

OCTOBER 2019



REGIONAL WORKFORCE STRATEGY: CONROE, TX
PREPARED FOR THE CONROE ECONOMIC DEVELOPMENT COUNCIL

ACKNOWLEDGMENTS

TIP would like to thank the all of the individuals and organizations who participated in this planning process. In particular, we'd like to thank the following individuals for their extra time and effort.

Danielle Scheiner, Executive Director
Conroe Economic Development Council

Jennifer Matthews, Associate Director
Conroe Economic Development Council

Dr. Rebecca Riley, Chair
Workforce Committee
President, Lone Star College-Montgomery



TIP STRATEGIES, INC., is a privately held economic development consulting firm with offices in Austin and Seattle. TIP is committed to providing quality solutions for public sector and private sector clients. Established in 1995, the firm's primary focus is economic development strategic planning.

CONTACT

TIP Strategies
2905 San Gabriel Street, Suite 309
Austin, TX 78705
PH: 512-343-9113
FAX: 512-343-9190
www.tipstrategies.com

CONSULTING TEAM

Caroline Alexander
Consultant

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INTRODUCTION

Nationally, the unemployment rate is at a historically low level that hasn't been seen since the 1960s, and the economy is officially at full employment. According to a recent survey by the Manpower Group, employers are struggling more than ever to fill open jobs. In fact, 46 percent of employers reported in the survey that they are having difficulty filling roles. Although in past surveys employers cited lack of skills as a driving factor in the hiring difficulty, a lack of applicants and a lack of experience are now the top factors contributing to the talent shortage.

FIGURE 1. TOP 10 HARDEST TO FILL ROLES, US



Source: Manpower Group Talent Shortage Survey.

The labor market in the Conroe area exhibits many of the same characteristics. The unemployment rate in Montgomery County was 3.8 percent in 2018, dropping to a low of 2.8 percent in May 2019, and rising to 3.5 percent in August 2019. Thus, Conroe's economy is also at full employment and Conroe-based employers are reporting hiring difficulty for many of the same roles.

Over the past 5 years, the Montgomery County labor force has grown, on average, 2 percent per year while annual job growth has grown almost 4 percent per year. This imbalance in growth rates has led to the tightening of the regional labor market. And job growth is expected to continue. Montgomery County is projected to add more than 35,000 jobs over the next 5 years. Including replacement jobs or separations, Montgomery County is projected to have more than 150,000 openings over the next 5 years.

In the face of this challenging labor market, employers have come together with the region's school districts, Lone Star College, and other stakeholders through the Conroe Economic Development Council Workforce Committee to craft a strategy to guide their efforts to bridge the regional skills gap.

Over a 6-month period in the spring of 2019, TIP Strategies conducted a study of the regional labor market, engaged stakeholders, facilitated the planning process, and assisted in the development of this strategy. The outcome of these efforts is documented on the following pages.

The strategy that follows is structured around three areas of need that emerged. Strategies and actions were developed to support each of these goals.



1. CONNECT WORKERS, EDUCATORS, AND INDUSTRY

A platform for connecting potential workers, education/training providers, and industries.



2. ALIGN EDUCATION AND INDUSTRY

Better alignment between education and industry through strong feedback loops and systems.



3. INCREASE AWARENESS OF CAREERS AND PROGRAMS

A higher level of awareness among students and potential workers of high-demand careers and their related programs.

The foundation of this strategic plan is deeper, broader, and more meaningful engagement of employers in the regional workforce system. In addition, these three goals provide opportunities to increase coordination and collaboration among the many organizations that are involved in developing the workforce and shaping the talent pipeline in the Conroe region. The end result will be a more connected, responsive, and demand-driven workforce system.

GOAL 1. CONNECT WORKERS, EDUCATORS, AND INDUSTRIES

A platform for connecting potential workers, education/training providers, and industries.

There is a wide array of initiatives related to talent development and the workforce system in the Conroe area. Some are through partnerships and some are through individual organizations. However, there currently is not a formal platform for connecting these various pieces and connecting this network with potential workers and with industries. As a result, potential workers and employers have difficulty finding the information they need and the services they seek.

PRIORITY PROJECTS

- 1 Recruit talent development partners.
- 2 Create an executive council.
- 3 Initiate work for online platform.

A connection platform would serve as a repository of information, facilitate information sharing, and help to match users and resources. It would more efficiently connect potential workers with needed services, training programs, career exploration tools, and employment opportunities. It can be used to effectively engage business and industry in Conroe’s workforce system and ensure that they have the tools and support to optimize their participation. This platform can also be used to launch awareness campaigns to drive more potential workers into high-demand careers, which would help address significant gaps and strengthen the regional talent pipeline.

In addition, the platform will serve to formalize and strengthen the region’s network of talent development partners. By creating an online and offline foundation for the talent development network, the platform can amplify the collaborations that are already happening and enhance the coordination of this network to the benefit of both the network partners and the clients they serve.

- 1.1. Formalize the talent development network in the Conroe region, which includes businesses, education/training providers, nonprofits, industry/business associations, and workforce centers.
 - 1.1.1. Enlist partners in the talent development network as affiliates.
 - 1.1.2. Maintain an updated database of these partners that includes contact information, a description of services, an events calendar, and pertinent information about their opportunities to engage potential workers and employers.
 - 1.1.3. Establish project-focused working groups for carrying out the work of the talent development network, which includes the implementation of this strategy. Each working group should have a chair or cochair who is a business or industry representative. Suggested working groups are as follows.
 - Executive Council—provides oversight for the multiple working groups, consists of the chairs of the other subcommittees/working groups.
 - Online Platform—coordinates the creation and content for the website that will serve as the online connection platform.
 - Industry Input and Curriculum—coordinates and centralizes the industry input on programs and curriculum and coordinates a response to relevant issues.
 - Career Awareness—coordinates targeted outreach campaigns and develops messaging. Also coordinates delivery of messaging through media, events, and other forms of outreach.

- Work-Based Learning—coordinates the sharing and/or creation of tools to support work-based learning programs (including earn and learn opportunities) and works to increase the utilization of and effectiveness of work-based learning programs.
- Educational Incentives—coordinates the tools to encourage students to pursue training related to high-demand careers and increase the utilization of these tools.

1.2. Build an online platform that facilitates information sharing among potential workers, education/training providers, and companies.

- 1.2.1.** Provide information on Conroe’s primary industries, high-demand occupations and careers, and companies within those industries.
- 1.2.2.** Show related training and education programs offered in the area, for each of the high-demand occupations and careers, including programs at Lone Star College, apprenticeship programs, career and technical education programs, and those provided by community-based organizations.
- 1.2.3.** Publish events and other opportunities for companies, education/training providers, and potential workers/students to connect. This could include events such as the Career Expo, career fairs, and career panels.
- 1.2.4.** Highlight opportunities for companies to get involved and become a participant or partner in this strategy implementation.
- 1.2.5.** Link to information on resources to assist job seekers in finding employment
- 1.2.6.** Provide profiles of the partners in the talent development network and link to the profiles from the appropriate sections of the website.

1.3. Promote the platform to ensure a critical mass of users.

- 1.3.1.** Print cards that provide a brief description of the platform and the website address that can be distributed to schools, Workforce Solutions, and other partners.
- 1.3.2.** Raise awareness of the tool through earned media, especially through news stories in local media outlets.
- 1.3.3.** Distribute the link to the website through partners’ newsletters and social media outlets.
- 1.3.4.** Connect with career awareness campaigns. (See strategy 3.1.)

EXAMPLES OF CONNECTION PLATFORMS

ElevateIowa.com is focused on the advanced manufacturing industry in Iowa. It provides a self-assessment guide and information on career pathways, training resources, and the industry itself.

[Go Build Alabama](http://GoBuildAlabama.com) is a campaign to recruit more people into skilled trades. The campaign website provides a description of the construction industry and the skilled trades shortage. It also provides information on careers and available training.

[PetroChemWorks](http://PetroChemWorks.com) is a campaign to raise awareness of careers in the petrochemical industry in Houston. The website provides a self-assessment tool, career profiles, company profiles, and training resources.

The [TalentFound](http://TalentFound.com) website serves as a portal for Colorado’s talent development network and helps connect individuals and businesses with the most relevant tools and resources in the network.

[TN Work Learn Earn](http://TNWorkLearnEarn.com) serves as a career exploration platform for Tennessee residents that profiles industries and careers and helps connect people to education, resources, and jobs.

- 1.4.** Maintain accurate and up-to-date information on the platform to sustain a high level of relevancy.
 - 1.4.1.** Update labor market information listed on the platform (at least annually).
 - 1.4.2.** Partner with Lone Star College, school districts, and community-based information to update training program information.
 - 1.4.3.** Update events and connection opportunities regularly (at least monthly).

GOAL 2. ALIGN EDUCATION AND INDUSTRY

Better alignment between education and industry through strong feedback loops and systems.

Industry input and involvement is at the heart of a demand-driven workforce system. The notion of a demand-driven workforce system is recognized as a best practice at both the federal and state levels in workforce development. As a result, employer engagement and input are statutorily required for career and technical education, community college workforce programs, and other types of public career training. However, obtaining broad-based, meaningful industry input can be difficult for institutions, and institutions often struggle to align their programs with industry needs.

Currently, the school districts and Lone Star College are individually seeking input from business and industry on their needs and feedback on training program curriculum. Thus, each institution must forge its own relationships with industry, and the industry representatives could be tapped up to three times to provide input. At the same time, many industry representatives are not aware of opportunities to provide input and are not currently participating. A closer collaboration between the school districts and Lone Star College could centralize industry input, deepen industry engagement, and help coordinate responses to industry needs.

- 2.1.** Establish industry-led collaboratives to serve as forums for companies to identify shared needs and implement shared solutions.
 - 2.1.1.** Continue to convene the HR Fuse group as a forum for manufacturing companies.
 - 2.1.2.** Consider breaking-out industry-specific groups or multi-industry affinity groups, if there is enough interest. The industry-specific groups that could be considered are hospitality, healthcare (including long-term care), or construction. Potential affinity groups could be organized around shared talent needs, such as business and operations, facilities and grounds management, or information technology.
 - 2.1.3.** Facilitate the development of a shared agenda, objectives, and focus areas with each of these groups. (See HR Fuse example.)

PRIORITY PROJECTS

- ❶ Centralize the career and technical education (CTE) business advisory councils with those of Lone Star College-Montgomery.
- ❷ Work with HR Fuse (see below) to document specific skills needs and coordinate a response to those needs.

HR FUSE

HR Fuse is a human resource (HR) manufacturing networking group that is a program of the Conroe EDC. It aims to provide participating members creative and cost-effective HR solutions to solve their companies' human capital challenges.

Strategic Objectives of the Group

- To be aware of city, county, and state resources available to support our companies' talent and skill needs;
- To contribute back to the community the jobs that lead to careers and contribute to the well-being of the community; and
- To build our HR competency through networking, mentoring, and collaboration to provide greater contribution to the companies we serve.

Focus Areas of the Group

- Identify talent pipelines that support current and future staffing needs;
- Identify, nurture, and contribute to increasing the skills and competencies of the talent pipeline from the schools, colleges, and community; and
- Connect and network with fellow HR professionals to build our HR knowledge, skills, and relationships.

GOAL 3. INCREASE AWARENESS OF CAREERS AND PROGRAMS

A higher level of awareness among students and potential workers of high-demand careers and their related programs.

More students and potential workers need to choose high-demand careers and programs related to these careers in order to bridge the existing skills gap. Research showed that high school graduates, including CTE students, are largely working in the retail and accommodations/food service sectors rather than in higher-earning industries, such as manufacturing, construction, or health sciences. In addition, it showed that there is a host of apprenticeship programs with few apprentices. Generating more interest in high-demand careers will require coordinated outreach efforts in which employers are actively involved. In addition, layering in incentives, such as scholarships and tuition reimbursement for programs related to high-demand careers, can improve outcomes of career awareness activities. Targeting outreach activities to specific audiences, such as disconnected youth, could help reach underutilized pockets of talent.

PRIORITY PROJECTS

- 1 Create an inventory of work-based learning programs.
- 2 Choose the first two target audiences for the campaign.
- 3 Convene a peer and industry roundtable for the next signature event (e.g., the Career Expo or a career fair).

- 3.1. Design and launch a campaign to promote awareness of high-demand careers and training programs.
 - 3.1.1. Choose two or three target audiences to be the focus of the campaign (e.g., high school students, disconnected youth, working poor) and identify specific outreach activities to reach them.
 - 3.1.2. Develop a set of talking points and key messages for each audience.
 - 3.1.3. Recruit a team of ambassadors to deliver these messages to the audiences. Having representatives from companies who work in the high-demand occupations is an effective means of delivering the message.
 - 3.1.4. Organize and coordinate opportunities to deliver the talking points and messages, leaving cards to promote the use of the online connection platform.
- 3.2. Support the expansion of work-based learning programs and earn-and-learn opportunities to provide hands-on career exploration experiences.
 - 3.2.1. Create an inventory of existing work-based learning programs and earn-and-learn opportunities that can be accessed through the online connection platform.
 - 3.2.2. Convene industry collaboratives and talent development partners to share best practices and lessons learned associated with organizing and managing effective work-based learning/earn-and-learn programs.
 - 3.2.3. Encourage the creation of more programs and the participation in the programs through outreach activities.
 - 3.2.4. Provide opportunities for peer/industry input and collaboration to sharpen one another's signature events and work-based learning opportunities.

- 3.3.** Encourage the use of incentives (e.g., scholarships, tuition assistance) that are structured to inspire the pursuit of education/training programs related to high-demand careers.
 - 3.3.1.** Develop a toolkit to help companies improve their tuition assistance programs.
 - 3.3.2.** Create a scholarship endowment to fund scholarships for students pursuing educational opportunities relevant to high-demand careers. This could be funded through an annual event such as a golf tournament.

AMAZON CAREER CHOICE

Amazon has announced it is investing \$700 million in upskilling its employees through its Career Choice program. The program is available for hourly associates who have worked one continuous year. For these associates, Amazon will prepay 95 percent of tuition and fees to earn certificates and associate's degrees in high-demand occupations. Amazon only funds training for programs that lead to high-demand, well-paying careers and will provide up to \$12,000 over 4 years.

Fulfillment centers with more than 1,000 associates have dedicated Career Choice classrooms on-site. Amazon determines which programs to offer and fund, based on a labor market study that it conducts twice a year.

Since the program's inception, more than 16,000 Amazon associates in more than 10 countries have utilized the program. Amazon has found that the program has led to a higher level of engagement, which has resulted in less attrition and more productivity. In fact, employees in Career Choice are four times less likely to leave Amazon.

Amazon is now looking for employer partners who might be interested in hiring graduates of the Career Choice program.

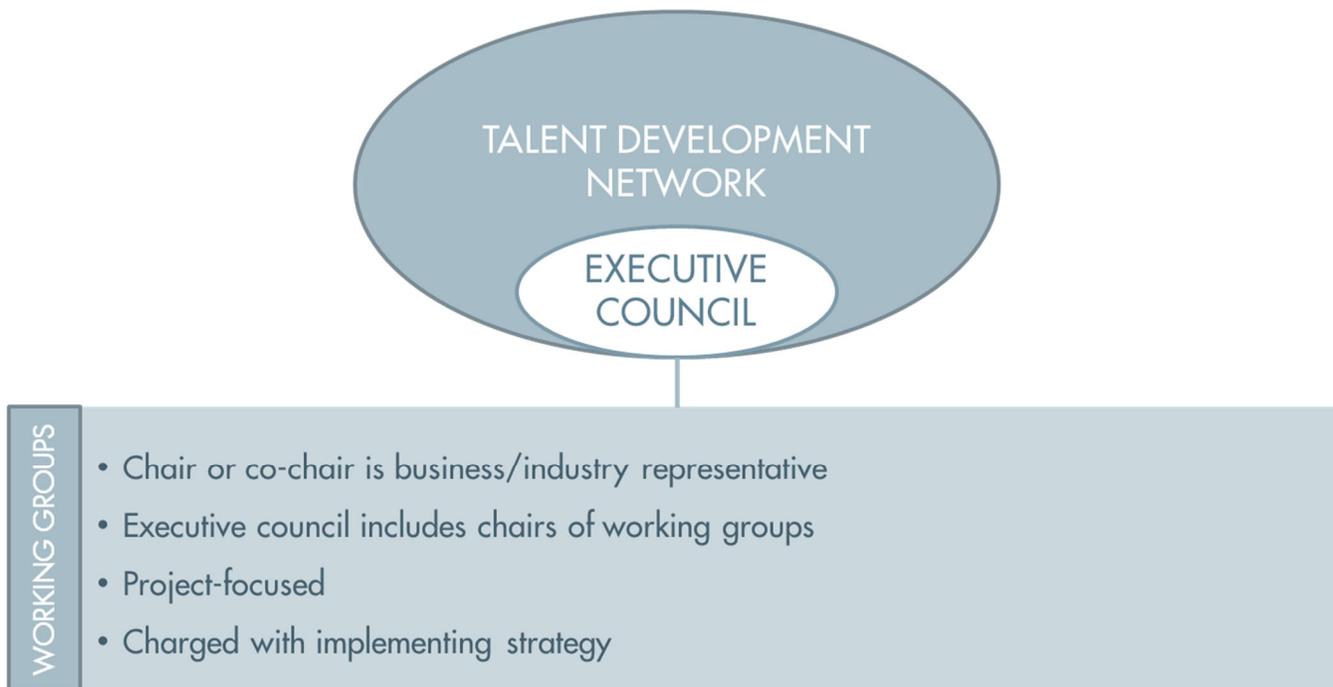
For more information, visit—

www.amazoncareerchoice.com or www.amazoncareerchoice.com/employerpartnership

IMPLEMENTATION

To implement these strategies successfully, the Workforce Committee will need to extend its membership and formalize its structure. This will ensure that the committee has enough resources and the level of commitment needed to carry out this strategic plan. As mentioned in Goal 1, it is recommended that an executive council be formed to supervise the plan implementation and that project-based working groups be established according to the priorities set forth by the executive council.

FIGURE 2. ORGANIZATIONAL STRUCTURE



The **Talent Development Network** is the broad group of partners that are actively working to strengthen the regional talent pipeline. This group includes businesses, education/training providers, nonprofits, industry/business associations, and workforce centers.

The **Executive Council** will consist of a small group of leaders that include chairs of the other working groups and industry collaboratives. The executive council will provide oversight for the multiple working groups, monitor progress, and serve as a coordinating body across the various groups.

The **Working Groups** will be charged with carrying out the work of the talent development network, which includes the implementation of this strategy. Each working group should have a chair or cochair who is a business or industry representative.

It is recommended that the executive council choose two or three working groups to establish first and then add other working groups as capacity allows.

An important part of implementation is setting up structures for measuring progress and success. Each working group should have a manageable list of metrics that it will track and report. Sample metrics are listed in Figure 3.

FIGURE 3. SAMPLE METRICS

OUTPUTS	OUTCOMES
<ul style="list-style-type: none">• Participants in talent development network• Website traffic and usage• # of industry collaboratives and # of members• # of centralized business advisory committees and # of industry participants• # of work-based learning programs and participants• # of educational incentives and utilization	<ul style="list-style-type: none">• Increased enrollment in programs related to high-demand careers• Increase in placement of program graduates• Increase in applicants (# and quality)• Decrease in turnover/attrition• Decrease in onboarding time

These metrics will provide guideposts to assess whether the strategy implementation is making progress and having the desired impact.

APPENDIX 1. REGIONAL LABOR MARKET

To provide a common framework for TIP Strategies recommendations for workforce strategies, TIP conducted an assessment of the Montgomery County labor market. Team members began by compiling data on the county, with comparisons to the Houston–The Woodlands–Sugar Land Metropolitan Statistical Area (Houston MSA), the state of Texas, and the US, where appropriate. The purpose of the assessment was to understand the drivers of demand for workers in the county’s labor market, the supply of workers, and the training infrastructure. A comparison of the two can provide insights into any gaps between the demand for and supply of workers.

The findings presented in this section are based on the following elements.

- A review of labor market data from primary and secondary sources, including the US Census Bureau, the US Bureau of Labor Statistics, Economic Modeling Specialists International (Emsi), the National Center for Education Statistics (NCES) Integrated Postsecondary Education Data System (IPEDS), the Texas Public Education Information Resource (TPEIR), Conroe ISD, Willis ISD, Lone Star College-Montgomery, and the US Department of Labor Employment and Training Administration (DOLETA).
- Input from interviews, focus groups with key stakeholders, and the Workforce Committee.
- TIP Strategies’ 20 years of experience working with communities across the country and compiling best practices.

The key findings from this analysis and input is presented below and on the following pages.

DEMAND DRIVERS

Montgomery County’s job base now exceeds 200,000 jobs, having grown 41 percent from 148,973 in 2008 to 209,497 in 2018. Job growth in the county has consistently outpaced that of the metro, state, and nation over the past 10 years.

The industry sectors that employ the largest number of workers in Montgomery County are **retail trade; education; lodging, restaurants, & bars; healthcare; and construction**. Healthcare, construction, and education are expected to add the largest number of jobs over the next 5 years.

The industry sectors with the highest concentrations of employment relative to the US are energy (mining incl. oil & gas), construction, education, and retail trade. This is indicative of the relative strength of these sectors in Montgomery County and in the Houston MSA overall.

The number of openings is a measure of occupational demand. Openings are comprised of two components: new jobs and replacement jobs. New jobs are an estimate of net job change during the period of analysis. These represent new positions that did not exist previously. Anticipated replacement demand, or separations, represent existing positions that must be filled due to workers leaving the occupation for reasons including retirement, changing careers, dropping out of the labor force, etc.

Over the next 5 years, **Montgomery County is expected to have more than 150,000 job openings**. More than half of these job openings will require some kind of training. In addition, about 21,000 of these job openings are new positions.

The list of middle skill and high skill high-demand occupations in Figure 14 reflect the key industries in Montgomery County that require skilled labor and, thus, drive the education/training needs. The important pathways that are represented on these lists are as follows.

- Skilled trades, including maintenance and repair
- Healthcare professionals and support occupations
- Business, operations, and management
- Education

Examining openings by career cluster reveals high-demand areas of study. The career clusters with the highest number of openings that require training are the following.

- Architecture & Construction
- Education & Training
- Business, Management & Administration
- Health Science
- Manufacturing

Figure 16 shows occupational demand for each of these major career clusters. Key observations regarding demand factors are listed below.

- The local labor market is tight but only about **1 in 5** of the top 75 high-demand occupations in the top five career clusters are showing significant **wage pressure**. However, wage pressure in the science, technology, engineering, and mathematics (STEM) career cluster is significant in 9 of the 15 highest-demand occupations.
- Retirement exposure is highest in business, manufacturing, and STEM occupations.

FIGURE 4. ANNUAL JOB GROWTH (PERCENT)

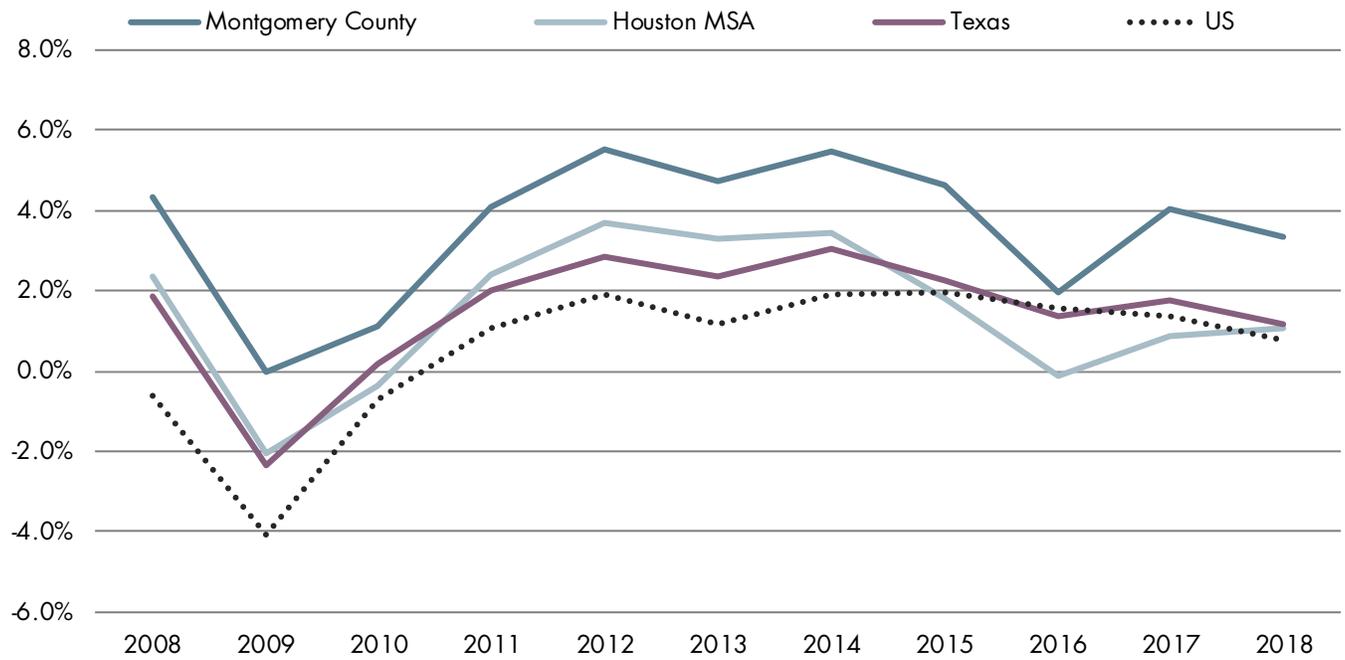
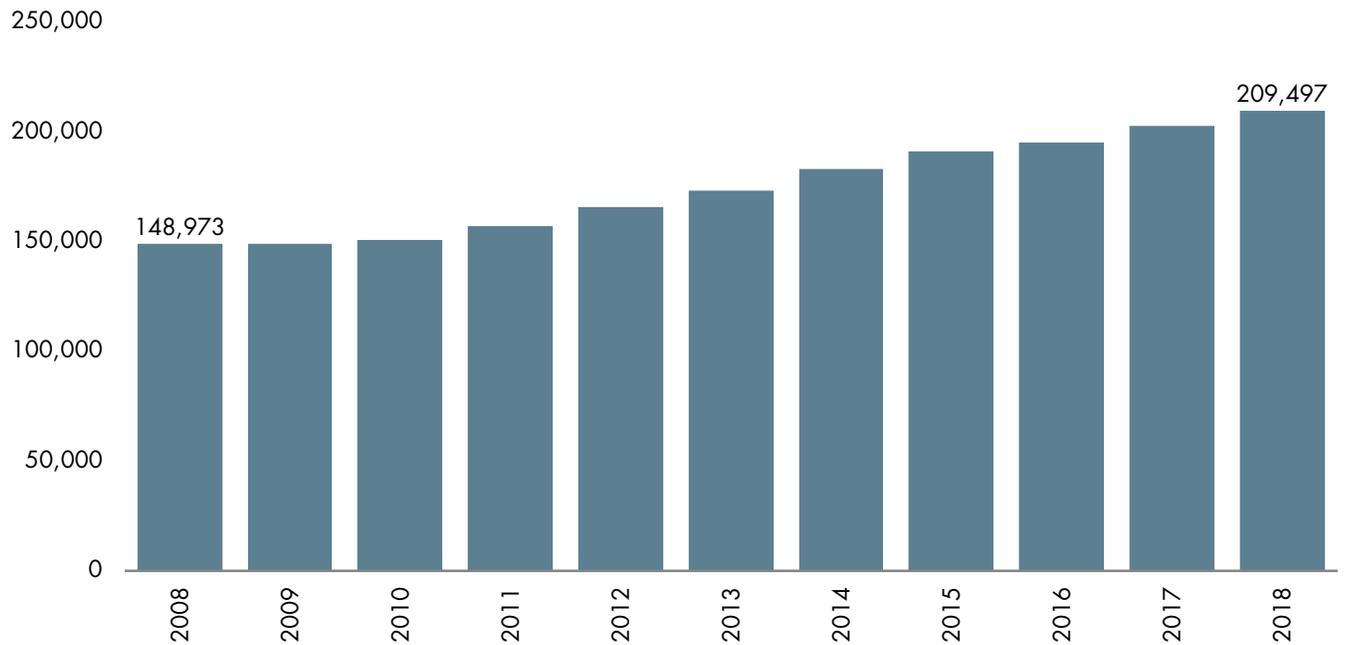


FIGURE 5. MONTGOMERY COUNTY EMPLOYMENT



Source: (figures this page) Emsi 2019.1—QCEW Employees, Non-QCEW Employees, and Self-Employed.

FIGURE 6. INDUSTRY DISTRIBUTION (PERCENT OF TOTAL)
 COMPARISON OF MONTGOMERY COUNTY WITH SELECTED GEOGRAPHIES AND US

NAICS Code & Description	Montgomery			
	County	Houston MSA	Texas	US
44-45 Retail trade	12.9%	9.8%	10.3%	10.3%
61 Education*	12.1%	10.0%	9.9%	9.2%
72 Lodging, restaurants, & bars	10.2%	8.9%	9.0%	8.7%
62 Healthcare & social assistance*	10.1%	11.3%	12.0%	13.5%
23 Construction	9.2%	8.1%	7.0%	5.6%
54 Professional services	7.2%	7.4%	6.5%	6.6%
81 Personal & other services	5.9%	5.3%	5.0%	4.8%
56 Administrative & support services	5.8%	7.2%	6.7%	6.3%
31-33 Manufacturing	5.3%	7.0%	6.6%	8.0%
42 Wholesale trade	3.6%	4.9%	4.5%	3.8%
52 Finance & insurance	3.4%	3.3%	4.4%	4.1%
9039 Local government	2.7%	2.4%	2.9%	3.5%
48-49 Transportation & warehousing*	2.4%	4.6%	4.3%	4.0%
21 Mining (incl. oil & gas)	2.2%	2.4%	1.8%	0.4%
53 Property sales & leasing	2.0%	2.2%	2.0%	1.7%
71 Arts, entertainment, & recreation	1.9%	1.3%	1.3%	1.8%
55 Corporate & regional offices	1.4%	1.3%	1.0%	1.4%
51 Information	0.7%	1.0%	1.6%	1.9%
22 Utilities	0.3%	0.5%	0.4%	0.3%
9029 State government	0.2%	0.5%	1.1%	1.4%
9011 Federal government (civilian)	0.2%	0.6%	1.2%	1.4%
11 Agriculture & forestry	0.2%	0.2%	0.8%	1.2%

*Includes related public sector employment (e.g., education includes public schools, colleges, and universities; healthcare includes public hospitals; and transportation & warehousing includes US Postal Service workers).
 Source: Emsi 2019.1 – QCEW Employees, Non-QCEW Employees, and Self-Employed.
 Note: Three largest industries are highlighted.

FIGURE 7. INDUSTRY CONCENTRATION (LQ)
 COMPARISON OF MONTGOMERY COUNTY WITH SELECTED GEOGRAPHIES AND US

NAICS Code & Description		Montgomery			
		County	Houston MSA	Texas	US
21	Mining (incl. oil & gas)	5.45	5.73	4.23	1.00
23	Construction	1.65	1.45	1.24	1.00
61	Education*	1.31	1.08	1.07	1.00
44-45	Retail trade	1.26	0.96	1.00	1.00
81	Personal & other services	1.23	1.10	1.02	1.00
72	Lodging, restaurants, & bars	1.18	1.03	1.03	1.00
53	Property sales & leasing	1.15	1.27	1.15	1.00
54	Professional services	1.11	1.14	0.98	1.00
71	Arts, entertainment, & recreation	1.09	0.73	0.74	1.00
55	Corporate & regional offices	0.99	0.93	0.69	1.00
42	Wholesale trade	0.97	1.32	1.19	1.00
22	Utilities	0.96	1.48	1.11	1.00
56	Administrative & support services	0.92	1.14	1.06	1.00
52	Finance & insurance	0.84	0.81	1.07	1.00
9039	Local government	0.75	0.67	0.82	1.00
62	Healthcare & social assistance*	0.75	0.84	0.89	1.00
31-33	Manufacturing	0.67	0.88	0.82	1.00
48-49	Transportation & warehousing*	0.61	1.15	1.08	1.00
51	Information	0.38	0.55	0.85	1.00
9029	State government	0.17	0.35	0.74	1.00
11	Agriculture & forestry	0.16	0.15	0.67	1.00
901199	Federal government (civilian)	0.14	0.43	0.85	1.00

*Includes related public sector employment (e.g., education includes public schools, colleges, and universities; healthcare includes public hospitals; and transportation & warehousing includes US Postal Service workers).

Source: Emsi 2019.1 – QCEW Employees, Non-QCEW Employees, and Self-Employed.

Note: LQs greater than 1.25 are presumed to show competitive advantage and are highlighted.

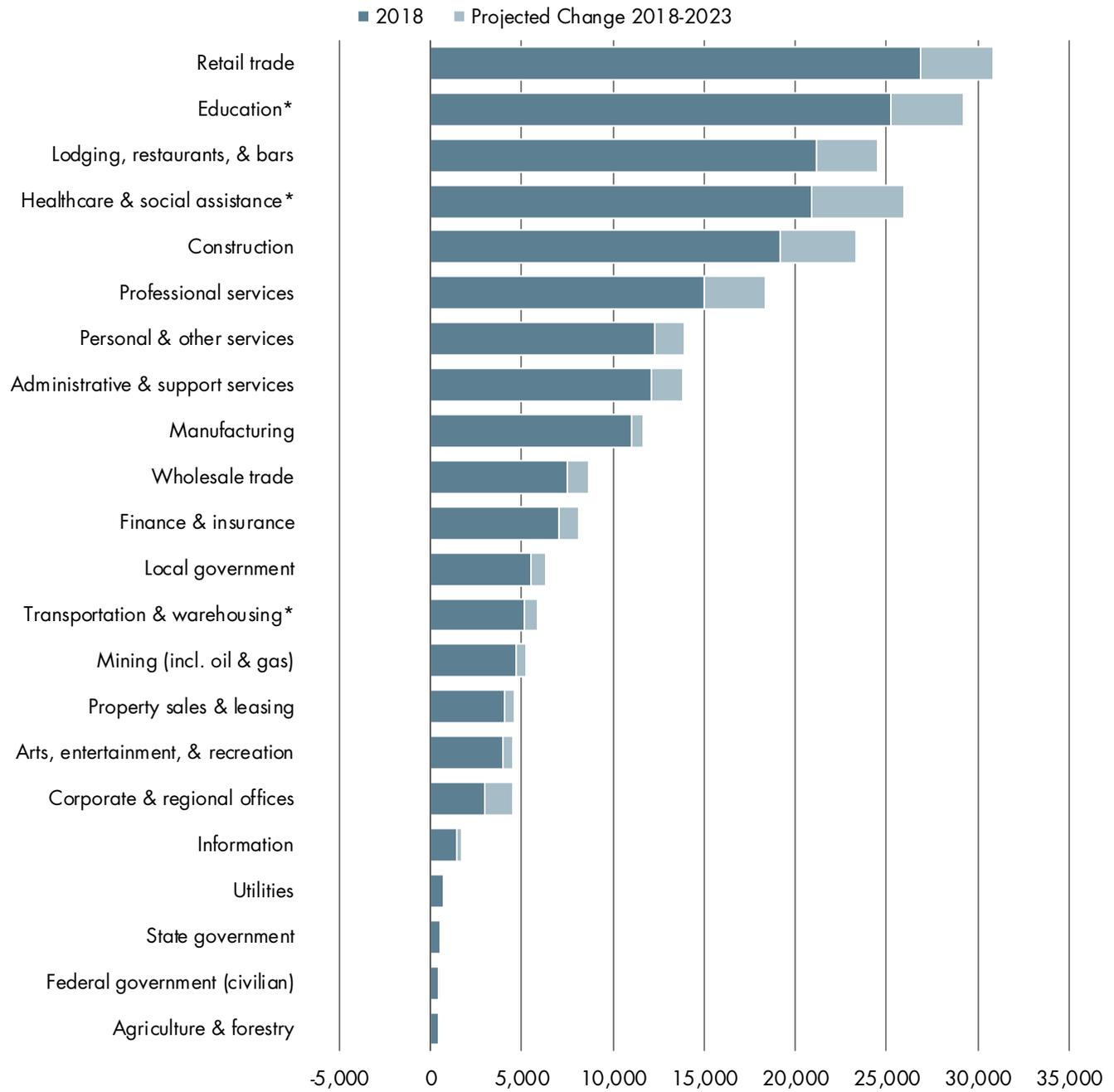
ABOUT LOCATION QUOTIENTS (LQS)

Location quotient analysis is a statistical technique used to suggest areas of relative advantage based on a region’s employment base. LQs are calculated as an industry’s share of total local employment divided by the same industry’s share of employment at the national level.

$$\frac{\text{(local employment in industry x / total local employment-all industries)}}{\text{(national employment in industry x / total national employment-all industries)}}$$

If the local industry and national industry are perfectly proportional, the LQ will be 1.00. LQs greater than 1.25 are presumed to indicate a comparative advantage; those below 0.75 suggest areas of weakness but also point to opportunities for expansion or attraction.

FIGURE 8. TOTAL EMPLOYMENT BY INDUSTRY
2018 JOB BASE AND PROJECTED 5-YEAR CHANGE



*Includes related public sector employment (e.g., education includes public schools, colleges, and universities; healthcare includes public hospitals; and transportation & warehousing includes US Postal Service workers).

Source: Emsi 2019.1—QCEW Employees, Non-QCEW Employees, and Self-Employed.

COMPONENTS OF OCCUPATIONAL DEMAND

New Jobs. New jobs are an estimate of net job change during the period of analysis. These represent new positions that did not exist previously.

Replacement Jobs. Anticipated replacement demand, or separations, represent existing positions that must be filled due to workers leaving the occupation for reasons including retirement, changing careers, dropping out of the labor force, etc. This calculation is produced by the US Bureau of Labor Statistics as part of its Employment Projections program.

Openings. Openings provide a more comprehensive measure of demand for a given occupation. Figures are comprised of the two components: new jobs and replacement jobs.

FIGURE 9. OCCUPATIONS BY SKILL LEVEL MONTGOMERY COUNTY

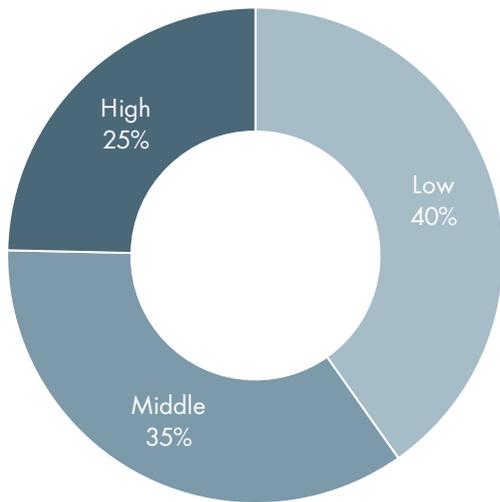


FIGURE 10. EXPECTED OCCUPATIONAL CHANGES BY SKILL LEVEL, ESTIMATED OPENINGS 2018-2023 MONTGOMERY COUNTY

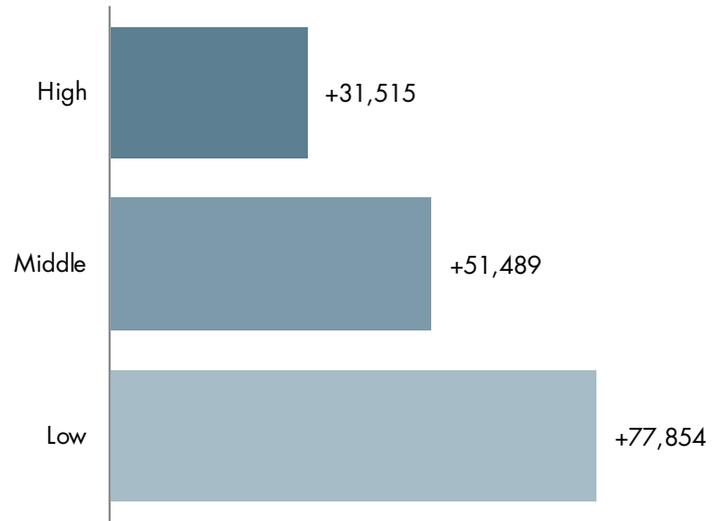


FIGURE 11. OCCUPATIONS BY SKILL LEVEL US

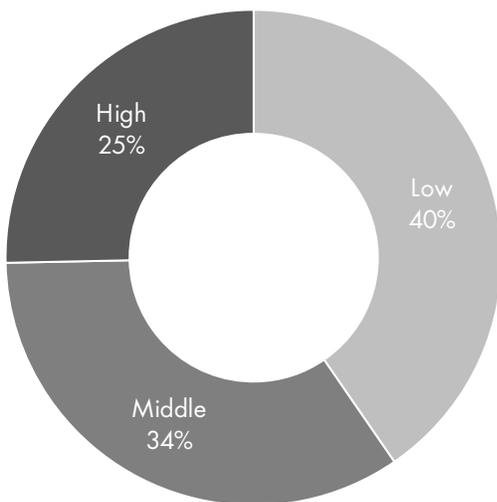
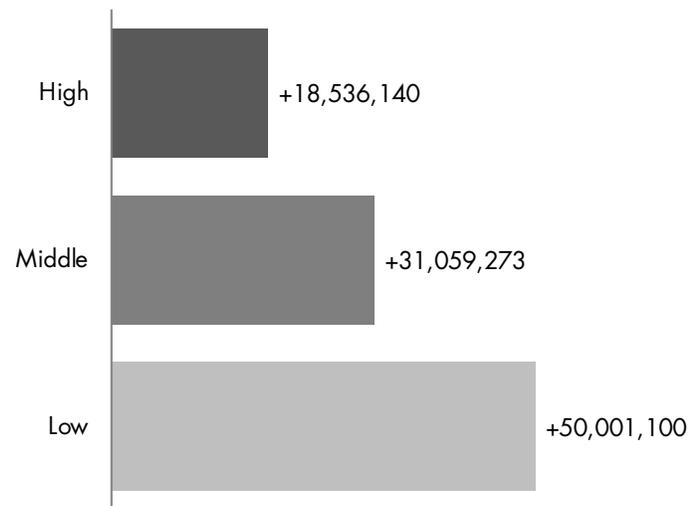


FIGURE 12. EXPECTED OCCUPATIONAL CHANGES BY SKILL LEVEL, ESTIMATED OPENINGS 2018-2023 US



Source: (figures this page) Emsi 2019.1—QCEW Employees, Non-QCEW Employees, and Self-Employed.

Notes: High skill occupations require a bachelor's degree or higher; middle skill occupations require at least a high school diploma but less than a bachelor's degree; low skill occupations require a high school diploma or less. Due to rounding, not all numbers equal 100.

FIGURE 13. MONTGOMERY COUNTY OCCUPATIONAL STRENGTHS
TOP 25 LQS

SOC CODE	DESCRIPTION	Montgomery County				Houston MSA			
		2018 Jobs	2018 LQ	Median Hourly Earnings	Wage Premium over US Avg.	2018 Jobs	2018 LQ	Median Hourly Earnings	Wage Premium over US Avg.
17-2171	Petroleum Engineers	455	9.67	\$68.98	1.08	10,821	14.69	\$75.85	1.19
47-5011	Derrick Operators, Oil & Gas	131	9.33	\$16.96	0.76	1,814	8.26	\$19.24	0.87
47-5071	Roustabouts, Oil & Gas	587	8.01	\$14.91	0.84	7,699	6.72	\$16.80	0.94
47-5012	Rotary Drill Operators, Oil & Gas	182	7.86	\$22.70	0.87	2,654	7.35	\$25.63	0.99
47-5081	Helpers-Extraction Workers	163	6.97	\$15.29	0.89	2,013	5.50	\$17.17	1.00
47-5013	Service Unit Operators, Oil, Gas, & Mining	379	6.53	\$20.72	0.89	5,729	6.32	\$23.42	1.01
19-4041	Geological & Petroleum Technicians	125	5.60	\$29.79	1.14	2,517	7.21	\$33.36	1.28
19-2042	Geoscientists, Except Hydrologists & Geographers	235	5.52	\$60.02	1.35	5,119	7.69	\$64.49	1.45
17-2041	Chemical Engineers	188	4.02	\$61.05	1.24	5,129	7.01	\$62.28	1.27
47-2011	Boilermakers	91	4.00	\$25.15	0.84	1,298	3.64	\$27.76	0.93
53-7073	Wellhead Pumpers	70	3.80	\$22.68	0.90	1,467	5.13	\$24.53	0.97
53-7072	Pump Operators, Except Wellhead Pumpers	86	3.63	\$17.82	0.84	1,461	3.95	\$19.46	0.91
47-2151	Pipelayers	215	3.61	\$14.43	0.82	1,653	1.77	\$15.35	0.87
47-3015	Helpers-Pipelayers, Plumbers, Pipe/Steamfitters	277	3.59	\$14.64	1.02	3,464	2.87	\$16.36	1.14
47-2171	Reinforcing Iron & Rebar Workers	111	3.40	\$16.71	0.86	1,902	3.73	\$18.36	0.94
25-3011	Teachers & Instr., Adult/Remedial/GED	252	2.82	\$24.57	1.00	2,323	1.66	\$24.31	0.99
51-8091	Chemical Plant & System Operators	103	2.59	\$31.31	1.05	2,898	4.67	\$33.82	1.13
47-3019	Helpers, Construction Trades, All Other	91	2.54	\$13.36	0.94	1,425	2.54	\$14.89	1.04
51-9011	Chemical Equipment Workers	257	2.53	\$31.62	1.38	7,557	4.76	\$34.64	1.51
29-1061	Anesthesiologists	111	2.46	\$121.36	1.01	1,526	2.16	\$131.48	1.10
43-6013	Medical Secretaries	1,903	2.44	\$16.02	0.96	27,892	2.28	\$16.32	0.98
49-3092	Recreational Vehicle Service Technicians	51	2.41	\$15.99	0.88	509	1.54	\$17.97	0.99
29-1151	Nurse Anesthetists	138	2.39	\$70.77	0.89	2,234	2.46	\$76.88	0.97
13-2082	Tax Preparers	298	2.31	\$26.19	1.28	2,464	1.22	\$23.88	1.17
37-3013	Tree Trimmers & Pruners	187	2.26	\$14.25	0.94	2,216	1.71	\$14.22	0.94

Source: Emsi 2019.1—QCEW Employees, Non-QCEW Employees, and Self-Employed.

Note: Occupations with at least 50 jobs in Montgomery County. Wage premiums greater than 1.10 are highlighted for emphasis.

FIGURE 14. MONTGOMERY COUNTY DEMAND FACTORS BY SKILL LEVEL
 ESTIMATED ANNUAL OPENINGS (THROUGH 2023) WITH ESTIMATE OF NET CHANGE

SOC CODE	DESCRIPTION	2018 Jobs	DEMAND FACTORS				
			Projected Openings (2018-2023)	Net Job Change (2018-2023)	Wage Premium over US	% 55-64 Years	% 65+ Years
LOW-SKILL (High school or less)							
35-3021	Combined Food Prep. & Servers, Incl. Fast Food	6,027	7,322	1,309	0.92	8%	5%
41-2031	Retail Salespersons	7,211	6,428	950	0.94	13%	8%
41-2011	Cashiers	5,367	6,288	895	1.00	10%	5%
35-3031	Waiters & Waitresses	4,330	5,035	680	0.91	5%	3%
43-9061	Office Clerks, General	5,391	4,072	736	1.10	17%	9%
43-5081	Stock Clerks & Order Fillers	3,317	2,865	597	1.05	12%	5%
47-2061	Construction Laborers	3,455	2,757	819	0.94	12%	3%
37-2011	Janitors & Cleaners, Exc. Maids & Housekeepers	3,031	2,707	592	0.95	20% ◀	10%
43-4051	Customer Service Representatives	3,139	2,627	497	0.94	13%	4%
43-6014	Secretaries/Admin. Asst., Exc. Legal, Med., & Exec.	3,336	2,295	418	0.96	23% ◀	10%
53-7062	Laborers/Freight, Stock, & Material Movers, Hand	2,370	2,149	413	0.93	12%	4%
39-9021	Personal Care Aides	1,761	1,898	502	0.93	19%	10%
37-3011	Landscaping & Groundskeeping Workers	2,339	1,836	357	0.92	16%	6%
37-2012	Maids & Housekeepers	1,889	1,482	195	0.95	18%	5%
35-3022	Counter Attendants, Cafeteria, & Concession	1,147	1,472	156	0.89	5%	4%
39-9011	Childcare Workers	1,539	1,428	240	0.93	13%	6%
35-2021	Food Preparation Workers	1,236	1,382	250	1.03	10%	5%
43-4171	Receptionists & Information Clerks	1,311	1,147	231	0.89	13%	8%
35-9031	Hosts & Hostesses	792	1,078	121	0.93	4%	7%
33-9032	Security Guards	1,069	968	206	0.93	16%	11% ◀
MIDDLE-SKILL (More than high school, less than four years)							
35-2014	Cooks, Restaurant	2,099	1,971	386	0.96	9%	5%
43-3031	Bookkeeping, Accounting, & Auditing Clerks	2,244	1,689	359	1.00	23% ◀	11% ◀
41-1011	First-Line Supvsr., Retail Sales Workers	2,377	1,658	339	1.03	15%	4%
53-3032	Heavy & Tractor-Trailer Truck Drivers	2,282	1,529	264	0.91	20% ◀	9%
43-6013	Medical Secretaries	1,903	1,490	385	0.96	17%	6%
35-1012	First-Line Supvsr., Food Prep. & Servers	1,551	1,452	274	1.29	10%	4%
41-3099	Sales Reps., Services, All Other	1,794	1,440	298	0.94	15%	6%
25-9041	Teacher Assistants	1,878	1,407	373	0.77	18%	5%
43-1011	First-Line Supvsr., Office & Admin. Support	1,861	1,291	315	1.03	18%	5%
41-4012	Sales Reps., Whls. & Mfg., Exc. Tech. & Scientific	1,780	1,273	311	0.99	20% ◀	8%

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FIGURE 14. MONTGOMERY COUNTY DEMAND FACTORS BY SKILL LEVEL (CONTINUED)
 ESTIMATED ANNUAL OPENINGS (THROUGH 2023) WITH ESTIMATE OF NET CHANGE

SOC CODE	DESCRIPTION	2018 Jobs	DEMAND FACTORS				
			Projected Openings (2018-2023)	Net Job Change (2018-2023)	Wage Premium over US	% 55-64 Years	% 65+ Years
47-1011	First-Line Supvrs., Constr. Trades & Extraction	1,718	1,268	357	0.98	19%	6%
49-9071	Maintenance & Repair Workers, General	1,772	1,185	273	0.91	23% ◀	7%
47-2111	Electricians	1,255	983	238	0.89	14%	4%
47-2031	Carpenters	1,594	916	164	0.92	17%	4%
31-9092	Medical Assistants	1,048	901	283	0.92	6%	1%
31-1014	Nursing Assistants	1,157	888	196	1.00	13%	4%
47-2152	Plumbers, Pipefitters, & Steamfitters	1,036	848	253	0.91	13%	3%
47-2073	Operating Eng. & Other Constr. Equip. Operators	906	817	260	0.78	18%	6%
51-4121	Welders, Cutters, Solderers, & Brazers	1,165	777	131	1.06	14%	3%
39-5012	Hairdressers, Hairstylists, & Cosmetologists	906	736	162	1.05	11%	6%
HIGH SKILL (Four-year degree or above)							
13-2011	Accountants & Auditors	2,883	2,061	669	1.13	16%	6%
11-1021	General & Operations Managers	2,841	1,821	576	1.15	17%	4%
25-2021	Teachers, Elementary (Except Special Ed.)	2,770	1,497	454	0.96	17%	3%
29-1141	Registered Nurses	2,588	1,419	691	1.12	17%	4%
25-2031	Teachers, Secondary (Exc. Special Ed. & CTE)	2,530	1,305	385	0.92	17%	3%
25-3098	Substitute Teachers	1,453	1,048	211	0.82	16%	7%
25-1099	Teachers, Postsecondary	1,837	1,043	302	1.20	18%	14% ◀
13-1199	Business Operations Specialists, All Other	1,026	725	222	1.11	19%	6%
25-2022	Teachers, Middle School (Exc. Special Ed. & CTE)	1,325	709	211	0.95	17%	3%
13-1111	Management Analysts	1,010	668	204	1.04	24% ◀	13% ◀
11-9199	Managers, All Other	1,109	576	167	0.76	25% ◀	10%
13-1071	Human Resources Specialists	781	564	157	1.12	14%	3%
41-3031	Securities, Commodities, & Financial Svcs. Sales	724	484	120	0.71	14%	5%
11-9021	Construction Managers	873	460	144	0.84	21% ◀	6%
11-3031	Financial Managers	659	455	186	1.10	18%	5%
21-2011	Clergy	572	450	116	1.09	25% ◀	20% ◀
15-1132	Software Developers, Applications	705	446	196	0.99	11%	2%
15-1121	Computer Systems Analysts	740	386	133	0.99	15%	3%
13-1161	Market Research Analysts & Mktng. Specialists	440	380	140	1.06	12%	4%
17-2051	Civil Engineers	486	369	168	1.30	17%	9%

Source: Emsi 2019.1 – QCEW Employees, Non-QCEW Employees, and Self-Employed.

Note: Highlights represent the following in each column. Wage premium = 10% or higher than US wages; %55-64 = 20% or higher; %65+ >10%.

FIGURE 15. OPENINGS BY CAREER CLUSTER, 2018–2023
MONTGOMERY COUNTY

CAREER CLUSTER	TOTAL OPENINGS	OPENINGS REQUIRING TRAINING	BY SKILL LEVEL	
			Middle	High
Architecture & Construction	14,452	10,622	9,265	1,357
Education & Training	10,881	10,445	2,198	8,247
Business Management & Administration	21,418	10,376	4,044	6,332
Health Science	10,185	9,069	5,887	3,182
Manufacturing	9,714	8,303	8,303	
Marketing	21,040	7,227	5,742	1,484
Finance	6,873	6,102	2,205	3,896
Hospitality & Tourism	32,019	4,448	4,435	13
Transportation, Distribution & Logistics	14,457	4,447	4,263	184
Human Services	7,875	3,097	1,267	1,830
Information Technology	2,311	2,311	689	1,622
Law, Public Safety, Corrections & Security	3,873	1,975	1,592	382
Arts, Audio/Video Technology & Communications	1,775	1,728	979	749
Science, Technology, Engineering & Mathematics	1,647	1,647	72	1,574
Agriculture, Food & Natural Resources	1,610	802	695	107
Government & Public Administration	728	472	250	222

Source: Emsi 2019.1 – QCEW Employees, Non-QCEW Employees, and Self-Employed.
Note: Only occupations with 10+ openings.

FIGURE 16. MONTGOMERY COUNTY DEMAND FACTORS BY CAREER CLUSTER
 ESTIMATED ANNUAL OPENINGS (THROUGH 2023) WITH ESTIMATE OF NET CHANGE

SOC CODE	DESCRIPTION	2018 Jobs	DEMAND FACTORS				
			Projected Openings (2018-2023)	Net Job Change (2018-2023)	Wage Premium over US	% 55-64 Years	% 65+ Years
Architecture & Construction							
47-1011	First-Line Supvsr., Constr. Trades & Extraction	1,718	1,268	357	0.98	19%	6%
47-2111	Electricians	1,255	983	238	0.89	14%	4%
47-2031	Carpenters	1,594	916	164	0.92	17%	4%
47-2152	Plumbers, Pipefitters, & Steamfitters	1,036	848	253	0.91	13%	3%
47-2073	Operating Eng. & Other Constr. Equip. Operators	906	817	260	0.78	18%	6%
11-9021	Construction Managers	873	460	144	0.84	21% ◀	6%
49-9021	HVAC/Refrig. Mechanics & Installers	518	378	108	0.84	14%	4%
17-2051	Civil Engineers	486	369	168	1.30	17%	9%
47-2051	Cement Masons & Concrete Finishers	374	334	108	0.75	13%	4%
47-2141	Painters, Construction & Maintenance	677	334	41	1.04	19%	4%
47-5013	Service Unit Operators, Oil, Gas, & Mining	379	306	65	0.89	8%	Insf. Data
13-1051	Cost Estimators	354	268	80	1.01	22% ◀ 14% ◀	
47-2021	Brickmasons & Blockmasons	243	226	103	0.93	15%	5%
47-2211	Sheet Metal Workers	237	163	33	0.82	15%	5%
37-1012	First-Line Supvsr., Landscaping & Groundskeeping	241	152	33	0.77	17%	Insf. Data
Education & Training							
25-2021	Teachers, Elementary (Except Special Ed.)	2,770	1,497	454	0.96	17%	3%
25-9041	Teacher Assistants	1,878	1,407	373	0.77	18%	5%
25-2031	Teachers, Secondary (Exc. Special Ed. & CTE)	2,530	1,305	385	0.92	17%	3%
25-3098	Substitute Teachers	1,453	1,048	211	0.82	16%	7%
25-1099	Teachers, Postsecondary	1,837	1,043	302	1.20	18%	14% ◀
25-2011	Teachers, Preschool (Except Special Ed.)	1,052	724	180	0.77	10%	2%
25-2022	Teachers, Middle School (Exc. Special Ed. & CTE)	1,325	709	211	0.95	17%	3%
25-3097	Teachers & Instructors, All Other	471	360	85	0.82	14%	10%
21-1012	Educ., Guidance, School, & Vocational Counselors	431	306	69	1.07	17%	5%
11-9032	Educ. Administrators, Elem. & Secondary	497	278	81	0.83	23% ◀	5%
27-2022	Coaches & Scouts	303	277	61	1.11	8%	5%
25-2012	Teachers, Kindergarten (Except Special Ed.)	368	244	55	0.99	13%	Insf. Data
25-9031	Instructional Coordinators	275	175	44	1.05	21% ◀	8%
25-3011	Teachers & Instr., Adult/Remedial/GED	252	153	13	1.00	13%	8%
25-2054	Special Educ. Teachers, Secondary School	268	144	43	0.92	18%	Insf. Data

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FIGURE 16. MONTGOMERY COUNTY DEMAND FACTORS BY CAREER CLUSTER (CONTINUED)
 ESTIMATED ANNUAL OPENINGS (THROUGH 2023) WITH ESTIMATE OF NET CHANGE

SOC CODE	DESCRIPTION	2018 Jobs	DEMAND FACTORS				
			Projected Openings (2018-2023)	Net Job Change (2018-2023)	Wage Premium over US	% 55-64 Years	% 65+ Years
Business Management & Administration							
11-1021	General & Operations Managers	2,841	1,821	576	1.15	17%	4%
43-3031	Bookkeeping, Accounting, & Auditing Clerks	2,244	1,689	359	1.00	23%	◀ 11%
43-1011	First-Line Supvrs., Office & Admin. Support	1,861	1,291	315	1.03	18%	5%
13-1199	Business Operations Specialists, All Other	1,026	725	222	1.11	19%	6%
13-1111	Management Analysts	1,010	668	204	1.04	24%	◀ 13%
43-3021	Billing & Posting Clerks	720	578	183	1.01	14%	5%
11-9199	Managers, All Other	1,109	576	167	0.76	25%	◀ 10%
13-1071	Human Resources Specialists	781	564	157	1.12	14%	3%
13-1028	Buyers & Purchasing Agents	632	393	80	0.94	21%	◀ 7%
43-6011	Exec. Secretaries/Admin. Assistants	611	388	48	1.02	23%	◀ 9%
13-1151	Training & Development Specialists	355	263	77	1.10	17%	4%
13-1041	Compliance Officers	327	206	66	1.14	21%	◀ 6%
11-3011	Administrative Services Managers	312	203	67	1.05	24%	◀ 6%
43-3051	Payroll & Timekeeping Clerks	271	193	48	1.03	19%	7%
11-3021	Computer & Info. Systems Managers	296	189	71	1.03	16%	Insf. Data
Health Science							
43-6013	Medical Secretaries	1,903	1,490	385	0.96	17%	6%
29-1141	Registered Nurses	2,588	1,419	691	1.12	17%	4%
31-9092	Medical Assistants	1,048	901	283	0.92	6%	1%
31-1014	Nursing Assistants	1,157	888	196	1.00	13%	4%
29-2052	Pharmacy Technicians	778	462	138	1.13	8%	2%
29-2061	Licensed Practical/Vocational Nurses	815	460	150	1.13	16%	4%
31-9091	Dental Assistants	595	446	100	1.04	7%	Insf. Data
11-9111	Medical & Health Services Managers	340	249	102	1.08	19%	5%
29-1051	Pharmacists	488	185	75	1.03	14%	5%
29-2018	Clinical Laboratory Technologists & Techs.	275	158	65	0.95	14%	Insf. Data
29-2071	Medical Records & Health Info. Technicians	232	141	64	1.05	16%	5%
29-1069	Physicians & Surgeons, All Other	331	120	73	0.82	16%	◀ 11%
29-2056	Veterinary Technologists & Technicians	217	119	30	0.86	6%	Insf. Data
29-2021	Dental Hygienists	216	118	47	1.08	11%	Insf. Data
29-1171	Nurse Practitioners	175	110	62	1.12	15%	Insf. Data

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FIGURE 16. MONTGOMERY COUNTY DEMAND FACTORS BY CAREER CLUSTER (CONTINUED)
 ESTIMATED ANNUAL OPENINGS (THROUGH 2023) WITH ESTIMATE OF NET CHANGE

SOC CODE	DESCRIPTION	2018 Jobs	DEMAND FACTORS				
			Projected Openings (2018-2023)	Net Job Change (2018-2023)	Wage Premium over US	% 55-64 Years	% 65+ Years
Manufacturing							
49-9071	Maintenance & Repair Workers, General	1,772	1,185	273	0.91	23% ◀	7%
51-4121	Welders, Cutters, Solderers, & Brazers	1,165	777	131	1.06	14%	3%
51-9061	Inspectors, Testers, Sorters, Samplers, & Weighers	801	533	47	1.07	19%	7%
51-1011	First-Line Supvsr., Production & Operating Workers	704	437	80	1.06	20%	5%
51-4041	Machinists	564	365	67	0.96	21% ◀	6%
49-1011	First-Line Supvsr., Mechanics, Install, & Repair	591	353	87	0.98	22% ◀	5%
43-5061	Production, Planning, & Expediting Clerks	462	332	81	0.98	18%	4%
49-9041	Industrial Machinery Mechanics	500	289	63	1.01	21% ◀	5%
51-3021	Butchers & Meat Cutters	293	266	69	0.91	15%	5%
49-9099	Install./Maint./Repair Workers, All Other	267	178	43	0.91	17%	7%
51-9011	Chemical Equipment Workers	257	160	19	1.38	20% ◀	Insf. Data
51-4031	Cutting, Punching, & Press Machine, Metal/Plastic	213	128	7	0.91	19%	5%
51-4011	CNC Machine Operators, Metal/Plastic	204	128	23	1.03	14%	Insf. Data
51-2028	Electrical/Electronic/Electromech. Assemblers, Exc. Co	214	126	-1	0.93	21% ◀	6%
49-2011	Computer, ATM, & Office Machine Repairers	185	117	22	0.99	13%	Insf. Data
Science, Technology, Engineering & Mathematics							
17-2171	Petroleum Engineers	455	218	63	1.08	20% ◀	4%
17-2141	Mechanical Engineers	360	202	79	1.12	16%	5%
19-2042	Geoscientists, Except Hydrologists & Geographers	235	152	38	1.35	21% ◀	5%
17-2112	Industrial Engineers	232	126	45	1.26	19%	5%
11-9041	Architectural & Engineering Mgrs.	191	118	45	1.24	24% ◀	6%
17-2071	Electrical Engineers	168	105	46	1.01	20% ◀	7%
17-2199	Engineers, All Other	189	100	35	1.12	20%	11% ◀
17-2041	Chemical Engineers	188	94	30	1.24	19%	Insf. Data
19-4099	Life, Physical, & Social Science Techs., All Other	100	72	11	0.90	11%	Insf. Data
17-2072	Electronics Engineers, Except Computer	110	59	21	1.10	20% ◀	Insf. Data
19-2031	Chemists	97	58	12	0.95	15%	Insf. Data
19-2041	Environmental Scientists & Specialists, Incl. Health	70	53	17	1.14	20% ◀	Insf. Data
17-2011	Aerospace Engineers	101	52	20	1.22	20%	Insf. Data
17-2111	Health & Safety Eng., Except Mine Safety	74	40	14	1.02	20% ◀	Insf. Data
17-2131	Materials Engineers	41	20	5	0.98	Insf. Data	Insf. Data

Source: Emsi 2019.1 – QCEW Employees, Non-QCEW Employees, and Self-Employed.

Note: Highlights represent the following in each column. Wage premium = 10% or higher than US wages; %55-64 > 20%; %65+ > 10%.

SUPPLY OF WORKERS

The Montgomery County labor force is more than 275,000. Over the past 5 years, the labor force has grown, on average, 2 percent per year while annual job growth has grown almost 4 percent per year.

The county's unemployment rate was consistently below the unemployment rate of the state and the Houston MSA from 2007 to 2015. From 2016 to 2018, the county's unemployment rate closely tracked the state's rate. In August 2019, **the unemployment rate was 3.5 percent** after a brief dip below 3 percent in April and May of 2019. With unemployment below 4 percent, the Montgomery County economy is considered to be at full employment.

Just over 10,000 residents in Montgomery County are unemployed. The occupational categories with the largest number of unemployed are construction & extraction; office & administrative support, management; sales & related; and production.

The top occupational categories that employed Montgomery County residents work in are office & administrative support, sales & related, food preparation, construction & extraction, and transportation & material moving. In most occupational categories, the number of employed residents who work in those occupations is greater than the number of jobs in that occupation in the county. This indicates a likely outflow of resident workers to jobs in another county. **The occupational categories with the largest potential surplus of resident workers are transportation & material moving; office & administrative support; production; construction & extraction; and installation, maintenance, & repair.** The specific occupations with the largest potential surplus of resident workers are tractor trailer truck drivers; laborers & material movers; office clerks; registered nurses; and customer service representatives.

The rate of youth disconnection, which is the percent of 16 to 24-year-olds not working and not in school, is nearly 15 percent in Montgomery County. This is 27 percent higher than the US average.

In Montgomery County, **4.4 percent of the workers worked full-time in the last 12 months and earned below the poverty level.** This rate is 22 percent higher than the US average.

The number of **graduates from Lone Star College-Montgomery (LSC-M) grew by 44 percent** between 2014 and 2017, largely due to an increase in the number of graduates earning associate's degrees. The largest number of students are earning an associate's degree in liberal arts and sciences, which is a common transfer degree. Aside from liberal arts, the next most popular fields of study are registered nursing; industrial technology; welding technology; heating, ventilation, and air conditioning (HVAC) maintenance; and general business. The most popular career clusters are health science, manufacturing, business, law and public safety, and architecture and construction.

A comparison of **middle skill openings and completions by career cluster shows that the two are fairly well-aligned.** The gaps that do exist in areas such as construction, manufacturing, marketing, and hospitality, are primarily because the occupations do not require for-credit training; instead, they might require on-the-job training or apprenticeships or non-credit training. However, in areas such as health science, business, information technology, there are a similar number of completions and openings.

Between Conroe and Willis ISDs, there are **more than 4,000 high school graduates.** Many of these graduates are staying in the area to attend LSC-M. Texas A&M University and Sam Houston State University are

also top destinations for high school graduates. **About 1,600 graduates are going into the workforce;** top industries they are working in are retail and hospitality.

A wide range of career and technical education programs are offered at the Conroe and Willis ISD high schools. **About one in four students are enrolled in CTE.**

Lone Star College also offers a wide range of non-credit programs that support workforce training. Energy, manufacturing, and construction programs are offered at the Conroe and Montgomery campuses. At LSC-M, arts, humanities, communication & design; business & professional services; computer/digital technology; health sciences; and public safety & human/consumer services are also offered.

There were **20 different registered apprenticeship programs** identified. Most of the apprenticeship programs support occupations in construction and manufacturing. However, there are two information technology-related programs. Of the 20 programs, however, **more than half have no apprentices.**

FIGURE 17. LABOR MARKET OVERVIEW, 2018
IN THOUSANDS

GEOGRAPHY	CIVILIAN LABOR FORCE	EMPLOYMENT	UNEMPLOYMENT	UNEMPLOYMENT RATE
Montgomery County	275.2	264.8	10.3	3.8%
Houston MSA	3,391	3,245	146	4.3%
Texas	13,848	13,314	534	3.9%
US	162,075	155,761	6,314	3.9%

FIGURE 18. MONTGOMERY COUNTY CIVILIAN LABOR FORCE

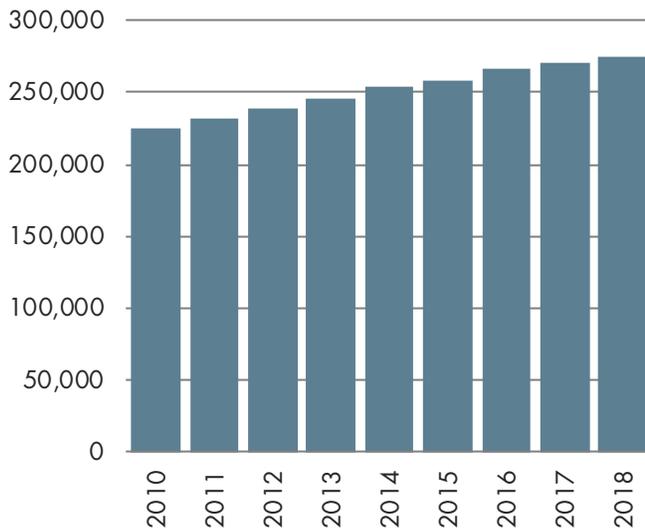


FIGURE 19. MONTGOMERY COUNTY UNEMPLOYMENT

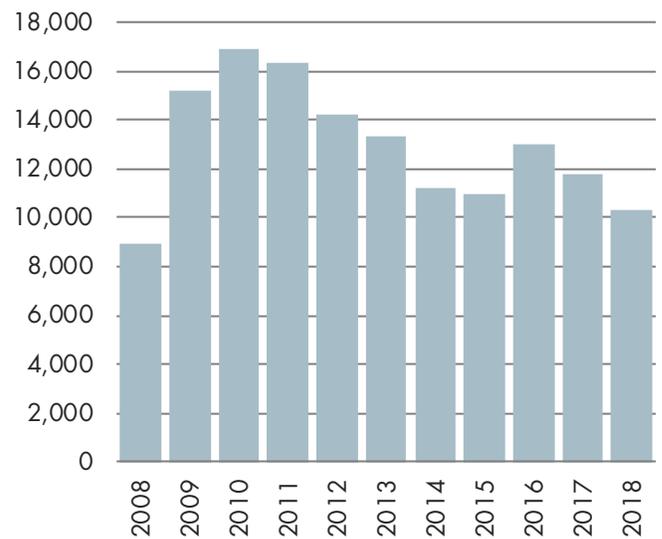
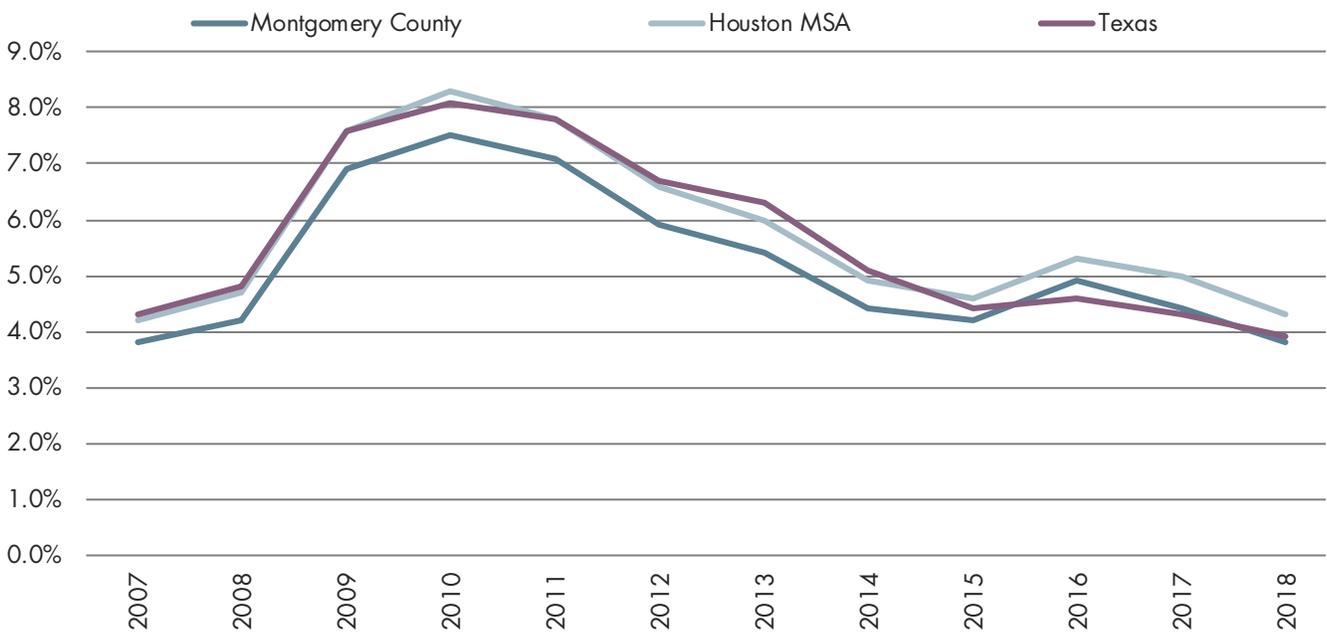


FIGURE 20. UNEMPLOYMENT RATES



Sources: (figures this page) US Bureau of Labor Statistics, Current Population Survey (national figures), and Local Area Unemployment Statistics (state and local).

FIGURE 21. UNEMPLOYMENT BY OCCUPATIONAL CATEGORY, 2019
MONTGOMERY COUNTY

SOC	DESCRIPTION	2019 UNEMPLOYMENT
47-0000	Construction & Extraction Occupations	1,504
43-0000	Office & Administrative Support Occupations	1,094
11-0000	Management Occupations	1,040
41-0000	Sales & Related Occupations	914
51-0000	Production Occupations	683
13-0000	Business & Financial Operations Occupations	600
53-0000	Transportation & Material Moving Occupations	527
49-0000	Installation, Maintenance, & Repair Occupations	504
35-0000	Food Preparation & Serving Related Occupations	424
31-0000	Healthcare Support Occupations	335
15-0000	Computer & Mathematical Occupations	213
37-0000	Building & Grounds Cleaning & Maintenance Occupations	198
25-0000	Education, Training, & Library Occupations	174
29-0000	Healthcare Practitioners & Technical Occupations	156
17-0000	Architecture & Engineering Occupations	137
39-0000	Personal Care & Service Occupations	123
33-0000	Protective Service Occupations	85
27-0000	Arts, Design, Entertainment, Sports, & Media Occupations	83
21-0000	Community & Social Service Occupations	73
23-0000	Legal Occupations	49
19-0000	Life, Physical, & Social Science Occupations	20
45-0000	Farming, Fishing, & Forestry Occupations	17

Source: Emsi 2019.3—QCEW Employees, Non-QCEW Employees, and Self-Employed.

FIGURE 22. RESIDENT WORKERS VS. JOBS, 2018
 BY MAJOR OCCUPATIONAL CATEGORY, MONTGOMERY COUNTY

SOC	DESCRIPTION	2018 JOBS	2018 RESIDENT WORKERS	DIFFERENCE*
53-0000	Transportation & Material Moving Occupations	11,764	18,152	-6,388
43-0000	Office & Administrative Support Occupations	31,452	37,802	-6,350
51-0000	Production Occupations	9,983	14,772	-4,789
47-0000	Construction & Extraction Occupations	15,786	19,208	-3,422
49-0000	Installation, Maintenance, & Repair Occupations	8,371	11,674	-3,303
41-0000	Sales & Related Occupations	24,550	27,093	-2,543
11-0000	Management Occupations	11,095	13,460	-2,365
13-0000	Business & Financial Operations Occupations	10,599	12,778	-2,179
17-0000	Architecture & Engineering Occupations	3,806	5,944	-2,138
29-0000	Healthcare Practitioners & Technical Occupations	10,929	12,968	-2,039
15-0000	Computer & Mathematical Occupations	4,444	5,977	-1,533
35-0000	Food Preparation & Serving Related Occupations	21,475	22,989	-1,514
33-0000	Protective Service Occupations	4,111	5,370	-1,259
39-0000	Personal Care & Service Occupations	7,521	8,496	-975
19-0000	Life, Physical, & Social Science Occupations	1,372	2,138	-766
37-0000	Building & Grounds Cleaning & Maint. Occupations	8,183	8,939	-756
31-0000	Healthcare Support Occupations	4,304	4,955	-651
25-0000	Education, Training, & Library Occupations	16,054	16,675	-621
23-0000	Legal Occupations	1,253	1,849	-596
27-0000	Arts, Design, Entertain., Sports, & Media Occupations	3,280	3,816	-536
21-0000	Community & Social Service Occupations	2,882	3,074	-192
45-0000	Farming, Fishing, & Forestry Occupations	395	444	-49

*Difference = Resident Workers – Jobs.

Source: Emsi 2019.3 – QCEW Employees, Non-QCEW Employees, and Self-Employed.

FIGURE 23. TOP 25 OCCUPATIONS, 2018

GREATEST DIFFERENCE BETWEEN RESIDENT WORKERS AND JOBS, MONTGOMERY COUNTY

SOC	DESCRIPTION	2018 JOBS	2018 RESIDENT WORKERS	DIFFERENCE*
53-3032	Heavy & Tractor-Trailer Truck Drivers	2,238	3,658	-1,420
53-7062	Laborers & Freight, Stock, & Material Movers, Hand	2,485	3,808	-1,323
43-9061	Office Clerks, General	5,144	6,253	-1,109
29-1141	Registered Nurses	2,755	3,700	-945
43-4051	Customer Service Representatives	3,459	4,380	-921
41-4012	Sales Reps., Wholesale & Mfg., Except Tech. & Scientific Products	1,731	2,556	-825
11-1021	General & Operations Managers	3,260	4,064	-804
35-3021	Combined Food Preparation & Serving Workers, Including Fast Food	6,892	7,497	-605
39-9021	Personal Care Aides	1,827	2,402	-575
33-9032	Security Guards	1,015	1,575	-560
43-6014	Secretaries & Admin. Assistants, Except Legal, Medical, & Executive	3,327	3,878	-551
41-3099	Sales Representatives, Services, All Other	1,794	2,340	-546
53-7051	Industrial Truck & Tractor Operators	828	1,319	-491
43-4181	Reservation & Transportation Ticket Agents & Travel Clerks	72	546	-474
49-9071	Maintenance & Repair Workers, General	1,810	2,279	-469
51-2098	Assemblers & Fabricators, All Other, Including Team Assemblers	787	1,217	-430
37-2011	Janitors & Cleaners, Except Maids & Housekeeping Cleaners	3,103	3,520	-417
51-4121	Welders, Cutters, Solderers, & Brazers	1,206	1,623	-417
13-1199	Business Operations Specialists, All Other	1,216	1,625	-409
51-9061	Inspectors, Testers, Sorters, Samplers, & Weighers	856	1,250	-394
43-3031	Bookkeeping, Accounting, & Auditing Clerks	2,488	2,879	-391
47-2111	Electricians	1,251	1,641	-390
53-3033	Light Truck or Delivery Services Drivers	948	1,334	-386
43-1011	First-Line Supervisors of Office & Administrative Support Workers	1,901	2,259	-358
43-5071	Shipping, Receiving, & Traffic Clerks	818	1,173	-355

*Difference = Resident Workers – Jobs.

Source: Emsi 2019.3—QCEW Employees, Non-QCEW Employees, and Self-Employed.

FIGURE 24. YOUTH DISCONNECTION, 2017
 PERCENT OF YOUTH AGES 16 TO 24 NOT IN SCHOOL AND NOT WORKING

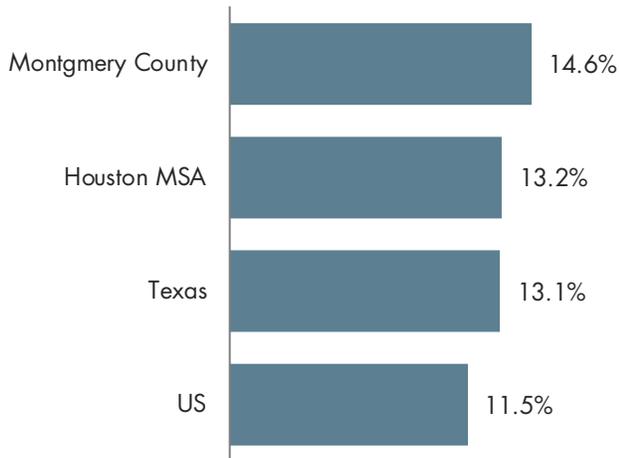


FIGURE 25. WORKING POOR
 PERCENT WORKING FULL-TIME AND EARNING BELOW THE POVERTY LEVEL

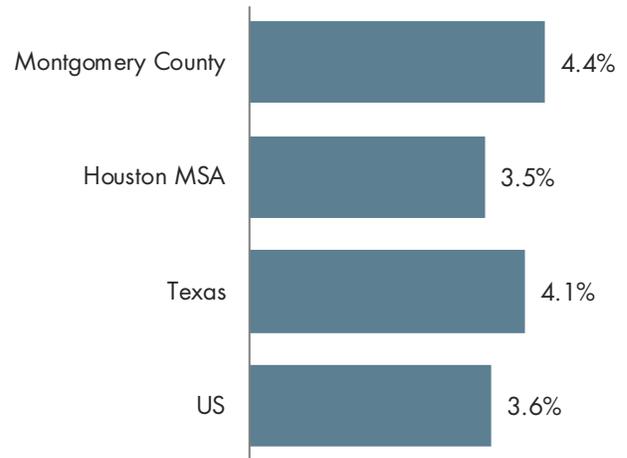
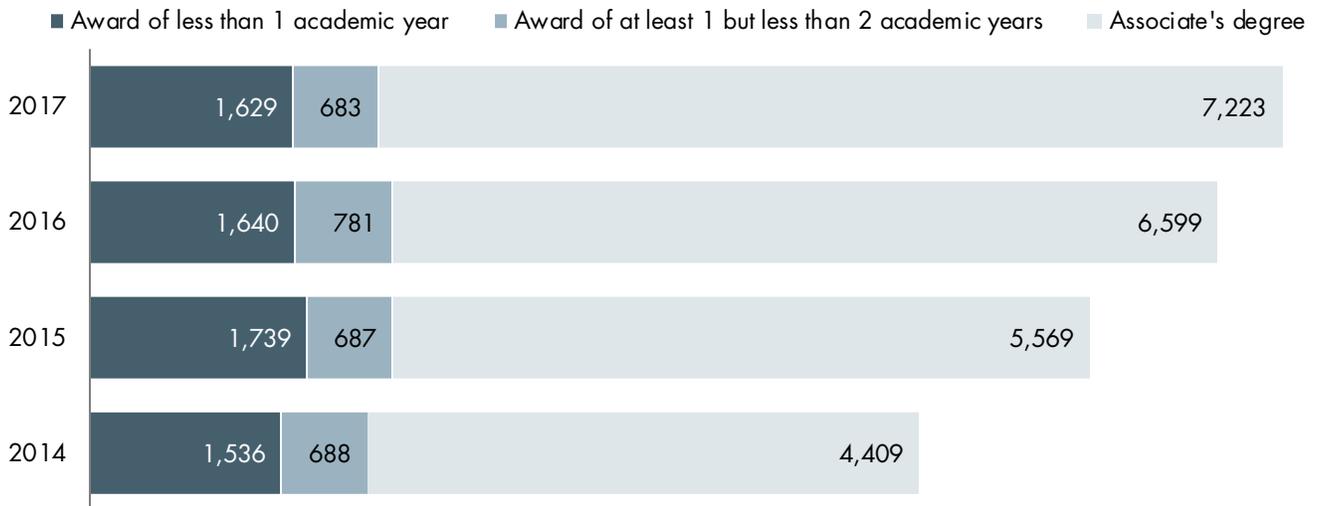
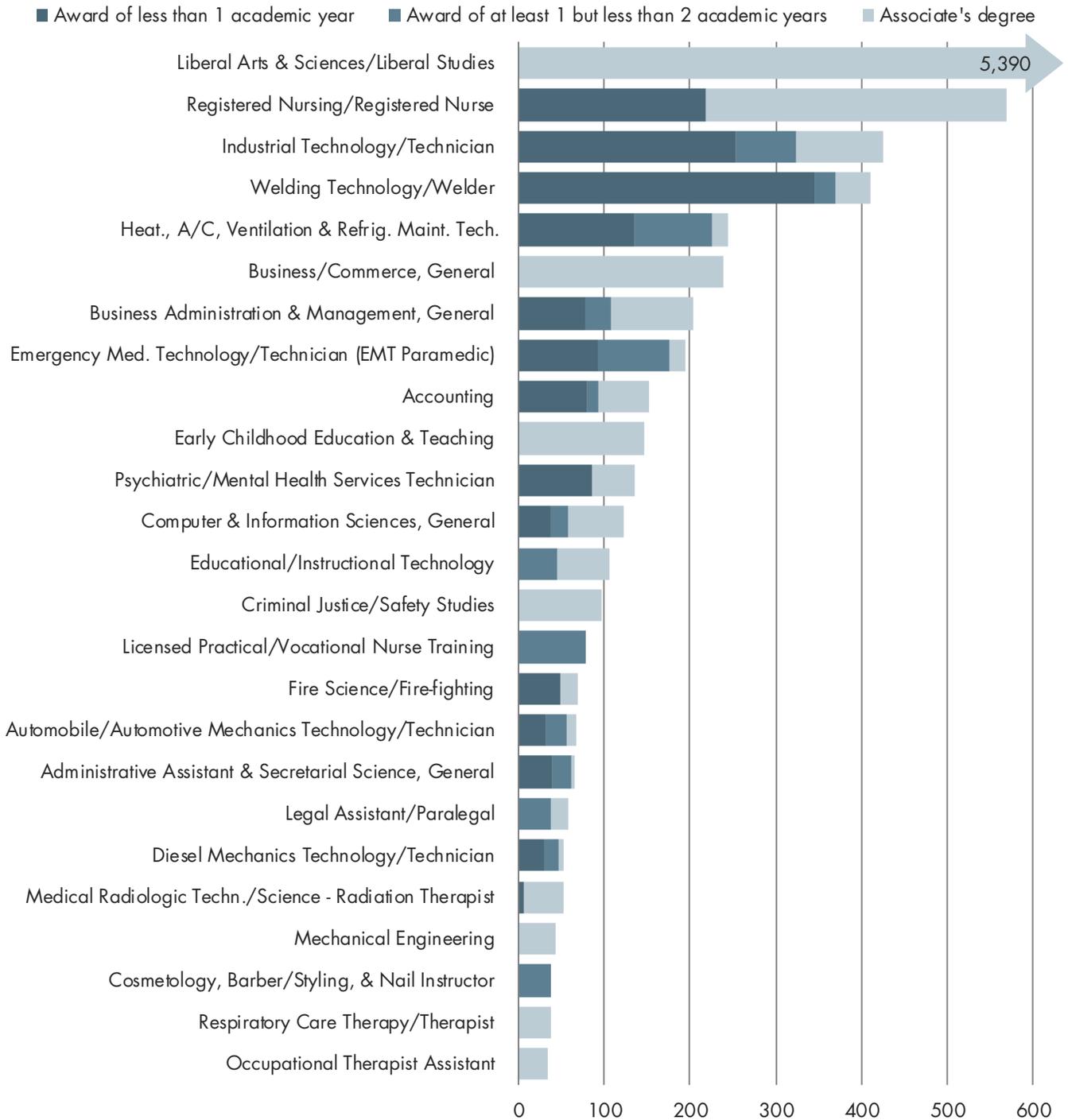


FIGURE 26. COMPLETIONS BY AWARD LEVEL, 2014-2017
 LONE STAR COLLEGE-MONTGOMERY



Sources: (Figure 24) Measure of America, Social Science Research Council; (Figure 25) 5-Year American Community Survey, 2017; (Figure 26) NCES, IPEDS.

FIGURE 27. TOP 25 FIELDS OF STUDY, 2017
LONE STAR COLLEGE-MONTGOMERY



Source: NCES, IPEDS.

FIGURE 28. COMPLETIONS BY AWARD LEVEL, 2017
LONE STAR COLLEGE-MONTGOMERY

CAREER CLUSTER	TOTAL COMPLETIONS	AWARD OF <1 YR.	AWARD OF AT LEAST 1 BUT <2 YRS.	ASSOCIATE'S DEGREE
Health Science	1,115	346	140	629
Manufacturing	838	599	94	145
Business Management & Administration	508	118	52	338
Law, Public Safety, Corrections & Security	419	141	120	158
Architecture & Construction	278	146	99	33
Education & Training*	270	8	46	216
Finance	152	80	14	58
Transportation, Distribution & Logistics	149	79	40	30
Information Technology	144	39	21	84
Human Services	92	47	38	7
Science, Technology, Engineering & Mathematics	82	17	3	62
Agriculture, Food & Natural Resources	50	5	11	34
Arts, Audio/Video Technology & Communications	48	4	5	39

FIGURE 29. DEMAND-SUPPLY COMPARISON

CAREER CLUSTER	MIDDLE SKILL ANNUAL OPENINGS	2017 COMPLETIONS
Architecture & Construction	1,853	278
Manufacturing	1,661	838
Health Science	1,177	1,115
Marketing	1,148	-
Hospitality & Tourism	887	-
Transportation, Distribution & Logistics	853	149
Business Management & Administration	809	508
Finance	441	152
Education & Training*	440	270
Law, Public Safety, Corrections & Security	318	419
Human Services	253	92
Arts, Audio/Video Technology & Communications	196	48
Agriculture, Food & Natural Resources	139	50
Information Technology	138	144
Government & Public Administration	50	0
Science, Technology, Engineering & Mathematics	14	82

*Excludes liberal arts.
Source: NCES, IPEDS.

FIGURE 30. SCHOOL DISTRICT SUMMARY

	CONROE ISD	WILLIS ISD
High School Graduates	3,791	425
<i>CTE Participants</i>	24.70%	30.10%
Enrolled in a Texas Public College	42.60%	40.00%
Top Public Colleges	<ul style="list-style-type: none"> • Lone Star College-Montgomery • Texas A&M University • Sam Houston State University • The University of Texas at Austin • University of Houston 	<ul style="list-style-type: none"> • Lone Star College-Montgomery • Sam Houston State University • Texas A&M University • Texas State University • Blinn College
High School Graduates Earning a Degree within 6 Years	5.4% Public 2 Yr. 23.2% Public 4 Yr.	5.4% Public 2 Yr. 14.9% Public 4 Yr.
Employed Only after Graduation	19.40%	29.90%
Employed and Enrolled	17.80%	23.10%
Top Industries of Employment	<ul style="list-style-type: none"> • Retail • Accommodations & Food Svcs. • Arts, Entertainment, Recreation • Admin, & Support • Healthcare 	<ul style="list-style-type: none"> • Retail • Accommodations & Food Svcs. • Arts, Entertainment, Recreation • Construction • Healthcare

Source: TPEIR.

FIGURE 31. CAREER AND TECHNICAL EDUCATION SUMMARY

CAREER CLUSTER	CANEY CREEK HIGH SCHOOL	CONROE HIGH SCHOOL	GRAND OAKS HIGH SCHOOL	HAUKE ALT. HIGH SCHOOL	JUVENILE JUSTICE ALT. ED.	OAK RIDGE HIGH SCHOOL	THE WOODLANDS COLLEGE PARK HS	THE WOODLANDS HIGH SCHOOL	WILLIS HIGH SCHOOL
Agriculture, Food & Natural Resources	●	●	●			●	●	●	●
Architecture & Construction	●	●				●	●	●	●
Arts, A/V Technology & Comm.	●	●	●	●		●	●	●	●
Business, Management & Admin.	●	●	●	●		●	●	●	●
Education & Training	●	●	●			●	●	●	●
Finance									
Government & Public Administration									
Health Science	●	●	●	●		●	●	●	●
Hospitality & Tourism	●	●	●	●	●	●	●	●	●
Human Services	●	●	●	●		●	●	●	●
Information Technology								●	●
Law, Public Safety, Corrections & Sec.	●	●		●	●	●	●	●	●
Manufacturing	●	●		●		●		●	●
Marketing, Sales & Service								●	
STEM	●	●	●			●	●	●	●
Transportation, Distribution & Logistics	●	●		●		●	●	●	●

FIGURE 32. NON-DEGREE PROGRAM SUMMARY

CAREER CLUSTER	LSC - CONROE	LSC-M
Energy, Manufacturing & Construction	●	●
Arts, Humanities, Communication & Design		●
Business & Professional Services		●
Computer/Digital Technology		●
Health Sciences		●
Public Safety & Human/Consumer Services		●

Sources: (Figure 31) Conroe ISD, Willis ISD; (Figure 32) Lone Star College-Montgomery.

FIGURE 33. APPRENTICESHIP PROGRAMS

PROGRAM SPONSOR	OCCUPATION TITLE	TOTAL APPRENTICE COUNT
ICOTEX, Industrial Components of Texas LLC	Inspector, Precision	0
ICOTEX, Industrial Components of Texas LLC	Welder, Combination	0
ICOTEX, Industrial Components of Texas LLC	Numerical Control Machinist	2
Hughes Christensen	Machine Repairer, Maintenance	6
Hughes Christensen	Tool Maker	1
Hughes Christensen	Tool Grinder Operator	0
Epic Software Group, Inc.	IT Project Manager	1
Proficient Electric Apprenticeship Program	Electrician (Alternate Title: Interior Electrician)	0
Ivey Mechanical Company	Pipe Fitter (Construction)	0
Ivey Mechanical Company	Plumber	0
Ivey Mechanical Company	Sheet Metal Worker	0
Supra America Machined Parts, LLC	Quality Control Technician	1
Supra America Machined Parts, LLC	CNC Operator and Programmer	3
Lone Star College System	Oil Field Equip. Mechanic	0
Lone Star College System	Numerical Control Machinist	0
Lone Star College System	Mechatronics Technician	1
Lone Star College System	Cybersecurity Support Technician	0
Bay Institute of Science and Engineering	Machinist (Alternate Title: Precision Machinist)	0
Bay Institute of Science and Engineering	Mold Maker, Die-Cast & Plaster	0
Bay Institute of Science and Engineering	Tool and Die Maker	0

Source: US DOLETA.

GAPS AND OPPORTUNITIES

Through an examination of the available data related to the demand for and supply of labor and through input from committee members and employers, the following emerged as key gaps and/or opportunities.

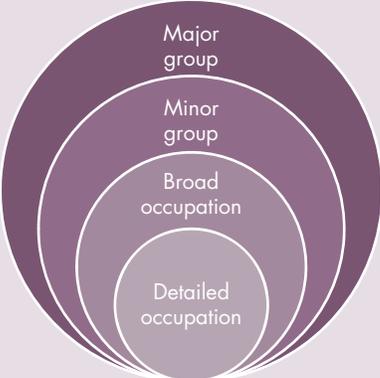
- An **experience gap** resulting from the recession exacerbates risk related to retirement exposure. How can the transfer of knowledge be formalized to capture the experience of retiring workers? How can young talent be developed more quickly to fill the void left by retirees? Creating programs to address this gap would be greatly beneficial to employers facing a high degree of retirement exposure and an experience gap.
- The **competition from the oil & gas sector** makes recruiting for some positions more difficult. Growing the supply of workers in these occupations and building in connection points between the new supply of workers and employers could help alleviate the competition.
- There are **pockets of underutilized talent**, including disconnected youth, underemployed, unemployed, and the working poor. These groups could be targeted with outreach and services to connect them with upskilling and reskilling opportunities to move them into better career pathways.
- A key element of demand-driven workforce strategy is **industry engagement and involvement**. Industry participants are willing partners and eager to get involved, but sometimes knowing who to contact and where is difficult. Facilitating these connections could greatly increase the participation of industry in the workforce system and programs.
- The curricula of workforce development programs (both LSC-M and CTE) could be refined and strengthened with **active industry participation and input**.
- Creating **a connection point or platform between high school graduates and local industry** could enable employers to tap into this source of talent and would allow high school graduates to stay in the local area to pursue a career.
- The **underutilization of apprenticeship programs** shows there is work to be done to raise awareness of this opportunity to learn and earn.
- The choice of career and technical education and postsecondary field of study is often driven by the students' interest or guidance from friends and family. Often the choices are not well-informed by labor market or career information. **Designing programs to get more students into high-demand occupations and the related fields of study** is another way to improve the alignment of the talent pipeline and industry needs.
- The area has many different programs and initiatives related to workforce development. Increasing the **coordination of these programs and the collaboration among the different organizations** involved can improve program outcomes.

APPENDIX 2. DATA AND METHODOLOGY

CLASSIFICATION SYSTEMS

Much of the analysis presented in this report relies on three separate classification systems. An overview of each follows. The **Standard Occupational Classification (SOC)** system is used by federal statistical agencies to classify workers into categories for the purpose of collecting, calculating, or disseminating data. This system groups all occupations in which work is performed for pay or profit according to the type of work performed and, in some cases, on the skills, education, or training needed to perform the work at a competent level. Under the 2018 SOC system, which was finalized in late November 2017, workers are classified into one of 867 detailed occupations, which are combined to form 459 broad occupations, 98 minor groups, and 23 major groups. Federal agencies began implementing the newly updated SOC system in 2018.

STANDARD OCCUPATIONAL CLASSIFICATION (SOC) SYSTEM STRUCTURE AND EXAMPLE



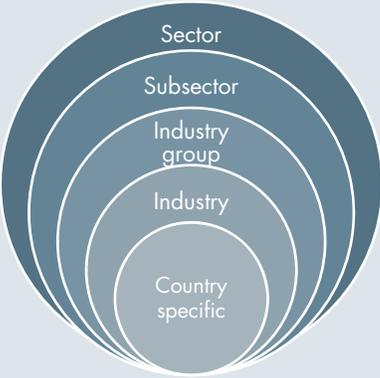
The diagram illustrates the hierarchy of the Standard Occupational Classification (SOC) system. It consists of four concentric circles, each representing a different level of classification. From the outermost to the innermost, the levels are: Major group, Minor group, Broad occupation, and Detailed occupation.

EXAMPLE: Major group 51-0000 Production Occupations

- **Minor group 51-2000** Assemblers and Fabricators
 - **Broad occupation 51-2090** Miscellaneous Assemblers and Fabricators
 - **Detailed occupation 51-2092** Team Assemblers

The **North American Industry Classification System (NAICS, pronounced nakes)** was developed under the direction and guidance of the Office of Management and Budget (OMB) as the standard for use by federal statistical agencies in classifying business establishments for the collection, tabulation, presentation, and analysis of statistical data describing the US economy. The classification system was developed jointly with government agencies in Canada and Mexico to allow for a high level of comparability in business statistics among the North American countries. NAICS classifies industries into 20 sectors based on production processes. These sectors are broken into subsectors, industry groups, and individual industries, with an additional level of detail to accommodate industry codes specific to the three countries. The most recent version, 2017 NAICS, was finalized in 2016 and will continue to be implemented by agencies over the next several years.

NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS) STRUCTURE AND EXAMPLE



The diagram illustrates the hierarchy of the North American Industry Classification System (NAICS). It consists of five concentric circles, each representing a different level of classification. From the outermost to the innermost, the levels are: Sector, Subsector, Industry group, Industry, and Country specific.

EXAMPLE: Sector 31-33 Manufacturing

- **Subsector 336** Transportation Equipment Manufacturing
 - **Industry group 3361** Motor Vehicle Manufacturing
 - **Industry 33611** Automobile and Light Duty Motor Vehicle Manufacturing
 - **Country-specific 336111** Automobile Manufacturing

The **Classification of Instructional Programs (CIP)** is the accepted federal government statistical standard on instructional program classifications. Developed in 1980 by the National Center for Education Statistics (NCES), the CIP is used by state agencies, national associations, academic institutions, and employment counseling services for collecting, reporting, and analyzing instructional program data. The 2010 CIP is the current version of this classification system.

The CIP titles and program descriptions are intended to be generic categories into which program completion data can be placed and are not exact duplicates of specific majors or field of study titles used by individual institutions. The vast majority of CIP titles correspond to academic and occupational instructional programs offered for credit at the postsecondary level. These programs result in recognized completion points and awards, including degrees, certificates, and other formal awards. The CIP also includes other types of instructional programs, such as residency programs in various dental, medical, podiatry, and veterinary specialties that might lead to advanced professional certification, personal improvement and leisure programs, and instructional programs that lead to diplomas and certificates at the secondary level only.

DATA SOURCES

EMPLOYMENT

The industry and occupational data presented in this report were prepared using Emsi's foundational dataset, which integrates economic, labor market, demographic, and education data from over 90 government and private sector sources, creating a comprehensive and current database that includes both published data and detailed estimates with full coverage of the United States.

For a complete list of Emsi US data sources, see: www.economicmodeling.com/data-sources.

The company's core data consists of jobs (historical and projected) and earnings (current year) by industry and occupation for every ZIP Code, metropolitan statistical area, and county in the United States. Emsi data are annual averages of jobs (not workers); full-time and part-time jobs are counted equally. There are three classes of workers that are included in the core dataset.

- **QCEW Employees:** A form of the US Bureau of Labor Statistics Quarterly Census of Employment and Wages (BLS QCEW) dataset that has been modified slightly by Emsi. Suppressions have been removed, public sector employment has been reorganized, and county and NAICS changes have been modified in past years for consistency. This dataset is designed to match QCEW in almost all cases and should be used in analyses where it is important to match official sources.
- **Non-QCEW Employees:** Attempts to cover jobs that fall under an employer-employee relationship but are not covered by QCEW. The major types of employment covered in this set include military jobs, railroad jobs, many nonprofit and religious workers, certain salespersons, miscellaneous federal government, and some other government workers.
- **Self-Employed:** Covers people who, when responding to US Census Bureau surveys, consider self-employment to be a significant part of their income or time spent working. Most people normally considered "self-employed" would fall into this dataset.

With occupational data, beginning with its 2017.3 data run, Emsi uses the new BLS "occupational separations" methodology in its calculation of replacements and therefore openings. The BLS updated its methodology for

calculating replacements because the old methodology (known as the “replacements” methodology) significantly undercounted the number of workers leaving occupations. This resulted in an artificially low number of replacements and openings. The BLS new methodology corrects the problem and provides a better estimate of true replacement needs. See kb.economicmodeling.com/how-does-ems-i-calculate-job-openings.

REAL-TIME LABOR MARKET INFORMATION/JOB POSTING ANALYTICS

Gartner’s TalentNeuron is an online talent market intelligence portal with real-time labor market insights, including custom role analytics and executive-ready dashboards and presentations. Supply-and-demand data is gathered by location, occupation, skill set, which competitors are hiring, and what roles are being posted most often. This data aggregates more than three million weekly job ads collected by TalentNeuron from over 25,000 websites (excludes staffing agencies and anonymous employers).

EDUCATION AND TRAINING

Under the Higher Education Act of 1965, every college, university, and vocational or technical institution that participates in federal financial student aid programs, such as Pell Grants or federally backed student loans, is required to report annually to the US Department of Education on a range of indicators. Data are collected through a system of interrelated surveys and are made available through the Integrated Postsecondary Education Data System (IPEDS).

Each fall, institutions report on the number of awards conferred for credit by field of study, by award level, and by the gender and race or ethnicity of the recipient. These data are referred to as “completions.” Data on completions for the most recent academic year available was downloaded from IPEDS for all schools in the region that participate in IPEDS surveys, except for schools in which training was limited to cosmetology.