

Mismatch?

Aligning Secondary Career and Technical Education with Regional Workforce Demand



May 2020

by Erin Davis Valdez and Sam Johnson



Texas Public Policy
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Mismatch?

Aligning Secondary Career and Technical Education with Regional Workforce Demand

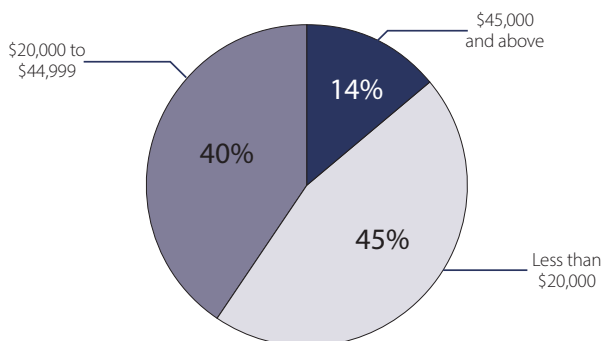
Erin Davis Valdez and Sam Johnson

Secondary career and technical education (CTE) is a proven pathway to economic mobility for students and a potentially important partner to industries for regional workforce pipelines. Our analysis of which industry sectors within CTE (“clusters”) students concentrate in by region, compared with the high-growth, above-median wage jobs in the same regions, shows that this natural synergy may be underutilized in some areas of Texas. Paid apprenticeships, tying college, career, and military readiness outcomes bonuses more closely to labor market outcomes, and increasing access to data on longitudinal student outcomes based on their high school pathways, are policy measures that may provide schools and business incentives to improve return on investment for current CTE expenditures and create more valuable programs for Texas students.

Career and Technical Education Benefits Students

Career and technical education provides a number of benefits to students who take more than two courses in a sequence or program of study.¹ According to the Department of Education, these students were more likely than other students to graduate from high school by expected graduation year (94 percent and 86 percent, respectively), to enroll in postsecondary education by eight years after expected graduation (84 percent and 82 percent), be employed full time eight years after graduation (72 percent and 67 percent), and to earn more ([InformED](#)).

Figure 1A. Percentage distribution of high school CTE concentrators by employment earnings eight years after expected high school graduation



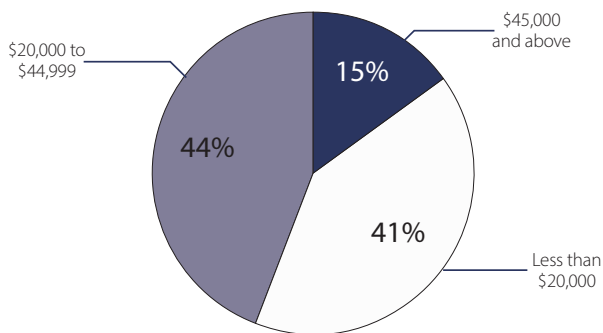
Source: [InformED](#)

¹ The definition of “CTE concentrator” used in research conducted by Matt Giani and cited later is three or more courses in a single program area. The reason for this distinction is that the group of students he studied (Texas high school graduates of 2016) were tracked under the definition of “concentrator” that applied in 2016 ([PCRN 2006](#)). In 2018, Perkins V formally defined concentrator as “a student who completes at least two courses in a single program or program of study” ([ACTE 2018, 5](#)). The research cited in this paper by Kreisman and Stange demonstrates that wage benefits increase as students specialize in programs of study, so the findings by the DOE that these benefits accrue to students with only two courses in a sequence likely underestimate the benefits to students who pursue three or more credits in a program of study ([Figure 2](#)).

Key Points

- Career and technical education (CTE) in Texas has the potential to open pathways to prosperity for students regardless of whether they immediately attend college or not.
- CTE at the school and district levels could be better aligned with regional workforce needs.
- Partnerships between high schools and businesses can help bridge the so-called skills gap.
- Paid internships using the CTE allocation for students finishing a program of study, better outcomes bonus metrics, and improved transparency of longitudinal outcomes for high school student pathways have the potential to improve the economic mobility of Texas’ young workforce and the competitiveness of regional economies.

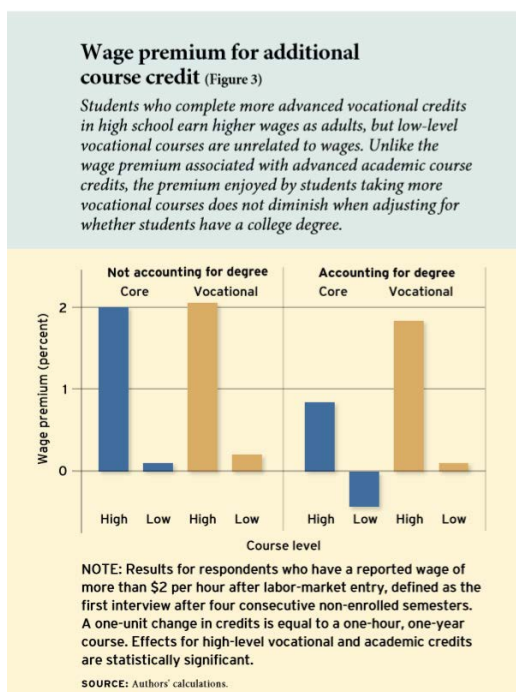
Figure 1B. Percentage distribution of high school CTE concentrators by employment earnings eight years after expected high school graduation



Source: [InformED](#)

Recent research (**Figure 1B**) by Kreisman and Stange demonstrates that students who take upper-level CTE courses earn 2 percent more for each high-level course they take in high school, independent of whether they attend college ([82](#)).

Figure 2. Wage premium for additional course credit



Source: [Kreisman and Stange, 82](#)

Furthermore, the high school graduation rate among students who took two or more CTE courses in 2016 was 95.6 percent. Texas' overall graduation rate in that year was 89.1 percent. Students who took two or more CTE courses also outperformed their peers on state reading and algebra tests ([TWIC, 4-5](#)).

Because the benefits of CTE increase as students take more classes within a concentration, according to a legislative analysis by the Association of Career and Technical

Education, Perkins V (the federal legislation funding CTE) emphasizes the importance of “programs of study,” which it defines as

a coordinated, non-duplicative sequence of academic and technical content at the secondary and postsecondary level that incorporates challenging, state-identified academic standards; addresses academic and technical knowledge, as well as employability skills ...; is aligned to the needs of industries in the state, region, Tribal community, or local area; progresses in content specificity; has multiple “entry and exit points” that allow for credentialing; and ultimately culminates in the attainment of a recognized postsecondary credential. ([ACTE 2018, 4](#))

Of particular interest is the definition that pertains to alignment with the “needs of industries” in a given region. In accordance with the federal emphasis on courses of study, the Texas Education Agency (TEA) has defined statewide and regional programs of study to reflect the criteria of “high wage, high demand” occupations, and is “improv[ing the] data collection and reporting of CTE concentrators for districts” ([TEA 2020a, 1](#)).

In light of these benefits, both the federal and state legislatures have been supportive of career and technical education for generations.

Federal Career and Technical Education Involvement

In 1984, Congress passed the Carl D. Perkins Act, the first purpose of which was to “assist the States to expand, improve, modernize, and develop quality vocational education programs in order to meet the needs of the Nation’s existing and future work force for marketable skills and to improve productivity and promote economic growth” ([Sec. 2.1](#)).

The latest re-authorization, the Strengthening Career and Technical Education for the 21st Century Act, or Perkins V, was signed into law by President Trump in 2018. Perkins V funding amounts to \$1.3 billion annually ([PCRN 2020](#)), with Texas receiving \$111 million in fiscal year 2020-21 ([TEA 2019a, 69](#)).

Perkins V has eight parts, with the purpose of the first being to assist students in “preparation for high skill, high wage, or in-demand occupations in current or emerging professions.” The sixth aim is “supporting partnerships among secondary schools, post-secondary institutions, baccalaureate degree granting institutions, area career and technical education schools, local workforce investment boards, business and industry, and intermediaries” ([Sec. 2.6](#)).

Figure 3. Top three most popular courses in each CTE subject

CTE Cluster	Top Course	Second Course	Third Course
Agriculture	Principles of Agriculture, Food, and Natural Resources	Principles and Elements of Floral Design	Agricultural Mechanics and Metal Technology
Architecture	Principles of Architecture and Construction	Construction Technology	Interior Design
Arts	Professional Communications	Graphic Design and Illustration Principles	Arts/Audio Video Technology and Communication
Business	Business Information Management I	Principles of Business, Marketing, and Finances	Business Information Management II
Education	Human Growth and Development	Principles of Education and Training	Instructional Practice in Education and Training
Finance	Money Matters	Accounting I	Statistics and Risk Management
Government	Principles of Government and Public Administration	Political Science I	National Security
Health	Anatomy and Physiology	Principles of Health Science	Health Science
Hospitality	Culinary Arts	Food Science	Principles of Hospitality and Tourism
Human Services	Lifetime Nutrition and Wellness	Child Development	Principles of Human Services
IT	Digital and Interactive Media	Principles of IT	Web Technologies
Law	Forensic Science	Law Enforcement I	Principles of Law, Public Safety, Corrections, & Security
Manufacturing	Welding	Principles of Manufacturing	Advanced Welding
Marketing	Sports and Entertainment Marketing	Entrepreneurship	Fashion Marketing
STEM	Concepts of Engineering and Technology	Introduction to Engineering	Design Principles of Technology
Transportation	Automotive Technology	Energy, Power, and Transportation Systems	Principles of Transportation, Distribution, and Logistics

Source: [Giani, 11](#)

Figure 4. Counts and percentages of CTE concentration by CTE cluster, 2016 high school graduates

Counts and Percentages of CTE Concentration by CTE Cluster, 2016 High School Graduates		
	Frequency	Percentage
None	230,739	71.4
Agriculture	19,277	6.0
Architecture	1,933	0.6
Arts	9,613	3.0
Business	5,275	1.6
Education	1,089	0.3
Finance	721	0.2
Government	119	0.0
Health Science	17,916	5.5
Hospitality	2,447	0.8
Human Services	9,411	2.9
IT	2,504	0.8
Law	5,346	1.7
Manufacturing	909	0.3
Marketing	742	0.2
STEM	5,634	1.7
Transportation	1,975	0.6
Multiple	7,387	2.3
Total	323,037	100.0

Source: [Giani, 14](#)

Texas' Commitment to Career and Technical Education

Supporting students in their pursuit of career and technical education has been a priority for the Texas Legislature. In fiscal year 2020-21, it committed nearly \$2.8 billion per annum to secondary and postsecondary CTE ([TEA 2019a, 69](#)).

At the postsecondary level, Texas Higher Education Coordinating Board launched its 60x30 Strategic Plan in 2015, which called for 60 percent of Texans between the ages of 25 and 34 having earned a certificate or degree by 2030 ([THECB](#)). The plan, with authority codified in [TEC §61.051](#), also includes the following goals: 550,000 students completing a postsecondary credential at a Texas higher education institution, all graduates of Texas public institutions of higher education having marketable skills, and ensuring that undergraduate loan debt is below 60 percent of first-year wages.

In 2016, the office of the governor directed the Texas Education Agency, Texas Higher Education Coordinating Board, and Texas Workforce Commission to establish the Tri-Agency Workforce Initiative and subsequently issue the

original *Tri-Agency Report*, published in November 2016. Under the report's Prime Recommendation 1, the agency's second "major initiative" was to

Promote statewide and regional industry clusters and objectives that support a variety of businesses and regional job creation. Launch the Texas Industry Clusters and Careers marketing campaign to promote the state's industry clusters through industry-aligned partnerships and industry-specific campaigns to continuously build and maintain a world-class workforce. Establish Texas as a leader in accelerated retraining programs, as well as building and expanding high-demand occupational pathway opportunities for students.
([TEA et al., 14](#))

At the secondary level, House Bill 3, passed by the 86th Texas Legislature, further prioritized CTE through reimbursement to districts for college preparation and industry-based certification exams, funds for 7th and 8th grade CTE courses, additional formula funding for innovative high school models, a summer CTE grant program, a study on alternate measures of college, career, and military readiness (CCMR) for small districts, and a CCMR outcomes bonus program ([TEA 2019b](#)). CCMR indicators have been included in the state's school accountability ratings since HB 22 (85th Legislature) ([TEA 2020c](#)).

With so much wind at the back of efforts to encourage CTE and CCMR, and especially the recognition of the need for a regionally focused approach, there is an opportunity to inquire into the current state of affairs and whether local schools, communities, businesses, and policymakers have enough transparent information on what can be done to make career readiness programs ready to deliver on that promise to Texas high school graduates. Simply put, post-graduation wage outcomes are a vital consideration in weighing both the return on taxpayer investment into vocational programs as well as the value for the individual students who choose to participate.

Data Sources

For half of our data, we are indebted to a report published by Dr. Matt Giani, entitled *Who is the Modern CTE Student*, along with unpublished data that he graciously supplied for our inquiry. Professor Giani used data from the Texas Education Research Center, housed at the University of Texas, to examine demographic trends among students who pursue an in-depth program of study within CTE clusters ([Giani](#)).

Career Clusters and Programs of Study

Perkins V defines 16 career clusters and calls for states to develop "programs of study" within each. The TEA

evaluated labor market data to identify “high wage, high demand occupations” in Texas. Following this process, the TEA has defined [725 programs](#) for the 2020-2021 school year ([TEA 2020g](#)). The CTE concentrator data analyzed by Giani and used in our comparisons of labor market data in the following regional studies dates from 2016, prior to the enactment of Perkins V in 2018.

As can be seen in **Figure 3**, statewide, agriculture was the most popular cluster for concentrators in 2016 (6 percent). Rounding out the top 5 were health science (5.5 percent), arts (3 percent), human services (2.9 percent), and multiple concentrators (2.3 percent).

Courses

Giani notes the three most popular courses in each of the CTE clusters in **Figure 4** ([Giani, 11](#)). The third most popular “ag” course is metal technology, which could include instruction in basic architectural welding. This may or may not lead to certification in welding or more advanced techniques.

The manufacturing cluster, the most popular courses of which include two welding courses, only accounts for 0.3 percent of concentrators. This is one example of a possible mismatch emerging between the regional opportunities for high-wage, high-growth jobs and the level of preparation that even the most prepared CTE students leave high school with.

Welding is a key skill in construction, and construction and manufacturing are both among the top 5 industries that offer workers good wages without a bachelor’s degree ([ACTE 2020](#)).

College, Career, and Military Readiness

Where appropriate, the TEA aligned programs of study to industry-based certifications that students can earn while still in high school, or that they can prepare to take after graduation. The industry-based certifications that count toward school accountability scores consist of a list curated by the TEA ([TEA 2020d](#)). Accountability scores are used by the TEA to grade schools and districts on an A-F scale. Schools that score below certain thresholds are subject to state intervention. Such high stakes may provide an incentive for school districts and other interests to lobby for the inclusion of credentials connected to legacy programs that may not be of demonstrable labor market value. Recent research has shown, for example, that cosmetology licenses are 100 percent oversupplied ([Burning Glass and Excel In Ed, 66](#)). Yet, cosmetology licenses constitute four out of five certifications included in the human services cluster on the TEA’s most recent industry-based certification list. Despite

this contrast in market demands, the TEA faced pressure to keep these programs ([Lundstrom](#)).

The bonuses, which are more rigorous than the standard for CCMR used in the academic accountability system ([Crowe and Justice, 9](#)), are available to school districts that have CCMR graduates above a percentage determined by the TEA. College readiness is determined by a TSIA (Texas Success Initiative Assessment) score on the SAT/ACT/TSI Assessment and by either having earned an associate degree prior to high school graduation or having enrolled in college by the fall after graduation. The military-readiness metric requires a passing score on the ASVAB (Armed Services Vocational Aptitude Battery) and enlistment in the military.

For school districts to qualify for the new career-ready bonuses, graduates will have to meet the same TSIA scores for college readiness *and* earn a level I or II certification from the approved industry-based certification list ([TEC §48.110 \(e\)\(2\)](#); [Crowe and Justice](#)). The statutory requirement of the college-ready score may limit the number of students who qualify for the bonus, but it is unclear whether the actual measure of career readiness is captured on an academic standardized test along with a level I or II certification. Both the college- and military-readiness metrics allow for post-graduation outcomes verification, while the career-readiness metric does not. Since there is likely room for improvement in this measure and because [TEC 48.1101 \(HB 3\)](#) requires the TEA to report on alternative measures of career readiness for small and rural districts by January 1, 2021, we provide a recommendation below relating to this metric.

Mismatch?

Career and Technical Education (or vocational) programs are already highly local in nature. This regional variability is evident in the graphs that follow—different regions have different concentrator rates. In some cases, this may be because CTE programs are already somewhat aligned with local labor market needs, or it may be because some regions have legacy programs that are actually lagging the growth of new industries in a particular region.

We analyzed the CTE concentrator data for each of the Education Service Centers (ESCs) in Texas, comparing them with the labor market information on the top 25 occupations that pay above the Texas median wage of \$37,099 ([Texas Career Check](#)) and ranked by highest projected number of jobs added due to growth for the period 2016-2026. Texas Career Check draws data from the Texas Workforce Board Regions. There are 20 Education Service Centers designated by the TEA and 28 Workforce Areas (WFAs) designated by the Texas Workforce Commission ([TEA 2020b](#); [TWC](#)). The foundational focus of this study was based on

Figure 5. Top three most popular courses in each CTE subject

CTE Cluster	Top Course	Second Course	Third Course
Agriculture	Principles of Agriculture, Food, and Natural Resources	Principles and Elements of Floral Design	Agricultural Mechanics and Metal Technology
Architecture	Principles of Architecture and Construction	Construction Technology	Interior Design
Arts	Professional Communications	Graphic Design and Illustration Principles	Arts/Audio Video Technology and Communication
Business	Business Information Management I	Principles of Business, Marketing, and Finances	Business Information Management II
Education	Human Growth and Development	Principles of Education and Training	Instructional Practice in Education and Training
Finance	Money Matters	Accounting I	Statistics and Risk Management
Government	Principles of Government and Public Administration	Political Science I	National Security
Health	Anatomy and Physiology	Principles of Health Science	Health Science
Hospitality	Culinary Arts	Food Science	Principles of Hospitality and Tourism
Human Services	Lifetime Nutrition and Wellness	Child Development	Principles of Human Services
IT	Digital and Interactive Media	Principles of IT	Web Technologies
Law	Forensic Science	Law Enforcement I	Principles of Law, Public Safety, Corrections, & Security
Manufacturing	Welding	Principles of Manufacturing	Advanced Welding
Marketing	Sports and Entertainment Marketing	Entrepreneurship	Fashion Marketing
STEM	Concepts of Engineering and Technology	Introduction to Engineering	Design Principles of Technology
Transportation	Automotive Technology	Energy, Power, and Transportation Systems	Principles of Transportation, Distribution, and Logistics

Source: [Giani, 11](#)

WFAs. Accordingly, some WFAs geographically overlap a single ESC, while many WFAs contained all or parts of several ESCs. In order to best depict the comparison of labor market demand to CTE class-taking trends, for WFAs that encompass parts of more than one ESC, we provided separate graphs for each WFA-ESC comparison.

Each area of the state has different regional trends in terms of high-wage, high-growth jobs. While we were not able to dig down to individual campus-level data, we do note that in some areas of the state, CTE concentrations (especially in human services and agriculture) seem out of step with the availability of local, above-median-wage employment opportunities.

One example of a potential mismatch appears in the case of the Beaumont/Port Arthur Region (**Appendix Figures 6a-c**), where the unemployment and poverty rates are higher than the state average. Architecture and manufacturing have strong combined projected growth (19.55 percent) whereas the number of concentrators in architecture and manufacturing is below 2 percent. On the other hand, over 8 percent of students in the Beaumont/Port Arthur Region were concentrators in agriculture, but the projected growth rate above median wage in that industry was 0 percent.

The data for the Houston area paints a similar picture (**Appendix Figure 7**). The architecture/construction/manufacturing concentrations account for less than 1 percent of 2016 high school graduates, but the projected growth above median wage in architecture and construction is above 12 percent.

This is not the only area where opportunities in high-growth, high-wage jobs do not appear to be aligned with the rates of secondary CTE concentrations. On the other hand, Houston's health science concentration rate (5 percent) aligns well with the projected job growth in this field (4.45 percent). Like all other regions of the state, the alignment between the percentage of arts and government concentrators does not correspond to regional projected demand.

Skills Gap

The so-called skills gap, which refers to the labor shortage in jobs that require some postsecondary training but not a college degree, represented 54 percent of jobs in Texas in 2018, but only 45 percent of workers by education level. Examples of these occupations included jobs in the skilled trades (such as plumbers and electricians), healthcare, advanced manufacturing, and IT ([National Skills Coalition](#)).

Local businesses are in a unique position to use the data here presented in order to catalyze conversations with

educators, students, and families about the opportunities in their industries that can both address the skills gap *and* offer economic mobility. Local schools may wish to identify which programs are the most valuable to their alumni and, by extension, their communities. State and local policymakers who are seeking the source of the so-called skilled labor gap may wish to take a closer look at the continuum of career education as it begins in secondary settings.

Recommendations

We recommend the following in order to address what we think are the most pressing challenges posed by the data presented in this report:

- Align career outcomes bonuses with six-month post-graduation employment at an individual income above a certain threshold instead of the combination of an academic cut score combined with a level I or II certification. This list is vulnerable to being misused, to political influence, and to being out of step with emerging industry needs. In addition, the college readiness cut score (TSI) could be a barrier for students who are career-ready in other dimensions but are academically disinclined.
- Improve the quality and availability of the longitudinal data (K-12 to higher education to workforce) housed by the Texas Education Research Center. Currently, the center charges up to \$15,000 per researcher for contributing agencies, Education Service Centers, and others outside of the UT system to access its data ([Texas ERC](#)). Research has to be conducted on-site and with supervision. More accessible and transparent information, compliant with privacy laws, will allow for a better understanding of which educational interventions can make the most difference to students over the long run and will empower communities to make better decisions about how to allocate scarce resources. The funding model for this program relies on fees from researchers. While increasing access to longitudinal data is vital, the solution should be crafted in a revenue-neutral fashion, potentially even through private philanthropy.
- Encourage students to gain more in-depth knowledge in a career cluster by making paid work-based learning opportunities available to those who are in their third or fourth year in an approved program of study or equivalent program. The existing CTE allocation could be used to outsource CTE instruction to businesses willing to participate in the program. Paid apprenticeships have the potential to improve access to a valuable career for students who are unable to afford to take unpaid internships.

Methodology

Identifying Region-Specific Occupation Data Points

We created graphs using Giani’s calculations of the percentages by Education Service Centers of 2016 Texas high school graduates who took three or more courses in one of the 16 Perkins career clusters and plotted them against the fastest-growing occupations in any given workforce region.

The methodology Giani used for identifying concentrators was to examine the set of 2016 high school graduates in Texas who took CTE courses (323,037) and then to analyze participation patterns in programs of study within the 16 clusters aligned to the Career Clusters Framework (CCF) (Giani, 8). Consistent with the federal guidelines effective in 2016, he classified concentrators as students who took three or more courses within an occupational program area (Giani, 8). Perkins V, signed into law in 2018, defines “concentrator” as a student who takes two or more courses within a single program of study (InformEd).

For labor market data, we used Texas Career Check’s online tool Labor Market & Career Information (LMCI). Under the “Explore Careers” tab, we selected “Occupation Trends.” We then selected the workforce region that corresponds to the area being researched, “South East Texas” for example (Hardin, Jefferson, and Orange counties). This list provides the top 25 occupations making above Texas’s median wage (\$37,099), ranked by highest projected number of jobs added due to growth for the period 2016-2026.

The list provides a link to an occupation summary for each occupation on the list. On each occupation’s page, we expanded the “Texas Regional Employment Information” section and identified the row specifically identifying the Southeast Texas region. We then gathered the following data points: projected annual openings 2026, annual growth rate, and average income.

Aligning Occupation and Career Cluster

In order to determine which career cluster or industry cluster a specific occupation falls under, we used the clusters identified by Advance CTE (ACTE 2020). These clusters aligned with the 16 career clusters in the National Career Clusters Framework (NCCF), as established by Perkins. Under the “Career Technical Education” tab, we selected “Career Clusters.” Then, for each career cluster, there is a link to a page with more information about said cluster. Within this career cluster page, we selected the PDF of the “Career Cluster Frame.” This document lists various careers/occupations aligned with their respective pathways.

For example, under the Architecture & Construction Career Cluster Frame, aligned with the Construction pathway, we found “Electrician.” In the table, we then assigned “Electrician” to the construction industry cluster.

Note on Career Clusters

In the charts in the appendix, we combined the manufacturing and construction industry clusters because multiple occupations were found to be listed under both career cluster frames. The government industry cluster is uniformly at 0 percent for all ESCs because, even though the National Career Clusters Framework provided by Advance CTE has a specific government industry cluster, the TEA’s CTE clusters do not. TEA CTE clusters have law and public service under one group.

Afterword

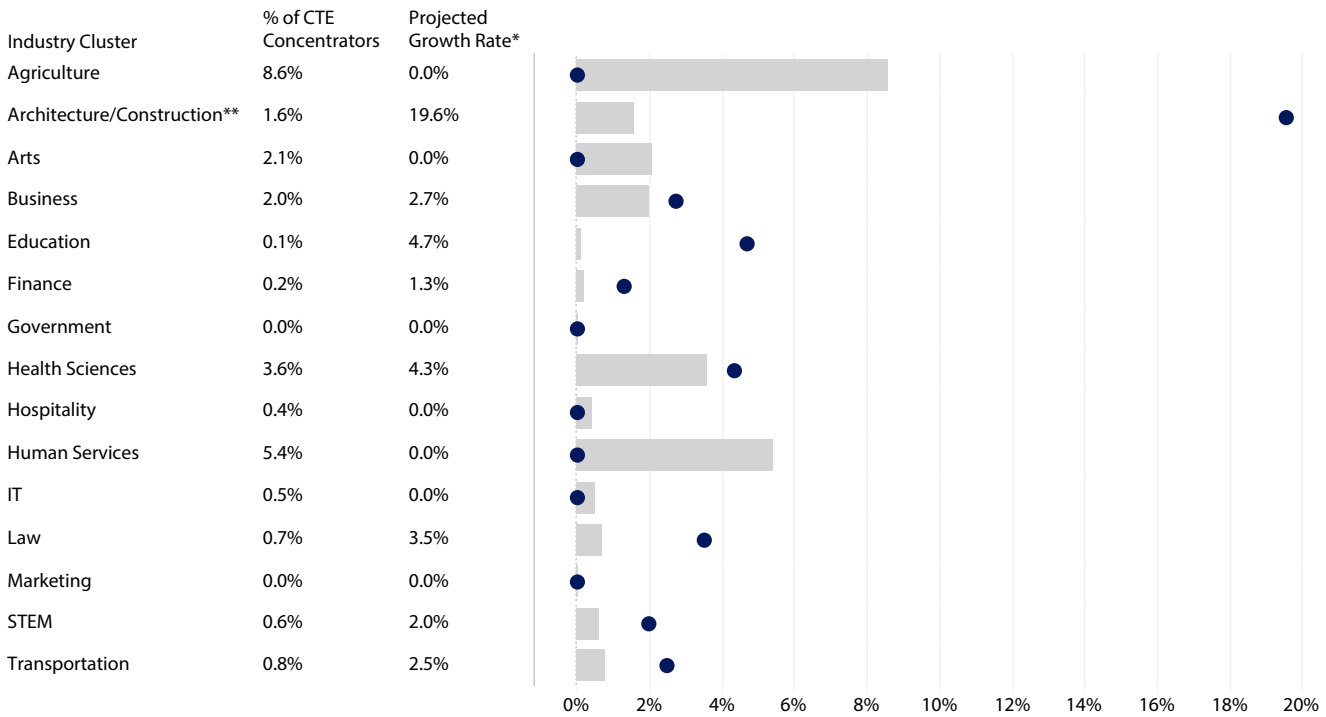
The research presented in this report was concluded before the business closures and ensuing unemployment caused by the response to COVID-19. The overall need for schools and businesses to partner together to help students find promising careers has not changed, though the demand signals from various industries may have. The need for dynamic incentives to apply to vocational education is all the more necessary in times of economic upheaval and uncertainty. ★

Appendix:

Texas Labor Markets Compared to Secondary CTE Concentrators

Figure 6a. Beaumont: Southeast Texas LM x CTE¹

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

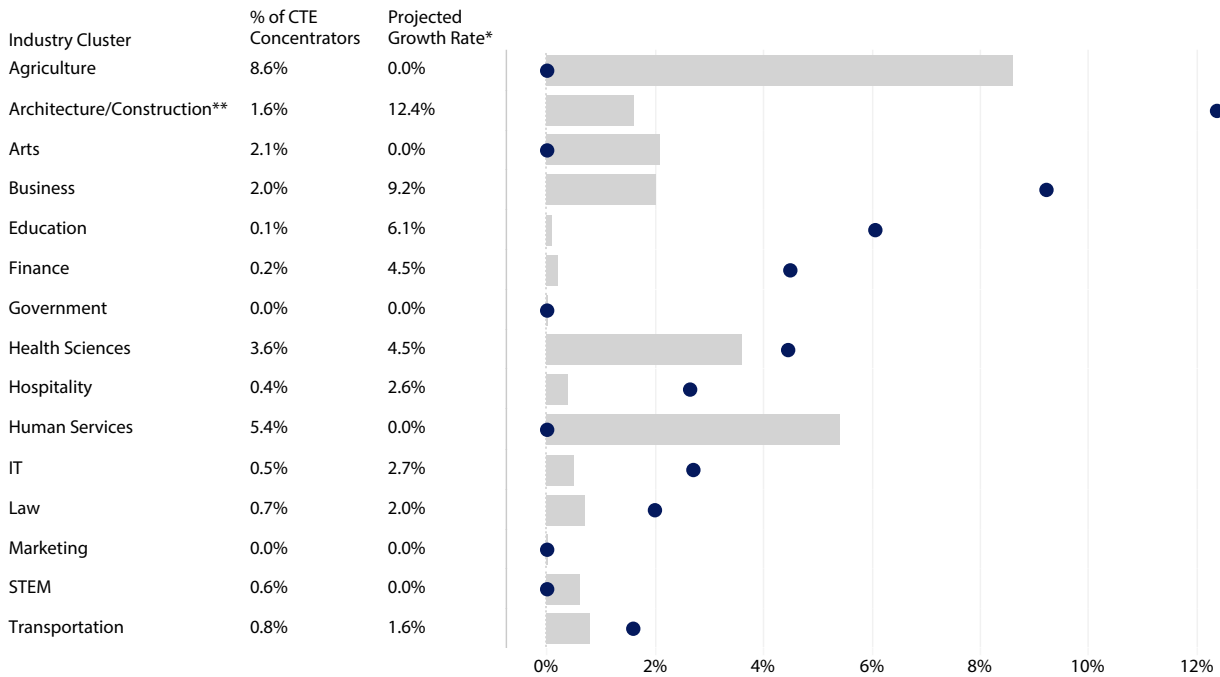


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 6b. Beaumont: Gulf Coast LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)



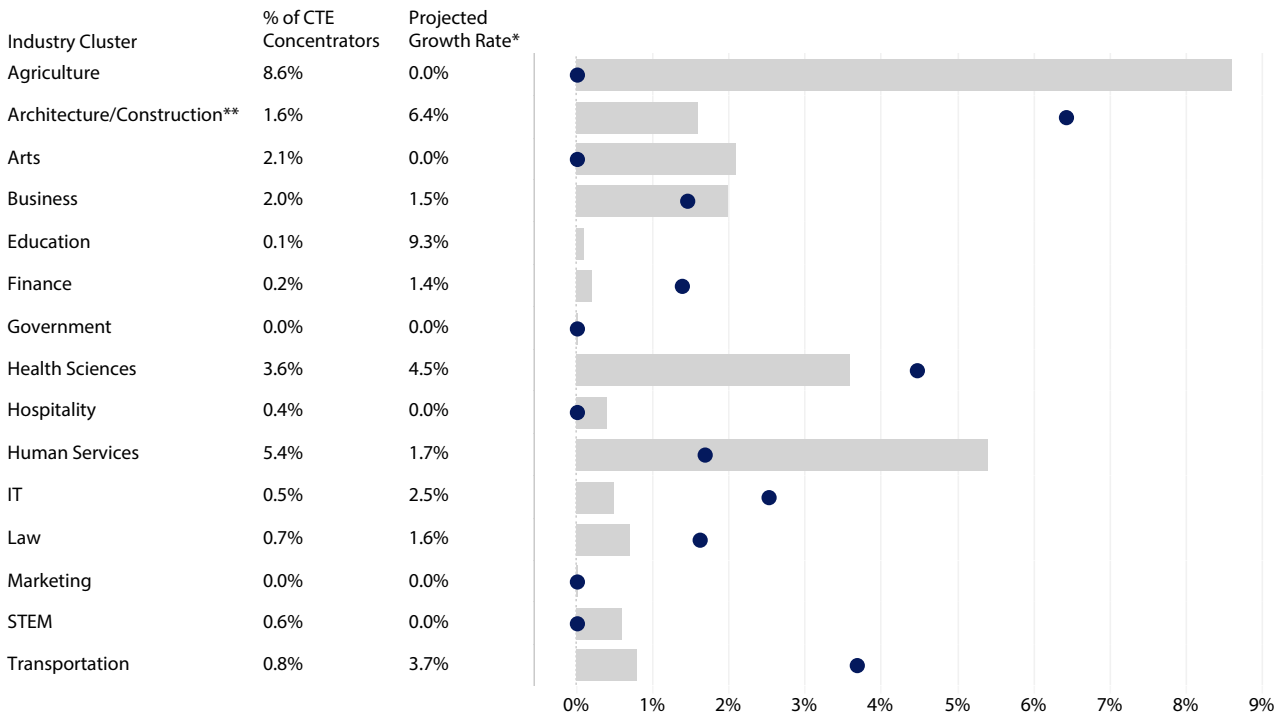
*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

¹ "LM x CTE" is an abbreviated title for the charts that compare labor market projections and CTE course-taking trends.

Figure 6c. Beaumont: Deep East Texas LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

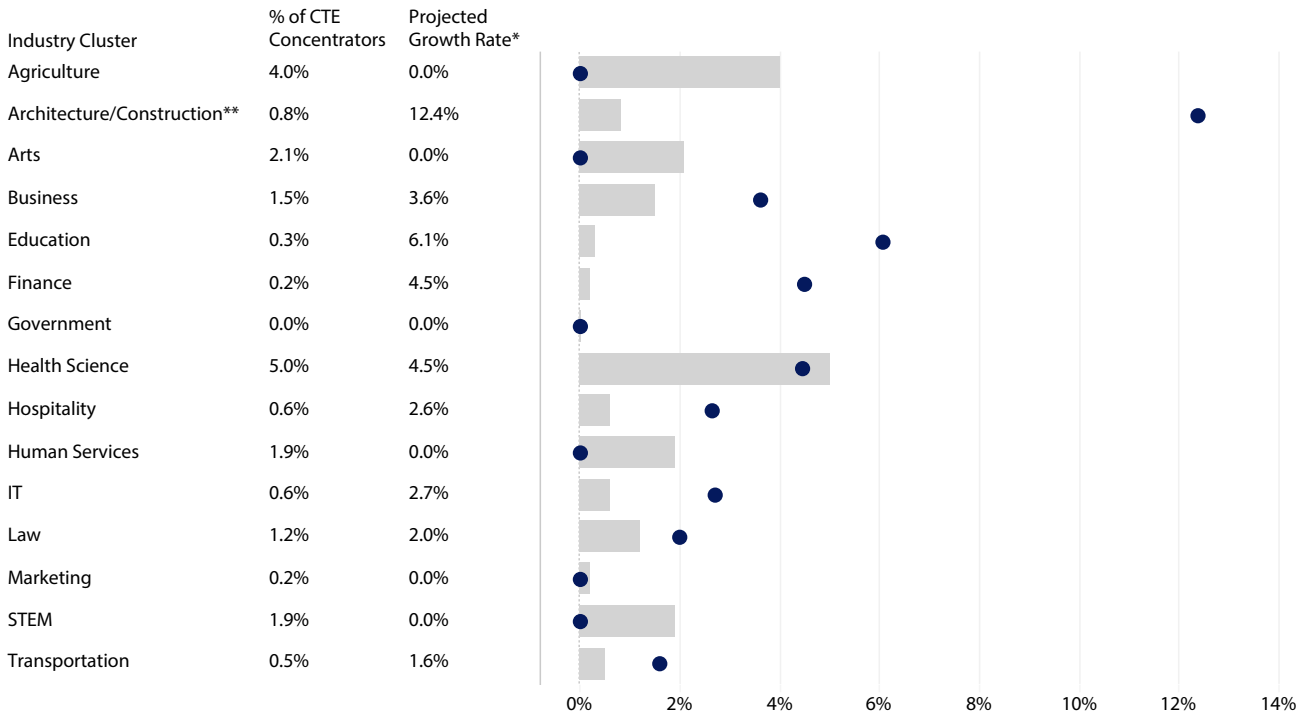


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 7. Houston: Gulf Coast LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

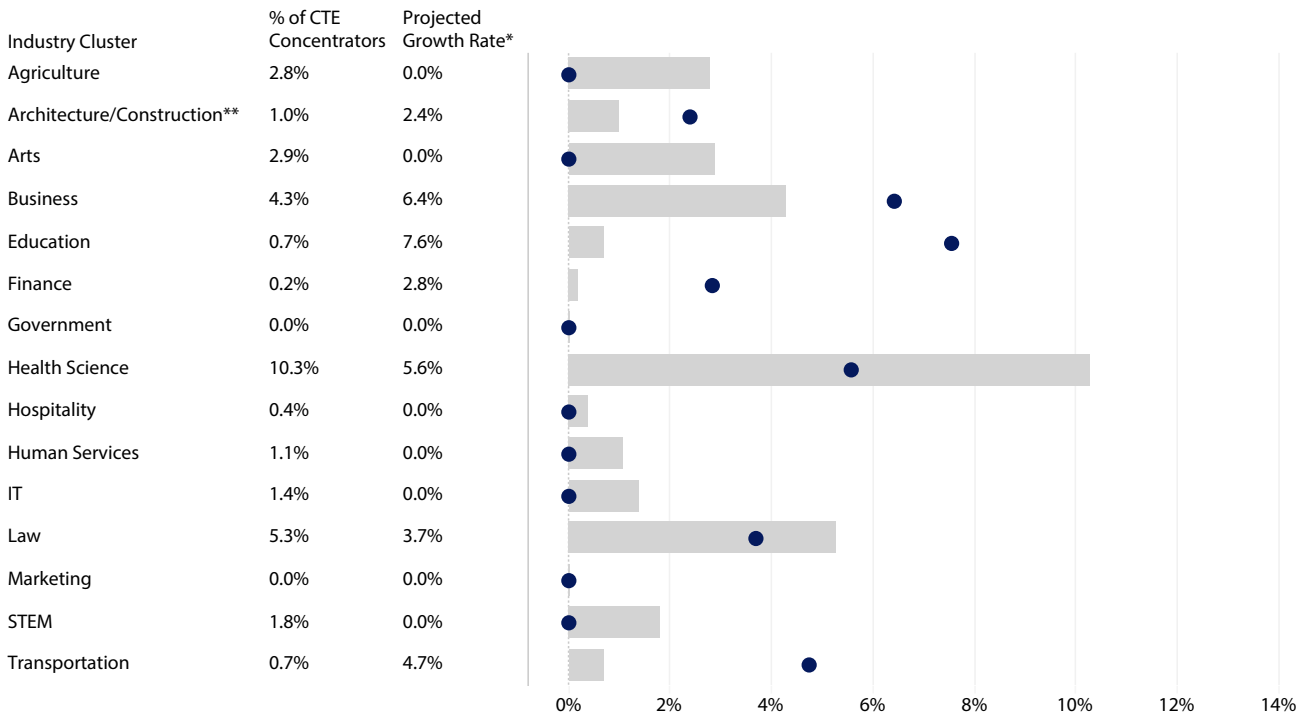


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 8a. Edinburg: South Texas LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

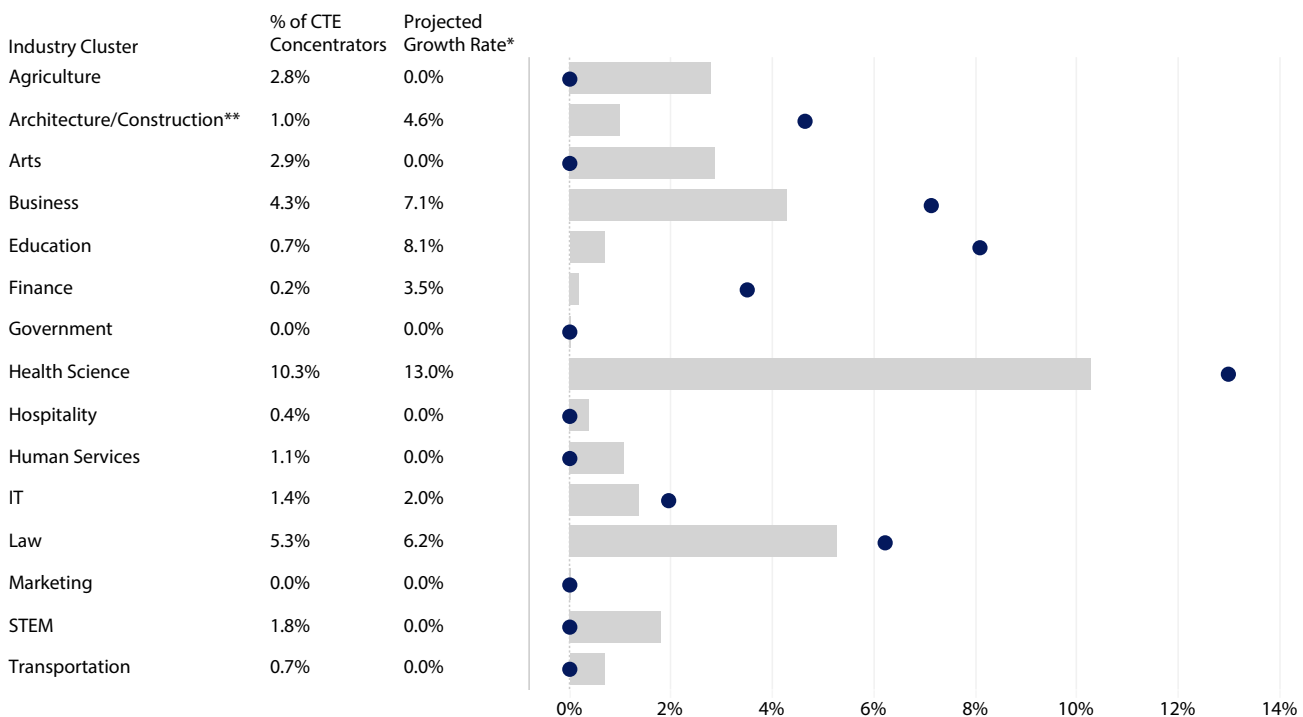


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 8b. Edinburg: Lower Rio Grande Valley LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

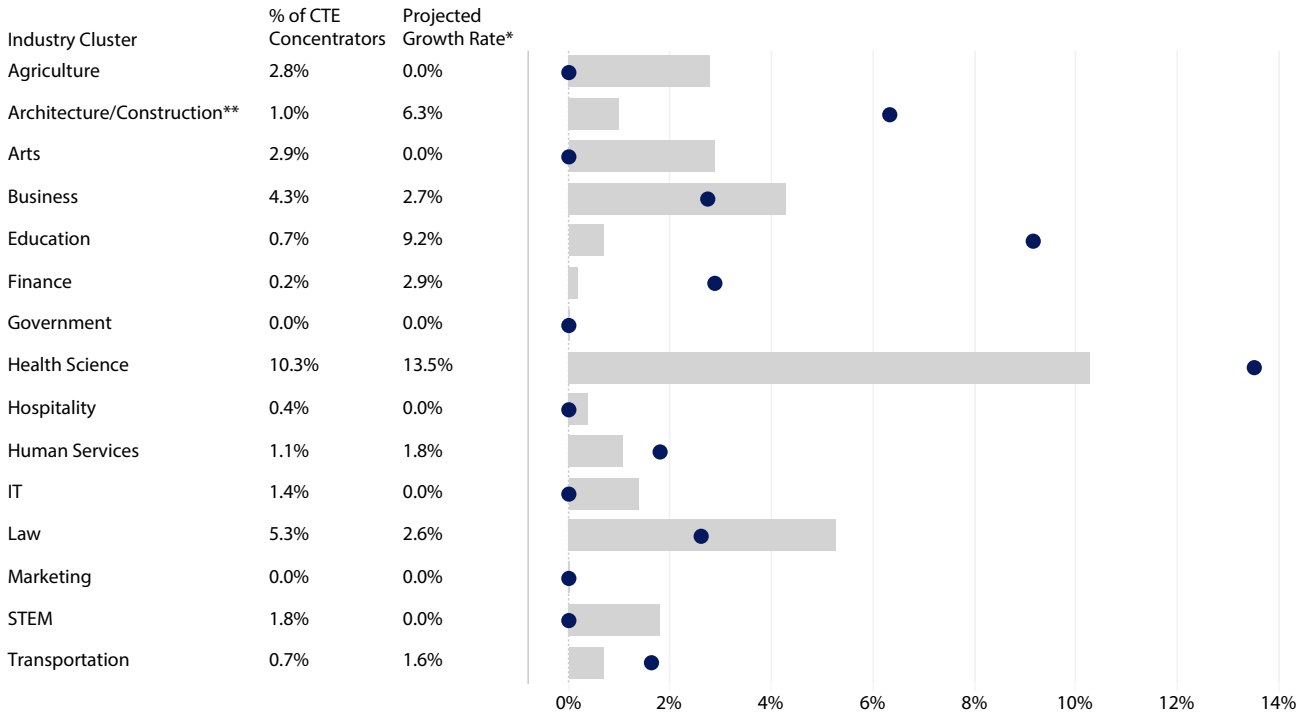


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 8c. Edinburg: Cameron County LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

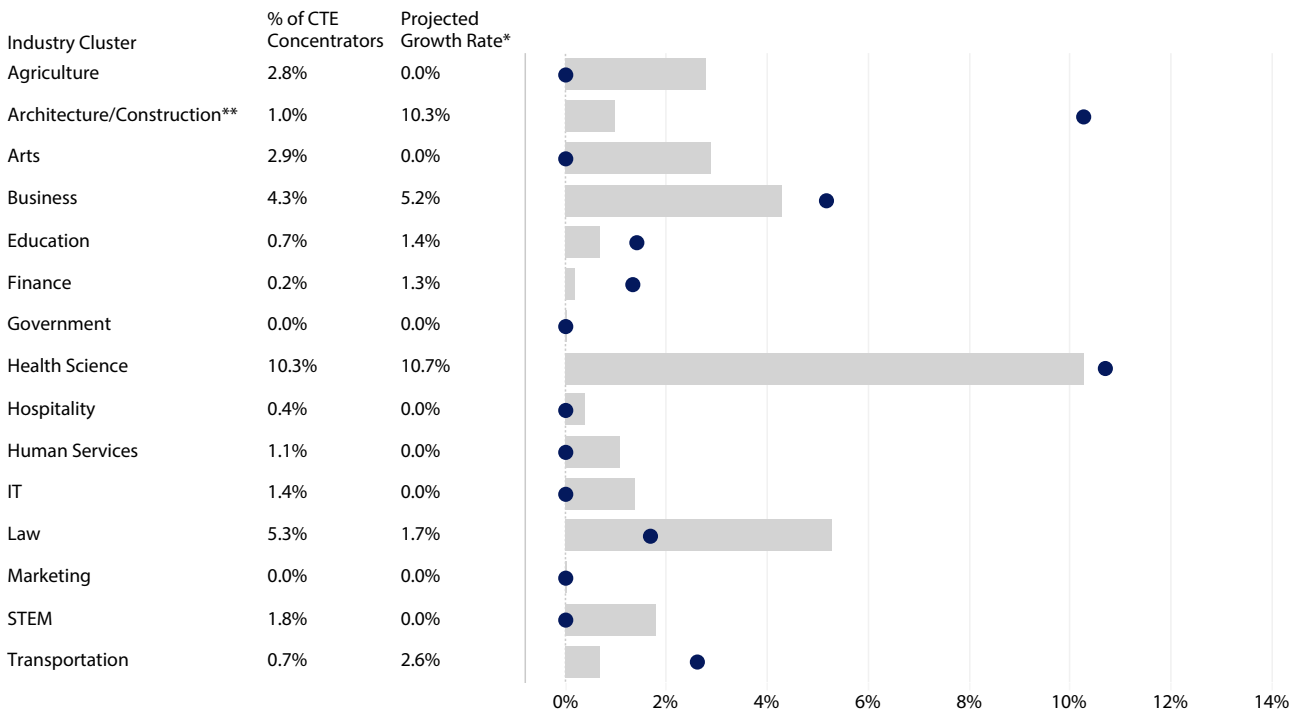


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 8d. Edinburg: Coastal Bend LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)



*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 9. Corpus Christi: Coastal Bend LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

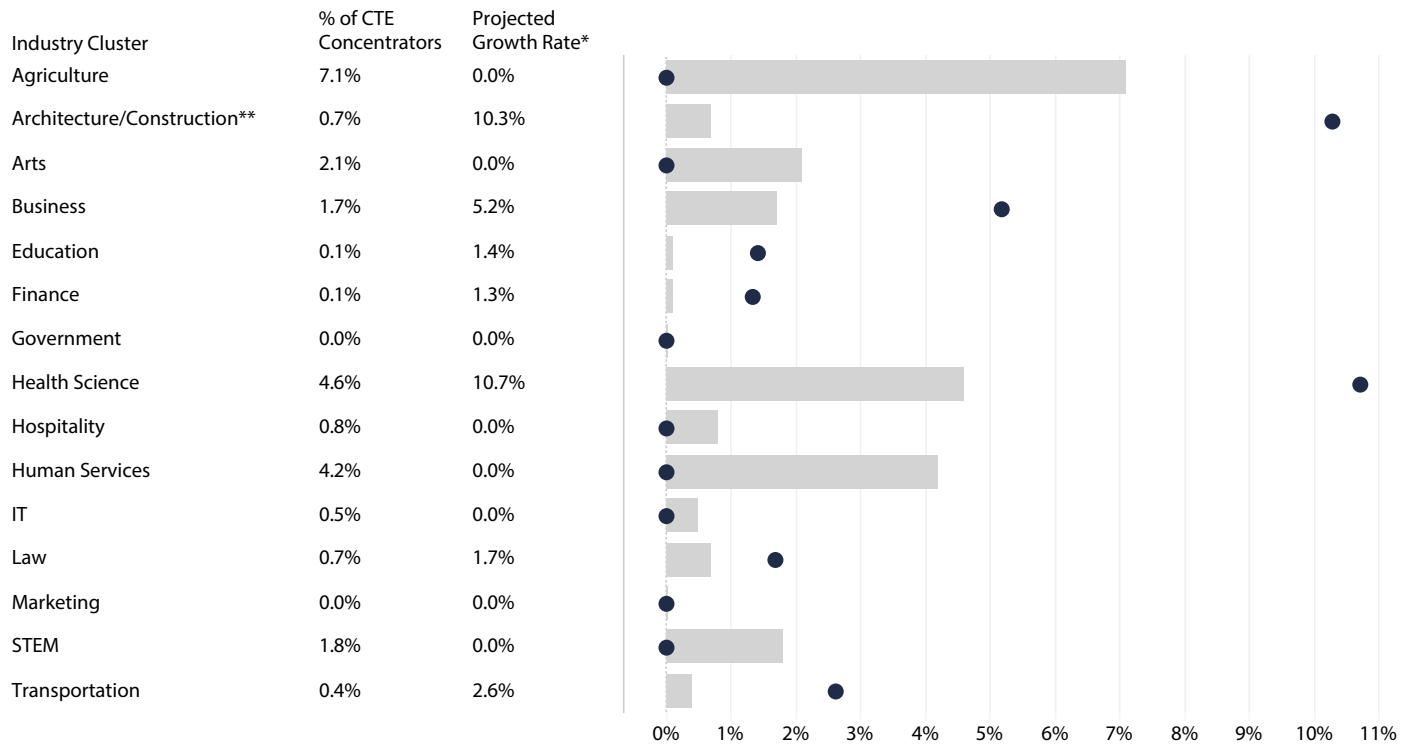
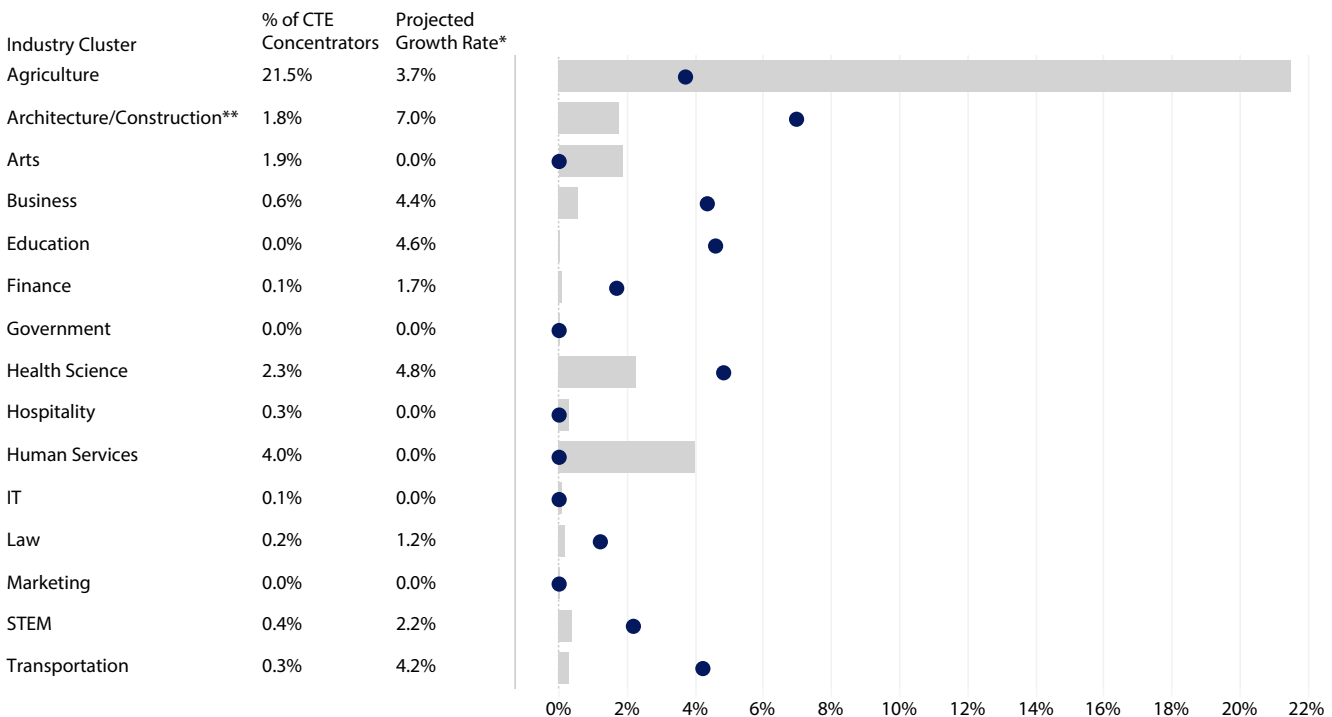


Figure 10a. Victoria: Golden Crescent LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

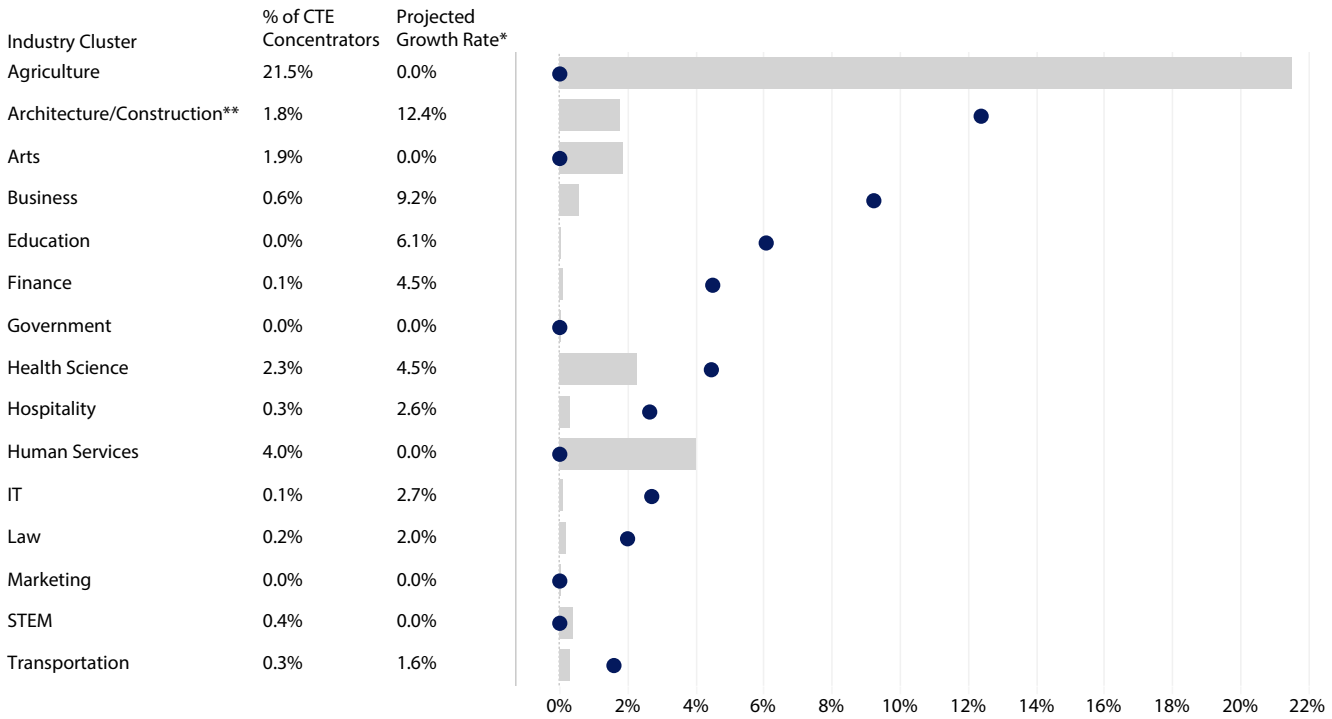


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 10b. Victoria: Gulf Coast LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

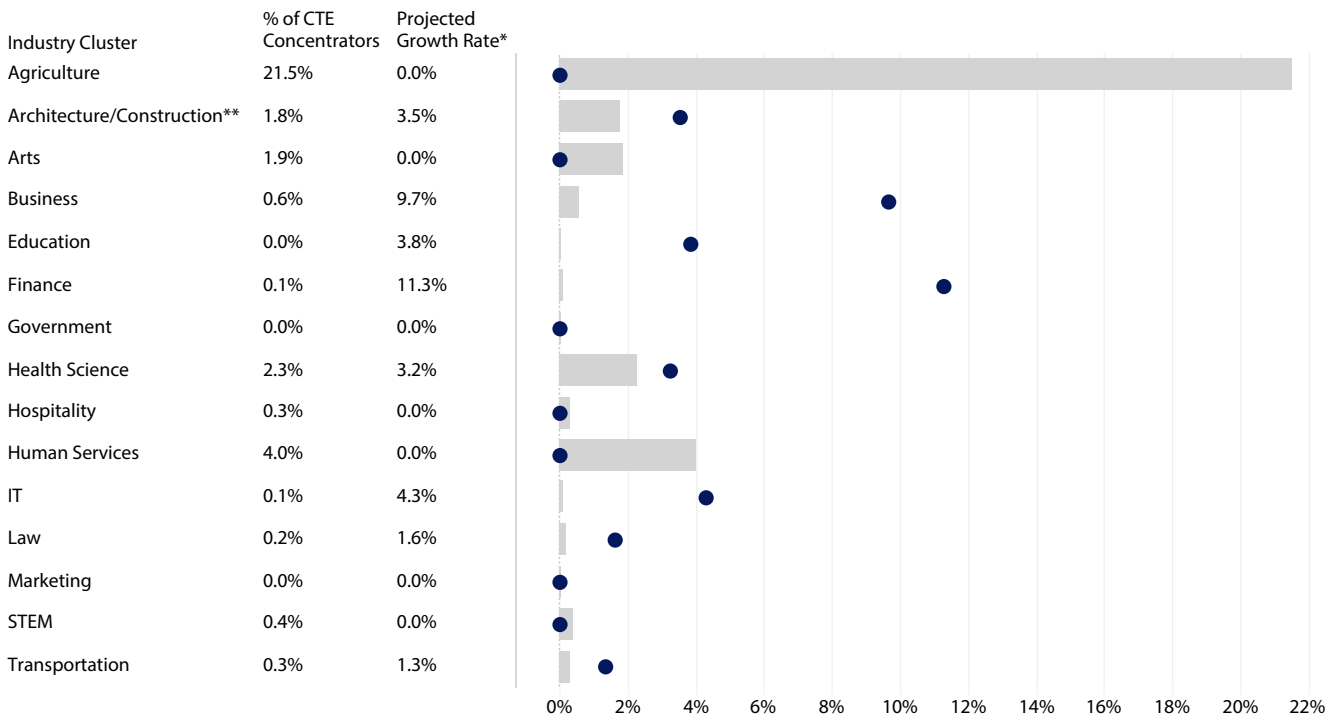


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 10c. Victoria: Alamo LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

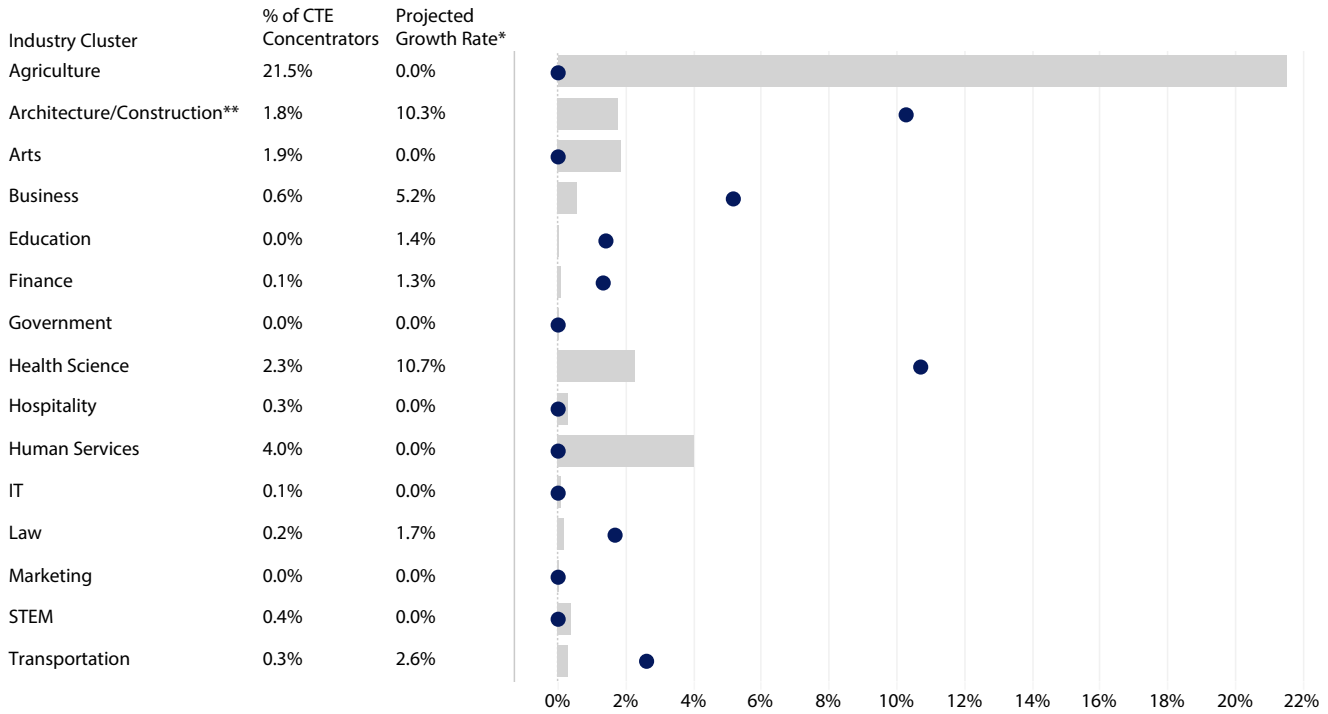


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 10d. Victoria: Coastal Bend LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

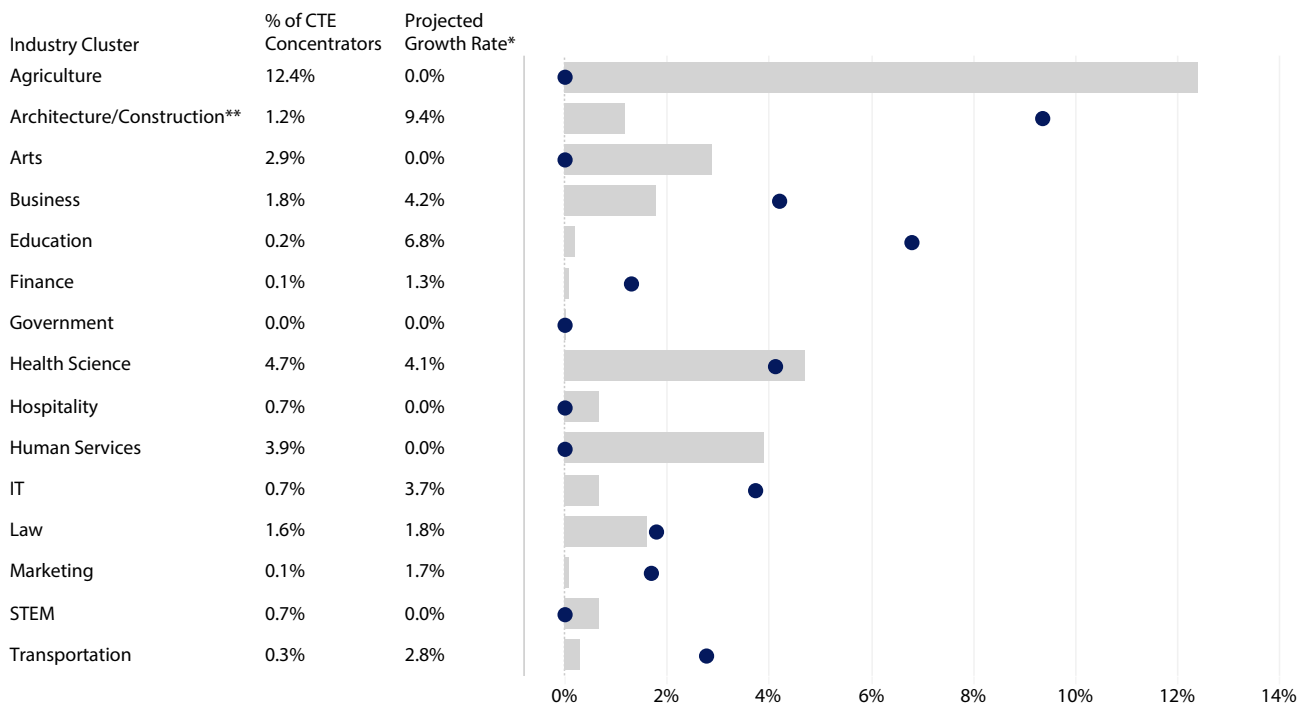


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 11a. Huntsville: Brazos Valley LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

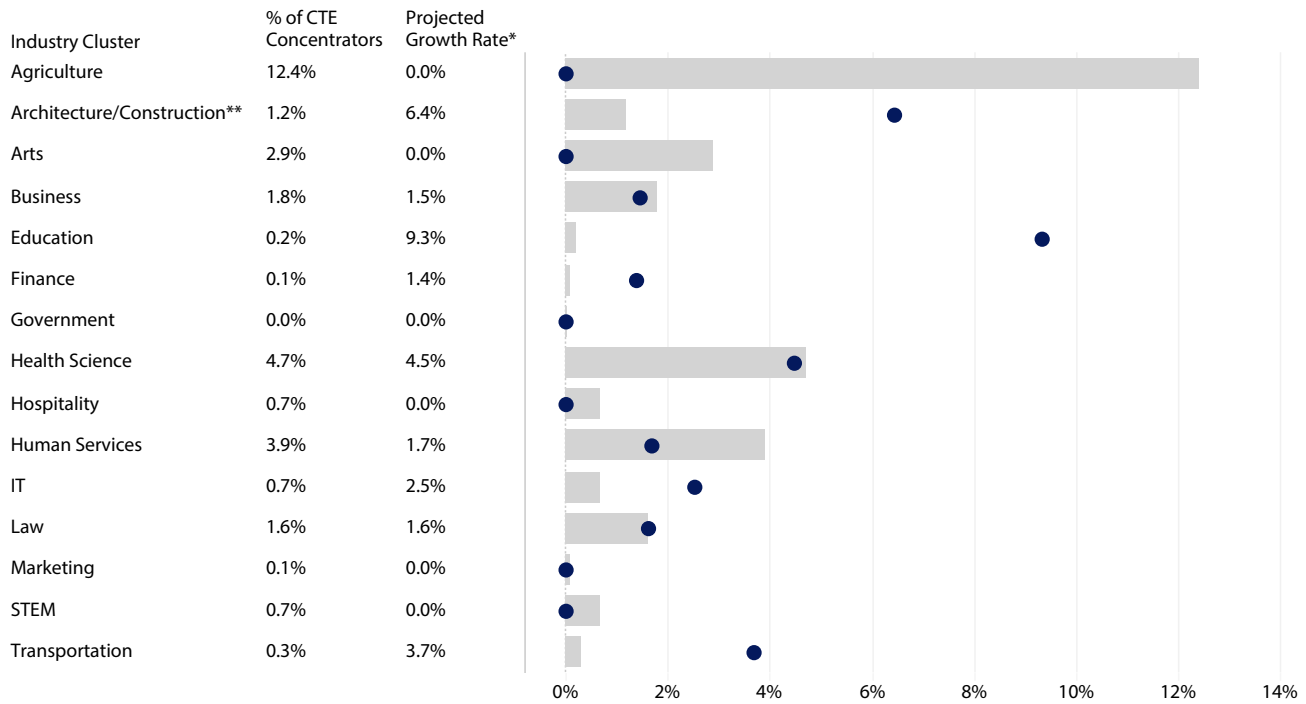


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 11b. Huntsville: Deep East Texas LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

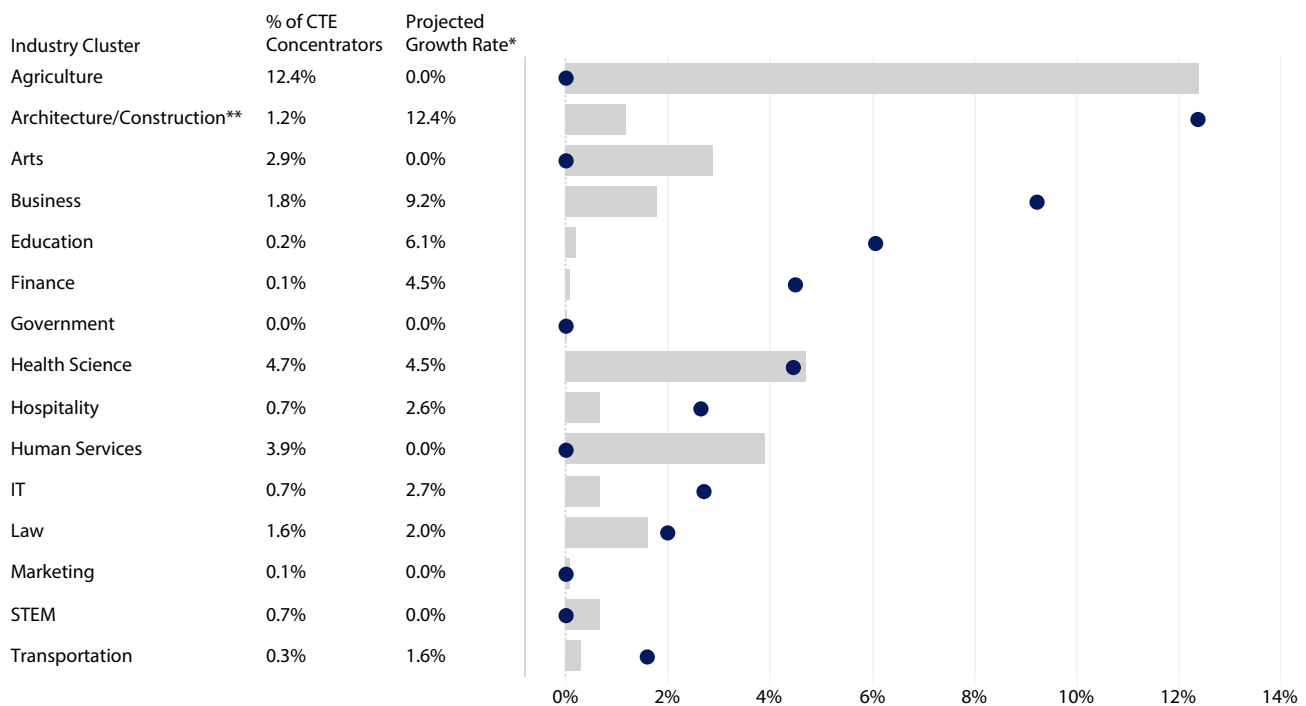


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 11c. Huntsville: Gulf Coast LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

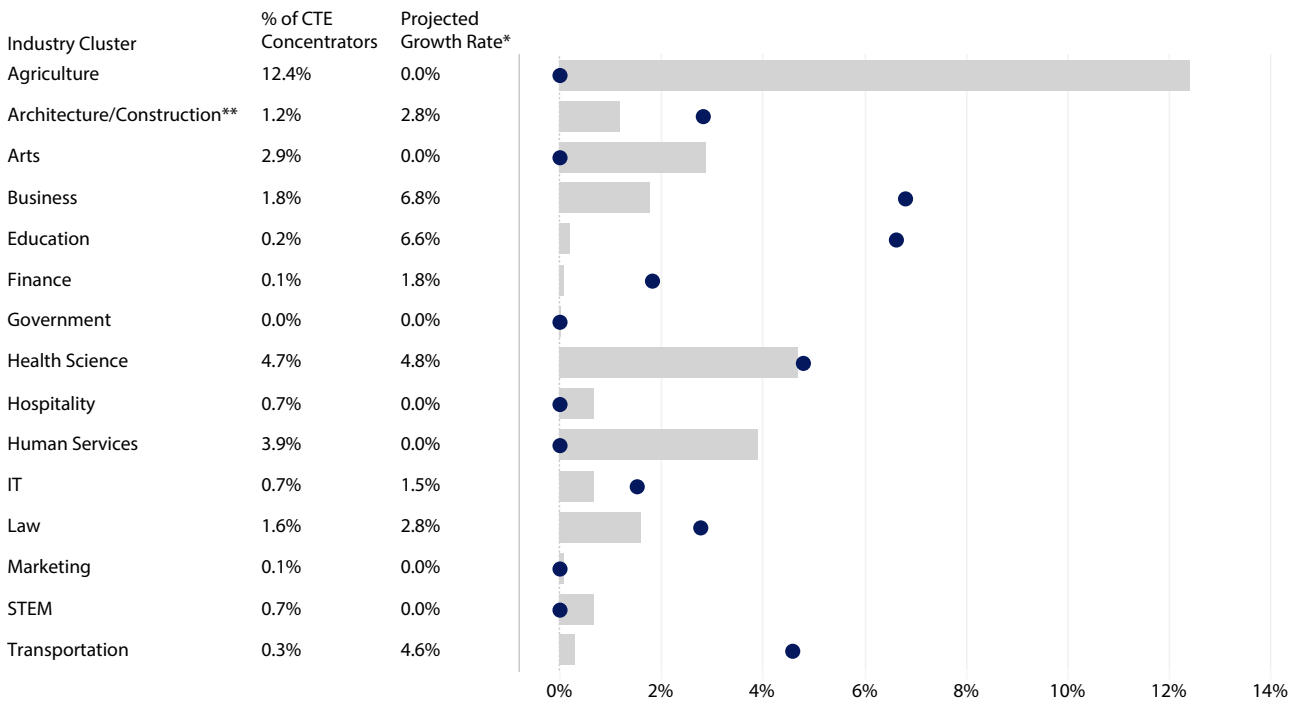


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 11d. Huntsville: Central Texas LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

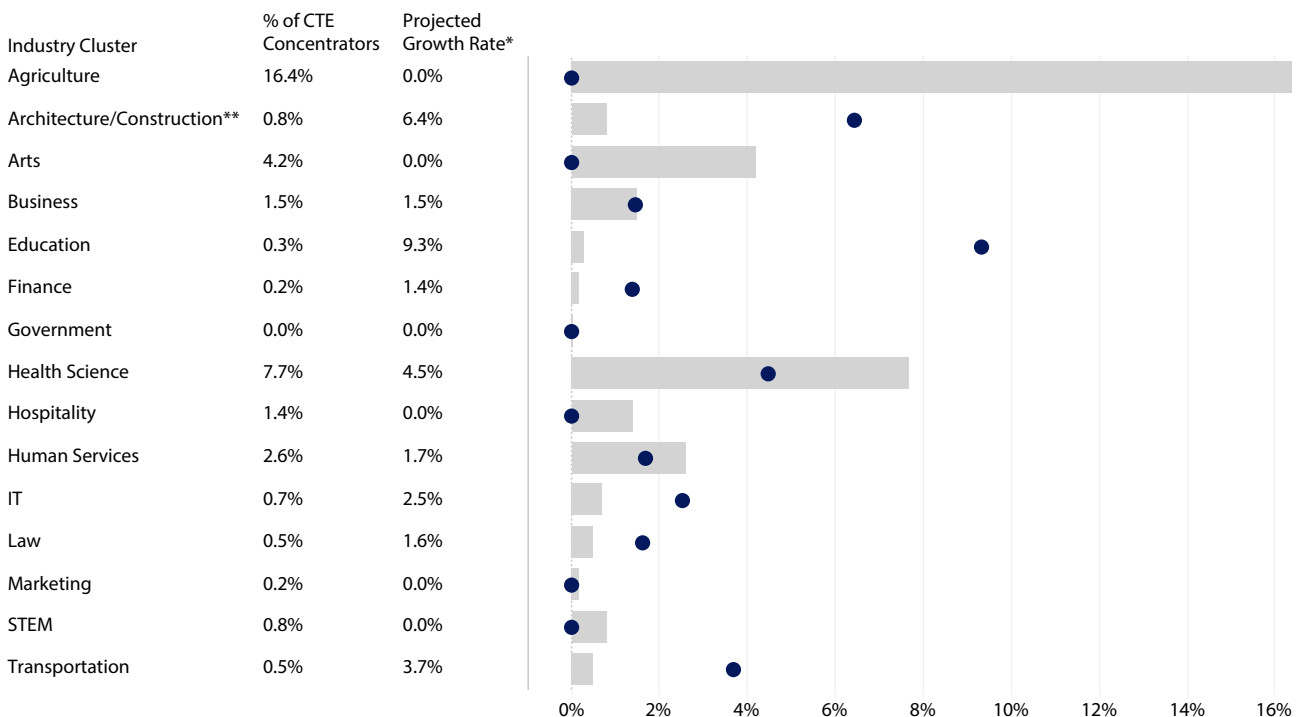


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 12a. Kilgore: East Texas LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

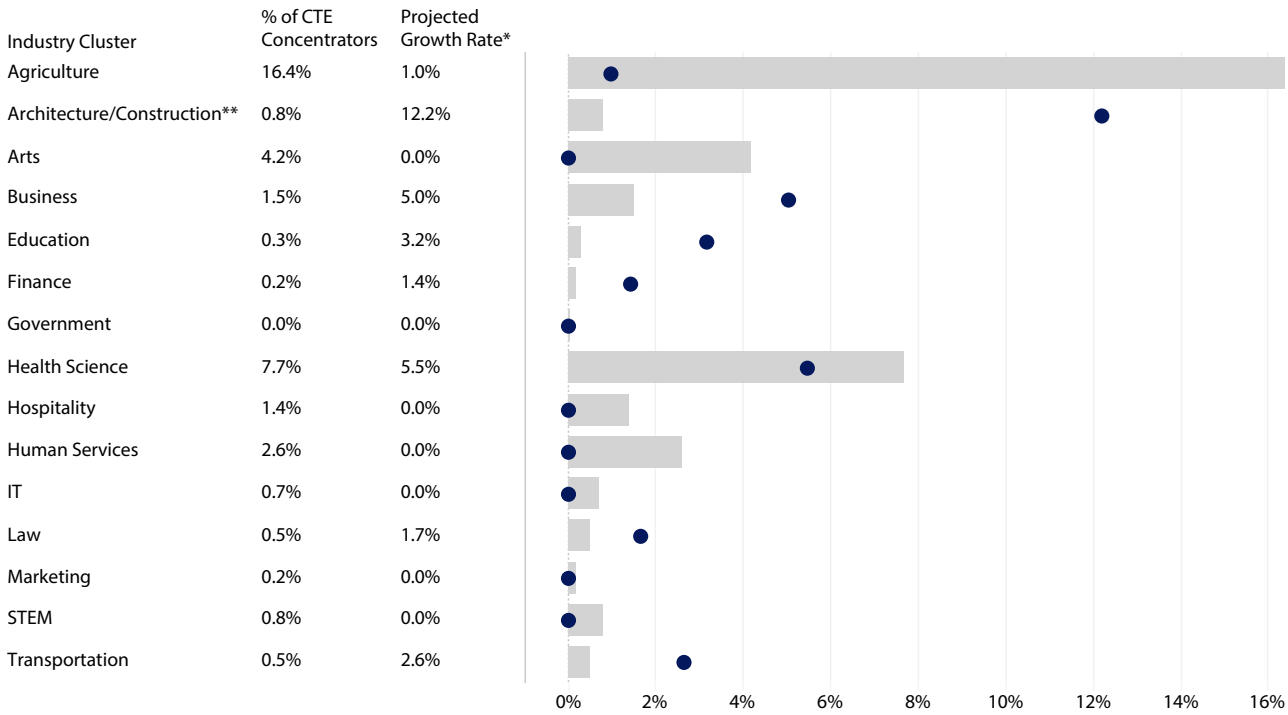


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 12b. Kilgore: Deep East Texas LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

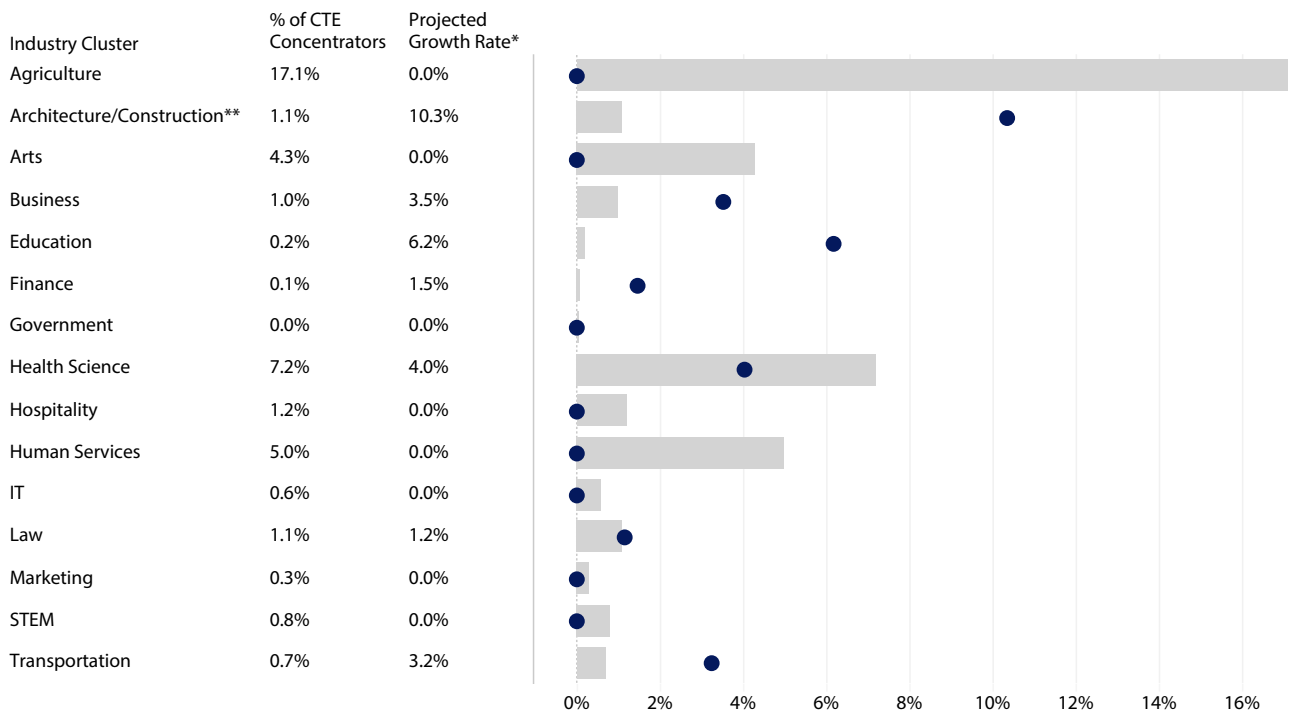


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 13a. Mount Pleasant: Northeast Texas LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

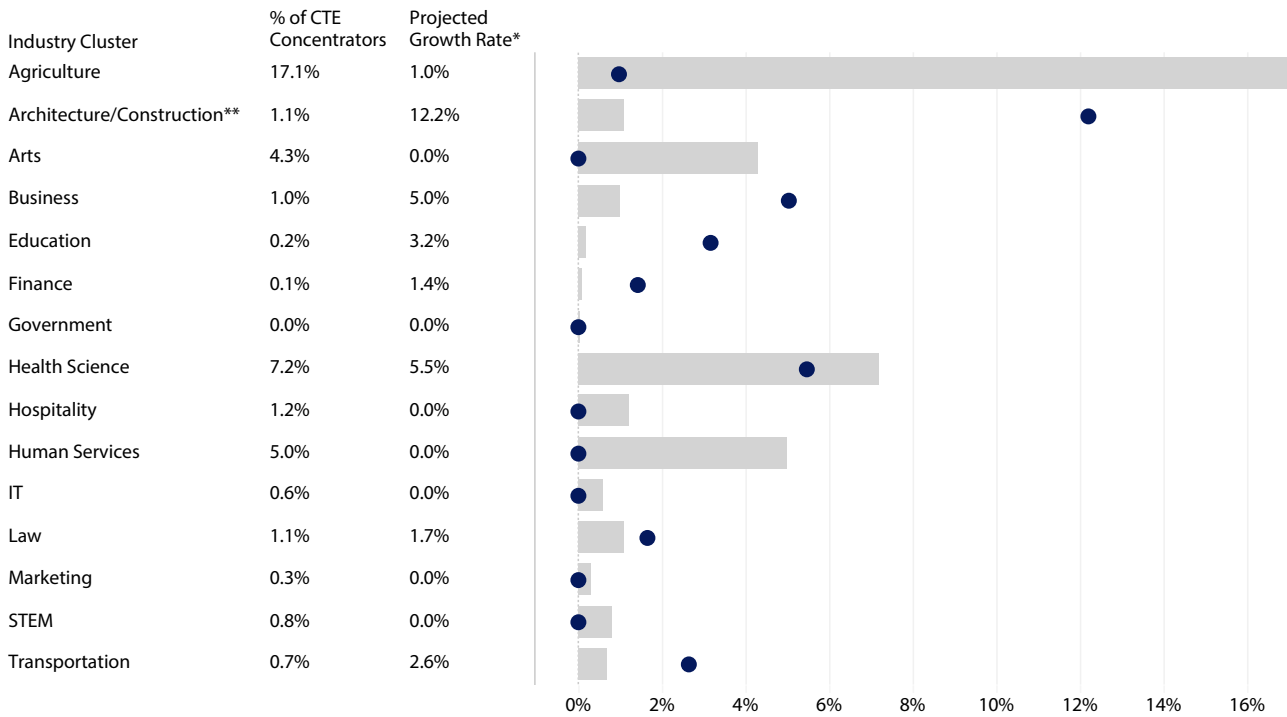


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 13b. Mount Pleasant: East Texas LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

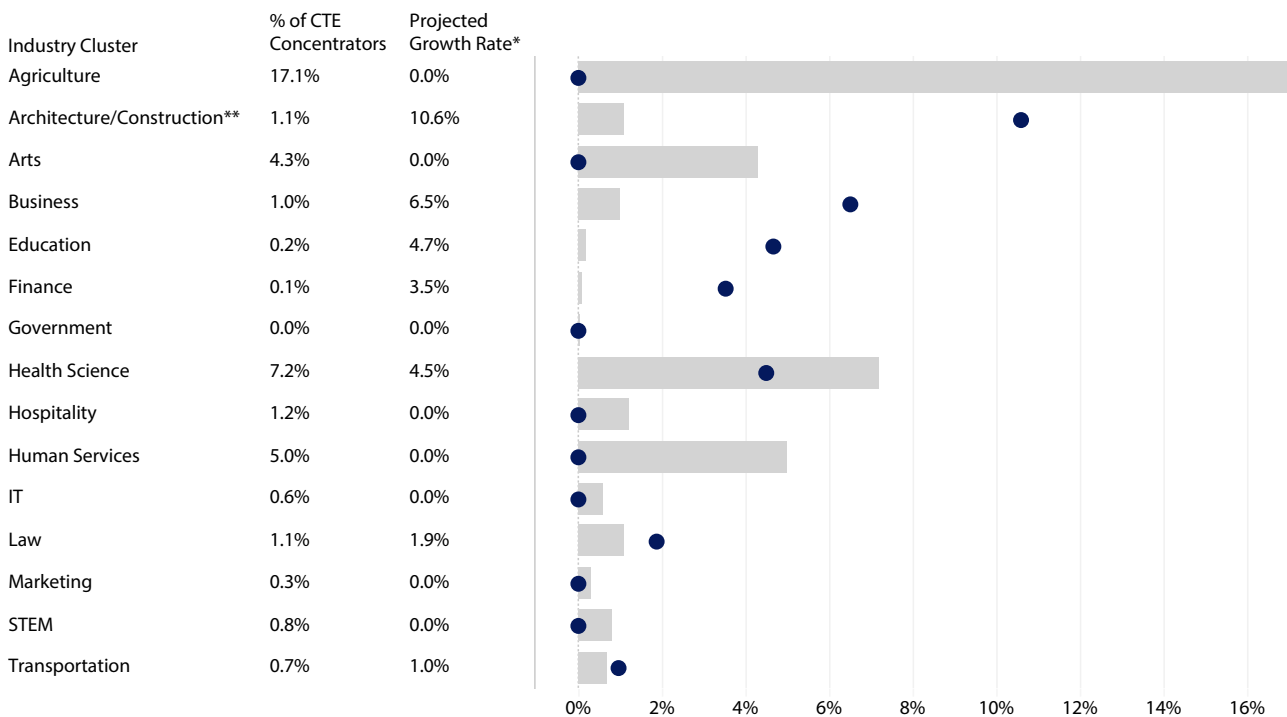


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 13c. Mount Pleasant: Texoma LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

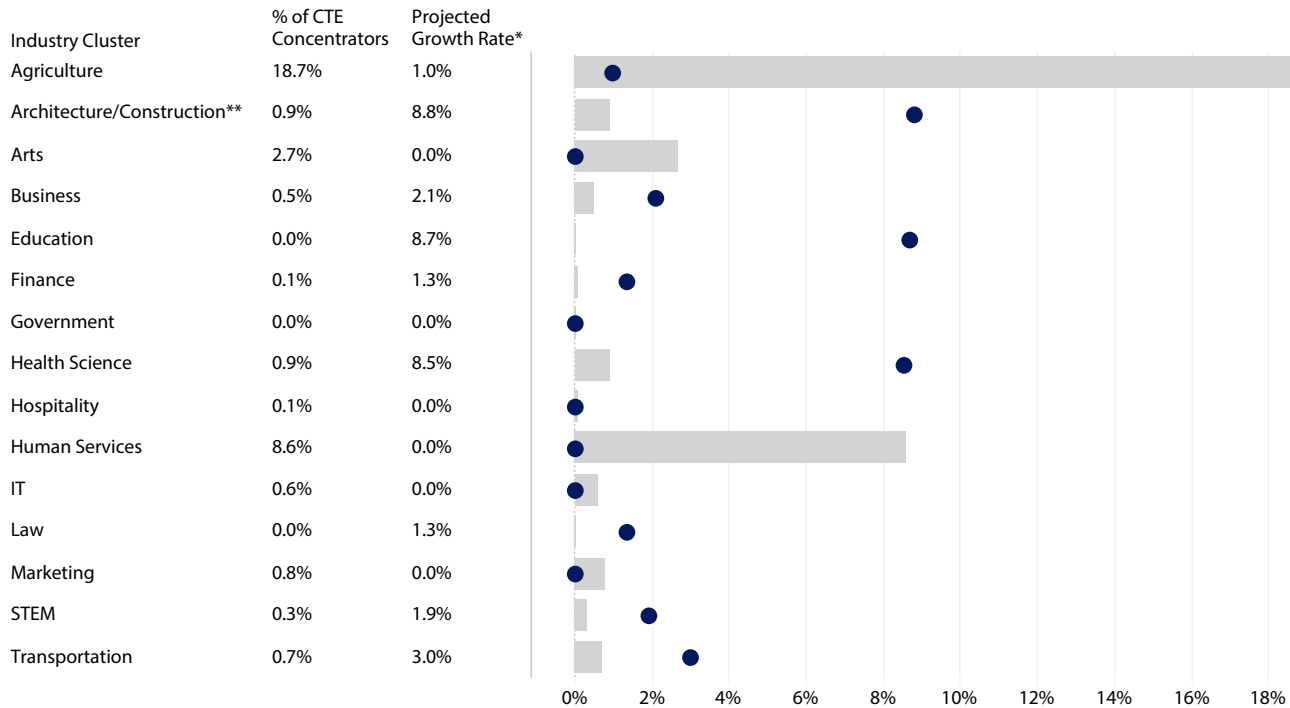


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 14a. Wichita Falls: North Texas LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

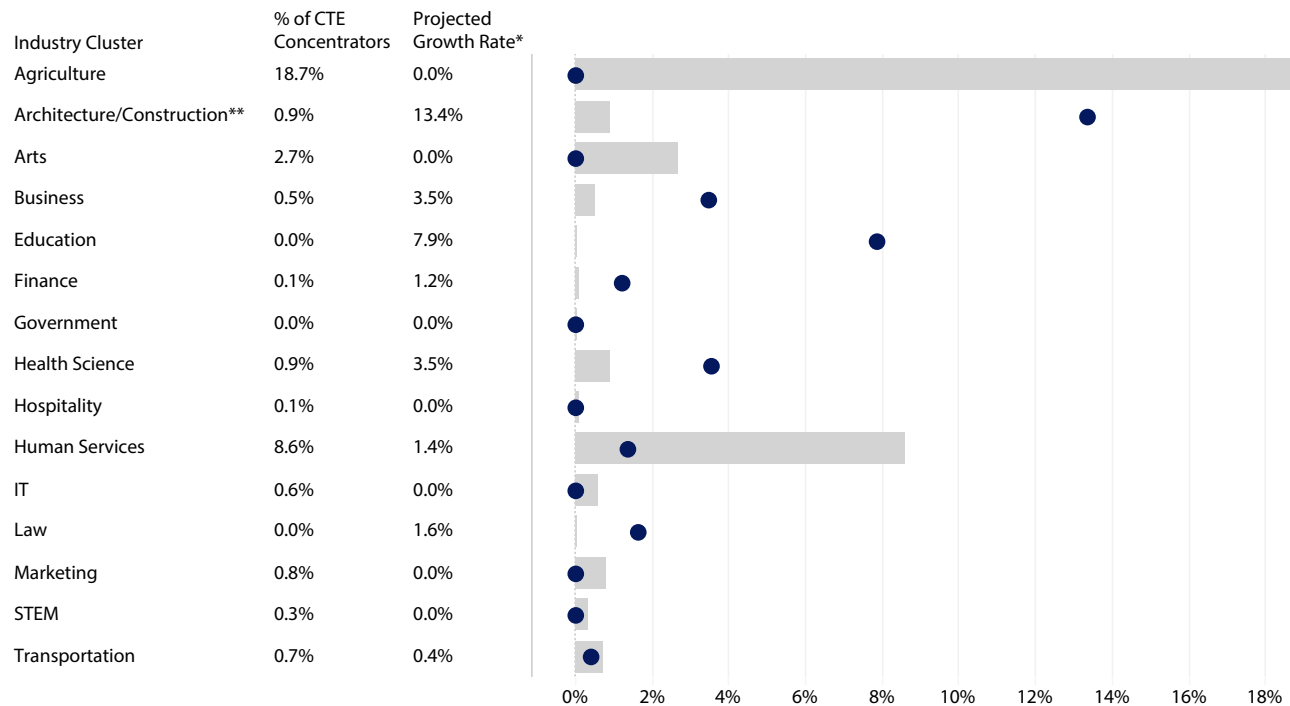


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 14b. Wichita Falls: West Central Texas LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

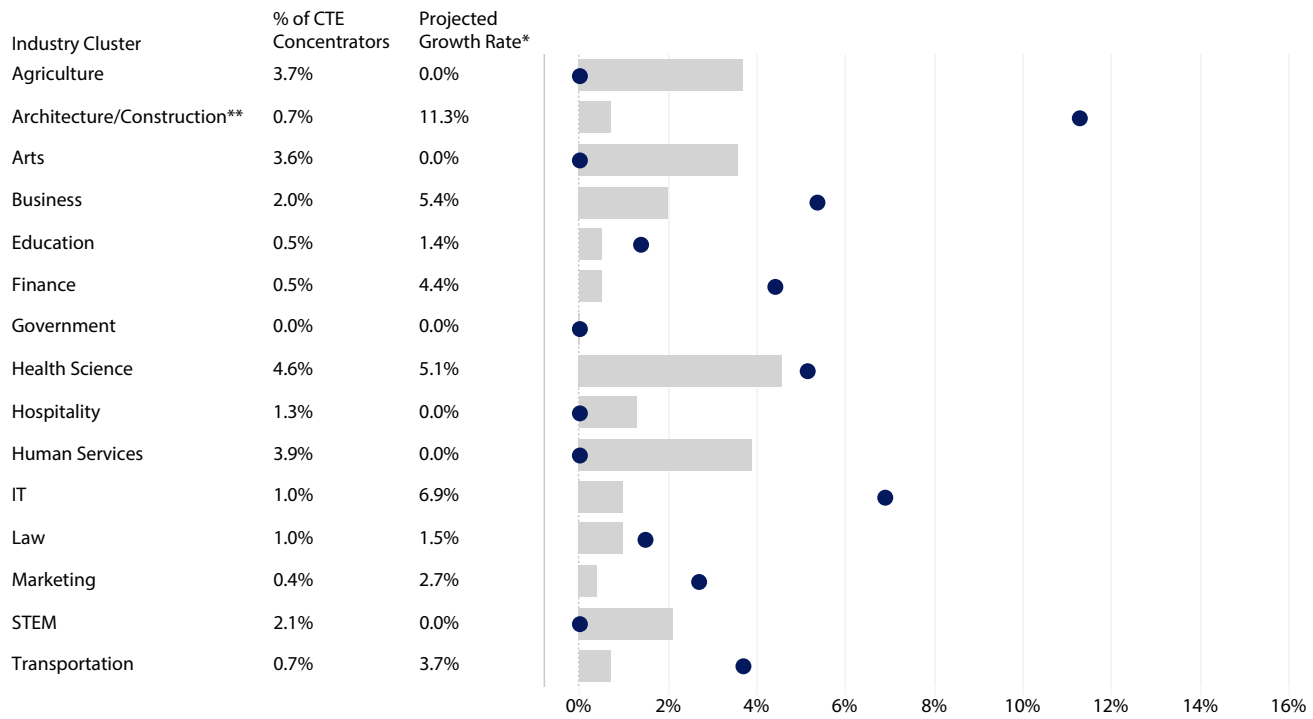


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 15a. Dallas: Dallas County LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

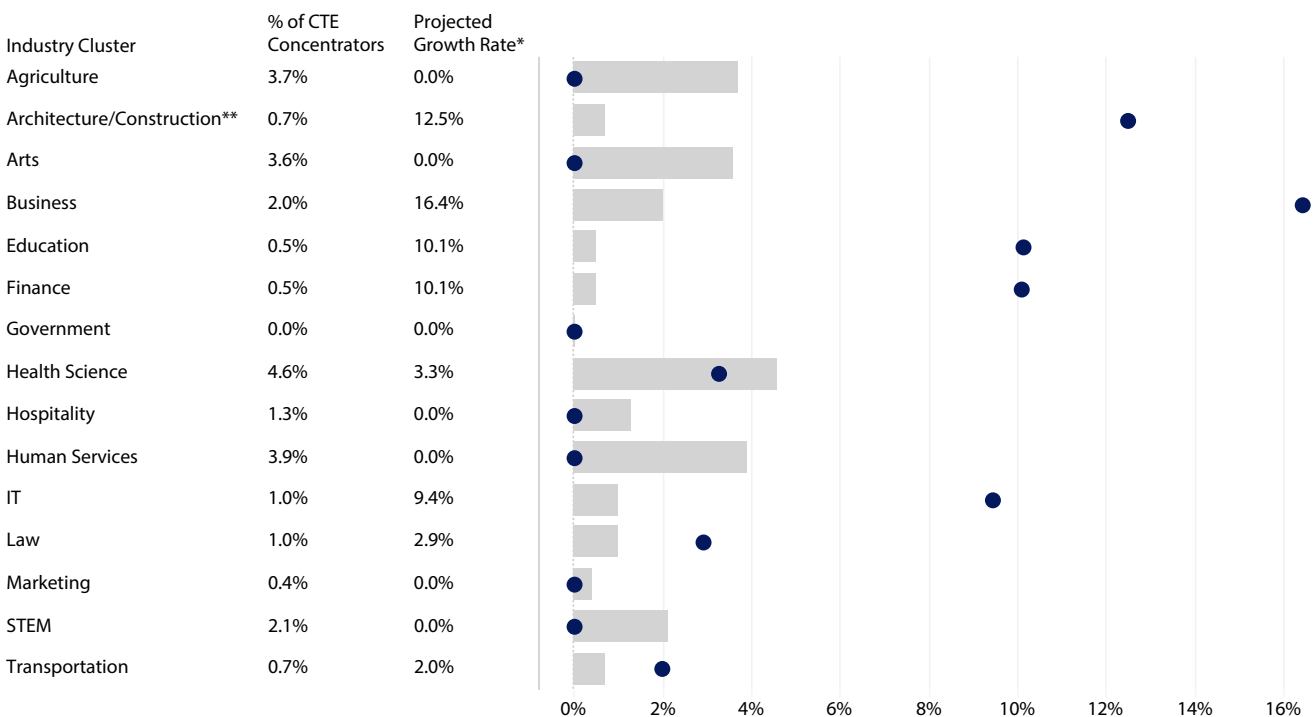


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 15b. Dallas: North Central Texas LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

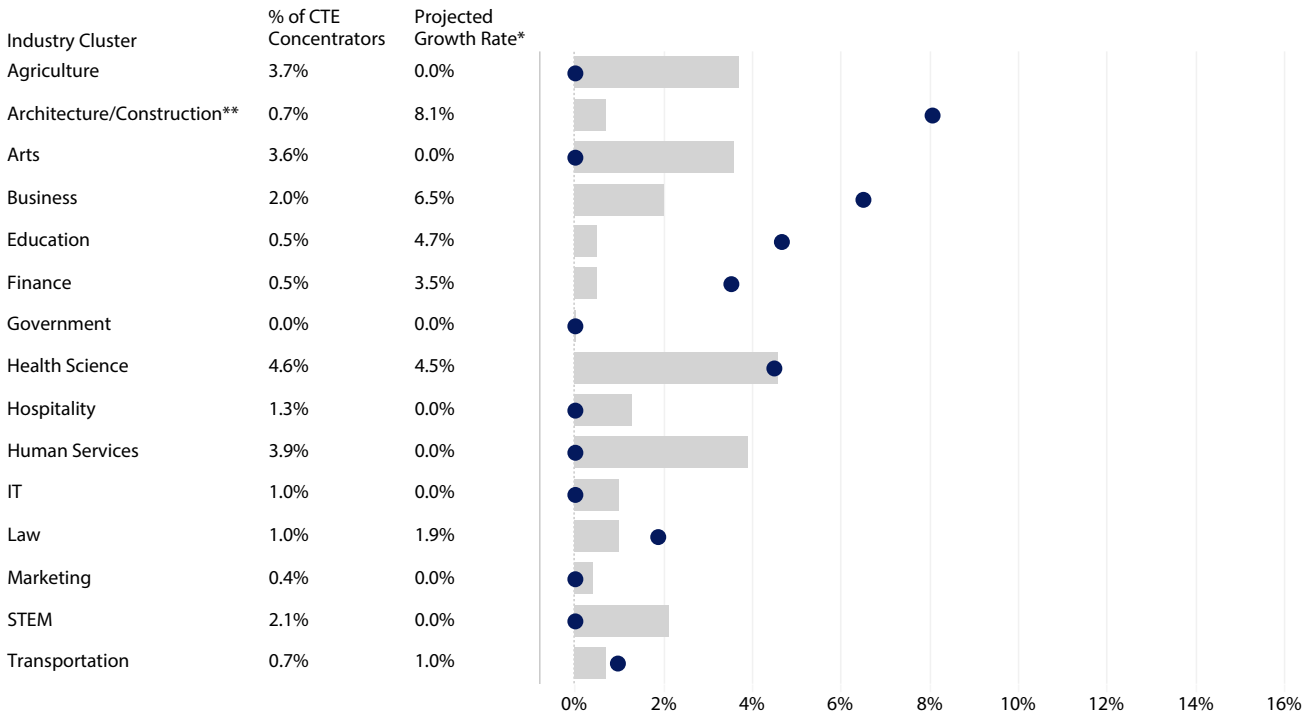


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 15c. Dallas: Texoma LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

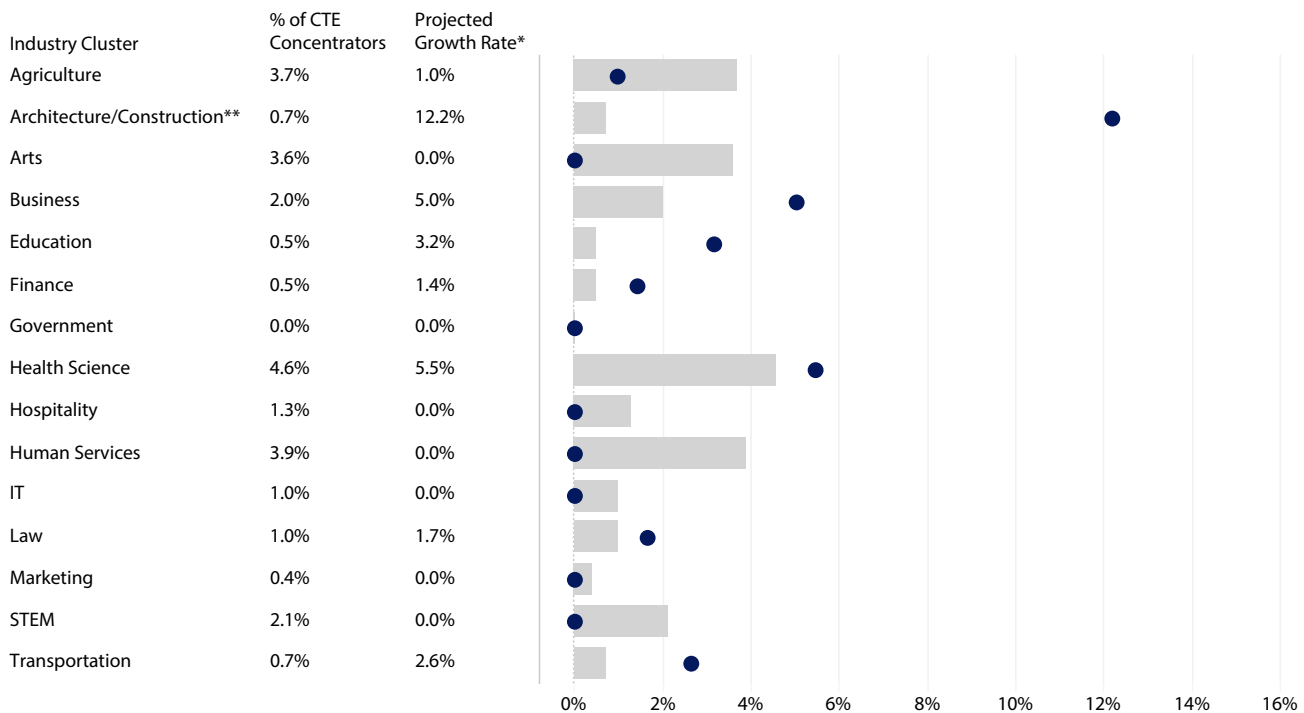


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 15d. Dallas: East Texas LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

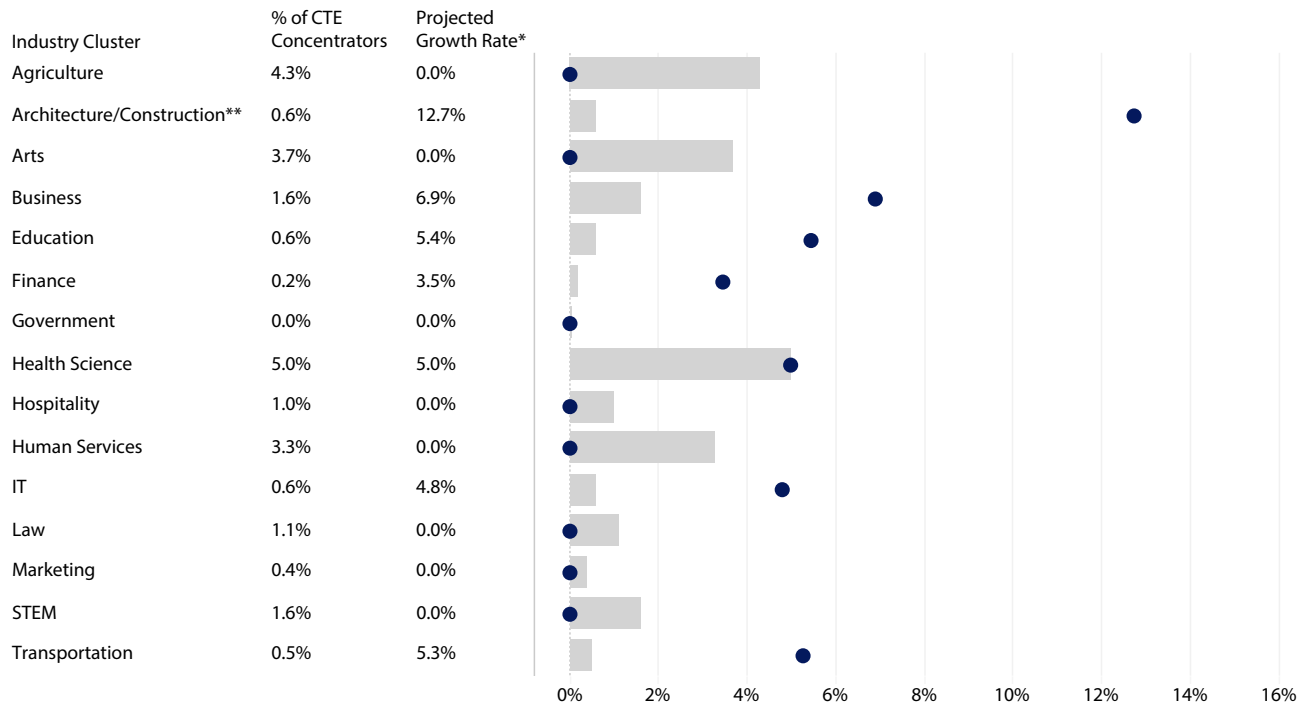


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 16a. Fort Worth: Tarrant County LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

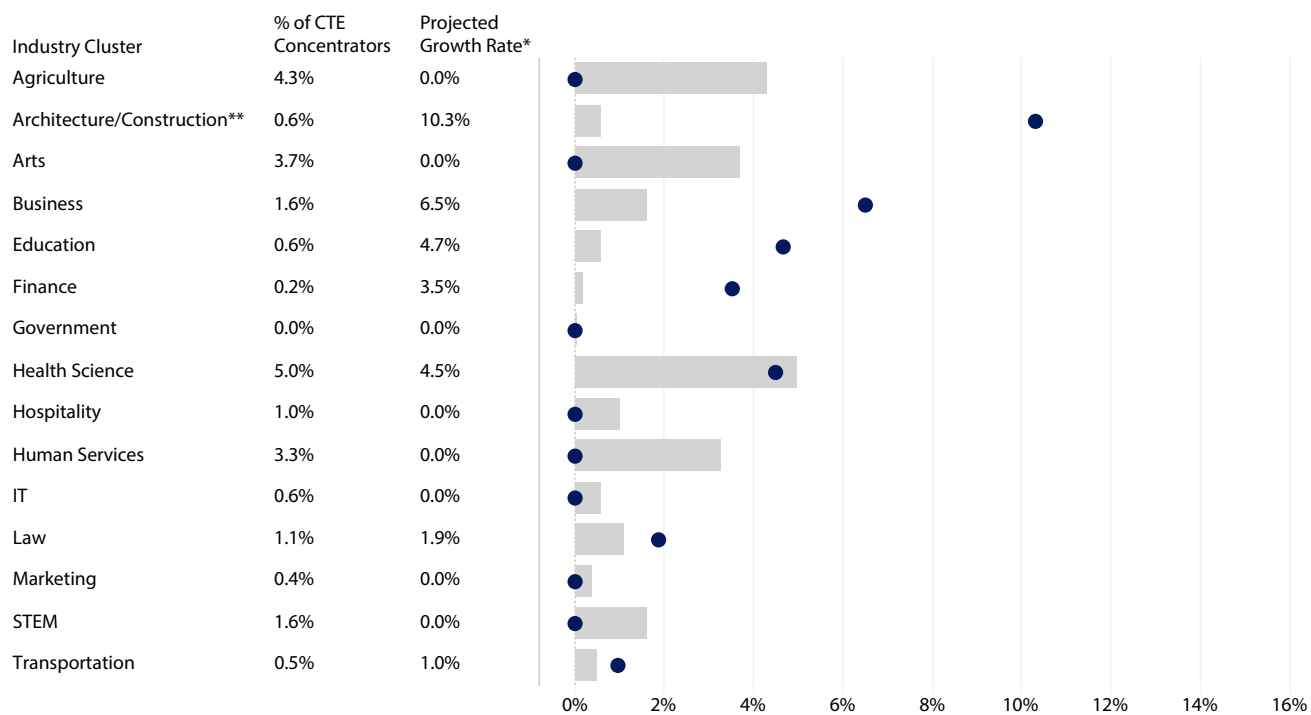


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 16b. Fort Worth: Texoma LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

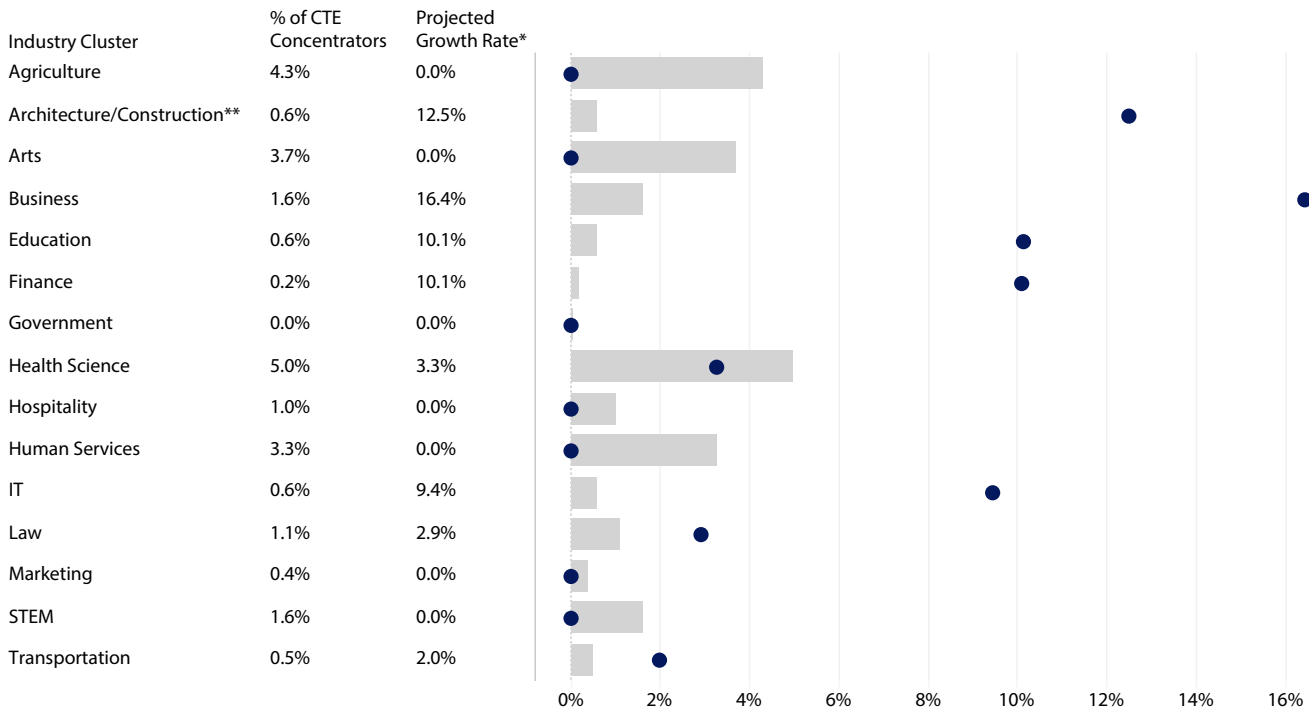


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 16c. Fort Worth: North Central Texas LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

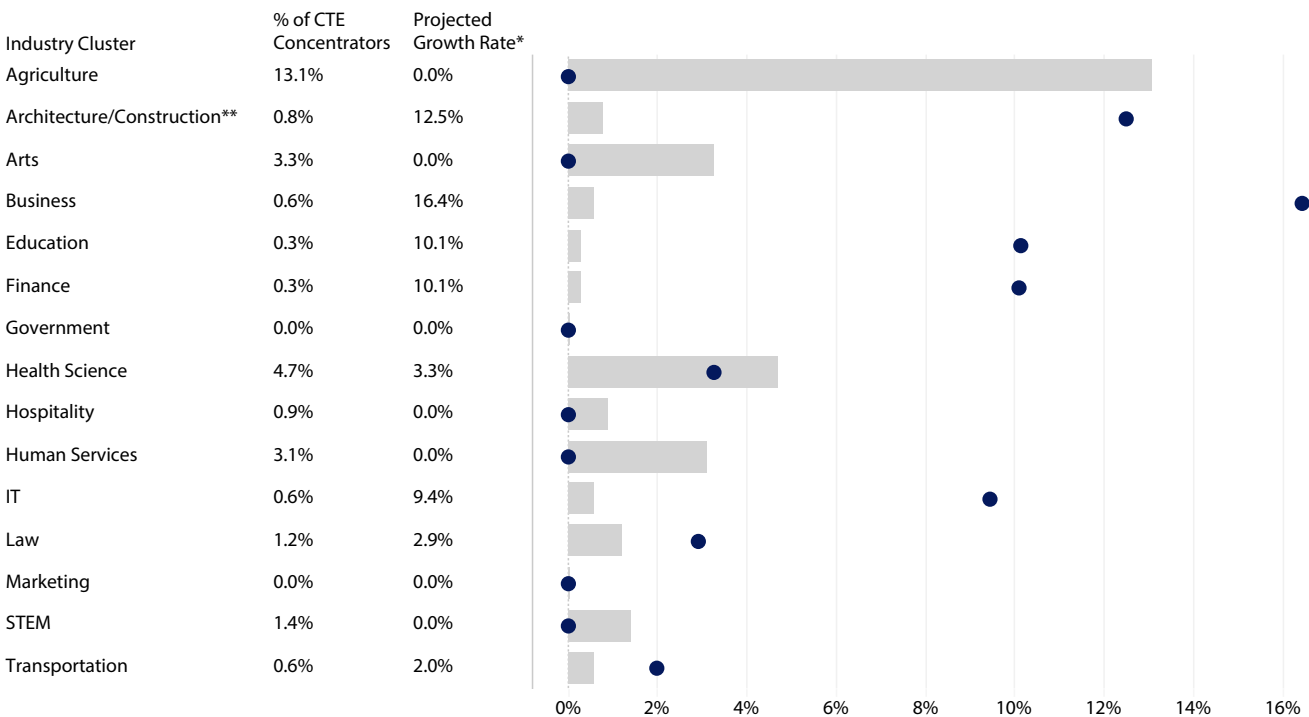


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 17a. Waco: North Central Texas LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

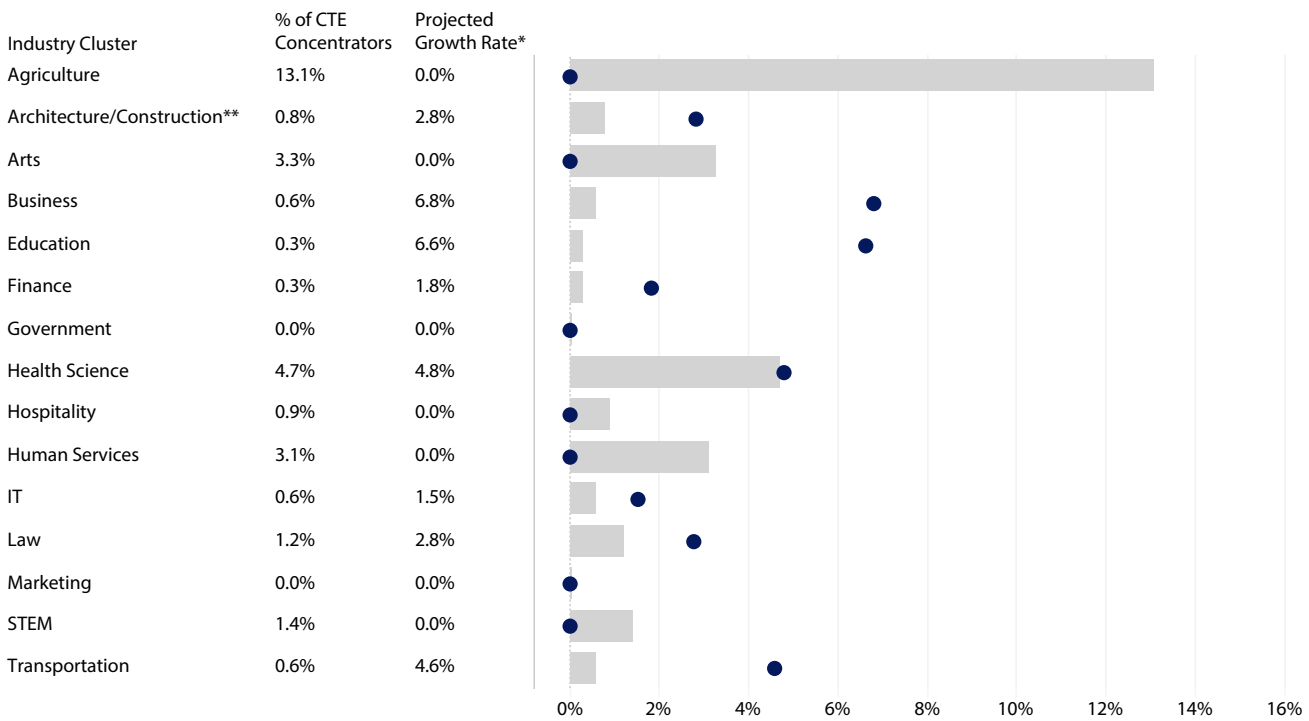


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 17b. Waco: Central Texas LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

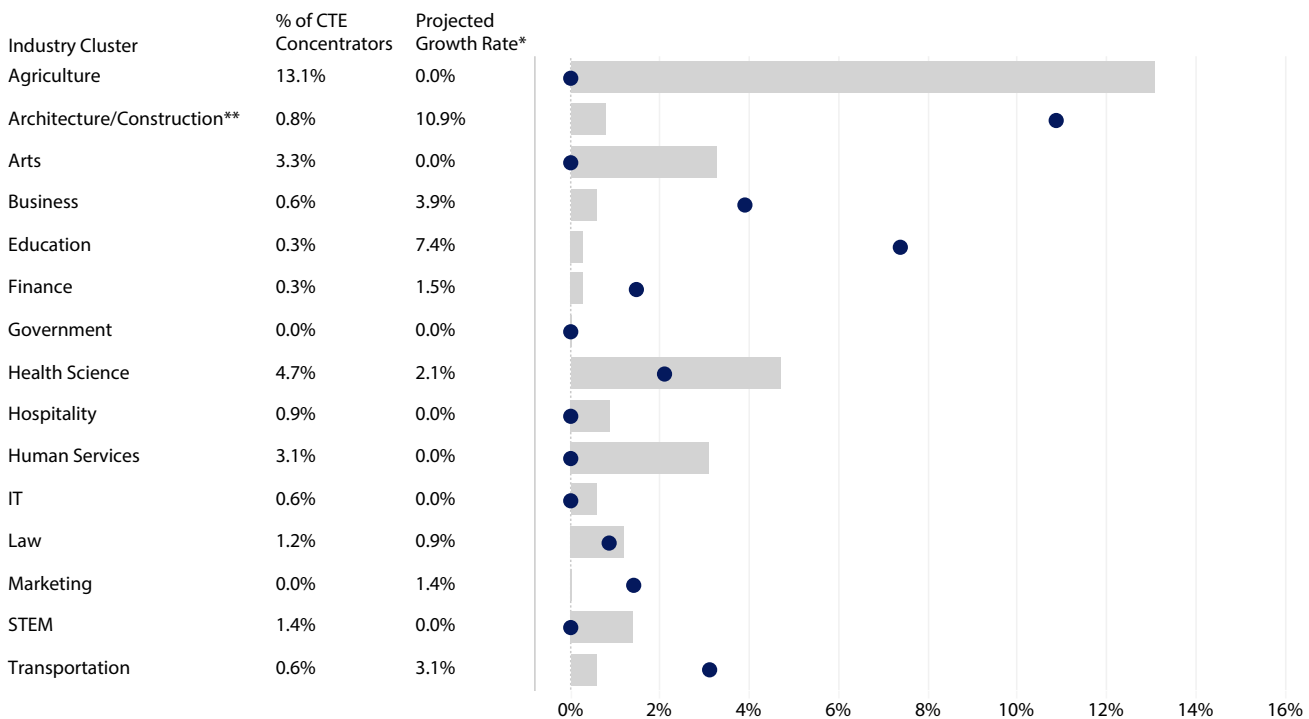


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 17c. Waco: Heart of Texas LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

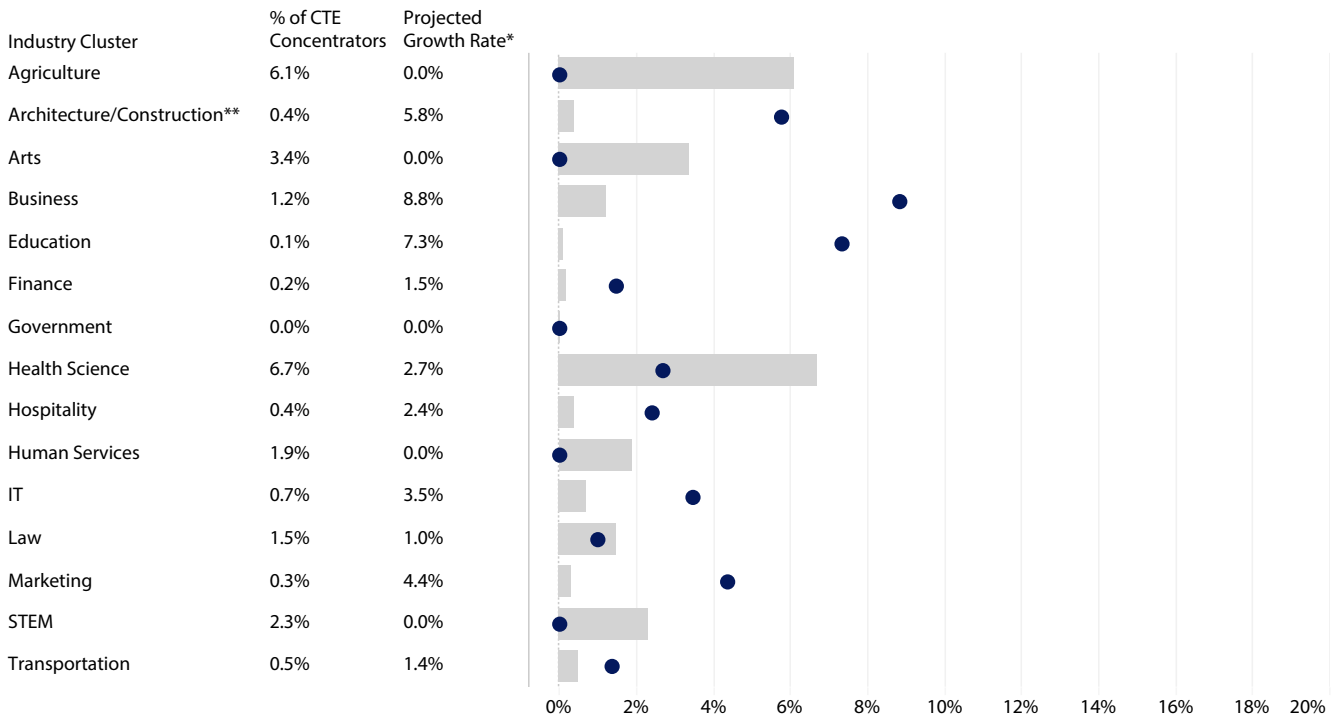


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 18a. Austin: Capital Area LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

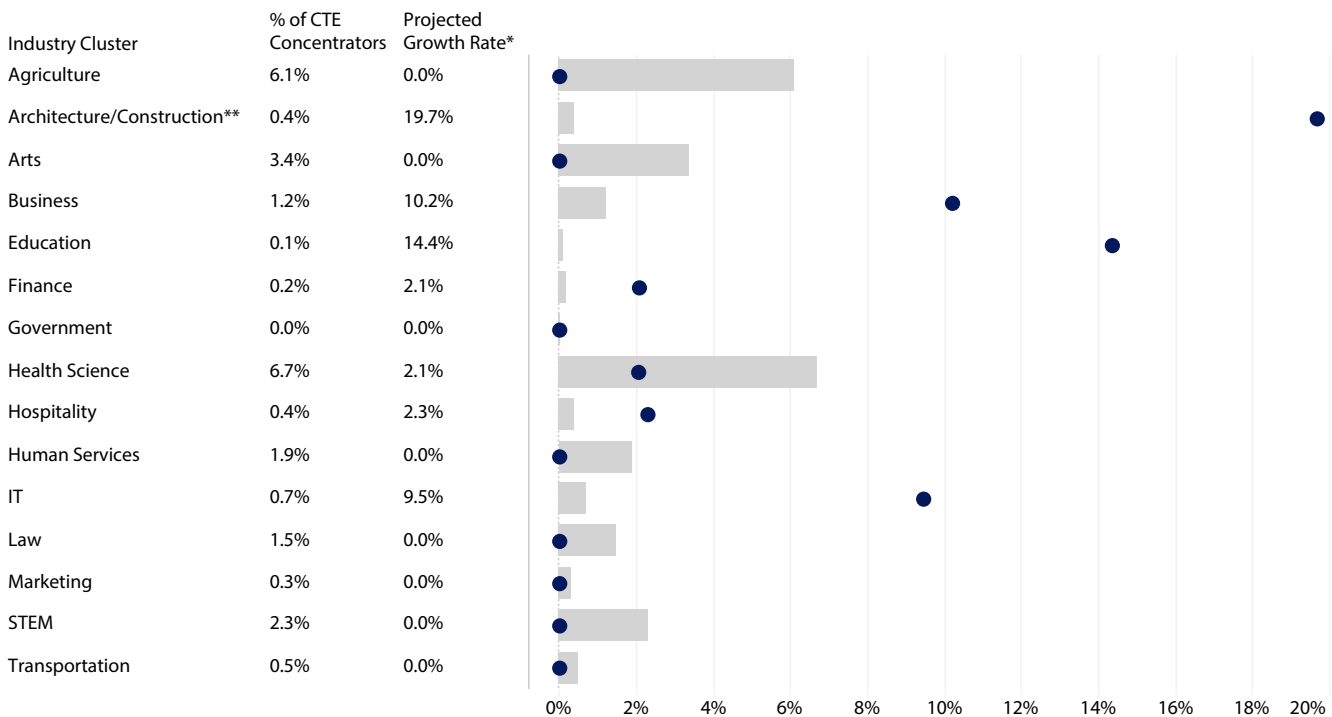


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 18b. Austin: Rural Capital LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

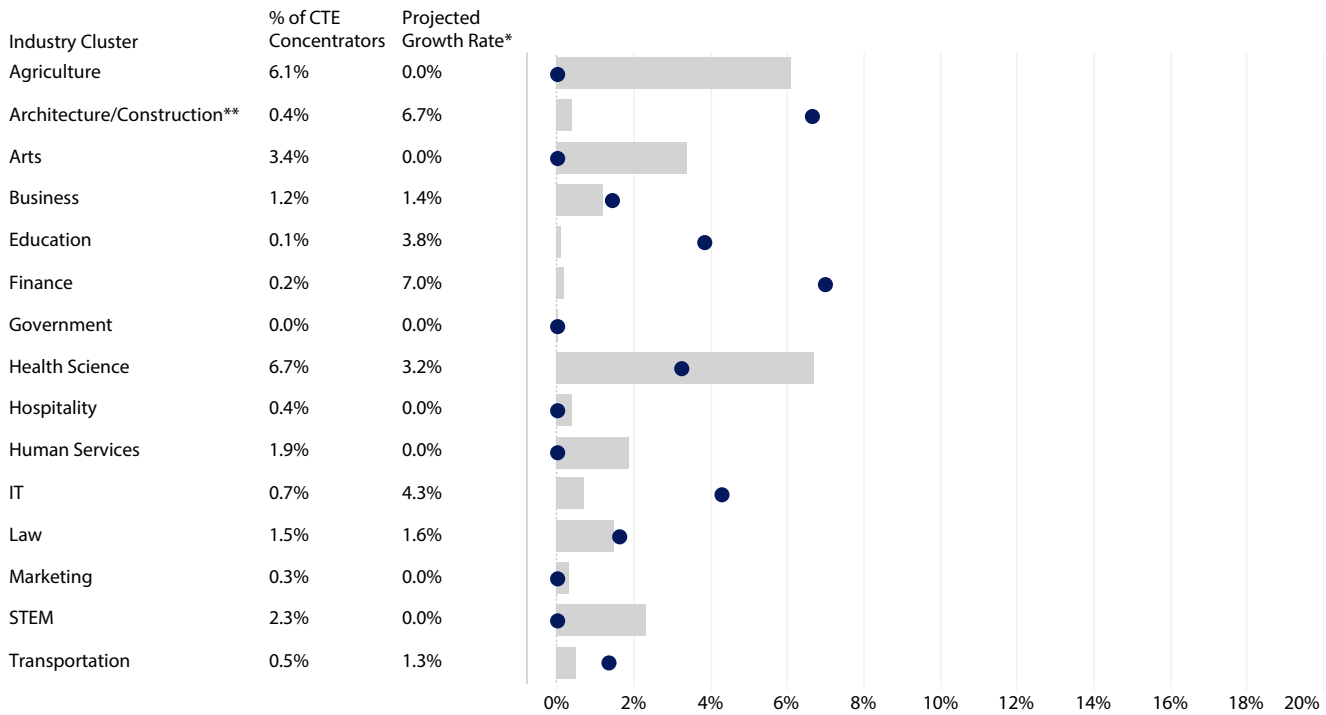


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 18c. Austin: Alamo LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

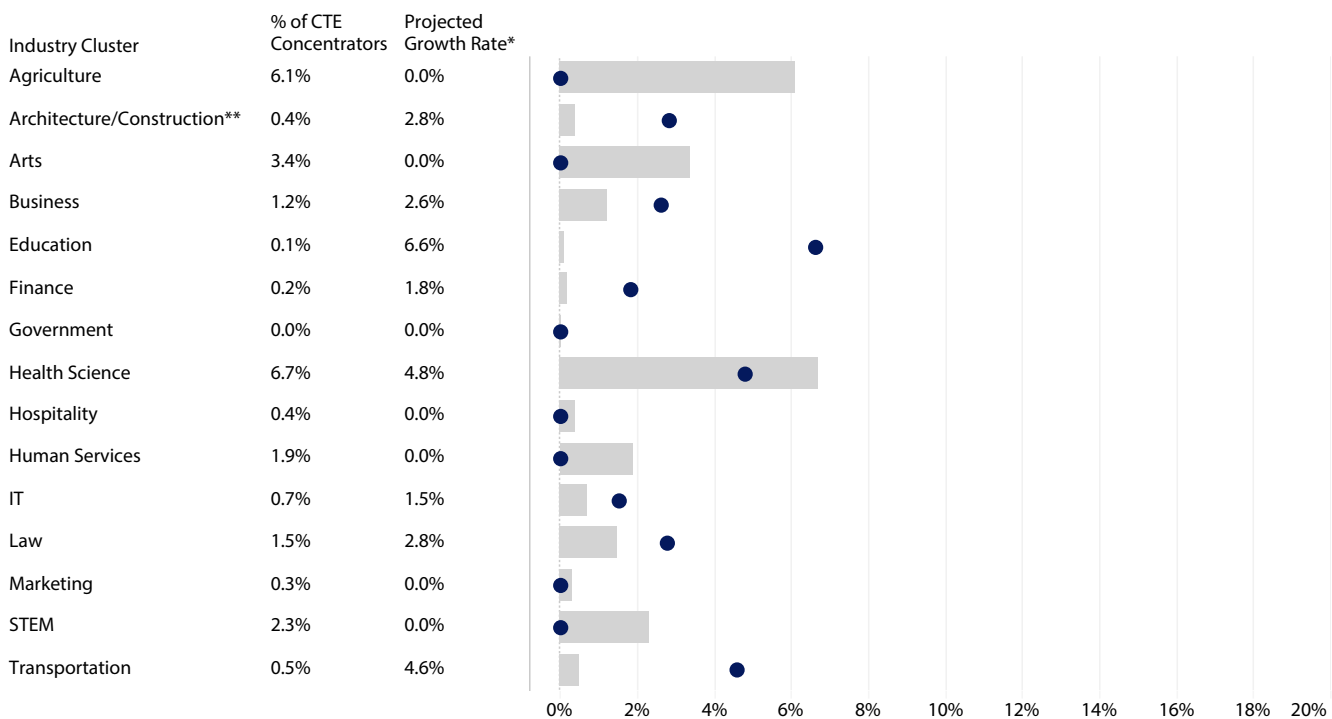


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 18d. Austin: Central Texas LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

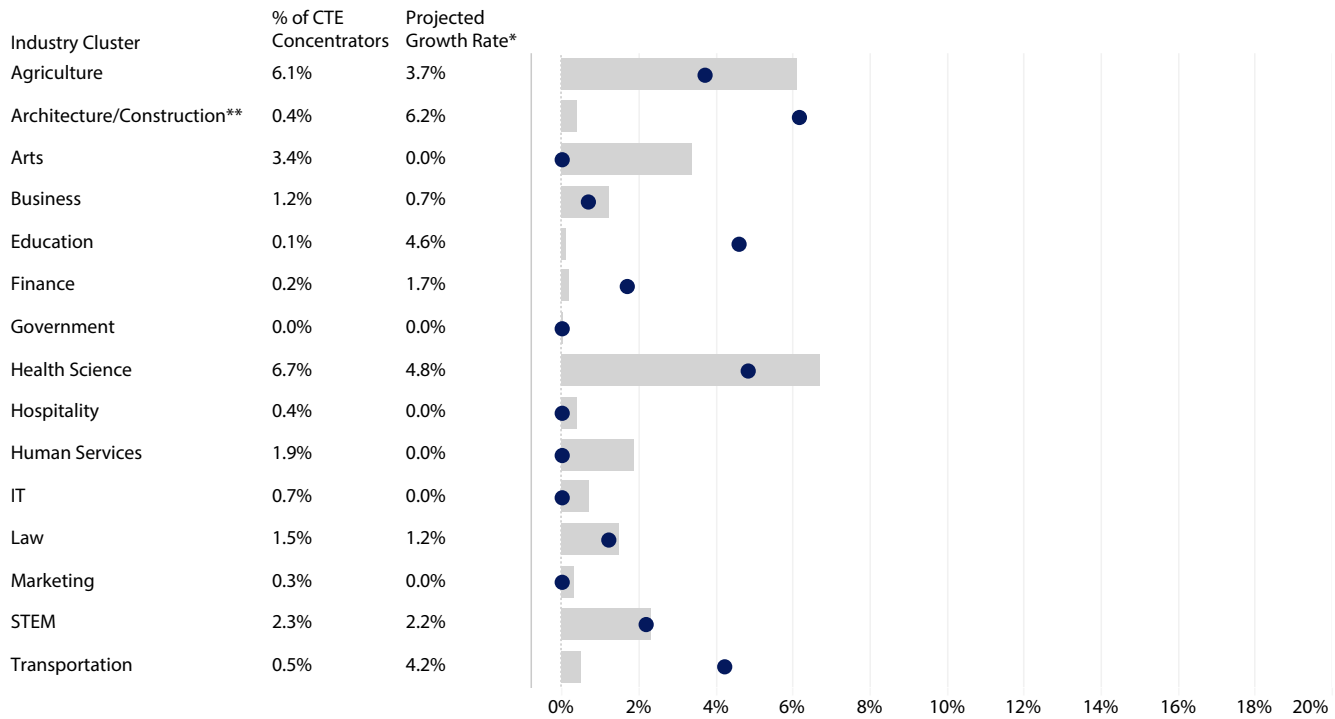


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 18e. Austin: Golden Crescent LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

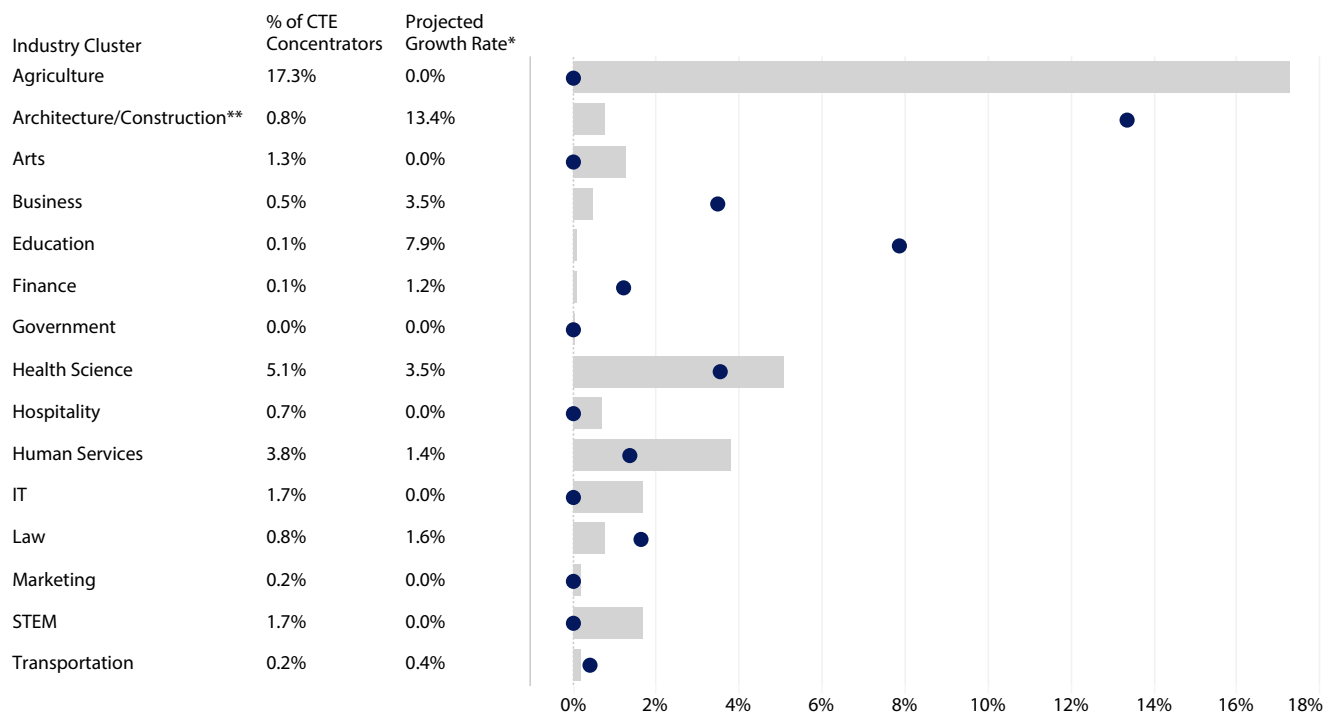


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 19. Abilene: West Central Texas LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

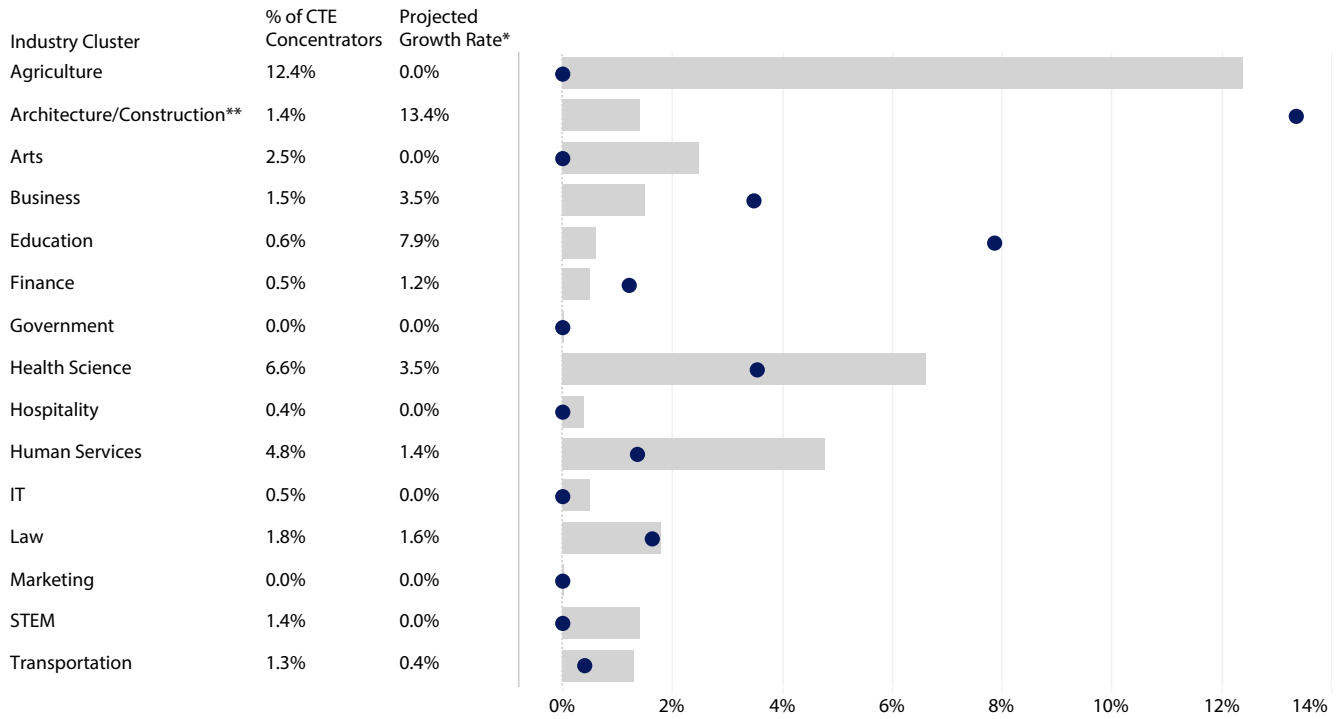


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 20a. San Angelo: West Central Texas LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

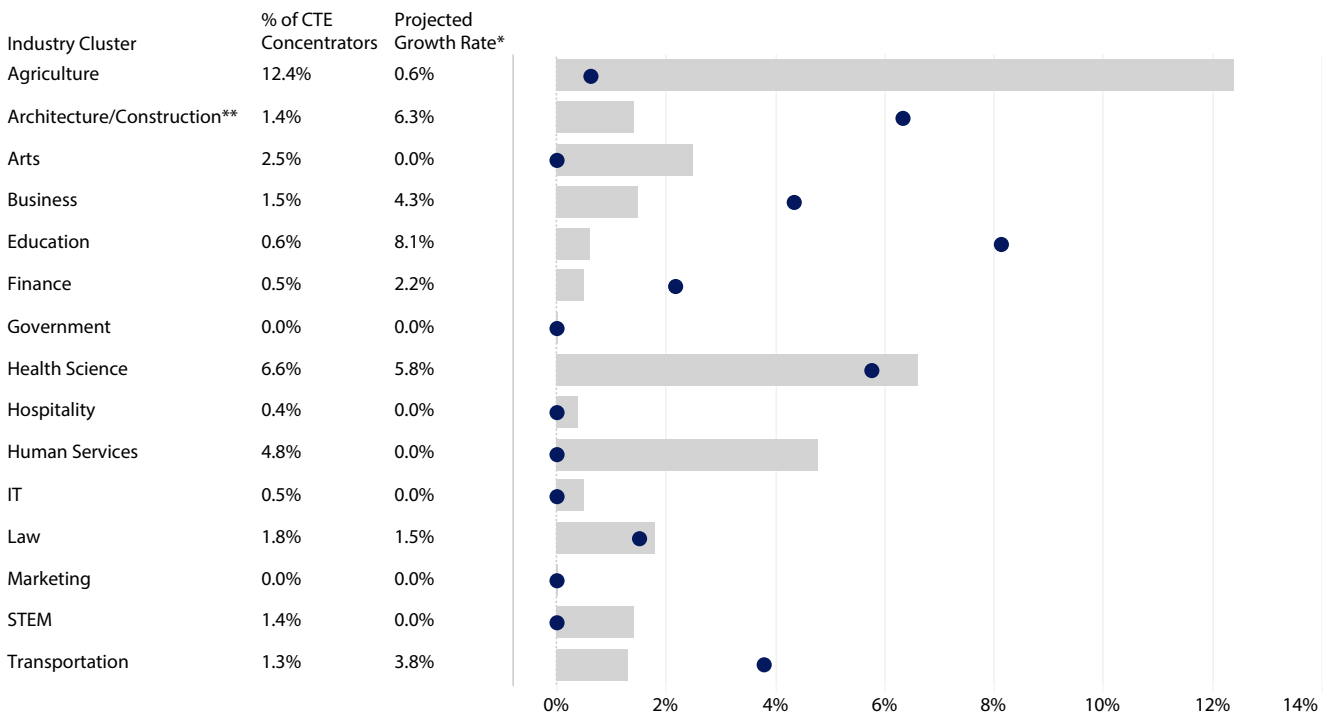


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 20b. San Angelo: Concho Valley LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

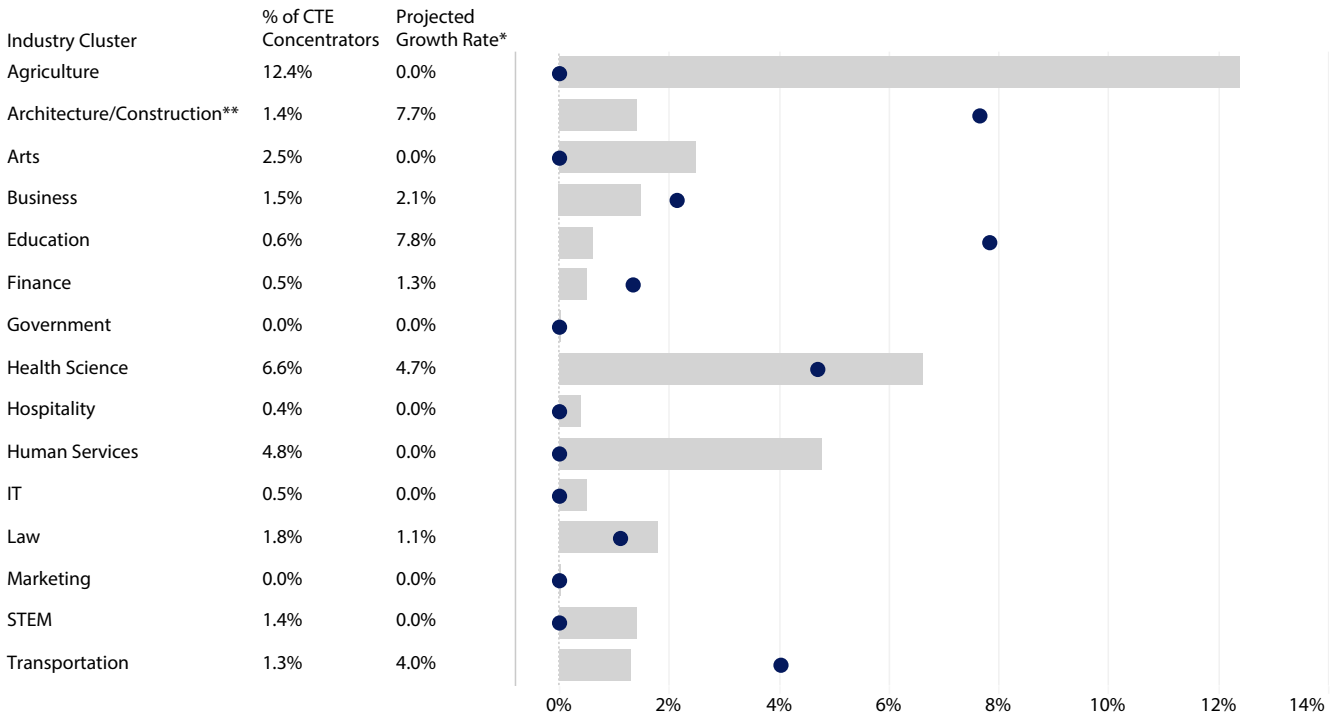


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 20c. San Angelo: Middle Rio Grande LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

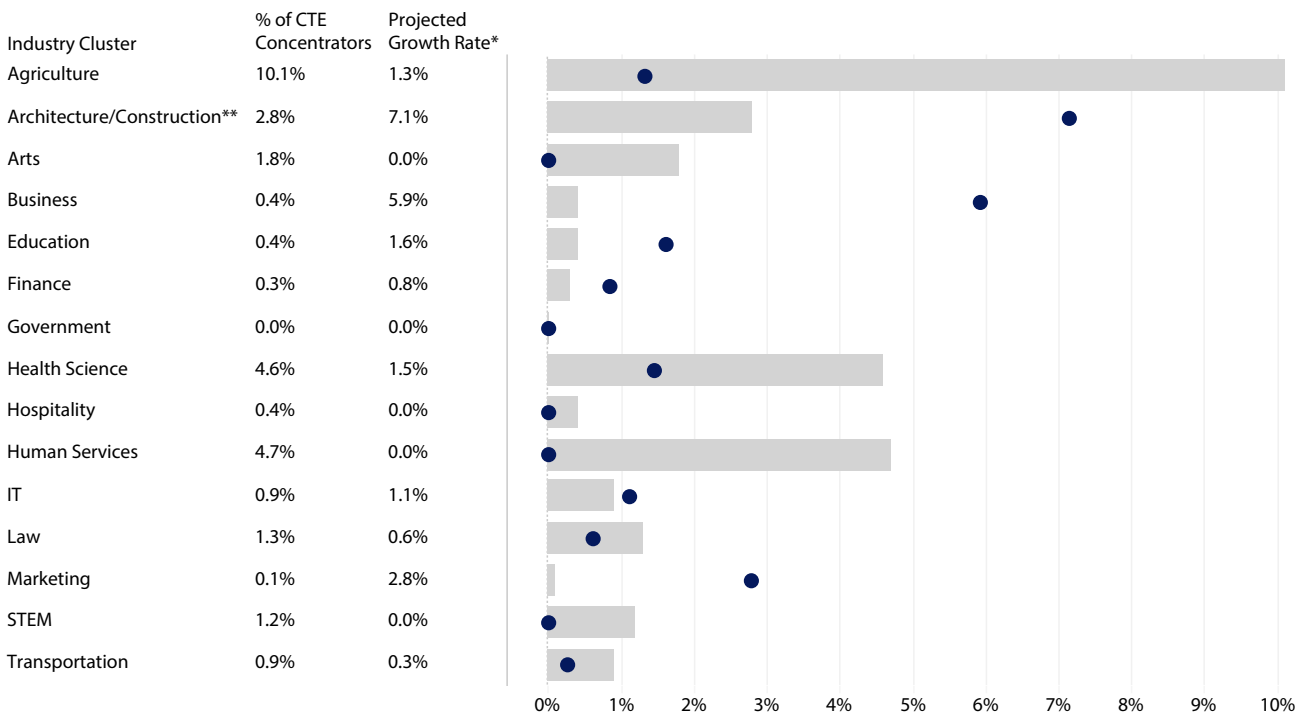


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 21. Amarillo: Panhandle LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

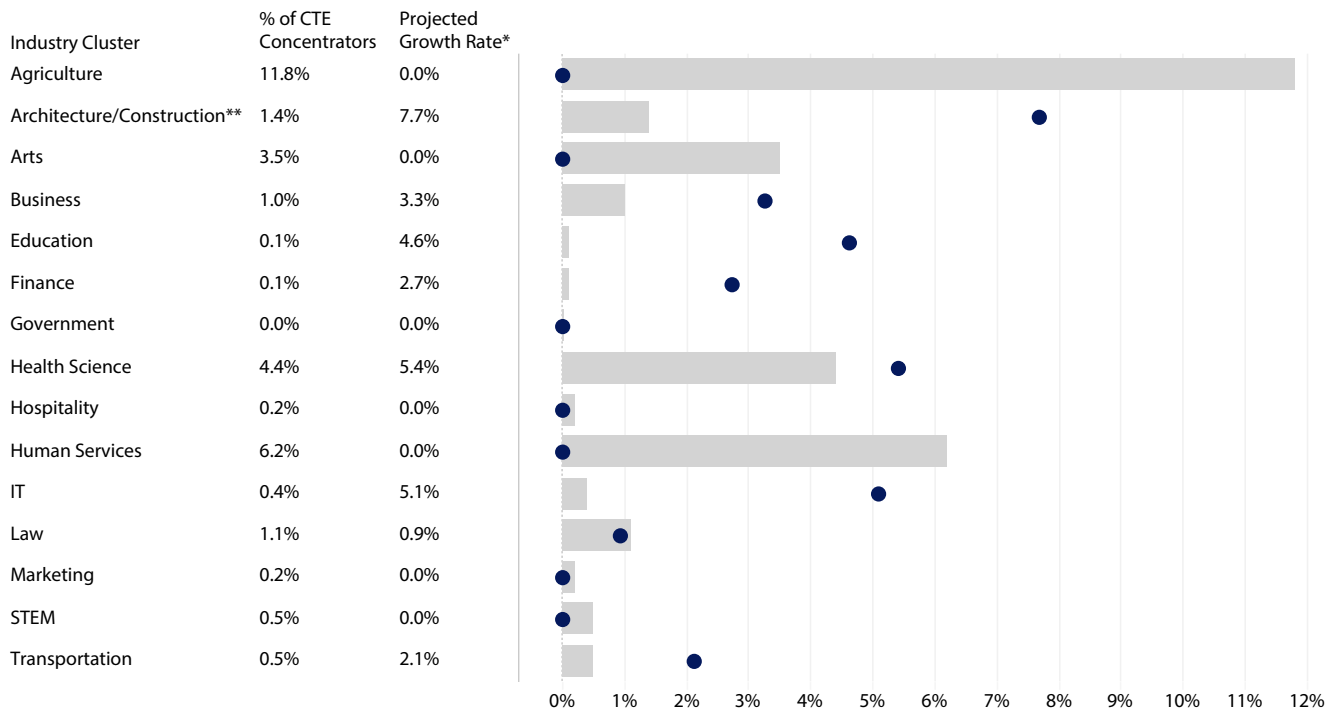


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 22a. Lubbock: South Plains LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

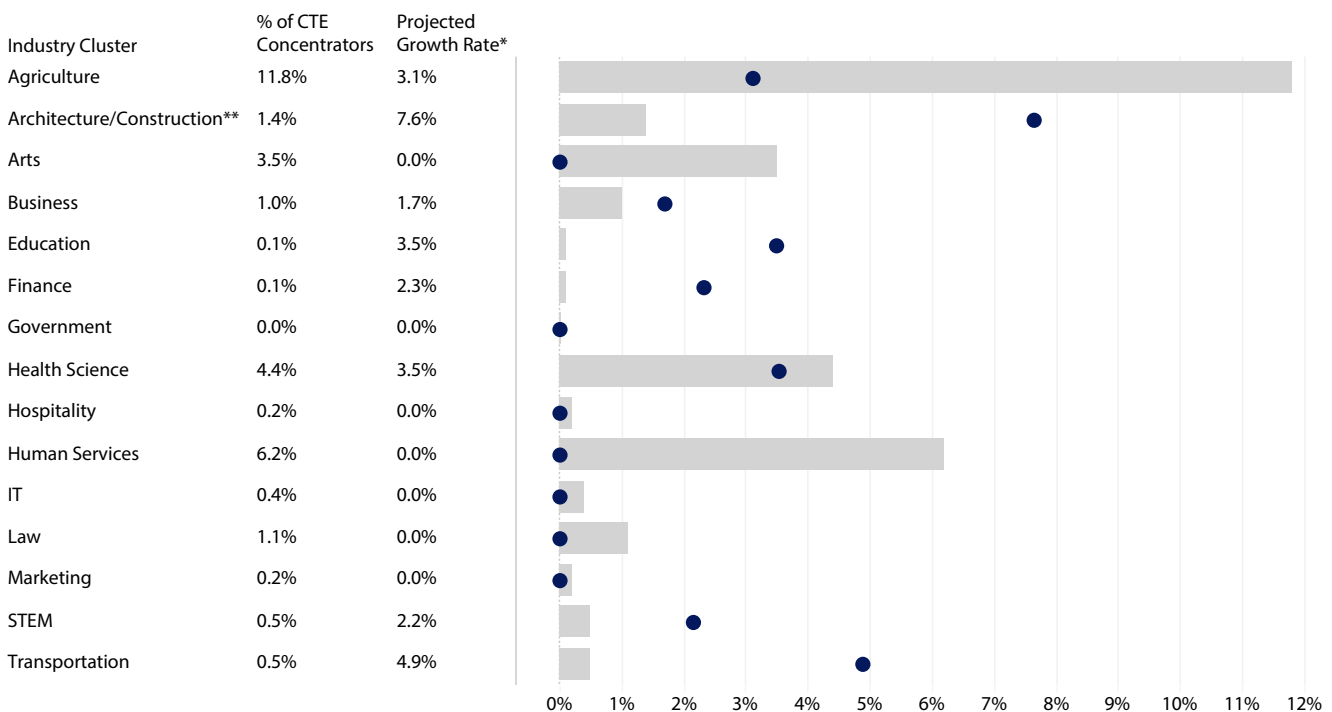


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 22b. Lubbock: Permian Basin LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

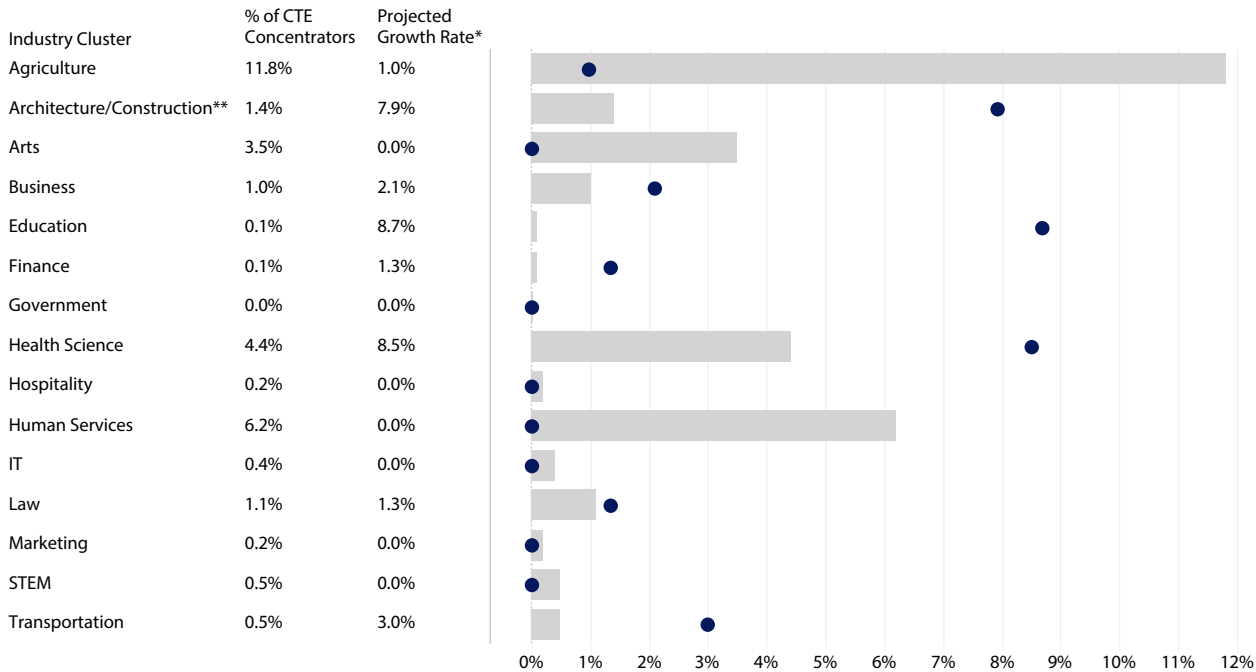


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 22c. Lubbock: North Texas LM x CTE

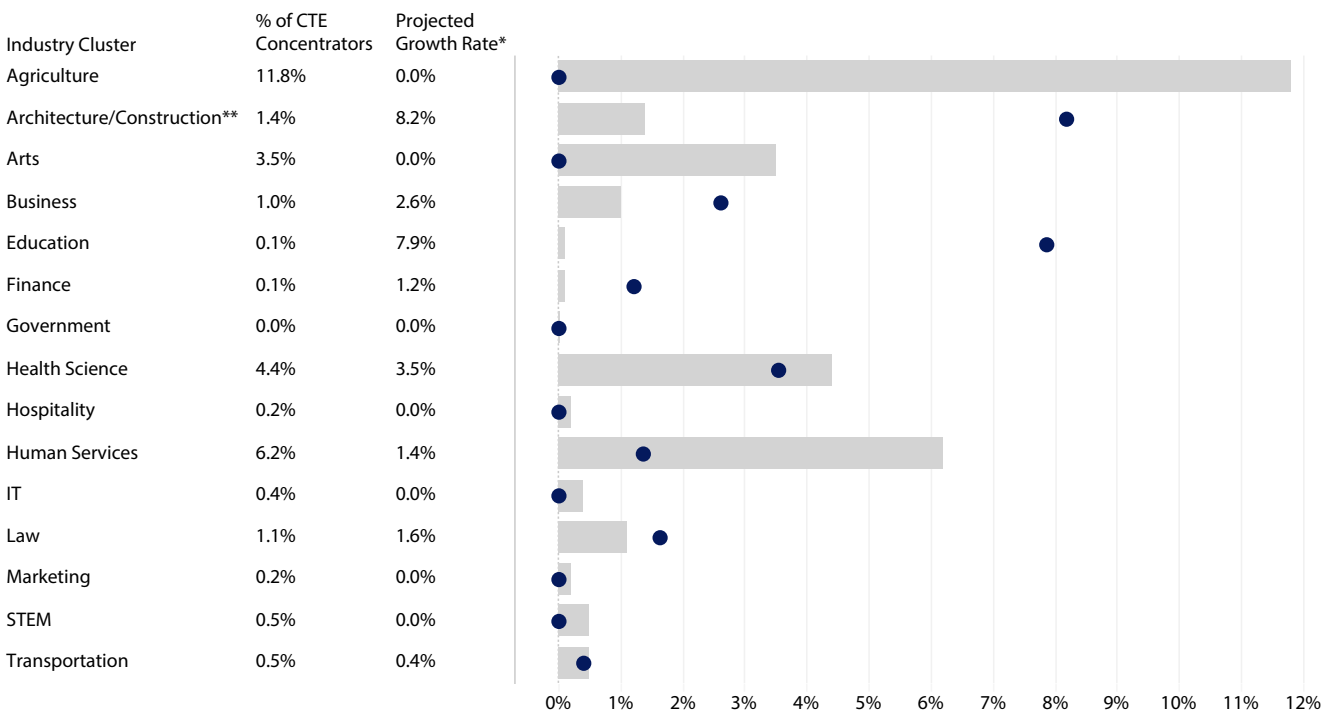
Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)



*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026
 **Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 22d. Lubbock: West Central Texas LM x CTE

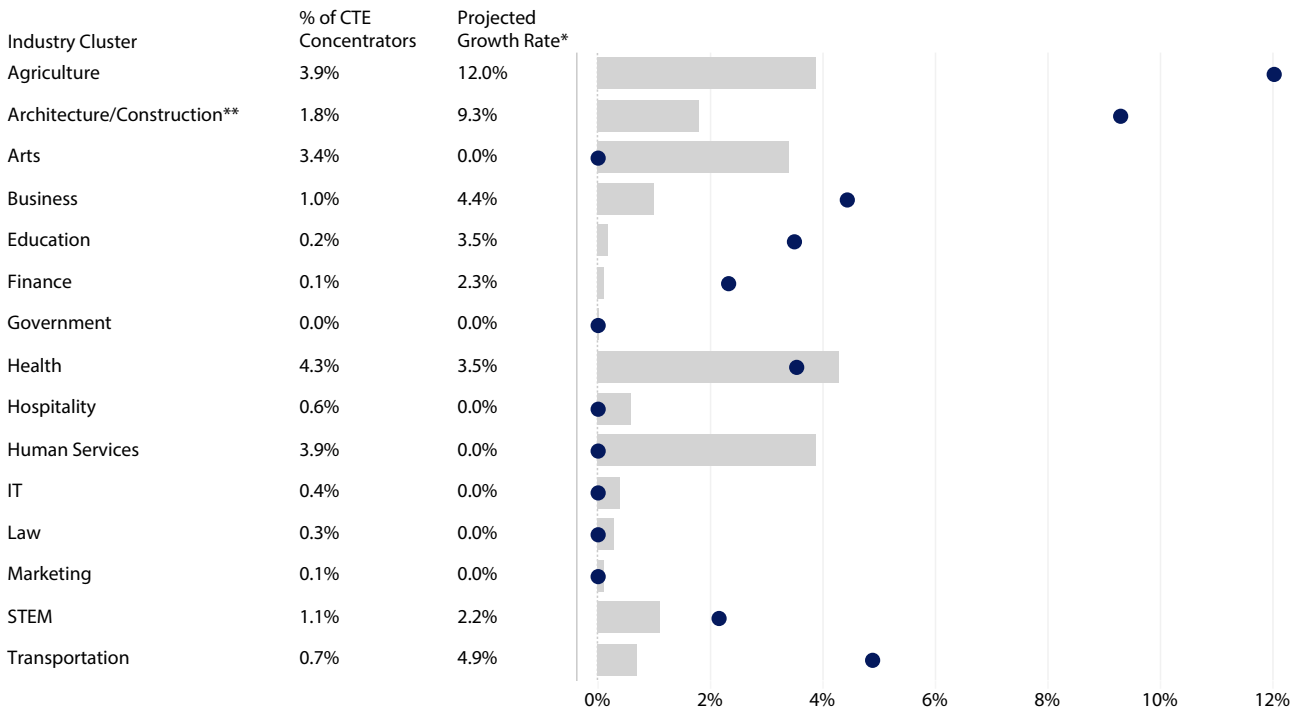
Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)



*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026
 **Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 23a. Midland: Permian Basin LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

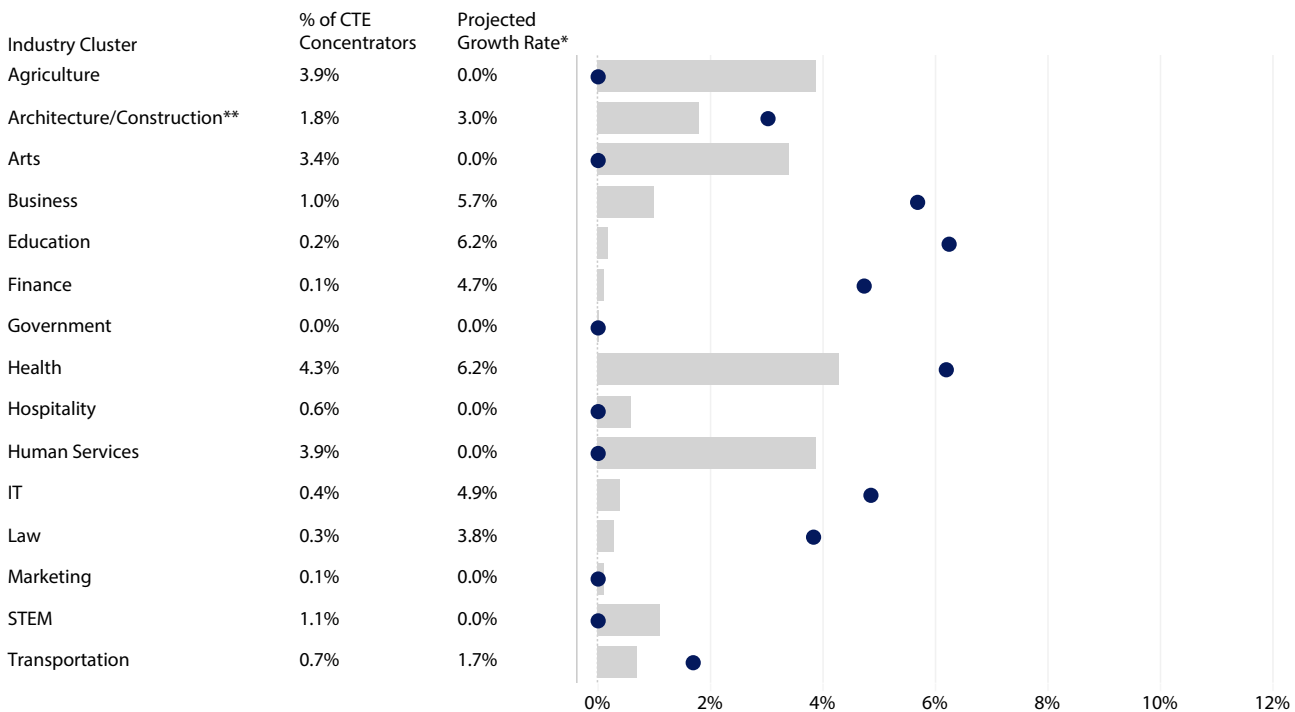


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 23b. Midland: Borderplex LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

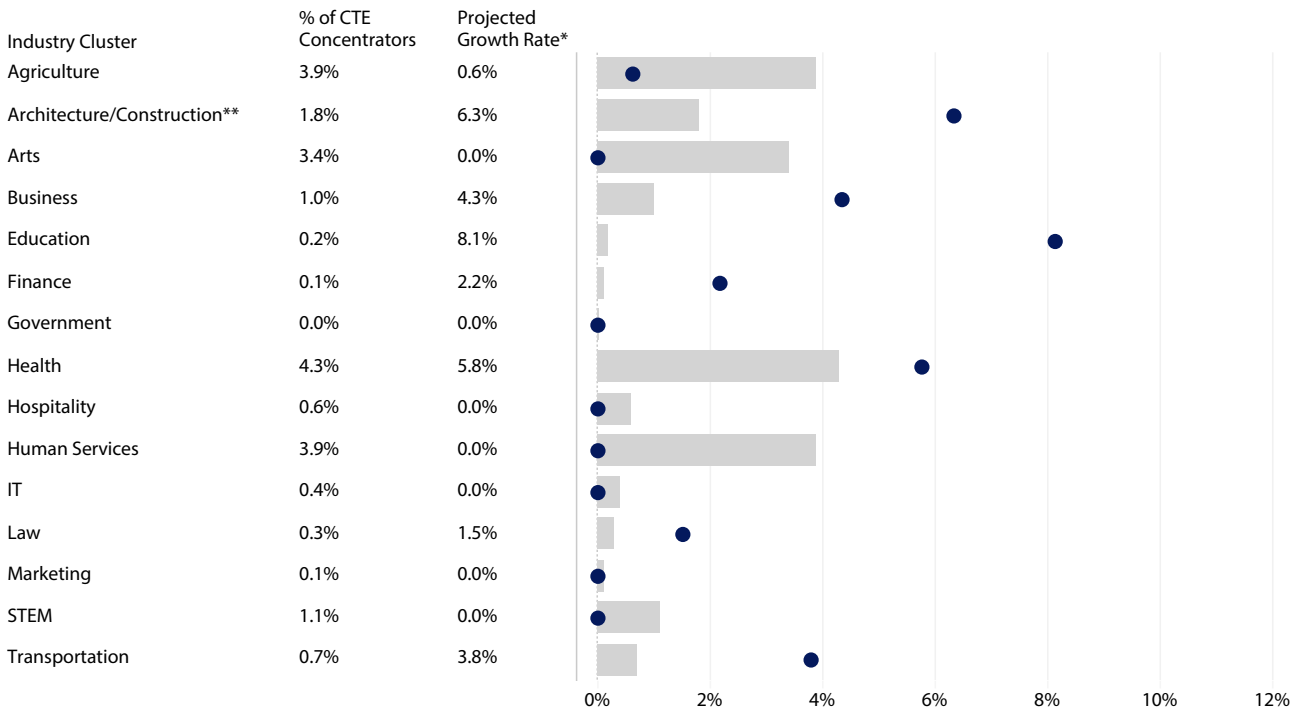


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 23c. Midland: Concho Valley LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

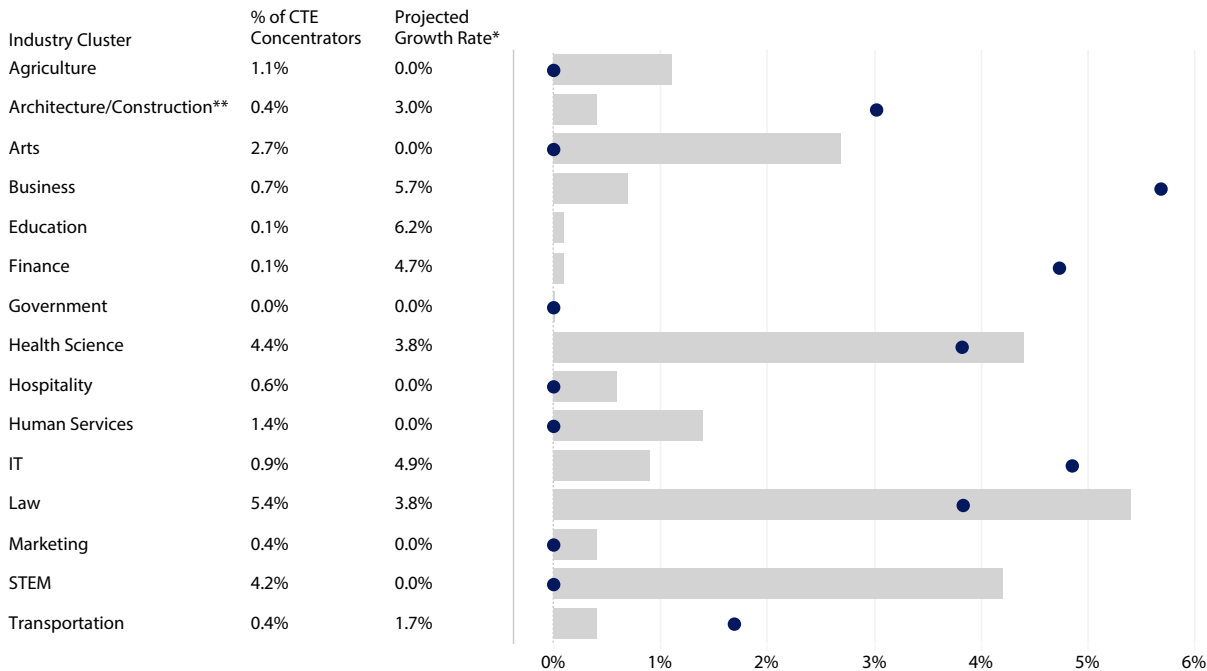


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 24. El Paso: Borderplex LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

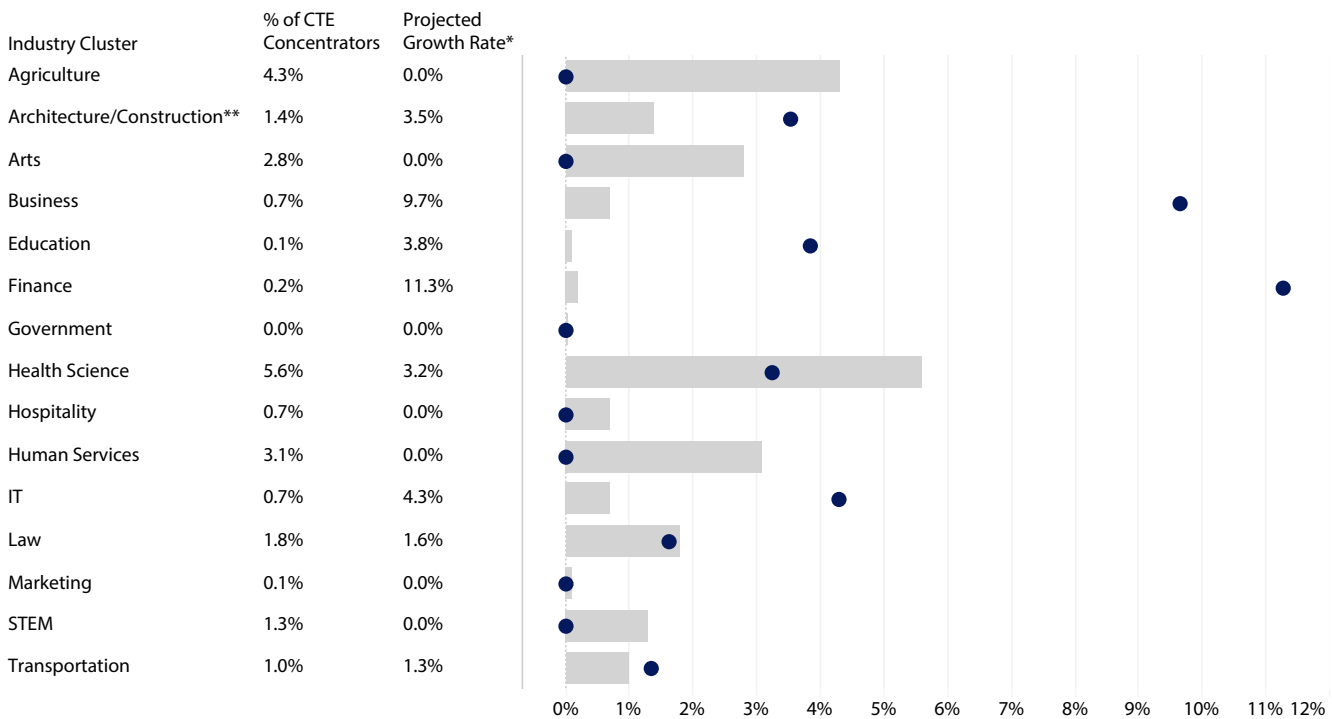


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 25a. San Antonio: Alamo LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

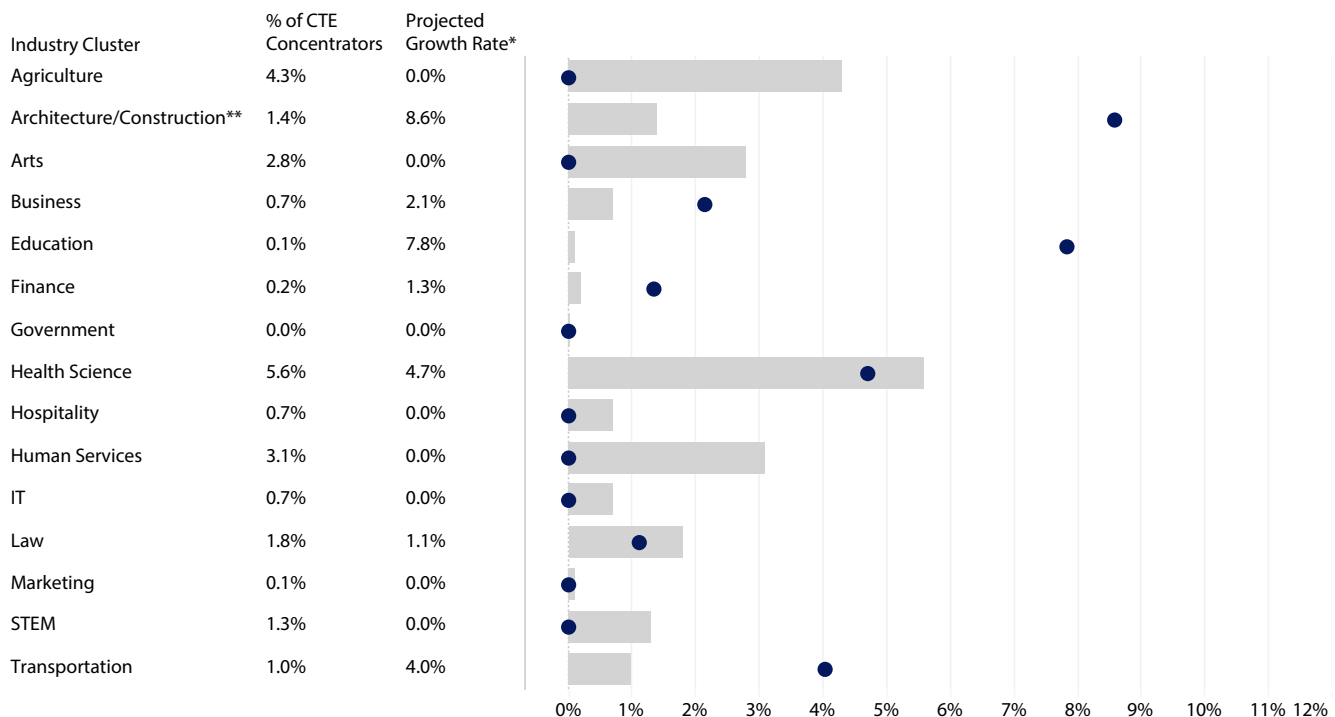


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 25b. San Antonio: Middle Rio Grande LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

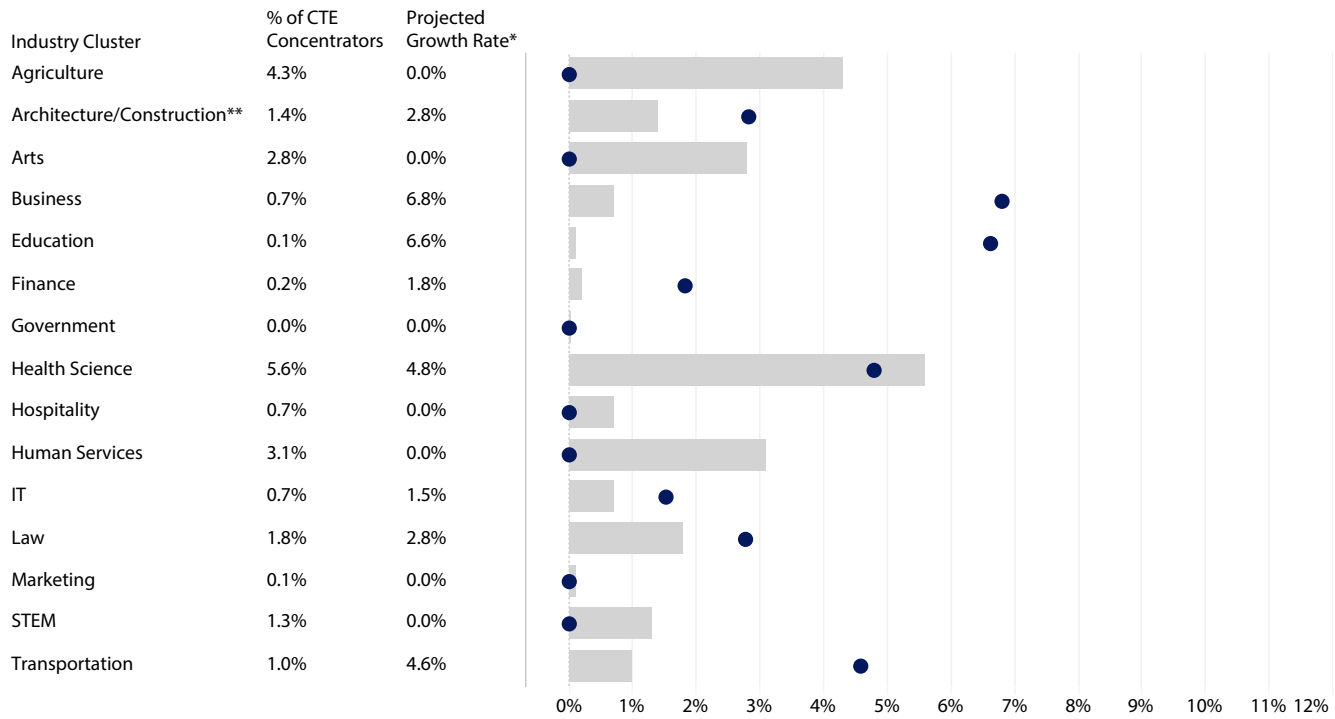


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 25c. San Antonio: Central Texas LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)

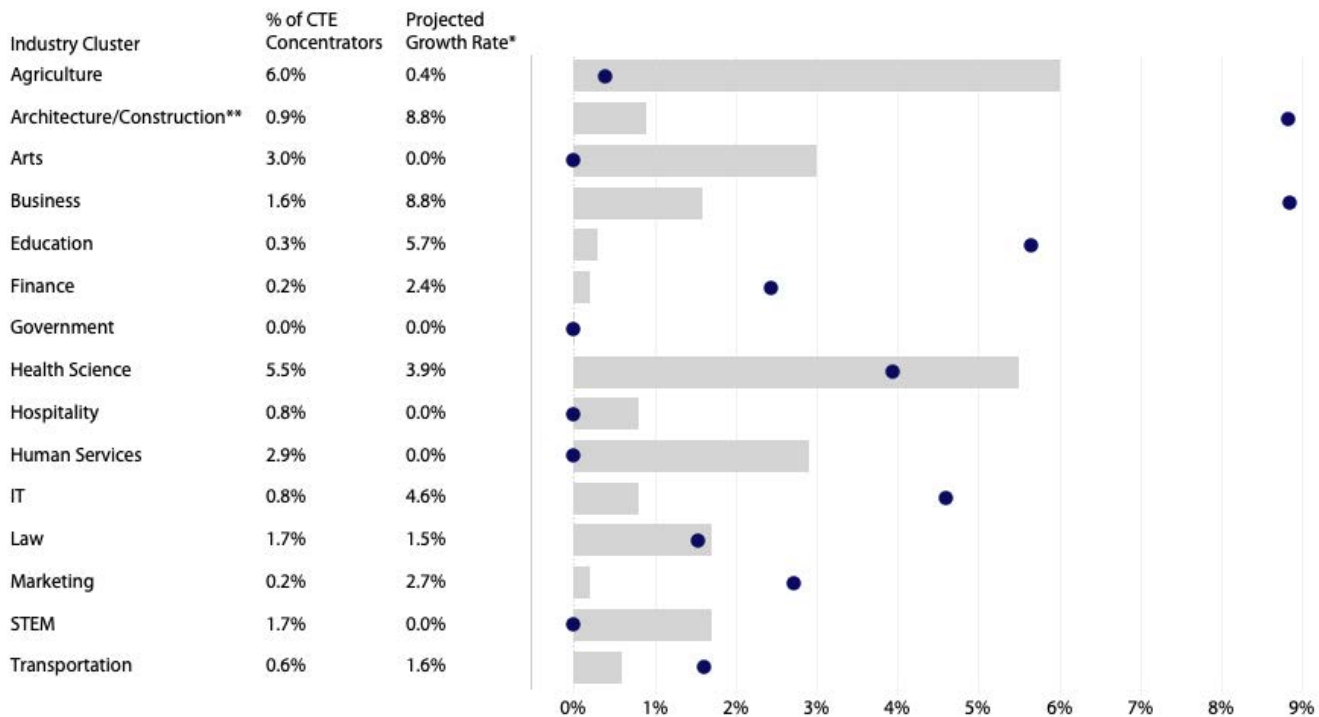


*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

Figure 26. Statewide LM x CTE

Projected Growth Rate ('16-'26)* by Workforce Area (●) Compared to Percent of CTE Concentrators by Education Service Center (gray bar)



*Top 25 occupations making above Texas median wage of \$37,099, ranked by highest projected number of jobs added due to growth for the period 2016 - 2026

**Manufacturing was combined with Architecture/Construction data because both sets of skills are generally transferable

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Erin Davis Valdez is a policy analyst at the Texas Public Policy Foundation. She has been passionate about the transformational power of education all her life, having been given the gift of being homeschooled. She taught for over a decade in Austin-area schools and served as an assistant principal at a charter school in Lewisville. These experiences have given her the opportunity to see first-hand how students can thrive when they have excellent options.

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