



TFHC Market Study

Opportunities for the Dutch Life Sciences & Health Sector in Texas

June
2018

Commissioned by:



Netherlands Enterprise Agency

In collaboration with:



Netherlands Business Support Office
Texas

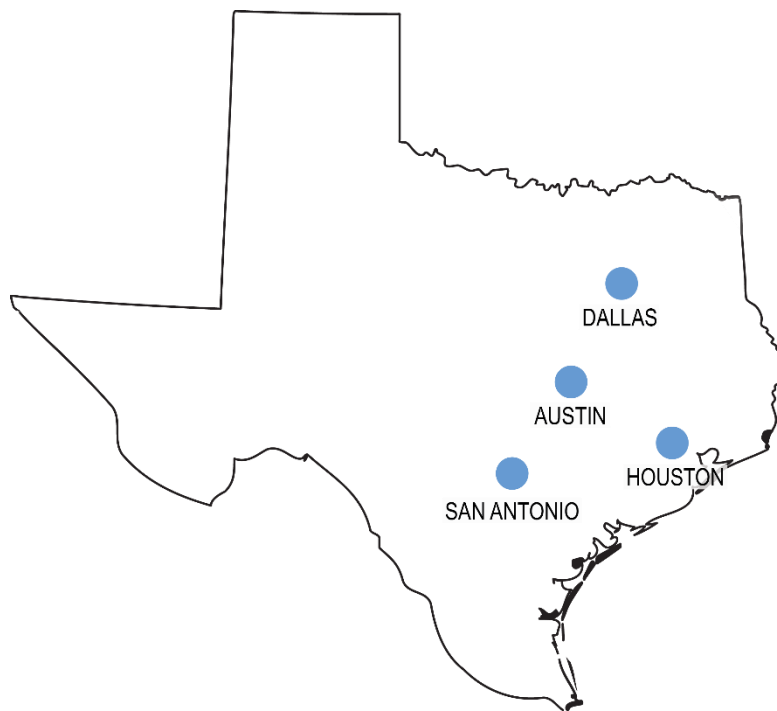


Figure 1: Map of Texas and its major cities

Table of Contents

Top 10 Reasons: Why is Texas Interesting for the Dutch Health Sector?	5
I. Glossary of Terms	7
II. List of Figures and Tables	7
1. Introduction	8
1.1. An Introduction to Texas	8
1.2. About this Market Study and Methodology	10
2. The Texas Healthcare Sector	12
2.1. Historical Background	12
2.2. The Healthcare System	14
2.3. Healthcare Expenditure and Financing	15
2.4. Healthcare Infrastructure	16
2.5. Healthcare Workforce	19
2.6. Health Challenges and Achievements	19
3. The Texas Healthcare Market	20
3.1. Business Climate	20
3.2. Market Entry	20
3.3. Health Industry & Research	21
3.4. FDA & Procurement	21
3.5. Regulations and Standards	21
4. Matching Dutch Strengths to Texas Opportunities	22
4.1. eHealth	22
4.2. Medical Devices	23
4.3. Hospital Build	24
4.4. Mobility & Vitality	24
4.5. Product Development	25
4.6. Public Health	25
4.7. Pharma & Biotech	26
5. Conclusions	27
References	28
Appendices	29
A. Results from Survey amongst the Dutch Life Sciences & Health Sector	29

B.	Meetings with Central Actors on the Texas Healthcare Market during Fact-finding Visit	30
C.	List of Group Purchasing Organizations (GPOs)	31
D.	List of Medical Device Distributors.....	33
E.	List of Relevant Trade Fairs and Events	33
F.	Map of Medical Schools and Selected Research Centers.....	34
G.	SWOT Analysis of the Texas Healthcare Market	35
Authors	36

Top 10 Reasons:

Why is Texas Interesting for the Dutch Health Sector?

1. **Huge Market – It’s True!**: Texas is the 2nd largest state in the U.S. in size and population (28.3 million people) and has the 10th largest economy (1.75 trillion GDP) in the world. Houston is the 4th largest city in the U.S. There are 50 Fortune 500 companies in Texas, including medical giants Kimberly-Clark, Tenet Healthcare and USAA. In other words, the state has a massive health care market. [See section 1.1.](#)
2. **Epicenter of Health**: Texas, more specifically Houston, is home to most healthcare professionals, health clinics, and the world’s largest medical center (Texas Medical Center/TMC), which houses the world’s largest children’s hospital (Texas Children’s Hospital) and world’s largest cancer hospital (MD Anderson Cancer Center). [See section 2.4.](#)
3. **“Everything is Bigger in Texas,” also in Health**: And if that’s not enough, TMC3, a new interdisciplinary research center was recently announced. The new research campus, to be completed in 2022, brings together clinical care, research and industry while creating 30,000 new jobs for healthcare professionals. Additionally, it is estimated that the project will be a \$5.2 billion stimulus to the Texas economy. [See section 4.6.](#)
4. **A State of Contrasts**: While Texas is home to the greatest number of health facilities, it’s also home to the highest medically underserved, unserved, and uninsured population. This, combined with the lack of care in many rural areas, has instilled a sense of urgency for healthcare solutions. [See section 2.6.](#)
5. **eHealth: A Unicorn or Not?** Everyone talks about it, everyone wants it but it seems not many have seen its full potential yet. The (reimbursement) system and regulation might not incentivise the implementation and application for eHealth yet, but the will and resources to expand the use in all 254 Texas counties are there which makes it a valley for proven concepts. [See section 4.1.](#)
6. **There’s Money, a Dream and a Moonshot**: In Texas there’s a fine line between business opportunity and social responsibility. Due to the free market principle and the -enormous- financial resources available in health, there’s an unprecedented business/social drive to innovate and make dreams come true. This provides opportunities for Dutch health companies, start-ups and research organizations. [See section 3.3](#)
7. **Forgotten Valley of Medical OEMs**: Besides well-known major players such as Texas Instruments, Johnson & Johnson, General Electric, Amazon, Dell and Philips, numerous other large OEMs active in health have chosen Texas for their research, development and production activities. [See section 4.2.](#)
8. **Texas is Inspired by Texas**: Looking at the financial resources, high concentration of expertise and achievements, Texas is not surprisingly home to some of the most prestigious institutions in the

field of among others neurology, rehabilitation and oncology. It's worthwhile to invest in these massive world-renowned institutions to enhance intercontinental collaboration. [See section 3.2.](#)

9. **Meeting Health Giants:** Although the Texas healthcare market is very scattered, every health system (hospital) in Texas, such as Memorial Hermann and Houston Methodist, is larger than any hospital in the Netherlands serving very large regions and populations. [See section 2.4.](#)
10. **Undiscovered "Third Coast":** Many European companies don't even consider Texas when entering the U.S. There's barely an EU presence. Those who are smart enough to recognize the potential of the state are rewarded with less competition -and lower prices- compared to the traditional coasts in the East (Massachusetts) and West (California). Additionally, since many Texas hospitals are nationally recognized for their excellence, gaining a foothold in the state is a good platform for further American expansion. [See section 1.1.](#)

I. Glossary of Terms

HHS	U.S. Department of Health and Human Services
HHSC	Texas Health and Human Services Commission
DSHS	Texas Department of State Health Services
DFPS	Texas Department of Family and Protective Services
TMC	Texas Medical Center
ESBD	Electronic State Business Daily
FDA	U.S. Food and Drug Administration

II. List of Figures and Tables

Figure 1	Map of Texas.....	2
Figure 2	Population distribution of Texas, 2018.....	6
Figure 3	Organizational chart of Texas Health and Human Services, 2018.....	13
Figure 4	Top 10 Medical Device & Equipment Companies with Texas Operations.....	21
Table 1	Comparative indicators between Texas and The Netherlands.....	7
Table 2	Top 10 Largest Hospitals in Texas.....	14

1. Introduction

1.1. An Introduction to Texas

Geography

Texas is the second largest state in the United States by size, occupying about seven percent of the total land and water area of the United States at 268,596 square miles (about 695,660 square kilometers).¹ The size of Texas leads to significant diversity in terms of both climate and culture across the state. It is traditionally divided into East Texas, Central Texas, North Texas, West Texas and South Texas. The largest city in Texas is Houston, located in East Texas, followed by Central Texas' San Antonio, North Texas' Dallas, Austin, Fort Worth and El Paso.² In spite of its size, Texas is well-connected through highway, rail, air and water ports. The Port of Houston is the number one United States port in foreign waterborne tonnage, stretching 40 kilometers along the Houston Ship Channel.³

Demographic Trends

Texas is also the second largest state in the United States by population with an estimated 28.7 million residents in 2018, with a growth rate of 1.80 percent. It is home to three of the 10 most populous American cities: Houston (2.3 million people), San Antonio (1.49 million), and Dallas (1.3 million).⁴ Additionally, five of the 15 fastest growing U.S. cities are in Texas.⁵ Texas' population is racially diverse, with a white majority.⁴ The second largest group is Hispanics and Latinos, with people of Mexican descent accounting for 39.6 percent of the total state population.⁶

The 2016 Census recorded 7.2 percent of Texans as under 5 years of age and 26.2 percent under 18 years. Twelve percent of Texans were recorded as 65 years of age or older in 2016, an increase of 1.7 percent over data from 2010.⁷ There are approximately 6-7 million additional Texans that will reach 65 years of age or older by 2023, placing more than 30 percent of the population of Texas over age 65 in 20 years.⁸

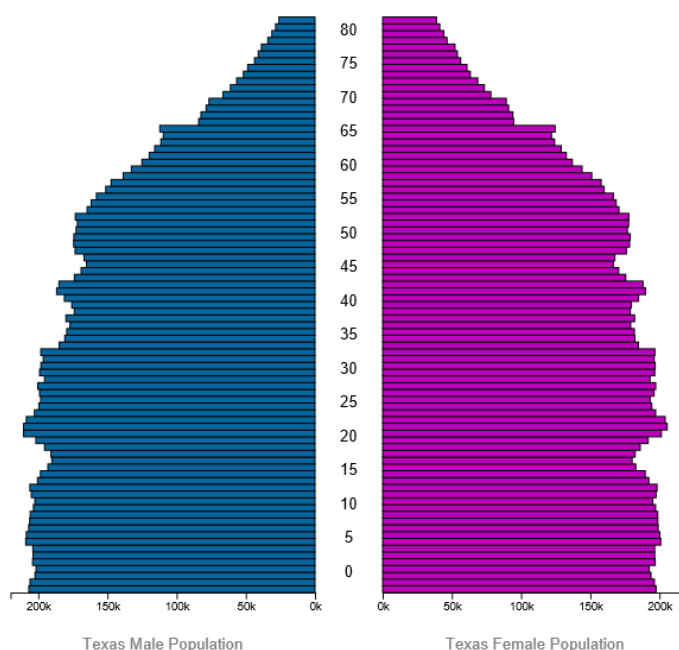


Figure 2. Population distribution of Texas, 2018⁴

Economic Trends

Texas has the second largest economy in the country and the tenth largest economy in the world, with a Gross State Product of \$1.587 trillion in 2017.⁹ The cost of doing business in Texas is 11.5 percent below the national average. It has been ranked number one on Forbes' list of American states for its Economic Climate due to strong employment and gross state product growth in the last five years.⁹

Disease pattern

Approximately 8.1 percent of Texans under 65 years old are living with a disability and an estimated 18.6 percent under age 65 do not have health insurance according to the U.S. Census Bureau's 2016 data.⁷

Nearly two-thirds of Texas deaths are from chronic disease.¹⁰ The number one cause of death in Texas is heart disease, followed closely by cancer. Other leading causes of death are stroke, chronic lower respiratory diseases, accidents, Alzheimer's, diabetes, etc (see right).¹⁰ Life expectancy in the state is around 78 years old according to the Texas Department of Health and Human Services.¹¹

Leading Causes of Death in Texas¹⁰

1. Diseases of the Heart, 23%
2. Malignant Neoplasms, 21%
3. Cerebrovascular Diseases, 5%
4. Chronic Lower Respiratory Diseases, 5%
5. Accidents, 5%
6. Alzheimer's Disease, 4%
7. Diabetes Mellitus, 3%
8. Septicemia, 2%
9. Nephritis, 2%
10. Chronic Liver Disease and Cirrhosis, 2%

Snapshot: Texas Compared

To understand the differences between Texas and The Netherlands, the table below provides a comparative snapshot of the two healthcare markets.

Indicators	Texas (US state)	The Netherlands (Country)
Population	28.3 million	17 million
Land area sq. km	695,662	41,543
Population density	105 (people per sq. mile)	488 (people per sq.km)
Life expectancy	78,5	81,2
GDP (Total)	\$1.75 trillion	\$770,8 billion
GDP per capita	\$53,129	\$45,290
Health Expenditure	\$80 billion	\$72,3 billion
Healthcare spending per capita	\$6,998 (US \$9,892)	\$5,385

Table 1: Comparative indicators between Texas and The Netherlands (U.S. Census Bureau, CIA World Factbook)

1.2. About this Market Study and Methodology

This market report was commissioned by the Netherlands Enterprise Agency (RVO) in The Netherlands. It is delivered by Task Force Health Care (TFHC) and the Netherlands Business Support Office (NBSO) in Texas, and provides an analysis of the Texas healthcare sector, business opportunities for organizations active in the Dutch Life, Sciences and Health sector, and recommendations for the organizations in The Netherlands that see opportunities in working in Texas and that consider it a potential growth market for their organizations.

For this study, TFHC conducted a survey among Dutch organizations in the Life Sciences and Health sector in The Netherlands, in order to determine the interest in the Texas healthcare market and the main (perceived) opportunities and barriers. The responses to this survey have been an important guide for the desk research and the interviews with the most important actors in the Texas Life Sciences and Health sector. Moreover, the responses confirmed the need for more information and awareness about the Texas Life Sciences and Health Sector. However, this is not a surprising finding since also other countries from the EU, apart from the UK, do not seem to have a big presence in this state compared to other popular states like California and Massachusetts, respectively the West and East coast of the United States.

The results demonstrate that a few dozen Dutch organizations are already active or have strong interest to become active in Texas. These organizations are mainly active in the fields of “eHealth”, “medical devices”, “mobility and vitality”, “pharma and biotech”, “public health” and “hospital build”. Chapter 4 of this market study outlines recommendations for the Dutch Life, Sciences and Health sector on how to align the sector-wide, Dutch smart solutions, with the current and future opportunities for these solutions in Texas. These three above-mentioned elements of the methodology that we have used for this market study, will allow us to provide a ‘360-degree’, all-encompassing analysis of the Texas healthcare sector.

Survey on the interest of the Dutch Life Sciences & Health actors

The Dutch actors within the Life Sciences & Health sector that participated in the survey indicated their interest in the Texas market and the difficulties that they perceive. The participants first presented the general information about their organizations and then categorized themselves in a particular sector such as eHealth or medical devices. Secondly, they were asked to share their ambitions on the Texas market, how they saw the state as a potential new market, and in which sector they would specifically be interested. This allowed us to see each case of the different actors, and to combine this with our field-visits and interviews in Texas. Based on this survey, this report aims to give an in-depth analysis of where Dutch expertise and solutions could give a response to the needs and challenges present in Texas, and vice versa.

Desk research

The desk research was based on information research on different subjects and resources, such as government documents, reports from organizations and federations and academic articles. Various public organizations in Texas share market data and statistics, like Texas Department of State Health Services. Relevant data have been used for our study. The information gathered was treated and analyzed to carry out a thorough overview of the market.

Interviews

In order to complete the two above-mentioned sources of information, the interviews with Texas actors that are active in the healthcare market, allowed us to acquire more information, directly from people actually working in the field. These interviews were conducted during a fact finding visit to Houston, Austin, San Antonio and Dallas Fort-Worth by a delegation from TFHC and the NBSO Texas. The selected stakeholders are key actors within the health sector in Texas from different domains, either private (for profit / not for profit) or public. In other words, we contacted persons with expertise on the market and on their organization.

The interviewed parties operate both at the national level with a large overview on the market and at the regional and local level. The aim of these interviews was to use the previously done desk research to guide the interviews and to acquire the most useful information and direct, personal expertise from people directly implied in the respective field, in order to incorporate this in the final market report. An overview of the local healthcare stakeholders that were interviewed during the fact finding visit to Texas are listed in [Appendix B](#).

2. The Texas Healthcare Sector

2.1. Historical Background

Texas: Lone Star State

A strong sense of independence pervades every aspect of Texas life. The single star on the state's flag, which gives it its nickname of "Lone Star State," anecdotally symbolises the do-it-yourself attitude of Texans. The state used to be its own republic having gained independence from Mexico before joining the union.



The Alamo in San Antonio, where Texans lost a hard-fought battle against the Mexican army in 1836, is a constant reminder of that to its citizens. These days it is home to Fort Sam Houston and Lackland Airforce Base, where Brooke Army Medical Center is located.

Like many aspects of American life, modern healthcare developed in great part due to the needs of various industries. Several cities in Texas have played an important role herein.

Austin: Institutionalized Healthcare

Institutionalized healthcare of the disabled began before the civil war. In 1856 legislators authorized the establishment of asylums in Austin for the insane, blind, and deaf. The institutions for the deaf and blind opened in 1857; the one for the mentally ill opened in 1861. Legislators allocated at least \$600,000 for the maintenance of these three institutions between 1856 and 1873.¹²

After X rays were discovered in 1895, surgeons needed machines that would not fit in their saddlebags or grips used for home visits. Private and public hospitals sprouted throughout the state to house the equipment and provide the personnel needed for conscientious care of Texans, including those who suffered serious accidents in the railway, lumber, and mining industries. Several hospitals originated as railway institutions.¹²

Galveston: Medical Research Collaboration

To share clinical experiences and scientific knowledge, and to exert some political and economic influence, doctors began to organize professional societies. The Galveston Medical Society began in July 1865. Ten doctors organized the Waco Medical Society in April 1866. Many organizations formed in the following decades across Texas. In 1903, many of them reorganized under the American Medical Association, under which Texas became much larger and more powerful.¹²

Most doctors were general practitioners prior to 1940, but they began to specialize in the specific careers of nurses, pharmacists, dentists, osteopathic doctors, optometrists, chiropractors, podiatrists, and others. Texans could support these professionalized and specialized healthcare practices because residents of the state had more money than ever after the oil boom that began at the Spindletop Oilfield in 1901.¹²

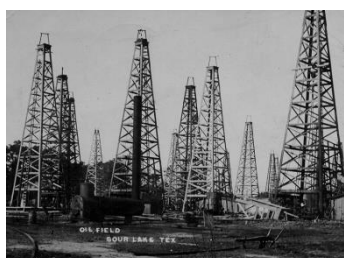
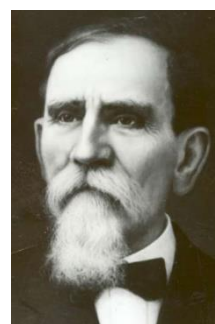
Dallas: Insurance

An official at Baylor University in Dallas noticed Americans were paying about a dollar at a month for cosmetics. He wanted to get people to pay for healthcare the same way – a little at a time. Baylor offered teachers a plan to pay 50 cents per month in exchange for the hospital to pay the rest of the cost associated with hospital visits. Americans lost the ability to pay out of pocket for healthcare when the Great Depression hit, and Baylor's payment plan became massively popular; it eventually got a name – Blue Cross. Today, Blue Cross Blue Shield is one of the largest healthcare insurance providers in the United States.¹²

The Blue Cross system was soon available in almost every state, but it would take the second world war for people across the nation to sign up. Factories needed a way to lure workers in times when food and basic necessities were rationed by the government, so in lieu of higher pay, they offered increasingly generous healthcare plans. By the 1960s, 70 percent of the population was covered some form of a private, voluntary health insurance plan.¹³

Houston: Philanthropic Spirit

The nineteenth-century civic leader and eccentric philanthropist George Hermann dedicated some of his personal funds to creating a large municipal park in Houston and the city's for-charity hospital. The hospital is now named Memorial Hermann-Texas Medical Center. This philanthropic spirit is an integral part of the Texas Medical Center, where much of the health systems (hospital groups) and research conducted are funded by donations and grants. See [section 2.4](#) for more information on sources of funding.



Cross-overs within the Texas economy

One of the driving forces of the Texas economy has traditionally been oil. Although it still is a massive player, many companies are also now focusing on other forms of energy production, making the city of Houston earn its nickname as “The Energy Capitol of the World.” This long-standing fixture of Texas' economic force, the presence of NASA, and the medical industry have made way for some unique initiatives and collaborations among unexpected sectors. One of those initiatives is a collaborative effort of doctors, oil and gas engineers, and aerospace engineers through a forum called [Pumps and Pipes](#). They are self-described as a “union of curious people”. Their goal is to solve each other's problems across the three sectors by applying methods and technologies from their own fields.

Recently, in order to diversify the economy, the state of Texas has earmarked Life Sciences and Health as one of the three priority sectors, next to energy/oil and logistics, in which significant investments are made.

2.2. The Healthcare System

The United States is the only major industrial country that does not have an agency at the national level providing medical services, and it does not guarantee health coverage for all citizens.

U.S. Department of Health and Human Services (HHS)

There are many governmental departments involved in healthcare. The most important one to be aware of is the Department of Health and Human Services (HHS). The main goal of the HHS is to protect the health of all Americans and provide essential human services. It is led by the Surgeon General who is responsible for addressing public health concerns. There are also state-level health and human services departments that receive funding from the federal level for implementation of health programs and initiatives. The Texas Health and Human Services is in charge of setting the state budget and sets laws and regulation. In order to make the system more efficient and effective, Texas began transforming how it delivers health and human services and shifted from 5 into 3 agencies in 2017.

1. Texas Health and Human Services Commission (HHSC)

The Texas HHSC delivers services such as Medicaid for families and children, long-term care for people who are older or who have disabilities, SNAP food benefits and TANF cash assistance for families, behavioral health services, services to help keep people who are older or who have disabilities in their homes and communities, services for woman and other people with special health needs.

The agency also oversees regulatory functions licensing and credentialing for many long-term care facilities. Among those receiving licensing are nursing homes and assisted living, child care provider, and managing the day-to-day operations of state supporting living centers and state hospitals.

2. Texas Department of State Health Services (DSHS)

The Texas DSHS focuses on vital statistics such as birth and death records, compiling and disseminating health data on more than 25 topics, chronic and infectious disease prevention and laboratory testing and licensing and regulating facilities on topics such as asbestos, mobile food establishments and youth camps.

3. Texas Department of Family and Protective Services (DFPS)

In 2017 DFPS was established as independent agency independent of Texas Health and Human Services focusing on protective and preventative services.

Organization and Priorities

Below is the organizational chart of the Texas Health and Human Services that falls under the responsibility of the 48th Governor of the State of Texas, Greg Abbott.

In the Health and Human Services System Strategic Planning Elements 2019–2023 for Texas, there are stated three strategic priorities:

- Improving Health Outcomes and Well-Being
- Supporting Independence for People and Families, and
- Driving Efficiency and Accountability.

The total consolidated budget for the biennium 2018-2019 is 80 billion USD. ¹⁵ [See section 2.3.](#)

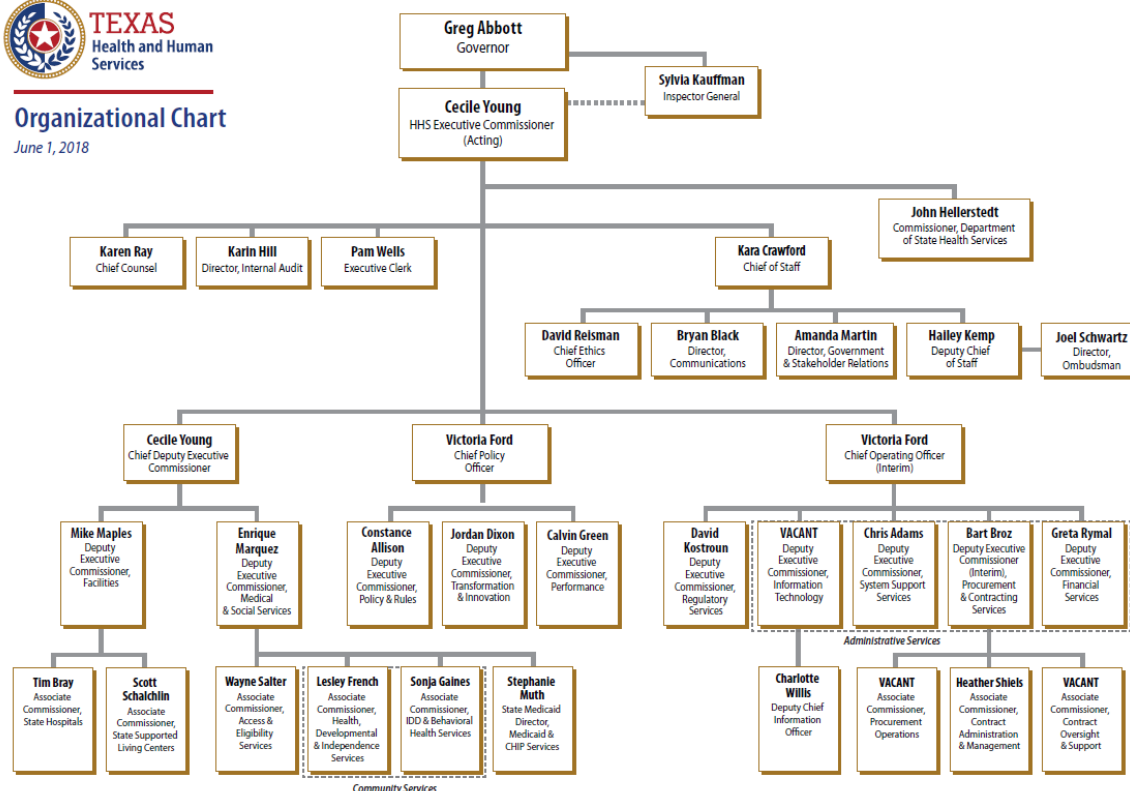


Figure 3: Organizational [chart](#) of Texas Health and Human Services, 2018

2.3. Healthcare Expenditure and Financing

Expenditure

Healthcare spending represents about 12 percent of Texas' gross state product, according to the Texas Comptroller's Office report from 2015.¹⁰ In Dallas-Forth Worth (DFW) alone, \$52 billion is added annual to the economy by the health care industry, which accounts for 15 percent of the DFW economy. Additionally, 601,000 jobs are supported by the industry.¹⁴ Texas agencies and higher education institutions spent 19.7 percent more on healthcare in 2015 than in 2011, with state-funded health research spending rising 24.1 percent in the same period of time. The State of Texas spent \$42.9 billion on healthcare in 2015.¹⁰ Health-related institutions of higher education received 88.9 percent of the money spent by the state of Texas on funding health research in 2015, amounting to \$434.1 million.¹⁰ See [section 3.3](#) for an overview of these institutions.

Financing: a payer mix

The consolidated Health and Human Services System budget for 2018-2019 is around \$80 billion of which \$9.5 billion goes to the Department of Aging and Disability Services, \$1.3 billion goes to the department of Assistive and Rehabilitative Services, \$3.4 billion goes to the Department of Family and Protective Services, \$6.6 billion goes to the Department of State Health Services Mobile, and \$62 billion goes to the Health and Human Services Commission.¹⁵

The cost of healthcare in Texas is divided among many stakeholders resulting in a complex payment model with multiple streams of funding. A significant portion of the total cost of health care expenditures of Texas' health programs and institutions is covered by state and federal funds.¹⁰

Medicare provides care for people aged 65 and up, people receiving Social Security disability benefits for two years, and most people with End-Stage Renal Disease (ESRD). Medicaid helps low-income families pay for medical services. It is the largest source of funding for medical and health-related services for the poorest people. Each state sets its own eligibility standards and determines the type, amount, duration, and scope of services. States also set the rate of payment for services and administer their own programs. As Texas has not accepted federal Medicaid expansion under the Affordable Care Act (ACA), the state has one of the biggest coverage gaps in the country. An estimated 15 percent of the uninsured population would have access to coverage if Texas were to expand Medicaid.¹⁶

For healthcare expenditure, some additional funds may be received at the city and county level. Texas healthcare institutions, programs, and organizations may also have endowments or receive donations through partnerships with non-profits. The remaining cost of healthcare provided to consumers is covered by insurance companies (through employer) such as United, BSBC, and Aetna, direct payments from consumers/patients, or support from non-profits serving underserved communities.

2.4. Healthcare Infrastructure

Texas is home to more than 5,000 life science and research firms with over 100,000 workers in related fields.¹⁷ One of the most important fixtures of the healthcare infrastructure in the state is the [Texas Medical Center](#) (TMC), which is the world's largest medical complex. It is also home to the world's largest children's hospital, Texas Children's Hospital, and the world's largest cancer hospital, MD



Anderson Cancer Center. 21 hospitals make up the TMC with 14 support organizations, 10 academic institutions, 8 academic/research institutions, 7 nursing programs, 3 public health organizations, 3 medical schools, 2 pharmacy schools, and a dental school. In total, the 54 institutions at the Texas Medical Center employ over 106,000 people and host about 10 million visitors annually.¹⁸

Texas has 376 hospitals, the most of any state in the United States, and 58,480 staffed hospital beds. The hospitals are classified as profit, not for profit or public. The ten largest hospitals in Texas measured by the number of staffed hospital beds are¹⁹:

Largest Hospitals in Texas	City	Beds	Gross Patient Revenue (\$000)
Methodist Hospital	San Antonio	1,576	\$8,601,814
Baptist Medical Center	San Antonio	1,487	\$6,615,951
Memorial Hermann Southwest Hospital	Houston	1,284	\$5,264,963
Houston Methodist Hospital	Houston	1,003	\$6,776,704
Memorial Hermann Texas Medical Center	Houston	960	\$5,552,361

Baylor University Medical Center at Dallas	Dallas	854	\$2,940,680
Parkland Hospital	Dallas	825	\$5,914,919
Edinburg Regional Medical Center	Edinburg	816	\$3,334,580
Ben Taub General Hospital	Houston	708	\$3,092,189
Medical City Hospital	Dallas	689	\$4,920,451

Table 2: Top 10 Largest Hospitals in Texas¹⁹

Many of the hospitals in Texas rank highly in certain specialties and overall.²⁰ These rankings help us highlight many of the state's strengths, which include cardiology and heart surgery, children's care and cancer hospitals.

Cardiology and Heart Surgery

There are four hospitals in Texas among the top 50 for cardiology and heart surgery in the United States.²¹

Hospital	National Rank
Heart Hospital Baylor Plano	#16
Houston Methodist Hospital	#16
Texas Heart Institute at Baylor St. Luke's Medical Center	#24
Memorial Hermann-Texas Medical Center	#29

Heart Hospital Baylor Plano gained a spot on the nation's best list for the first time in 2016. The Society of Thoracic Surgeons has awarded its highest rating of three stars to the Heart Hospital Baylor Plano in all three surgical categories it tracks in 2016. The hospital has been re-designated by the Commission on Magnet Recognition as a Magnet® hospital, which means people going there will be cared for by one of the highest-rated nursing staffs in the country.²²

The DeBakey Heart and Vascular Center at Houston Methodist Hospital was founded in 2001. It is named after well-known and decorated Dr. Michael E DeBakey, who performed and estimated 60,000 surgeries throughout his career. The center boasts many breakthroughs in its field such as the first removal of blockage in the carotid artery in 1953, the invention of the Dacron graft in 1954, the first angioplasty procedure performed in 1980, the first successful auto transplant for cardiac malignancy, the first treatment of a patient with immune modulation therapy (IMT) which lead to European approval in 2001, the first percutaneous implantation of a left ventricular assist device (LVAD) in 2004, the first "American Correction" mitral valve using a surgical robot, and many other accomplishments.²³

Children's Hospitals and Pediatric Specialties

Texas Children's Hospital is ranked as the fourth best hospital for children overall in the United States, and it ranks highly in many specific categories, such as Pediatric Cardiology & heart Surgert, Pediatric Pulmonology, Pediatric Neurology & Neurosurgery, Neonatology.²⁴ It is the largest pediatric cancer and hematology research and treatment center in the country. The hospital employs 350 researchers in 42 laboratories dedicated to understanding and curing childhood cancer. They conduct more clinical trials than any other pediatric cancer center in the nation. The histiocytosis program is the largest

histiocytosis treatment clinic in the world. The lymphoma program is the only program in the United States with a dedicated program on childhood lymphoma and lymphoproliferative disorders.²⁵ Shriners Hospital for Children specializes in burn victims and child care. Their top three priorities are patient care, education and research. Artificial skins used for burn victims anywhere in the world today were either invented or first evaluated and tested at Shriners.²⁶ The treatment for children often extends to skeletal development problems. They also treat cleft lip and palate, spinal cord injuries, and their original focus upon foundation in 1922 was orthopaedics. This hospital is a non-profit institution with 40 beds for pediatric orthopedic patients in the Texas Medical Center in Houston. There are 22 other hospitals within the Shriners network. The burn center for children is in the coastal city of Galveston just 80 kilometers southeast of Houston.

Cancer Care

As previously mentioned, Texas Children's hospital is a leader in childhood cancer research and treatment. Texas' excellency in cancer care extends beyond paediatrics. MD Anderson has been ranked as the top facility specializing in cancer. In 2017 they received 28,793 patients and performed 70,460 hours of surgery.²⁷ The hospital currently ranks first in number of research grants issued by the National Cancer Research Institute.

Through the Moon Shots Program's APOLLO (Adaptive Patient-Oriented Longitudinal Learning and Optimization) platform, MD Anderson researchers are performing large-scale analysis of patient samples over time, generating novel data to better understand how tumors become resistant to certain treatments. Their goal is to make cancers more predictable and easier to treat. In the next two years, such analysis will be conducted in 2,100 patients enrolled in 28 high-priority clinical trials. The hospital research efforts also produce drugs, such as a PHASE I clinical trial drug known as IACS-10759, which was developed at MD Anderson's Institute for Applied Cancer Science (IACS). The drug disrupts energy production in cancer cells.

Finally, MD Anderson is part of the six health institutions of the [University of Texas \(UT\)](#): UT Southwestern Medical Center, UT Medical Branch at Galveston, UT Health Science Center at Houston, UT Health Science Center at San Antonio, UT MD Anderson Cancer Center and the UT Health Science Center at Tyler. Although the hospital is not directly part of the university, they share a common structure and have educational programs.²⁸

2.5. Healthcare Workforce

The U.S. is projected to be short 90,000 physicians by 2025, with existing shortages exacerbated by an aging population. Shortages of doctors are more concentrated among rural areas than urban areas.²⁹

While there are major research clusters in Texas' cities, Texas ranks 41 among the 50 United States for physicians per 100,000 residents.³⁰ Most of the physicians are operating independently, but they are more and more shifting from a fee for service system towards a value based outcome by joining Accountable Care Organizations (ACOs). 35 of the 254 Texas counties do not have a single physician. An additional 80 counties in Texas have five or less physicians, 158 counties have no general surgeon, 147 counties have no obstetrician/gynaecologist, and 185 counties have no psychiatrist.³¹ There is a significant rural-urban divide among healthcare access in Texas. There were 234,027 Registered Nurses in Texas in 2017, according to the Texas Department of Health and Human Services.³²

2.6. Health Challenges and Achievements

The United Health Foundation ranks Texas 34 overall for health care out of 50 United States.²⁰ The strengths in Texas include patient care, few poor mental health days, high rate of high school graduation, and low prevalence of smoking. Some of the challenges for the state include high percentage of uninsured population, low immunization coverage among children, and large disparity in health status by education level.

In the past year, disparity in health status by education level increased from 28.3 percent to 34 percent. In the past two years, the obesity rate increased from 29.2 percent to 31.9 percent of adults. Smoking decreased from 18.2 percent to 14.5 percent of adults. And cancer deaths in the last 20 years decreased from 201.3 to 182.3 per 100,000 population.²⁰

Health Challenges in Texas²⁰

1. *Disparity in health status by educational level*
2. *Obesity*
3. *Smoking*
4. *Poor mental health days*
5. *Cancer deaths*

3. The Texas Healthcare Market

3.1. Business Climate

The United States are ranked 6th in the World Bank's Ease of Doing Business.³³ Texas has a notoriously easy market to enter. The state prides itself on having a great economy that bolsters business. There is no state income tax for workers, and many city-level and state-level governments will offer incentives to business that will create jobs in their region.

Texas has the second largest civilian workforce in the country. There are 13 million working Texans, according to the Department of Labor with dozens of top-tier universities that produce thousands of qualified workers each year.³⁴ Being approachable with a business-like demeanor will help establish good relationships in Texas.

The [Texas Economic Development Corporation](#) together with the [Governor's Office of Economic Development and Tourism](#) are a good starting point to become familiar with the Texas market and business climate. Biotechnology and Life Sciences is one of the six key sectors the State of Texas is focusing on to help spur economic expansion.³⁵

3.2. Market Entry

To enter the Texas market, advice can also be sought from the Life Sciences and Health Department of [Houston First](#) when seeking introduction to hospitals in Houston. We know from our research that hospitals in Texas receive hundreds of proposals every week. In order to get further than the screening processes, it is recommended for companies to have a good summary of their product or service. Some of the areas in which hospitals are actively looking for collaboration are:

- Patient experience
- Patience guide for the patient (make a visit as easy as possible)
- Leverage data (clinical, research and administrative)

Additional resources such as websites and presentations are also useful, but failing to have a concise pitch will usually mean healthcare institutions don't have time to look into a company wanting to partner with them. Some area hospitals partner with [Avia Health Innovation](#), which is an innovator network that brings together action-oriented health system to address shared challenges by leveraging digital solutions.

There are also many incubators across the states for all types of business. There are a few worth paying attention to, specifically if you are a start up in the Life Sciences and Health. These are [MassChallenge Texas](#), [Station Houston](#), [TMCx](#) including [JLABS](#) from Johnson & Johnson, and the [Design Institute for Health](#) at the Dell Medical School in Austin. Turning to them will help you gain access to industry leaders, funding and will help you make many valuable connections.

As authors of this market study, [TFHC](#) and the [NBSO Texas](#) are available for Dutch companies and organizations interested in the Texas healthcare sector to provide additional information, contacts and further guidance. The [Netherlands Enterprise Agency \(RVO\)](#) can also be consulted for information.

3.3. Health Industry & Research

Texas is home to more than 5,000 life science and research firms where about 100,000 people work.³⁵ With \$5.3 billion in annual R&D expenditures and 23,701 clinical trials underway, Texas is driving innovation in healthcare research.³⁵ Through the Governor's University Research Initiative (GURI) grant program, Texas is bringing the best and brightest researchers in the world to its state. To date, the State has awarded \$45.5 million to attract and recruit prominent researchers in fields such as molecular biology and animal genetics.³⁵ Health-related institutions of higher education that spent more than \$100 million on health care in the fiscal year 2015 include¹⁰:

- The University of Texas (U.T.)
- M.D. Anderson Cancer Center
- U.T. Medical Branch at Galveston
- U.T. Southwestern Medical Center
- U.T. Health Science Center at Houston
- U.T. Health Science Center at Tyler
- U.T. Health Science Center at San Antonio

Additionally, a new research center called [TMC3](#) is set to open in Houston as a collaborative effort between the city's top hospitals. The project is expected to create 30,000 new jobs and generate \$5.2 billion.³⁶

3.4. FDA & Procurement

Securing a contract with the Texas Health and Human Services Commission can be a great pathway to success in Texas. They award more than \$60 billion in contracts annual for goods and services covering every aspect of business. By Texas Government Code, the HHS posts all notifications of new contract opportunities (Requests for Proposal) on the [electronic state business daily \(ESBD\)](#). It goes without saying that all products need to be [FDA](#) approved.

It is also crucial to be aware of important group purchasing organizations (GPOs). Most procurement is done through these groups. Hospitals and clinics join GPOs who have contact with the medical device and equipment vendors to negotiate prices and contracts. Establishing contact with them is often more important than going straight to a hospital, as they have lists of approved vendors, such as McKesson. A list of GPOs, which are also referred to as coalitions and purchasing cooperatives, can be found [here](#) and in [Appendix C](#).

Additionally, Medicare has an [online supplier directory](#) where one can search for information regarding potential distributors.

3.5. Regulations and Standards

Dutch companies marketing health care products and services will need to be aware of laws and regulations from several agencies at the federal and state level, such as [U.S. Food & Drug Administration](#), [U.S. Department of Health & Human Services](#) and [Texas Department of Health & Human Services](#). In addition, we encourage all companies to seek the advice of lawyers and other experts to ensure they are compliant, particularly because regulations and standards may change.

4. Matching Dutch Strengths to Texas Opportunities

4.1. eHealth

Smart solutions which (seamlessly) brings care and cure to patients and citizens and substantially increases the efficiency and functionality of care provision

One of the primary trend-drivers increasing the need for e-health solutions is the construction of satellite campuses. The traditional structure of large hospital towers with hundreds of beds is still a big player in the healthcare market, but the massive size of Texas and its spread-out population mean having remote locations for people who might not be able to make the commute to the larger cities every day or in emergency situations has become a more viable option. For example, Houston's mere geography has caused a need for a rise in remote patient treatments. Although the proper city limits only include 2.3 million people³⁷, the metropolitan area is home to 6.77 million.³⁸

Another trend-driver is the fact that in Texas there are (only) 58,000 licensed physicians,³⁹ and many counties are underserved. There are between 30 and 40 counties in Texas with no healthcare providers at all.³¹ The state wants to extend access to these rural communities through bolstering telemedicine.

In the Spring of 2017 Governor Greg Abbott signed into law many bills that massively broadened the possibility to provide eHealth to Texans. The bills include grants for rural hospitals to be able to purchase tele-neonatal intensive care equipment, the possibility for patients to receive treatment from prescriptions from doctors through first-time virtual consultations, an increase in the amount of money schools can get reimbursed through Medicaid for services through telemedicine and the permission to pharmacies to create remote dispensing sights using tele-pharmacy in areas where physical pharmacies are unavailable.⁴⁰

The [Texas eHealth Alliance](#) is a leading advocate for the implementation of telemedicine and eHealth solutions in Texas. Although the (reimbursement) system and regulation might not incentivise the implementation and application for eHealth in Texas yet, as is the case in states like Arkansas, South Carolina and Georgia. However, the will and resources to expand the use of eHealth in all 254 Texas counties are there, especially in the rural areas where there is a lack of infrastructure of physicians, which makes it a valley for proven concepts.

4.2. Medical Devices

Smart solutions which increase the quality, comfort and efficiency of care and decrease the costs, pain and treatment time

The most common types of medical devices used in the United States are those that help deliver medications, first aid, assistive technologies (mobility aids, sensory aids, prosthetics, orthotics), durable medical equipment (environmental devices like beds, person-lifting aids and toileting aids, testing and monitoring devices), according to the National Research Council (NCBI). The NCBI also projects that miniaturization (nanotech) and telehealth monitoring/reporting (internet of things integration) will trend in the future.⁴¹

In Texas, there are more than 750 firms employing around 15,500 high-skilled workers in the medical device market. Often, companies that are not headquartered in Texas have corporate facilities in the State, including Abbott Laboratories, Medtronic, Stryker, Agilent Technologies, Johnson & Johnson, and many more (see [Figure 4](#)).

Many medical products are produced in Texas, such as surgical sutures, bandages, molecular biology kits, and medication delivery systems. The medical device market in the state is vast, but there are a few areas that have particularly clustered here, which are ophthalmology, orthopaedics, cardiology, diagnostics and wound care. The major hubs for medical device research are UT Health Science Center and Johnson and Johnson Jlabs at TMC. Two of the most well-known medical devices that were developed in Texas are the Palmaz stent and the titanium rib.⁴²

The association for medical devices is the [Texas Medical Device Alliance](#). Distributors and manufacturers of medical devices must be licensed by the [Texas Department of State Health Services](#) (see [section 3.4](#) and [Appendix D](#)).

Top 10 Medical Device & Equipment Companies with Texas Operations By Parent Company Global Revenues		
Company Name	Primary Locations	Specialization
GE Medical Systems (General Electric)	El Paso	Cardiology products
Hitachi High Technologies America	Dallas	Lab instruments
Ethicon (Johnson & Johnson)	San Angelo	Surgical supplies
Alcon Research (Novartis)	Houston	Ophthalmic products
Flextronics	Irving, Plano	Contract design & manufacturing
Dunlee (Philips)	Arlington	Radiology & imaging products
Abbott Laboratories	Irving	Diagnostics
Kimberly-Clark	Irving	Respiratory (disposables)
Medtronic	Fort Worth, San Antonio	Surgical devices & diabetes management
Thermo Fisher Scientific	Austin	Diagnostics

Figure 4: Top 10 Medical Device & Equipment Companies with Texas Operations. Credit: State of Texas Governor's Office of Business & Community Development¹⁷

4.3. Hospital Build

Smart solutions which modernize, optimize, and increase access to the provision of quality healthcare

Texas has a \$15.8 billion pipeline for medical real estate, which is the second largest in the United States.⁴³ Houston and Dallas-Fort Worth have the largest pipelines: in 2017 the cities had \$3.8 billion (31 projects) and \$8 billion (26 projects) respectively. Austin had 8 projects worth \$503 million, San Antonio had 9 projects worth \$402 million.

Although the trend of large hospital towers in large clusters has declined, there are still many hospitals being built. The structure has changed to where most hospitals have satellite campuses away from city centers to serve the outlying communities. The opportunity here is for medical device implementation, architecture, and design. “The primary (strategy) is seeking to expand the geographic reach of the hospital systems into developing areas with high household incomes and rich health benefits,” said analyst Allan Baumgarten in a health market review for Texas released at the end of 2016.⁴³

State agencies that have bids valued at \$25,000 more post their opportunities publicly on the [Electronic Business State Daily](#) (ESBD), which is also known as TxSmartBuy. Vendors can see the newest listings for all state agencies and narrow their desired results by specific state agency or type of contract.

4.4. Mobility & Vitality

Smart solutions which stimulate, enable, and facilitate disabled, less abled and vital citizens to be and to stay active and mobile participants/contributors in society

Another trend that drives innovation is the aging population. Twelve percent of Texans were recorded as 65 years of age or older in 2016, with an increase of 1.7 percent over data from 2010.⁷ There are approximately 6-7 million additional Texans that will reach 65 years of age or older by 2023, placing more than 30 percent of Texas’ population over age 65 in 20 years.⁸

Private providers that receive government funding provide service to the aging population. The cost of care is mostly covered by private insurance from the patients or by Medicare and Medicaid. The types of providers servicing this demographic are 24-hour residential services, in-home caregivers, hospice personal care or independent living facilities. The Texas HHS provides a [list](#) of long-term care programs that the aging population receives.

The aging population of Texas represents a significant opportunity for Dutch companies offering solutions to diseases that are more prevalent in this age group, particularly heart disease, vascular disease, Alzheimer's, arthritis and other chronic conditions that significantly affect quality of life. There will be an increase in the demand for solutions that allow an aging population to live an active lifestyle and live with minimal assistance as most adults in this age bracket do not live in multi-generation households in the United States.

Texas A&M University forecasts that artificial intelligence and voice-activated personal assistants will take on larger roles in helping older adults, families and care givers.⁴⁴ In 2015, nearly a third of the population of noninstitutionalized adults were living alone.

4.5. Product Development

Offering smart solutions that accelerate, enable, upgrade or optimize the development and production of meaningful, affordable and high quality products

Medical device companies in the United States spend a high percentage of their revenue on R&D. From 2011 to 2016, R&D accounted for 6.7 percent of revenue expenditure by these firms.⁴⁵

There are many organizations that offer grants or act as investor for proof of concept and prototype development. In Texas, those include Cancer Prevention and Research Institute of Texas, San Antonio Angel Network, UT Horizon Fund and Texas Emerging Technology Fund.

Products have to be approved by the Texas Department of State Health Services and the Federal Drug Administration. Additionally, hospitals and providers have their own approval process in addition to those mandated by state and federal governments.

There are over 5,000 life science research and development firms in the Lone Star State with over 100,000 workers employed in related fields.³⁵ Among the companies manufacturing are Fortune 500 giants like Kimberly-Clark and Celanase. Additionally, global leaders such as Johnson & Johnson, Allergan and Medtronic have major operations in Texas.

4.6. Public Health

Smart solutions to create sustainable health policy systems in order to increase healthcare capacity, accessibility, affordability and quality

The Texas Department of State Health Services and Texas HHS are responsible for overseeing public health issues. The Texas HHS keeps [statistics on health](#) such as birth data, death data, behavioural risk

factors, hospital discharges, major trauma, population data, youth risk factors, cardiovascular disease, cancer, HIV/STDs, environmental illness, diabetes, chronic illnesses, chronic diseases and more. Texas can be seen as economic powerhouse and clinical machine due to its access to different patient populations. Ethically seen, Texas is the most diverse state in the U.S. generating much more diverse data compared to the East and West coast.

Research is funded through private or public grants, and the [list of grant-finding researches](#), which includes federal, state and private grant resources and other funding resources is available from the Texas HHS. UT Health also has a [funding sources list](#).

A new research center is set to open in Houston, which will be an enormous collaborative effort between the Texas Medical Center, Baylor College of Medicine, Texas A&M University Health Science Center, The University of Texas Health Science Center at Houston and the University of Texas MD Anderson Cancer Center.⁴⁶ The 30-acre research center will be called “TMC3” and is expected to create 30,000 new jobs in Houston. The project will generate \$5.2 billion for the Texas economy. Researchers will conduct studies in advanced therapeutics, medical devices, regenerative medicine, genomic, data science and other fields.³⁶

Exchange programs already exist between Texas and The Netherlands, for example in the field of Advanced Nursing Practice. Rice Campus and Texas Children’s Hospital are often visited by stakeholders from The Netherlands. The Dutch Health Innovation School also collaborates with the Design Institute for Health of Dell Medical School that functions as a bridge between the research department and the outpatient clinic.

4.7. Pharma & Biotech

Smart solutions to prevent & treat diseases in an early stage in order to boost a healthy, sustainable and prosperous future.

There are approximately 22,160 clinical trials underway in Texas, which ranks the state at number three nationwide.¹⁷ A combination of Texas-grown companies and international firms that have established a presence in the area contribute to the vast number of trials being conducted. About 180 firms employ 11,800 people in the pharmaceutical manufacturing sector.¹⁷

There are many organizations that companies should reach out to for the pharma and biotech industries, including [Houston Methodist department of Nanomedicine](#), [BioAustin](#), [BioHouston](#), [Texas Healthcare and BioScience Institute](#) and the [Texas Biomedical Research Institute](#).

There are great resources for Dutch companies that focus on nanomedicine. The University of Texas at Dallas has a [Nanotech institute](#). A Houston Methodist researcher is sharing his method for a new and more affordable way to make nanoparticles.⁴⁷

5. Conclusions

This market study has highlighted the Top 10 Reasons for Dutch companies to be interested in the Texas healthcare market. The Texas Life Science and Health sector is rife with opportunity for well established companies and start-ups alike. Whether it be eHealth solutions, innovative medical devices, research or new disruptive technologies, you can find a path in the Lone Star State.

Currently there is opportunity in care for an underserved (rural) community, aging population and care for chronic or previously untreatable diseases. Through a robust network of private and public initiatives, Texas can be a much more attractive option to set up shop in the United States than typical choices like California or Boston.

There is less competition in Texas for outside companies, costs are lower, tax burden is less, there is a growing population and there are continual projects all over the state that are attracting more and more qualified workers.

Texas has established institutions as well as new accelerators and incubators that fund innovation. The Texas Medical Center is an ideal test market for new products since there is no other place with such a high concentration of reputable hospitals, universities and research centers for the medical industry.

The sheer size of the state means there is vast space for expansion, and the building of a new world-class interdisciplinary research center in Houston that will employ more than 30,000 people is a prime example of what is to come in Texas' future.

Due to the free market principle, the extensive research infrastructure and the enormous financial resources available in health, there's an unprecedented business and social drive to innovate and make dreams come true. All critical ingredients are present in Texas. In order to tap into these opportunities in this huge market, the Dutch LSH sector will need to invest in sustainable relationships with Texas healthcare stakeholders in order to enhance intercontinental collaboration and business.

[Appendix F](#) presents a strengths, weaknesses, opportunities, and threats analysis of the Texas healthcare market.

Next steps

This report marks an important step to strengthen the bilateral healthcare relation between Texas and The Netherlands. Together with the NBSO Texas, future steps and activities will be identified to further connect Texan and Dutch healthcare stakeholders and build towards sustainable healthcare relationships. Please get in touch with the [NBSO Texas](#), [TFHC](#) and/or the [Netherlands Enterprise Agency \(RVO\)](#).

References

- 1 <http://texasalmanac.com/topics/environment/environment>
- 2 <https://www.tsl.texas.gov/ref/abouttx/popcity32010.html>
- 3 <https://www.ocean-insights.com/business-news/port-of-houston-the-nations-largest-petrochemical-complex/>
- 4 <http://worldpopulationreview.com/states/texas-population/>
- 5 <https://www.census.gov/newsroom/press-releases/2016/cb16-81.html>
- 6 <https://web.archive.org/web/20131023121850/http://quickfacts.census.gov/qfd/states/48000.html>
- 7 <https://www.census.gov/quickfacts/fact/table/TX#viewtop>
- 8 <http://healthdata.dshs.texas.gov/HealthFactsProfiles>
- 9 <https://www.forbes.com/places/tx/>
- 10 <https://comptroller.texas.gov/economy/in-depth/special-reports/health-care/96-1796.pdf>
- 11 <http://healthdata.dshs.texas.gov/VitalStatistics/Death>
- 12 <https://tshaonline.org/handbook/online/articles/smhzc>
- 13 <https://www.npr.org/templates/story/story.php?storyId=114045132>
- 14 <https://cdn.dallaschamber.org/wp-content/uploads/2016/01/14135802/DRC-Healthcare-final-full-v2.pdf>
- 15 <https://hhs.texas.gov/sites/default/files/documents/about-hhs/budget-planning/consolidated-budget-request-2018-2019.pdf>
- 16 <https://www.healthinsurance.org/texas-medicaid/>
- 17 <https://businessintexas.com/sites/default/files/07/14/17/biotechreport.pdf>
- 18 <http://www.tmc.edu/about-tmc/facts-and-figures/>
- 19 https://www.ahd.com/state_statistics.html
- 20 <https://www.americashealthrankings.org/explore/annual/measure/Overall/state/TX>
- 21 <https://health.usnews.com/best-hospitals/rankings/cardiology-and-heart-surgery>
- 22 <https://www.thehearthospitalbaylor.com/Pages/hospital-overview.aspx>
- 23 <http://www.houstonmethodist.org/heart-vascular/locations/debakey-heart-vascular-center/about-us/>
- 24 <https://health.usnews.com/best-hospitals/area/tx/texas-childrens-hospital-6742018#children-rankings>
- 25 <https://www.texaschildrens.org/departments/cancer-and-hematology-centers/quick-facts-and-figures>
- 26 <https://www.shrinershospitalforchildren.org/shc/research>
- 27 <https://www.mdanderson.org/documents/about-md-anderson/about-us/facts-and-history/quick-facts.pdf>
- 28 <https://www.mdanderson.org/about-md-anderson/facts-history/institutional-profile.html>
- 29 https://www.washingtonpost.com/news/to-your-health/wp/2015/03/03/u-s-faces-90000-doctor-shortage-by-2025-medical-school-association-warns/?noredirect=on&utm_term=.6f509071cd1f
- 30 <http://www.star-telegram.com/opinion/opn-columns-blogs/other-voices/article211423889.html>
- 31 <http://www.healthleadersmedia.com/community-rural/35-texas-counties-have-zero-physicians>
- 32 <https://www.dshs.texas.gov/chs/hprc/RN-lnk.shtm>
- 33 <http://www.doingbusiness.org/rankings>
- 34 <https://tracer2.com/>
- 35 <https://businessintexas.com/industries/biotechnology-life-sciences>
- 36 <http://abc13.com/health/new-medical-research-center-to-bring-30000-new-jobs/3382728/>
- 37 <https://www.census.gov/quickfacts/fact/table/houstoncitytexas/PST045216>
- 38 http://www.houston.org/newgen/02_Geography/02C%20W001%20Houston%20Area%20Profile.pdf
- 39 <https://www.aamc.org/download/447234/data/texasprofile.pdf>
- 40 <http://www.star-telegram.com/opinion/opn-columns-blogs/other-voices/article168731522.html>
- 41 <https://www.ncbi.nlm.nih.gov/books/NBK210047/>
- 42 <https://www.expressnews.com/150years/education-health/article/Medical-innovations-turned-spotlight-on-San-6476392.php>
- 43 <https://www.dallasnews.com/business/health-care/2017/03/07/texas-16-billion-medical-construction-pipeline-boom-revista>
- 44 <https://today.tamu.edu/2017/08/21/future-of-aging-supporting-older-adults-with-artificial-intelligence/>
- 45 <https://www.selectusa.gov/medical-technology-industry-united-states>
- 46 <https://www.chron.com/business/article/TMC3-takes-major-step-toward-collaborative-biomed-12857850.php>
- 47 <http://www.tmc.edu/news/2018/03/houston-methodist-researcher-makes-bold-move-releasing-nanotech-recipe/>
- 48 <http://www.himssconference.org/>
- 49 <https://www.sxsw.com/>
- 50 <http://www.tha.org/conference>
- 51 <https://texmed.org/texmed/>
- 52 <https://www.sabcs.org/2018-Overview#TargetAudience>
- 53 <https://health.usnews.com/health-care/best-hospitals/articles/faq-how-and-why-we-rank-and-rate-hospitals>
- 54 <https://www.houstonpublicmedia.org/articles/news/2016/03/24/142556/census-numbers-are-out-greater-houston-area-has-largest-population-gain/>

Appendices

A. Results from Survey amongst the Dutch Life Sciences & Health Sector

As part of this market study a survey was conducted amongst Dutch organisations active in the Life Sciences & Health sector to identify the interest in the Texas healthcare market in Texas. The (number of) responses confirmed the need for more information and awareness about this market. This is not a surprising finding since also other countries from the EU, apart from the UK, do not seem to have a big presence in this state compared to other popular U.S. states like California and Massachusetts. The results show that 53% of the Dutch organizations (N=17) are already active in Texas. Of all survey respondents, 76% indicated to consider Texas as potential growth market for the coming years.

The respondents in The Netherlands are mainly active in the fields of “eHealth” (OR cockpit, interoperability and standardization, skin cancer melanoma detection app, e-mental health platform), “medical devices” (air fluidized care systems, regulatory processes, pill grinder, hospital bed washing facility, “mobility and vitality” (rehabilitation), “pharma and biotech” (oncology, logistics), “public health” (education) and “hospital build” (heliport solutions). It is within these areas why they see Texas as target market. In addition, interest was also shown from the Dutch regional investments agencies.

General barriers experienced by the respondents range from FDA approval, coverage through reimbursement, local production, product liability insurance to legal aspects. Insufficient knowledge of the healthcare sector and hospitals in Texas as well as the lack of contacts were perceived as major challenges.

B. Meetings with Central Actors on the Texas Healthcare Market during Fact-finding Visit

No	Company/Organization	Description
1.	Houston First	Houston's economic development organization with good contacts with area hospitals
2.	Memorial Hermann	The largest not for profit healthcare system in Texas with 13 hospitals in Houston.
3.	Texas Healthcare and Bioscience Institute	Advocacy group promoting healthcare and bioscience to the state legislature
4.	Texas Health and Human Services	State of Texas health regulatory agency in charge of budget and regulations
5.	Dell Medical School	The Medical School at the University of Texas at Austin, opened in 2016
6.	MassChallenge Texas	Startup accelerator with an office in Austin
7.	American Academy of Nurse Entrepreneurs	Provides educational programs, resources and community support for advanced nurse practitioners
8.	UTMB Health (University of Texas Medical Branch)	Academic health center and oldest medical school in Texas
9.	Ascension Texas	World's largest Catholic health system based in Austin
10.	Blue Cross Blue Shield of Texas	A state-wide, customer-owned health insurer
11.	City of San Antonio	Oversees the San Antonio Metropolitan Health District, its public agency responsible for providing public health programs in San Antonio
12.	BioMed SA	Nonprofit organization created by City of San Antonio to promote bioscience and medicine within the city
13.	UT Health San Antonio	Largest health sciences university in South Texas
14.	Rapamycin Holdings	San Antonio-based company with a patented oral treatment for Cancer prevention
15.	Clark Construction Group	Construction company with many hospital build projects throughout the United States with an office in Houston
16.	Sunbelt Medical Corporation	Houston-based medical device distribution company in business for over 26 years
17.	Houston Methodist Hospital	Highly ranked hospital in the Texas Medical Center with special recognition in cardiovascular care
18.	Station Houston	Co-working space that offers education and community support, including expert mentors
19.	UT Health Houston	The most comprehensive academic health university in the gulf coast region with six schools
20.	Rice Alliance for Technology and Entrepreneurship	Provides education and supports commercialization of innovations in the Houston and Texas regions
21.	TMCx	Texas Medical Center's startup accelerator with specific focus on bioscience companies
22.	JLabs	Johnson&Johnson's accelerator at the Texas Medical Center
23.	MD Anderson Cancer Center	World's number one ranked cancer center located at the Texas Medical Center in Houston
24.	Baylor College of Medicine	health sciences university that creates knowledge and applies science and discoveries to further education, healthcare and community service
25.	Texas Scottish Rite Hospital for Children	Hospital with national recognition in pediatric orthopaedics.
26.	Texas Health Resources	One of the largest faith-based, nonprofit health systems in the U.S. located in North Texas

C. List of Group Purchasing Organizations (GPOs)

HGR = Health Group Cooperatives (originally authorized by Senate Bill 10 from the 78th Legislative Session)

PPC = Purchasing Cooperatives (originally authorized by House Bill 2055 from the 73rd Legislative Session)

SEHC = Small Employer Health Coalitions (originally authorized by House Bill 8897 from the 78th Legislative Session)

Reg/ Type	Organization Name (Select name for more info)	Mailing Address	Phone Number	Date Registered
HGR	<u>CU HEALTH GROUP</u>	P O BOX 16151 SUGAR LAND TX 77496-6151	713/222-7977	APRIL , 2006
HGR	<u>LAKESIDE HCS-JPG HEALTH GROUP</u>	P O BOX 180253 DALLAS TX 75218-0253	214/453-2550	JANUARY , 2010
HGR	<u>LARGE EMPLOYER LUBBOCK CHAMBER HEALTH PLAN COOPERATIVE</u>	P O BOX 6170 LUBBOCK TX 79493-6170	806/796-7300	JUNE , 2006
HGR	<u>LARGE EMPLOYER PERMIAN BASIN HEALTH PLAN COOPERATIVE</u>	5030 EAST UNIVERSITY BLVD SUITE D 103 ODESSA TX 79762-8148	432/363-1300	APRIL , 2007
HGR	<u>LUBBOCK CHAMBER EMPLOYER HEALTH PLAN SMALL BUSINESS COOPERATIVE</u>	P O BOX 6170 LUBBOCK TX 79493-6170	806/796-7300	JUNE , 2006
HGR	<u>MAIN STREET HEALTH GROUP</u>	P O BOX 16151 SUGAR LAND TX 77496-6151	713/222-7977	FEBRUARY , 2007
HGR	<u>MD HEALTH GROUP</u>	P O BOX 16151 SUGAR LAND TX 77496-6151	713/222-7977	FEBRUARY , 2007
HGR	<u>PERMIAN BASIN EMPLOYER HEALTH PLAN SMALL BUSINESS COOPERATIVE</u>	5030 EAST UNIVERSITY BLVD SUITE D 103 ODESSA TX 79762-8148	432/363-1300	MARCH , 2007
HGR	<u>TEXAS DENTISTS HEALTH GROUP COOPERATIVE</u>	2441 HIGH TIMBERS DRIVE SUITE 410 THE WOODLANDS TX 77380-1052	281/738-5005	FEBRUARY , 2011
HGR	<u>TEXAS LAWYERS HEALTH GROUP COOPERATIVE</u>	BAILEY LAW FIRM PLLC 2441 HIGH TIMBERS DRIVE SUITE 410 THE WOODLANDS TX 77380-1052	281/738-5005	FEBRUARY , 2011
HGR	<u>TEXAS MIDWEST CHAMBER COOPERATIVE</u>	C/O WAGSTAFF ALVIS STUBBEMAN SEAMSTER 115 SOUTH LAMAR STREET EASTLAND TX 76448-2709	254/629-1400	OCTOBER , 2007
HGR	<u>TEXAS PHYSICIANS HEALTH GROUP COOPERATIVE</u>	BAILEY LAW FIRM PLLC 2441 HIGH TIMBERS DRIVE SUITE 410 THE WOODLANDS TX 77380-1052	281/738-5005	FEBRUARY , 2011
HGR	<u>TEXAS REAL ESTATE HEALTH GROUP COOPERATIVE</u>	BAILEY LAW FIRM PLLC 2441 HIGH TIMBERS DRIVE SUITE 410 THE WOODLANDS TX 77380-1052	281/738-5005	FEBRUARY , 2011
HGR	<u>TEXAS RELIGIOUS ORGANIZATIONS HEALTH GROUP COOPERATIVE</u>	BAILEY LAW FIRM PLLC 2441 HIGH TIMBERS DRIVE SUITE 410 THE WOODLANDS TX 77380-1052	281/738-5005	FEBRUARY , 2011
HGR	<u>TEXAS SMALL BUSINESS HEALTH GROUP COOPERATIVE</u>	BAILEY LAW FIRM PLLC 2441 HIGH TIMBERS DRIVE SUITE 410 THE WOODLANDS TX 77380-1052	281/738-5005	FEBRUARY , 2011
HGR	<u>WORKER'S COOPERATIVE OF TEXAS, INC.</u>	1110 KINGWOOD DRIVE SUITE 200 N KINGWOOD TX 77339-3164	281/358-1455	AUGUST , 2008
HGR	<u>WORKERS COOPERATIVE, INC.</u>	C/O LOCKE LIDDELL AND SAPP LLP 2200 ROSS AVENUE SUITE 2200 DALLAS TX 75201-6776	214/740-8639	JUNE , 2004
PPC	<u>AMARILLO CHAMBER HEALTHCARE COOPERATIVE</u>	P O BOX 9480 AMARILLO TX 79105-9480	806/373-7800	SEPTEMBER, 2009
PPC	<u>CU HEALTH GROUP, PPC</u>	P O BOX 16151 SUGAR LAND TX 77496-6151	713/504-5293	DECEMBER , 2008
PPC	<u>EMPLOYER & EMPLOYEE BENEFIT ASSOCIATION</u>	6322 SOVEREIGN STREET SUITE 138 SAN ANTONIO TX 78229-5133	210/308-5770	MAY , 2004
PPC	<u>FIRST TEXAS HEALTH COOPERATIVE</u>	4403D MANHACA ROAD AUSTIN TX 78745-1646	512/428-9827	NOVEMBER , 2006
PPC	<u>GREATER WACO CHAMBER LARGE EMPLOYER HEALTH BENEFIT PLAN</u>	5400 BOSQUE BLVD SUITE 301 CENTRAL TOWER WACO TX 76710-4446	254/776-5500	JANUARY , 2009
PPC	<u>GREATER WACO CHAMBER SMALL EMPLOYER HEALTH BENEFIT PLAN</u>	5400 BOSQUE BLVD SUITE 301 CENTRAL TOWER WACO TX 76710-4446	254/776-5500	JANUARY , 2009
PPC	<u>LIBERTY COALITION, INC., THE</u>	P O BOX 3692 HOUSTON TX 77251-3692	713/880-2002	JANUARY , 2003
PPC	<u>LONE STAR HEALTH ALLIANCE, INC. d b a - TRUCKERS INSURANCE PURCHASING ALLIANCE</u>	3509 HULEN STREET SUITE 203 FORT WORTH TX 76107-6865	N/A	SEPTEMBER, 1993

PPC	<u>LONGVIEW PARTNERSHIP HEALTH INSURANCE CO-OP, INC.</u>	410 NORTH CENTER STREET LONGVIEW TX 75601-6403	903/237-4000	JUNE , 2010
PPC	<u>LUBBOCK CHAMBER OF COMMERCE TIER I PRIVATE PURCHASING COOPERATIVE</u>	C/O MCCLESKEY HARRIGER BRAZIL L AND GRAF P O BOX 6170 LUBBOCK TX 79493-6170	806/796-7311	NOVEMBER , 2009
PPC	<u>LUBBOCK CHAMBER OF COMMERCE TIER III PRIVATE PURCHASING COOPERATIVE</u>	C/O MCCLESKEY HARRIGER BRAZILL AND GRAF P O BOX 6170 LUBBOCK TX 79493-6170	806/796-7311	NOVEMBER , 2009
PPC	<u>MAIN STREET HEALTH GROUP, PPC</u>	P O BOX 16151 SUGAR LAND TX 77496-6151	713/504-5293	DECEMBER , 2008
PPC	<u>MD HEALTH GROUP, PPC</u>	P O BOX 16151 SUGAR LAND TX 77496-6151	713/504-5293	DECEMBER , 2008
PPC	<u>PERMIAN BASIN EMPLOYER HEALTH PLAN</u>	MITCHELL-WILLIAMS AUSTIN TX 78701-3661	512/480-5100	JANUARY , 2012
PPC	<u>SMALL BUSINESS UNITED OF TEXAS HEALTH INSURANCE PURCHASING COOPERATIVE</u>	100 CONGRESS AVENUE SUITE 2000 AUSTIN TX 78701-2745	512/476-1707	JULY , 1994
PPC	<u>TEXAS HEALTH CARE PURCHASING ALLIANCE, INC.</u>	P O BOX 3692 HOUSTON TX 77251-3692	713/880-2002	AUGUST , 1994
PPC	<u>TEXAS SMALL BUSINESS PRIVATE PURCHASING COOPERATIVE</u>	C/O BAILEY LAW FIRM PLLC 2441 HIGH TIMBERS DRIVE SUITE 410 THE WOODLANDS TX 77380-1052	281/738-5005	JULY , 2011
SEHC	<u>CAMPGROUND OPERATORS COALITION</u>	1285 NORTH MAIN STREET SUITE 101 4 MANSFIELD TX 76063-1511	N/A	OCTOBER , 2007
SEHC	<u>DFW SMALL EMPLOYER HEALTH COALITION #1</u>	1406 WEST LOUISIANA STREET MC KINNEY TX 75069-4643	214/558-0865	FEBRUARY , 2007
SEHC	<u>FIRST TEXAS HEALTH COALITION #1</u>	4403D MANCHACA ROAD AUSTIN TX 78745-1646	512/428-9827	DECEMBER , 2005
SEHC	<u>FIRST TEXAS HEALTH COALITION #10</u>	4403D MANCHACA ROAD AUSTIN TX 78745-1646	512/428-9827	APRIL , 2006
SEHC	<u>FIRST TEXAS HEALTH COALITION #11</u>	4403D MANCHACA ROAD AUSTIN TX 78745-1646	512/428-9827	FEBRUARY , 2007
SEHC	<u>FIRST TEXAS HEALTH COALITION #14</u>	4403D MANCHACA ROAD AUSTIN TX 78745-1646	512/428-9827	SEPTEMBER, 2006
SEHC	<u>FIRST TEXAS HEALTH COALITION #16</u>	4403D MANCHACA ROAD AUSTIN TX 78745-1646	512/428-9827	FEBRUARY , 2007
SEHC	<u>FIRST TEXAS HEALTH COALITION #17</u>	4403D MANCHACA ROAD AUSTIN TX 78754-1646	512/428-9827	FEBRUARY , 2007
SEHC	<u>FIRST TEXAS HEALTH COALITION #18</u>	4403D MANCHACA ROAD AUSTIN TX 78754-1646	512/428-9827	FEBRUARY , 2007
SEHC	<u>FIRST TEXAS HEALTH COALITION #19</u>	4403D MANCHACA ROAD AUSTIN TX 78745-1646	512/428-9827	MARCH , 2007
SEHC	<u>FIRST TEXAS HEALTH COALITION #20</u>	4403 MANCHACA ROAD SUITE D AUSTIN TX 78745-1646	512/447-9853	JUNE , 2008
SEHC	<u>FIRST TEXAS HEALTH COALITION #21</u>	4403 MANCHACA ROAD SUITE D AUSTIN TX 78745-1646	512/447-9853	JUNE , 2008
SEHC	<u>FIRST TEXAS HEALTH COALITION #8</u>	4403D MANCHACA ROAD AUSTIN TX 78745-1646	512/428-9827	DECEMBER , 2005
SEHC	<u>FIRST TEXAS HEALTH COALITION, INC.</u>	4403D MANCHACA ROAD AUSTIN TX 78754-1646	512/428-9827	MARCH , 2004
SEHC	<u>GULF COAST - IEC, INC.</u>	P O BOX 3692 HOUSTON TX 77251-3692	713/880-2002	JANUARY , 2005
SEHC	<u>HANOVER COALITION, INC.</u>	1701 RIVER RUN ROAD, SUITE 902 FORT WORTH TX 76107	817/332-8956	NOVEMBER , 2011
SEHC	<u>HOUSTON COALITION, INC., THE</u>	P O BOX 3692 HOUSTON TX 77251-3692	713/880-2002	MARCH , 2004
SEHC	<u>JOHNSON COUNTY HEALTH GROUP</u>	541 MEADOWCREST DRIVE BURLESON TX 76028-7483	817/905-8449	MARCH , 2009
SEHC	<u>JOHNSON COUNTY HEALTH GROUP #2</u>	541 MEADOWCREST DRIVE BURLESON TX 76028-7483	817/905-8449	JULY , 2009
SEHC	<u>KEY ASSOCIATION HEALTH COALITION #1</u>	P O BOX 1659 BURLESON TX 76097-1659	817/717-6377	MARCH , 2007
SEHC	<u>KEY ASSOCIATION HEALTH COALITION #2</u>	P O BOX 1659 BURLESON TX 76097-1659	817/717-6377	AUGUST , 2007
SEHC	<u>KEY ASSOCIATION HEALTH COALITION #3</u>	P O BOX 1659 BURLESON TX 76097-1659	817/717-6377	AUGUST , 2007
SEHC	<u>KEY ASSOCIATION HEALTH COALITION #4</u>	P O BOX 1659 BURLESON TX 76097-1659	817/717-6377	AUGUST , 2007
SEHC	<u>MR. HANDYMAN TEXAS HEALTH INSURANCE COALITION</u>	901 NORTH MCDONALD SUITE 903 MC KINNEY TX 75069	214/387-3474	AUGUST , 2007

SEHC	<u>PIONEER PURCHASING ALLIANCE, INC.</u>	P O BOX 3692 HOUSTON TX 77251-3692	713/880-2002	MARCH , 2004
SEHC	<u>SMALL BUSINESS COALITION</u>	P O BOX 116994 CARROLLTON TX 75011-6994	972/306-1966	MAY , 2005
SEHC	<u>SMALL BUSINESS COALITION II</u>	10501 NORTH CENTRAL EXPRESSWAY SUITE 303 DALLAS TX 75231-2219	N/A	JUNE , 2005
SEHC	<u>SMALL BUSINESS COALITION III</u>	10501 NORTH CENTRAL EXPRESSWAY SUITE 303 DALLAS TX 75231-2219	866/559-0111	JULY , 2005
SEHC	<u>SMALL BUSINESS COALITION V</u>	1310 WEST EL PASO STREET FORT WORTH TX 76102-5980	817/322-9059	SEPTEMBER, 2005
SEHC	<u>SMALL BUSINESS COALITION VI</u>	1310 WEST EL PASO STREET FORT WORTH TX 76102-5908	817/332-9059	SEPTEMBER, 2005
SEHC	<u>SMALL BUSINESS COALITION VIII</u>	P O BOX 116994 CARROLLTON TX 75011-6994	972/306-1966	MAY , 2006
SEHC	<u>SMALL BUSINESS COALITIONS OF TEXAS</u>	P O BOX 116994 CARROLLTON TX 75011-6994	972/306-1966	DECEMBER , 2005
SEHC	<u>TEXAS SERVICE PROVIDERS HEALTH ALLIANCE, INC.</u>	400 WEST 15TH STREET SUITE 711 AUSTIN TX 78701-1647	N/A	MARCH , 2004

D. List of Medical Device Distributors

Below are some examples of Medical Device Distributors active in Texas:

- McKesson
- Medline
- Owens & Minor
- Henry Schein

A complete overview of Medical Device Distributor License Holders (1200+) of the Texas Department of State Health Services is available through the authors of this study.

E. List of Relevant Trade Fairs and Events

- **HIMSS: The Healthcare Information Systems Society**⁴⁸
HIMSS is an annual conference and the most important place for connecting with hospitals and healthcare stakeholders. Attendees can benefit from face-to-face meetings with CEOs, heads of hospitals, government officials, and experts who could potentially help them enter the market. Attendees should plan on filling their schedules with meetings from morning until evening every day, and have a solid “elevator pitch” to quickly and effectively sell services or products to potential buyers. As of 2015 a Dutch HIMSS Community delegation is present yearly at the HIMSS.
- **SXSW: South by Southwest**⁴⁹
SXSW is one of the most important trade shows in Texas for many different sectors. It was originally for music, but over the years it has expanded to include a medical component. This festival is great for getting brand recognition and finding investment capital. Companies can enter competitions to catch the attention of investors, as well as participate in the trade expo. Dozens of networking events help investors find the next great start up. In 2018 a first (European) healthcare delegation visited SXSW.

- [Texas Hospital Association \(THA\) Annual Conference & Expo](#)⁵⁰
The THA Annual Conference and Expo brings together health care leaders from across Texas. The two-day event is the association's premiere event for Texas hospital leaders and features sessions designed for clinical, policy, legal, technology, and governance positions.
- [TexMed Conference](#)⁵¹
The Texas Medical Association hosts a yearly conference rife with networking opportunities, expert speakers and exposition to promote products.
- [San Antonio Breast Cancer Symposium](#)⁵²
Drawing 7,500 attendees from over 90 countries, this symposium brings together academics, researchers and physicians specialized in treating breast cancer. It is one of the largest events concentrating on this topic in the world.

F. Map of Medical Schools and Selected Research Centers

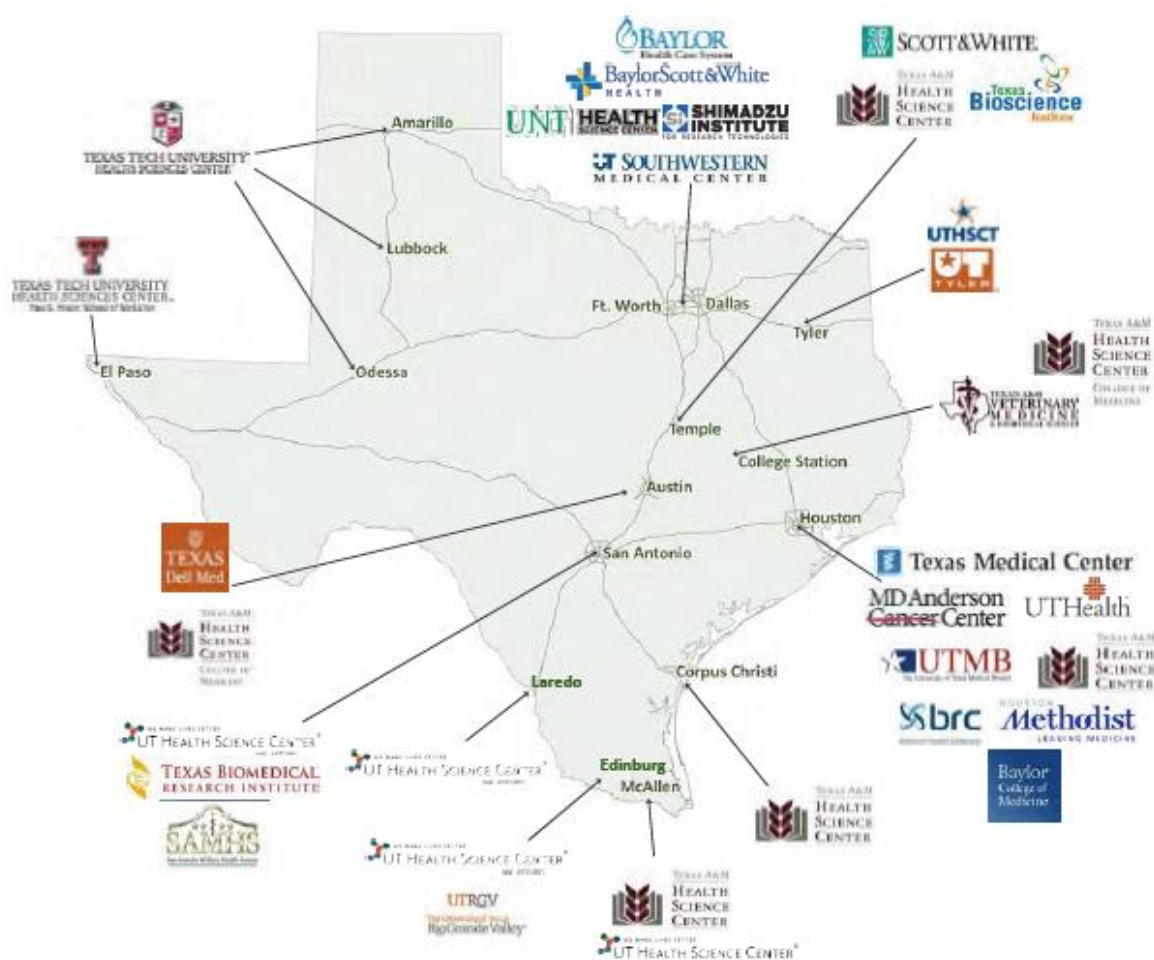


Image credit: State of Texas Governor's Office of Business & Community Development¹⁷

G. SWOT Analysis of the Texas Healthcare Market

Strengths	Weaknesses
<ul style="list-style-type: none"> - Size of market - Excellent research infrastructure - Low tax burden and cost of doing business - Excellent philanthropic support and willingness to solve problems - Strong educational support and large labor force 	<ul style="list-style-type: none"> - Underserved rural community - Large uninsured population - Aging population - Scattered healthcare market - Slow, complex regulatory process
Opportunities	Threats
<ul style="list-style-type: none"> - Scattered market means each player is significant - Increase in demand due to chronic disease and aging population - Underserved rural community needs eHealth solutions - Medical devices not in top 25 imports and exports for Texas yet leaving significant room for growth - Strong funding support network for start-ups with disruptive technologies 	<ul style="list-style-type: none"> - Highly litigious market - Insurance structure uncertainty - Possibility for tariffs under current presidential administration - No universal healthcare means patients can't always meet costs - Many Texan companies operate with old business model and can be slow to accept new ideas

Authors



Netherlands Business Support Office (NBSO) Texas

The Netherlands Business Support Office Texas is an office of the Dutch Ministry of Foreign affairs dedicated to building business relationships between the Netherlands and Texas. The office is available to answer any questions Dutch companies may have on their journey to doing business in Texas.

For more information visit usa.nbso-texas.com

Task Force Health Care



Task Force Health Care (TFHC) is a public-private platform founded in 1996. The TFHC network consist of partners from industry, knowledge institutes, NGO's, healthcare providers and the government, all active in the Dutch Life Sciences & Health sector. The partners provide innovative and sustainable solutions to global (and local) healthcare challenges and are active all over the world.

TFHC stimulates cooperation and knowledge-sharing in order to combine forces within the Dutch healthcare sector, and present and position The Netherlands abroad in order to be involved in the global and local healthcare challenges.

For more information visit: www.tfhc.nl

Agenda

For more information on upcoming activities:
www.tfhc.nl/agenda/

Publication

Written by: NBSO Texas and Task Force Health Care

Date: June 2018

Contact: **TFHC**
Mieke Flierhuis
mieke.flierhuis@tfhc.nl
+31 70 2199 009

NBSO Texas
Saskia Pardaans & Daniel Pérez
pardaans@nbso-texas.com
+1 832 900 4948