



2018 Texas Cancer Registry Annual Report

**As Required by
Texas Health and Safety Code
Section 82.007**



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Executive Summary

The Texas Cancer Incidence Reporting Act ([Health and Safety Code, 82.001](#)) requires the Department of State Health Services (DSHS) to maintain the Texas Cancer Registry (TCR): a statewide population-based registry that serves as the foundation for measuring the cancer burden in Texas. Data from the TCR are used to assess comprehensive cancer control efforts; health disparities; and progress in prevention, diagnosis, treatment, and survivorship. TCR data also support a wide variety of cancer-related research. This important work cannot be adequately addressed by state and local government, academic institutions, or the private sector without the timely, complete, and accurate cancer data provided by the TCR.

[Section 82.007](#) requires DSHS to publish an annual report to the Legislature of the information obtained under the Act. The following are key findings discussed in this report.

- In 2018, an estimated 121,463 new cases of cancer will be diagnosed in Texas, and an estimated 44,713 Texans will die from cancer.
- In 2018, an estimated 1,220 new cases and 145 cancer deaths are expected to occur in Texas children (birth to 14 years), and an additional 572 new cases and 72 cancer deaths are expected in Texas adolescents (15 to 19 years).
- The most common cancers diagnosed are breast cancer for women and prostate cancer for men. Lung cancer is the leading cause of cancer death in Texas, with an estimated 11,092 deaths expected to occur in 2018.
- During the past two decades, lung, colorectal, prostate, female breast, and cervical cancer incidence rates have decreased markedly. Incidence rates are increasing for melanoma, thyroid, kidney, and liver cancer.
- Cancer is the second most common cause of death in Texas for adults, children, and adolescents. Cancer is the most common cause of disease-related death for Texan children and adolescents ages 0-19 years.
- Sixty-five percent of Texans survive 5 years or more after being diagnosed with cancer.
- The number of cancer survivors continues to increase; as of January 1, 2015, 775,148 Texans who were diagnosed with cancer in the last 20 years are alive today.

1. Introduction

The Texas Cancer Incidence Reporting Act ([Health and Safety Code, Section 82.004](#)) requires the Department of State Health Services to maintain a cancer registry for the state that includes a record of cancer cases that are diagnosed and/or treated in Texas and collect information that can be used for prevention, early detection, diagnosis, treatment, and survivorship of cancer.

The purpose of this report is to provide a summary of information collected by the Texas Cancer Registry (TCR), as required by [Section 82.007](#). The report is due to the Legislature annually.

This report highlights the role of the TCR in collecting, maintaining, and disseminating accurate, precise, and current information that serves as a tool in the control of cancer. An overview of key cancer statistics is provided using the most current data available (cases diagnosed through 2015), as well as the estimated number of new cases and deaths expected in 2018. The report also includes information on the different ways TCR data are used.

2. Background

Cancer Causes and Prevention

Cancer is not a single disease, but rather a group of related diseases characterized by uncontrolled growth and spread of abnormal cells.¹ Cancer can occur in many different sites in the body. If the spread of abnormal cells is not controlled, cancer can invade other organs and tissues. Some cancer cells can spread to distant places in the body through the blood or the lymph system and form new tumors. The uncontrolled growth and spread of cancer can result in serious health problems and death.

Cancer is caused by both internal and external factors. Internal factors are conditions and characteristics that exist within the body, such as genetics, hormones, and immune conditions. External factors are behaviors and environmental conditions that affect health, such as tobacco use, excess body weight, infectious organisms, chemicals, and ultraviolet (UV) radiation. These causal factors may act together to start the development of cancer. Often, ten or more years pass between exposure to external factors and detectable cancer.

The American Cancer Society (ACS) estimates that at least 42 percent of cancers are preventable. This includes 19 percent that are caused by smoking and 18 percent that are attributable to a combination of excess alcohol consumption, poor diet, excess body weight, and physical inactivity.² Certain cancers are caused by infectious agents, including viruses and bacteria, which could be prevented through treatment of the infection, behavioral changes, or vaccination.

Cancer screening can reduce the risk of developing and dying from cancer. Screening offers the ability to detect certain cancers early on, at more treatable stages, thus reducing mortality from cancers of the breast, lung, cervix, colon, and

¹ American Cancer Society. Cancer Facts & Figures 2018. Atlanta: American Cancer Society; 2018.

² American Cancer Society. Cancer Facts & Figures 2018. Atlanta: American Cancer Society; 2018.

rectum.³ In addition, screening for colorectal and cervical cancers can prevent cancer by allowing for the identification and removal of precancerous lesions.

For more information on the types, causes, and prevention of cancer, visit the ACS website cancer.org.

The Texas Cancer Registry

Cancer registries collect information about cancer cases, including information about the location in the body and specific cell type(s), spread of the disease, patient demographics, survival, and cause of death. The information is used to monitor the cancer burden, identify trends and patterns in populations, and identify high-risk groups and behaviors. Public health officials and policymakers use the data to guide the planning of cancer control programs and to prioritize resources.

The TCR was first established by the 66th Texas Legislature in 1979 and reauthorized by the Texas Cancer Incidence and Reporting Act in 1989. The TCR is one of the largest cancer registries in the United States. Over 260,000 reports of cancer were received in 2017 from more than 550 hospitals, cancer treatment centers, ambulatory surgery centers, and pathology laboratories across Texas. Of these reports, over 7,900 were for out-of-state residents. These reports are sent to their residing state cancer registry, providing a significant contribution to the national cancer surveillance system. Similarly, the TCR receives reports of Texans diagnosed with cancer outside of Texas from other state cancer registries.

The TCR first met Centers for Disease Control and Prevention's (CDC) "high quality" data standards in 2004 and achieved Gold Certification from the North American Association of Central Cancer Registries (NAACCR) in 2006. The data standards and gold certification have been maintained each year since, except in 2013 when the TCR received NAACCR Silver Certification.

³ American Cancer Society. Cancer Prevention & Early Detection Facts & Figures 2017-2018. Atlanta: American Cancer Society; 2017.

3. Cancer in Texas

The Texas Cancer Registry (TCR) examines cancer incidence, mortality, survival, and prevalence to assess the burden of cancer in Texas.

Incidence is the number of new cancers diagnosed, and mortality is the number of new cancer deaths occurring in a specified population in one year. Incidence and mortality rates are most often expressed as the number of new cases or deaths, respectively, per 100,000 individuals in the population at risk. Childhood cancer rates are typically presented as the number of cases or deaths per one million children. Because cancer incidence and mortality increase with age, incidence and mortality are commonly expressed as age-adjusted rates. For example, the age-adjusted incidence rate in 2015 of all cancers in Texas is 396 cases per 100,000 population.

Cancer survival is assessed using the percentage of cancer patients who have survived for a certain period of time after their cancer diagnosis. Five-year relative survival is a commonly used measure of cancer survival, as it represents the percentage of cancer patients who have survived for five years after diagnosis compared to the expected survival for people without cancer. Cancer prevalence estimates the number of people alive on a certain date who have ever been diagnosed with cancer.

Cancer Incidence

The TCR used Texas cancer incidence data from 1995 to 2015 to estimate the number of new invasive cancer cases expected to be diagnosed in 2018. This method accounts for expected delays in case reporting and considers geographic variations in sociodemographic and lifestyle factors, medical settings, and cancer screening behaviors as predictors of incidence.⁴

In 2018, an estimated 121,463 new cancer cases are expected to be diagnosed in Texas. Although cancer incidence rates overall continue to decline, the number of

⁴ Zhu L, et al. Predicting US- and state-level cancer counts for the current calendar year. *Cancer* 2012; 118(4):1100-9.

newly diagnosed cancer cases continues to increase with the aging and growing of the Texas population.

For women in Texas, breast cancer is the most commonly diagnosed cancer with an estimated 17,407 cases expected to be diagnosed in 2018, followed by lung cancer (6,800 cases), and colorectal cancer (5,000 cases). The fourth and fifth leading cancers in women are of the uterus and pancreas.

Among men in Texas, prostate cancer is the most commonly diagnosed cancer with an estimated 13,936 cases expected to be diagnosed in 2018, followed by lung cancer (8,685 cases), and colorectal cancer (4,239 cases). Kidney and renal pelvis cancer and liver (including intrahepatic bile duct) cancer are the fourth and fifth most commonly diagnosed cancers in men.

During the past two decades, lung, colorectal, prostate, female breast, and cervical cancer incidence rates have markedly decreased, largely attributed to a reduced number of smokers and increase in screenings. In contrast to the decline for most cancer types, incidence rates are increasing for melanoma, thyroid, kidney, and liver cancer.

Cancer Mortality

Cancer is the second most common cause of death in Texas.⁵ The age-adjusted cancer mortality rate is 150 cancer deaths per 100,000 population. In 2018, an estimated 44,713 Texans, or over 120 people per day, are expected to die from cancer.

Lung cancer is the leading cause of cancer death in Texas for males and females, accounting for 25 percent of all expected cancer deaths in 2018. Cigarette smoking is the leading risk factor for lung cancer. The duration of smoking and number of cigarettes smoked per day significantly impact cancer risk. According to the Centers for Disease Control (CDC), 14.3 percent of adult Texans and 14.1 percent of Texas high school students currently smoke cigarettes.⁶

⁵ Center for Health Statistics, Texas Department of State Health Services. Ten Leading Causes of Death by Race/Ethnicity – Texas, 2014, Vital Statistics Annual Report. 2016. Accessed April 2018. dshs.texas.gov/chs/vstat/.

⁶ Centers for Disease Control and Prevention. State Tobacco Activities Tracking and Evaluation (STATE) System. State Highlights. Accessed April 2018. cdc.gov/statesystem/statehighlights.

Colorectal cancer is expected to be the second leading cause of cancer death in Texas in 2018, with an estimated 4,144 deaths. Breast, pancreatic, and liver (including intrahepatic bile duct) cancers are expected to be the third, fourth, and fifth leading causes of cancer deaths, respectively, in Texas.

Cancer Survival

Overall, 65 percent of Texans survive five years or more after being diagnosed with cancer compared to Texans without cancer. However, survival rates can significantly vary by cancer type and stage at diagnosis.

- For Texans diagnosed with localized cancer, the 5-year relative survival rate is 88 percent.
- If cancer has spread to surrounding tissues or organs and/or regional lymph nodes, the 5-year relative survival rate is 69 percent.
- If cancer has spread to distant organs or tissues, the 5-year relative survival rate is 32 percent.
- Liver and pancreatic cancers have the lowest 5-year relative survival rates among all cancers in Texas (18 percent and 12 percent, respectively).
- In contrast, 5-year survival rates for the most commonly diagnosed cancers, prostate and female breast cancers, are 97 percent and 89 percent, respectively.

Prevalence of Cancer

As of January 1, 2015, the most recent date for which data exists, 775,148 Texans who were diagnosed with cancer in the previous 20 years were alive. Some of these individuals were cancer free, while others may have been receiving ongoing treatment. The cancer sites with the highest number of survivors in Texas are female breast, prostate, colorectal, thyroid, non-Hodgkin's lymphoma, melanoma, and kidney. Prostate and female breast cancers constitute about 40 percent of the cancer survivor population.

4. Cancer in Children and Adolescents

Although advances in cancer treatment and survival have improved in recent decades, cancer is still the second leading cause of death in Texas children aged 1 to 14 years old.⁷ In 2018, an estimated 1,220 new cases and 145 cancer deaths are expected to occur among children (birth to 14 years), and an additional 572 new cases and 72 cancer deaths are expected among adolescents (15 to 19 years).

The annual cancer incidence rate among children is 199 cases per 1 million population. Among this group, leukemias are the most common cancers, followed by brain and central nervous system cancers, lymphomas, soft tissue sarcomas, and neuroblastoma.

The annual incidence rate among adolescents is 273 cases per 1 million population. For this group, the most common cancers are brain and central nervous system cancers, other malignant epithelial neoplasms and melanomas (of which thyroid carcinoma is the predominant cancer in this category), lymphomas, and leukemias.

The relative five-year survival rate among children and adolescents diagnosed with cancer is approximately 85 percent. As of January 1, 2015, an estimated 11,515 survivors of childhood and adolescent cancer were alive in Texas.

⁷ Center for Health Statistics, Texas Department of State Health Services. Five Leading Causes of Death by Sex and Age – Texas, 2014, Vital Statistics Annual Report. 2016. Accessed April 2018. dshs.texas.gov/chs/vstat/

5. Texas Cancer Registry Data Uses

Health Care Management

Hospital and cancer treatment center administrators use Texas Cancer Registry (TCR) data to evaluate patient services and identify patterns in cancer care and plan accordingly. For example, administrators can examine reports that identify changes in care over time and evaluate referral patterns to see when patients are directed or choose to be treated at that facility or another health care center. These data are crucial for planning resource allocation and staff recruitment.

Cancer Surveillance

Cancer surveillance enables health professionals to evaluate and address the cancer burden. Public health professionals, health care providers, researchers, policy makers, and others use TCR data to assess patterns in cancer occurrence, detect important trends within populations, and evaluate the impact of cancer prevention programs. Cancer registry data are used to conduct needs and capacity assessments that allow for evidence-based decision-making when allocating limited resources.

Cancer Research

In 2017, the TCR completed 389 data requests from customers across the state and nation. TCR data are also available through a web-based query system that provides cancer incidence and mortality rates, counts, and maps.⁸ In 2017, there were 15,253 queries for TCR cancer statistics using the web-based query system.

TCR data are requested and queried for the following primary purposes:

- comprehensive cancer control planning;
- health event investigations;
- epidemiologic studies;
- collaboration with cancer screening programs;

⁸ Web Query Tool: Selectable Cancer Incidence/Mortality Rates and Mapping. Texas Cancer Registry, Texas Department of State Health Services. cancer-rates.info/tx/

- study of incidence and mortality by stage, geographic area, or other factors;
- comparative effectiveness of various cancer care interventions; and
- needs assessments, program planning and evaluation.

Epidemiology Studies

Epidemiologic studies are crucial for identifying risk factors and determining optimal treatment approaches to clinical practice. The TCR provides data that support epidemiologic studies on the causes of cancer, cancer prevention and control, and cancer survivorship. While the TCR does not provide financial support for research, TCR data make a significant amount of cancer epidemiology research possible.

TCR data are used to describe the demographic characteristics of people who develop a specific type of cancer, compare the cancer burden to other public health issues, evaluate trends in cancer incidence and mortality over time, and examine factors affecting cancer survival outcomes.^{9,10} For instance, TCR data contributed to the evidence of a continuous reduction in incidence and mortality rates of cervical cancer after an increase in Pap test screening, underscoring the importance of preventive strategies.¹¹

TCR data are used to support some of the largest, longest, and most well-known cohort studies in the nation. For these epidemiologic studies, the TCR conducts regular data linkages to provide accurate and high quality cancer outcome data. Many of these large cohort studies are examining the effect of lifestyle factors and modifiable behaviors on cancer risk.^{12,13,14} For example, the Mexican American

⁹ Wang DY, et al. Rising Incidence of Colorectal Cancer Among Young Hispanics in Texas. *J Clin Gastroenterol* 2017; 51(1):34-42.

¹⁰ Zhao H, et al. Adherence to treatment guidelines and survival for older patients with stage II or III colon cancer in Texas from 2001 through 2011. *Cancer* 2017; 124(4):679-87.

¹¹ Jemal A, et al. Annual Report to the Nation on the Status of Cancer, 1975–2009, Featuring the Burden and Trends in Human Papillomavirus (HPV)–Associated Cancers and HPV Vaccination Coverage Levels. *J Natl Cancer Inst* 2013; 105(3): 175-201.

¹² Gordon-Dseagu VLZ, et al. A Cohort Study of Adolescent and Midlife Diet and Pancreatic Cancer Risk in the NIH-AARP Diet and Health Study. *Am J Epidemiol* 2017; 186(3):305-17.

¹³ Tantamango-Bartley Y, et al. Independent associations of dairy and calcium intakes with colorectal cancers in the Adventist Health Study-2 cohort. *Public Health Nutr* 2017; 20(14):2577-86.

¹⁴ Petrick JL, et al. Body weight trajectories and risk of esophageal and gastric cardia adenocarcinomas: a pooled analysis of NIH-AARP and PLCO Studies. *Br J Cancer* 2017;

Cohort Study led by MD Anderson Cancer Center is investigating behavioral and genetic risk factors for cancer among people of Mexican descent. To achieve their study aims, the TCR conducts an annual data linkage for the researchers.¹⁵ Data linkages with TCR are also used to examine other research topics, including the effect of regional differences in access to cancer treatment on survival outcomes.¹⁶

Additionally, TCR data have been used in tandem with data from 278 other population-based registries in 67 countries to better understand worldwide survival rates for different cancers as a part of the CONCORD-2 study.¹⁷

Community Efforts

The TCR works locally with a diverse group of partners to provide data to support community efforts, such as public awareness, education, and fundraising. Partner examples include the following organizations:

- Cancer Prevention and Research Institute of Texas;
- American Cancer Society;
- Susan G. Komen Foundation;
- Make a Wish Foundation;
- MD Anderson's Center for Community Engagement; and
- Leukemia and Lymphoma Society.

Cancer Cluster Investigations

An important activity performed by cancer registries includes providing data to respond to community concerns about suspected cancer clusters. The Centers for Disease Control (CDC) defines a cancer cluster as a greater-than-expected number

116(7):951-9.

¹⁵ Chow WH, et al. Cohort Profile: The Mexican American Mano a Mano Cohort. *Int J Epidemiol* 2017; 46(2):e3.

¹⁶ Kneurtz PJ, et al. Regional disparities affect treatment and survival of patients with intrahepatic cholangiocarcinoma—A Texas Cancer Registry analysis. *J Surg Oncol* 2014; 110(4):416-21.

¹⁷ Allemani C, et al. Global surveillance of cancer survival 1995–2009: analysis of individual data for 25 676 887 patients from 279 population-based registries in 67 countries (CONCORD-2). *The Lancet* 2015; 385(9972):977-1010.

of cancer cases occurring within a group of people, geographic area, or period of time.¹⁸

The public may suspect a cancer cluster if multiple family members, friends, neighbors, or coworkers in their community are diagnosed with cancer. While most suspected clusters are found to not be true cancer clusters, each inquiry is thoroughly evaluated. Between 2015 and 2017, TCR data were used to complete 16 cancer cluster investigation reports. Investigation reports can be found at dshs.texas.gov/epitox/CancerClusters.

Accessing Texas Cancer Data

To aid in state, national, and international efforts, the Department of State Health Services (DSHS) has made significant efforts to make TCR data available and accessible. Data tables and summaries with detailed information about cancer incidence, mortality, survival and prevalence in Texas, as well special reports on topics such as obesity- and tobacco-associated cancers are available at dshs.texas.gov/tcr/. DSHS will continue developing ways to make TCR more available and accessible to support progress towards addressing the cancer burden in Texas.

¹⁸ Centers for Disease Control and Prevention, Investigating Suspected Cancer Clusters and Responding to Community Concerns Guidelines from CDC and the Council of State and Territorial Epidemiologists. Morbidity and Mortality Weekly Report 2013; 62(RR08):1-14.

6. Conclusion

The Texas Cancer Incidence Reporting Act ([Health and Safety Code, Section 82.001](#)) requires the Department of State Health Services (DSHS) to maintain a cancer registry for the state and publish an annual report to the Legislature of the information obtained under the Act.

From information collected through the Texas Cancer Registry (TCR), DSHS estimates that in 2018, 121,463 new cases of cancer will be diagnosed in Texas, and 44,713 Texans will die from cancer. Of these cases, 1,220 new cases and 145 cancer deaths are expected to occur among children (birth to 14 years), and an additional 572 new cases and 72 cancer deaths are expected among adolescents (15 to 19 years). Cancer is the second most common cause of death in Texas for adults, and for children and adolescents.

Lung cancer is the leading cause of cancer death in Texas. The most common cancers diagnosed in Texas are breast cancer for women and prostate cancer for men. Incidence rates have markedly decreased during the past two decades for lung, colorectal, prostate, female breast, and cervical cancer. However, incidence rates are increasing for melanoma, thyroid, kidney, and liver cancer.

The number of cancer survivors continues to increase. As of January 1, 2015 (the most recent date for which data exist), 775,148 Texans who were diagnosed with cancer in the last 20 years are alive today.

Cancer continues to have a significant impact on Texans, those seeking care in the state, and institutions providing cancer care. Accurate and complete collection and analysis of high quality cancer data is central to the fight against cancer. The TCR continues to play a critical role in assessing Texas' cancer burden and contributing to national and international cancer surveillance, research, control, and prevention.

List of Acronyms

Acronym	Full Name
ACS	American Cancer Society
CDC	Centers for Disease Control and Prevention
DSHS	Department of State Health Services
NAACCR	North American Association of Central Cancer Registries
TCR	Texas Cancer Registry
UV	Ultraviolet