Texas Supply and Demand Dental Projections, 2018 - 2030

TEXAS
Health and Human Services
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Texas Department of State Health Services

Texas Department of State Health Services

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1. Introduction

The Health Professions Resource Center at the Texas Department of State Health Services (DSHS) collects and analyzes data pertaining to educational and employment trends for health professions in Texas, with particular interest in health professions demonstrating an acute shortage. This report assesses the dental shortage level in Texas by presenting supply and demand projections for all dentists, general dentists, and dental hygienists from 2018 through 2030. These projections are based on the Health Workforce Model created by IHS Markit, a consulting firm that has conducted dental workforce modeling for the Health Resources and Services Administration,[1] as well as physician[2] and nurse[3] workforce modeling for DSHS.

This report is organized into seven sections beginning with a brief introduction and the background and objectives of this report. Section 3 describes the methodology for the supply and demand models used for the projections in this report. Sections 4, 5, and 6, respectively, present the supply and demand projections for all dentists, general dentists, and dental hygienists from 2018 through 2030. Section 7 provides report conclusions.

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[1] U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Workforce, National Center for Health Workforce Analysis. National and State-Level Projections of Dentists and Dental Hygienists in the U.S., 2012-2025. https://bhw.hrsa.gov/sites/default/files/bhw/nchwa/projections/nationalstatelevelprojectionsdentists.pdf. Published February 2015. Accessed May 15, 2019.

[2] Texas Department of State Health Services. Texas Projections of Supply and Demand for Primary Care Physicians and Psychiatrists, 2017 - 2030. http://dshs.texas.gov/legislative/2018-Reports/SB-18-Physicians-Workforce-Report-Final.pdf. Published July 2018. Accessed April 26, 2019.

[3] Texas Department of State Health Services, Texas Center for Nursing Workforce Studies. Nurse Supply and Demand Projections, 2015-2030. https://www.dshs.texas.gov/chs/cnws/WorkforceReports/SupplyDemand.pdf. Published October 2016. Accessed April 26, 2019.

At the end of this report, there are two appendices. Appendix A provides a map of Texas' eight public health regions that includes the regional names used throughout this report, as well as a table indicating in which region each Texas county is located. Appendix B provides shortage maps (2018 and 2030) and regional supply and demand projections for all dentists, general dentists, and dental hygienists from 2018 through 2030.

2. Background

Oral health is important to overall health and quality of life. Evidence shows that poor oral health can lead to infections, worsen existing health conditions, and increase the incidence and mortality of disease.[4] Moreover, research also suggests that poor oral health can cause psychosocial stress, decreased social function, and lost productivity. Due to the significance of oral health, it is imperative to assess the current and future capability of the dental workforce to meet the public's health care needs.

Nationally, over 57.9 million people live in the 5,833 dental health professional shortage areas identified by the Health Resources and Services Administration.[5] Areas designated as dental health professional shortage areas have a population to dentist ratio that is at least 5,000 to 1 or, in areas with high needs, 4,000 to 1. In Texas, more than 1.9 million people live in the 87 designated dental health professional shortage areas in the state. Estimates show that there is an existing deficiency of 10,635 dentists nationwide, with an estimated shortage of 266 dentists in Texas.

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[4] U.S. Department of Health and Human Services, National Institutes of Health, National Institute of Dental and Craniofacial Research. Oral Health in America: A Report of the Surgeon General. https://www.nidcr.nih.gov/sites/default/files/2017-10/hck1ocv.%40www.surgeon.fullrpt.pdf. Published 2000. Accessed May 13, 2019.

[5] U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Workforce. Designated Health Professional Shortage Areas Statistics: Third Quarter of Fiscal Year 2019 Designated HPSA Quarterly Summary. Published June 30, 2019. Accessed July 15, 2019.

According to the Bureau of Labor Statistics, the projected job growth of dentists[6] and dental hygienists[7] nationwide from 2016 to 2026 is much faster than average at 19 percent and 20 percent, respectively. Similar job growth is projected for dentists and dental hygienists in Texas during these years.[8] Demand for oral health care services is projected to increase due to the aging population and the continued association between oral health and overall health.[6,7]

In 2015, the Health Resources and Services Administration issued a report that projected the supply and demand for dentists and dental hygienists both nationally and at the state-level from 2012 to 2025.[1] Results from this report indicate that there will be an estimated shortage of 15,600 dentists nationwide in 2025, with an estimated shortage of 490 dentists in Texas. Results also indicate that there will be an estimated surplus of 28,100 dental hygienists nationwide in 2025, with an estimated surplus of 3,324 dental hygienists in Texas.

The purpose of this report is to identify the degree of shortage of all dentists, general dentists, and dental hygienists in Texas. Results are reported statewide and for each of the state's eight public health regions. The supply and demand projections presented in this report are from the baseline year of 2018 through 2030.

This report will serve to inform state officials and stakeholders regarding areas of critical shortage. By doing so, this report should prove beneficial in the development of policies that address the availability of the dental workforce in Texas.

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[6] U.S. Department of Labor, Bureau of Labor Statistics. Occupational Outlook Handbook, Dentists. https://www.bls.gov/ooh/healthcare/dentists.htm. Accessed May 15, 2019.

[7] U.S. Department of Labor, Bureau of Labor Statistics. Occupational Outlook Handbook, Dental Hygienists. https://www.bls.gov/ooh/healthcare/dental-hygienists.htm. Accessed May 15, 2019.

[8] Projections Central, State Occupational Projections. Long Term Occupational Projections (2016-2026). http://www.projectionscentral.com/Projections/LongTerm. Accessed May 15, 2019.

2.1 Objectives

The primary objectives of this report are to:

- Project supply and demand for all dentists statewide and by geographic region;
- Project supply and demand for general dentists statewide and by geographic region; and
- Project supply and demand for dental hygienists statewide and by geographic region.

3. Methodology for Supply and Demand Projections

Projected supply and demand for all dentists, general dentists, and dental hygienists are estimated for Texas both statewide and by geographic region using IHS Markit's Health Workforce Model, which has previously been utilized by the Health Resources and Services Administration for dental workforce modeling[1] and DSHS for physician[2] and nurse[3] workforce modeling.

The model is composed of two parts: the Health Workforce Supply Model (HWSM) and the Healthcare Demand Microsimulation Model (HDMM). The supply projections are derived from the HWSM and the demand projections are derived from the HDMM. Both models use a microsimulation approach for which the unit of analysis is the individual. In this case, providers for the HWSM and patients for the HDMM. Information about the models contained within this report is based on IHS Markit's Health Workforce Model Documentation.[9]

The model used Texas-specific data when possible and data from national sources when necessary. The model presents results for all dentists, general dentists, and dental hygienists.

3.1 Supply Model

Supply, when used in reference to the dental workforce, refers to the capacity of dentists and dental hygienists to provide patient care. In general, the HWSM uses a microsimulation approach that models the likely career choices of individual dentists and dental hygienists to project what supply might look like annually through 2030. The HWSM starts with the current supply of dentists and dental hygienists and models new dentists and dental hygienists entering the workforce, dentists and dental hygienists leaving the workforce, and workforce participation patterns as dentist and dental hygienist demographics change over time. Because supply is not necessarily a headcount of dentists and dental hygienists, the HWSM reports supply

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[9] IHS Markit. Health Workforce Model Documentation, Version 4.4.2016. https://cdn.ihs.com/www/pdf/IHS-HDMM-DocumentationApr2016.pdf. Accessed May 13, 2019.

data as a count of the number of full-time equivalents (FTEs) available to provide patient care.

The supply projections presented in this report are based on multiple data sources. Texas dental licensure data are provided by the Texas State Board of Dental Examiners and are geocoded and processed by DSHS' Health Professions Resource Center. The 2015 through 2017 dentist and dental hygienist files from the Health Professions Resource Center were used to model projected new entrants to the Texas dental workforce. The 2018 dentist and dental hygienist files from the Health Professions Resource Center were used as the baseline supply for the Texas all dentist, general dentist, and dental hygienist workforce. General dentists include dentists indicating a specialty in general, pediatric, or public health dentistry.

Table 1. Supply of Dentists and Dental Hygienists in Texas, 2018

	Starting Supply
All Dentists	13,786
• **General Dentists**	11,572
Dental Hygienists	13,096

Additionally, national data from the 2013 through 2017 American Community Survey were used to estimate the number of hours worked and retirement patterns for dentists and dental hygienists.

3.2 Demand Model

Demand may be defined as the quantity of dentist- and dental hygienist-provided oral health care services and care delivery necessary so that Texans, based on their demographic and health profiles, receive the national average level of care. The HDMM models demand for oral health care services and providers and includes three major components.

The first component includes characteristics of each person in a representative sample of the current and future population. Characteristics of these individuals include demographics, socioeconomics, health behaviors, and occurrence of chronic conditions among others. Specifically, the HDMM used national and state data from

the 2017 American Community Survey, the 2015 Centers for Medicare and Medicaid Services' Minimum Data Set, the 2015 Medicare Current Beneficiary Survey, the 2014 Behavioral Risk Factor Surveillance System for children, and the 2015 and 2017 Behavioral Risk Factor Surveillance System for adults, as well as county population projections from the Texas Demographic Center and county-level demographic counts from the U.S. Census Bureau.

The second component is oral health care use patterns that relate to patient characteristics. Pooled data from the 2012 through 2016 Medical Expenditure Panel Survey were used to provide a measure of oral health care services consumed by the national population.

The third component is national staffing patterns that translate demand for services into the need for FTE dentists and dental hygienists. To estimate provider staffing ratios for dental providers, the HDMM used national data from the 2017 American Dental Association masterfile for dentists and the 2017 American Community Survey for dental hygienists.

When demand is greater than supply, there can be said to be a shortage of dentist and dental hygienist FTEs. When supply is greater than demand, a surplus of dentist and dental hygienist FTEs can be said to exist.
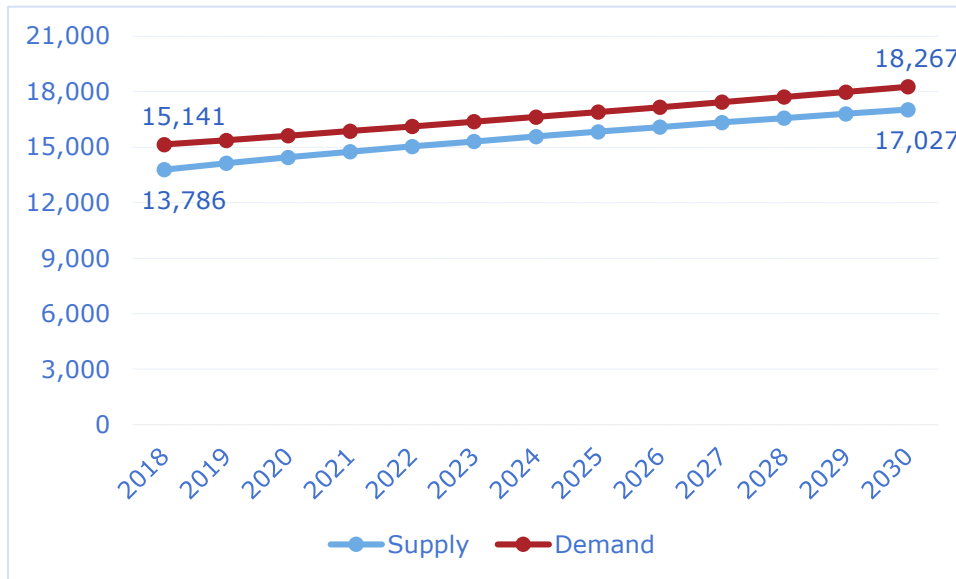
4. Supply and Demand for All Dentists

This section presents the supply and demand projections for all dentists statewide and by region through 2030.

4.1 Supply and Demand Projections for All Dentists Statewide

In Texas, demand for all dentists is projected to exceed supply every year between 2018 and 2030. The supply of all dentists is projected to grow by 23.5 percent while demand is projected to grow by 20.7 percent, decreasing the shortage of all dentists by 8.4 percent from 1,354 FTEs in 2018 to 1,240 FTEs in 2030.[10]

Figure 1. Supply and Demand for All Dentist FTEs, Texas

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[10] Calculations in this report are based on unrounded FTE numbers.

4.2 Supply and Demand Projections for All Dentists by Region

Regionally, demand is projected to exceed supply for all dentists every year between 2018 and 2030 in six of Texas' eight public health regions. Shortage maps (2018 and 2030) and regional all dentist projections from 2018 through 2030 are shown in Appendix B.

In the Panhandle (Region 1), the shortage of all dentists is projected to decrease by 13.0 percent from 181 FTEs in 2018 to 157 FTEs in 2030. In East Texas (Region 4/5N) from 2018 to 2030, the supply of all dentist FTEs is projected to increase by 19.3 percent while demand is projected to increase by just 2.2 percent. While the supply deficit is projected to decrease during these years, East Texas is still projected to have a shortage of 347 all dentist FTEs in 2030.

The shortage of all dentists in Central Texas (Region 7) is projected to increase by 46.4 percent from 296 FTEs in 2018 to 433 FTEs in 2030. In South Texas (Region 8), supply and demand are projected to grow at similar rates, 20.8 percent and 21.8 percent, respectively, increasing the shortage of all dentists from 37 FTEs in 2018 to 59 FTEs in 2030.

In West Texas (Region 9/10), supply is projected to grow by 22.7 percent while demand is projected to grow by 17.4 percent, increasing the shortage of all dentists from 263 FTEs in 2018 to 285 FTEs in 2030. In the Rio Grande Valley (Region 11), the shortage of all dentists is projected to decrease by 10.3 percent from 376 FTEs in 2018 to 338 FTEs in 2030.

North Texas (Region 2/3) and the Gulf Coast (Region 6/5S) are the only regions where the supply of all dentists is projected to exceed demand every year between 2018 and 2030. In North Texas, the surplus of all dentists is projected to increase by 108.5 percent from 137 FTEs in 2018 to 285 FTEs in 2030. In the Gulf Coast, the surplus of all dentists is projected to increase by 3.0 percent from 91 FTEs in 2018 to 94 FTEs in 2030.
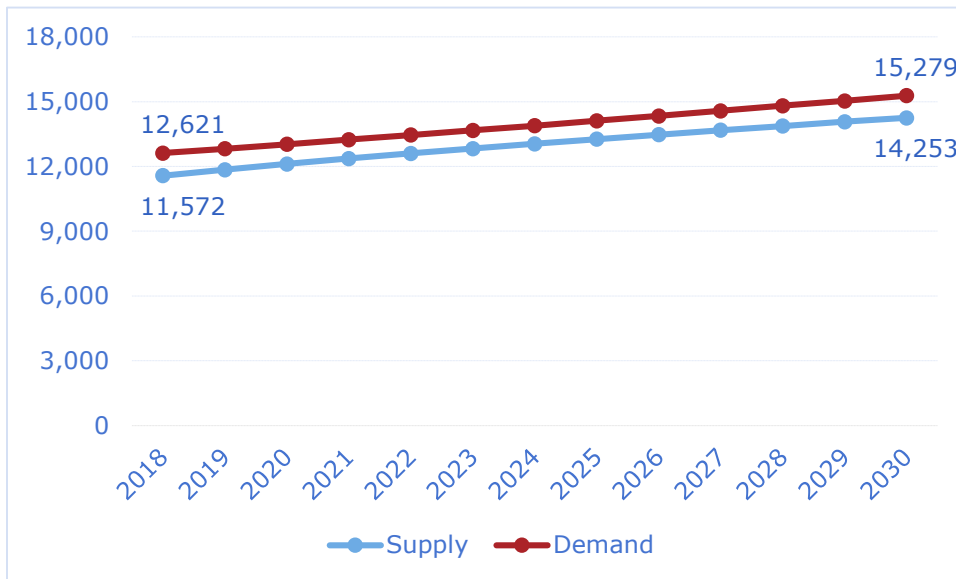
5. Supply and Demand for General Dentists

This section presents the supply and demand projections for general dentists statewide and by region through 2030.

5.1 Supply and Demand Projections for General Dentists Statewide

In Texas, demand for general dentists is projected to exceed supply every year between 2018 and 2030. The supply of general dentists is projected to grow by 23.2 percent while demand is projected to grow by 21.1 percent, decreasing the shortage of general dentists by 2.3 percent from 1,049 FTEs in 2018 to 1,026 FTEs in 2030.

Figure 2. Supply and Demand for General Dentist FTEs, Texas

5.2 Supply and Demand Projections for General Dentists by Region

Regionally, demand is projected to exceed supply for general dentists every year between 2018 and 2030 in six of Texas' eight public health regions. Shortage maps

(2018 and 2030) and regional general dentist projections from 2018 through 2030 are shown in Appendix B.

In the Panhandle (Region 1), the shortage of general dentists is projected to decrease by 12.5 percent from 148 FTEs in 2018 to 130 FTEs in 2030. In East Texas (Region 4/5N) from 2018 to 2030, the supply of general dentist FTEs is projected to increase by 19.6 percent while demand is projected to increase by just 2.4 percent. While the supply deficit is projected to decrease during these years, East Texas is still projected to have a shortage of 310 general dentist FTEs in 2030.

The shortage of general dentists in Central Texas (Region 7) is projected to increase by 51.6 percent from 250 FTEs in 2018 to 379 FTEs in 2030. In South Texas (Region 8), supply and demand are projected to grow at similar rates, 20.9 percent and 22.1 percent, respectively, increasing the shortage of general dentists from 34 FTEs in 2018 to 57 FTEs in 2030.

In West Texas (Region 9/10), supply is projected to grow by 22.6 percent while demand is projected to grow by 17.6 percent, increasing the shortage of general dentists from 239 FTEs in 2018 to 262 FTEs in 2030. In the Rio Grande Valley (Region 11), the shortage of general dentists is projected to decrease by 10.8 percent from 309 FTEs in 2018 to 276 FTEs in 2030.

North Texas (Region 2/3) and the Gulf Coast (Region 6/5S) are the only regions where the supply of general dentists is projected to exceed demand every year between 2018 and 2030. In North Texas, the surplus of general dentists is projected to increase by 52.8 percent from 175 FTEs in 2018 to 268 FTEs in 2030. In the Gulf Coast, the surplus of general dentists is projected to decrease by 11.1 percent from 135 FTEs in 2018 to 120 FTEs in 2030.
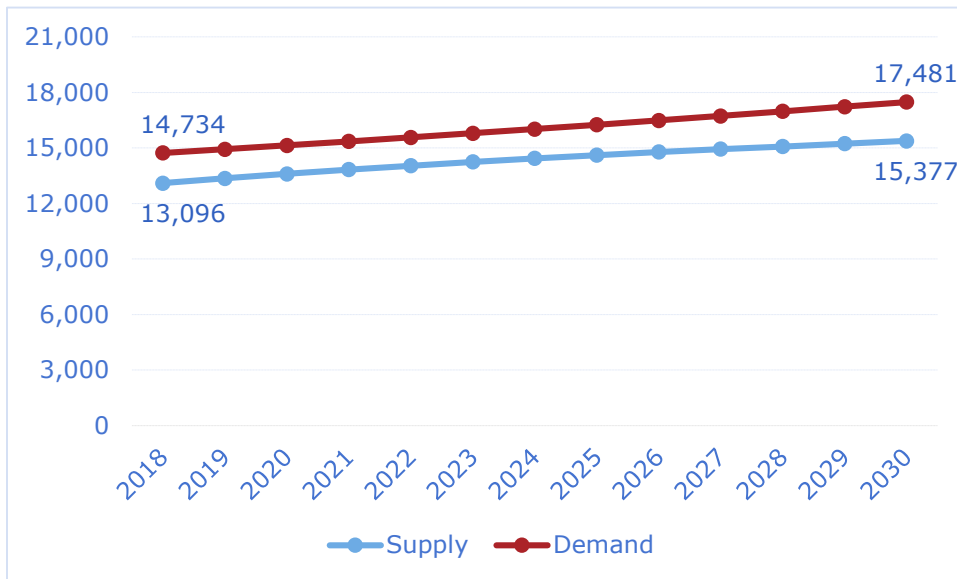
6. Supply and Demand for Dental Hygienists

This section presents the supply and demand projections for dental hygienists statewide and by region through 2030.

6.1 Supply and Demand Projections for Dental Hygienists Statewide

In Texas, demand for dental hygienists is projected to exceed supply every year between 2018 and 2030. The supply of dental hygienists is projected to grow by 17.4 percent while demand is projected to grow by 18.6 percent, increasing the shortage of dental hygienists by 28.4 percent from 1,638 FTEs in 2018 to 2,103 FTEs in 2030.

Figure 3. Supply and Demand for Dental Hygienist FTEs, Texas

6.2 Supply and Demand Projections for Dental Hygienists by Region

Regionally, demand is projected to exceed supply for dental hygienists every year between 2018 and 2030 in six of Texas' eight public health regions. Shortage maps

(2018 and 2030) and regional dental hygienist projections from 2018 through 2030 are shown in Appendix B.

In North Texas (Region 2/3), the shortage of dental hygienists is projected to increase by 51.1 percent from 254 FTEs in 2018 to 384 FTEs in 2030. In the Gulf Coast (Region 6/5S), supply is projected to grow by 15.6 percent while demand is projected to grow by 23.7 percent, increasing the shortage of dental hygienists from 624 FTEs in 2018 to 1,033 FTEs in 2030.

The shortage of dental hygienists in Central Texas (Region 7) is projected to increase by 116.4 percent from 110 FTEs in 2018 to 238 FTEs in 2030. In South Texas (Region 8), supply is projected to grow by 18.4 percent while demand is projected to grow by 21.0 percent, increasing the shortage of dental hygienists from 77 FTEs in 2018 to 129 FTEs in 2030.

In West Texas (Region 9/10), the shortage of dental hygienists is projected to increase by 9.7 percent from 152 FTEs in 2018 to 167 FTEs in 2030. In the Rio Grande Valley (Region 11) from 2018 to 2030, the supply of dental hygienist FTEs is projected to increase by 23.1 percent while demand is projected to increase by 6.9 percent. While the supply deficit is projected to decrease during these years, the Rio Grande Valley is still projected to have a shortage of 248 dental hygienist FTEs in 2030.

East Texas (Region 4/5N) is the only region where the shortage of dental hygienists is projected to improve to a surplus by 2030. It is projected that the shortage of 94 dental hygienist FTEs in 2018 will improve to a surplus of 17 FTEs in 2030. The Panhandle (Region 1) is the only region where the supply of dental hygienists is projected to exceed demand every year between 2018 and 2030. The surplus of dental hygienists in the Panhandle is projected to increase by 2,061.9 percent from 4 FTEs in 2018 to 79 FTEs in 2030.

7. Conclusion

This report presents the supply and demand projections for all dentists, general dentists, and dental hygienists in Texas both statewide and by geographic region from 2018 through 2030.

Statewide results indicate that demand is projected to exceed supply for all dentists, general dentists, and dental hygienists every year between 2018 and 2030. The shortage of all dentists and general dentists is projected to improve between 2018 and 2030 while the shortage of dental hygienists is projected to worsen.

Regional results indicate that the projected supply and demand for all dentists, general dentists, and dental hygienists vary by region. Demand for all dentists and general dentists is projected to exceed supply every year between 2018 and 2030 in all regions of the state except North Texas (Region 2/3) and the Gulf Coast (Region 6/5S). Demand for dental hygienists is projected to exceed supply every year between 2018 and 2030 in all regions of the state except the Panhandle (Region 1) and East Texas (Region 4/5N). The only region that is projected to improve from a shortage in 2018 to a surplus by 2030 is East Texas, which is projected to have a surplus of dental hygienists by 2030.

The key strengths of the projections in this report lie in the availability and quality of state-level data. The main strength of the supply side projections is the use of state-level licensure data for dentists and dental hygienists. These data provide a timely and accurate count of the number of all dentists, general dentists, and dental hygienists practicing in Texas along with their demographics. On the demand side, the use of state-level population numbers and demographics provide a sound starting point for estimating the population's demand for oral health care services.

As with any model, there are also limitations. On the demand side, baseline projections model the impact of changing demographics over time while oral health care use and delivery patterns remain the same. The baseline demand projections also assume that disease prevalence and oral health risk factors will remain consistent by demographic groups over time. As access to care changes, models of care transform, and technology improves oral health practices and outcomes, it is difficult to predict how oral health care use and delivery patterns as well as disease

prevalence and oral health risk factors will change over time. However difficult it is to predict the future of oral health and oral health care delivery, it is unlikely that they will remain consistent.

Another limitation is that the demand projections are based on national oral health care use patterns. Without better state-level data on oral health care use to include in the demand model, it is difficult to know how Texas compares to national oral health care use patterns. Additionally, this assumption does not address the quality of care provided by national use patterns.

Due to the importance of oral health, it is imperative to assess the current and future capability of the dental workforce in Texas to meet the health care needs of Texans. Results from this report indicate that shortages currently exist for all dentists, general dentists, and dental hygienists in Texas and that these shortages will continue through 2030. Unless corrective measures are taken, these shortages may persist beyond 2030.

List of Acronyms

Acronym	Full Name
DSHS	Texas Department of State Health Services
FTE	Full-time equivalent
HDMM	Healthcare Demand Microsimulation Model
HWSM	Health Workforce Supply Model

Appendix A. Texas Public Health Regions
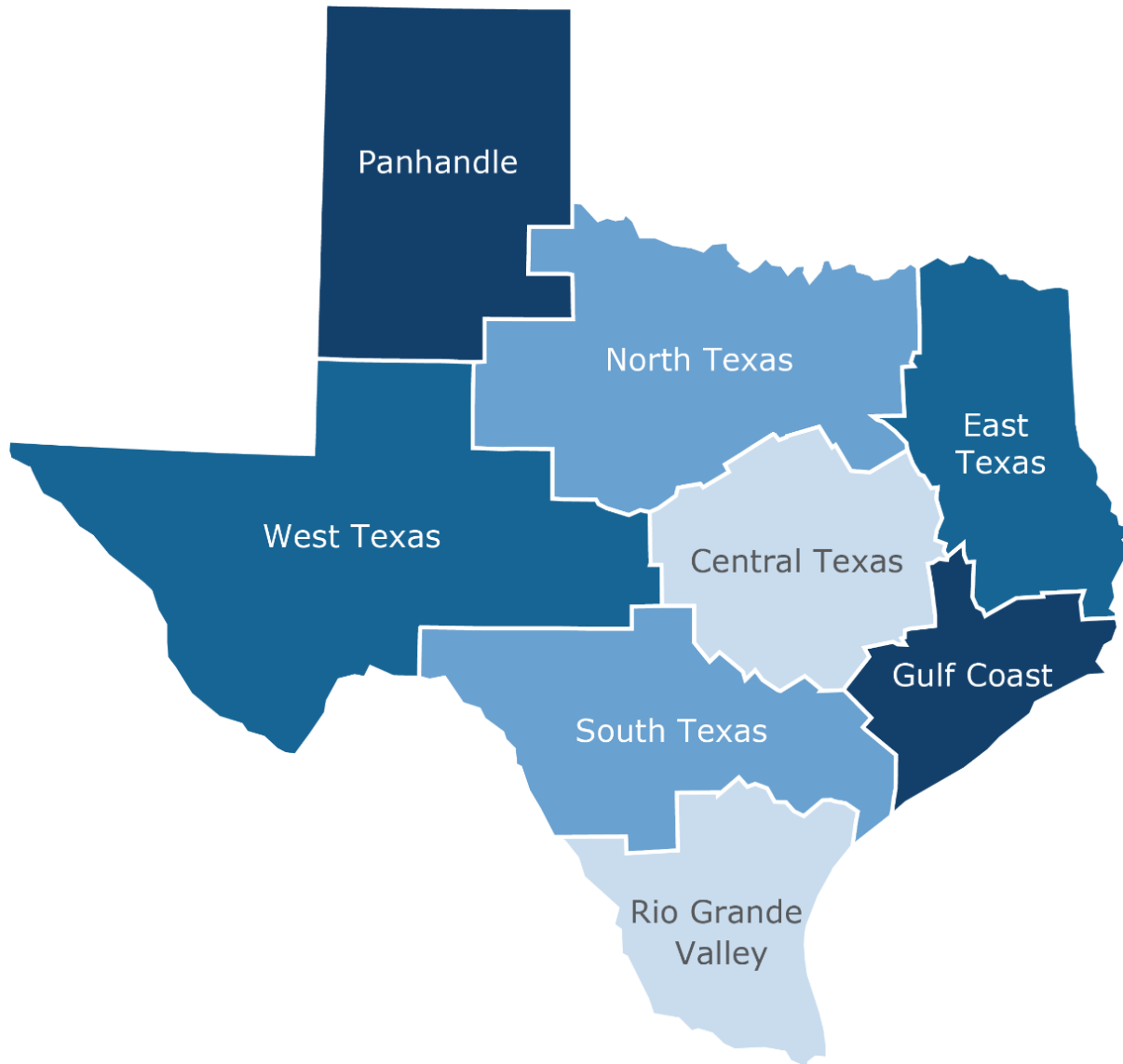
Figure 4. Map of Texas Regions

Table 2. Texas Counties by Region

County	Region
Anderson	East Texas
Andrews	West Texas
Angelina	East Texas
Aransas	Rio Grande Valley
Archer	North Texas
Armstrong	Panhandle
Atascosa	South Texas
Austin	Gulf Coast
Bailey	Panhandle
Bandera	South Texas
Bastrop	Central Texas
Baylor	North Texas
Bee	Rio Grande Valley
Bell	Central Texas
Bexar	South Texas
Blanco	Central Texas

County	Region
Borden	West Texas
Bosque	Central Texas
Bowie	East Texas
Brazoria	Gulf Coast
Brazos	Central Texas
Brewster	West Texas
Briscoe	Panhandle
Brooks	Rio Grande Valley
Brown	North Texas
Burleson	Central Texas
Burnet	Central Texas
Caldwell	Central Texas
Calhoun	South Texas
Callahan	North Texas
Cameron	Rio Grande Valley
Camp	East Texas

County	Region
Carson	Panhandle
Cass	East Texas
Castro	Panhandle
Chambers	Gulf Coast
Cherokee	East Texas
Childress	Panhandle
Clay	North Texas
Cochran	Panhandle
Coke	West Texas
Coleman	North Texas
Collin	North Texas
Collingsworth	Panhandle
Colorado	Gulf Coast
Comal	South Texas
Comanche	North Texas
Concho	West Texas

County	Region
Cooke	North Texas
Coryell	Central Texas
Cottle	North Texas
Crane	West Texas
Crockett	West Texas
Crosby	Panhandle
Culberson	West Texas
Dallam	Panhandle
Dallas	North Texas
Dawson	West Texas
De Witt	South Texas
Deaf Smith	Panhandle
Delta	East Texas
Denton	North Texas
Dickens	Panhandle
Dimmit	South Texas

County	Region
Donley	Panhandle
Duval	Rio Grande Valley
Eastland	North Texas
Ector	West Texas
Edwards	South Texas
El Paso	West Texas
Ellis	North Texas
Erath	North Texas
Falls	Central Texas
Fannin	North Texas
Fayette	Central Texas
Fisher	North Texas
Floyd	Panhandle
Foard	North Texas
Fort Bend	Gulf Coast
Franklin	East Texas

County	Region
Freestone	Central Texas
Frio	South Texas
Gaines	West Texas
Galveston	Gulf Coast
Garza	Panhandle
Gillespie	South Texas
Glasscock	West Texas
Goliad	South Texas
Gonzales	South Texas
Gray	Panhandle
Grayson	North Texas
Gregg	East Texas
Grimes	Central Texas
Guadalupe	South Texas
Hale	Panhandle
Hall	Panhandle

County	Region
Hamilton	Central Texas
Hansford	Panhandle
Hardeman	North Texas
Hardin	Gulf Coast
Harris	Gulf Coast
Harrison	East Texas
Hartley	Panhandle
Haskell	North Texas
Hays	Central Texas
Hemphill	Panhandle
Henderson	East Texas
Hidalgo	Rio Grande Valley
Hill	Central Texas
Hockley	Panhandle
Hood	North Texas
Hopkins	East Texas

County	Region
Houston	East Texas
Howard	West Texas
Hudspeth	West Texas
Hunt	North Texas
Hutchinson	Panhandle
Irion	West Texas
Jack	North Texas
Jackson	South Texas
Jasper	East Texas
Jeff Davis	West Texas
Jefferson	Gulf Coast
Jim Hogg	Rio Grande Valley
Jim Wells	Rio Grande Valley
Johnson	North Texas
Jones	North Texas
Karnes	South Texas

County	Region
Kaufman	North Texas
Kendall	South Texas
Kenedy	Rio Grande Valley
Kent	North Texas
Kerr	South Texas
Kimble	West Texas
King	Panhandle
Kinney	South Texas
Kleberg	Rio Grande Valley
Knox	North Texas
La Salle	South Texas
Lamar	East Texas
Lamb	Panhandle
Lampasas	Central Texas
Lavaca	South Texas
Lee	Central Texas

County	Region
Leon	Central Texas
Liberty	Gulf Coast
Limestone	Central Texas
Lipscomb	Panhandle
Live Oak	Rio Grande Valley
Llano	Central Texas
Loving	West Texas
Lubbock	Panhandle
Lynn	Panhandle
Madison	Central Texas
Marion	East Texas
Martin	West Texas
Mason	West Texas
Matagorda	Gulf Coast
Maverick	South Texas
McCulloch	West Texas

County	Region
McLennan	Central Texas
McMullen	Rio Grande Valley
Medina	South Texas
Menard	West Texas
Midland	West Texas
Milam	Central Texas
Mills	Central Texas
Mitchell	North Texas
Montague	North Texas
Montgomery	Gulf Coast
Moore	Panhandle
Morris	East Texas
Motley	Panhandle
Nacogdoches	East Texas
Navarro	North Texas
Newton	East Texas

County	Region
Nolan	North Texas
Nueces	Rio Grande Valley
Ochiltree	Panhandle
Oldham	Panhandle
Orange	Gulf Coast
Palo Pinto	North Texas
Panola	East Texas
Parker	North Texas
Parmer	Panhandle
Pecos	West Texas
Polk	East Texas
Potter	Panhandle
Presidio	West Texas
Rains	East Texas
Randall	Panhandle
Reagan	West Texas

County	Region
Real	South Texas
Red River	East Texas
Reeves	West Texas
Refugio	Rio Grande Valley
Roberts	Panhandle
Robertson	Central Texas
Rockwall	North Texas
Runnels	North Texas
Rusk	East Texas
Sabine	East Texas
San Augustine	East Texas
San Jacinto	East Texas
San Patricio	Rio Grande Valley
San Saba	Central Texas
Schleicher	West Texas
Scurry	North Texas

County	Region
Shackelford	North Texas
Shelby	East Texas
Sherman	Panhandle
Smith	East Texas
Somervell	North Texas
Starr	Rio Grande Valley
Stephens	North Texas
Sterling	West Texas
Stonewall	North Texas
Sutton	West Texas
Swisher	Panhandle
Tarrant	North Texas
Taylor	North Texas
Terrell	West Texas
Terry	Panhandle
Throckmorton	North Texas

County	Region
Titus	East Texas
Tom Green	West Texas
Travis	Central Texas
Trinity	East Texas
Tyler	East Texas
Upshur	East Texas
Upton	West Texas
Uvalde	South Texas
Val Verde	South Texas
Van Zandt	East Texas
Victoria	South Texas
Walker	Gulf Coast
Waller	Gulf Coast
Ward	West Texas
Washington	Central Texas
Webb	Rio Grande Valley

County	Region
Wharton	Gulf Coast
Wheeler	Panhandle
Wichita	North Texas
Wilbarger	North Texas
Willacy	Rio Grande Valley
Williamson	Central Texas
Wilson	South Texas
Winkler	West Texas
Wise	North Texas
Wood	East Texas
Yoakum	Panhandle
Young	North Texas
Zapata	Rio Grande Valley
Zavala	South Texas

Appendix B. Shortage, Supply, and Demand by Region

Map of All Dentist Shortage by Region, 2018 and 2030

In both 2018 and 2030, North Texas (Region 2/3) and the Gulf Coast (Region 6/5S) are the only regions where the supply of all dentists is projected to exceed demand, indicated in blue in the figure below.

Figure 5. Percent of All Dentist Demand Exceeding Supply and FTE Shortage/Surplus (n)

2018

Region 1
36.5% n=181

Region 2/3
0% n=137

Region 4/5N
44.6% n=428

Region 9/10
36.1% n=263

Region 7
14.8% n=296

Region 6/5S
0% n=91

Region 8
2.4% n=37

Region 11
36.8% n=376

2030

Region 1
29.8% n=157

Region 2/3
0% n=285

Region 4/5N
35.4% n=347

Region 9/10
33.3% n=285

Region 7
17.2% n=433

Region 6/5S
0% n=94

Region 8
3.2% n=59

Region 11
30.2% n=338

Shortage
Surplus
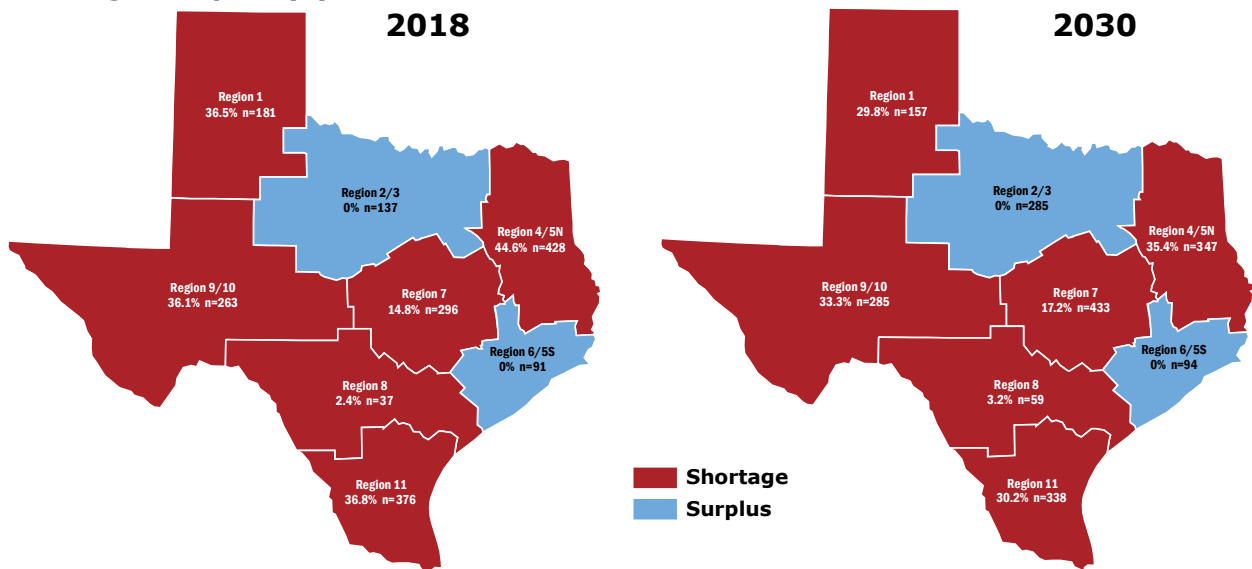
Supply and Demand for All Dentists by Region, 2018-2030

Figure 6. Supply and Demand for All Dentist FTEs, Panhandle
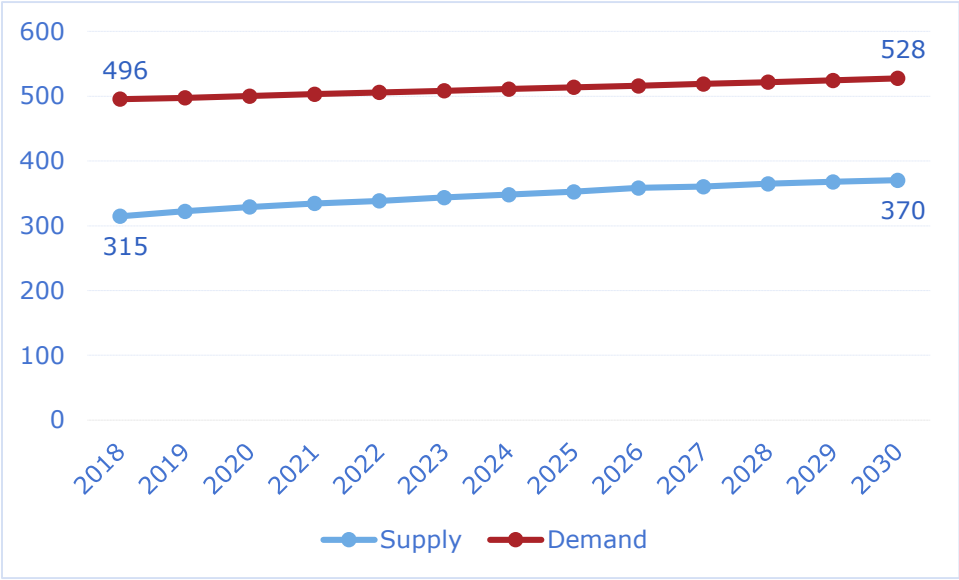
From 2018 to 2030, the supply of all dentists in the Panhandle (Region 1) is projected to increase by 56 FTEs while demand is projected to increase by 32 FTEs. This indicates an ongoing shortage of all dentists in the Panhandle.

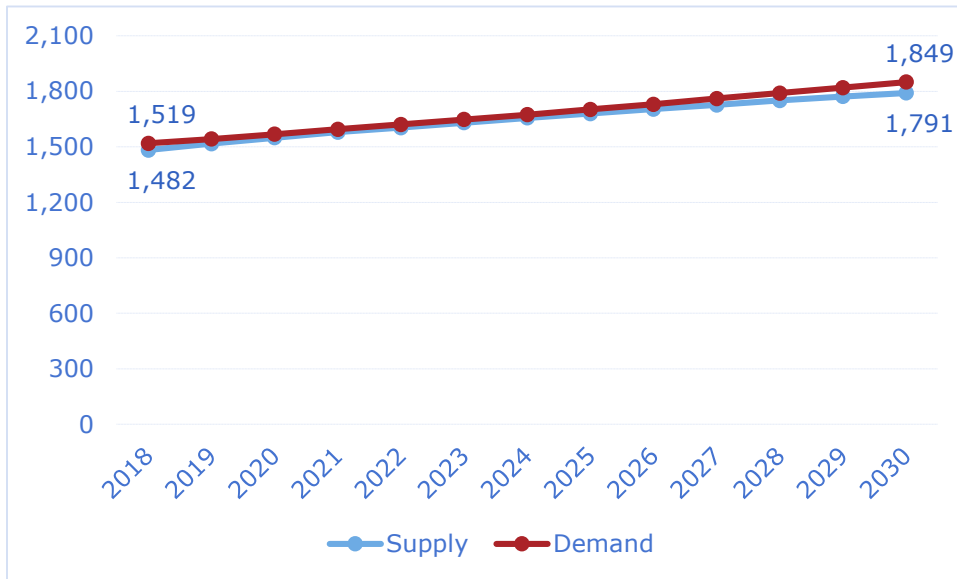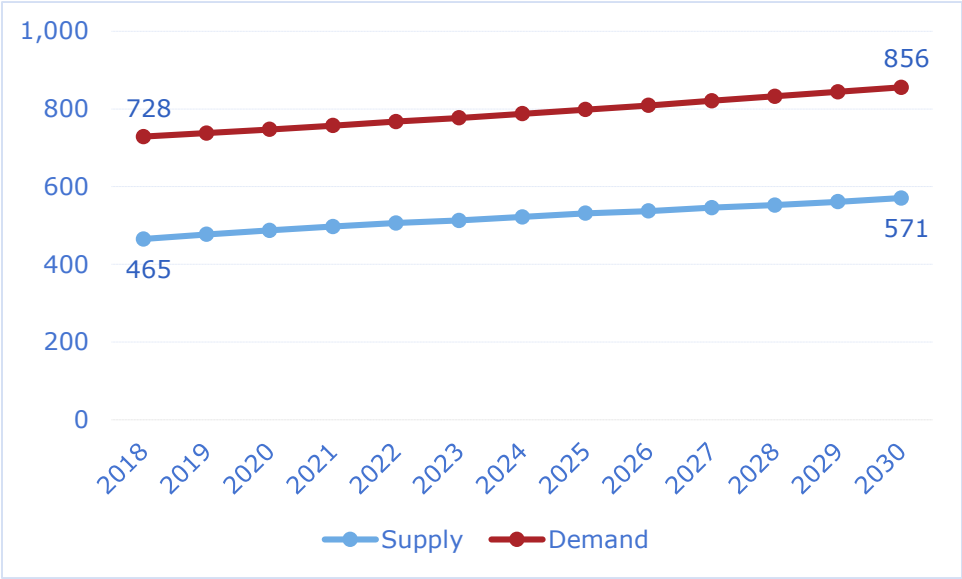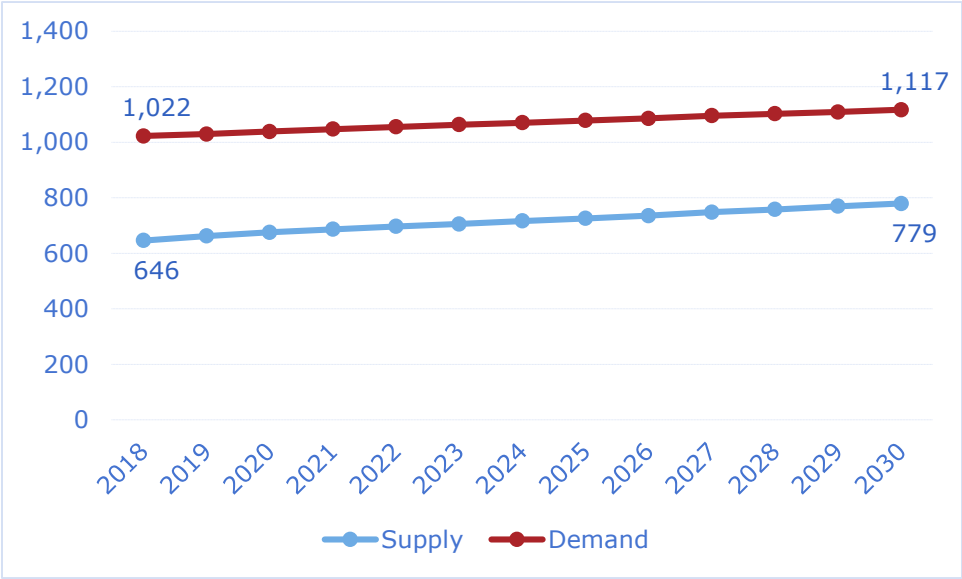**Figure 7. Supply and Demand for All Dentist FTEs, North Texas**
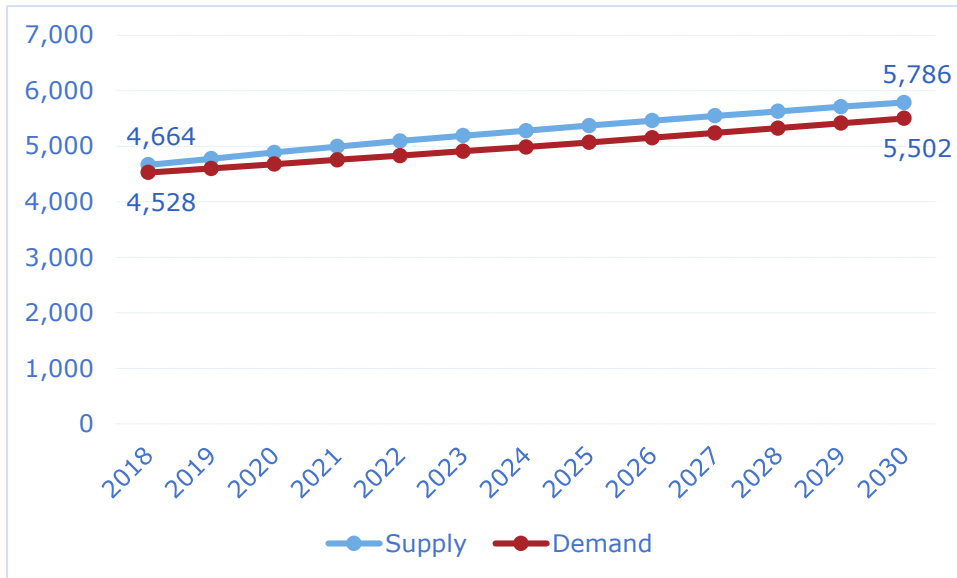
From 2018 to 2030, the supply of all dentists in North Texas (Region 2/3) is projected to increase by 1,122 FTEs while demand is projected to increase by 974 FTEs. This indicates an ongoing surplus of all dentists in North Texas.

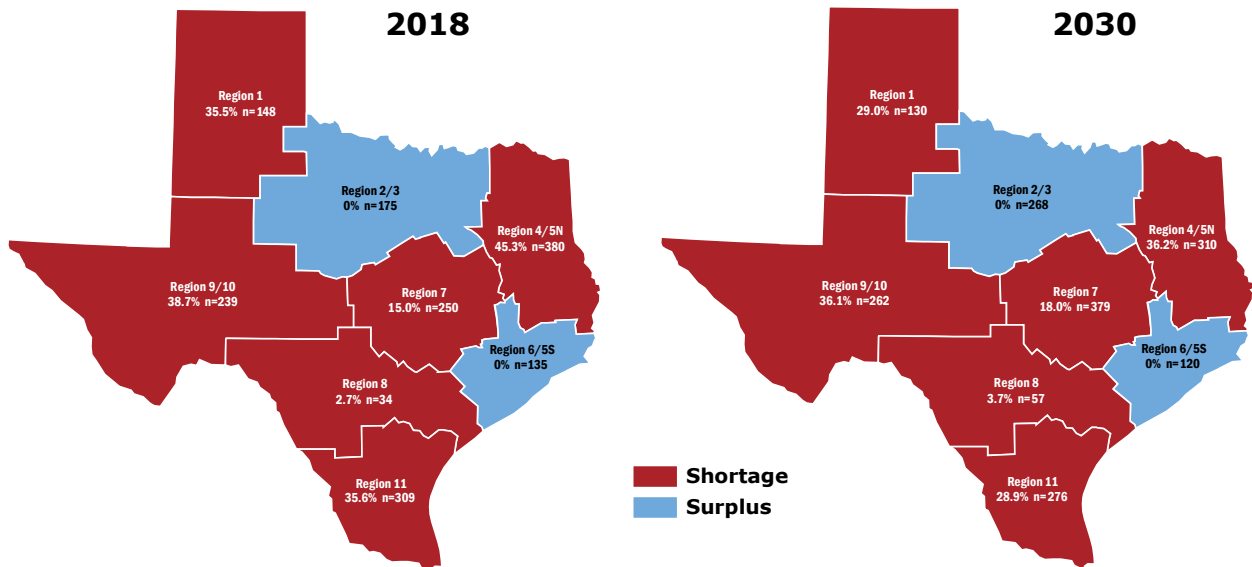**Figure 8. Supply and Demand for All Dentist FTEs, East Texas**
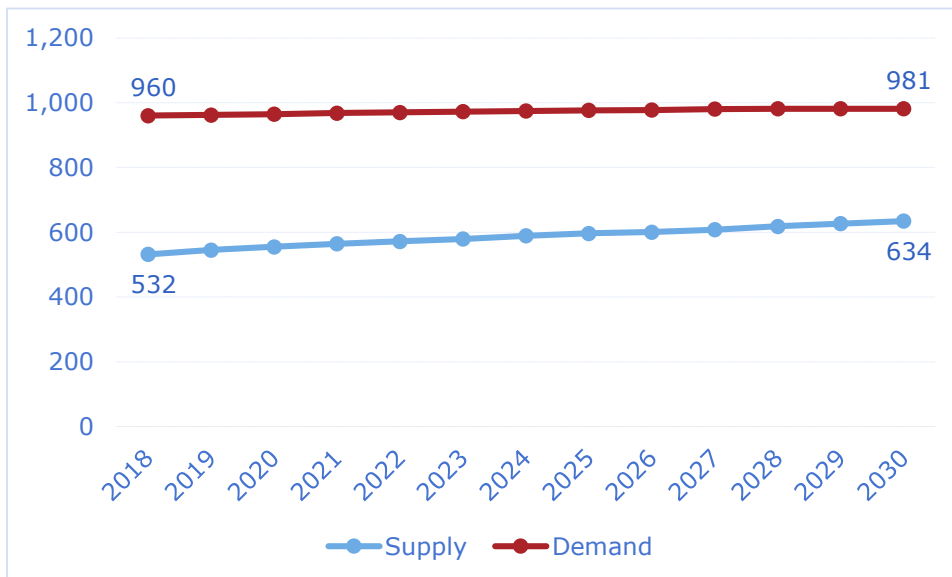
From 2018 to 2030, the supply of all dentists in East Texas (Region 4/5N) is projected to increase by 103 FTEs while demand is projected to increase by 22 FTEs. This indicates an ongoing shortage of all dentists in East Texas.

Figure 9. Supply and Demand for All Dentist FTEs, Gulf Coast
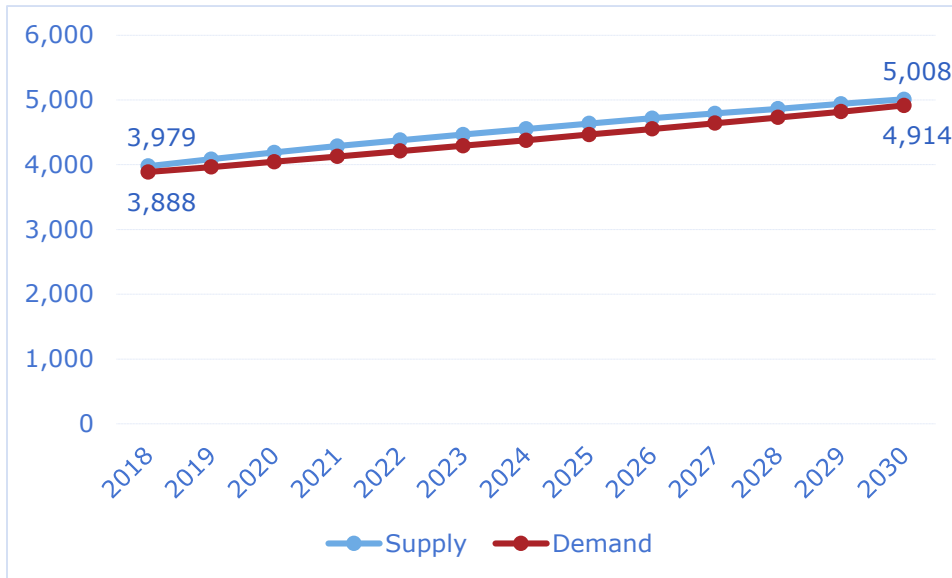
From 2018 to 2030, the supply of all dentists in the Gulf Coast (Region 6/5S) is projected to increase by 1,029 FTEs while demand is projected to increase by 1,027 FTEs. This indicates an ongoing surplus of all dentists in the Gulf Coast.

Figure 10. Supply and Demand for All Dentist FTEs, Central Texas
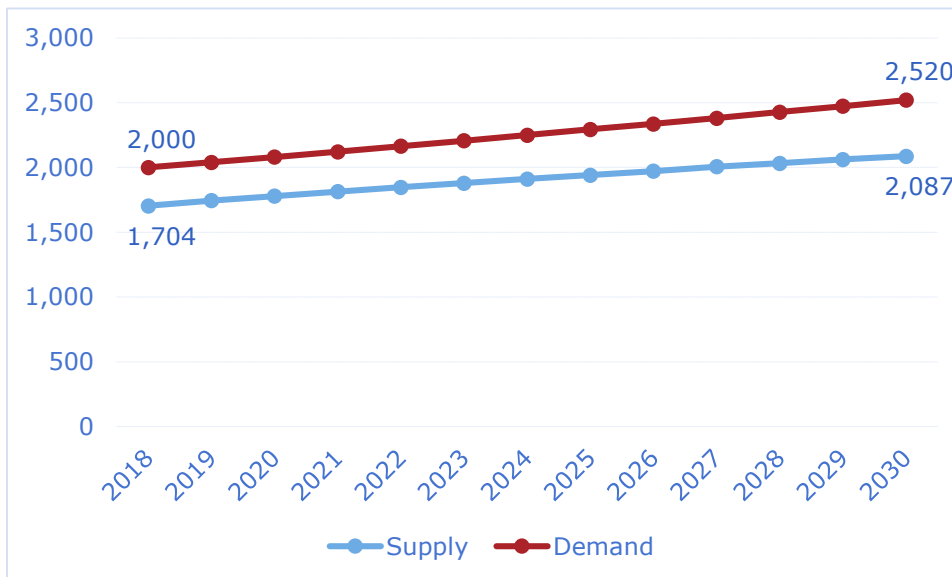
From 2018 to 2030, the supply of all dentists in Central Texas (Region 7) is projected to increase by 383 FTEs while demand is projected to increase by 520

FTEs. This indicates an ongoing and worsening shortage of all dentists in Central Texas.

Figure 11. Supply and Demand for All Dentist FTEs, South Texas

From 2018 to 2030, the supply of all dentists in South Texas (Region 8) is projected to increase by 309 FTEs while demand is projected to increase by 331 FTEs. This indicates an ongoing and worsening shortage of all dentists in South Texas.

Figure 12. Supply and Demand for All Dentist FTEs, West Texas

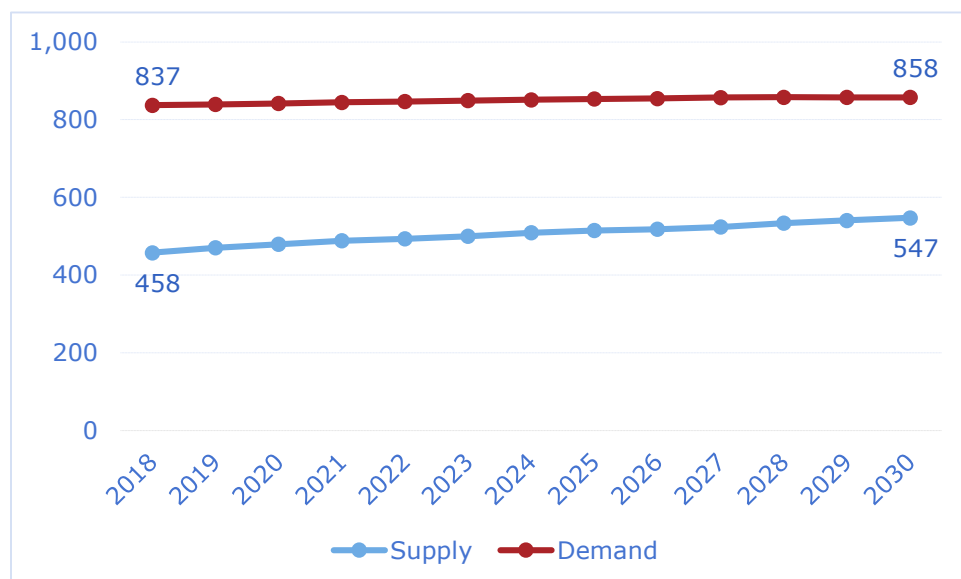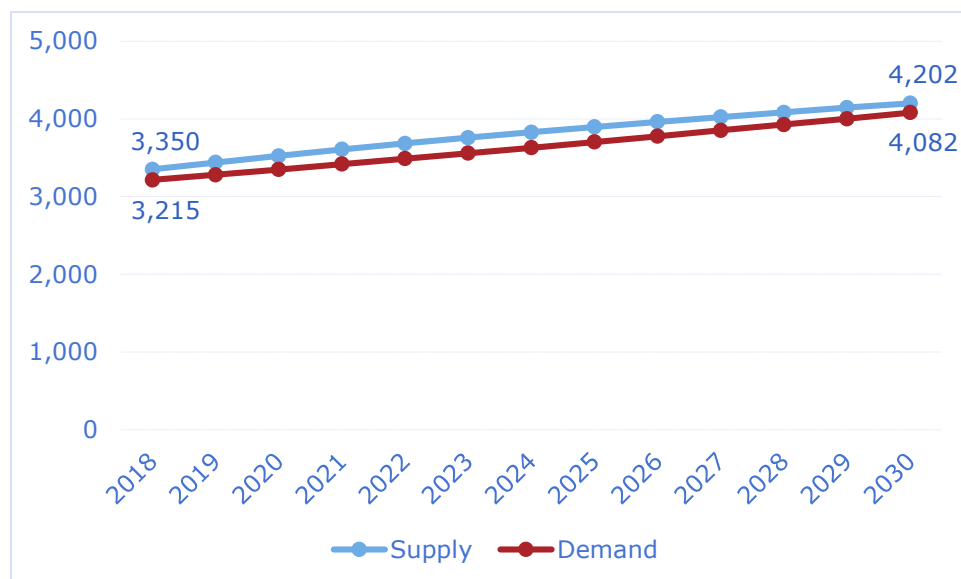From 2018 to 2030, the supply of all dentists in West Texas (Region 9/10) is projected to increase by 105 FTEs while demand is projected to increase by 127 FTEs. This indicates an ongoing and worsening shortage of all dentists in West Texas.

Figure 13. Supply and Demand for All Dentist FTEs, Rio Grande Valley

From 2018 to 2030, the supply of all dentists in the Rio Grande Valley (Region 11) is projected to increase by 133 FTEs while demand is projected to increase by 95 FTEs. This indicates an ongoing shortage of all dentists in the Rio Grande Valley.

Map of General Dentist Shortage by Region, 2018 and 2030

In both 2018 and 2030, North Texas (Region 2/3) and the Gulf Coast (Region 6/5S) are the only regions where the supply of general dentists is projected to exceed demand, indicated in blue in the figure below.

Figure 14. Percent of General Dentist Demand Exceeding Supply and FTE Shortage/Surplus (n)

2018

Region 1
35.5% n=148

Region 2/3
0% n=175

Region 4/5N
45.3% n=380

Region 9/10
38.7% n=239

Region 7
15.0% n=250

Region 6/5S
0% n=135

Region 8
2.7% n=34

Region 11
35.6% n=309

2030

Region 1
29.0% n=130

Region 2/3
0% n=268

Region 4/5N
36.2% n=310

Region 9/10
36.1% n=262

Region 7
18.0% n=379

Region 6/5S
0% n=120

Region 8
3.7% n=57

Region 11
28.9% n=276

Shortage
Surplus

Supply and Demand for General Dentists by Region, 2018-2030

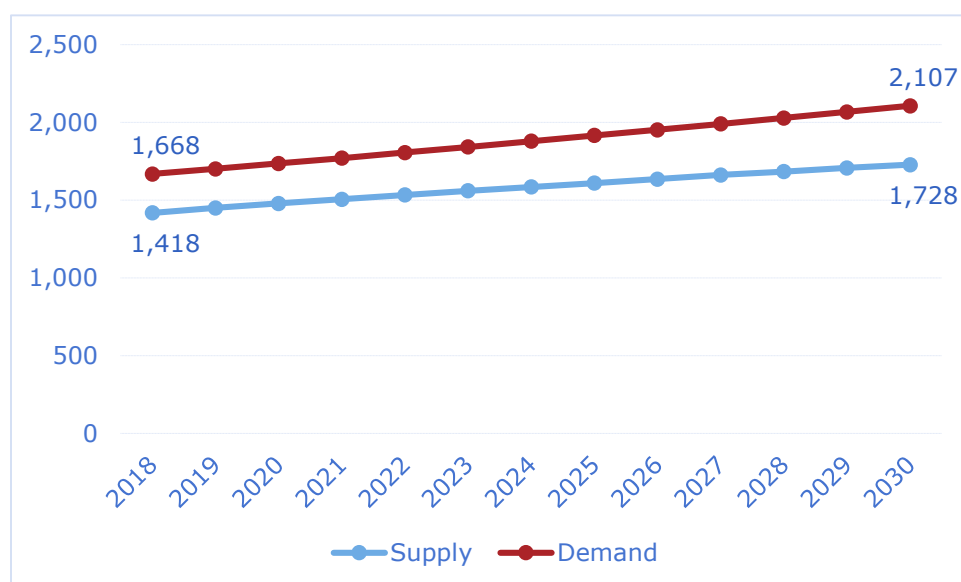**Figure 15. Supply and Demand for General Dentist FTEs, Panhandle**
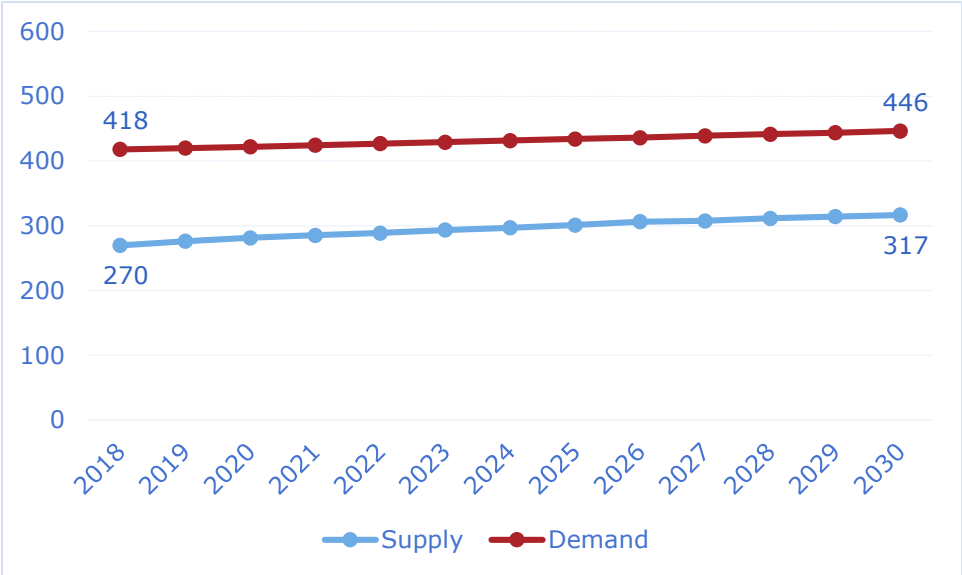
From 2018 to 2030, the supply of general dentists in the Panhandle (Region 1) is projected to increase by 47 FTEs while demand is projected to increase by 28 FTEs. This indicates an ongoing shortage of general dentists in the Panhandle.
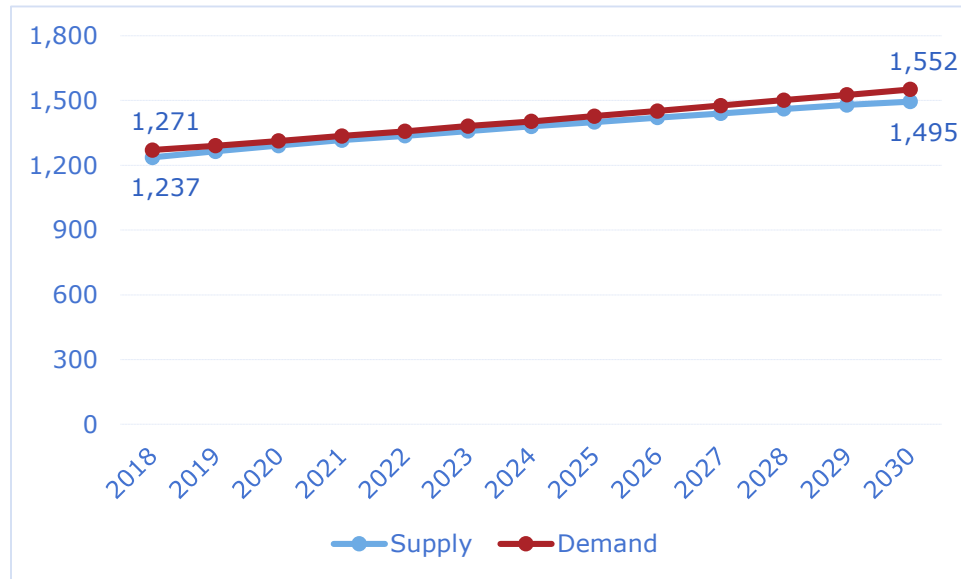
Figure 16. Supply and Demand for General Dentist FTEs, North Texas
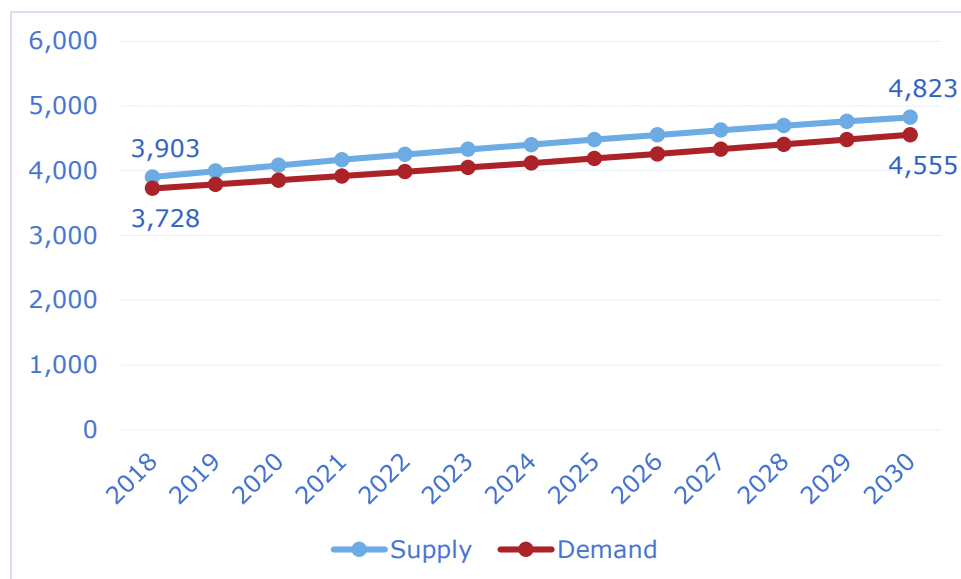
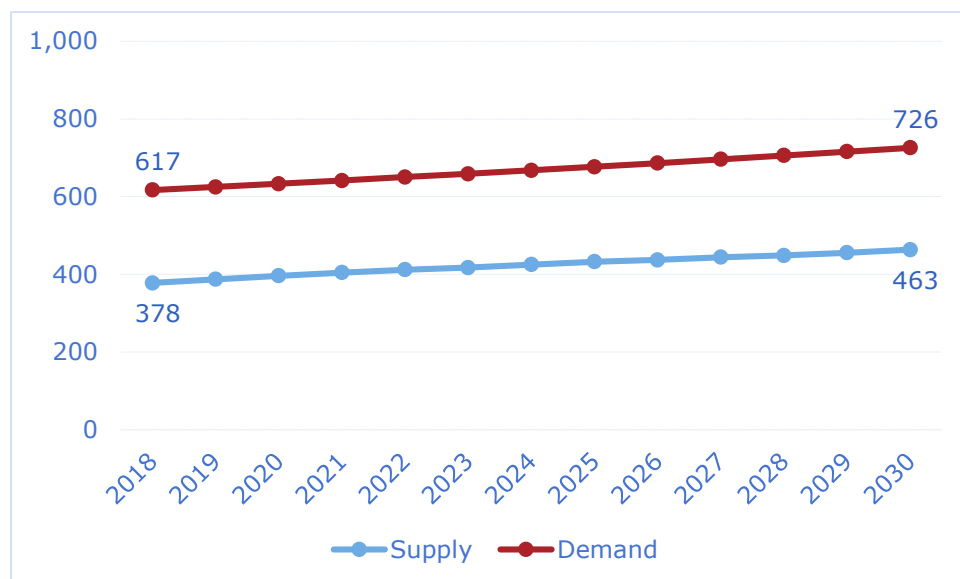From 2018 to 2030, the supply of general dentists in North Texas (Region 2/3) is projected to increase by 920 FTEs while demand is projected to increase by 828 FTEs. This indicates an ongoing surplus of general dentists in North Texas.

Figure 17. Supply and Demand for General Dentist FTEs, East Texas
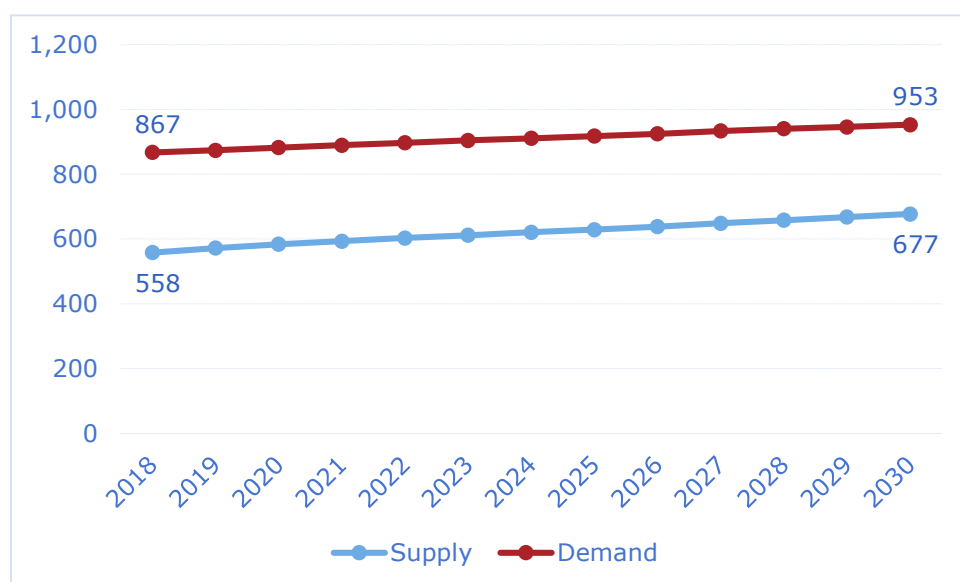

From 2018 to 2030, the supply of general dentists in East Texas (Region 4/5N) is projected to increase by 90 FTEs while demand is projected to increase by 20 FTEs. This indicates an ongoing shortage of general dentists in East Texas.

Figure 18. Supply and Demand for General Dentist FTEs, Gulf Coast

From 2018 to 2030, the supply of general dentists in the Gulf Coast (Region 6/5S) is projected to increase by 852 FTEs while demand is projected to increase by 867 FTEs. This indicates that the surplus of general dentists in the Gulf Coast will decrease by 2030.

Figure 19. Supply and Demand for General Dentist FTEs, Central Texas

From 2018 to 2030, the supply of general dentists in Central Texas (Region 7) is projected to increase by 310 FTEs while demand is projected to increase by 439

FTEs. This indicates an ongoing and worsening shortage of general dentists in Central Texas.

Figure 20. Supply and Demand for General Dentist FTEs, South Texas

From 2018 to 2030, the supply of general dentists in South Texas (Region 8) is projected to increase by 258 FTEs while demand is projected to increase by 281 FTEs. This indicates an ongoing and worsening shortage of general dentists in South Texas.

Figure 21. Supply and Demand for General Dentist FTEs, West Texas

From 2018 to 2030, the supply of general dentists in West Texas (Region 9/10) is projected to increase by 85 FTEs while demand is projected to increase by 109 FTEs. This indicates an ongoing and worsening shortage of general dentists in West Texas.

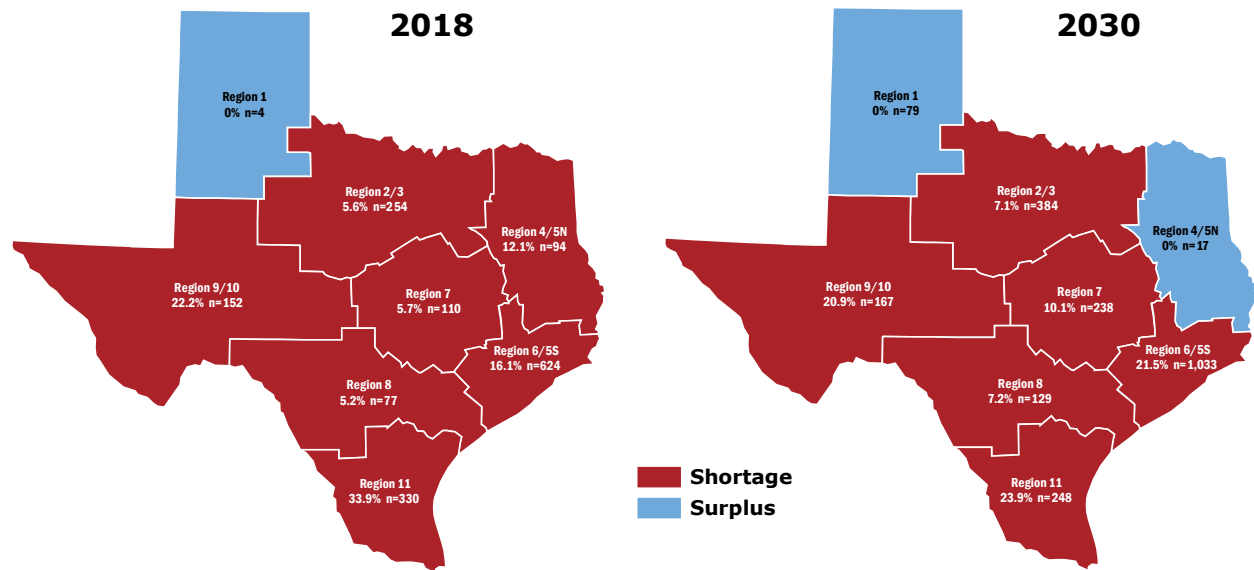**Figure 22. Supply and Demand for General Dentist FTEs, Rio Grande Valley**

From 2018 to 2030, the supply of general dentists in the Rio Grande Valley (Region 11) is projected to increase by 119 FTEs while demand is projected to increase by

86 FTEs. This indicates an ongoing shortage of general dentists in the Rio Grande Valley.

# Map of Dental Hygienist Shortage by Region, 2018 and 2030

In 2018, the Panhandle (Region 1) is the only region where the supply of dental hygienists is projected to exceed demand, indicated in blue in the figure below. By 2030, the Panhandle and East Texas (Region 4/5N) are the only regions where the supply of dental hygienists is projected to exceed demand.

**Figure 23. Percent of Dental Hygienist Demand Exceeding Supply and FTE Shortage/Surplus (n)**

2018

Region 1
0% n=4

Region 2/3
5.6% n=254

Region 4/5N
12.1% n=94

Region 9/10
22.2% n=152

Region 7
5.7% n=110

Region 6/5S
16.1% n=624

Region 8
5.2% n=77

Region 11
33.9% n=330

2030

Region 1
0% n=79

Region 2/3
7.1% n=384

Region 4/5N
0% n=17

Region 9/10
20.9% n=167

Region 7
10.1% n=238

Region 6/5S
21.5% n=1,033

Region 8
7.2% n=129

Region 11
23.9% n=248

■ Shortage
■ Surplus

Supply and Demand for Dental Hygienists by Region, 2018-2030

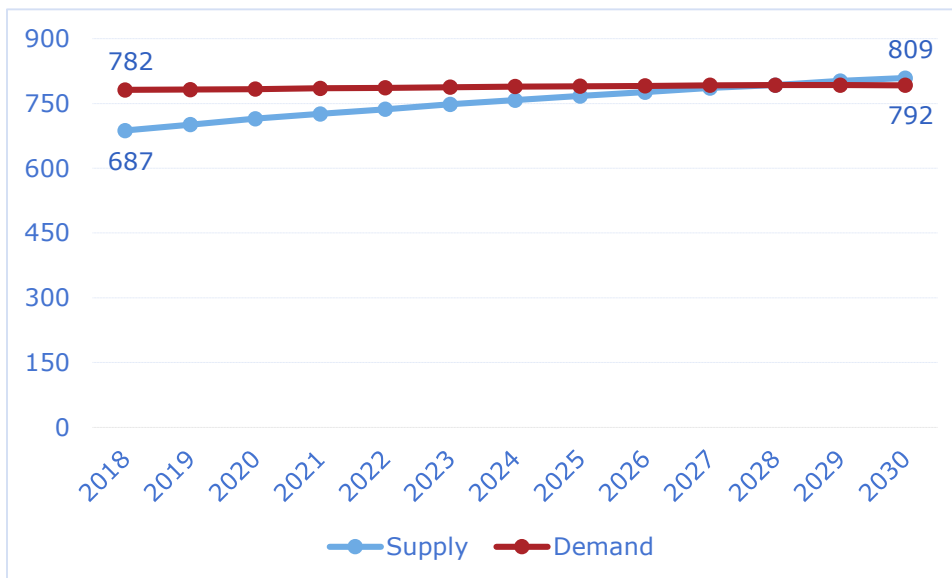**Figure 24. Supply and Demand for Dental Hygienist FTEs, Panhandle**
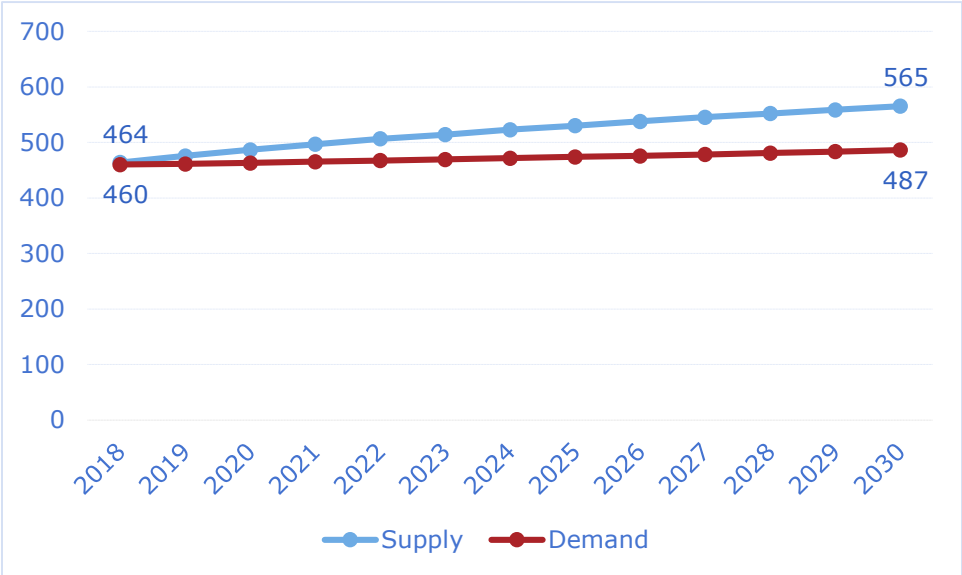
From 2018 to 2030, the supply of dental hygienists in the Panhandle (Region 1) is projected to increase by 101 FTEs while demand is projected to increase by 26 FTEs. This indicates an ongoing surplus of dental hygienists in the Panhandle.

Figure 25. Supply and Demand for Dental Hygienist FTEs, North Texas
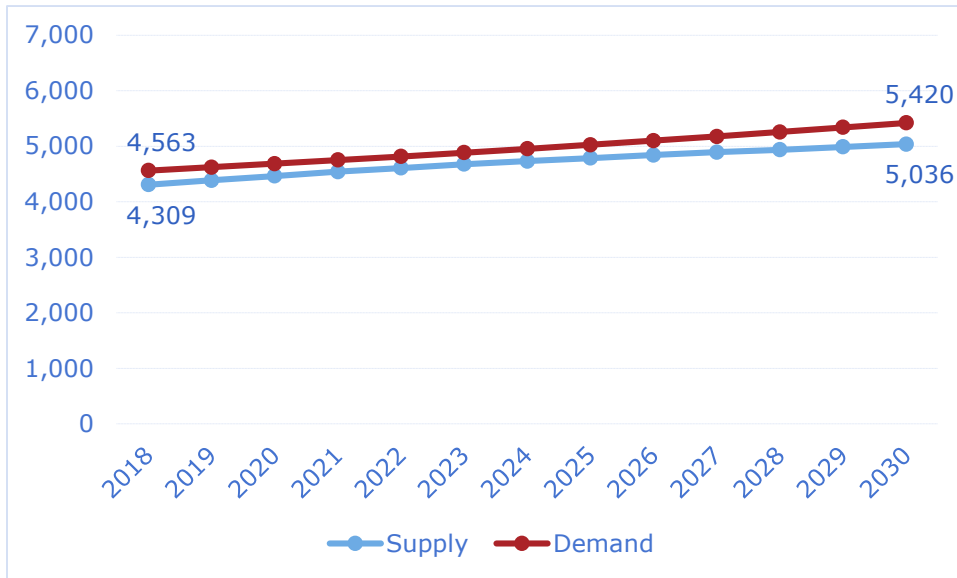
From 2018 to 2030, the supply of dental hygienists in North Texas (Region 2/3) is projected to increase by 727 FTEs while demand is projected to increase by 857 FTEs. This indicates an ongoing and worsening shortage of dental hygienists in North Texas.
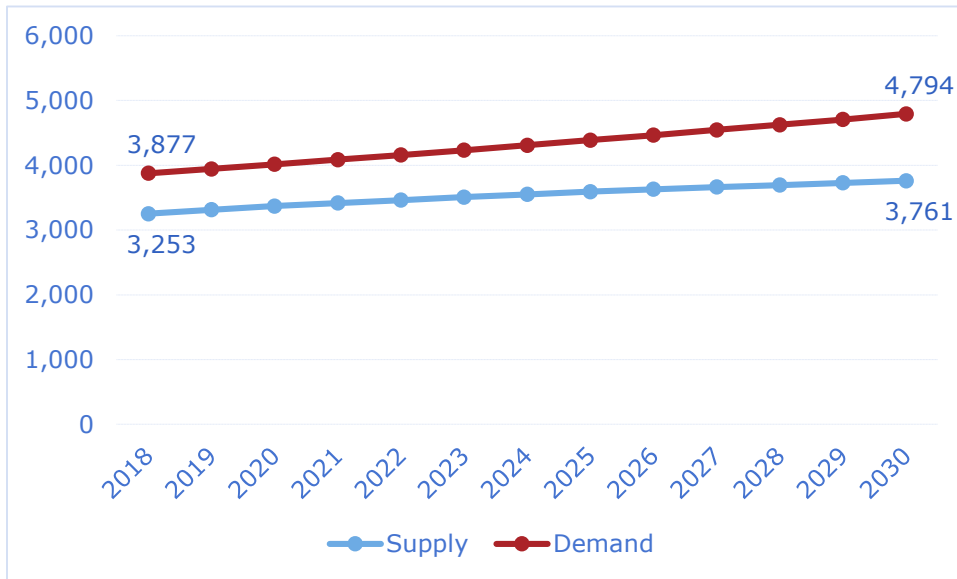
Figure 26. Supply and Demand for Dental Hygienist FTEs, East Texas

From 2018 to 2030, the supply of dental hygienists in East Texas (Region 4/5N) is projected to increase by 122 FTEs while demand is projected to increase by 10

FTEs. This indicates that there will be a surplus of dental hygienists in East Texas by 2030.

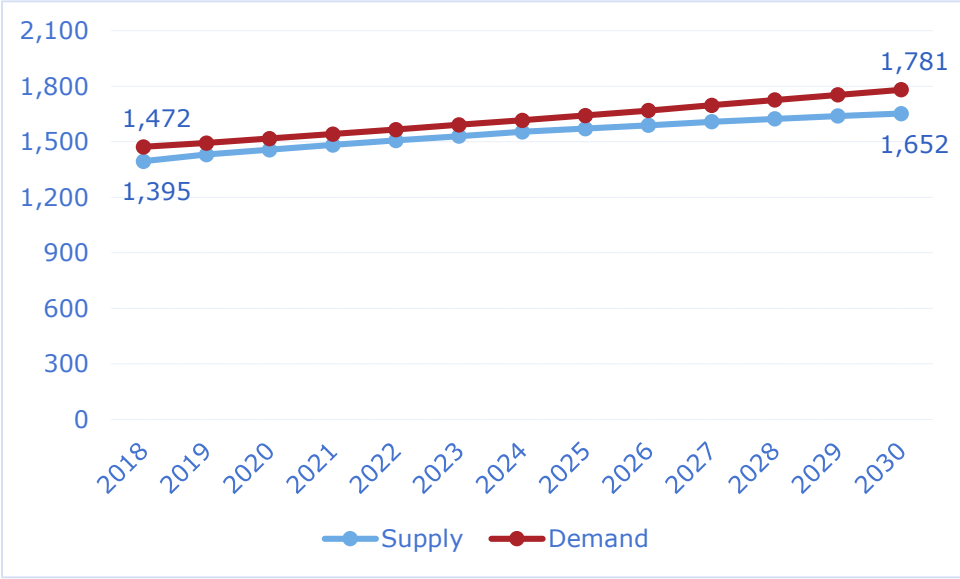**Figure 27. Supply and Demand for Dental Hygienist FTEs, Gulf Coast**

From 2018 to 2030, the supply of dental hygienists in the Gulf Coast (Region 6/5S) is projected to increase by 508 FTEs while demand is projected to increase by 917 FTEs. This indicates an ongoing and worsening shortage of dental hygienists in the Gulf Coast.

Figure 28. Supply and Demand for Dental Hygienist FTEs, Central Texas
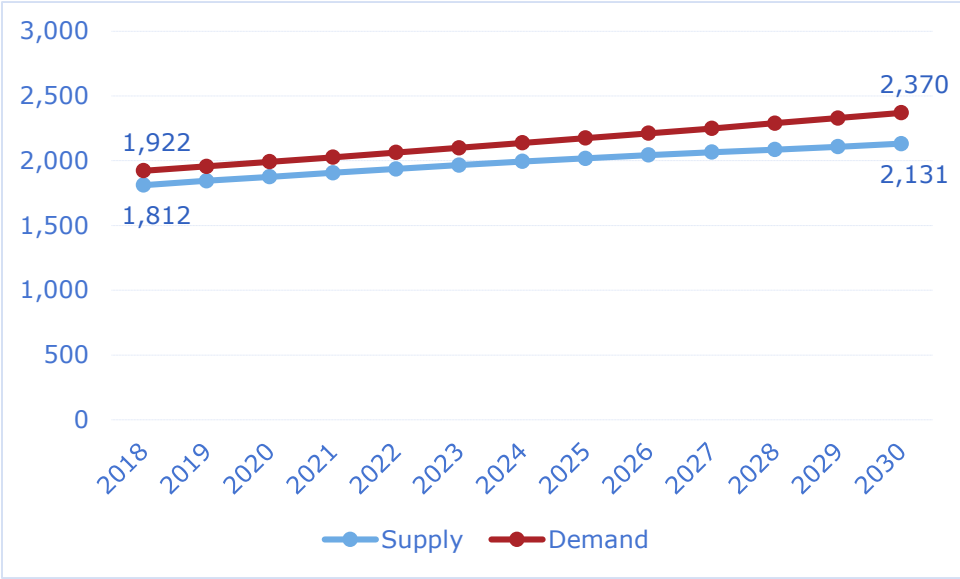
From 2018 to 2030, the supply of dental hygienists in Central Texas (Region 7) is projected to increase by 319 FTEs while demand is projected to increase by 447 FTEs. This indicates an ongoing and worsening shortage of dental hygienists in Central Texas.
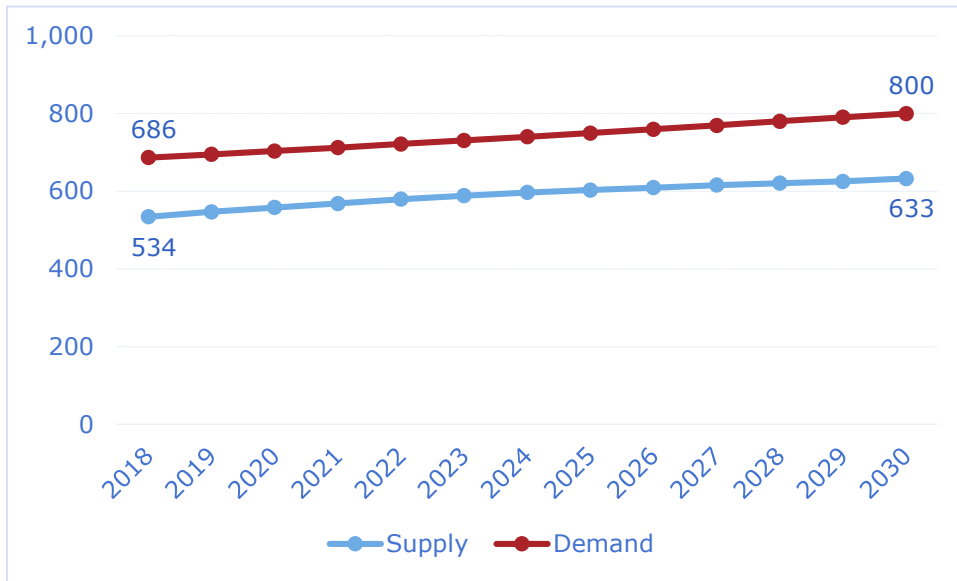
Figure 29. Supply and Demand for Dental Hygienist FTEs, South Texas

From 2018 to 2030, the supply of dental hygienists in South Texas (Region 8) is projected to increase by 257 FTEs while demand is projected to increase by 309
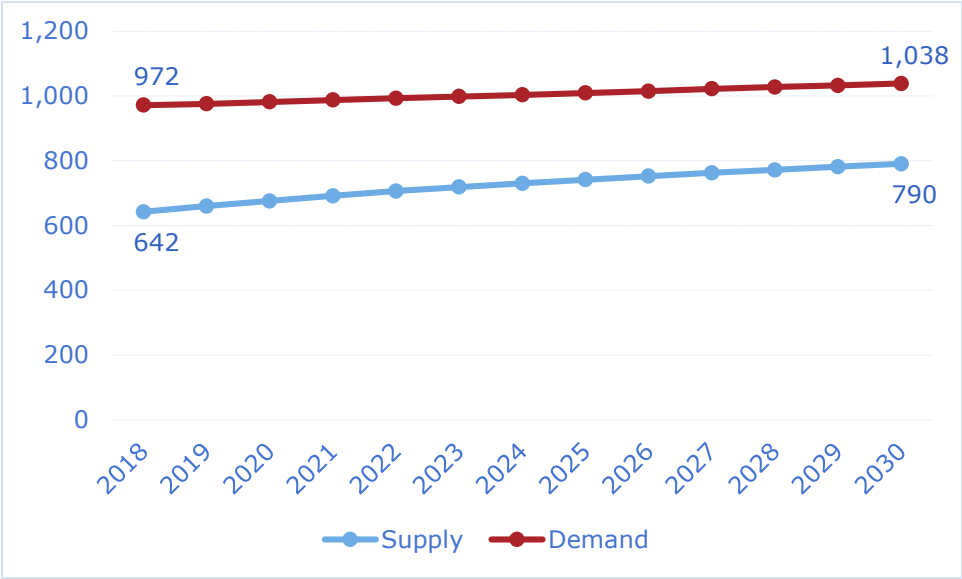
FTEs. This indicates an ongoing and worsening shortage of dental hygienists in South Texas.

Figure 30. Supply and Demand for Dental Hygienist FTEs, West Texas

From 2018 to 2030, the supply of dental hygienists in West Texas (Region 9/10) is projected to increase by 99 FTEs while demand is projected to increase by 113 FTEs. This indicates an ongoing and worsening shortage of dental hygienists in West Texas.

Figure 31. Supply and Demand for Dental Hygienist FTEs, Rio Grande Valley

From 2018 to 2030, the supply of dental hygienists in the Rio Grande Valley (Region 11) is projected to increase by 148 FTEs while demand is projected to increase by 67 FTEs. This indicates an ongoing shortage of dental hygienists in the Rio Grande Valley.