

Workforce Solutions

Capital Area Healthcare Industry Analysis

REPORT 1: WORKFORCE SUPPLY AND DEMAND ANALYSIS
DATA APPENDIX

JUNE 2018



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APPENDIX 01: METHODS

This appendix includes:

- *Workforce supply and demand methodology*
- *Data sources*
- *Definition of 4-digit NAICS industries in Healthcare*

Data Sources

The following data sources were utilized in the creation of this report:

JobsEQ – JobsEQ provides information on employment by industry and occupation as well as prevailing wage levels. JobsEQ employment data is based on the Bureau of Labor Quarterly Census of Employment and Wages (QCEW) program and Occupational Employment Statistics (OES). JobsEQ employs proprietary methods to remove data suppressions and provide geographical tranquility unavailable from federal resources.

National Center for Education Statistics – Each year, the National Center for Education Statistics reports the number and types of degrees awarded by U.S. postsecondary institutions. The survey, known as the Integrated Postsecondary Education Data System (IPEDS), collects data on the field of degree, the field of study, and the level of degree.

Bureau of Labor Statics (BLS) – Unemployment rates for counties are based on the Local Area Unemployment Statistics (LAUS) program. LAUS estimates are produced using models that incorporate data from the BLS Current Employment Statistics (CES) program, the BLS Quarterly Census of Employment and Wages (QCEW) program, the Census Bureau’s American Community Survey (ACS), the BLS Current Population Survey (CPS), and individual state Unemployment Insurance (UI) data.

Survey of Independent School Districts (ISDs) – The Consulting Team, in partnership with the Board and E3 Alliance administered a survey to ISDs in the region about their secondary healthcare programming, including career advising, College and Technical Education (CTE), dual credit, and industry credentials.

Education Asset Inventory – A review of secondary and postsecondary education and training programs identifying and inventorying programs that support the target middle-skill healthcare occupations in the five county region. We determined program offerings, from secondary Career and Technical (CTE) programs to industry certifications and associate degrees. The data in this analysis is based on institutions’ course catalogs and available online information and only includes program availability; student enrollment and outcome measures were not included in the inventory.

Focus Groups – The Consulting Team facilitated focus groups with local workforce stakeholders, including healthcare employers and education and training providers, to validate the quantitative data in this analysis.

Workforce Supply and Demand Methodology

HOW WE MEASURE DEMAND

Demand for individual occupations can be measured using several metrics, such as:

1. Job growth – How many new jobs are being created each year?
2. Job postings – How many real-time job postings are found on job boards today?
3. Wage growth – Does demand for workers translate to higher wages?
4. Job churn – How many positions get filled each year due to turnover?
5. Job openings – How many positions become available due to retirements or people changing careers?

Job growth, job postings, and wage growth data has been provided in previous sections. Job “churn” however, is data that is only available at the US level. The US Bureau of Labor Statistics reports that the Health Care and Social Assistance industry hired 6.8 million people in 2017, i.e. 35% of the workforce changed jobs last year. While this job-change rate may seem high, it is less than the US' 48% rate. However, one metric stands out: while the US overall has 1.1 job openings available for every new hire (about in-balance), the health care industry has 2 job openings for every person that actually gets hired. Clearly, the health care industry demands more workers.

While the job churn statistics are certainly interesting, the Bureau of Labor Statistics estimates how many job positions become available due to retirement and "permanent separations," or people changing their careers. This is the perfect measure for a gap analysis: How many people need to enter a field to replace the ones leaving it? And, when we add the net new job creation, we can get a very specific estimate of "new occupational openings" - the positions that college graduates hope to fill.

At the local level, additional dynamics come into play: How many people relocate to an area for jobs? How likely are students to stay where they graduate? How competitive are local graduates with the existing labor market? Numerous other questions can be made. Still, the "new occupational openings" measure is a good one to show the relative shortages by occupation.

In the following analysis, we calculate a 5-year average of new occupational openings (e.g. job openings) due to new job creation and replacement needs due to workers retiring or permanently changing their career. Nationally, these openings account for 12% of all jobs and must be filled by new workers - either through post-secondary graduates or through on-the-job training for workers changing careers into the occupation. Locally, these openings must be filled by new workers or an out-sized share of experienced workers flowing into the region.

Workforce Supply and Demand Methodology

Below is a table showing the projected annual job openings for middle-skill healthcare occupations in the Austin metro, along with their components – net new jobs created and "job openings":

PROJECTED OCCUPATIONAL OPENINGS AUSTIN METRO 2017-2022 ANNUAL AVERAGE

Occupational Code	Occupation Name	New Jobs	Job Openings	Total
29-1141	Registered Nurses*	466	1,159	1,625
31-1014	Nursing Assistants	171	1,397	1,569
31-1011	Home Health Aides	205	907	1,113
31-9092	Medical Assistants	173	572	745
29-2061	Licensed Practical and Licensed Vocational Nurses	118	416	534
31-9091	Dental Assistants	83	267	350
31-1013	Psychiatric Aides	30	285	316
29-2052	Pharmacy Technicians	67	231	297
29-2071	Medical Records and Health Information Technicians	48	211	258
29-2021	Dental Hygienists	49	141	190
29-2041	Emergency Medical Technicians and Paramedics	42	124	166
31-9097	Phlebotomists**	36	122	158
29-2034	Radiologic Technologists	33	105	138
29-2055	Surgical Technologists	22	76	98
29-2012	Medical and Clinical Laboratory Technicians	30	61	92
31-2021	Physical Therapy Assistants	18	73	91
29-1126	Respiratory Therapists	23	47	70
29-2032	Diagnostic Medical Sonographers	19	45	64
31-1015	Orderlies	6	56	62
31-9093	Medical Equipment Preparers	10	52	62

SOURCE: AVALANCHE CONSULTING / JOBSEQ

Note: Totals may not equal 100% due to rounding

*Data on Registered Nurses include both middle-skill and more advanced positions.

**Phlebotomists, along with EKG techs (not shown above), are increasingly being absorbed into other healthcare occupations. For example, many Medical Assistant education programs require students also obtain Phlebotomy and EKG certifications.

Workforce Supply and Demand Methodology

(cont'd)

PROJECTED OCCUPATIONAL OPENINGS AUSTIN METRO 2017-2022 ANNUAL AVERAGE

Occupational Code	Occupation Name	New Jobs	Job Openings	Total	
29-2053	Psychiatric Technicians		11	43	54
31-2022	Physical Therapy Aides		12	33	45
31-2011	Occupational Therapy Assistants		8	33	41
29-2057	Ophthalmic Medical Technicians		10	31	41
31-9094	Medical Transcriptionists		5	32	38
29-2031	Cardiovascular Technologists and Technicians		8	29	37
31-9095	Pharmacy Aides		2	31	33
51-9081	Dental Laboratory Technicians		6	24	30
29-9012	Occupational Health and Safety Technicians		4	22	26
51-9083	Ophthalmic Laboratory Technicians		5	21	25
29-2051	Dietary Technicians		5	18	23
29-2035	Magnetic Resonance Imaging Technologists		6	16	21
51-9082	Medical Appliance Technicians		3	13	16
29-2033	Nuclear Medicine Technologists		2	9	11
29-1124	Radiation Therapists		3	8	11
31-2012	Occupational Therapy Aides		2	7	9
29-2092	Hearing Aid Specialists		1	5	7
29-2054	Respiratory Therapy Technicians		-3	5	2

SOURCE: AVALANCHE CONSULTING / JOBSEQ

Note: Totals may not equal 100% due to rounding

*Data on Registered Nurses include both middle-skill and more advanced positions.

**Phlebotomists, along with EKG techs (not shown above), are increasingly being absorbed into other healthcare occupations. For example, many Medical Assistant education programs require students also obtain Phlebotomy and EKG certifications.

Workforce Supply and Demand Methodology

HOW WE MEASURE SUPPLY

Supply in our analysis is focused on the output of graduates from training providers and colleges. While local graduates are not the only source for new workers (many workers are hired away from other companies or attracted into the region from other parts of the US), local graduates are a significant source of new workers and one that can be directly affected through local workforce development programs.

HOW WE MEASURE GAPS

To determine the over- or under-supply for an occupation or competency group, the ratio of post-secondary graduates for 2016 versus the annualized job demand forecast is calculated. A higher percentage indicates more college graduates per job opening.

The workforce is considered “in balance” when local graduates comprise 50-100% of job openings. Given Austin’s ability to attract educated workers from outside the region and state, Austin doesn’t have to produce as many graduates as its economy needs. Still, many graduates from local schools are also recruited to other parts of the state and US.

Below 50% indicates a “shortage” and below 20% is a “severe shortage”. Above 100% indicates a likely surplus.

Note: Supply data for graduates includes “for-credit” programs that report to the US Department of Education and some limited data that was provided by local educators on “non-credit” programs. Some occupations such as nursing assistants or medical transcriptionists have significant production of graduates from non-credit programs. Occupations are flagged when gaps are potentially filled by these non-credit programs.

Healthcare Sub-Industry Descriptions

6211	Offices of Physicians	This industry comprises establishments of health practitioners having the degree of M.D. (Doctor of Medicine) or D.O. (Doctor of Osteopathy) primarily engaged in the independent practice of general or specialized medicine (e.g., anesthesiology, oncology, ophthalmology, psychiatry) or surgery. These practitioners operate private or group practices in their own offices (e.g., centers, clinics) or in the facilities of others (e.g., hospitals, HMO medical centers).
6212	Offices of Dentists	This industry comprises establishments of health practitioners having the degree of D.M.D. (Doctor of Dental Medicine), D.D.S. (Doctor of Dental Surgery), or D.D.Sc. (Doctor of Dental Science) primarily engaged in the independent practice of general or specialized dentistry or dental surgery. These practitioners operate private or group practices in their own offices (e.g., centers, clinics) or in the facilities of others (e.g., hospitals, HMO medical centers). They can provide either comprehensive preventive, cosmetic, or emergency care, or specialize in a single field of dentistry.
6213	Offices of Other Health Practitioners	This industry group comprises establishments of independent health practitioners (except physicians and dentists).
6214	Outpatient Care Centers	This industry group comprises establishments with medical staff primarily engaged in providing a range of outpatient services, such as family planning, diagnosis and treatment of mental health disorders and alcohol and other substance abuse, and other general or specialized outpatient care.
6215	Medical and Diagnostic Laboratories	This industry comprises establishments known as medical and diagnostic laboratories primarily engaged in providing analytic or diagnostic services, including body fluid analysis and diagnostic imaging, generally to the medical profession or to the patient on referral from a health practitioner.
6216	Home Health Care Services	This industry comprises establishments primarily engaged in providing skilled nursing services in the home, along with a range of the following: personal care services; homemaker and companion services; physical therapy; medical social services; medications; medical equipment and supplies; counseling; 24-hour home care; occupation and vocational therapy; dietary and nutritional services; speech therapy; audiology; and high-tech care, such as intravenous therapy.
6219	Other Ambulatory Health Care Services	This industry group comprises establishments primarily engaged in providing ambulatory health care services (except offices of physicians, dentists, and other health practitioners; outpatient care centers; medical laboratories and diagnostic imaging centers; and home health care providers).
6221	General Medical and Surgical Hospitals	This industry comprises establishments known and licensed as general medical and surgical hospitals primarily engaged in providing diagnostic and medical treatment (both surgical and nonsurgical) to inpatients with any of a wide variety of medical conditions. These establishments maintain inpatient beds and provide patients with food services that meet their nutritional requirements. These hospitals have an organized staff of physicians and other medical staff to provide patient care services. These establishments usually provide other services, such as outpatient services, anatomical pathology services, diagnostic X-ray services, clinical laboratory services, operating room services for a variety of procedures, and pharmacy services.

Healthcare Sub-Industry Descriptions

6222	Psychiatric and Substance Abuse Hospitals	This industry comprises establishments known and licensed as psychiatric and substance abuse hospitals primarily engaged in providing diagnostic, medical treatment, and monitoring services for inpatients who suffer from mental illness or substance abuse disorders. The treatment often requires an extended stay in the hospital. These establishments maintain inpatient beds and provide patients with food services that meet their nutritional requirements. They have an organized staff of physicians and other medical staff to provide patient care services. Psychiatric, psychological, and social work services are available at the facility. These hospitals usually provide other services, such as outpatient services, clinical laboratory services, diagnostic X-ray services, and electroencephalograph services.
6223	Specialty (except Psychiatric and Substance Abuse) Hospitals	This industry comprises establishments known and licensed as specialty hospitals primarily engaged in providing diagnostic and medical treatment to inpatients with a specific type of disease or medical condition (except psychiatric or substance abuse). Hospitals providing long-term care for the chronically ill and hospitals providing rehabilitation, restorative, and adjustive services to physically challenged or disabled people are included in this industry. These establishments maintain inpatient beds and provide patients with food services that meet their nutritional requirements. They have an organized staff of physicians and other medical staff to provide patient care services. These hospitals may provide other services, such as outpatient services, diagnostic X-ray services, clinical laboratory services, operating room services, physical therapy services, educational and vocational services, and psychological and social work services.
6231	Nursing Care Facilities (Skilled Nursing Facilities)	This industry comprises establishments primarily engaged in providing inpatient nursing and rehabilitative services. The care is generally provided for an extended period of time to individuals requiring nursing care. These establishments have a permanent core staff of registered or licensed practical nurses who, along with other staff, provide nursing and continuous personal care services.
6232	Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	This industry group comprises establishments primarily engaged in providing residential care (but not licensed hospital care) to people with intellectual and developmental disabilities, mental illness, or substance abuse problems.
6233	Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	This industry comprises establishments primarily engaged in providing residential and personal care services for (1) the elderly and other persons who are unable to fully care for themselves and/or (2) the elderly and other persons who do not desire to live independently. The care typically includes room, board, supervision, and assistance in daily living, such as housekeeping services. In some instances these establishments provide skilled nursing care for residents in separate on-site facilities.
6239	Other Residential Care Facilities	This industry comprises establishments primarily engaged in providing residential care (except residential intellectual and developmental disability facilities, residential mental health and substance abuse facilities, continuing care retirement communities, and assisted living facilities for the elderly). These establishments also provide supervision and personal care services.

Healthcare Sub-Industry Descriptions

- | | | |
|------|---|--|
| 6241 | Individual and Family Services | This industry group comprises establishments primarily engaged in providing nonresidential social assistance to children and youth, the elderly, persons with disabilities, and all other individuals and families. |
| 6242 | Community Food and Housing, and Emergency and Other Relief Services | This industry group comprises establishments primarily engaged in one of the following: (1) collecting, preparing, and delivering food for the needy; (2) providing short-term emergency shelter, temporary residential shelter, transitional housing, volunteer construction or repair of low-cost housing, and/or repair of homes for individuals or families in need; or (3) providing food, shelter, clothing, medical relief, resettlement, and counseling to victims of domestic or international disasters or conflicts (e.g., wars). |
| 6243 | Vocational Rehabilitation Services | This industry comprises (1) establishments primarily engaged in providing vocational rehabilitation or habilitation services, such as job counseling, job training, and work experience, to unemployed and underemployed persons, persons with disabilities, and persons who have a job market disadvantage because of lack of education, job skill, or experience and (2) establishments primarily engaged in providing training and employment to persons with disabilities. Vocational rehabilitation job training facilities (except schools) and sheltered workshops (i.e., work experience centers) are included in this industry. |

APPENDIX 02: Demand Analysis

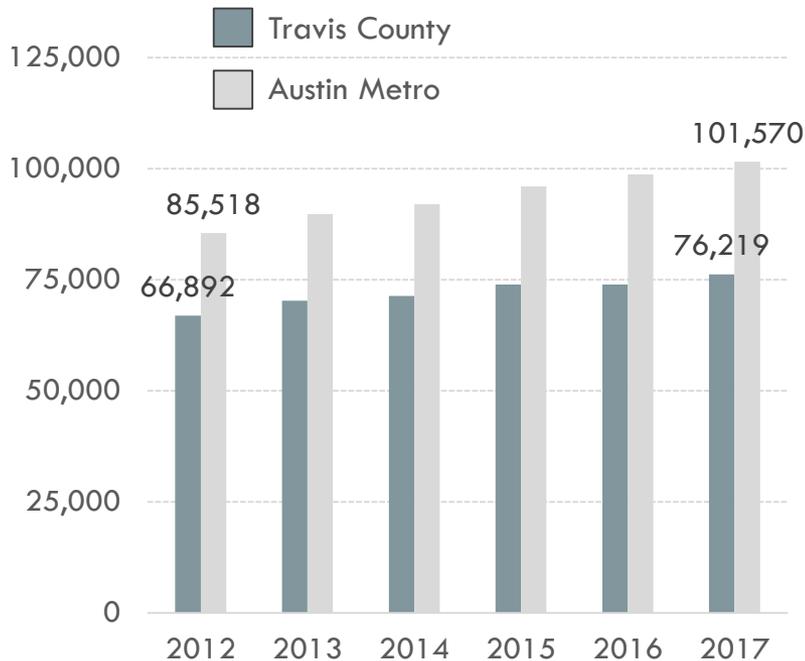
This appendix includes:

- *Healthcare industry and sub-industry employment*
- *Middle-skill occupation detailed employment and growth*
- *Middle-skill occupational wage data*
- *Jobs postings analysis*

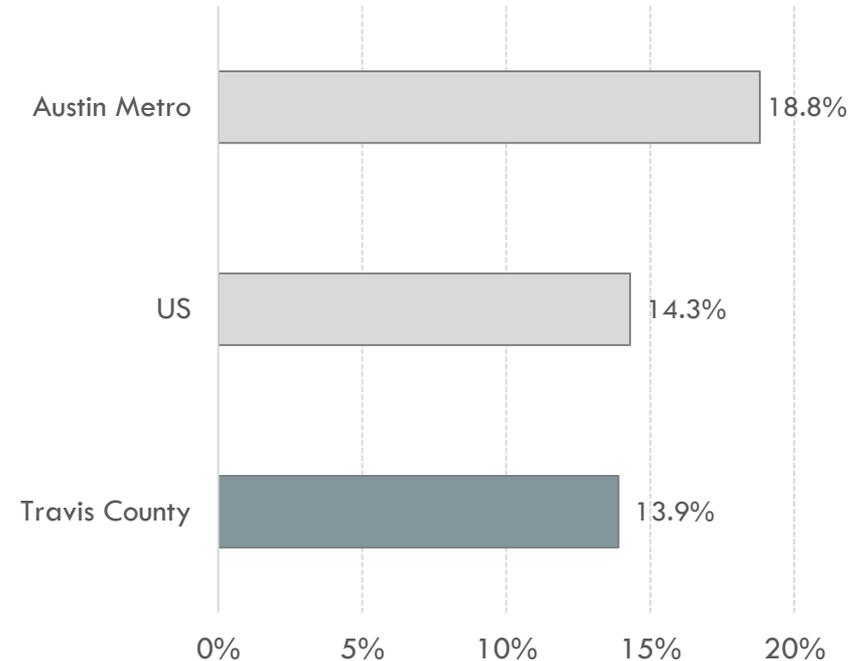
Healthcare Industry Employment Growth

Healthcare is one of the largest industry clusters in both Travis County and the Austin metro. In 2017, the metro featured nearly 102,000 healthcare jobs. With 76,000 jobs, Travis County is home to 75% of all Healthcare jobs in the Austin metro region. Since 2012, Healthcare industry employment in Travis County has grown by nearly 10,000, a 14% increase. Employment across the entire Austin metro increased at an even faster clip (19%) and grew faster than the US average.

HEALTHCARE INDUSTRY EMPLOYMENT
2012 – 2017



HEALTHCARE INDUSTRY EMPLOYMENT GROWTH
2012 – 2017



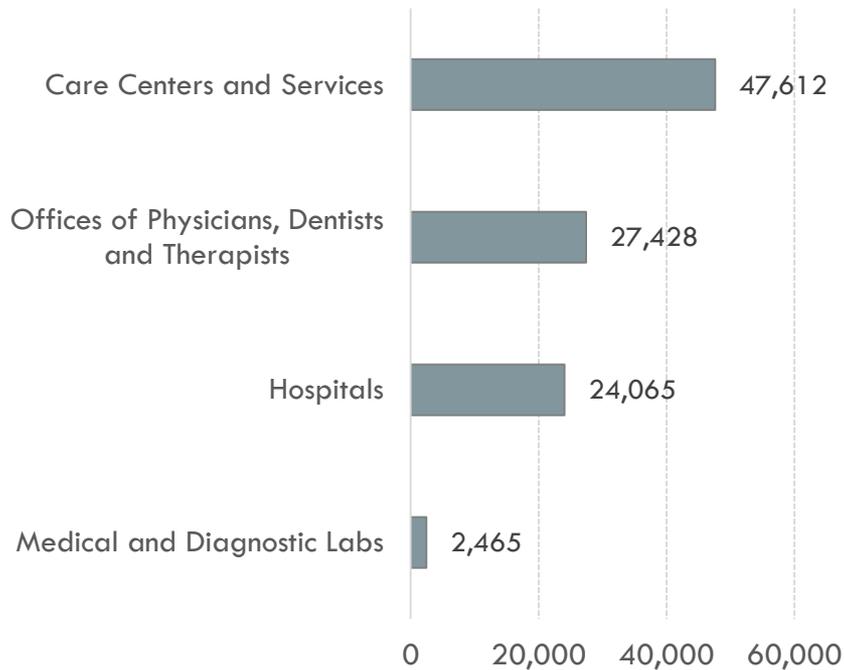
SOURCE: AVALANCHE CONSULTING / JOBSEQ

NOTE: Child care services are not included in this report's analysis, even though the US Department of Labor classifies its NAICS code under Health Care.

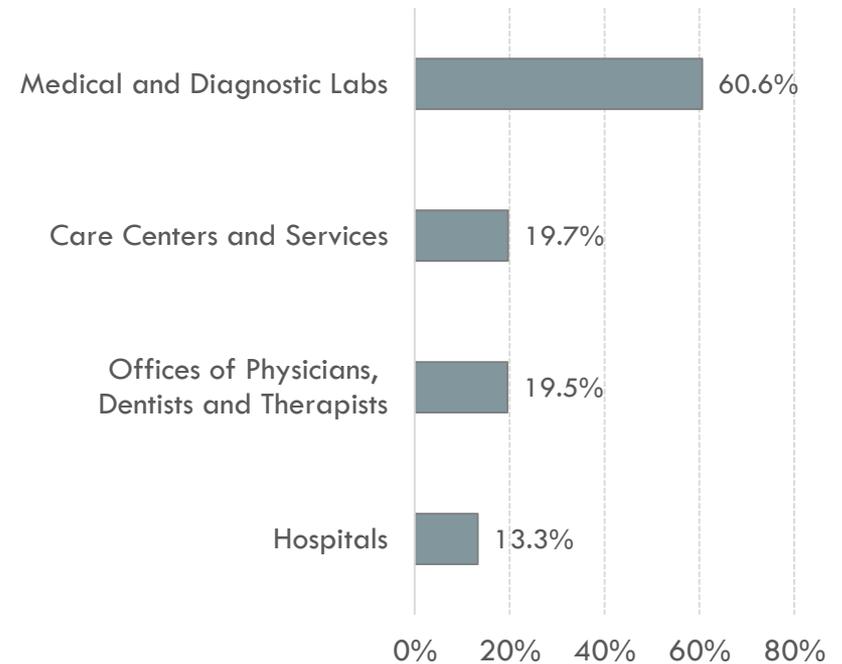
Employment by Healthcare Industry Sub-Cluster

The Healthcare industry can be organized into four sub-clusters: Care Centers and Services; Hospitals, Medical and Diagnostics Laboratories; and Offices of Physicians, Dentists and Therapists. Care Centers and Services, which encompasses activities such as outpatient care centers and nursing care centers, employs 48,000 people and represents 47% of all Healthcare jobs in the Austin metro. Offices of Physicians, Dentists and Therapists employ about 27,000 workers, and Hospitals employ about 24,000 workers. Medical and Diagnostic Labs (independent businesses) employ just 2,500 workers but grew significantly faster than other sub-clusters. Hospital employment grew the slowest among the sub-clusters.

AUSTIN METRO HEALTHCARE EMPLOYMENT BY SUB CLUSTER
2017



CHANGE IN AUSTIN METRO HEALTHCARE EMPLOYMENT
BY SUB CLUSTER, 2012 - 2017

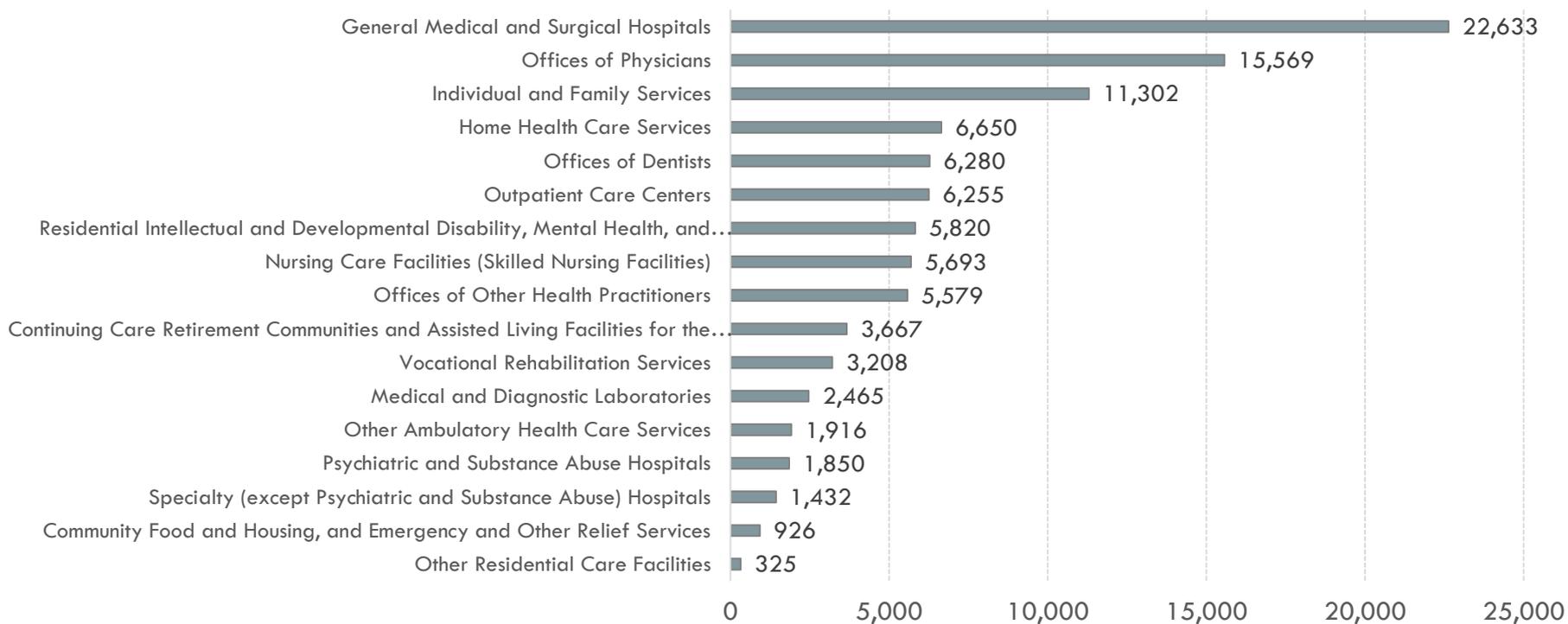


Employment by Healthcare Sub-Industries

Detailed NAICS codes provide an even deeper breakdown of employment. General Medical and Surgical Hospitals (with 23,000 workers) and Offices of Physicians (almost 16,000 workers) represent the bulk of Healthcare employment in the metro. Other leading Healthcare sub-industries include Individual and Family Services (11,000 workers), Home Health Care Services (7,000 workers), and Offices of Dentists (6,000 workers).

See a description of sub-industries in Appendix 01.

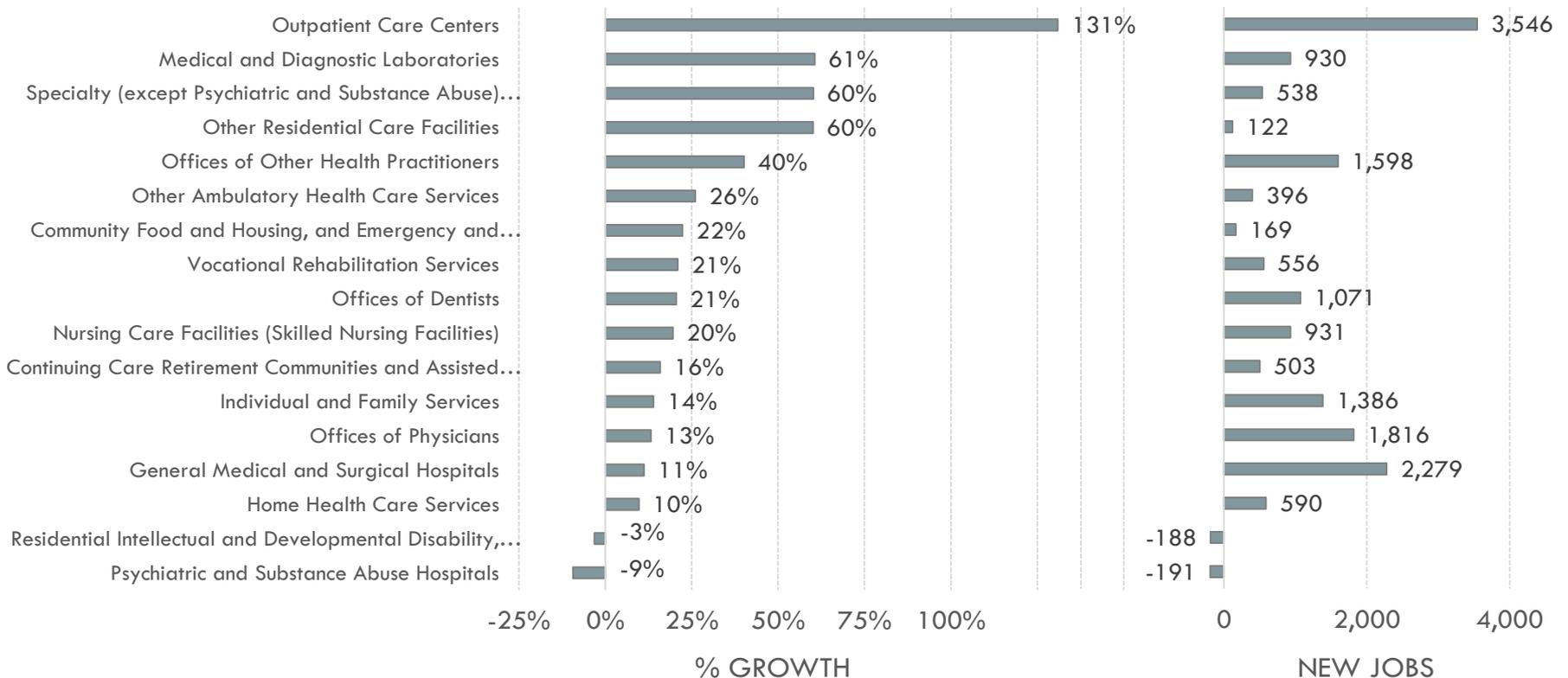
AUSTIN METRO HEALTHCARE EMPLOYMENT BY SUB-INDUSTRY
2017



Fastest Growing Healthcare Sub-Industries

Between 2012 and 2017, the vast majority major Healthcare sub-industries in the Austin metro posted employment gains. Employment in Outpatient Care facilities soared, growing more than 130%. Outpatient Care also added the most workers in absolute terms, with employment increasing by more than 3,500. The number of workers employed in Medical and Diagnostic Labs grew 61% and added nearly 1,000 workers. Specialty Hospitals and Office of Other Health Practitioners increased 60% and 40% respectively. Surgical Hospitals created the second-most new jobs, with nearly 2,300. The only three Healthcare sectors to suffer job losses were Continuing Care and Assisted Living Facilities, Residential Healthcare Facilities, and Psychiatric and Substance Abuse Hospitals.

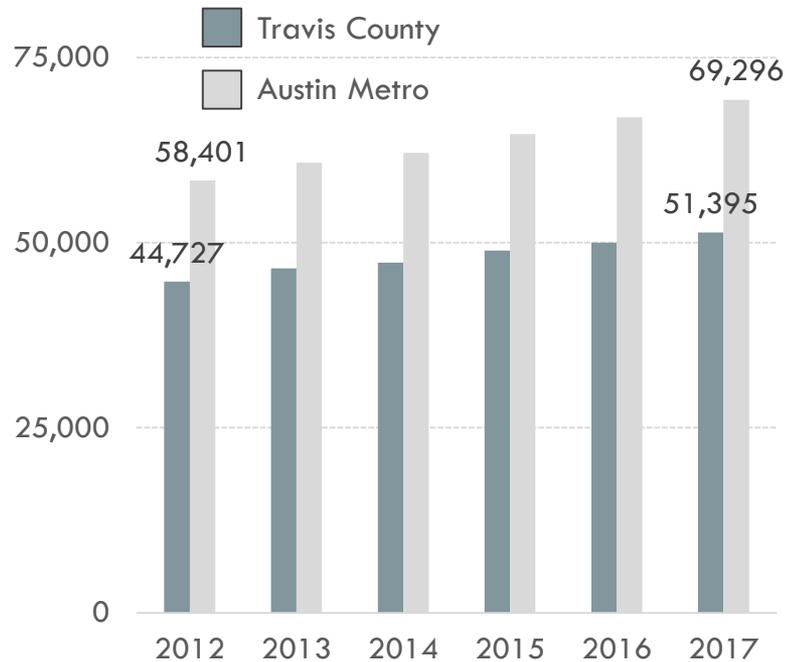
AUSTIN METRO HEALTHCARE EMPLOYMENT GROWTH BY SUB-INDUSTRY
2012 - 2017



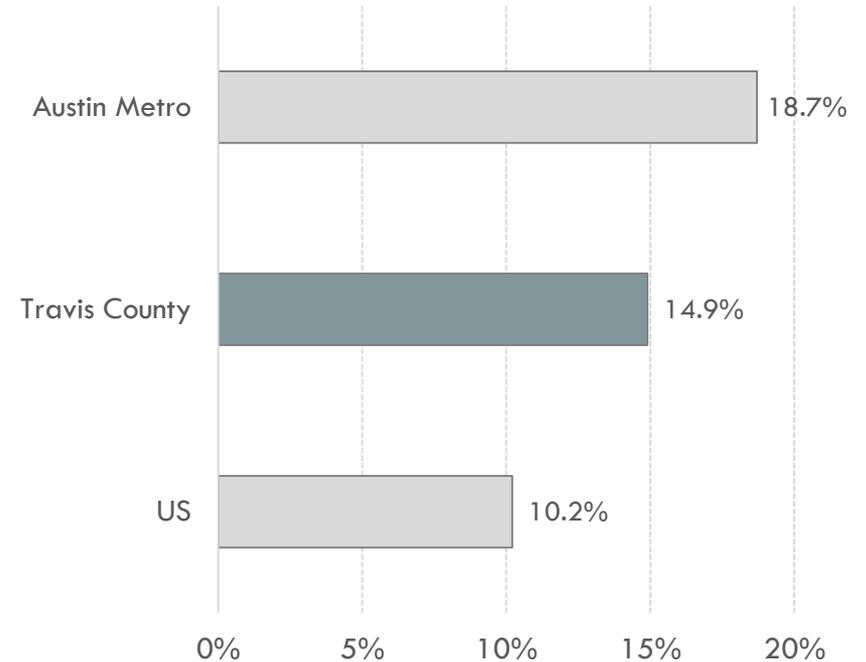
Healthcare Occupation Employment Growth

Healthcare positions represent one of the largest occupational clusters in both Travis County and the Austin metro. In 2017, employment in Healthcare occupations (those requiring medical education or training) reached nearly 70,000 workers. With nearly 51,000 jobs, Travis County represents 74% of all healthcare jobs in the Austin metro region. Healthcare employment in the Austin metro rose 19% between 2012 and 2017, an 11,000 worker increase.

HEALTHCARE OCCUPATION EMPLOYMENT
2012 – 2017



HEALTHCARE OCCUPATION EMPLOYMENT GROWTH
2012 – 2017



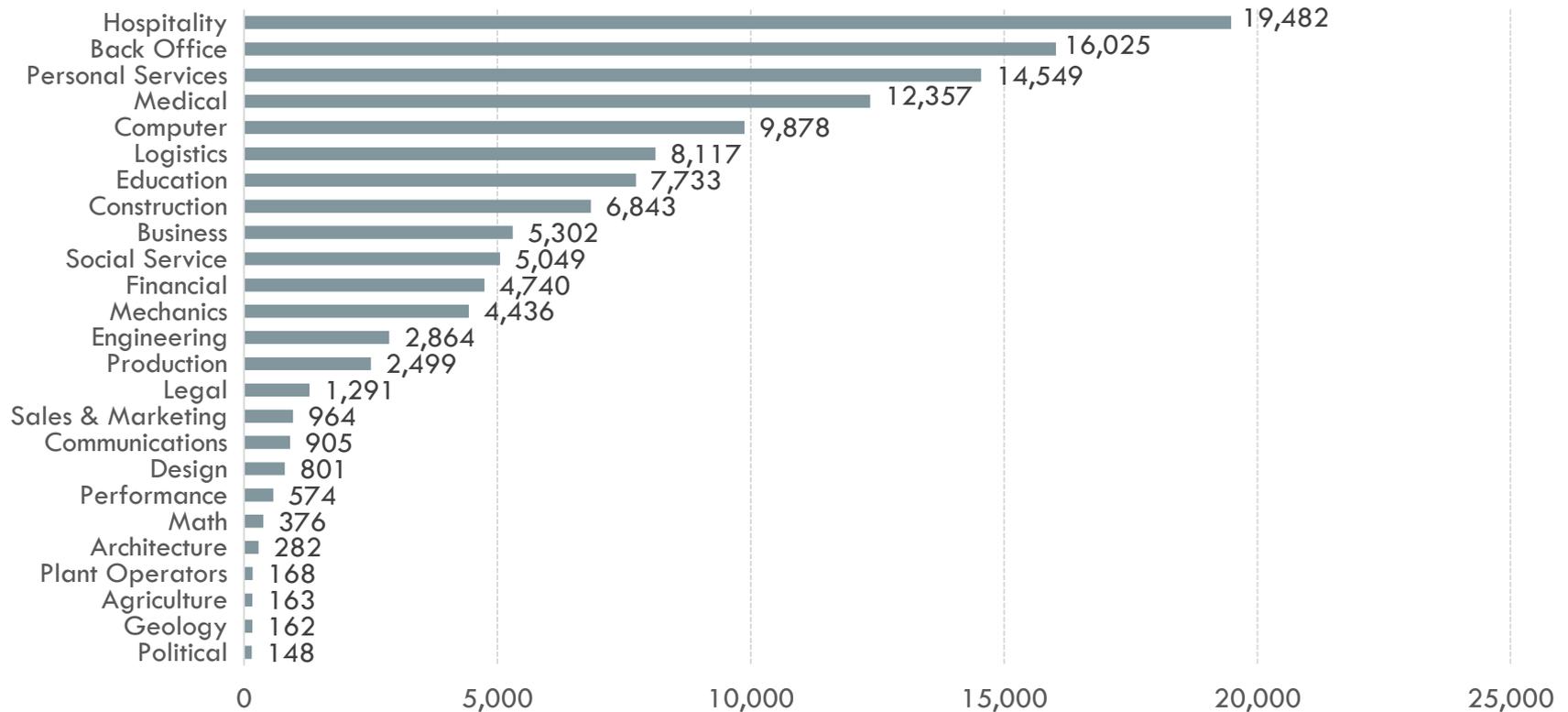
SOURCE: AVALANCHE CONSULTING / JOBSEQ

Note: The Healthcare occupation cluster definition includes all Healthcare Practitioners, Technical Occupations, and Support Occupations (SOC: 29-0000, 31-0000) plus Psychologists and Health Services Managers.

Forecasted Job Growth by Occupation Clusters

Positions in healthcare are expected to create over 16,000 net new jobs over the next 5 years. Healthcare occupations are the second-largest occupation cluster for behind Hospitality, which will create nearly 20,000 new jobs. The next largest job creators will be Back Office (15,000 new jobs), Personal Services (12,000), and Computer/Software (10,000).

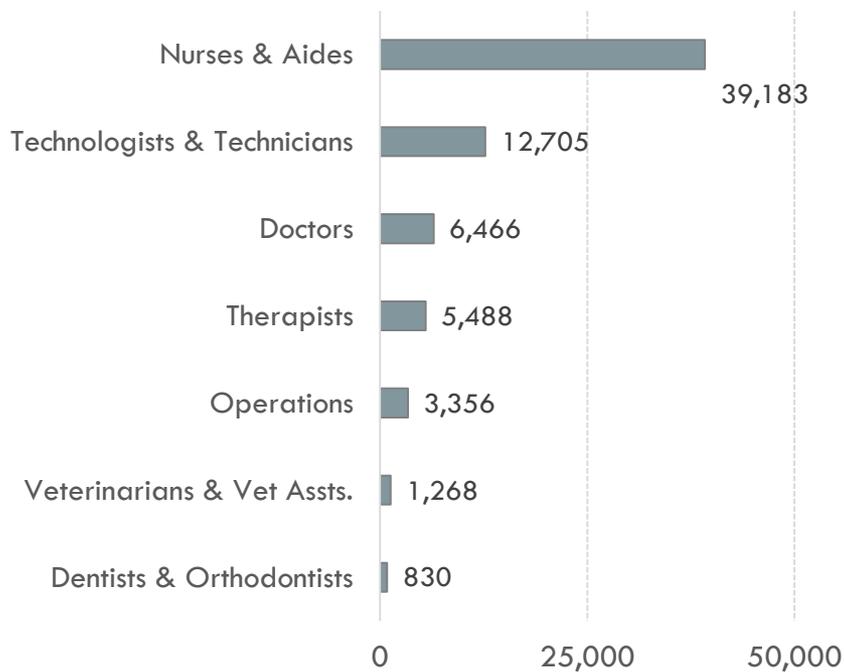
JOB CREATION FORECAST BY OCCUPATION CLUSTER
AUSTIN METRO 2017 - 2022



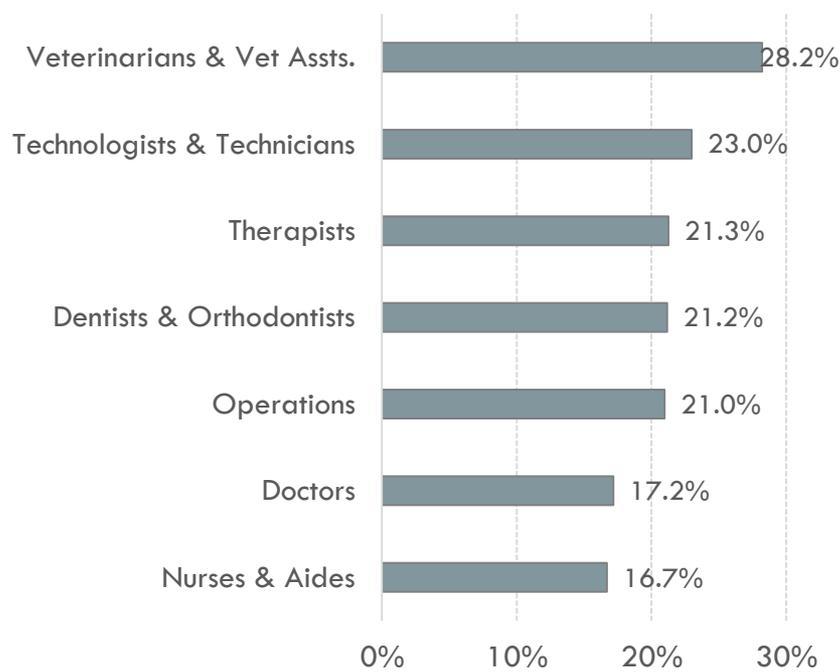
Employment in Healthcare Occupation Groups

The Healthcare industry employs workers across 100 different healthcare-related occupations, which can be grouped into seven distinct groups. Within the metro, Nurses and Aides comprise 57% of all healthcare workers – nearly 40,000 -- but are the slowest growing at 17% in the last five years. The metro is home to nearly 13,000 Medical Technologists and Technicians, approximately 18% of all healthcare workers. The next largest groups are Doctors (6,500), Therapists (5,500), and Operations workers (3,400 workers). Veterinarians and Vet Techs account for 1,300 workers and Dentists and Orthodontists number just over 800 workers. The fastest growing occupation groups since 2012 are Veterinary, Technologies, and Therapists.

AUSTIN METRO HEALTHCARE OCCUPATION GROUPS
2017

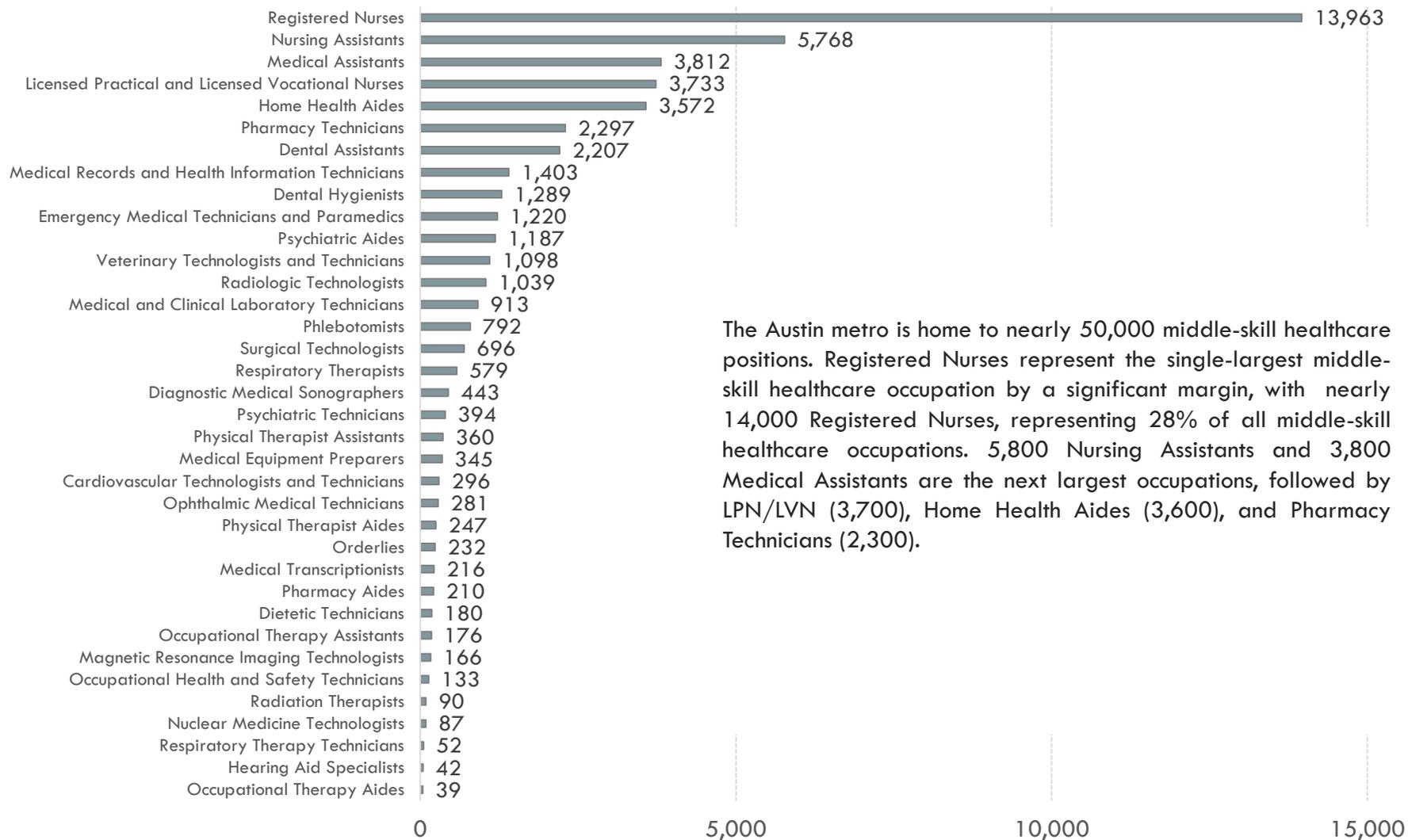


AUSTIN METRO HEALTHCARE OCCUPATION GROUPS
2012 – 2017 GROWTH



Employment by Healthcare Middle-Skill Occupation

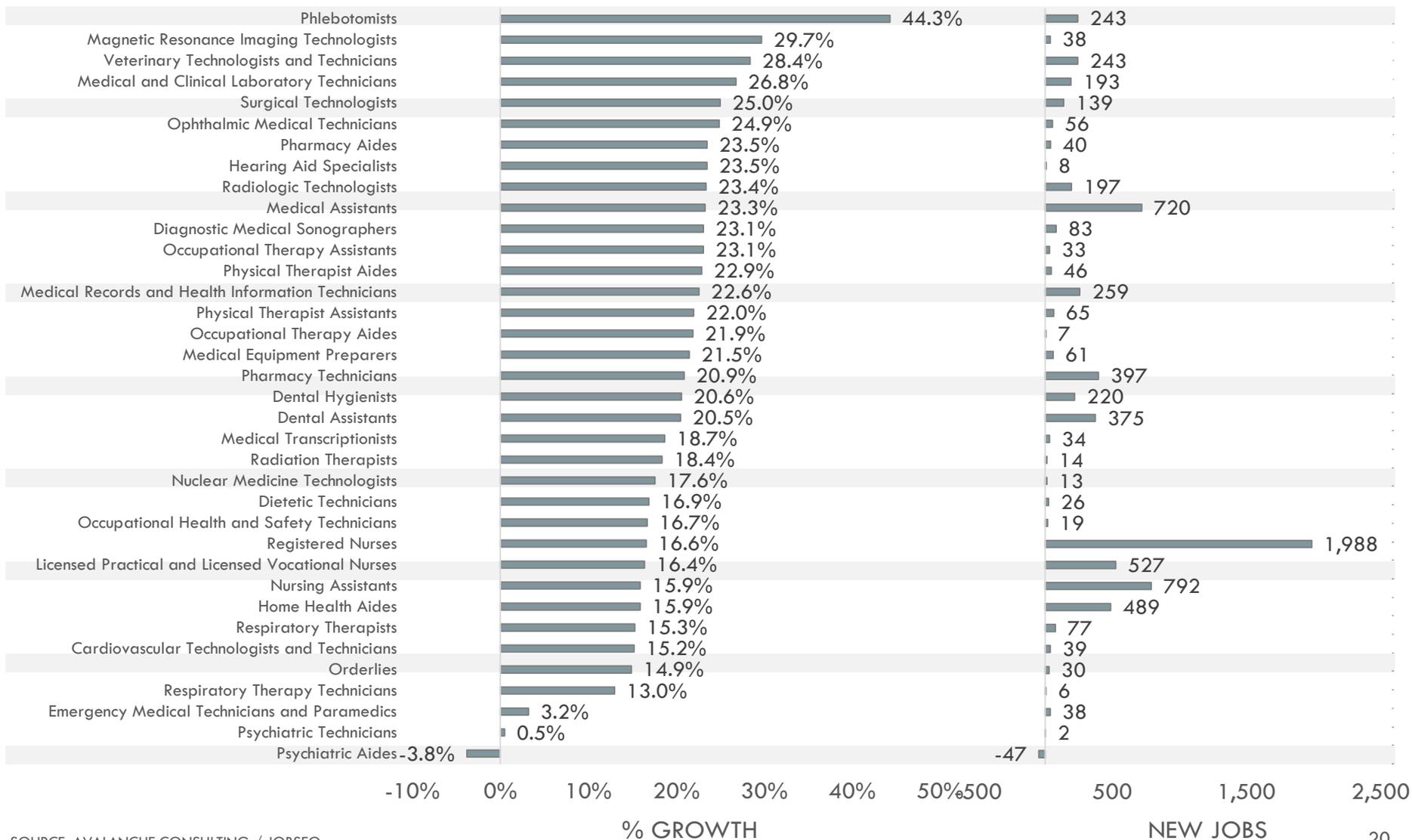
AUSTIN METRO HEALTHCARE EMPLOYMENT BY MIDDLE-SKILL OCCUPATION
2017



The Austin metro is home to nearly 50,000 middle-skill healthcare positions. Registered Nurses represent the single-largest middle-skill healthcare occupation by a significant margin, with nearly 14,000 Registered Nurses, representing 28% of all middle-skill healthcare occupations. 5,800 Nursing Assistants and 3,800 Medical Assistants are the next largest occupations, followed by LPN/LVN (3,700), Home Health Aides (3,600), and Pharmacy Technicians (2,300).

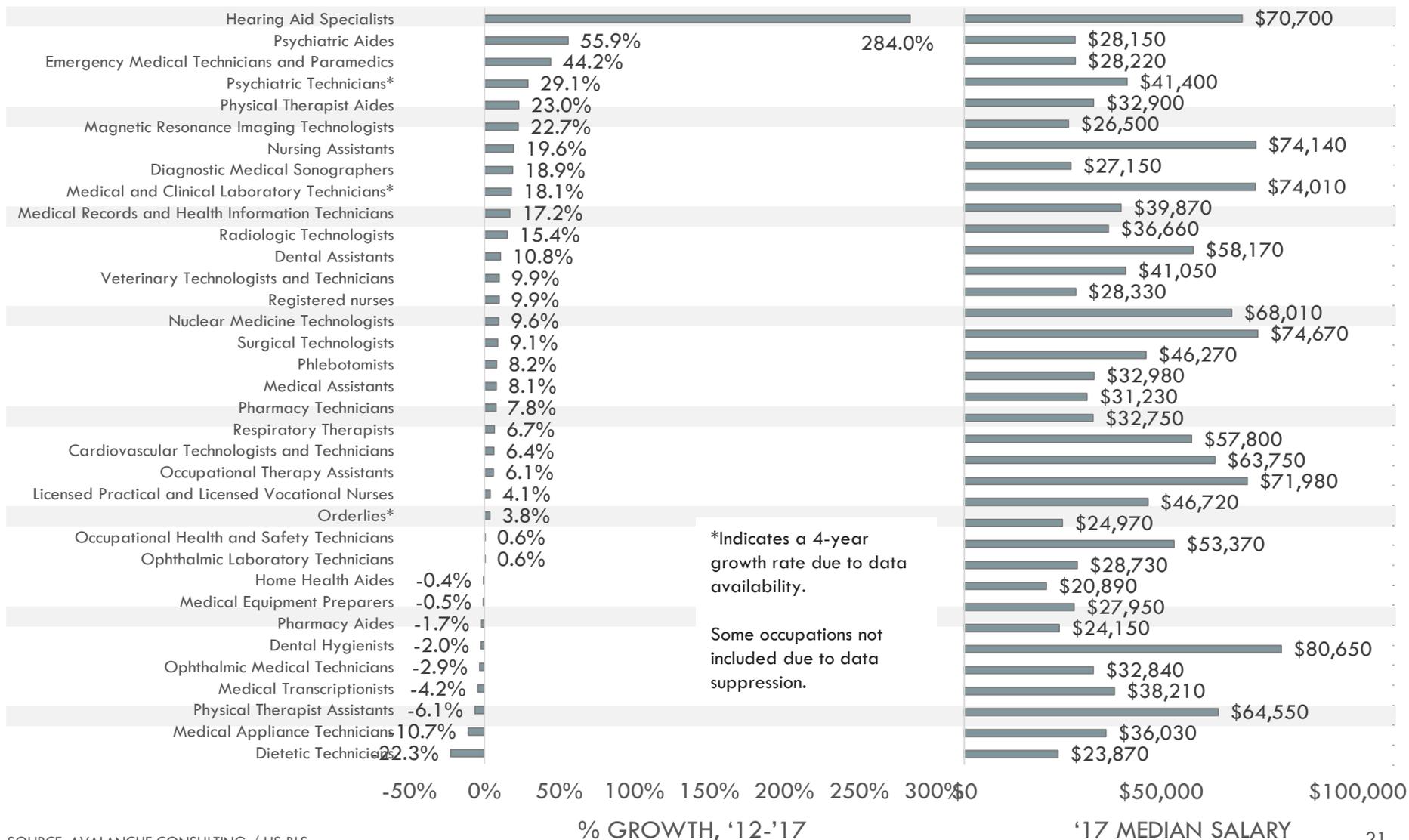
Employment Growth by Healthcare Middle-Skill Occupations

AUSTIN METRO HEALTHCARE EMPLOYMENT GROWTH BY MIDDLE-SKILL OCCUPATION
2012 - 2017



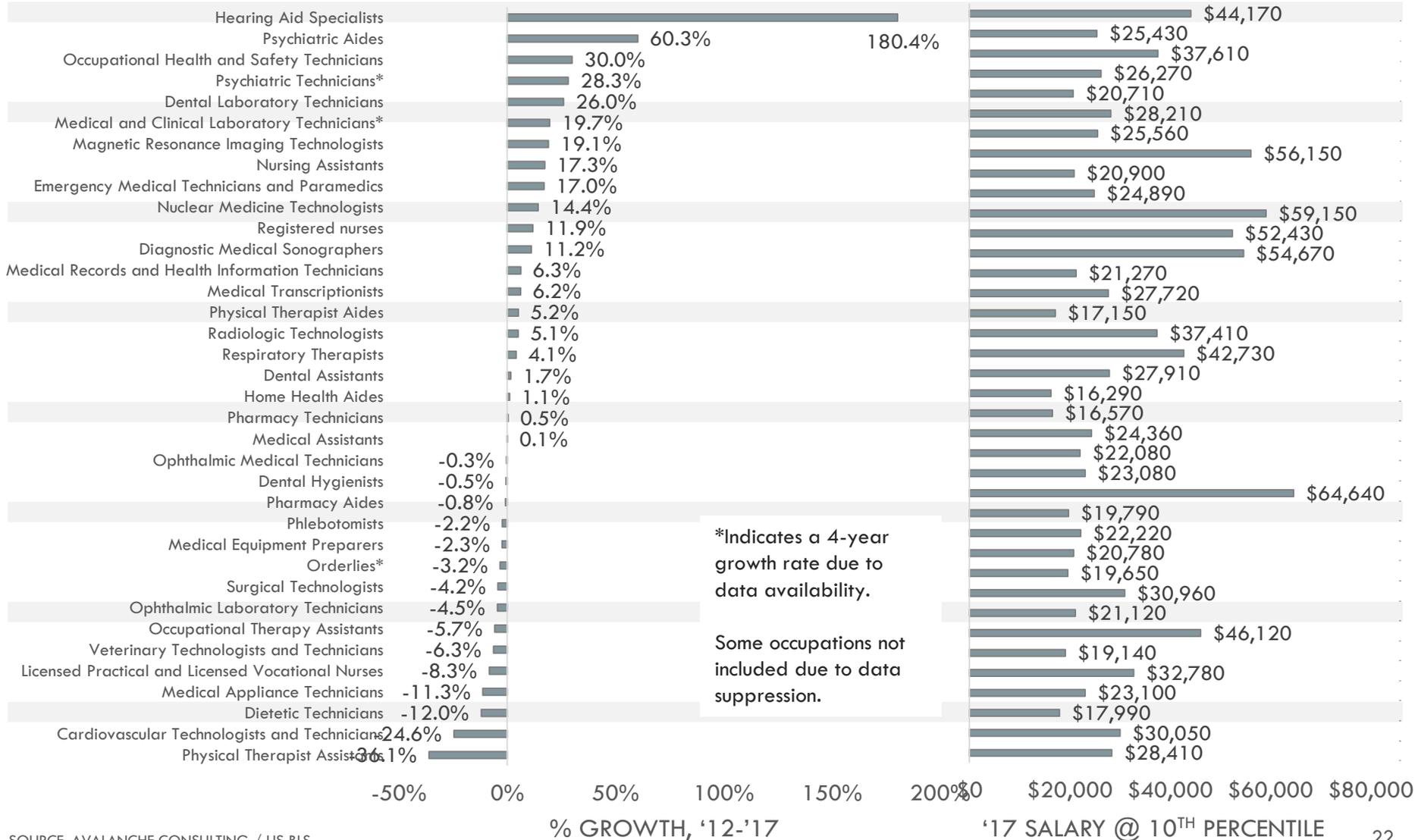
Fastest Growing Middle-Skill Median Wage

AUSTIN METRO MEDIAN WAGE GROWTH VS. SALARY LEVEL BY MIDDLE-SKILL OCCUPATION
2012 - 2017



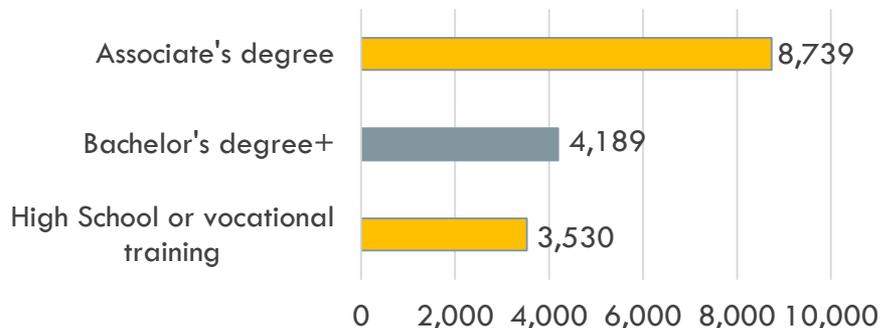
Fastest Growing Middle-Skill Entry Level Wage

AUSTIN METRO ENTRY LEVEL WAGE GROWTH VS. SALARY LEVEL
2012 - 2017

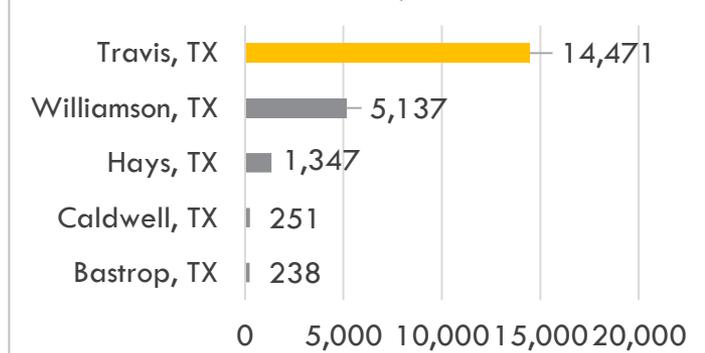


Online Healthcare Job Posting Trends- All Advertised Education Levels

HEALTHCARE OCCUPATIONS JOB POSTINGS BY ADVERTISED EDUCATION* 2017



HEALTHCARE OCCUPATIONS JOB POSTINGS LOCATIONS, 2017



LEADING HEALTHCARE OCCUPATIONS BY POSTINGS 2017

Occupation	Postings
Registered Nurses	13,146
Nursing Assistants	1,209
Licensed Practical and Licensed Vocational Nurses	1,163
Medical Assistants	831
Medical and Clinical Laboratory Technicians	673
Medical Records and Health Information Technicians	664
Surgical Technologists	572
Pharmacy Technicians	351
Cardiovascular Technologists and Technicians	319
Magnetic Resonance Imaging Technologists	319

LEADING COMPANY BY POSTINGS 2017

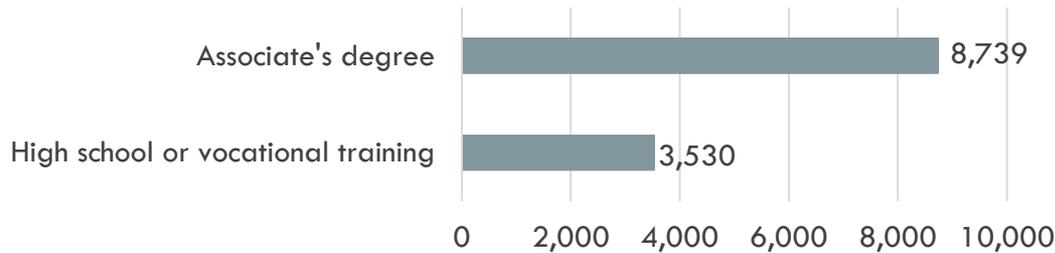
Company	Postings
Ascension Health	2,307
Hospital Corporation of America	2,306
Baylor Scott & White Health	756
St. David's Healthcare	515
Seton Healthcare	284
South Austin Medical Center	280
Psa Healthcare	242
Round Rock Medical Center	189
Community Health Systems Professional Services Corporation	171
North Austin Medical Center	162

SOURCE: CAEL / BURNING GLASS TECHNOLOGIES

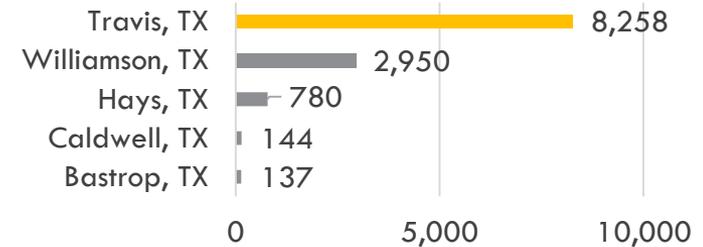
*Excludes postings that do not specify required education levels.

Online Healthcare Job Posting Trends- Sub-baccalaureate Advertised Education Levels

HEALTHCARE OCCUPATIONS JOB POSTINGS BY ADVERTISED EDUCATION*
2017



HEALTHCARE OCCUPATIONS JOB POSTINGS
LOCATIONS, 2017



LEADING HEALTHCARE OCCUPATIONS BY POSTING
2017

Occupation	Postings
Registered Nurses	8,399
Nursing Assistants	798
Medical Assistants	555
Medical and Clinical Laboratory Technicians	336
Surgical Technologists	294
Medical Records and Health Information Technicians	290
Licensed Practical and Licensed Vocational Nurses	249
Pharmacy Technicians	231
Cardiovascular Technologists and Technicians	135
Radiologic Technologists	134

LEADING COMPANY BY POSTINGS
2017

Company	Postings
Ascension Health	1,936
Hospital Corporation of America	908
Baylor Scott & White Health	370
St. David's Healthcare	298
South Austin Medical Center	177
Austin Regional Clinic	152
Community Health Systems Professional Services Corporation	125
Cedar Park Regional Medical Center	113
Seton Healthcare Family	104
Providence Health & Services	93

APPENDIX 03: Supply Analysis

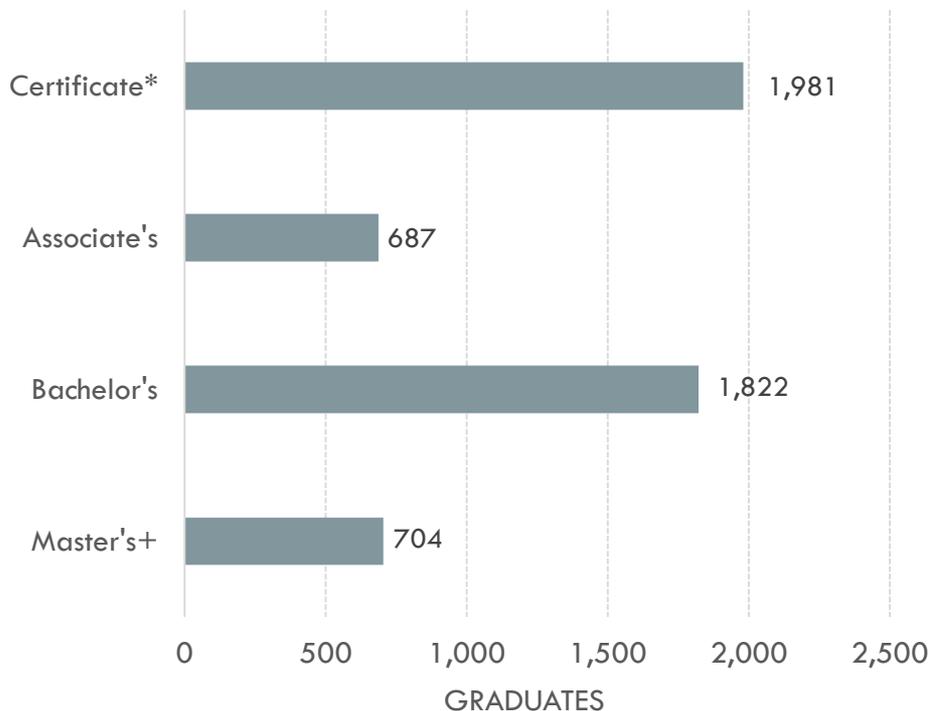
This appendix includes:

- *Supply analysis of Healthcare industry relative to full region workforce*
- *Detailed supply analysis of Healthcare industry*

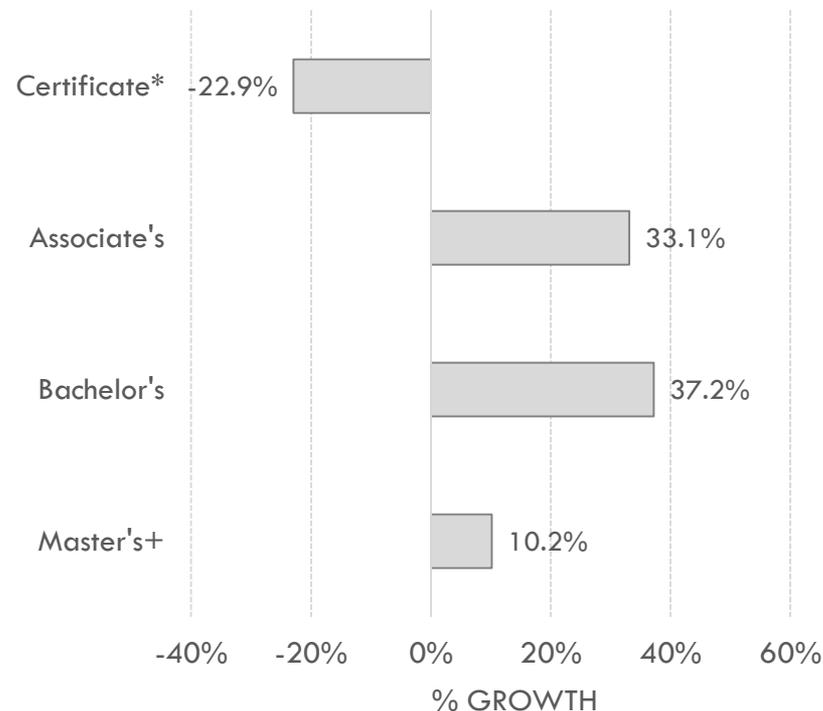
College Graduate Output – Healthcare Fields

In 2016, the Austin metro produced over 5,200* graduates from post-secondary healthcare programs. Certificates (for-credit and non-credit at ACC, Goodwill, and Skillpoint) account for nearly 40% of all graduates and is likely higher due to other non-credit programs in the region. Bachelor's degrees represent the next largest group (35%). The remaining graduates are evenly split between Associate's and Master's or higher (13% each). With the exception of post-secondary for-credit certificates, the Austin region posted a net increase in healthcare graduates at all program levels between 2011 and 2016.

HEALTHCARE GRADUATES BY AWARD LEVEL
AUSTIN METRO, 2016



HEALTHCARE GRADUATE GROWTH BY AWARD LEVEL
AUSTIN METRO, 2011 - 2016



SOURCE: AVALANCHE CONSULTING / US DEPT OF EDUCATION / NON-CREDIT PROVIDERS

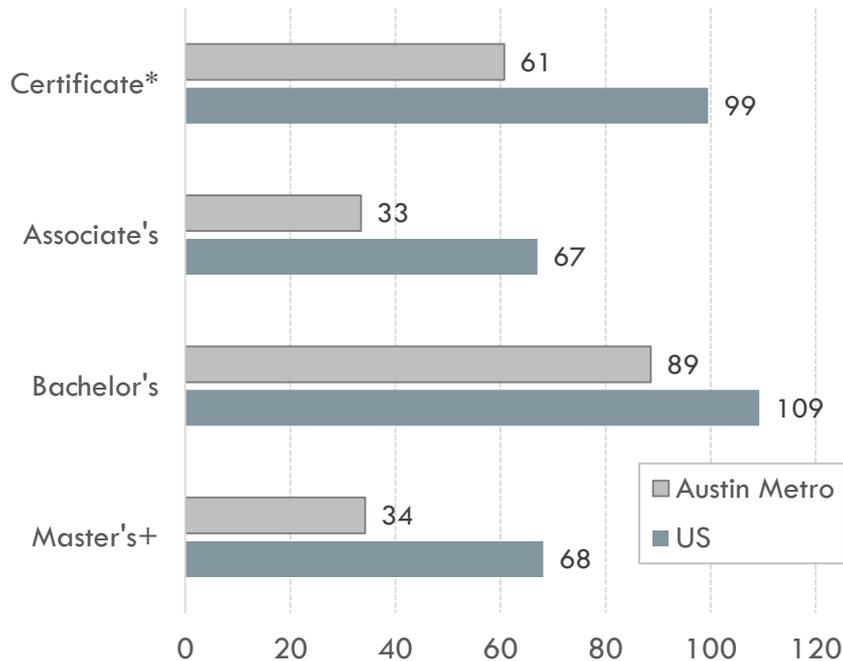
*Includes 732 graduates from non-credit programs at ACC, Goodwill, and Skillpoint in 2017. Historical data is not available, so growth calculations only include for-credit graduates.

Graduate Output Per Capita – Healthcare Fields

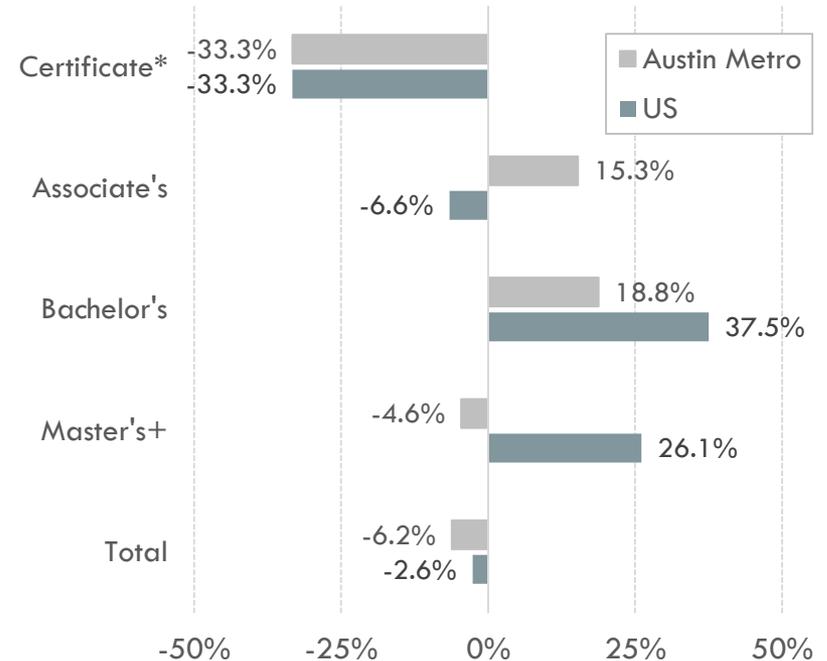
The Austin metro produces far fewer healthcare graduates per capita than the US. Austin produces 218 graduates per 100,000 people, about two-thirds of the 348 graduates per capita for the US. Associate's and Master's or higher graduates are half US levels. Still, per capita growth is occurring in the Austin metro at the Associate's and Bachelor's levels, but falling for all others.

Note that the Certificates data only includes available data on for-credit programs – non-credit programs are not required to report their graduate statistics to the US Dept. of Education.

HEALTHCARE GRADUATES PER 100K POPULATION
2016



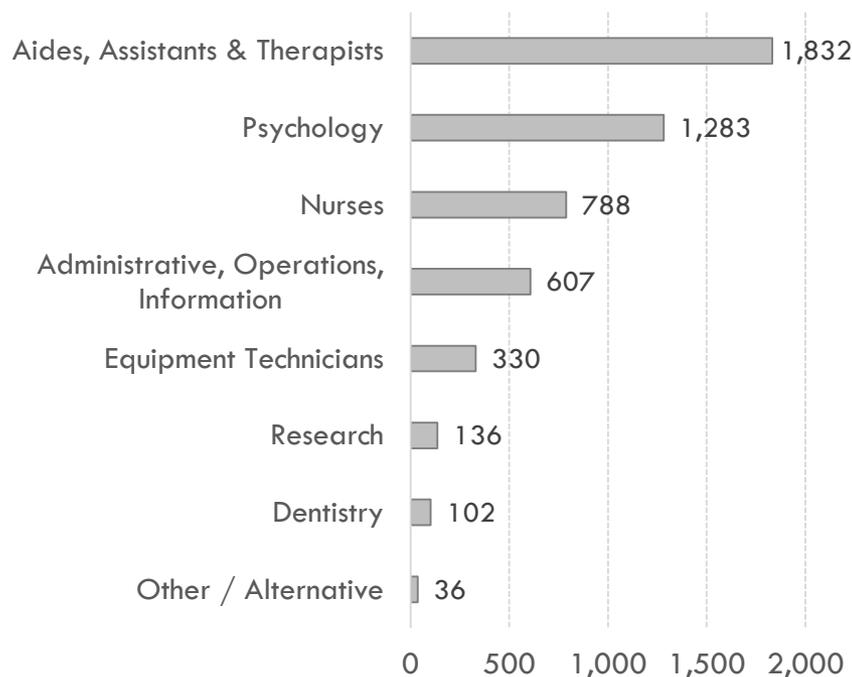
% GROWTH IN HEALTHCARE GRADUATES PER 100K POPULATION 2011
- 2016



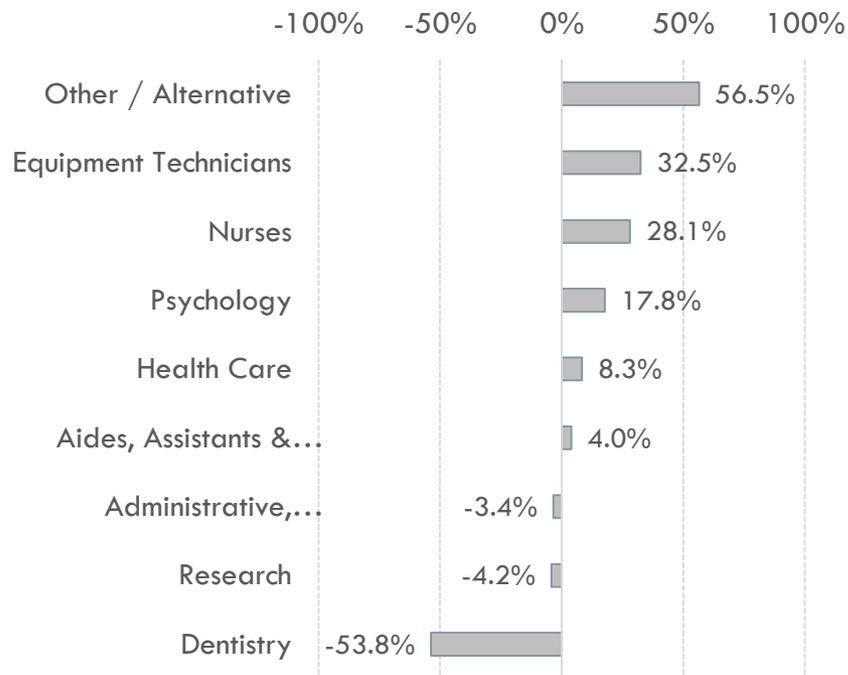
Healthcare Degree Sub-Cluster Trends

In 2016, the Austin metro produced over 1,800 graduates in Aides, Assistants, and Therapists fields across all award levels (including non-credit certificates). The second largest degree sub-cluster was Psychology, with nearly 1,300 graduates. Nurses accounted for 790 graduates and Administrative accounted for over 600 graduates. Equipment Technicians numbered 330. The fastest growing sub-cluster was Other/Alternative fields, albeit output is small (growing from 23 to 36 graduates). Equipment Technicians grew 33% and Nurses grew 28%. Dentistry graduates have fallen over 50% in five years.

HEALTHCARE DEGREE SUB-CLUSTERS, ALL AWARD LEVELS
AUSTIN METRO, 2016*



FASTEST GROWING HEALTHCARE DEGREE SUB-CLUSTERS
ALL AWARD LEVELS, AUSTIN METRO, 2011 – 2016*



SOURCE: AVALANCHE CONSULTING / US DEPT OF EDUCATION / NON-CREDIT PROVIDERS

*Includes non-credit certificate data for 2017; the growth chart only includes for-credit certificate data due to lack of historic data.

Institutions in the Austin Metro – Healthcare Graduates

While nearly two dozens educational institutions report healthcare graduates within the Austin metro, talent production is highly concentrated at just three colleges and universities. Collectively, the Austin Community College District, Texas State University, and the University of Texas are responsible for two-thirds of all healthcare graduates in the region. Austin Community College District alone is responsible for more than 80% of Healthcare Associate degree graduates in the region. Awards at the certificate level are more distributed. Three leading non-credit certificate providers are Austin Community College, Goodwill Industries, and Skillpoint Alliance.

HEALTHCARE GRADUATES FROM HIGHER EDUCATION INSTITUTIONS IN THE AUSTIN METRO 2016

Institution	2016 Total	Non-Credit		For-Credit		
		Certificate*	Certificate	Associate	Bachelor's	Master's+
The University of Texas at Austin	1,585		401		819	365
Texas State University	1,025				772	235
Austin Community College District	953	285	120	548		
Goodwill Industries	381	381	226			
Everest Institute-Austin	226		226			
The College of Health Care Professions-Austin	192		174	18		
Virginia College-Austin	181		86	95		
Saint Edward's University	162				83	79
Southern Careers Institute-Austin	140		140			
CyberTex Institute of Technology	93		93			
Skillpoint Alliance	66	66			58	
Concordia University-Texas	58				58	
Southwestern University	35				35	
South University-Austin	34			12	22	
Texas Health and Science University	31				14	17
Huston-Tillotson University	18				18	
National American University-Austin	9		1	7	1	
National American University-Georgetown	8		2	6		
Avenue Five Institute	5		5			
Strayer University-Texas	4					4
National American University-Harold D. Buckingham Graduate School	4					4
National American University-Austin South	2		1	1		

SOURCE: AVALANCHE CONSULTING / US DEPT OF EDUCATION / NON-CREDIT PROVIDERS

Note: Many Non-Credit programs do not report their statistics to the US Dept. of Education. The above includes select non-credit programs for which data were available.

*Data for non-credit is 2017

Secondary Healthcare Education

All five of the independent school districts that responded to the survey reported that at least one school in their district offers healthcare education programming. All five offer Career and Technical Education (CTE) programming, and most (4 out of 5) offer career exploration and advising and industry credentials. Many of the ISDs reported that more than 1 school offers healthcare programming available to 100 plus students.

HEALTHCARE EDUCATION PROGRAMMING OFFERED AT SCHOOLS IN THE DISTRICT

	Career exploration and advising	Career and Technical Education (CTE)	Dual Credit*	Industry Credentials**
Austin ISD				
Round Rock ISD				
Elgin ISD				
San Marcos ISD				
Pflugerville ISD				

*i.e. credit toward certificate or associate degrees at local post-secondary institutions, such as ACC

**i.e. certification or license from a credentialing body, such as a Certification in Nursing Assistance or Pharmacy Technician

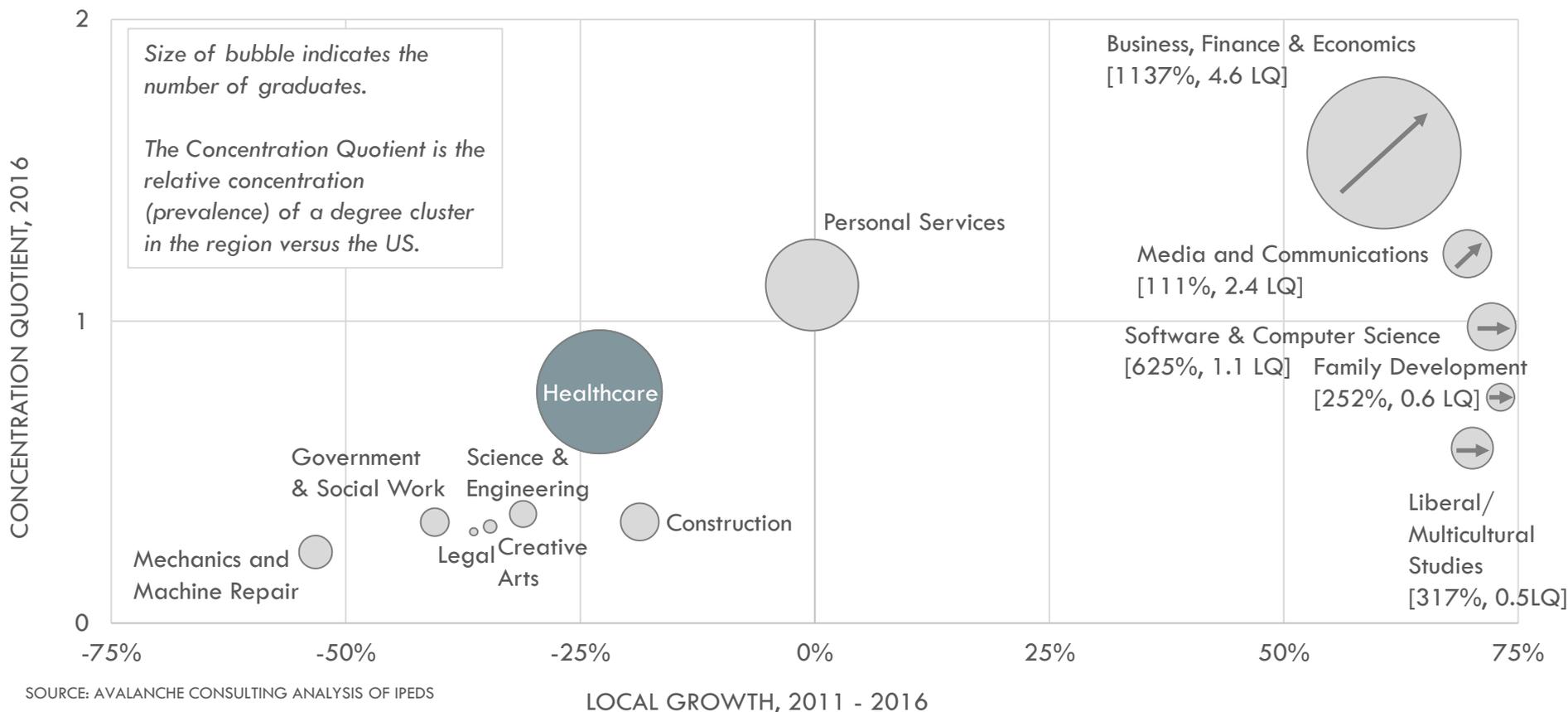
INDUSTRY CREDENTIALS ARE OFFERED FOR THE COMPETENCIES

	Nursing Assistant	Pharmacy Technician	Medical Assistant
Austin ISD			
Round rock ISD			
Elgin ISD			
San Marcos ISD			
Pflugerville ISD			

Certificate Trends

At the certificate level, Healthcare is the second-largest graduate cluster, with 1,249 graduates in 2016 in the Austin metro. This data only includes “for-credit” certificates, not the non-credit programs that are often characterized as continuing education programs. Healthcare certificates declined over the last five years, and on a percentage basis, accounts for a smaller share of certificates in the Austin metro than typically seen in the US. In contrast, Business, Finance, and Economics is the largest certificate cluster, is growing at an extremely high rate, and accounts for more than four times as many certificates in the metro relative to the US average.

CERTIFICATE CLUSTERS: AUSTIN METRO



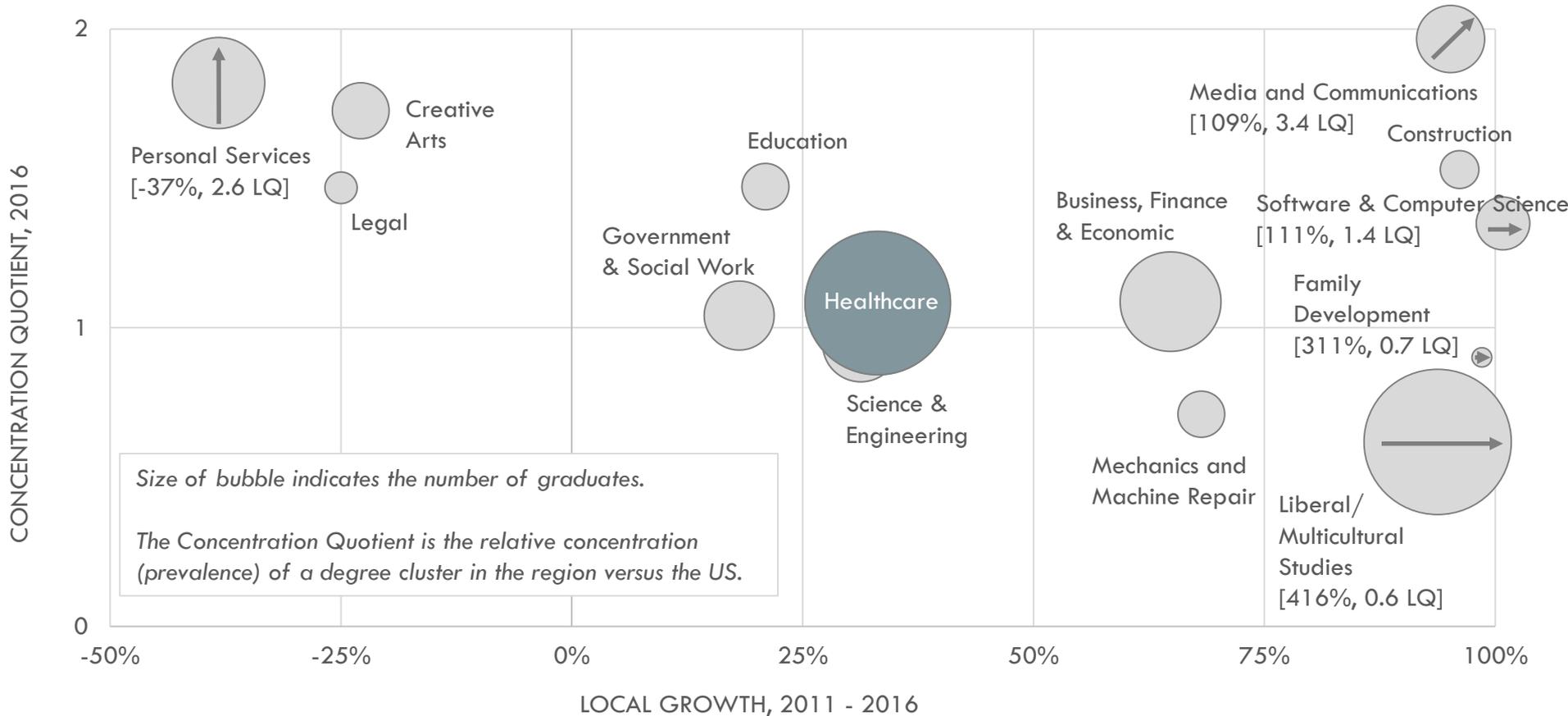
SOURCE: AVALANCHE CONSULTING ANALYSIS OF IPEDS

*Does not include Non-Credit programs, which are not required to report their statistics to the US Dept. of Education.

Associate's Degree Trends

Healthcare is the second-largest Associate's graduate cluster, with nearly 700 graduates in the Austin metro in 2016. Liberal Arts/Multicultural studies is the largest Associate's cluster, with most students receiving an Associate of Arts degree and planning to continue their education at a 4-year school. Medical Associate's graduates grew 33% in the past five years and accounts for a slightly higher-than-average share of all Associate's degrees in the metro.

ASSOCIATE'S CLUSTERS: AUSTIN METRO



Degree Cluster Trends - All Degree Levels

Graduate Clusters - All Degree Levels

Austin Metro

Code	Cluster	Austin Metro					U.S.		
		2011	2016	Net New	% Growth	LQ '16	2011	2016	% Growth
AG	Agriculture	188	327	139	73.9%	0.76	51,937	64,110	23.4%
AT	Architecture	188	178	-10	-5.3%	1.45	19,054	18,265	-4.1%
BZ	Business, Finance, Economics	4,343	6,945	2,602	59.9%	1.35	745,672	761,976	2.2%
CD	Creative Arts and Design	1,201	1,261	60	5.0%	1.28	148,896	146,382	-1.7%
CO	Construction	176	173	-3	-1.7%	0.30	72,921	85,496	17.2%
ED	Education	1,436	1,075	-361	-25.1%	0.53	364,048	299,314	-17.8%
EN	Science & Engineering	3,639	4,437	798	21.9%	1.36	386,718	485,834	25.6%
FC	Family Development	1,311	1,849	538	41.0%	1.91	117,799	143,943	22.2%
GO	Government, Social Work, Criminology	2,269	2,233	-36	-1.6%	0.96	317,220	346,550	9.2%
HE	Health Care	4,135	4,480	345	8.3%	0.59	1,112,149	1,122,958	1.0%
LE	Legal	538	529	-9	-1.7%	1.21	75,418	64,745	-14.2%
MA	Mathematics	327	469	142	43.4%	1.90	26,712	36,730	37.5%
MC	Media and Communications	3,037	3,081	44	1.4%	2.34	192,854	195,726	1.5%
ME	Mechanics and Machine Repair	245	168	-77	-31.4%	0.22	130,047	114,962	-11.6%
MM	Liberal / Multicultural Studies	3,241	3,806	565	17.4%	0.82	599,181	689,805	15.1%
PS	Personal Services / Hospitality	1,098	949	-149	-13.6%	0.84	181,715	167,379	-7.9%
SF	Software and Computer Sciences	676	1,478	802	118.6%	1.13	150,517	194,135	29.0%
TR	Transportation Professionals	61	105	44	72.1%	0.39	38,344	40,472	5.5%
TT	Total	28,109	33,543	5,434	19.3%	1.00	4,735,586	4,981,133	5.2%

SOURCE: AVALANCHE CONSULTING ANALYSIS OF DATA FROM US DEPARTMENT OF EDUCATION

*Does not include Non-Credit programs

Degree Cluster Trends – Certificates

Graduate Clusters - Certificates

Austin Metro

Code	Cluster	Austin Metro					U.S.		
		2011	2016	Net New	% Growth	LQ '16	2011	2016	% Growth
AG	Agriculture	0	7	7		0.22	5,873	6,359	8.3%
AT	Architecture	0	0	0		0.00	354	337	-4.8%
BZ	Business, Finance, Economics	152	1,880	1,728	1136.8%	4.64	60,737	79,938	31.6%
CD	Creative Arts and Design	26	17	-9	-34.6%	0.32	12,961	10,485	-19.1%
CO	Construction	150	122	-28	-18.7%	0.34	58,896	71,764	21.8%
ED	Education	0	0	0		0.00	10,123	10,620	4.9%
EN	Science & Engineering	90	62	-28	-31.1%	0.36	28,167	33,843	20.2%
FC	Family Development	19	67	48	252.6%	0.59	18,653	22,562	21.0%
GO	Government, Social Work, Criminology	116	69	-47	-40.5%	0.33	34,309	40,701	18.6%
HE	Health Care	1,621	1,249	-372	-22.9%	0.77	464,989	321,511	-30.9%
LE	Legal	11	7	-4	-36.4%	0.30	5,738	4,563	-20.5%
MA	Mathematics	0	17	17		17.93	75	187	149.3%
MC	Media and Communications	72	152	80	111.1%	2.42	10,802	12,411	14.9%
ME	Mechanics and Machine Repair	201	94	-107	-53.2%	0.24	89,299	78,691	-11.9%
MM	Liberal / Multicultural Studies	35	146	111	317.1%	0.45	31,926	64,090	100.7%
PS	Personal Services / Hospitality	690	688	-2	-0.3%	1.12	134,658	121,183	-10.0%
SF	Software and Computer Sciences	28	203	175	625.0%	1.09	29,740	36,798	23.7%
TR	Transportation Professionals	0	0	0		0.00	25,180	26,884	6.8%
TT	Total	3,211	4,780	1,569	48.9%	1.00	1,022,600	942,950	-7.8%

SOURCE: AVALANCHE CONSULTING ANALYSIS OF DATA FROM US DEPARTMENT OF EDUCATION

*Does not include Non-Credit programs

Degree Cluster Trends – Associate's Degrees

Graduate Clusters - Associate's Degrees

Austin Metro

Code	Cluster						U.S.		
		2011	2016	Net New	% Growth	LQ '16	2011	2016	% Growth
AG	Agriculture	0	18	18		0.74	6,858	8,257	20.4%
AT	Architecture	0	0	0		0.00	571	478	-16.3%
BZ	Business, Finance, Economics	202	333	131	64.9%	1.09	117,444	104,551	-11.0%
CD	Creative Arts and Design	140	108	-32	-22.9%	1.73	22,760	21,359	-6.2%
CO	Construction	26	51	25	96.2%	1.53	10,780	11,385	5.6%
ED	Education	62	75	13	21.0%	1.47	23,432	17,390	-25.8%
EN	Science & Engineering	147	193	46	31.3%	0.94	62,320	69,764	11.9%
FC	Family Development	9	37	28	311.1%	0.71	18,380	17,783	-3.2%
GO	Government, Social Work, Criminology	138	163	25	18.1%	1.04	56,018	53,466	-4.6%
HE	Health Care	516	687	171	33.1%	1.08	223,728	216,673	-3.2%
LE	Legal	48	36	-12	-25.0%	1.47	12,009	8,370	-30.3%
MA	Mathematics	4	13	9	225.0%	1.46	1,644	3,032	84.4%
MC	Media and Communications	77	161	84	109.1%	3.84	10,523	14,319	36.1%
ME	Mechanics and Machine Repair	44	74	30	68.2%	0.71	40,336	35,558	-11.8%
MM	Liberal / Multicultural Studies	146	754	608	416.4%	0.63	327,870	407,055	24.2%
PS	Personal Services / Hospitality	408	254	-154	-37.7%	2.90	32,802	29,864	-9.0%
SF	Software and Computer Sciences	62	131	69	111.3%	1.38	41,239	32,467	-21.3%
TR	Transportation Professionals	0	1	1		0.16	4,190	2,123	-49.3%
TT	Total	2,029	3,089	1,060	52.2%	1.00	1,015,685	1,054,941	3.9%

Degree Cluster Trends – Bachelor's Degrees

Graduate Clusters - Bachelor's Degrees

Austin Metro

Code	Cluster	Austin Metro					U.S.			
		2011	2016	Net New	% Growth	LQ '16	2011	2016	% Growth	
AG	Agriculture	145	255	110	75.9%	0.67	31,054	39,749	28.0%	
AT	Architecture	77	70	-7	-9.1%	0.82	9,933	8,978	-9.6%	
BZ	Business, Finance, Economics	2,662	2,891	229	8.6%	0.80	370,440	377,031	1.8%	
CD	Creative Arts and Design	859	929	70	8.1%	1.04	94,233	93,547	-0.7%	
CO	Construction	0	0	0		0.00	2,983	1,941	-34.9%	
ED	Education	67	83	16	23.9%	0.10	106,512	88,738	-16.7%	
EN	Science & Engineering	2,480	3,227	747	30.1%	1.24	210,266	272,021	29.4%	
FC	Family Development	1,139	1,619	480	42.1%	1.94	67,586	87,432	29.4%	
GO	Government, Social Work, Criminology	1,439	1,402	-37	-2.6%	0.82	165,366	179,679	8.7%	
HE	Health Care	1,328	1,822	494	37.2%	0.54	247,583	352,982	42.6%	
LE	Legal	0	2	2		0.05	4,446	4,281	-3.7%	
MA	Mathematics	257	365	108	42.0%	1.67	17,254	22,864	32.5%	
MC	Media and Communications	2,439	2,470	31	1.3%	1.82	142,369	141,982	-0.3%	
ME	Mechanics and Machine Repair	0	0	0		0.00	365	530	45.2%	
MM	Liberal / Multicultural Studies	2,621	2,430	-191	-7.3%	1.48	192,868	172,121	-10.8%	
PS	Personal Services / Hospitality	0	7	7		0.05	13,345	15,426	15.6%	
SF	Software and Computer Sciences	447	888	441	98.7%	1.24	51,938	75,136	44.7%	
TR	Transportation Professionals	61	104	43	70.5%	1.17	7,018	9,331	33.0%	
TT	Total	16,021	18,564	2,543	15.9%	1.00	1,735,623	1,944,127	12.0%	

Degree Cluster Trends – Master's Degrees and Above

Graduate Clusters - Master's, Professional, and Doctorate Degrees

Austin Metro

Code	Cluster	Austin Metro					U.S.			
		2011	2016	Net New	% Growth	LQ '16	2011	2016	% Growth	
AG	Agriculture	43	36	-7	-16.3%	0.53	8,024	9,515	18.6%	
AT	Architecture	111	108	-3	-2.7%	1.84	8,038	8,277	3.0%	
BZ	Business, Finance, Economics	1,323	1,840	517	39.1%	1.35	191,151	191,654	0.3%	
CD	Creative Arts and Design	176	207	31	17.6%	1.46	17,978	19,924	10.8%	
CO	Construction	0	0	0		0.00	244	321	31.6%	
ED	Education	1,296	913	-383	-29.6%	0.80	198,018	160,560	-18.9%	
EN	Science & Engineering	922	955	33	3.6%	1.26	83,013	106,345	28.1%	
FC	Family Development	98	124	26	26.5%	1.15	12,405	15,110	21.8%	
GO	Government, Social Work, Criminology	537	599	62	11.5%	1.21	59,709	69,797	16.9%	
HE	Health Care	639	704	65	10.2%	0.45	168,441	220,221	30.7%	
LE	Legal	463	417	-46	-9.9%	1.27	52,053	46,213	-11.2%	
MA	Mathematics	66	74	8	12.1%	1.01	7,491	10,325	37.8%	
MC	Media and Communications	443	290	-153	-34.5%	1.57	28,413	25,991	-8.5%	
ME	Mechanics and Machine Repair	0	0	0		0.00	44	177	302.3%	
MM	Liberal / Multicultural Studies	432	428	-4	-0.9%	1.43	43,263	42,117	-2.6%	
PS	Personal Services / Hospitality	0	0	0		0.00	846	851	0.6%	
SF	Software and Computer Sciences	127	249	122	96.1%	0.74	26,132	47,346	81.2%	
TR	Transportation Professionals	0	0	0		0.00	1,878	1,888	0.5%	
TT	Total	6,676	6,944	268	4.0%	1.00	907,630	976,848	7.6%	

APPENDIX 04: Gap Analysis

This appendix includes:

- *Graduate output data for middle-skill healthcare occupations in the gap analysis*

Nursing Occupations- Graduate Output, 2016

Note- will include LPN/LVN programs in final draft

Institution	Program Description	Level	Graduates
Registered Nurses			
Austin Community College District	Registered Nursing/Registered Nurse	A	247
The University of Texas at Austin	Registered Nursing/Registered Nurse	B	134
Texas State University	Registered Nursing/Registered Nurse	B	82
Concordia University-Texas	Registered Nursing/Registered Nurse	B	42
South University-Austin	Registered Nursing/Registered Nurse	B	9
Licensed Practical and Licensed Vocational Nurses			
Goodwill Industries	Acute Care	NC	109
Austin Community College District	Licensed Practical/Vocational Nurse Training	C2	46

Award Level:			
		C2	Certificate, 1 < 2 Years
NC	Non-Credit Certificate	A	Associate's
C1	Certificate, < 1 Year	B	Bachelor's

Patient Support Occupations- Graduate Output, 2016

Note- will include EMT/Paramedic programs in final draft

Institution	Program Description	Level	Graduates
Nursing Aide, Orderlies & Attendants			
Austin Community College District	Certified Nurse Aide	NC	148
Goodwill Industries	Nurse Aide	NC	118
Skillpoint Alliance	Certified Nurse Aide	NC	66
Home Health / Personal Care Aides			
Goodwill Industries	Home Health	NC	28
Emergency Medical Technicians and Paramedics			
Austin Community College District	Emergency Medical Technology/Technician (EMT I A		14
Austin Community College District	Emergency Medical Technology/Technician (EMT I C2		8
National American University-Georgetov	Emergency Medical Technology/Technician (EMT I A		1

Award Level:

		C2	Certificate, 1 < 2 Years
NC	Non-Credit Certificate	A	Associate's
C1	Certificate, < 1 Year	B	Bachelor's

Assistant Occupations- Graduate Output, 2016

Institution	Program Description	Level	Graduates
Medical Assistants			
Everest Institute-Austin	Medical/Clinical Assistant	C2	144
CyberTex Institute of Technology	Medical/Clinical Assistant	C1	93
Southern Careers Institute-Austin	Medical/Clinical Assistant	C2	78
The College of Health Care Professions-	Medical/Clinical Assistant	C2	65
Virginia College-Austin	Medical/Clinical Assistant	C2	51
Austin Community College District	Medical/Clinical Assistant	NC	39
National American University-Austin	Medical/Clinical Assistant	A	2
National American University-Georgetown	Medical/Clinical Assistant	A	2
Goodwill Industries	Medical/Clinical Assistant	NC	1
Phlebotomists			
Goodwill Industries	Phlebotomy	NC	26
Austin Community College	Phlebotomy	NC	25
Pharmacy Technicians/Aides			
Virginia College-Austin	Pharmacy Technician/Assistant	C2	28
Austin Community College District	Pharmacy Technician/Assistant	C2	27
Southern Careers Institute-Austin	Pharmacy Technician/Assistant	C1	23
Goodwill Industries	Pharmacy Technician/Assistant	NC	2
National American University-Austin	Pharmacy Technician/Assistant	A	1

Award Level:

		C2	Certificate, 1 < 2 Years
NC	Non-Credit Certificate	A	Associate's
C1	Certificate, < 1 Year	B	Bachelor's

SOURCE: AVALANCHE CONSULTING / US DEPT OF EDUCATION

Note: Only includes available data on for-credit programs and select non-credit training.

Technologist/Technician Occupations- Graduate Output, 2016

Institution	Program Description	Level	Graduates
Radiologic/Nuclear Technologists & Therapists			
The College of Health Care Professions-	Radiologic Technology/Science - Radiographer	C2	57
Austin Community College District	Radiologic Technology/Science - Radiographer	A	37
Texas State University	Medical Radiologic Technology/Science - Radiat B		11
Austin Community College District	Radiologic Technology/Science - Radiographer	C1	5
Austin Community College District	Radiologic Technology/Science - Radiographer	C2	3
Surgical Technologists			
Austin Community College District	Surgical Technology/Technologist	A	29
Virginia College-Austin	Surgical Technology/Technologist	A	19
Austin Community College District	Surgical Technology/Technologist	C2	2
Cardiovascular Technologists and Technicians			
National American University-Austin	Cardiovascular Technology/Technologist	A	3
National American University-Georgetov	Cardiovascular Technology/Technologist	A	1

Award Level:

		C2	Certificate, 1 < 2 Years
NC	Non-Credit Certificate	A	Associate's
C1	Certificate, < 1 Year	B	Bachelor's

Technologist/Technician Occupations- Graduate Output, 2016

Institution	Program Description	Level	Graduates
Respiratory Technicians & Therapists			
Texas State University	Respiratory Care Therapy/Therapist	B	37
Virginia College-Austin	Respiratory Therapy Technician/Assistant	A	20
Diagnostic Medical Sonographers			
Virginia College-Austin	Diagnostic Medical Sonography/Sonographer ar A		31
Austin Community College District	Diagnostic Medical Sonography/Sonographer ar A		19
Austin Community College District	Diagnostic Medical Sonography/Sonographer ar C1		12
The College of Health Care Professions-/	Diagnostic Medical Sonography/Sonographer ar A		12
The College of Health Care Professions-/	Diagnostic Medical Sonography/Sonographer ar PA		6
Magnetic Resonance Imaging Technician			
Austin Community College District	Magnetic Resonance Imaging Technician	C	3
Ophthalmic Medical Technicians			
Austin Community College	Ophthalmic Assistant	NC	5

Award Level:

		C2	Certificate, 1 < 2 Years
NC	Non-Credit Certificate	A	Associate's
C1	Certificate, < 1 Year	B	Bachelor's

Therapy Assistant Occupations- Graduate Output, 2016

Institution	Program Description	Level	Graduates
Physical Therapist Assistants			
Austin Community College District	Physical Therapy Technician/Assistant	A	19
South University-Austin	Physical Therapy Technician/Assistant	A	12
The College of Health Care Professions-	Physical Therapy Technician/Assistant	C1	11
Austin Community College District	Therapeutic Recreation/Recreational Therapy	A	7
Occupational Therapy Assistants			
Austin Community College District	Occupational Therapist Assistant	A	14

Award Level:			
		C2	Certificate, 1 < 2 Years
NC	Non-Credit Certificate	A	Associate's
C1	Certificate, < 1 Year	B	Bachelor's

Dental Support Occupations- Graduate Output, 2016

Institution	Program Description	Level	Graduates
Dental Assistants			
Everest Institute-Austin	Dental Assisting/Assistant	C2	53
The College of Health Care Professions-	Dental Assisting/Assistant	C2	30
Austin Community College	Dental Assisting/Assistant	NC	7
Dental Hygienists			
Austin Community College District	Dental Hygiene/Hygienist	A	13

Award Level:			
		C2	Certificate, 1 < 2 Years
NC	Non-Credit Certificate	A	Associate's
C1	Certificate, < 1 Year	B	Bachelor's

Laboratory Occupations- Graduate Output, 2016

Institution	Program Description	Level	Graduates
Medical and Clinical Laboratory Technicians			
Austin Community College District	Clinical/Medical Laboratory Technician	A	21
Austin Community College District	Biology Technician/Biotechnology Laboratory Tec A		14
Austin Community College District	Biology Technician/Biotechnology Laboratory Tec C1		6
Austin Community College District	Biology Technician/Biotechnology Laboratory Tec C2		6
Medical and Clinical Laboratory Technologists			
Texas State University	Clinical Laboratory Science/Medical Technology, B		18
The University of Texas at Austin	Clinical Laboratory Science/Medical Technology, B		7

Award Level:			
		C2	Certificate, 1 < 2 Years
NC	Non-Credit Certificate	A	Associate's
C1	Certificate, < 1 Year	B	Bachelor's

Psychiatric Support Occupations- Graduate Output, 2016

These graduates could possibly serve as Psychiatric Aides, but they are coded to the occupation Mental Health Assistants, which falls under Social Services, not Healthcare.

Institution	Program Description	Level	Graduates
Mental Health Assistants			
Austin Community College District	Psychology, General	A	55
Austin Community College District	Substance Abuse/Addiction Counseling	A	16
Austin Community College District	Mental Health Counseling/Counselor	A	14
Austin Community College District	Substance Abuse/Addiction Counseling	C2	6
Austin Community College District	Mental Health Counseling/Counselor	C2	1

Award Level:			
		C2	Certificate, 1 < 2 Years
NC	Non-Credit Certificate	A	Associate's
C1	Certificate, < 1 Year	B	Bachelor's

Administrative Support Occupations- Graduate Output, 2016

Institution	Program Description	Level	Graduates
Medical Records and Health Information Technicians			
Southern Careers Institute-Austin	Medical Insurance Coding Specialist/Coder	C2	39
Austin Community College District	Medical Billing & Coding	NC	34
Austin Community College District	Health Information/Medical Records Technology/ A	A	19
Everest Institute-Austin	Medical Insurance Coding Specialist/Coder	C2	14
The College of Health Care Professions-	Medical Insurance Specialist/Medical Biller	C2	11
Austin Community College District	Medical Insurance Coding Specialist/Coder	C2	10
Virginia College-Austin	Medical Insurance Coding Specialist/Coder	C2	7
National American University-Georgetov	Health Information/Medical Records Technology/ A	A	2
National American University-Georgetov	Medical Insurance Coding Specialist/Coder	C2	2
National American University-Austin	Health Information/Medical Records Technology/ A	A	1
National American University-Austin	Medical Insurance Coding Specialist/Coder	C2	1
National American University-Austin Sout	Health Information/Medical Records Technology/ A	A	1
National American University-Austin Sout	Medical Insurance Coding Specialist/Coder	C2	1
Medical Secretaries			
Virginia College-Austin	Medical Office Assistant/Specialist	A	25
Everest Institute-Austin	Medical Administrative/Executive Assistant and M	C2	15
Austin Community College	Medical Office Support	NC	3

Award Level:

		C2	Certificate, 1 < 2 Years
NC	Non-Credit Certificate	A	Associate's
C1	Certificate, < 1 Year	B	Bachelor's

Other Related Occupations- Graduate Output, 2016

Institution	Program Description	Level	Graduates
Athletic Trainers			
Texas State University	Kinesiology and Exercise Science	B	333
The University of Texas at Austin	Kinesiology and Exercise Science	B	111
The University of Texas at Austin	Sport and Fitness Administration/Management	B	78
Texas State University	Sport and Fitness Administration/Management	B	74
The University of Texas at Austin	Health and Physical Education/Fitness, General	B	42
Saint Edward's University	Kinesiology and Exercise Science	B	42
The University of Texas at Austin	Kinesiology and Exercise Science	M	20
Huston-Tillotson University	Kinesiology and Exercise Science	B	19
Concordia University-Texas	Health and Physical Education/Fitness, General	B	17
Texas State University	Athletic Training/Trainer	M	16
Texas State University	Kinesiology and Exercise Science	M	15
Texas State University	Athletic Training/Trainer	B	13
The University of Texas at Austin	Athletic Training/Trainer	B	13
Southwestern University	Kinesiology and Exercise Science	B	12
The University of Texas at Austin	Kinesiology and Exercise Science	D	12
Fitness Trainers and Aerobics Instructors			
Austin Community College District	Health and Physical Education/Fitness, General	A	12
Austin Community College District	Kinesiology and Exercise Science	A	10
The College of Health Care Professions-	Physical Fitness Technician	C1	8
Austin Community College District	Health and Physical Education/Fitness, General	C1	2
Austin Community College District	Health and Physical Education/Fitness, General	C2	1

SOURCE: AVALANCHE CONSULTING / US DEPT OF EDUCATION

Note: Only includes available data on for-credit programs and select non-credit training.

Other Related Occupations- Graduate Output, 2016

Institution	Program Description	Level	Graduates
Nutritionists			
The University of Texas at Austin	Foods, Nutrition, and Wellness Studies, General	B	233
Texas State University	Foods, Nutrition, and Wellness Studies, General	B	86
Texas State University	Human Nutrition	M	14
The University of Texas at Austin	Nutrition Sciences	D	3
The University of Texas at Austin	Nutrition Sciences	M	2
South University-Austin	Health and Wellness, General	B	1
Speech Therapists			
The University of Texas at Austin	Communication Sciences and Disorders, General	B	127
Texas State University	Communication Sciences and Disorders, General	B	47
The University of Texas at Austin	Communication Sciences and Disorders, General	M	28
Texas State University	Communication Sciences and Disorders, General	M	27
The University of Texas at Austin	Communication Sciences and Disorders, General	D	1

SOURCE: AVALANCHE CONSULTING / US DEPT OF EDUCATION

Note: Only includes available data on for-credit programs and select non-credit training.

Supply-Demand Conditions: All Other Healthcare

Supply-Demand Gap Conditions: All Other Healthcare Occupations

Austin Metro

Gap	Occupation Group	Education	Annual Job	Local Output		
		Level	Openings	Completions	Gap	% of Jobs
	Audiologists	PhD	8	11	-3	144%
	Chiropractors	PhD	33	0	33	0%
	Dentists & Othodontists	PhD	129	0	129	0%
	Doctors, Surgeons & Psychiatrists	PhD	478	0	478	0%
	Genetic Counselors	Master's/Prof.	4	0	4	0%
	Industrial Psychologists	Master's/Prof.	1	0	1	0%
	Medical and Health Services Manager	Bachelor's	372	244	128	66%
	Nurse Anesthetists	Master's/Prof.	31	0	31	0%
	Nurse Midwives	Master's/Prof.	4	0	4	0%
	Nurse Practitioners	Master's/Prof.	115	120	-5	105%
	Occupational Health and Safety Speci	Bachelor's	121	0	121	0%
	Occupational Therapists	Master's/Prof.	72	0	72	0%
	Optometrists	PhD	17	0	17	0%
	Orthotists and Prosthetists	Master's/Prof.	6	0	6	0%
	Pharmacists	PhD	140	136	4	97%
	Physical Therapists	PhD	121	36	85	30%
	Physician Assistants	Master's/Prof.	60	0	60	0%
	Psychologists	PhD	85	21	64	25%
	Speech Therapists	Master's/Prof.	103	230	-127	223%
	Therapists, All Other	Bachelor's	72	31	41	43%
	Veterinarians	PhD	83	0	83	0%

APPENDIX 05: Travis County Analysis

This appendix includes:

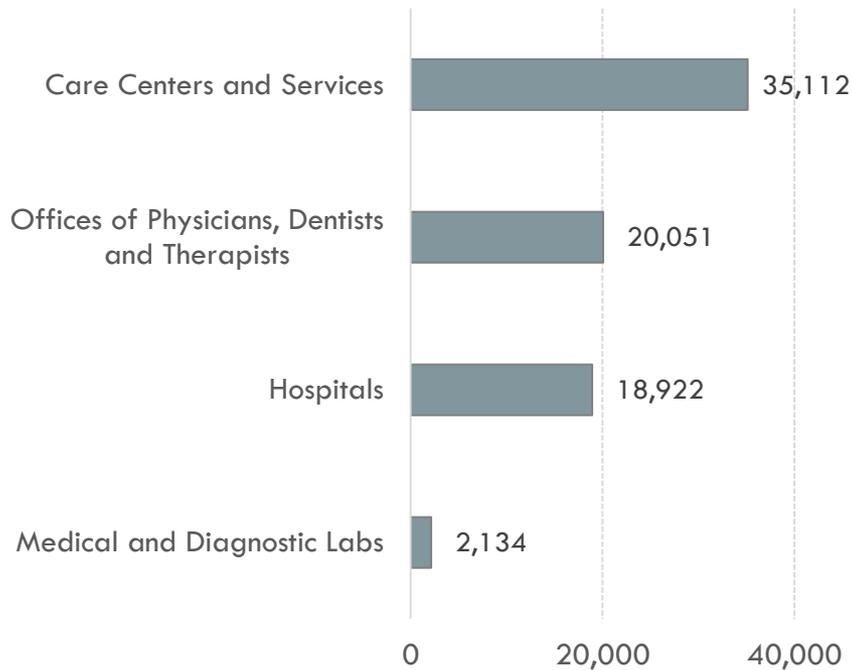
- *Healthcare industry and sub-industry employment*
- *Middle-skill occupation detailed employment and growth*
- *Travis County jobs postings analysis*
- *Travis County demographic analysis*

Employment by Healthcare Sub-Cluster

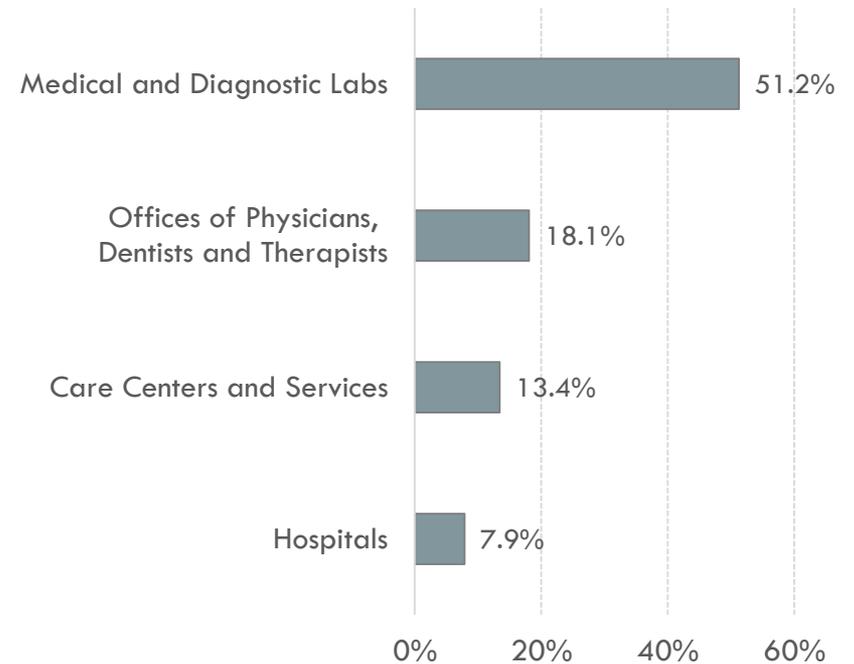
Travis County

Within Travis County, Care Centers and Services employs 35,000 people and represents 46% of all Healthcare jobs. Hospitals and Offices of Physicians, Dentists and Therapists both employ about 20,000 workers. Medical and Diagnostic Labs employ just over 2,000 workers in the county but grew significantly faster than other sub-clusters. Hospital employment grew the slowest among the sub-clusters, just 8% in the last five years.

TRAVIS COUNTY HEALTHCARE EMPLOYMENT BY SUB CLUSTER
2017



CHANGE IN TRAVIS COUNTY HEALTHCARE EMPLOYMENT
BY SUB CLUSTER, 2012 - 2017

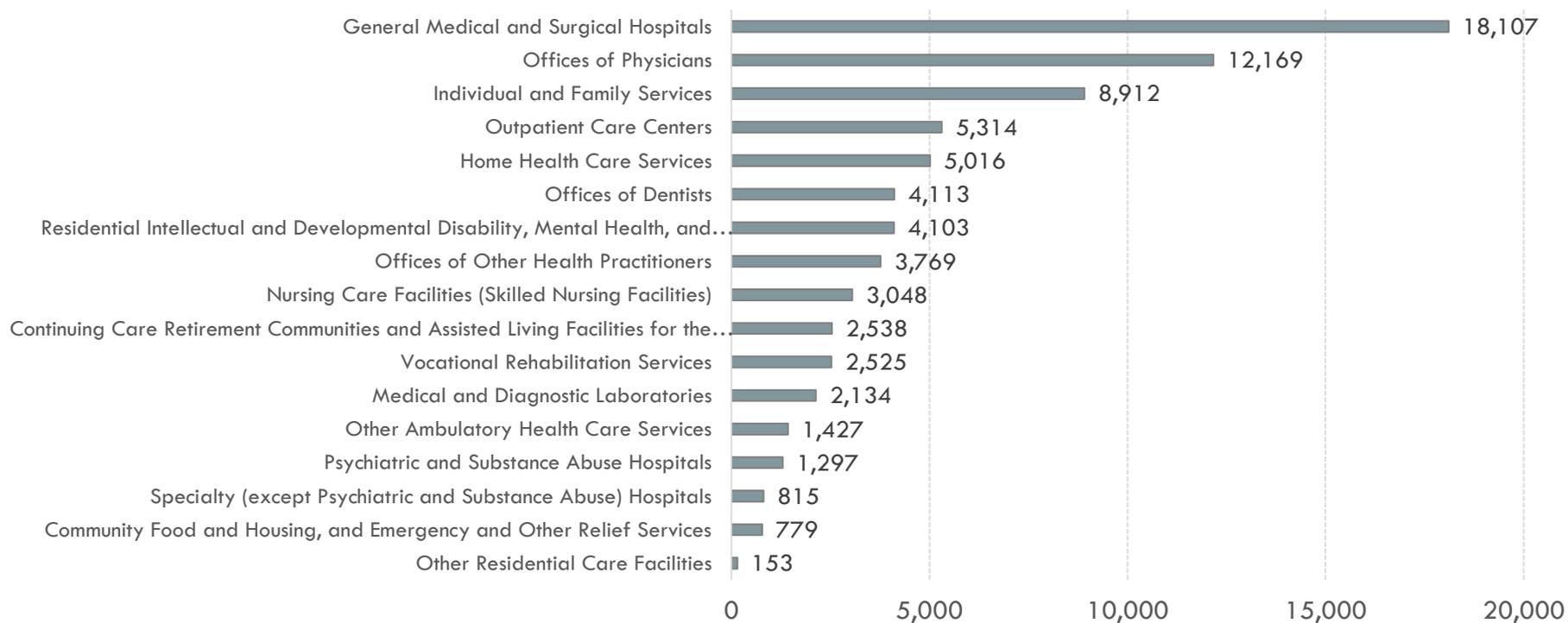


Employment by Healthcare Sub-Industries

Travis County

Within Travis County, General Medical and Surgical Hospitals (18,100 workers) and Offices of Physicians (12,200 workers) represent the bulk of Healthcare employment in Travis County. Other leading Healthcare sub-industries within Travis County include Individual and Family Services (8,900 workers), Outpatient Care Centers (5,300 workers), and Home Health Care Services (5,000).

TRAVIS COUNTY HEALTHCARE EMPLOYMENT BY NAICS CODE
2017

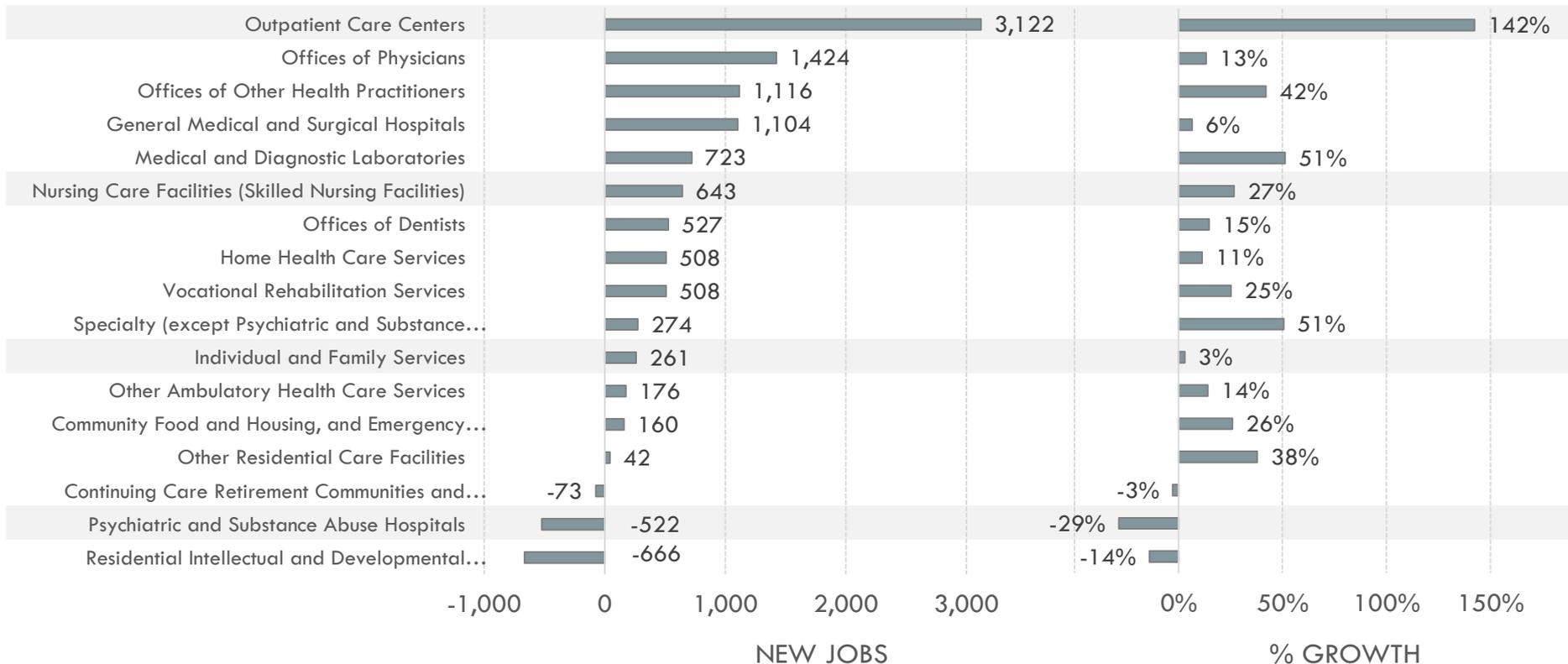


Fastest Growing Healthcare Sub-Industries

Travis County

Between 2012 and 2017, the vast majority of Healthcare sectors in Travis County posted employment gains. Employment in Outpatient Care facilities soared more than 142%. Outpatient Care also added the most workers in absolute terms, with employment increasing by more than 3,100. The number of Travis County workers employed in Specialty Hospitals and Office of Other Health Practitioners increased 51% and 42% respectively. Medical and Diagnostic Laboratories grew 51%, adding 700 new workers. The only three Healthcare sectors to suffer job losses were Continuing Care and Assisted Living Facilities, Residential Healthcare Facilities, and Psychiatric and Substance Abuse Hospitals.

TRAVIS COUNTY HEALTHCARE EMPLOYMENT GROWTH BY NAICS CODE
2012 - 2017

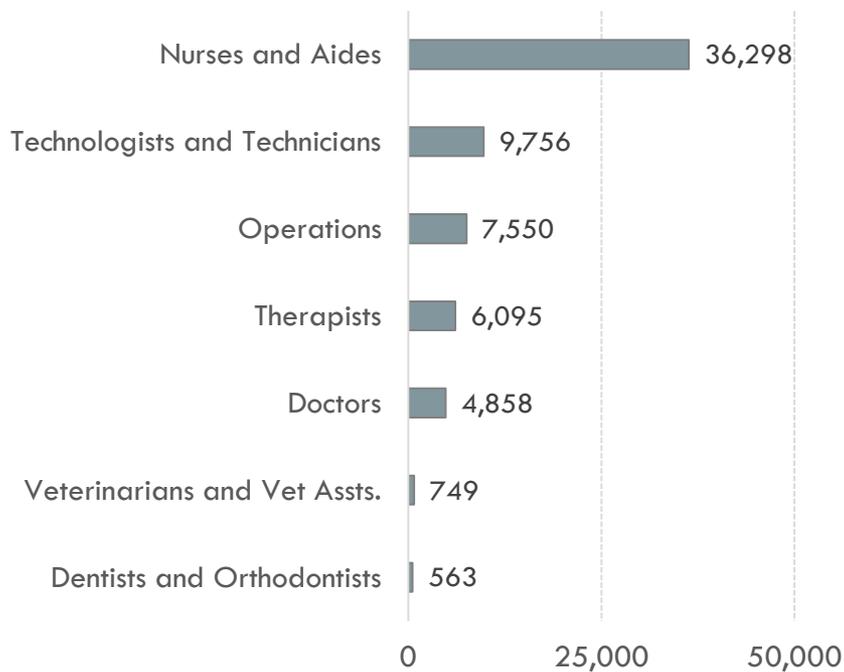


Employment in Healthcare Occupation Groups

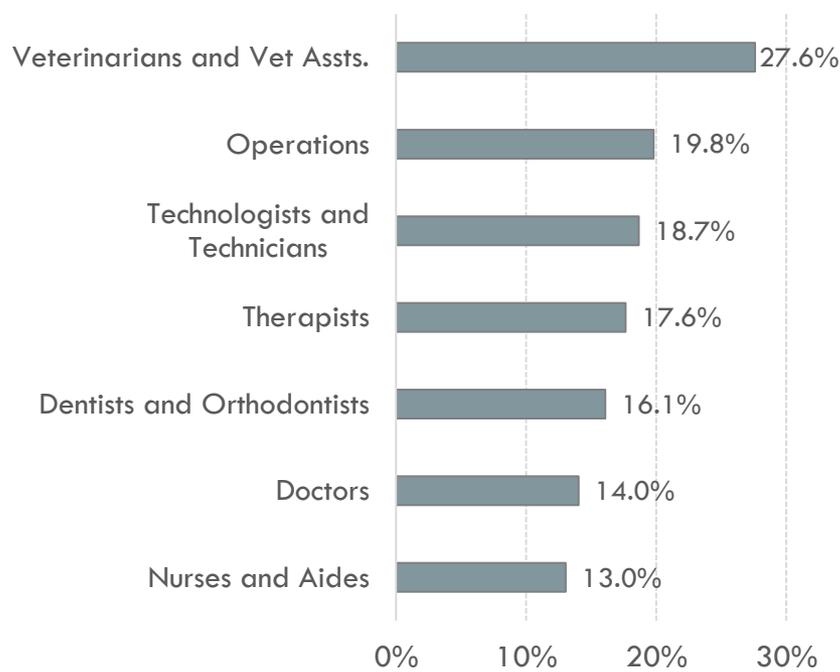
Travis County

Within Travis County, Nurses and Aides comprise 55% of all healthcare workers – over 36,000. Travis County is home to nearly 10,000 Technologists and Technicians, approximately 15% of all healthcare workers. Operations workers and Therapists account for 7,600 and 6,100 workers respectively. Doctors account for about 5,000 workers. During the past five years, all healthcare sub clusters have posted double-digit employment gains in Travis County, led by Veterinary and trailed by Nurses and Aides.

TRAVIS COUNTY HEALTHCARE OCCUPATION GROUPS
2017

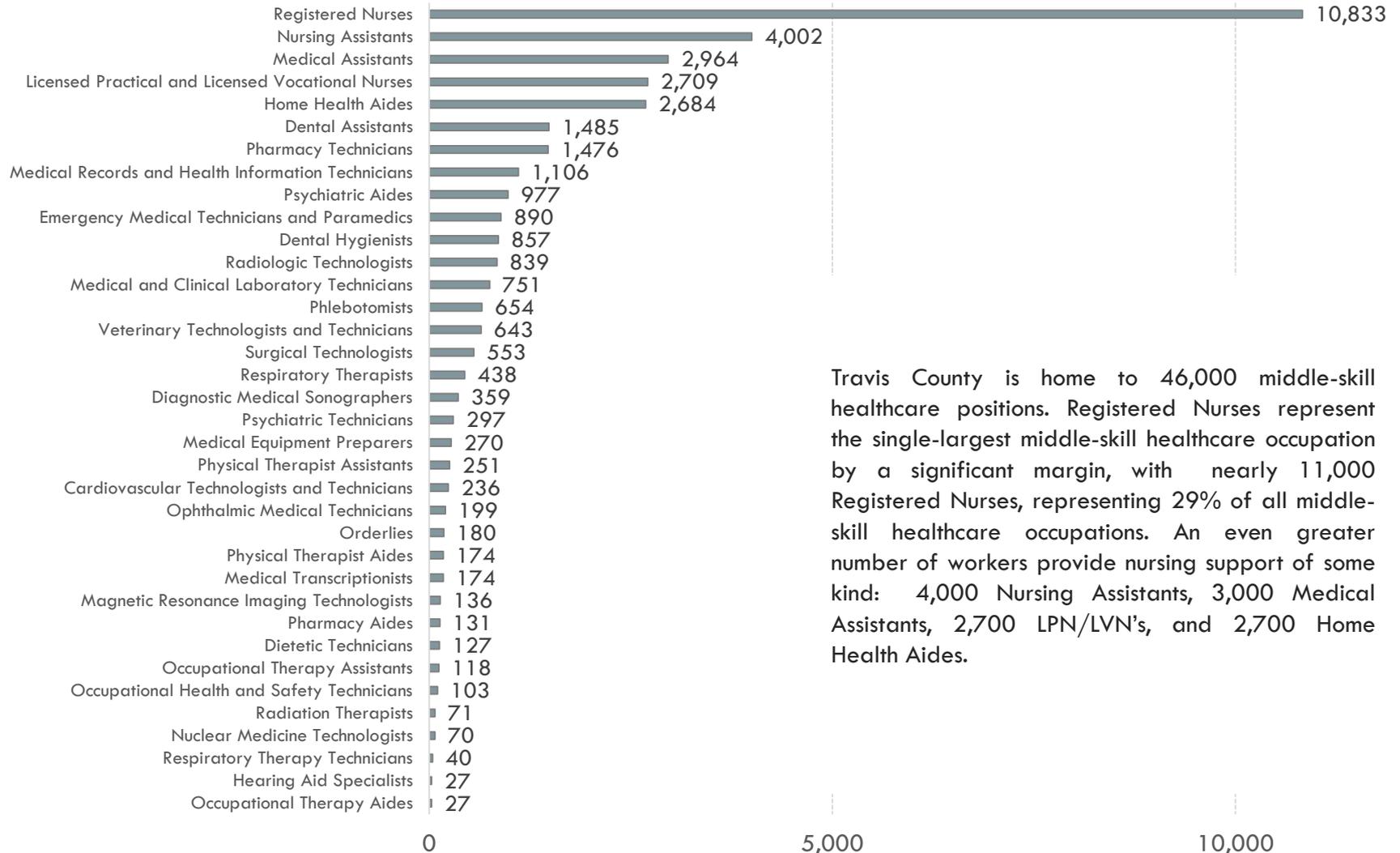


TRAVIS COUNTY HEALTHCARE OCCUPATION GROUPS
2012 – 2017 GROWTH



Employment by Healthcare Middle-Skill Occupations Travis County

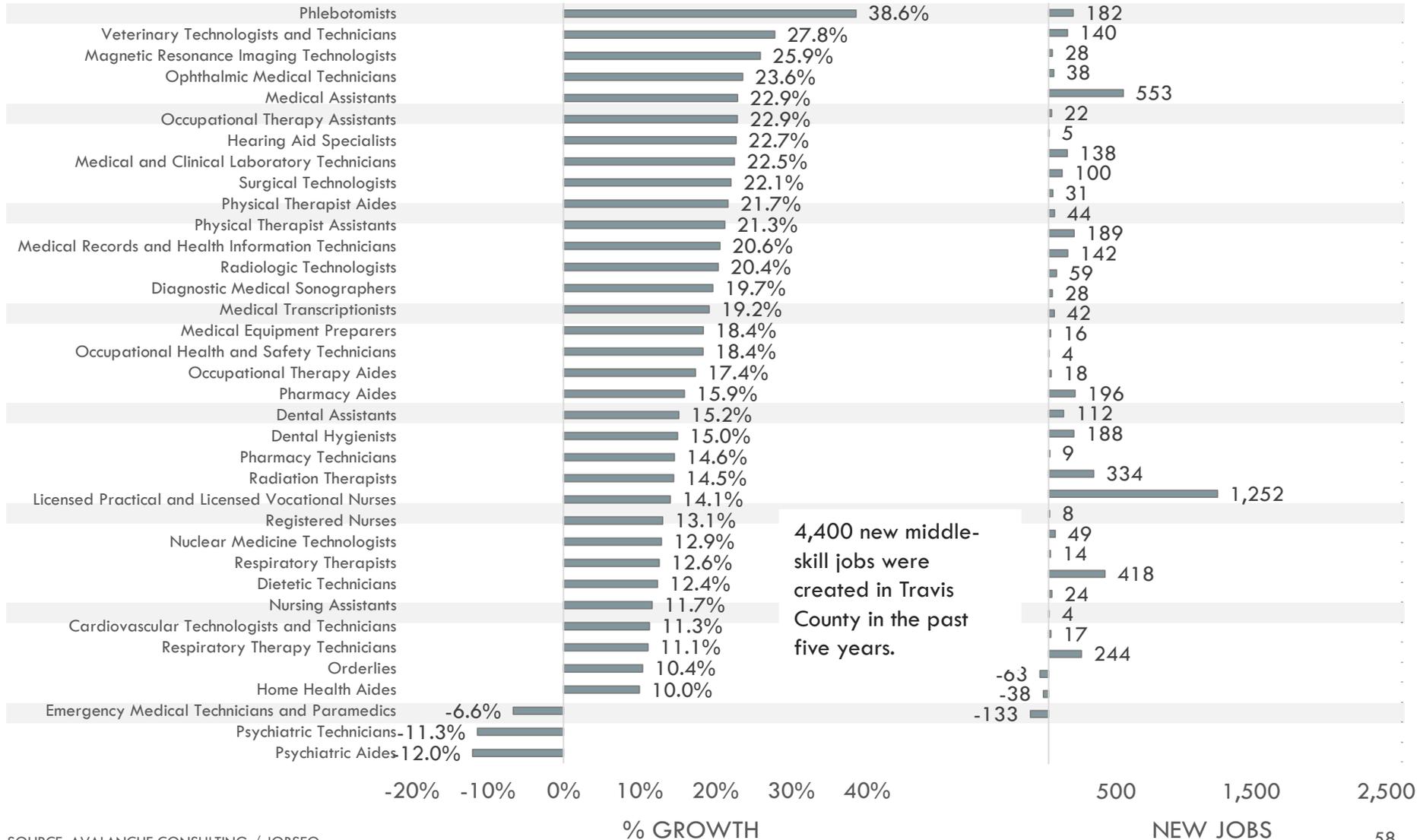
TRAVIS COUNTY HEALTHCARE EMPLOYMENT BY MIDDLE-SKILL OCCUPATION
2017



Travis County is home to 46,000 middle-skill healthcare positions. Registered Nurses represent the single-largest middle-skill healthcare occupation by a significant margin, with nearly 11,000 Registered Nurses, representing 29% of all middle-skill healthcare occupations. An even greater number of workers provide nursing support of some kind: 4,000 Nursing Assistants, 3,000 Medical Assistants, 2,700 LPN/LVN's, and 2,700 Home Health Aides.

Employment by Healthcare Middle-Skill Occupations Travis County

TRAVIS COUNTY HEALTHCARE EMPLOYMENT BY MIDDLE-SKILL OCCUPATION
GROWTH, 2012-2017

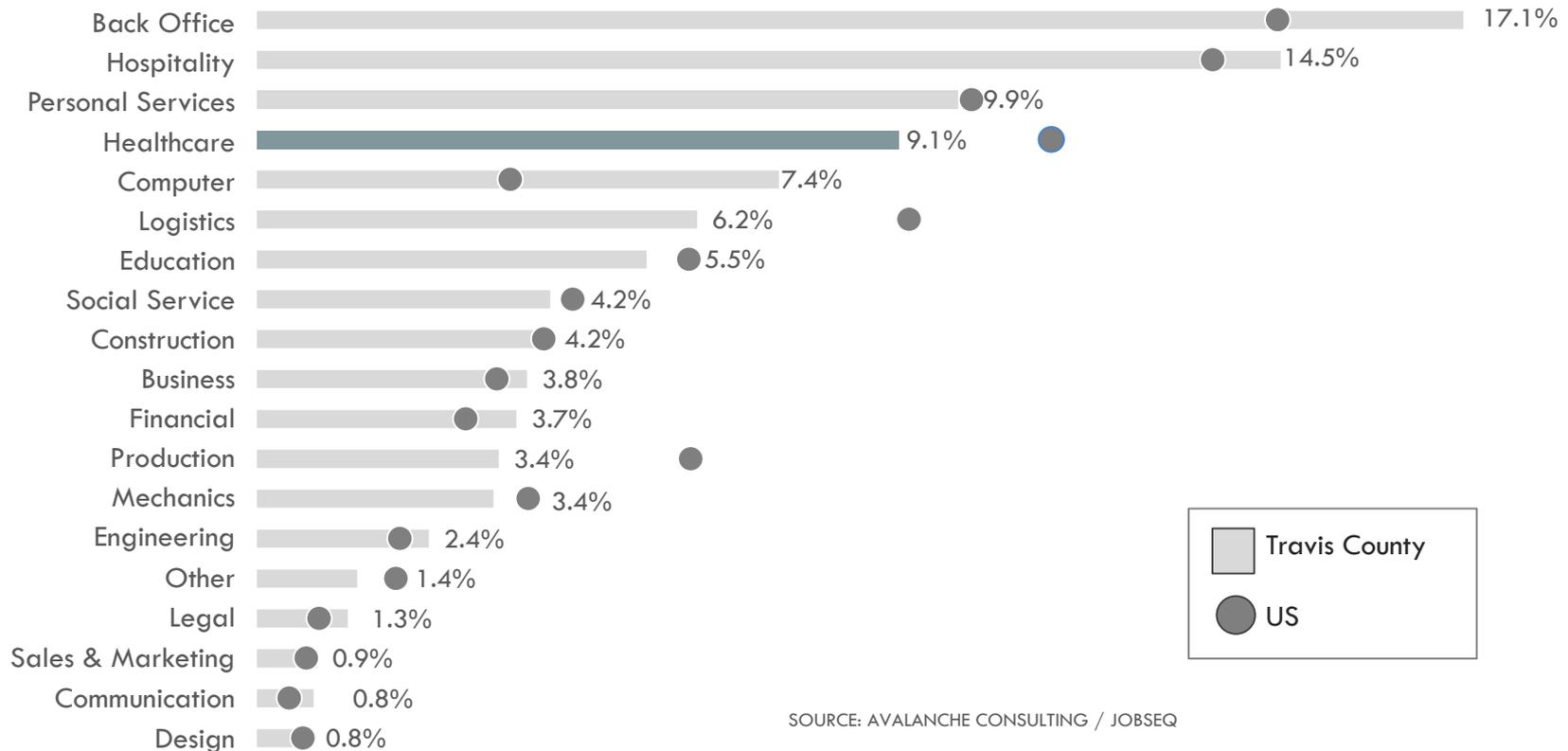


Employment by Occupation Cluster

Travis County

Travis County's Healthcare industry is supported by thousands of workers employment in various healthcare occupations. In 2017, these healthcare workers represented more than 9% of all jobs within Travis County. Among major occupational categories, only Back Office, Hospitality, and Personal Services employ more workers locally. Nationally, healthcare occupations encompass approximately 11% of all workers. The smaller proportion of healthcare workers in Travis County reflects the community's pronounced strengths in other areas such as Back Office and Hospitality.

EMPLOYMENT BY OCCUPATION CLUSTER
2017



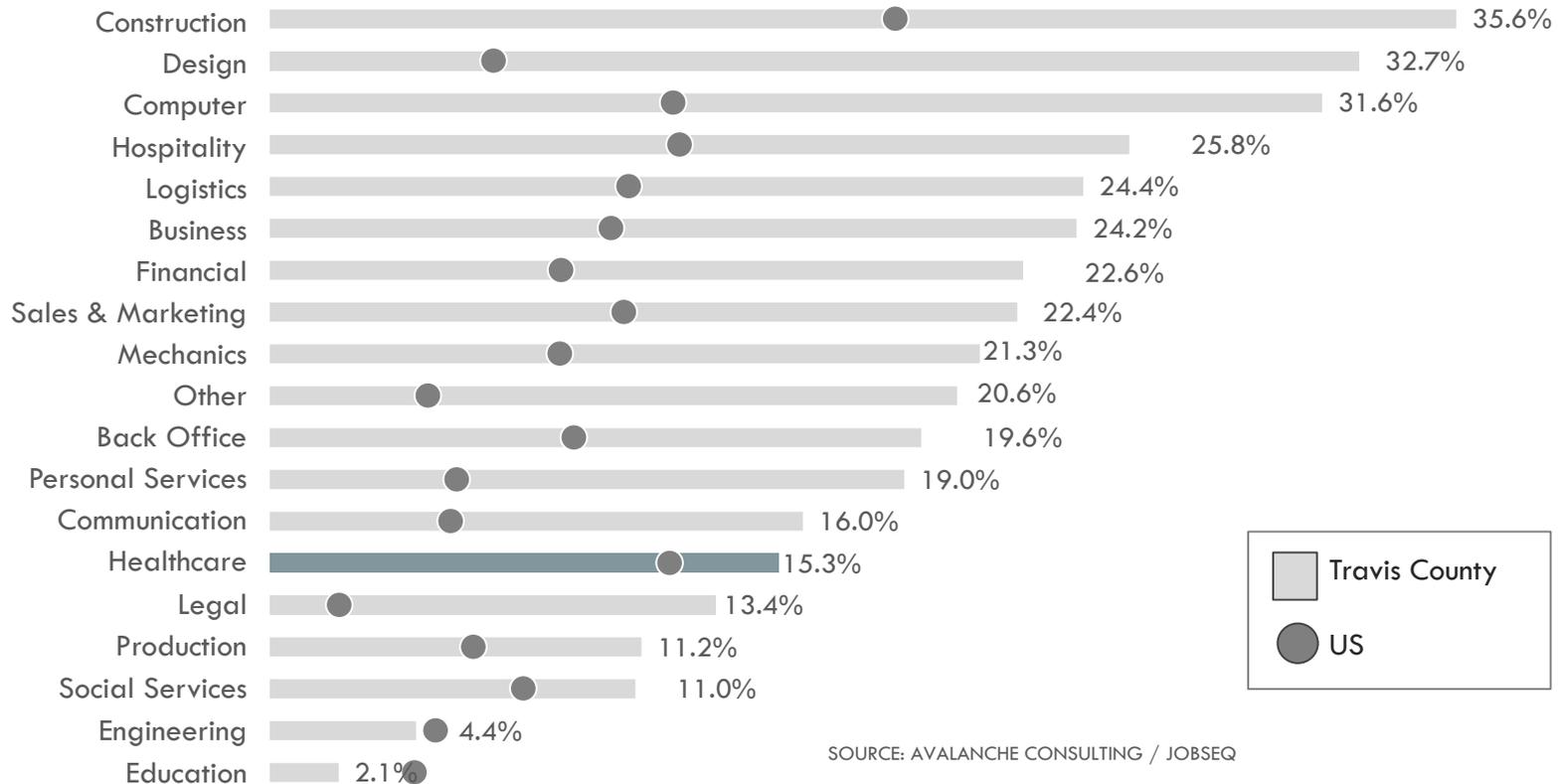
SOURCE: AVALANCHE CONSULTING / JOBSEQ

Employment Growth by Occupation Cluster

Travis County

Between 2012 and 2017, the number of healthcare workers in Travis County increased by more than 15%. On a percentage basis, most other occupational clusters posted even stronger rates of growth during this period. Employment in Travis County's Construction, Design, and Computer clusters, for example, all grew by more than 30%. The slower growth of the healthcare occupation in Travis County relative to other clusters is largely due to both its size and insulation from the ups and downs of the broader economy. In absolute terms, the healthcare cluster was one of the largest areas of Travis County employment growth. During the past five years, for example, Travis County healthcare employment increased by more than 8,700.

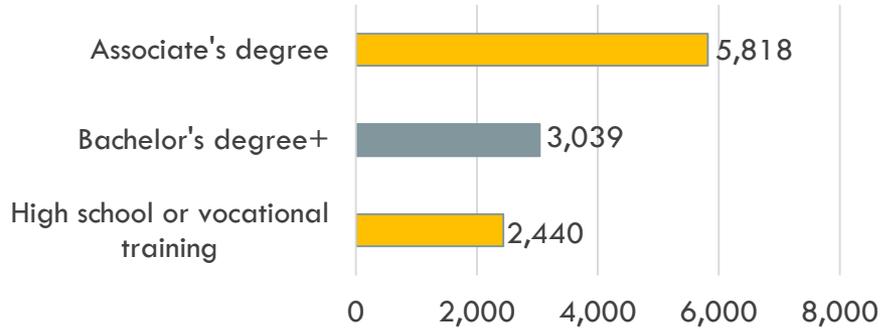
EMPLOYMENT GROWTH BY OCCUPATION CLUSTER
2012 - 2017



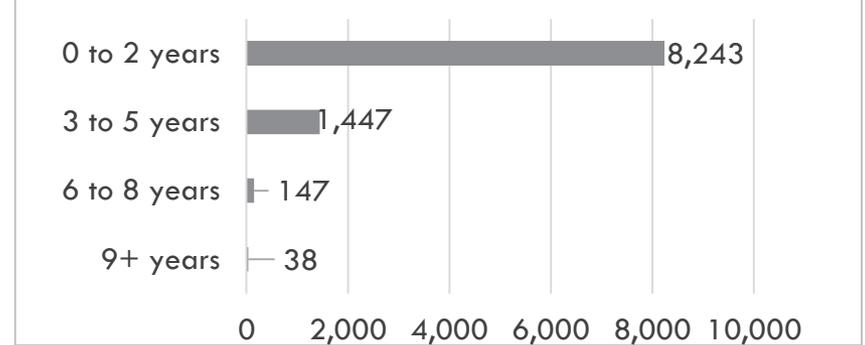
SOURCE: AVALANCHE CONSULTING / JOBSEQ

Travis County Online Healthcare Job Posting Trends- All Advertised Education Levels

HEALTHCARE OCCUPATIONS JOB POSTINGS BY ADVERTISED EDUCATION* 2017



HEALTHCARE OCCUPATIONS JOB POSTINGS BY ADVERTISED EXPERIENCE, 2017



LEADING HEALTHCARE OCCUPATIONS BY POSTINGS 2017

Occupation	Postings
Registered Nurses	9,168
Nursing Assistants	778
Licensed Practical and Licensed Vocational Nurses	720
Medical Assistants	528
Medical Records and Health Information Technicians	489
Medical and Clinical Laboratory Technicians	471
Surgical Technologists	408
Cardiovascular Technologists and Technicians	192
Pharmacy Technicians	187
Radiologic Technologists	158

LEADING COMPANY BY POSTINGS 2017

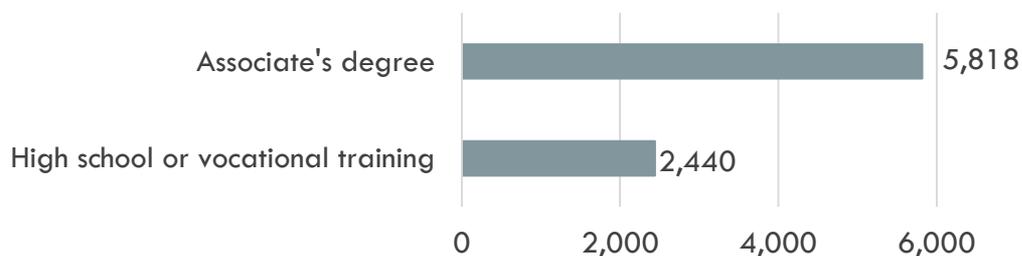
Company	Postings
Ascension Health	1,737
Hospital Corporation of America	1,645
St. David's Healthcare	394
Baylor Scott & White Health	288
South Austin Medical Center	280
Seton Healthcare	208
North Austin Medical Center	162
Austin Regional Clinic	158
Universal Health Services, Inc.	138
Accentcare	107

SOURCE: CAEL / BURNING GLASS TECHNOLOGIES

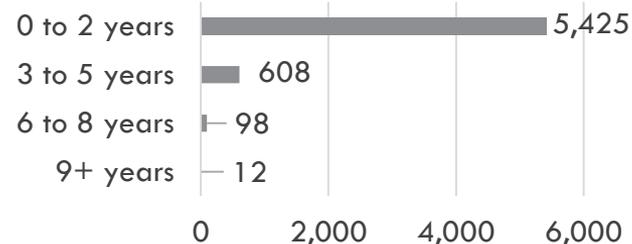
*Excludes postings that do not specify required education levels.

Travis County Online Healthcare Job Posting Trends- Sub-baccalaureate Advertised Education Levels

HEALTHCARE OCCUPATIONS JOB POSTINGS BY ADVERTISED EDUCATION*
2017



HEALTHCARE OCCUPATIONS JOB POSTINGS BY
ADVERTISED EXPERIENCE, 2017



LEADING HEALTHCARE OCCUPATIONS BY POSTING
2017

Occupation	Postings
Registered Nurses	5,752
Nursing Assistants	550
Medical Assistants	339
Surgical Technologists	210
Medical Records and Health Information Technicians	208
Medical and Clinical Laboratory Technicians	205
Licensed Practical and Licensed Vocational Nurses	199
Pharmacy Technicians	134
Cardiovascular Technologists and Technicians	71
Psychiatric Technicians	70

LEADING COMPANY BY POSTINGS
2017

Company	Postings
Ascension Health	1,452
Hospital Corporation of America	649
St. David's Healthcare	224
South Austin Medical Center	177
Austin Regional Clinic	152
Baylor Scott & White Health	140
Seton Healthcare Family	80
North Austin Medical Center	79
Universal Health Services, Inc.	77
Seton Healthcare	71

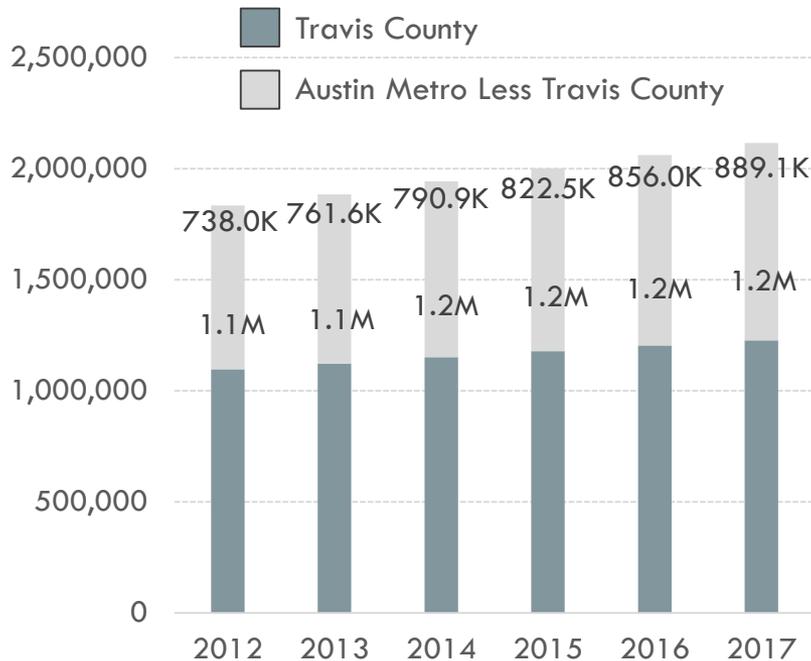
SOURCE: CAEL / BURNING GLASS TECHNOLOGIES

*Excludes postings that do not specify required education levels.

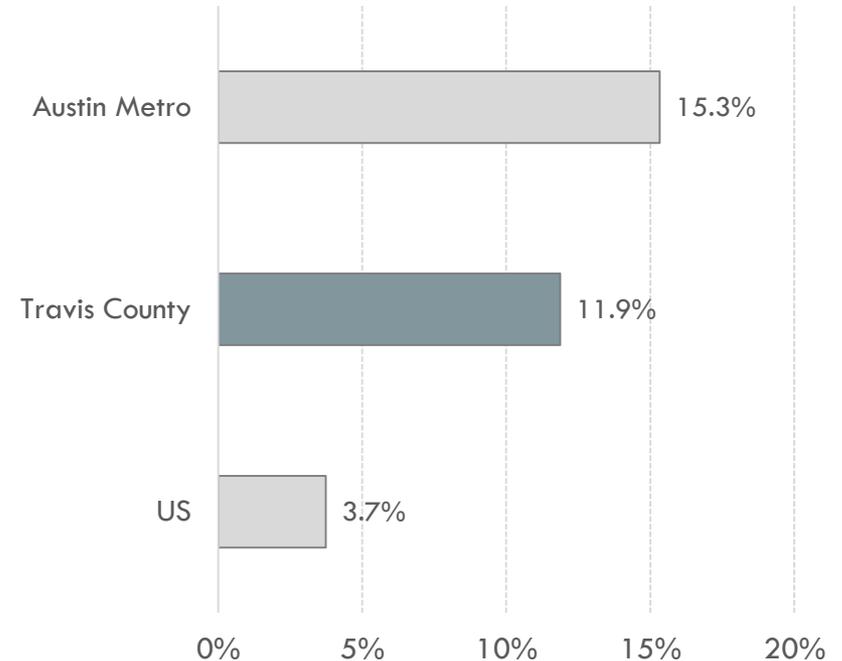
Population Growth

Population growth is the primary driver of healthcare demand in the Austin metro. Travis County is currently home to more than 1.2 million residents, representing 58% of the Austin metro's total population. Between 2012 and 2017, Travis County's population increased nearly 12%. With a growth rate exceeding 15%, the population of the broader Austin metro increased at an even faster pace during this period. Both Travis County and the Austin metro are growing far faster than the national average. During the past five years, the total US population increased less than 4%.

TOTAL POPULATION
2012 – 2017



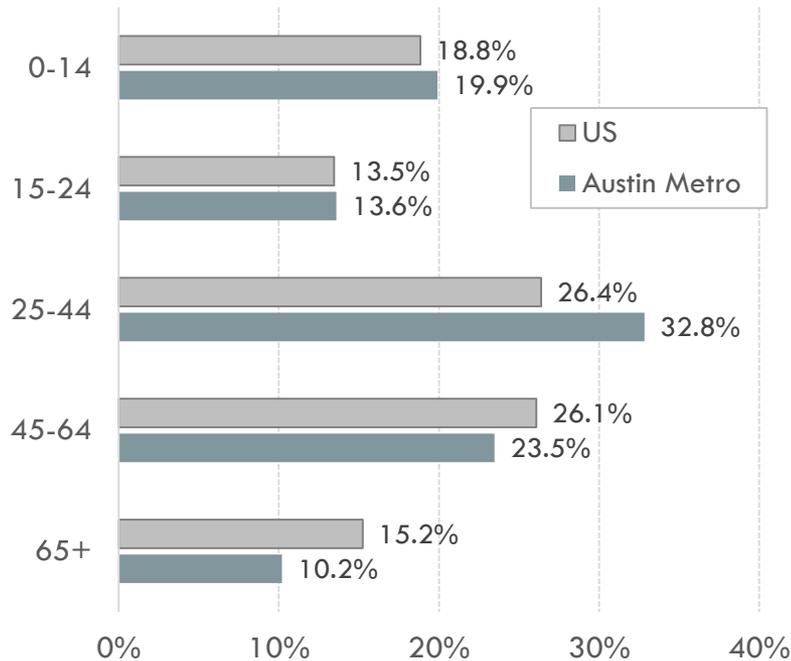
POPULATION GROWTH
2012 – 2017



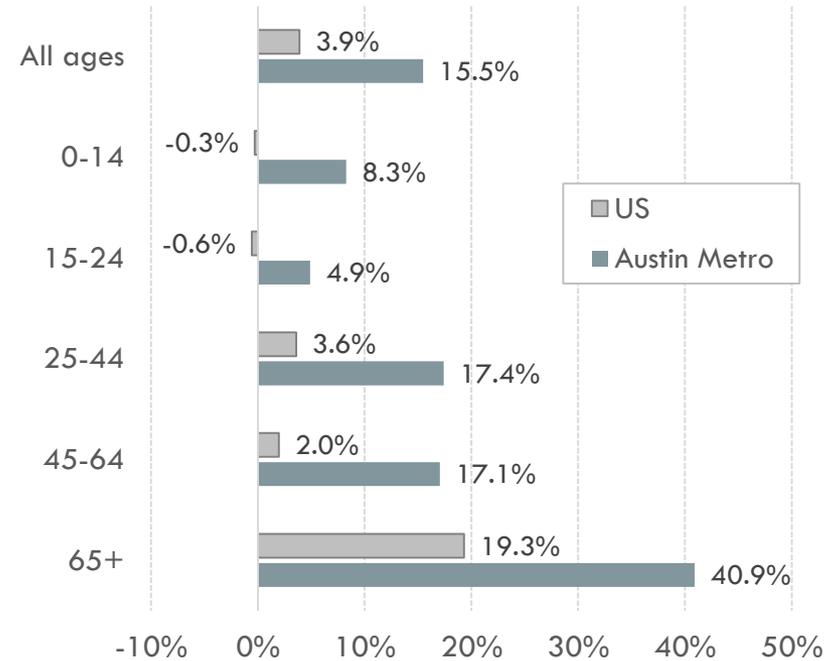
Population by Age

The population of the Austin metro is younger than the country as a whole due to a much higher percentage of young professionals aged 25-44 – 33% in Austin versus 26% in the US. Retirees account for a much smaller share of Austin’s population, but this demographic is the fastest-growing age group – over 40% in the past five years.

POPULATION BY AGE
2016



POPULATION CHANGE BY AGE
2011 - 2016



APPENDIX 05: Qualitative Information

This appendix includes:

- *Employer and Service Provider Focus Group Takeaways*

Employer and Service Provider Focus Group Takeaways

SERVICE PROVIDERS

- Participants of various sizes and focus areas have formal and informal agreements with larger employers, CEO engagement, and advisory committees to help develop and tailor program offerings towards what occupations that employers currently and will need in the future.
- Within the healthcare field, participants have recruitment support and career placement centers. Many employers view clinical placements as interviews and most are hired directly from these placements.
- Many providers are seeing full capacity for nursing programs and a growing need for more required clinical space to meet the demands of rising enrollments and overall demand for healthcare positions.
- Another common issue cited among participants was the availability and supply of *qualified* faculty – specifically in the “bottleneck” courses such as anatomy and physiology.
- Participants also cited a growing concern is the ongoing barriers that many students struggle with are common issues such as transportation, childcare, etc. Some are partnering with other community organizations to fill that gap and provide a semi-wraparound service to clients in need.

EMPLOYERS

- Employers cited low amounts of truly entry-level positions available in healthcare and positions that have no formal career progression to be potential problems for the future. Often, employers see turnover in these areas for various reasons including lack of upward mobility, salary competition, and other professional development issues.
- Community Health Workers (CHW’s) were cited as a needed position overall to help prospective students navigate their career and options available in the region. Not all CHW’s need a certification, but they are looking to formalize this process and increase the pay for those that have a formal certification. This is also a need because there is a high level of turnover due to the nature of the work.
- In terms of filling actual demand, when posting for jobs such as nurses, social workers, and health IT-focused careers, participants were not getting nearly enough qualified candidates as needed.
- Overall, there is a real lack of soft skills needed and many entering into the health care field are not formally trained in areas such as leadership, soft skills, or cultural competency. Cultural competency was a key element that many employers struggle with in regards to new candidates and training them up to work within the region and beyond.