Understanding the Need for Nurses in Texas:
Defining the Skills Gap

The Mission of the Texas Workforce Investment Council

Assisting the Governor and the Legislature with strategic planning for and evaluation of the Texas workforce system to promote the development of a well-educated, highly skilled workforce for Texas.

UNDERSTANDING THE NEED FOR NURSES IN TEXAS: DEFINING THE SKILLS GAP

Texas Workforce Investment Council
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Introduction

Research shows that the nation is in the midst of a nursing shortage. There are various explanations for the current nursing shortage, including high turnover due to high on-the-job stress caused by low nurse-to-patient ratios, and job dissatisfaction among nurses (Lang, Hodge, Olson, Romano, & Kravitz, 2004; Swiger, Patrician, & Vance, 2016; Wright & Bretthauer, 2010; Sabo, 2011; Aiken et al., 2017). Nursing school enrollment is down and unable to keep pace with the current need for nurses. A lack of nurse faculty in clinical instruction sites exacerbates the shortage (American Association of Colleges of Nursing [AACN], 2018). In 2017, approximately 5 million[1] individuals constituted the nursing labor force. This includes 2 million Registered Nurses (RNs), Licensed Practical and Licensed Vocational Nurses (LP and LVNs), Nurse Anesthetists, and Nurse Practitioners and Midwives who are 50 years of age and older. Analysts estimate that over 1 million RNs alone will reach retirement age within the next 10 to 15 years (Montana State University, 2015; National Council of State Boards of Nursing, 2018).

Emerging demographic, economic, and healthcare delivery issues characterize the current shortage. As the U.S. population continues to age, the nursing labor force will age with it (Auerbach, Buerhaus, Staiger, 2015; Kirch & Petelle, 2017). Aging Baby Boomers present challenges to existing healthcare models (U.S. Census Bureau, 2018; Buerhaus, Skinner, Auerbach, & Staiger, 2017). As people live longer, experts expect a rise in the need for geriatric and long-term care. However, the current clinical capacity of nurses to provide chronic disease management is inadequate (Centers for Disease Control and Prevention, 2013). An aging population also places demands on the Medicare system. Over 55 million Americans age 65 and older are currently covered by Medicare (Centers for Medicare and Medicaid Services [CMS], 2017). CMS projects that Medicare will cover approximately 80 million people by 2030 (2017). Growth in this segment of the population will drive the need for Medicare and related healthcare services. In turn, this will increase the demand for nurses.

This report examines data on the demographic characteristics of the nursing labor force in Texas. Analysis of Texas is contextualized by also presenting data on the national nursing shortage. This report focuses on analysis of the nursing labor force using data for the most recent year[2]. When appropriate, population projections are used to make assumptions about future populations. Finally, analysis of the nursing labor force at the county level and by local workforce development area (LWDA) is provided at the end of the report.

The Texas Workforce Investment Council

The Texas Workforce Investment Council was created in 1993 by the 73rd Texas Legislature. As an advisory body to the Governor and the legislature, the Council assists with strategic planning for and evaluation of Texas' workforce system. The Council promotes the development of a well-educated,

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[1] Nursing labor force estimates produced using 2017 ACS one-year PUMS (public use microdata sample) files. Total = 4,970,787.

[2] For a detailed description of data used, please see the Data and Methodology section beginning on p. 2.

highly skilled workforce for Texas and advocates for a workforce system that provides quality workforce education and training opportunities. The 19-member Council includes representatives from business, labor, education, community-based organizations, and the Council's five member state agencies.

Statutory Directive

Under Texas Government Code, Section 2308.101, the Council is responsible for promoting the development of a well-educated, highly skilled workforce and advocating for the development of an integrated workforce development system to provide quality services addressing the needs of business and workers in Texas.

The State Strategic Plan

The development of an integrated strategic plan for the workforce system is one of the Council's primary responsibilities. To sustain and increase economic growth, a well-trained labor supply must be available for employers seeking to establish, conduct, or expand business operations in Texas. The mission articulated in the Texas workforce system strategic plan (FY 2016–FY 2023) is to position Texas as a global economic leader by growing and sustaining a competitive workforce. For this to become reality, all Texans must be part of the critical pool of potential employees.

Scope of Report

This report presents a demographic analysis of the nursing labor force in Texas. The first section uses national data to summarize the national nursing shortage. The second section focuses on issues related to the current and future population of Texas. The third section provides demographic data on the nursing labor force in Texas.

Data and Methodology

Data Sources and Methodology

The sources of data for this report include decennial census historical data, the 2017 American Community Survey (ACS), population projections produced by the U.S. Census Bureau, and population projections provided by the Texas State Demographic Center (TDC).

The ACS is an ongoing, yearly survey that samples a small percentage of the population. Weights applied to sample respondents approximate the demographic characteristics of the entire population. The creation of custom estimates relied on 2017 ACS Public Use Microdata Sample (PUMS) files. The 2017 ACS PUMS microdata-derived estimates support analyses at the national and state level, unless specified otherwise. All estimates produced for this report using PUMS microdata were validated using the PUMS Estimates for User Verification documentation provided by the U.S. Census Bureau. The baseline population for each county and the county-specific estimates for the nursing labor force were established from the 2017 ACS PUMS microdata one-year estimates–the most current estimates available. For the counties not represented on the survey, allocation factors developed by the Missouri

Census Data Center (2018) were used to align the respondents in the ACS geographic segments (called public use microdata areas) with Texas counties. County-level data were used to produce tables on the geographic distribution of the nursing labor force in Texas by LWDA found in Appendix A and B. Rounding may affect totals.

The U.S. Census Bureau's population projections use the most recent decennial census (2010) as the base-year, and rely on assumptions about fertility, mortality, and net migration using the cohort-component method to estimate the future population. More detail on the cohort-component method is available from Murdock et al. (1987) and Smith, Tayman, & Swanson (2013). Analysis in this report relied on a simple projections model, as defined in Wachter (2016), which subdivides the population by age and sex.

Finally, TDC produces population projections for Texas. These projections provide statewide and countywide population totals. The latest projections use recent migration trends, race/ethnicity categories, and age distribution. These projections use a single projection scenario of patterns observed in Texas between 2010 and 2015. Like the U.S. Census Bureau, the TDC projections use the cohort-component method (Texas Demographic Center, 2018).

Variables and Limitations

The unit of analysis is the nursing labor force, which was coded using what is referred to as the "SOCP" variable found in the 2017 ACS PUMS microdata files data dictionary. The nursing labor force corresponds to occupation codes for 2012 and later based on the 2010[3] SOC (Standard Occupational Classification) system. The Census Bureau crosswalks the SOCP codes using the 2010 SOC codes. The nursing labor force unit of analysis for the nation and Texas was aggregated using the following SOCP categories: 291141 (Registered Nurses), 291151 (Nurse Anesthetists), 292061 (Licensed Practical and Licensed Vocational Nurses), and 2911XX (Nurse Midwives and Nurse Practitioners). These SOCP categories correspond to the following 2010 SOC codes: 29-1141 (Registered Nurses), 29-1151 (Nurse Anesthetists), 29-1161 (Nurse Midwives), 29-1171 (Nurse Practitioners), and 29-2061(Licensed Practical and Licensed Vocational Nurses). Users will note differences between SOC codes and the SOCP-derived Census occupation codes. According to the American Community Survey Office, "in cases where the SOC occupation code ends in X(s) or Y(s), two or more SOC occupation codes were aggregated to correspond to a specific Census occupation code. In these cases, the Census occupation description is used for the SOC occupation title" (2018).

Other reports use the Advanced Practice Registered Nurse (APRN) category to describe Nurse Anesthetists, Nurse Midwives, and Nurse Practitioners (Texas Center for Nursing Workforce Studies, 2015). This report does not. The categories for this report rely on the available Census occupation

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[3] On November 28, 2017, the Office of Management and Budget (OMB) published a Federal Register notice detailing the final decisions for the 2018 SOC, including the final 2018 SOC codes, titles, and definitions, for implementation in reference year 2018. According to the 2018 SOC Implementation Schedule, American Community Survey data reflecting the 2018 SOC codes will be available sometime in fall 2019.

nursing codes only. The decision not to total available categories into a larger meta-category was deliberate. The original categories available in the ACS PUMS source file remain unchanged.

Context of the Report

The American nursing population has grown since the first "Nightingale schools"[4] opened in the late 19th century. Beginning in the 1930s, experts began to recognize the signs of an emerging shortage of nurses following the economic impact of the Great Depression (Whelan, 2017). During the next five decades, healthcare and nursing leaders would use a series of strategies to increase the supply of nurses nationwide. The first of these strategies looked to increase enrollment in nursing schools. The goal was to increase the supply of nurses. Another approach focused on training non-nurses to supplement the work of professional nurses. A third strategy shortened the time it took nursing students to become nurses. In addressing the mid-twentieth century nursing shortage, these strategies proved successful. Yet, scholar Jean C. Whelan observed that while these strategies worked, the country also failed to avoid repeated nurse shortages (2017).

Currently, the U.S. is in the midst of another nursing shortage. Researcher Heather Janiszewski-Goodin (2003) describes the American demand and supply for nurses as cyclical. Over the last century, shortages and surpluses became common, each owing to specific social, economic, cultural, and technological circumstances (Buerhaus et al., 2017; Whalen, 2017; Rosseter, 2019). At present, demographic and socioeconomic changes challenge the nursing labor force. These challenges differentiate this shortage from shortages in the past in significant ways. This section details the contributing factors to the current nursing shortage and examines the following topics:

1. The changing demographics of the American population,

2. The demographic characteristics of the nursing labor force,

3. The impact of demographic and socioeconomic change on the nursing labor force, and

4. The gaps in nursing education affecting the shortage.

The Current and Future Population of the United States

The population of the United States has grown since the first decennial census in 1790, as shown in Figure 1. The decade of the 1940s was notable with regard to the post-war Baby Boom that began in 1946 and ended circa 1964. During this period, the population of the United States grew from 132,164,569 individuals to 203,211,926 individuals. By 2010, the population grew to 308,745,538 individuals.

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[4] Florence Nightingale (1820-1910) is the founder of modern nursing and pioneered the standards for sanitation and safety in hospitals during the 19th century. Following her service as a nurse in the Crimean War (1854), she established the Nightingale School of Nursing at Saint Thomas' Hospital in London—the beginning of professional nursing education.

Figure 1: Historical Population of the United States, 1790-2010
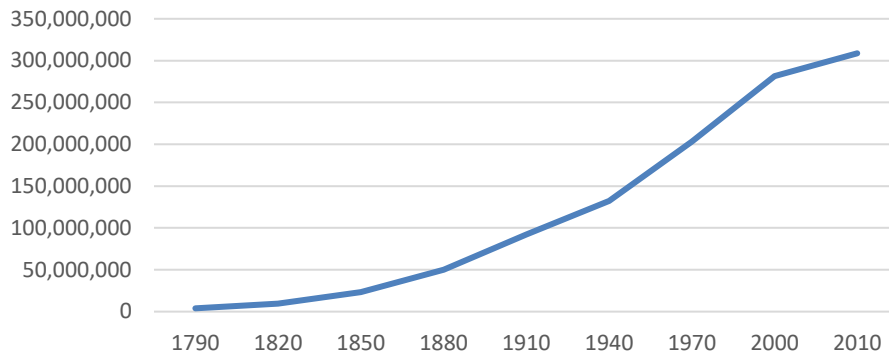
Figure notes: 1790-2010 data are from the decennial census, U.S. Census Bureau.

By 2050, as shown in Figure 2, the U.S. Census Bureau projects that the American population will exceed 388 million individuals.

Figure 2: Population Projections for the United States, 2017-2050
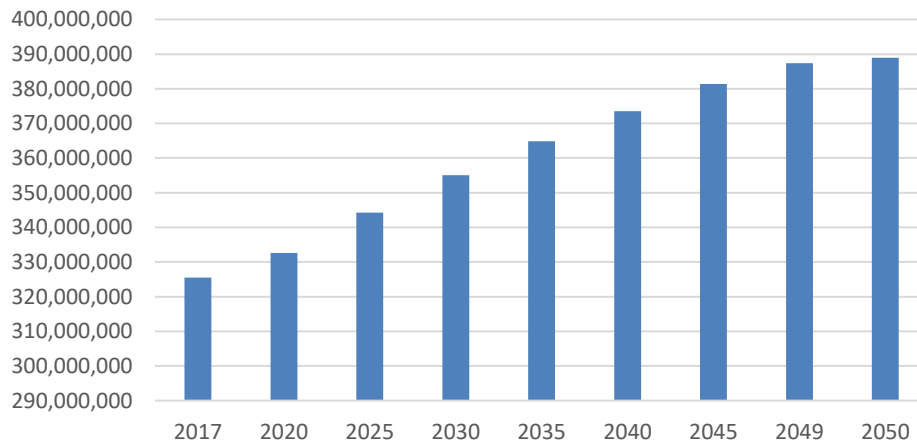
Figure notes: Projected Population Size and Births, Deaths, and Migration: Main Projections Series for the United States, 2017-2060. U.S. Census Bureau, Population Division: Washington, D.C.

To understand the impacts of population change in the United States, two factors are considered. The first focuses on the aging of the Baby Boom generation. The largest percentage increase in the annual growth rate of the Baby Boom generation occurred between 1946-1947. Growth continued through 1964, followed by a decline, and remained stable through 1990. The first Baby Boomers turned 65 in 2011. In 2030, all Baby Boomers will have turned 65 years of age. This will result in various shifts to the age structure of the country as demonstrated in Figure 3. By 2030, the U.S. Census Bureau projects that one in five Americans will be age 65 and over (Colby & Ortman, 2014). The aging of the population is expected to drive an increase in old-age dependency, presenting challenges to businesses, families, government agencies, and the workforce as they work to meet the needs of this growing population of Americans.

Figure 3: Comparison of Projected United States Age Structure, 2020-2050
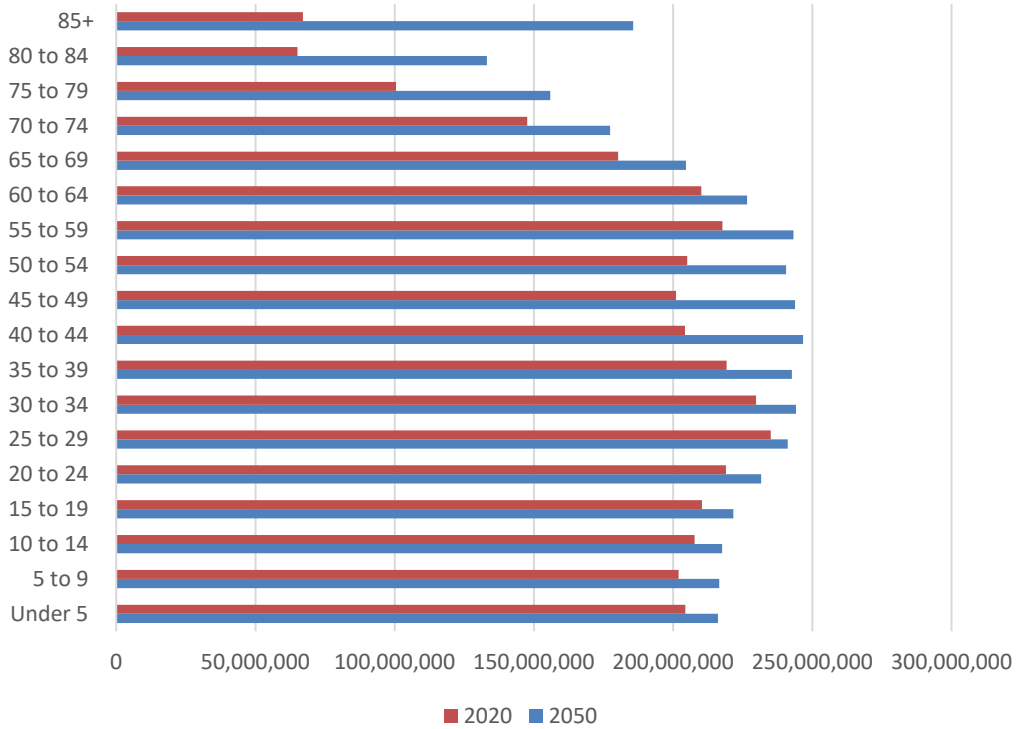
Figure notes: Projected Population Size and Births, Deaths, and Migration: Main Projections Series for the United States, 2017-2060. U.S. Census Bureau, Population Division: Washington, D.C.

The second factor concerns the relationship between age and race/ethnic diversity, particularly the increasing percentage of Hispanics in younger age categories. Figure 4 shows the age structure of the population by race/ethnicity group for 2017. For the population group age 65 years and older, 77 percent is White and eight percent is Hispanic. For the population group age 0-17 years, 51 percent is White and 26 percent is Hispanic. When African American, Asian, Hispanic, and Other (includes American Indian, Alaskan Native, and Hawaiian Pacific Islander) population groups are considered, 23 percent are 0-17 years of age and 14 percent are 65 years and older.

Figure 4: Race/Ethnicity of the United States by Age Group, 2017
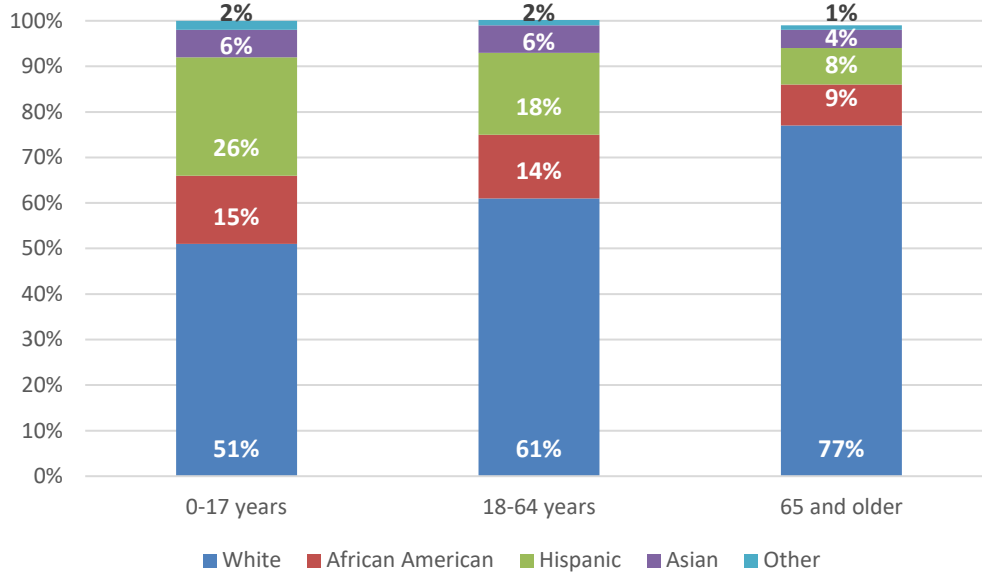
Figure notes: Population Projections Series for the United States, 2017-2060. U.S. Census Bureau.

Figure 5 shows significant population growth for the African American, Asian, Hispanic, and Other population groups. By 2050, approximately 48 percent of the population will be White, 15 percent will be African American, and 26 percent will be Hispanic. These projections assume that changes to the age structure observed in the current decade are likely to continue into the future.

Figure 5: Projected Race/Ethnicity Composition of the United States, 2050
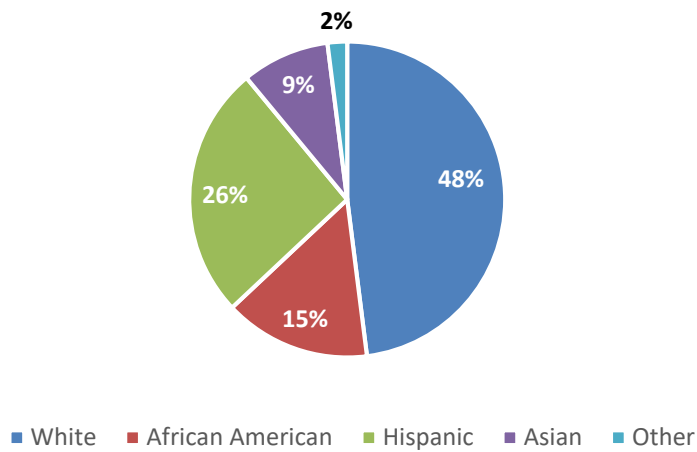
Figure notes: Population Projections Series for the United States, 2017-2060. U.S. Census Bureau.

The Current Nursing Labor Force of the United States

Demographic and socioeconomic changes have influenced the supply of nurses in America. In this section, the demographic and socioeconomic characteristics of the current national nursing labor force are examined.

In 2017, 4.9 million Registered Nurses (RNs), Nurse Anesthetists, Nurse Practitioners and Nurse Midwives, and Licensed Practical and Licensed Vocational Nurses (LP and LVNs) composed the nursing labor force in the United States. As shown on Figure 6, approximately 74 percent were RNs, one percent were Nurse Anesthetists, four percent were Nurse Practitioners and Nurse Midwives, and 21 percent were LP and LVNs. The median age of the nursing labor force is 46 years of age. The Bureau of Labor Statistics projects that employment of registered nurses will grow approximately 12 percent in the next ten years (2019).

Figure 6: U.S. Nursing Labor Force by Nurse Type, 2017

- Registered Nurses
- Nurse Anesthetists
- Nurse Practicioners and Nurse Midwives
- Licensed Practical and Licensed Vocational Nurses
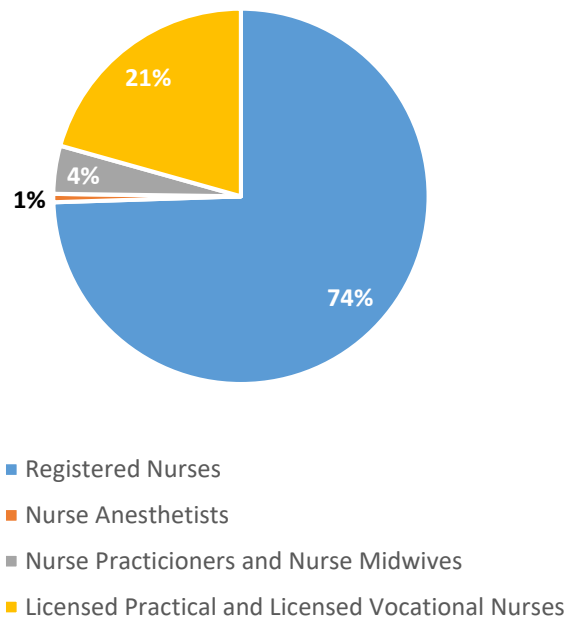
Source: 2017 ACS PUMS microdata files.

Figure 7 compares the number of male and female nurses by nurse type. A large difference exists between the number of male and female nurses. Despite higher male representation in nursing over time, nursing remains predominantly female (Mackintosh, 1997; Landivar, 2013).

Figure 7: U.S. Nursing Labor Force by Nurse Type and Gender, 2017
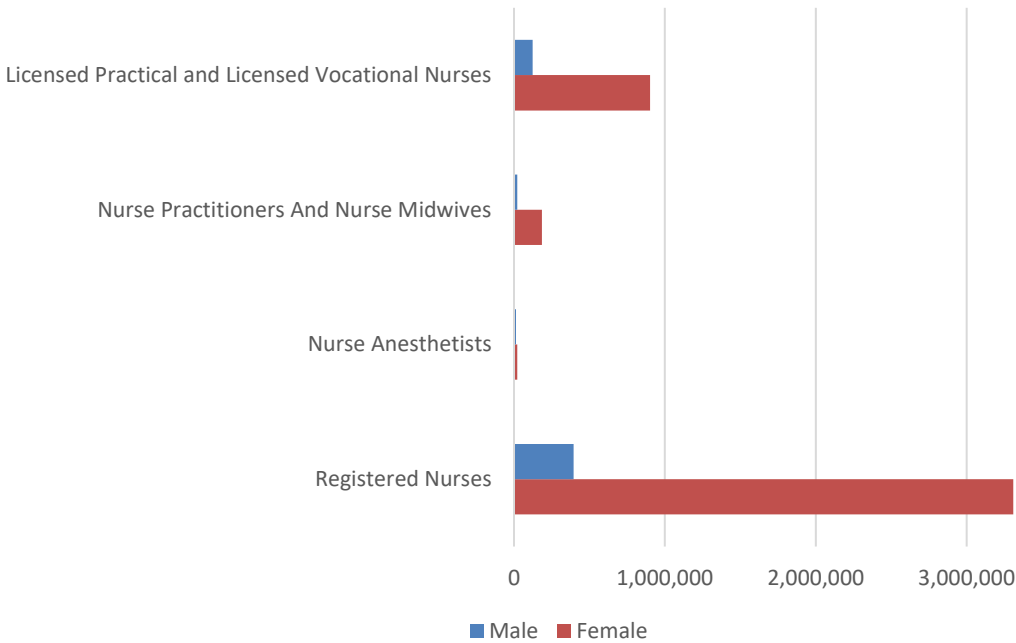
Source: 2017 ACS PUMS microdata files.

The data in Table 1 show that males compose only 11 percent of the total nursing population. Comparatively, females compose approximately 89 percent. The data show that RNs and LP and LVNs have the highest concentration of males and females.

Table 1: U.S. Nursing Labor Force by Nurse Type and Sex, 2017

Nurse Type	Male	Percent	Female	Percent	Total
Registered Nurses (RNs)	394,721	7.9%	3,308,279	66.6%	3,703,000
Nurse Anesthetists	13,651	0.3%	22,042	0.4%	35,693
Nurse Practitioners And Nurse Midwives	21,175	0.4%	184,581	3.7%	205,756
Licensed Practical and Licensed Vocational Nurses (LP and LVNs)	123,620	2.5%	902,718	18.2%	1,026,338
Total Nursing Population	**553,167**	**11.1%**	**4,417,620**	**88.9%**	**4,970,787**

Source: 2017 ACS PUMS microdata files.

Table 2 shows the race/ethnicity composition of the U.S. nursing labor force. Overall, individuals who belong to non-White race/ethnicity groups constitute a smaller percentage of nurses. Coupled with the data on Table 1, the nursing labor force is primarily White and predominantly female. For non-White race/ethnicity groups, LP and LVNs represent higher percentages for African Americans and Hispanics and Registered Nurses and Nurse Anesthetists are highest among Asians.

Table 2: Race/Ethnicity of the U.S. Nursing Labor Force, 2017

Race/Ethnicity	RNs	Nurse Anesthetists	Nurse Practitioners & Nurse Midwives	LP and LVNs
White	71.8%	82.0%	80.8%	56.7%
African American	10.2%	3.0%	8.1%	24.7%
Hispanic	6.8%	3.1%	4.4%	11.5%
Asian	8.9%	8.4%	5.5%	4.3%
Other	2.3%	3.5%	1.3%	2.7%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Source: 2017 ACS PUMS microdata files.

Implications of Population Change on the Nursing Labor Force

The current nursing shortage is predicted to affect the growing U.S. population (Cohen, 2009; Dinour, Kwan, Freudenburg, 2017). Cohen (2009) and Evans (2013) suggest that demographic and socioeconomic factors are currently working together and disproportionately impact older Americans. As discussed in previous sections, the growing population of older Americans is transforming the American landscape in significant ways. Older Americans will play a significant role in challenging existing healthcare delivery models in the coming decades. These changes affect the current supply of nurses. Amid these changes are growing numbers of dissatisfied nurses. Various surveys cite insufficient staffing as a leading cause for a rise in patient mortality rates, nurse burnout (also referred to as emotional exhaustion or compassion fatigue), and increased job dissatisfaction among nurses (Aiken, Clarke, & Sloane, 2002; Sheward et al, 2004; Halm et al., 2005; Nantsupawat et al., 2017).

The retirement of the first Baby Boomers in 2011 included retirement-eligible nurses. The numbers of retirement-eligible staff in the public health sector rose in 2014 (AACN, 2019). This poses significant challenges to the public health workforce in the coming years as more nurses become eligible for retirement and others decide to leave due to reasons associated with job dissatisfaction. According to analyses conducted by Bogaert et al. (2019), an increase in the turnover of public health staff is unprecedented. As workers either retire or leave nursing, the ability to replace those staff is compromised given the current shortage. This is exacerbated by the young median age of newly graduated nurses (George, Springer, & Haughton, 2009; Brown, Fuchs, & Ristow, 2019). Projections show that over a third of the nursing population will age and retire along with the rest of the Baby Boomer cohort (Beurhaus, Skinner, & Staiger, 2017).

Finally, the aging Baby Boomers present economic challenges to the healthcare industry. Healthcare costs will increase in the next decades due to the looming retirements of Baby Boomers (Beurhaus, Skinner, & Staiger, 2017). Additionally, Baby Boomers are expected to live longer than previous generations. The prevalence of chronic diseases such as hypertension, diabetes, and cognitive degeneration conditions such as Alzheimer disease are expected to increase with Baby Boomers (Goldman, Cassil, & Gaudette, 2015). The resulting projected long-term care needs of aging Baby

Boomers pose challenges to chronic-disease management (Rice & Fineman, 2004) and therefore to the availability of a skilled nursing workforce.

Addressing Gaps in Nursing Education

Funding in support of nursing initiatives that address the nursing shortage increased in the last 20 years. The focus of many of these programs is recruiting, training, and retaining highly qualified nurses and nurse faculty. Although researchers note there has been growth in the number of registered nurses in recent years, this growth occurred in nurses over 50 years of age and from foreign-born populations (Buerhaus, Staiger, & Auerbach, 2004). Attracting new nurses has proven difficult, especially with regard to recruiting nurses from rural and remote communities and from diverse cultural and underrepresented backgrounds (American Association of Colleges of Nursing, 2019). Recruitment of nurses from these populations is vital in addressing the nationwide shortage of nurses. The projected growth of the U.S. minority population over the next several decades emphasizes the need for increasing diversity in nursing (U.S. Department of Health and Human Services, 2014). The recruiting, hiring, and retaining of minority faculty in nursing programs is necessary (Salvucci & Lawless, 2016). Yet, the current faculty shortages affect nursing school applicants across the country. Results from a recent report on enrollment and graduations in U.S. nursing programs revealed that over 75,000 qualified applicants were turned away in the 2018-2019 academic year due to faculty shortages (AACN, 2018).

Nurse and faculty shortages place extra burdens on existing nurse populations. An insufficient supply of nurses and nurse support staff affects patient care (Coventry et al., 2015; Griffiths et al., 2018). The relationship between levels of nurse staffing and patient outcomes is well established. Insufficient nurse-to-patient ratios influence the well-being of nurses and patients. Combating fatigue, stress-related burnout, and staff turnover are among the most pressing issues in nursing today (Gander et al., 2019; Stimpfel, Fletcher, & Kovner, 2019; Ungard, Kroger-Jarvis, & Davis, 2019). Analyses by Rogers et al. (2004) provided one of the first nationwide studies on the relationship between extended work hours and the probability of errors or near errors while on duty. Using multivariate analysis of a nationwide sample of nurses, the authors state that long work hours affect patient care when a staff's regular shift exceeded 8.5 hours. This indicates higher likelihood of error with increased workday hours. Since then, studies have analyzed the role of fatigue (whether emotional or occupational), scheduling, and shift length on nurse safety and patient outcomes (Hassmiller & Cozine, 2006; Berent & Anderko, 2011; Fulcher & Mullin, 2011; Robert Wood Johnson Foundation, 2019).

To help increase productivity and patient outcomes, many clinical settings have turned to adopting information technology systems. Information and computer technology plays a large role in nursing today. Many hospitals have introduced online clinical information systems (CIS) to improve productivity, quality of care, and safety (Kirkley & Stein, 2004; Colligan, Potts, Finn, & Sinkin, 2015). Acceptance of CIS varies. Some nurses have cited a preference for paper documentation as a source of resistance (Kirkley & Stein, 2004). Other nurses cite a measurable increase in the mental effort required to adopt new CIS technologies while attending to regular duties (Pickering et al., 2015). Studies show that factors such as the age of the nurse and experience with traditional documentation methods present barriers to

adoption (Eley et al., 2009). Developing strategies to overcome these barriers is now essential as information technology's role in nursing will grow in the coming years. When considered together, the shortage in nursing faculty, the burdens placed on the current nurse supply, and the introduction of CIS present primary challenges to recruiting, training, and retaining high-quality nurses of all ages and backgrounds.

Demographic Analysis of the Texas Population

The population of Texas is also growing and becoming more diverse. These attributes provide for a large workforce and place the state in an advantageous position to compete in the global market. Texas is unique in that its demographic characteristics mirror those of the nation, while also differing in important ways. For example, the Texas population is younger than the national average. However, the Texas population is also aging. The percentage of the Texas population age 55 and older is increasing as the Baby Boom generation ages. In this section, a general overview of the current and future population of the state is provided. Discussion includes past population trends, current demographic characteristics, and future population projections.

The Changing Texas Population: 1960 to 2017

The population of Texas grew from 9,579,677 in 1960 to 28,304,596 in 2017. This is a gain of approximately 18.7 million individuals in 57 years. Figure 8 utilizes population pyramids to illustrate the age and gender distribution of the Texas population from 1960 to 2017. In these graphs, the horizontal bars represent the numbers of females (in red) and males (in blue) for the age categories on the left.

Figure 8: Texas Population Pyramids, 1960-2017
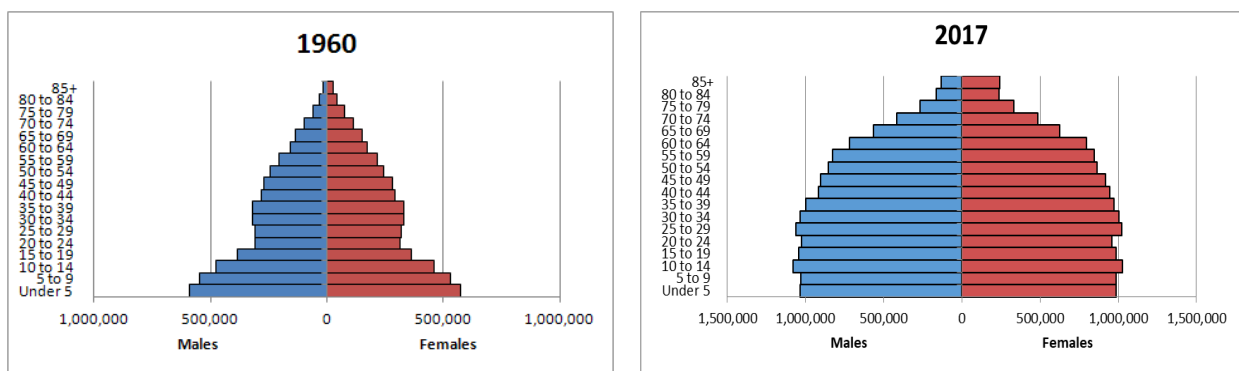
Figure notes: Data for 1960 are from the U.S. decennial census. Data for 2017 are from 2017 ACS PUMS microdata files.

The data in Figure 8 reveal four relevant trends: the growth of the state's population, the greater number of individuals in the older age categories, the progression of the Baby Boom cohort from the younger age categories into the older age categories, and the growth of younger Texans.

The number of individuals 55 or older increased from 1,497,120 in 1960 to 6,654,179 in 2017, an increase from 15.6 percent of the total population in 1960 to 23.5 percent in 2017. This increase in the

number of older individuals influences the median age of the population. Median age is a reliable method to summarize a population's age distribution across decades. The median age in Texas is traditionally younger than that of the U.S., as illustrated in Table 3. Additionally, the median age in Texas has risen steadily since 1970.

Table 3: Median Ages, 1960-2017

Year	U.S.	Texas
1960	29.5	27.0
1970	28.1	26.4
1980	30.0	28.2
1990	32.9	30.8
2000	35.3	32.3
2010	37.2	33.6
2017	38.1	34.7

Table Notes: Data for 1960-2010 are from the U.S. decennial census. Data for 2017 are from 2017 ACS PUMS microdata files.

The Texas Population in 2017

The current composition of the state's population is a snapshot of the ongoing demographic trends as evidenced by the population pyramids in Figure 4. In 2017, males accounted for 49.7 percent of the Texas population (14,054,001) and females accounted for 50.3 percent (14,250,595).

In 2017, the median age in Texas was 34.7 compared to 38.1 for the U.S. Individuals age 18 to 65 are considered working-age. According to 2017 ACS data, 26 percent of the Texas population was under 18 years old and over 12 percent of the Texas population was older than 65 in 2017.

Table 4: Population in Texas by Age Group, 2017

Age Group	Count	Percent
Under 5 years	2,012,438	7.1%
5 to 13 years	3,705,807	13.1%
14 to 17 years	1,642,983	5.8%
18 to 24 years	2,793,395	9.9%
25 to 44 years	7,959,499	28.1%
45 to 64 years	6,731,124	23.8%
65 years and over	3,459,350	12.2%
Total	**28,304,596**	**100.0%**

Source: 2017 ACS PUMS microdata files.

An ongoing trend not indicated by the population pyramids is the increase in the state's racial and ethnic diversity. In 1980, approximately 66 percent of the Texas population was White, 21 percent was Hispanic, and 12 percent was African American. By 2017, the Texas population had diversified further

with the proportion of Whites in the population decreasing and the proportion of Hispanics increasing. As illustrated in Figure 9, approximately 42 percent of the entire Texas population was White, 39 percent was Hispanic, 12 percent was African American, five percent was Asian, and two percent was Other.

Figure 9: Race/Ethnicity Composition of Texas, 2017

■ White ■ African American ■ Hispanic ■ Asian ■ Other
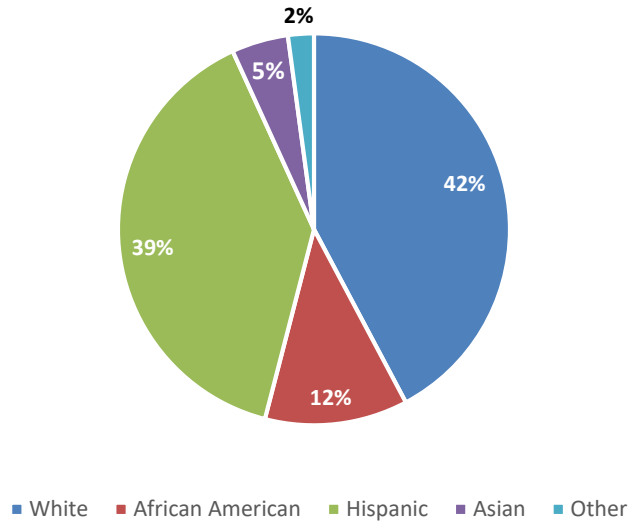
Source: 2017 ACS PUMS microdata files.

Differences in median age exist between the racial and ethnic groups. Whites are the oldest racial group in the state and Hispanics are the youngest. In 2017, the median age was 35.8 for Whites, 35.5 for Asians, 33.2 for African Americans, and 28.7 for Hispanics.

Education is a key aspect of a competitive workforce (Murdock, Cline, Zey, Jeanty, & Perez, 2014). Figure 10 illustrates the educational attainment of Texans 25 years of age and older in 2017. Approximately 54 percent of the Texas population had at least a high school diploma in 2017 and approximately 19 percent (5,377,972 individuals) had at least a bachelor's degree.

Figure 10: Educational Attainment of the Texas Population, 2017
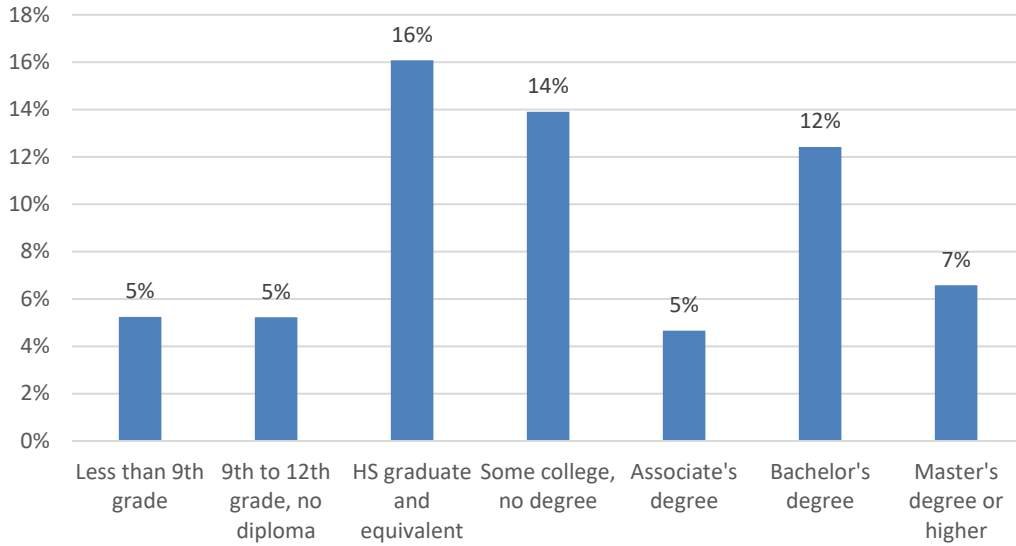
Source: 2017 ACS PUMS microdata files.

The Future Texas Population

The Texas population will continue to grow and diversify. Figure 11 illustrates the projected population pyramid for Texas in 2050 along with a comparison of 2017 data.

Figure 11: Texas Population Pyramid, 2017-2050
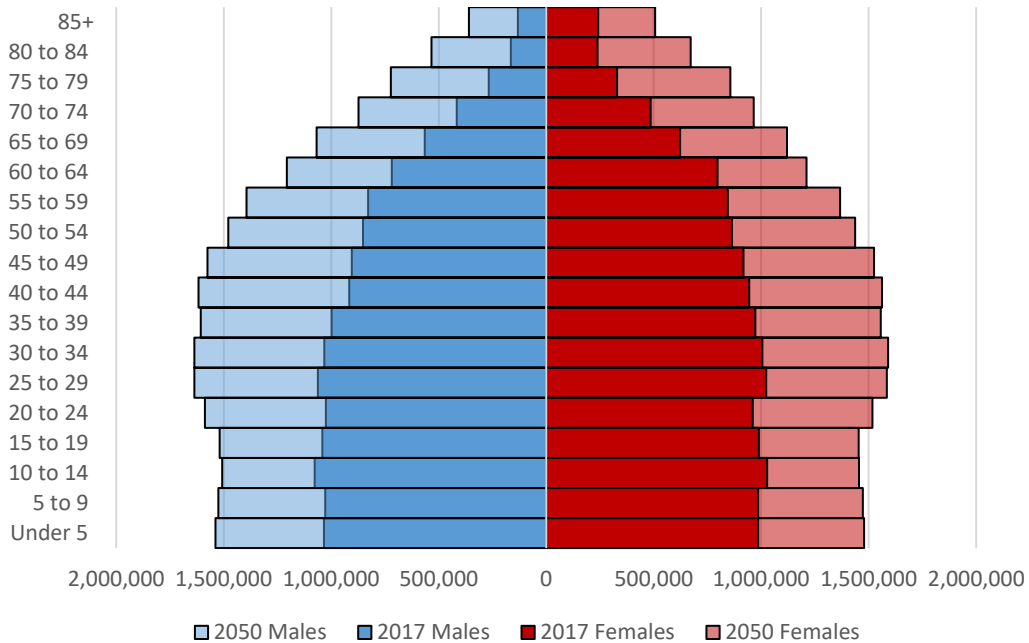
Source: 2018 Population Projections, Texas Demographic Center.

The projections in Table 5 show that the population of Texas will be 47,342,417 in 2050–an increase of approximately 68 percent from 2017. Approximately 60 percent, or 28,287,981 individuals, will be between 18 and 64 years of age. Additionally, 8,306,674 Texans will be 65 or older in 2050, or over 17.5 percent of the total population. By 2050, the population continues to age, mirroring national trends associated with aging Baby Boomers.

Table 5: Texas Population, 2010, and Projected Population, 2020-2050, by Select Characteristics

Population Characteristics	Census 2010	Population Projections, 2010-2015 Migration Scenario			
		2020	2030	2040	2050
Total Population	25,145,561	29,677,668	34,894,452	40,686,496	47,342,105
Male	12,472,280	14,740,035	17,341,921	20,244,206	23,615,080
Female	12,673,281	14,937,633	17,552,531	20,442,290	23,727,025
White	11,397,345	12,138,523	12,774,056	13,203,514	13,523,839
Black	2,886,825	3,557,892	4,322,983	5,141,963	6,030,795
Asian	948,426	1,525,540	2,414,778	3,772,186	5,782,879
Other	452,044	651,054	929,686	1,308,013	1,812,842
Hispanic	9,460,921	11,804,659	14,452,949	17,260,820	20,191,750
0-4 Years	1,928,473	2,115,105	2,414,601	2,675,179	3,017,096
5-17 Years	4,937,351	5,400,024	6,037,081	6,895,478	7,730,354
18-44 Years	9,644,824	11,285,365	13,114,665	14,924,024	17,094,607
45-64 Years	6,033,027	6,965,146	7,751,616	9,282,871	11,193,374
65-84 Years	2,296,707	3,492,480	4,962,366	5,865,629	6,811,385
85 Years Plus	305,179	419,548	614,123	1,043,315	1,495,289

Source: 2018 Population Projections, Texas Demographic Center.

For Texas, a clear relationship exists between age and race/ethnicity status. If current trends hold, Figure 12 demonstrates that by 2050, a larger number of Hispanics will occupy the younger age groups. The data in Figure 12 also show an increasing number of Whites in the older age groups.

Figure 12: Texas Population by Age Group and Race/Ethnicity, 2050
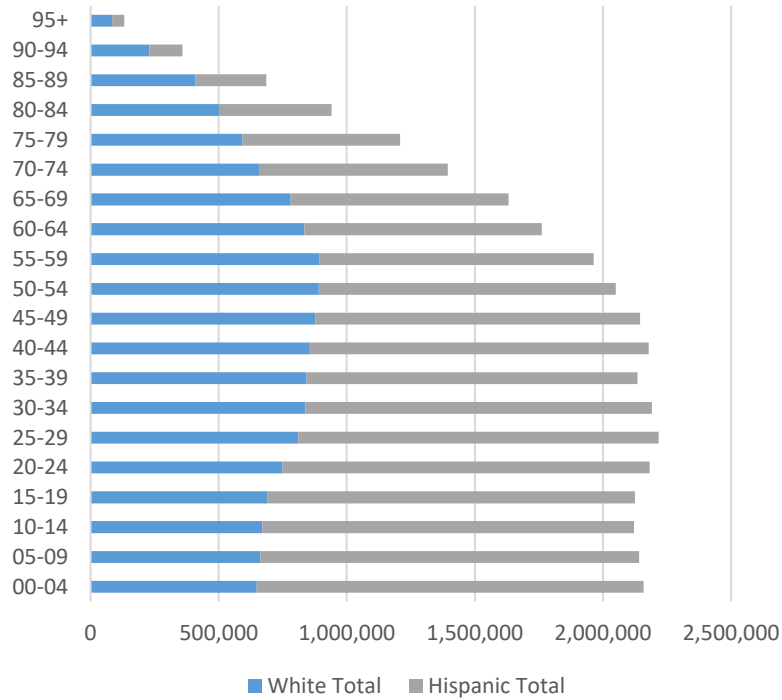
Source: 2018 Population Projections, Texas Demographic Center.

The 2050 Texas population will be more diverse. Projections show that approximately 29 percent of the 2050 Texas population will be White, 43 percent will be Hispanic, 13 percent will be African American, and 16 percent will belong to the Other category. Figure 13 illustrates the race and ethnicity of the Texas population from 2010 through 2050. The most noticeable trend is the increasing percentages of Hispanics relative to the other categories.

Figure 13: Race and Ethnicity of the Texas Population, 2010-2050
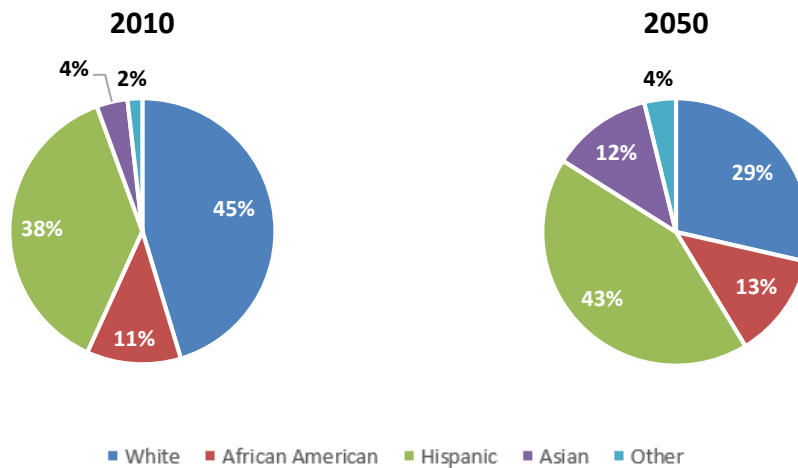
Source: 2018 Population Projections, Texas Demographic Center.

Demographic Analysis of the Texas Nursing Labor Force

In this section, a detailed demographic analysis of the nursing labor force in Texas is provided. The following discussion includes an overview of labor force participation rates, demographic characteristics, average salaries, and geographic distribution of the nursing labor force in Texas.

Labor Force Concepts

To remain consistent with accepted concepts and measures related to the labor force (such as the labor force participation and unemployment rates), all analyses in this section refer to only the civilian labor force. The civilian labor force is composed of all noninstitutionalized individuals 16 years old and older who are either employed or unemployed. The civilian labor force includes all civilian workers in the private sector, and in state and local government. This definition includes unemployed individuals. An unemployed person must have been available to work during the reference week the survey was taken, was actively looking for work during the last four weeks, and was available to accept a job (U.S. Census Bureau, 2019). This definition excludes those individuals residing in institutional group quarters facilities such as correctional institutions, juvenile facilities, skilled nursing facilities, and other long-term care living arrangements. In addition, individuals on active-duty in the armed forces are also excluded from this designation. For comparative analyses, the number and percentages of individuals not in the labor force are also provided.

Labor Force Participation of the Nursing Labor Force in Texas

Labor force participation for individuals in the nursing labor force varied significantly between nurse types. The total number of nurses employed in the Texas labor force was 357,691 in 2017. Approximately 72 percent (253,852 individuals) of Texas nursing labor force participants in the civilian non-institutionalized labor force were Registered Nurses and approximately 23 percent (82,117 individuals) were Licensed Practical or Licensed Vocational Nurses. Nearly five percent (17,177 individuals) of the Texas nursing labor force participants were Nurse Anesthetists, Nurse Practitioners, and Nurse Midwives. Additionally, over 50 percent of nurses that were unemployed in 2017 were RNs and approximately 49 percent were LP and LVNs. Table 6 also shows notably high numbers of RNs (approximately 68 percent) and LP and LVNs (30 percent) not in the labor force.

Table 6: Labor Force Participation Status of the Nursing Labor Force, 2017

Nurse Type	Employed	Percent	Unemployed	Percent	Not In the Labor Force	Percent	Total
RNs	253,852	71.9%	2,330	51.3%	31,390	67.9%	**287,572**
Nurse Anesthetists	3,812	1.1%	0	0.0%	57	0.1%	**3,869**
Nurse Practitioners and Nurse Midwives	13,365	3.8%	0	0.0%	896	1.9%	**14,261**
LP and LVNs	82,117	23.3%	2,215	48.7%	13,873	30.0%	**98,205**
Total	**353,146**	100.0%	**4,545**	100.0%	**46,216**	100.0%	**403,907**

Source: 2017 ACS PUMS microdata files.

Demographic Characteristics of the Nursing Labor Force in Texas

The age distribution of individuals participating in the nursing labor force in Texas was analyzed using data from the 2017 ACS PUMS microdata files. Figure 14 illustrates the age distribution of the Texas nursing labor force by gender. Similar to the national data, female participation in nursing outpaces that of males. The highest concentration of nurses occurs between the ages of 25 and 48 with steady, although declining, rates from ages 49 to 68. The median age for nurses in Texas is 41, which is slightly younger than the median age for nurses at the national level.

Figure 14: Age Distribution of the Texas Nursing Labor Force by Gender, 2017
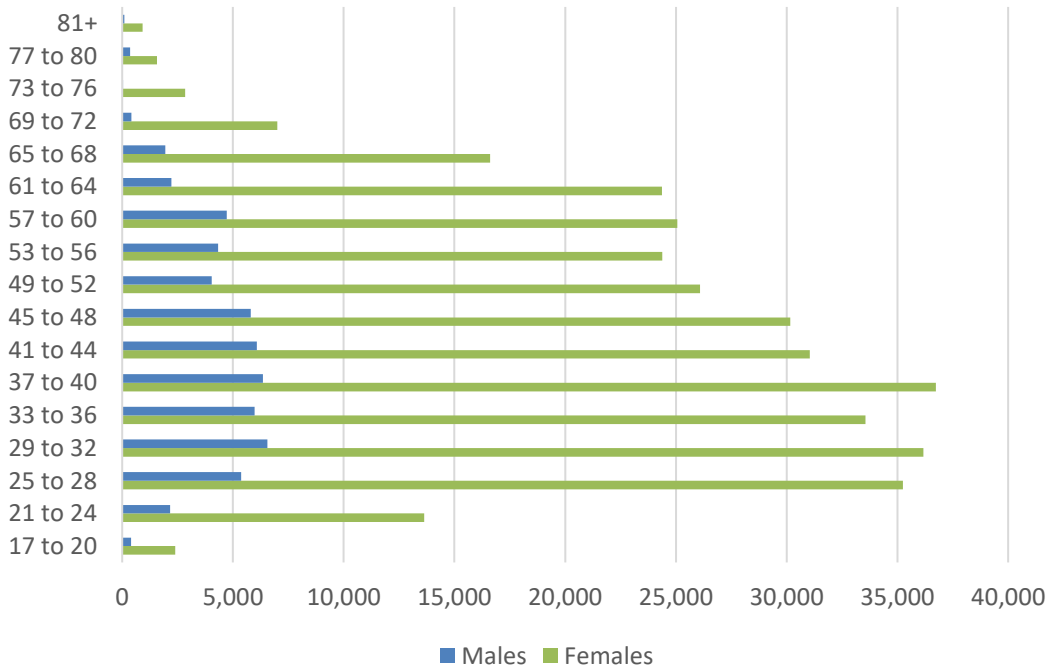
Source: 2017 ACS PUMS microdata files.

Figure 15 shows the age distribution of the nursing labor force in Texas by nurse type. Following the data outlined in Table 6, RNs constitute the largest representation among all age groups 17 and over. The second highest concentration belongs to LP and LVNs. The proportion of the nursing population that is between the ages of 25 and 48 comprise the largest concentration of nurses of all types. The highest concentration of RNs occurs between 37 and 40 years of age, which trends alongside the median age for all nurses in Texas.

Figure 15: Age Distribution of the Nursing Labor Force in Texas by Nurse Type, 2017
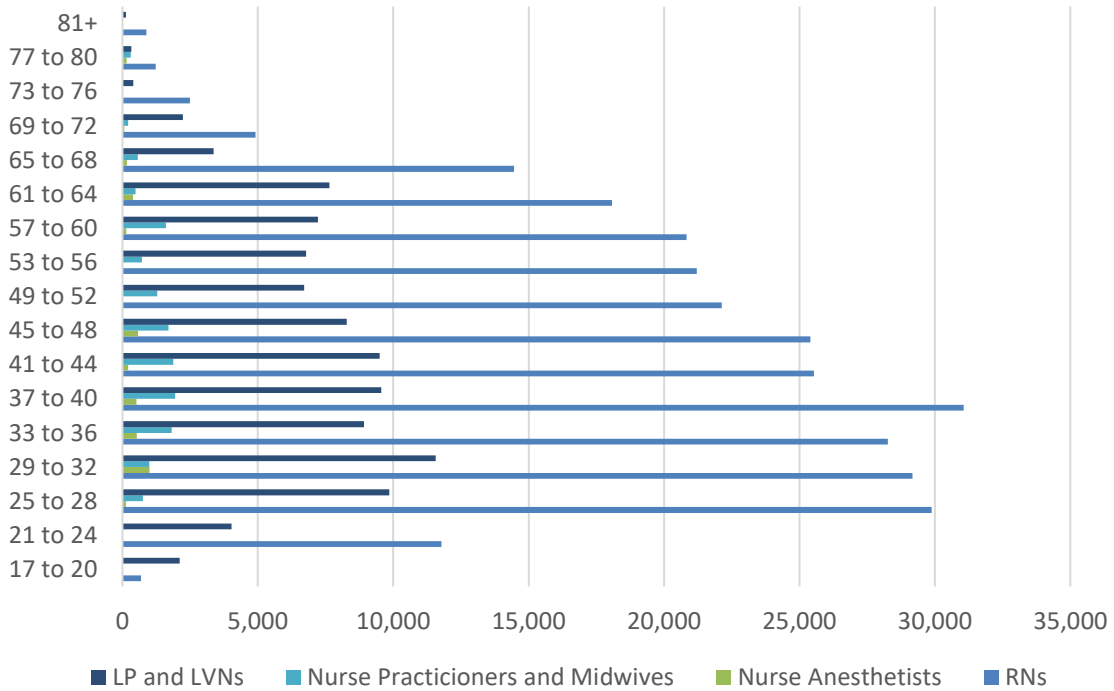
Source: 2017 ACS PUMS microdata files.

Figure 16 looks at the age distribution of RNs in Texas in more detail. While the overall population of RNs in Texas falls between 17 and 44 years of age (approximately 54 percent), nearly half of all RNs in Texas are 44 years of age and older (46 percent), and over a third of all RNs (approximately 29 percent) are age 55 and older.

Figure 16: Age Distribution of RNs in Texas, 2017
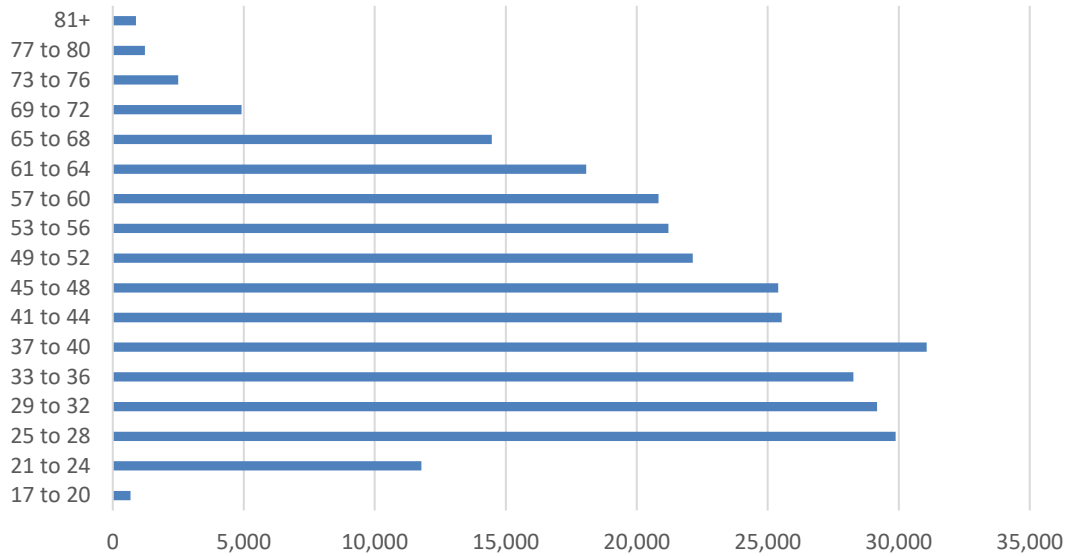
Source: 2017 ACS PUMS microdata files.

Similarly, Figure 17 examines the age distribution of LP and LVNs in Texas. A marked difference from RNs, nurses in this category trend younger between 25 and 44 years of age, with the highest concentrations of LP and LVNs situated between 25 and 32 years of age.

Figure 17: Age Distribution of LP and LVNs in Texas, 2017
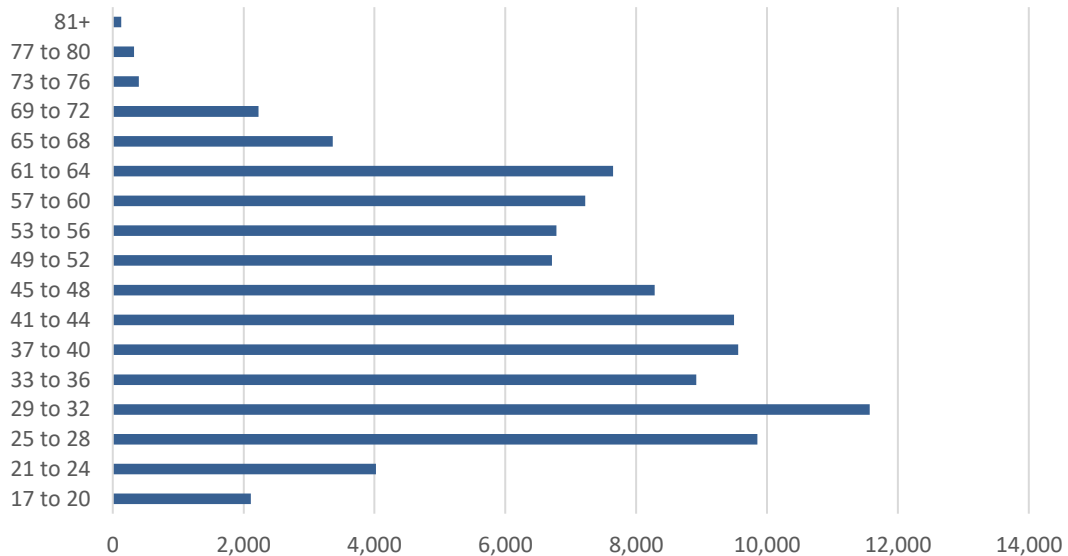
Source: 2017 ACS PUMS microdata files.

Figure 18 provides the race and ethnicity composition of the nursing labor force in Texas. The largest subgroup is the White subgroup at 51 percent. The second largest subgroup is the Hispanic subgroup (22 percent), followed by the African American subgroup (16 percent), and the Asian subgroup (eight percent). As noted previously, Texas is projected to become older with marked differences between the White and the Hispanic populations. Specifically, the median age in 2020 is projected to be 43.2 for the White population and 31.1 for the Hispanic population. Conversely, the median age in 2050 is projected to be 48.7 for the White population and 35.6 for the Hispanic population.

Figure 18: Race/Ethnicity of the Texas Nursing Labor Force, 2017

■ White ■ African American ■ Hispanic ■ Asian ■ Other
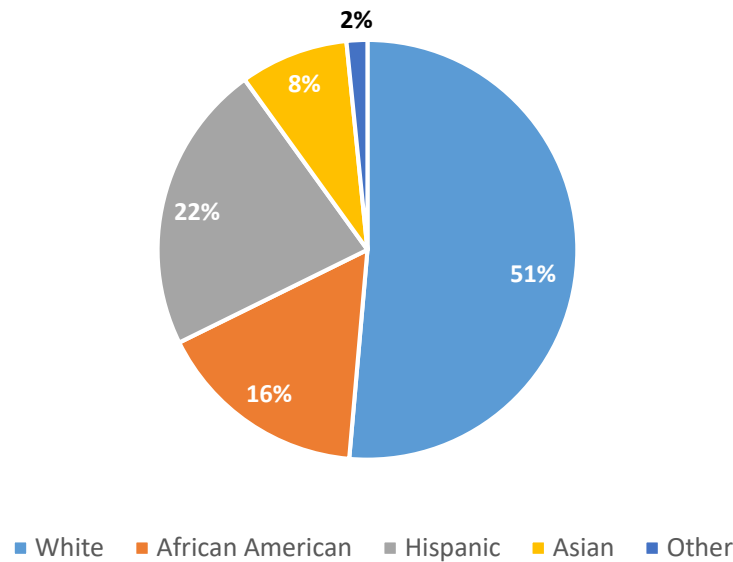
Source: 2017 ACS PUMS microdata files.

Figure 19 illustrates the educational attainment levels of nursing labor force participants in Texas by nurse type for 2017. Of the nursing labor force participants in Texas, over 90 percent of Nurse Practitioners and Midwives had a master's degree and higher. Approximately 50 percent of RNs had a bachelor's degree or higher. LP and LVNs had at least a high school diploma or equivalent, with the higher numbers having obtained some college, but no degree.

Figure 19: Educational Attainment of the Nursing Labor Force in Texas, 2017
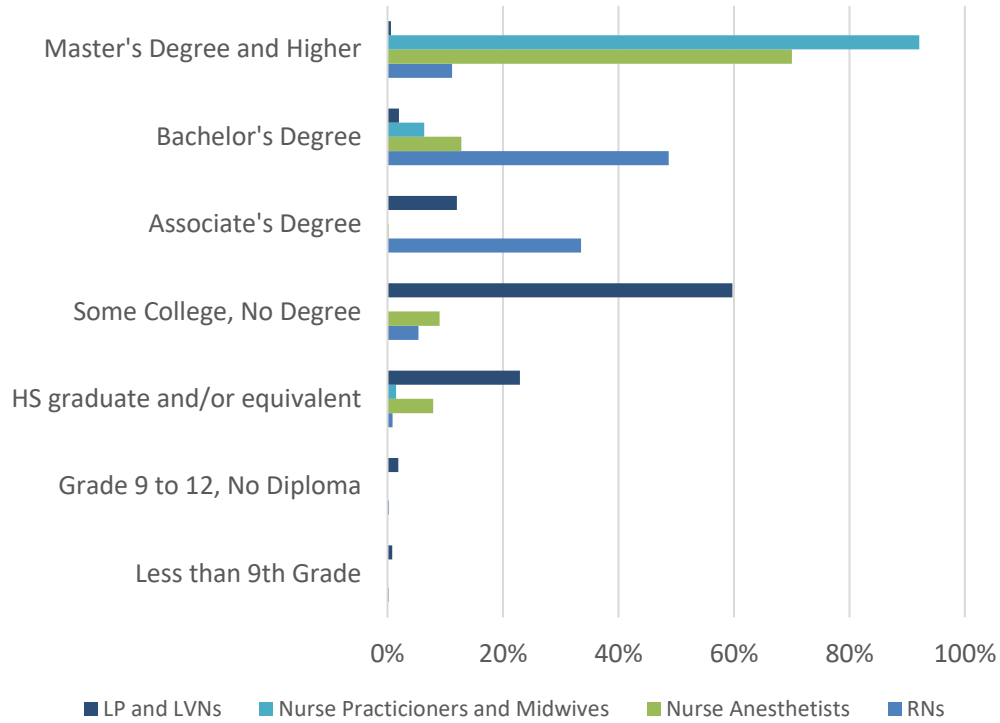
Source: 2017 ACS PUMS microdata files.

Average Salaries of Nurses in the Texas Workforce

In 2017, RNs earned an average salary of $57,021 (inflation adjusted for 2017). Average salary increases with higher levels of educational attainment. For example, average annual salaries for Nurse Anesthetists and Nurse Practitioners & Midwives reflect educational attainment of a bachelor's degree or higher.

Table 7: Average Yearly Salary for Nursing Labor Force by Nurse Type, 2017

Nurse Type	Average Annual Salary
RNs	$57,021
Nurse Anesthetists	$103,334
Nurse Practitioners & Midwives	$96,723
LP and LVNs	$33,235

Source: 2017 ACS PUMS microdata files.

Geographic Distribution of the Nursing Labor Force in Texas

This section illustrates the geographic distribution of the nursing labor force throughout Texas by calculating the estimated number of individuals over the age of 16 who are identified as members of the nursing labor force in each of the 28 LWDAs. A more detailed breakdown of the nursing labor force in Texas by LWDA can be found in Appendix B.

Estimates Methodology for LWDAs

The LWDA estimates were made using data from the 2017 one-year ACS and data allocation factors produced by the Missouri Census Data Center. The methodology for these estimates is described in detail in the Data and Methodology section of this report. Analysis by LWDA relies on county-level estimates to be produced. As previously stated, limitations exist with geography-based data due to the sample size of the ACS one-year survey, which were mitigated by applying data allocation factors from the source geography (PUMS) to the target geography (Texas counties). Once county data were obtained, they were aggregated to each corresponding LWDA to obtain the population totals. This data can be found in Appendix A. Then, totals for the Texas nursing labor force by nurse type were calculated for each LWDA by applying the SOCP occupation categories for nursing used throughout this report.

Summary of the Geographic Distribution of the Nursing Labor Force in Texas

Table 8 summarizes the total numbers of nursing labor force participants in each LWDA. These estimates indicate that the largest concentration of nurses of any type occurs in the areas along the I-35 corridor. However, the number of nurses is different for each LWDA and can vary by nurse type. Areas of high supply of nurses by type, however, do not indicate whether a shortage or surplus is present.

Table 8: Nursing Labor Force in Texas by LWDA, 2017

LWDA Name	Total Population	Registered Nurses	Nurse Anesthetists	Licensed Practical and Licensed Vocational Nurses	Nurse Practitioners and Midwives
Panhandle	435,273	3,870	35	2,429	43
South Plains	438,349	5,925	0	1,696	419
North Texas	227,998	2,689	0	816	37
North Central Texas	2,842,469	35,247	379	6,745	1,964
Tarrant County	2,052,945	19,564	895	5,223	580
Greater Dallas	2,617,835	20,730	267	5,221	484
Northeast Texas	282,647	4,537	0	2,252	22
East Texas	862,009	12,076	0	4,094	480
West Central Texas	325,835	2,810	0	1,355	173
Borderplex	868,007	8,135	0	3,106	147
Permian Basin	472,595	4,606	29	2,094	600
Concho Valley	161,833	1,412	22	969	0
Heart of Texas	364,291	3,389	0	1,328	310
Capital Area	1,227,473	11,061	373	3,433	520
Rural Capital	1,008,357	11,396	168	1,638	103
Brazos Valley	353,004	2,856	41	1,345	167
Deep East Texas	383,791	4,434	0	2,532	0
Southeast Texas	398,763	2,695	0	2,380	627
Golden Crescent	204,198	2,708	0	597	38
Alamo	2,588,488	24,922	123	10,792	1,566
South Texas	294,472	1,610	0	867	0
Coastal Bend	591,790	5,072	81	4,682	224
Lower Rio Grande Valley	945,617	6,939	49	3,770	162
Cameron County	423,421	4,673	114	2,598	69
Texoma	205,401	2,262	0	719	24
Central Texas	491,209	6,641	251	3,172	246
Middle Rio Grande	170,776	1,298	0	583	0
Gulf Coast	7,064,920	74,360	1,042	22,165	5,255
Total	**28,303,766**	**287,918**	**3,869**	**98,598**	**14,261**

Source: 2017 ACS PUMS microdata files.

Conclusion

This report has provided a demographic overview of the nursing labor force in Texas. National data illustrates how an aging population is changing the landscape of nursing and how demographic and socioeconomic changes affect the current nursing shortage. In addition, this report examined challenges in recruiting, training, and retaining a high-quality nursing labor force. Demographic trends highlighted in this report are expected to continue into the future.

Analysis of the Texas population highlights the growth of the state's population, particularly the increase in the state's Hispanic population. Additionally, the aging of the Baby Boom cohort presents immediate challenges to nursing. Over one-third of RNs in Texas are age 55 and older. In the current decade, large numbers of Baby Boomers began retiring. This includes large numbers of nurses. The retirement of nurses is expected to increase by 2030. This means that their accumulated nursing experience and knowledge will retire with them.

The population of Texas will continue to age, diversify, and grow. The current median age for nurses in Texas is 41, and the majority of the nursing labor force in Texas is White and female. The future Texas population the nursing labor force will serve varies in age and is multiracial. Population change presents challenges and opportunities for nurses, nurse educators, and employers. Employers must understand the implications for nurses associated with unprecedented demographic changes.

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Appendix A: 2017 Texas Nursing Labor Force by Occupation, by County

This appendix illustrates the numbers of nurses by each county in Texas. In the following tables, the total population of each county by nurse type is illustrated. The estimated numbers of nurses are from the 2017 one-year ACS PUMS microdata files. For more information on how county estimates were calculated, see the explanation in the Data and Methodology section of this report.

Table 9: Texas Nursing Labor Force by Nurse Type, by County

County	Total Population	Registered Nurses	Nurse Anesthetists	Licensed Practical and Licensed Vocational Nurses	Nurse Practitioners and Nurse Midwives
Anderson	59,289	567	0	358	0
Andrews	15,988	62	0	30	1
Angelina	88,004	1,403	0	502	0
Aransas	22,620	171	0	2	6
Archer	9,432	141	0	21	4
Armstrong	1,808	10	0	5	0
Atascosa	49,139	63	43	101	0
Austin	30,208	149	0	91	29
Bailey	7,202	50	0	32	0
Bandera	22,387	29	20	46	0
Bastrop	82,499	683	0	136	0
Baylor	3,930	59	0	9	2
Bee	31,072	235	0	3	9
Bell	347,497	6,084	232	2,675	236
Bexar	1,958,296	19,560	0	7,622	856
Blanco	11,995	105	0	157	13
Borden	612	2	0	5	0
Bosque	17,938	148	0	94	4
Bowie	93,480	2,039	0	1,215	0
Brazoria	362,929	5,365	0	732	1,436
Brazos	223,018	2,016	41	523	117
Brewster	10,022	39	0	19	1
Briscoe	1,627	9	0	4	0
Brooks	7,327	30	0	81	0
Brown	36,938	132	0	175	0
Burleson	17,945	116	0	114	7
Burnet	43,929	145	7	124	0
Caldwell	42,272	350	0	70	0
Calhoun	22,474	363	0	45	0
Callahan	13,070	47	0	62	0
Cameron	423,421	4,673	114	2,598	69
Camp	13,400	185	0	99	0
Carson	5,966	33	0	15	0
Cass	30,828	673	0	401	0
Castro	7,774	43	0	19	0
Chambers	39,620	129	0	242	65

County	Total Population	Registered Nurses	Nurse Anesthetists	Licensed Practical and Licensed Vocational Nurses	Nurse Practitioners and Nurse Midwives
Cherokee	50,845	842	0	187	0
Childress	6,870	38	0	17	0
Clay	11,161	167	0	24	4
Cochran	3,201	22	0	14	0
Coke	3,266	12	2	25	0
Coleman	8,524	31	0	40	0
Collin	969,936	11,179	236	1,365	568
Collingsworth	2,893	16	0	7	0
Colorado	22,068	109	0	66	21
Comal	141,024	1,340	0	494	342
Comanche	13,449	48	0	64	0
Concho	4,083	15	2	32	0
Cooke	40,834	450	0	143	5
Coryell	77,510	257	13	219	0
Cottle	1,572	23	0	3	1
Crane	4,772	19	0	9	0
Crockett	3,675	13	2	28	0
Crosby	6,135	43	0	28	0
Culberson	2,625	10	0	5	0
Dallam	6,509	36	0	16	0
Dallas	2,617,835	20,730	267	5,221	484
Dawson	13,781	50	7	107	0
Deaf Smith	18,803	103	0	47	0
Delta	5,230	60	0	21	1
Denton	836,550	10,907	135	1,733	393
DeWitt	22,634	219	0	93	10
Dickens	2,401	17	0	11	0
Dimmit	10,236	78	0	35	0
Donley	3,616	20	0	9	0
Duval	12,060	23	0	16	0
Eastland	17,995	64	0	85	0
Ector	157,015	1,478	0	806	96
Edwards	2,047	16	0	7	0
El Paso	840,566	8,028	0	3,054	145
Ellis	173,859	2,010	0	655	170
Erath	41,586	216	2	137	26
Falls	17,617	145	0	92	4

County	Total Population	Registered Nurses	Nurse Anesthetists	Licensed Practical and Licensed Vocational Nurses	Nurse Practitioners and Nurse Midwives
Fannin	36,114	398	0	126	4
Fayette	27,272	226	0	45	0
Fisher	3,789	14	0	18	0
Floyd	6,535	45	0	29	0
Foard	1,415	21	0	3	1
Fort Bend	764,816	11,616	0	2,140	730
Franklin	10,619	122	0	43	1
Freestone	19,539	161	0	102	5
Frio	18,867	24	16	39	0
Gaines	18,970	74	0	36	1
Galveston	335,148	5,476	90	1,406	146
Garza	6,535	45	0	29	0
Gillespie	28,303	247	0	370	30
Glasscock	1,225	4	1	9	0
Goliad	8,117	78	0	33	3
Gonzales	22,322	216	0	91	9
Gray	21,877	120	0	55	0
Grayson	128,453	1,415	0	449	15
Gregg	123,000	1,005	0	521	380
Grimes	27,776	179	0	176	11
Guadalupe	159,590	2,139	0	515	210
Hale	36,409	253	0	164	0
Hall	3,254	18	0	8	0
Hamilton	8,713	29	1	25	0
Hansford	5,424	30	0	14	0
Hardeman	4,402	66	0	10	2
Hardin	56,924	386	0	374	151
Harris	4,654,217	44,467	813	14,576	2,568
Harrison	66,180	921	0	471	0
Hartley	5,966	33	0	15	0
Haskell	5,683	20	0	27	0
Hays	214,242	1,691	0	337	11
Hemphill	3,616	20	0	9	0
Henderson	79,561	760	0	480	0
Hidalgo	860,572	6,724	49	3,439	162
Hill	34,594	284	0	181	8
Hockley	23,073	160	0	104	0
Hood	56,232	292	3	186	36

County	Total Population	Registered Nurses	Nurse Anesthetists	Licensed Practical and Licensed Vocational Nurses	Nurse Practitioners and Nurse Midwives
Hopkins	35,028	404	0	141	5
Houston	24,800	178	0	188	0
Howard	34,707	126	17	269	0
Hudspeth	3,818	15	0	7	0
Hunt	100,157	1,495	0	452	183
Hutchinson	21,515	118	0	54	0
Irion	1,633	6	1	13	0
Jack	9,432	141	0	21	4
Jackson	15,922	154	0	65	7
Jasper	35,148	354	0	239	0
Jeff Davis	2,506	10	0	5	0
Jefferson	256,453	1,731	0	1,444	249
Jim Hogg	5,443	11	0	7	0
Jim Wells	41,662	173	0	459	0
Johnson	167,585	2,342	0	470	0
Jones	19,511	70	0	92	0
Karnes	16,702	161	0	68	7
Kaufman	123,016	1,971	0	140	336
Kendall	38,007	332	0	497	40
Kenedy	419	2	0	5	0
Kent	758	3	0	4	0
Kerr	56,472	493	0	739	60
Kimble	4,594	17	2	36	0
King	267	2	0	1	0
Kinney	3,753	29	0	13	0
Kleberg	32,660	136	0	360	0
Knox	3,599	13	0	17	0
La Salle	6,995	53	0	24	0
Lamar	49,610	572	0	199	7
Lamb	14,004	97	0	63	0
Lampasas	20,149	67	3	57	0
Lavaca	21,698	210	0	89	9
Lee	18,409	152	0	30	0
Leon	17,477	113	0	111	7
Liberty	85,364	277	0	520	139
Limestone	23,063	190	0	121	6
Lipscomb	3,254	18	0	8	0
Live Oak	11,847	23	0	15	0

County	Total Population	Registered Nurses	Nurse Anesthetists	Licensed Practical and Licensed Vocational Nurses	Nurse Practitioners and Nurse Midwives
Llano	19,786	66	3	56	0
Loving	119	0	0	0	0
Lubbock	304,848	4,998	0	1,095	419
Lynn	6,002	42	0	27	0
Madison	14,200	92	0	90	5
Marion	10,603	148	0	76	0
Martin	4,798	17	2	37	0
Mason	3,981	15	2	31	0
Matagorda	38,890	192	0	117	37
Maverick	55,447	422	0	189	0
McCulloch	8,268	30	4	64	0
McLennan	251,540	2,462	0	738	283
McMullen	747	1	0	1	0
Medina	50,406	64	44	103	0
Menard	2,246	8	1	17	0
Midland	165,101	2,556	0	662	497
Milam	25,904	167	0	164	10
Mills	5,083	17	1	14	0
Mitchell	9,092	33	0	43	0
Montague	20,594	308	0	45	8
Montgomery	571,079	5,626	139	1,467	0
Moore	21,334	117	0	53	0
Morris	12,838	148	0	52	2
Motley	1,200	8	0	5	0
Nacogdoches	65,313	1,042	0	373	0
Navarro	47,086	387	0	246	11
Newton	14,174	143	0	96	0
Nolan	14,775	53	0	70	0
Nueces	361,653	3,744	81	3,735	190
Ochiltree	9,944	55	0	25	0
Oldham	1,989	11	0	5	0
Orange	85,386	578	0	562	227
Palo Pinto	30,948	161	2	102	20
Panola	23,822	395	0	88	0
Parker	133,355	1,956	0	681	25
Parmer	9,944	55	0	25	0

County	Total Population	Registered Nurses	Nurse Anesthetists	Licensed Practical and Licensed Vocational Nurses	Nurse Practitioners and Nurse Midwives
Pecos	16,823	66	0	32	1
Polk	47,548	341	0	360	0
Potter	120,432	913	0	707	0
Presidio	8,471	33	0	16	1
Rains	11,869	164	0	88	0
Randall	134,222	1,963	35	1,270	43
Reagan	3,369	12	2	26	0
Real	3,412	26	0	12	0
Red River	12,838	148	0	52	2
Reeves	14,914	58	0	28	1
Refugio	7,209	55	0	1	2
Roberts	904	5	0	2	0
Robertson	17,321	112	0	110	7
Rockwall	90,982	1,359	0	411	166
Runnels	10,229	37	0	48	0
Rusk	53,407	885	0	197	0
Sabine	10,717	108	0	73	0
San Augustine	8,758	88	0	60	0
San Jacinto	27,597	198	0	209	0
San Patricio	63,262	478	0	5	17
San Saba	6,353	21	1	18	0
Schleicher	3,471	13	2	27	0
Scurry	16,291	58	0	77	0
Shackelford	3,220	12	0	15	0
Shelby	25,007	252	0	170	0
Sherman	2,893	16	0	7	0
Smith	228,067	4,242	0	490	100
Somervell	9,395	49	1	31	6
Starr	62,435	121	0	81	0
Stephens	9,282	33	0	44	0
Sterling	1,123	4	1	9	0
Stonewall	1,515	5	0	7	0
Sutton	4,083	15	2	32	0
Swisher	7,594	42	0	19	0
Tarrant	2,052,945	19,564	895	5,223	580
Taylor	136,598	2,133	0	460	173
Terrell	1,074	4	0	2	0

County	Total Population	Registered Nurses	Nurse Anesthetists	Licensed Practical and Licensed Vocational Nurses	Nurse Practitioners and Nurse Midwives
Terry	12,670	88	0	57	0
Throckmorton	1,515	5	0	7	0
Titus	32,175	371	0	129	4
Tom Green	118,042	1,252	0	630	0
Travis	1,227,473	11,061	373	3,433	520
Trinity	15,290	110	0	116	0
Tyler	21,434	216	0	146	0
Upshur	39,615	551	0	282	0
Upton	3,369	12	2	26	0
Uvalde	26,956	205	0	92	0
Val Verde	49,987	380	0	171	0
Van Zandt	56,919	785	0	421	0
Victoria	91,031	1,469	0	181	0
Walker	71,043	510	0	538	0
Waller	45,764	226	0	138	43
Ward	11,573	45	0	22	1
Washington	35,266	228	0	223	14
Webb	274,728	1,572	0	841	0
Wharton	43,774	217	0	132	41
Wheeler	5,243	29	0	13	0
Wichita	132,575	1,264	0	607	0
Wilbarger	14,148	211	0	31	5
Willacy	22,610	94	0	249	0
Williamson	547,953	7,977	157	683	79
Wilson	48,546	469	0	198	21
Winkler	7,755	30	0	15	1
Wise	61,781	923	0	135	24
Wood	45,433	627	0	336	0
Yoakum	7,869	55	0	35	0
Young	19,336	289	0	42	8
Zapata	14,301	28	0	19	0
Zavala	11,942	91	0	41	0

Appendix B: Estimated Population of the Texas Nursing Labor Force by County in Each LWDA

The estimated numbers of the nursing labor force are from the 2017 ACS PUMS microdata files. For more information on how county estimates were calculated, see the explanation in the Data and Methodology section of this report.

Table 10: LWDA 1 Panhandle–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Armstrong	1,808	10	0	5	0
Briscoe	1,627	9	0	4	0
Carson	5,966	33	0	15	0
Castro	7,774	43	0	19	0
Childress	6,870	38	0	17	0
Collingsworth	2,893	16	0	7	0
Dallam	6,509	36	0	16	0
Deaf Smith	18,803	103	0	47	0
Donley	3,616	20	0	9	0
Gray	21,877	120	0	55	0
Hall	3,254	18	0	8	0
Hansford	5,424	30	0	14	0
Hartley	5,966	33	0	15	0
Hemphill	3,616	20	0	9	0
Hutchinson	21,515	118	0	54	0
Lipscomb	3,254	18	0	8	0
Moore	21,334	117	0	53	0
Ochiltree	9,944	55	0	25	0
Oldham	1,989	11	0	5	0
Parmer	9,944	55	0	25	0
Potter	120,432	913	0	707	0
Randall	134,222	1,963	35	1,270	43
Roberts	904	5	0	2	0
Sherman	2,893	16	0	7	0
Swisher	7,594	42	0	19	0
Wheeler	5,243	29	0	13	0
Panhandle Total	435,273	3,870	35	2,429	43

Table 11: LWDA 2 South Plains–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Bailey	7,202	50	0	32	0
Cochran	3,201	22	0	14	0
Crosby	6,135	43	0	28	0
Dickens	2,401	17	0	11	0
Floyd	6,535	45	0	29	0
Garza	6,535	45	0	29	0
Hale	36,409	253	0	164	0
Hockley	23,073	160	0	104	0
King	267	2	0	1	0
Lamb	14,004	97	0	63	0
Lubbock	304,848	4,998	0	1,095	419
Lynn	6,002	42	0	27	0
Motley	1,200	8	0	5	0
Terry	12,670	88	0	57	0
Yoakum	7,869	55	0	35	0
South Plains Total	438,349	5,925	0	1,696	419

Table 12: LWDA 3 North Texas–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Archer	9,432	141	0	21	4
Baylor	3,930	59	0	9	2
Clay	11,161	167	0	24	4
Cottle	1,572	23	0	3	1
Foard	1,415	21	0	3	1
Hardeman	4,402	66	0	10	2
Jack	9,432	141	0	21	4
Montague	20,594	308	0	45	8
Wichita	132,575	1,264	0	607	0
Wilbarger	14,148	211	0	31	5
Young	19,336	289	0	42	8
North Texas Total	227,998	2,689	0	816	37

Table 13: LWDA 4 North Central–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Collin	969,936	11,179	236	1,365	568
Denton	836,550	10,907	135	1,733	393
Ellis	173,859	2,010	0	655	170
Erath	41,586	216	2	137	26
Hood	56,232	292	3	186	36
Hunt	100,157	1,495	0	452	183
Johnson	167,585	2,342	0	470	0
Kaufman	123,016	1,971	0	140	336
Navarro	47,086	387	0	246	11
Palo Pinto	30,948	161	2	102	20
Parker	133,355	1,956	0	681	25
Rockwall	90,982	1,359	0	411	166
Somervell	9,395	49	1	31	6
Wise	61,781	923	0	135	24
North Central Total	2,842,469	35,247	379	6,745	1,964

Table 14: LWDA 5 Tarrant County–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Tarrant	2,052,945	19,564	895	5,223	580
Tarrant County Total	2,052,945	19,564	895	5,223	580

Table 15: LWDA 6 Greater Dallas–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Dallas	2,617,835	20,730	267	5,221	484
Greater Dallas Total	2,617,835	20,730	267	5,221	484

Table 16: LWDA 7 Northeast–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Bowie	93,480	2,039	0	1,215	0
Cass	30,828	673	0	401	0
Delta	5,230	60	0	21	1
Franklin	10,619	122	0	43	1
Hopkins	35,028	404	0	141	5
Lamar	49,610	572	0	199	7
Morris	12,838	148	0	52	2
Red River	12,838	148	0	52	2
Titus	32,175	371	0	129	4
Northeast Total	282,647	4,537	0	2,252	22

Table 17: LWDA 8 East Texas–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Anderson	59,289	567	0	358	0
Camp	13,400	185	0	99	0
Cherokee	50,845	842	0	187	0
Gregg	123,000	1,005	0	521	380
Harrison	66,180	921	0	471	0
Henderson	79,561	760	0	480	0
Marion	10,603	148	0	76	0
Panola	23,822	395	0	88	0
Rains	11,869	164	0	88	0
Rusk	53,407	885	0	197	0
Smith	228,067	4,242	0	490	100
Upshur	39,615	551	0	282	0
Van Zandt	56,919	785	0	421	0
Wood	45,433	627	0	336	0
East Texas Total	862,009	12,076	0	4,094	480

Table 18: LWDA 9 West Central–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Brown	36,938	132	0	175	0
Callahan	13,070	47	0	62	0
Coleman	8,524	31	0	40	0
Comanche	13,449	48	0	64	0
Eastland	17,995	64	0	85	0
Fisher	3,789	14	0	18	0
Haskell	5,683	20	0	27	0
Jones	19,511	70	0	92	0
Kent	758	3	0	4	0
Knox	3,599	13	0	17	0
Mitchell	9,092	33	0	43	0
Nolan	14,775	53	0	70	0
Runnels	10,229	37	0	48	0
Scurry	16,291	58	0	77	0
Shackelford	3,220	12	0	15	0
Stephens	9,282	33	0	44	0
Stonewall	1,515	5	0	7	0
Taylor	136,598	2,133	0	460	173
Throckmorton	1,515	5	0	7	0
West Central Total	325,835	2,810	0	1,355	173

Table 19: LWDA 10 Borderplex–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Brewster	10,022	39	0	19	1
Culberson	2,625	10	0	5	0
El Paso	840,566	8,028	0	3,054	145
Hudspeth	3,818	15	0	7	0
Jeff Davis	2,506	10	0	5	0
Presidio	8,471	33	0	16	1
Borderplex Total	868,007	8,135	0	3,106	147

Table 20: LWDA 11 Permian Basin–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Andrews	15,988	62	0	30	1
Borden	612	2	0	5	0
Crane	4,772	19	0	9	0
Dawson	13,781	50	7	107	0
Ector	157,015	1,478	0	806	96
Gaines	18,970	74	0	36	1
Glasscock	1,225	4	1	9	0
Howard	34,707	126	17	269	0
Loving	119	0	0	0	0
Martin	4,798	17	2	37	0
Midland	165,101	2,556	0	662	497
Pecos	16,823	66	0	32	1
Reeves	14,914	58	0	28	1
Terrell	1,074	4	0	2	0
Upton	3,369	12	2	26	0
Ward	11,573	45	0	22	1
Winkler	7,755	30	0	15	1
Permian Basin Total	472,595	4,606	29	2,094	600

Table 21: LWDA 12 Concho Valley–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Coke	3,266	12	2	25	0
Concho	4,083	15	2	32	0
Crockett	3,675	13	2	28	0
Irion	1,633	6	1	13	0
Kimble	4,594	17	2	36	0
Mason	3,981	15	2	31	0
McCulloch	8,268	30	4	64	0
Menard	2,246	8	1	17	0
Reagan	3,369	12	2	26	0
Schleicher	3,471	13	2	27	0
Sterling	1,123	4	1	9	0
Sutton	4,083	15	2	32	0
Tom Green	118,042	1,252	0	630	0
Concho Valley Total	161,833	1,412	22	969	0

Table 22: LWDA 13 Heart of Texas–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Bosque	17,938	148	0	94	4
Falls	17,617	145	0	92	4
Freestone	19,539	161	0	102	5
Hill	34,594	284	0	181	8
Limestone	23,063	190	0	121	6
McLennan	251,540	2,462	0	738	283
Heart of Texas Total	364,291	3,389	0	1,328	310

Table 23: LWDA 14 Capital Area–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Travis	1,227,473	11,061	373	3,433	520
Capital Area Total	1,227,473	11,061	373	3,433	520

Table 24: LWDA 15 Rural Capital–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Bastrop	82,499	683	0	136	0
Blanco	11,995	105	0	157	13
Burnet	43,929	145	7	124	0
Caldwell	42,272	350	0	70	0
Fayette	27,272	226	0	45	0
Hays	214,242	1,691	0	337	11
Lee	18,409	152	0	30	0
Llano	19,786	66	3	56	0
Williamson	547,953	7,977	157	683	79
Rural Capital Total	1,008,357	11,396	168	1,638	103

Table 25: LWDA 16 Brazos Valley–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Brazos	223,018	2,016	41	523	117
Burleson	17,945	116	0	114	7
Grimes	27,776	179	0	176	11
Leon	17,477	113	0	111	7
Madison	14,200	92	0	90	5
Robertson	17,321	112	0	110	7
Washington	35,266	228	0	223	14
Brazos Valley Total	353,004	2,856	41	1,345	167

Table 26: LWDA 17 Deep East Texas–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Angelina	88,004	1,403	0	502	0
Houston	24,800	178	0	188	0
Jasper	35,148	354	0	239	0
Nacogdoches	65,313	1,042	0	373	0
Newton	14,174	143	0	96	0
Polk	47,548	341	0	360	0
Sabine	10,717	108	0	73	0
San Augustine	8,758	88	0	60	0
San Jacinto	27,597	198	0	209	0
Shelby	25,007	252	0	170	0
Trinity	15,290	110	0	116	0
Tyler	21,434	216	0	146	0
Deep East Texas Total	383,791	4,434	0	2,532	0

Table 27: LWDA 18 Southeast Texas–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Hardin	56,924	386	0	374	151
Jefferson	256,453	1,731	0	1,444	249
Orange	85,386	578	0	562	227
Southeast Texas Total	398,763	2,695	0	2,380	627

Table 28: LWDA 19 Golden Crescent–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Calhoun	22,474	363	0	45	0
DeWitt	22,634	219	0	93	10
Goliad	8,117	78	0	33	3
Gonzales	22,322	216	0	91	9
Jackson	15,922	154	0	65	7
Lavaca	21,698	210	0	89	9
Victoria	91,031	1,469	0	181	0
Golden Crescent Total	204,198	2,708	0	597	38

Table 29: LWDA 20 Alamo–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Atascosa	49,139	63	43	101	0
Bandera	22,387	29	20	46	0
Bexar	1,958,296	19,560	0	7,622	856
Comal	141,024	1,340	0	494	342
Frio	18,867	24	16	39	0
Gillespie	28,303	247	0	370	30
Guadalupe	159,590	2,139	0	515	210
Karnes	16,702	161	0	68	7
Kendall	38,007	332	0	497	40
Kerr	56,472	493	0	739	60
McMullen	50,406	64	44	103	0
Medina	747	1	0	1	0
Wilson	48,546	469	0	198	21
Alamo Total	2,588,488	24,923	123	10,793	1,566

Table 30: LWDA 21 South Texas–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Jim Hogg	5,443	11	0	7	0
Webb	274,728	1,572	0	841	0
Zapata	14,301	28	0	19	0
South Texas Total	294,472	1,610	0	867	0

Table 31: LWDA 22 Coastal Bend–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Aransas	22,620	171	0	2	6
Bee	31,072	235	0	3	9
Brooks	7,327	30	0	81	0
Duval	12,060	23	0	16	0
Jim Wells	41,662	173	0	459	0
Kenedy	419	2	0	5	0
Kleberg	32,660	136	0	360	0
Live Oak	11,847	23	0	15	0
Nueces	361,653	3,744	81	3,735	190
Refugio	7,209	55	0	1	2
San Patricio	63,262	478	0	5	17
Coastal Bend Total	591,790	5,070	81	4,681	224

Table 32: LWDA 23 Lower Rio Grande Valley–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Hidalgo	860,572	6,724	49	3,439	162
Starr	62,435	121	0	81	0
Willacy	22,610	94	0	249	0
Lower Rio Grande Valley Total	945,617	6,939	49	3,770	162

Table 33: LWDA 24 Cameron County–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Cameron	423,421	4,673	114	2,598	69
Cameron County Total	423,421	4,673	114	2,598	69

Table 34: LWDA 25 Texoma–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Cooke	40,834	450	0	143	5
Fannin	36,114	398	0	126	4
Grayson	128,453	1,415	0	449	15
Texoma Total	205,401	2,262	0	719	24

Table 35: LWDA 26 Central Texas–Texas Nursing Labor Force Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Bell	347,497	6,084	232	2,675	236
Coryell	77,510	257	13	219	0
Hamilton	8,713	29	1	25	0
Lampasas	20,149	67	3	57	0
Milam	25,904	167	0	164	10
Mills	5,083	17	1	14	0
San Saba	6,353	21	1	18	0
Central Texas Total	491,209	6,641	251	3,172	246

Table 36: LWDA 27 Middle Rio Grande–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Dimmit	10,236	78	0	35	0
Edwards	2,047	16	0	7	0
Kinney	3,753	29	0	13	0
La Salle	6,995	53	0	24	0
Maverick	55,447	422	0	189	0
Real	3,412	26	0	12	0
Uvalde	26,956	205	0	92	0
Val Verde	49,987	380	0	171	0
Zavala	11,942	91	0	41	0
Middle Rio Grande Total	170,776	1,298	0	583	0

Table 37: LWDA 28 Gulf Coast–Texas Nursing Labor Force by Occupation, 2017

County	Total Population, 2017	Registered Nurses	Nurse Anesthetists	Licensed Practical And Licensed Vocational Nurses	Nurse Practitioners and Midwives
Austin	30,208	149	0	91	29
Brazoria	362,929	5,365	0	732	1,436
Chambers	39,620	129	0	242	65
Colorado	22,068	109	0	66	21
Fort Bend	764,816	11,616	0	2,140	730
Galveston	335,148	5,476	90	1,406	146
Harris	4,654,217	44,467	813	14,576	2,568
Liberty	85,364	277	0	520	139
Matagorda	38,890	192	0	117	37
Montgomery	571,079	5,626	139	1,467	0
Walker	71,043	510	0	538	0
Waller	45,764	226	0	138	43
Wharton	43,774	217	0	132	41
Gulf Coast Total	7,064,920	74,360	1,042	22,165	5,255

Texas Workforce Investment Council

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