce across five high-priority career clusters. Students in the Hospitality and Tourism career cluster showed the highest alignment rates, ranging from 49 to 66 percent across the Culinary Arts, Hospitality and Tourism, and Baking and Pastry programs. Health Science programs that could lead to direct workforce entry—such as Emergency Medical Technician and Community Health Science—had alignment rates around 27 percent. Students in Manufacturing and IT programs generally had lower alignment rates, ranging from roughly 4 to 36 percent. Low alignment in these fields may reflect job opportunities across a variety of industries, with IT occupations often dispersed across industries not classified as aligned.

> “ Students in the Hospitality and Tourism career cluster showed the highest alignment rates, ranging from 49 to 66 percent across the Culinary Arts, Hospitality and Tourism, and Baking and Pastry programs.

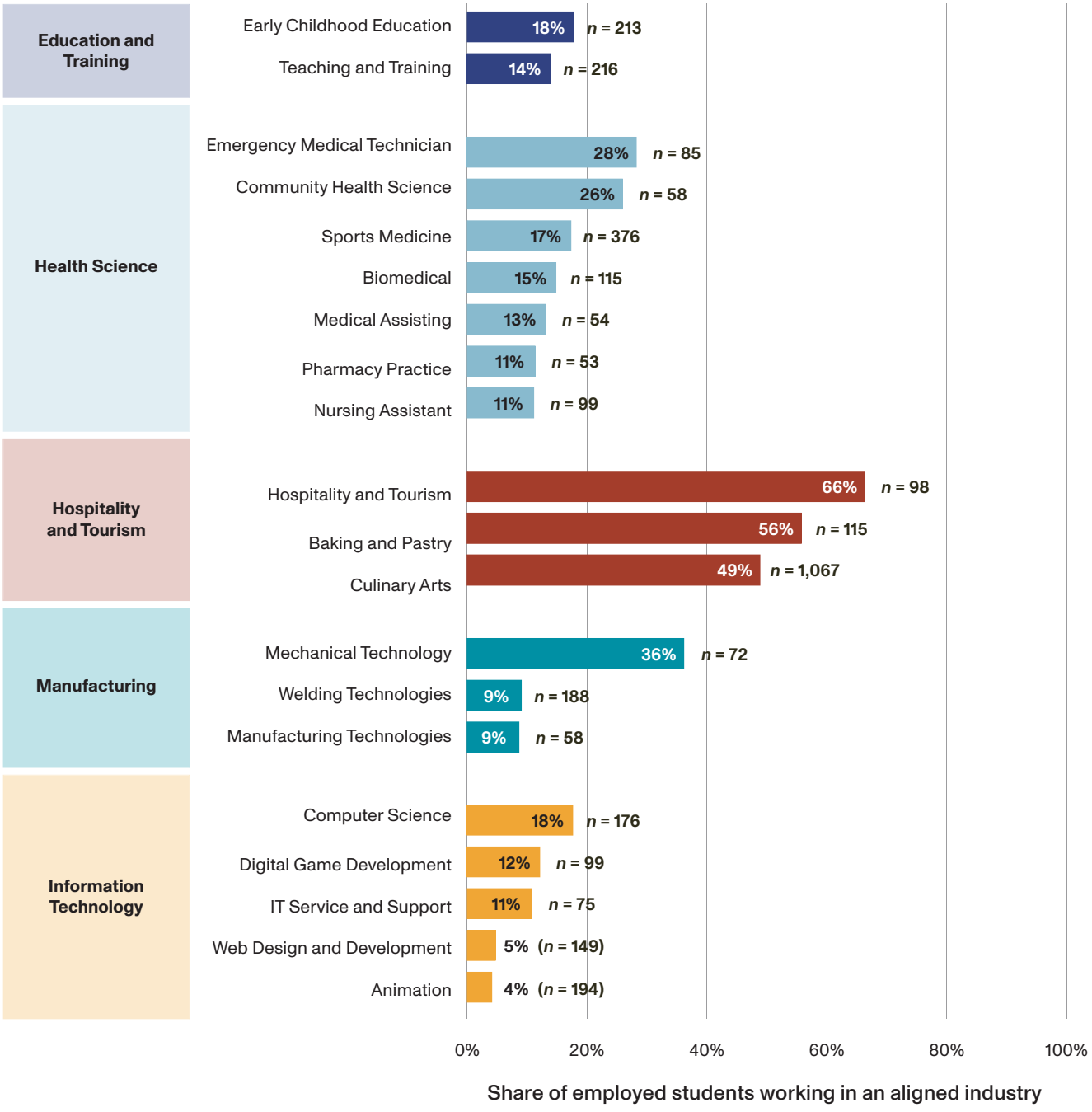
We examine two programs in more detail (Culinary Arts and Welding Technologies) to illustrate the variety of industries that CTE students entered. Figures 10 and 11 are Sankey diagrams showing where students from each program were employed two years after high school.[8]

Culinary Arts was one of the most popular CTE programs of study and had high industry alignment. Among Culinary Arts students employed in Nevada two years after projected high school graduation, Figure 10 shows that the most common industry was Food Services and Drinks. The remaining students were spread across a wide variety of industries, including Warehousing and Storage, Retail, and Administrative and Support Services. Alignment rates rose with CTE engagement and were highest for CSA recipients.

Welding Technologies students were often employed in service and trade industries, with few working in aligned manufacturing industries. Among the Welding Technologies students employed two years after high school, few worked in an aligned manufacturing industry (Figure 11). The most common destinations were Specialty Trade Contractors, Mining, Food Services and Drinking Places, and Warehousing and Storage. These patterns may partly reflect local job opportunities and may also point to limitations in our workforce alignment measure. For example, many students worked in Mining, which likely includes jobs related to welding and which tends to offer high wages and high demand in Nevada. Two years after high school may also be too early to observe alignment: Students pursuing apprenticeships or additional credentialing may not yet appear in wage records for industries in which welding skills are most valuable. Some Welding Technologies students may also have completed the program as a technical elective rather than in preparation for direct career entry and pursued different pathways.

FIGURE 9

Share of Employed CTE Students Working in an Industry Aligned with Their Program of Study, by Program and Career Cluster

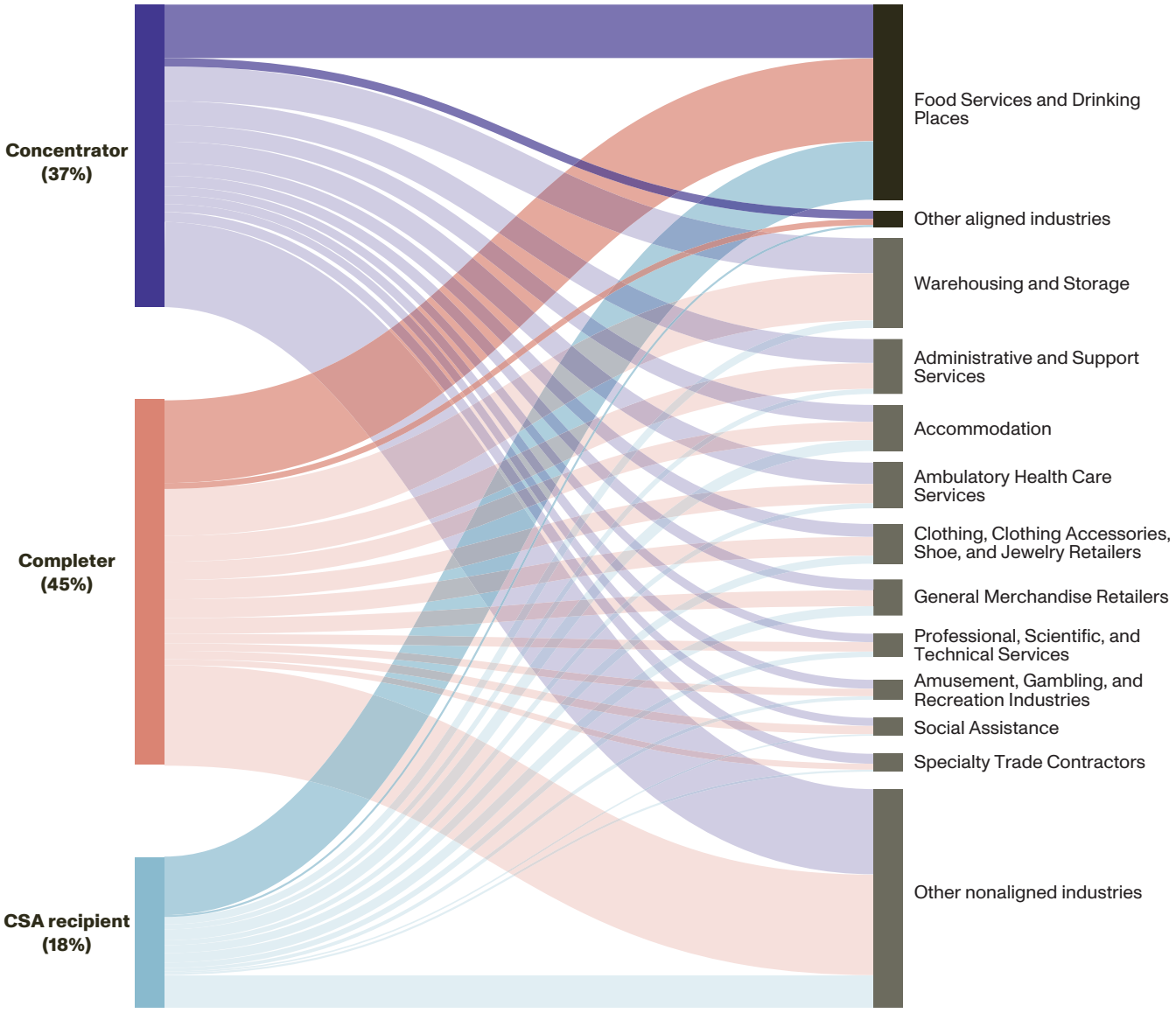


SOURCE: Based on NPWR data from 2016 to 2025.

NOTE: The sample includes CTE concentrators with a DETR wage record in year 1 or year 2 after on-time high school graduation and no NSHE enrollment in years 1 or 2. CTE concentrators include all students who completed two or more courses in a CTE program of study. Programs with fewer than 50 students are excluded. Industry alignment is based on the NAICS sector with highest earnings in year 2.

FIGURE 10

Primary Industry Destination for Culinary Arts CTE Students, Two Years After High School

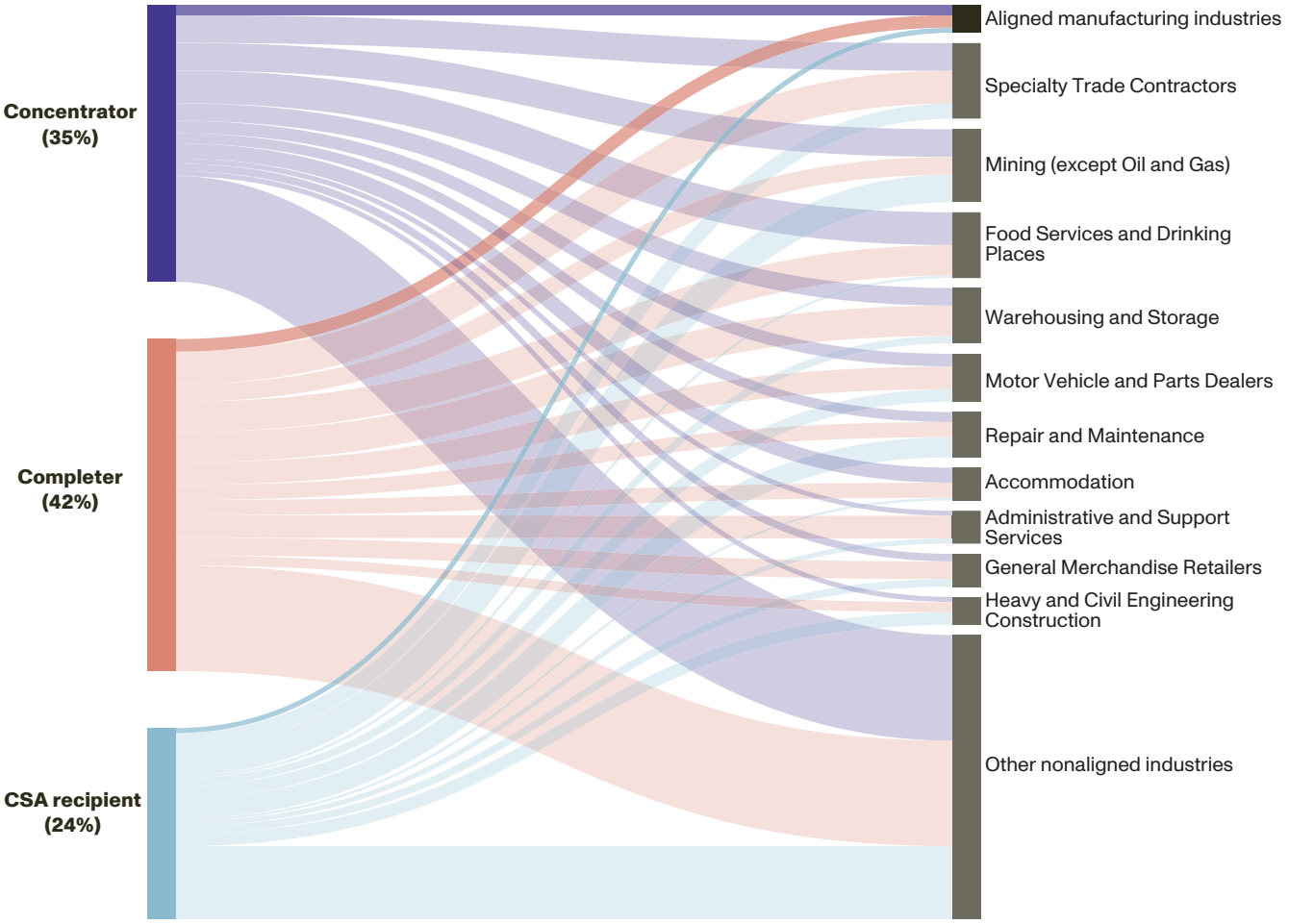


SOURCE: Based on NPWR data from 2016 to 2025.

NOTE: CTE concentrators completed two or more courses in a CTE program of study; completers completed a full program of study; CSA recipients earned a CSA. The sample includes Culinary Arts CTE students with a DETR wage record in year 2 after on-time high school graduation and no NSHE enrollment in year 2 (although they could have been enrolled in NSHE in year 1). Darker shading indicates employment in a CTE-aligned industry. The destination is the NAICS sector with highest earnings in year 2. Small aligned destinations are combined into "Other aligned industries."

FIGURE 11

Primary Industry Destinations for Welding Technologies CTE Students, Two Years After High School



SOURCE: Based on NPWR data from 2016 to 2025.

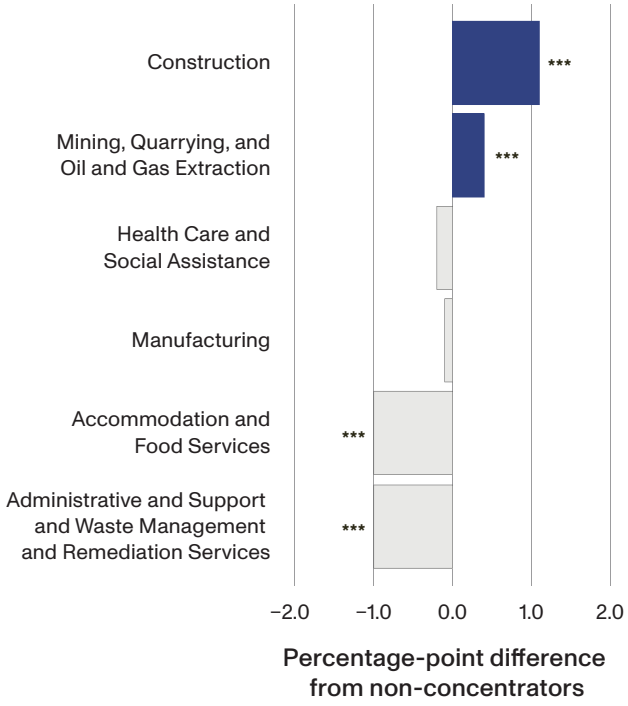
NOTE: CTE concentrators completed two or more courses in a CTE program of study; completers completed a full program of study; CSA recipients earned a CSA. The sample includes Welding Technologies CTE students with a DETR wage record in year 2 after on-time high school graduation and no NSHE enrollment in year 2 (although they could have been enrolled in NSHE in year 1). Darker shading indicates employment in a CTE-aligned industry. The destination is the NAICS sector with highest earnings in year 2. "Aligned manufacturing industries" combines Fabricated Metal Product Manufacturing, Transportation Equipment Manufacturing, and Machinery Manufacturing (each with fewer than ten students).

Employed CTE Concentrators Were More Likely to Work in Construction and Mining Than High School Graduates Who Did Not Concentrate in CTE

We also compared the industries of employment for CTE concentrators (including completers and CSA recipients) in the workforce two years after high school graduation with those for high school graduates in the same cohorts who did not concentrate in CTE (Figure 12). CTE concentrators were more likely than their non-CTE concentrator peers to work in Construction (+1.1 percentage points) and Mining, Quarrying, and Oil and Gas Extraction (+0.4 percentage points). Differences between the groups were near zero in Health Care and Social Assistance and Manufacturing. CTE concentrators were less likely than non-concentrators to work in Accommodation and Food Services (–1.0 percentage points) and Administrative and Support and Waste Management and Remediation Services (–1.0 percentage points).

FIGURE 12

Difference in Industry Employment Rates Between CTE Concentrators and Non-Concentrators, by Selected Industry



SOURCE: Based on NPWR data from 2016 to 2025.

NOTE: The sample includes students with a DETR wage record in year 2 after on-time high school graduation and no NSHE enrollment in years 1 or 2. Non-concentrators are students with fewer than two CTE courses in any program. Positive values (dark blue) indicate that CTE concentrators are more likely to work in that industry (conditional on any employment); negative values (gray) indicate a lower likelihood. *** $p < 0.01$, two-proportion z-test.

Recommendations

Nevada CTE students pursued a variety of postsecondary and workforce pathways after high school, with slightly less than half pursuing a path aligned with their CTE program of study. Alignment varied substantially across career clusters and number of CTE courses passed, as well as by sex and urbanicity. Three findings in particular point toward action: variation in alignment across clusters, the gap between rural and urban alignment rates, and the limited direct workforce entry in Manufacturing and IT.

We draw on those findings to offer five recommendations for state policymakers, district leaders, school staff, colleges, and employers. Because we report only descriptive patterns based on graduates who remain in

“ Three findings in particular point toward action: variation in alignment across clusters, the gap between rural and urban alignment rates, and the limited direct workforce entry in Manufacturing and IT.

Nevada, the recommendations identify areas in which the evidence is suggestive and action seems warranted, not areas in which the data establish a direct causal link.

We also note that Nevada's CTE program has changed significantly since the cohorts in this study finished high school. Namely, Nevada has revamped its CTE offerings to better align curriculum and programs of study with high-wage, high-skill, and in-demand jobs and has reduced the length of CTE programs from three years to two years. This report describes outcomes under the previous structure and serves as a baseline from which the effects of the new structure can eventually be assessed.

Recommendation 1. As part of their ongoing advising, school counselors and teachers should highlight the specific career pathways pursued by students in different CTE programs. Students pursue a wide variety of education and workforce paths after high school, and the most common pathway varied considerably by CTE career cluster. Some clusters showed strong college alignment, while others showed stronger workforce alignment, likely reflecting that some programs offer immediate pathways into aligned jobs after high school, while others lead to postsecondary education and aligned employment further down the road. For example, workforce alignment rates two years after high school were lowest in Manufacturing and IT, despite the state's strong interest in building workforce pipelines in those industries. Hospitality programs showed the highest workforce alignment, which partly reflects that Hospitality is a major employer in Nevada—although Hospitality and some other popular fields are not associated with high wages (Mihaly et al., 2025).

Recommendation 2. State staff should continue helping districts match CTE offerings to available workforce opportunities. Nevada recently reorganized its CTE programs of study to focus on preparation for high-wage, high-skill, and in-demand occupations (NDE, 2026). These changes may improve workforce outcomes, but tracking outcomes over time will be important to determine whether additional adjustments are needed. In the meantime, state and district leaders can support alignment by reviewing CTE offerings against local labor market data to ensure that students are being prepared for jobs available in their region. School staff can reinforce this by advising students on workforce opportunities and how to connect with relevant employers.

Recommendation 3. State leaders should continue to help rural districts build capacity to offer programs in high-alignment fields. Rural districts offer programs in a narrow set of clusters, with few providing programs in Education and Training—one of the clusters with the highest college alignment rates and many related job openings (see Figure A.1 in Appendix A). Rural districts may not offer these programs because of difficulty finding qualified instructors, limited student demand, or other resource constraints. State policymakers can further allocate resources to make offering such courses more financially feasible in these districts. State and district leaders can also continue to facilitate partnerships with industry professionals to build student and employer demand for programs and to identify the programs most likely to lead to aligned education and workforce outcomes.

Recommendation 4. District leaders should continue expanding CTE students' access to industry-recognized credentials (IRCs) in fields in which credentials are required for workforce entry. IRCs are required for employment in several high-demand jobs in Nevada, particularly in professions that do not require a college degree and for which direct workforce entry from CTE is a goal (e.g., nursing assistants, automotive technicians, welders, HVAC technicians). As of 2024, legislation (Nevada Regulation R019-24) allows students to count an IRC toward CSA requirements instead of passing the end-of-program assessment (Nevada Legislative Counsel Bureau, 2024). To support this, the state's CTE course catalog offers an optional IRC course specifically designed for exam preparation. Some high schools already use this course to help students earn an IRC after completing their CTE program, but there may be further opportunities to expand access. At the district level, leaders can explore ways to help students overcome barriers to IRC receipt—for example, by building exam preparation into the program schedule, covering or subsidizing exam fees, and establishing relationships with credentialing bodies and local employers that may be willing to support exam access.

Recommendation 5. Employers, workforce development organizations, and colleges should continue to build on-ramps for students completing CTE programs. Although CTE is widely promoted as a way to build pipelines of workers in high-demand fields, few Nevada students go directly from high school CTE into a job in a related Nevada industry. To bridge this gap, workforce development organizations and employers can further collaborate with local high schools and CTE program leaders to build on-ramps for students, such as internships, apprenticeships, and access to post–high school training and certification pathways. College leaders can also help students map their CTE experiences to postsecondary education pathways and expand opportunities for students to use CTE as a jump start on college degrees, such as through college credit for CTE coursework.

Notes

[1] These data were shared with RAND for the purposes of this project.

[2] During our study period, Nevada required students to complete two years of coursework to be defined as concentrators. The federal Perkins requirement for concentrators is two courses. We focus on concentrators because they are the sample of CTE students for which data are available. Students who enroll in too few courses to meet the concentrator benchmark are not classified into programs of study.

[3] Nevada has recently updated its CTE offerings to better align curricula and programs of study with high-wage, high-skill, and in-demand jobs and has reduced the length of CTE programs from three years to two years.

[4] Forty-three percent of high school graduates in our sample are CTE concentrators. Seventy-three percent of concentrators complete a program of study, and 34 percent of concentrators complete a CSA.

[5] Appendix C provides more information on our alignment measures.

[6] Because of space constraints, the figures use abbreviated names for some career clusters. Table B.1 in Appendix B provides the mapping from short to long names.

[7] Additional Sankey diagrams showing college major alignment for Nursing Assistant, Community Health Science, Welding Technologies, and Computer Science are in Appendix E.

[8] Additional Sankey diagrams showing workforce alignment for Emergency Medical Technician and Mechanical Technology are provided in Appendix E.

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Acknowledgments

We are extremely grateful to staff at the Nevada Department of Education and the Nevada P-20 to Workforce Research Data System for sharing insights on the Nevada context and data. In particular, we thank Victor Wakefield, Peter Zutz, Anna Reynolds, Natalie Brown, Jake Miller, Cameron Carey, Sonali Bandyopadhyay, Nicole Goldschmidt, Craig Moebus, and several others who assisted with this project. We are grateful to Jason Lee, Roddy Theobald, and Rachel Rosen for reviewing this report and providing helpful feedback. In addition to engaging expert human peer reviewers, the quality assurance team used assistive artificial intelligence tools to suggest writing improvements to the authors.

About This Report

In this report, we examine the college and career pathways that Nevada's Career and Technical Education (CTE) students pursue after high school. Roughly half of Nevada's CTE concentrators who enrolled in a Nevada college pursued an aligned college major, and 20 percent of those employed worked in the industry of employment aligned with their CTE program of study. However, alignment varied considerably across programs of study. These findings can help guide high school advising and career selection. We also offer recommendations to state leadership, high school educators, and workforce stakeholders on how to improve students' preparation for and transitions into related post–high school experiences. An annex, available separately at www.rand.org/t/RRA4872-1, provides appendixes with supporting materials, including the policy background, relevant literature, data sources, analytic samples, methodology, and supplementary results.

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Funding

This research was supported by the Institute of Education Sciences at the U.S. Department of Education through grant R305S230005 to RAND. The opinions expressed are those of the authors and do not represent the views of the Institute of Education Sciences, the U.S. Department of Education, or RAND.



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