TCEQ Environmental Health Update

THIS UPDATE IS BASED ON THE LATEST AVAILABLE (2018) HEALTH DATA

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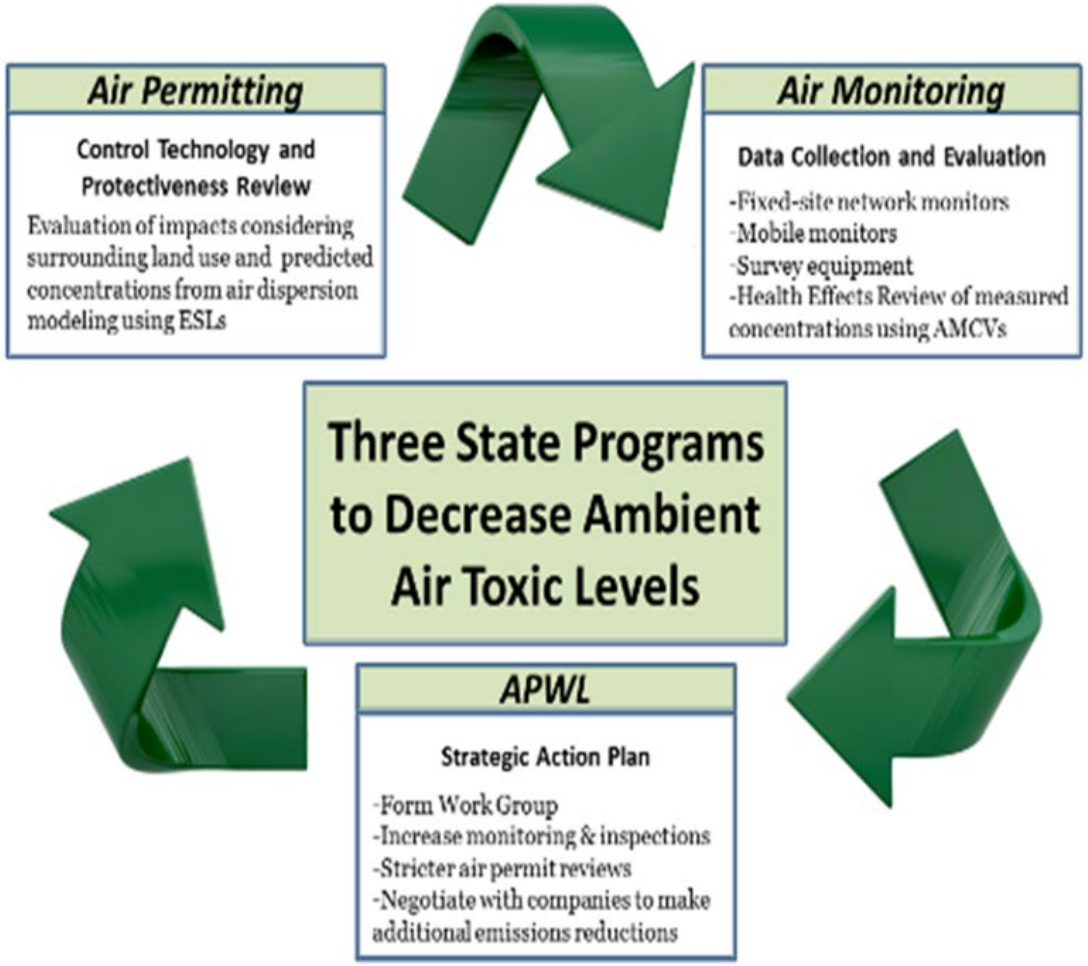
Introduction

- The TCEQ strives to protect our state's public health and natural resources consistent with sustainable economic development.
- Our goal is clean air, clean water, and the safe management of waste.
- The TCEQ Toxicology, Risk Assessment, and Research Division (TD) conducts research to address environmental health questions that are important to the state of Texas.
- The TCEQ Environmental Health Update is a publication by the TD, which assesses the Texas environmental and health data relative to the national statistics.
- It provides important information for decision-makers and raises awareness of environmental health risks to help improve public health in Texas.

TCEQ Programs to Decrease Ambient Air Toxics

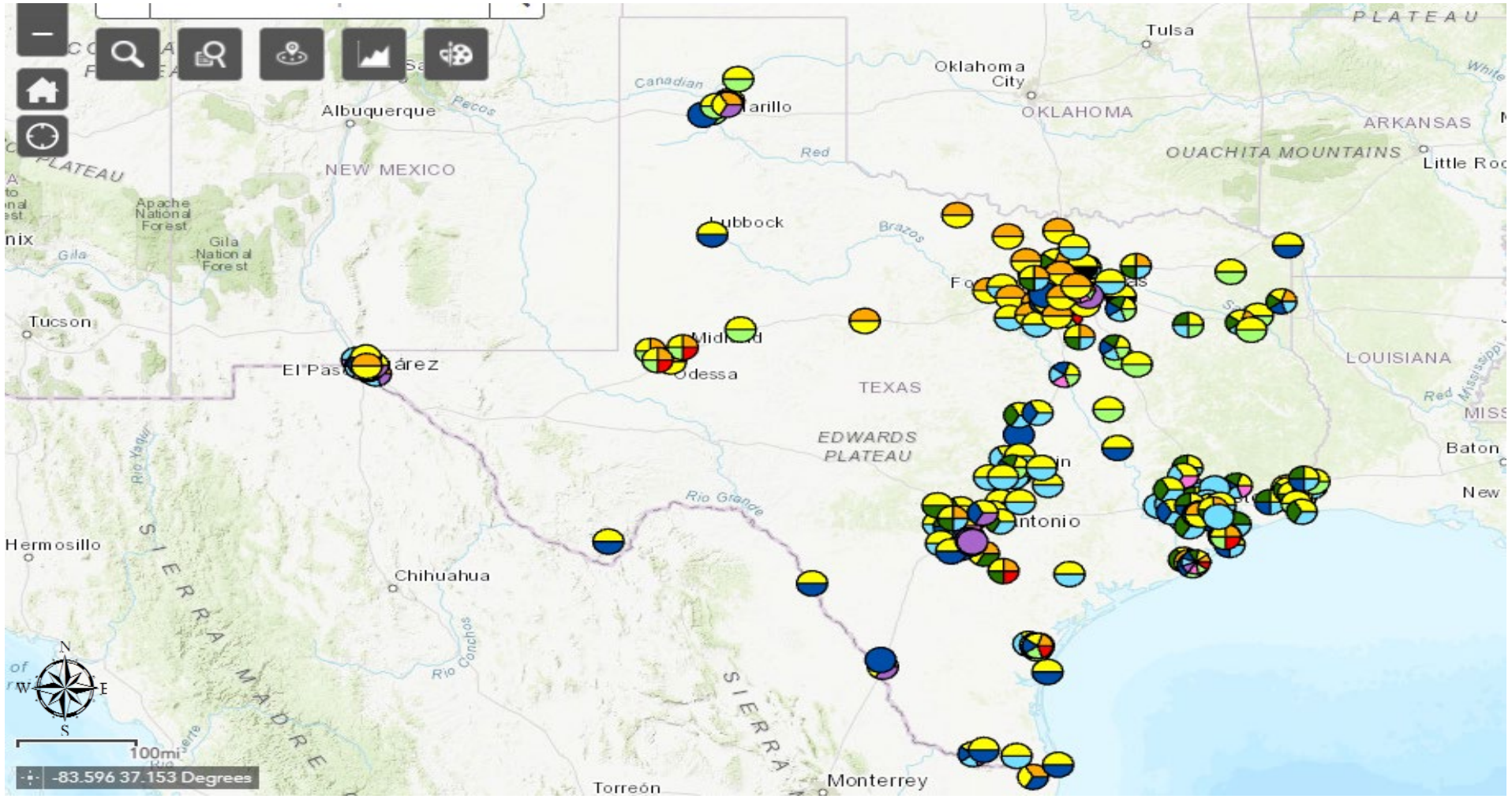


- The TCEQ uses air permitting, ambient air monitoring, and the Air Pollutant Watch List (APWL) to ensure that ambient air toxic concentrations are at levels that are protective of public health and welfare.
- The TD helps the TCEQ make scientifically sound decisions by applying toxicological principles when evaluating environmental data.
- TCEQ toxicologists identify chemical hazards, evaluate potential exposures, assess human health risks, and communicate risk to the general public and stakeholders.

Ambient Air Monitoring

- Texas has one of the most robust air monitoring networks in the country consisting of over 200 monitoring stations serving over 25 million Texans statewide.
- Mostly located in areas where the presence of industry intersects with large segments of the state's population.
- This network assists the TCEQ in monitoring compliance with federal air quality standards, providing information in response to localized air quality concerns, evaluating air pollution trends, and studying air pollution formation and behavior.

TCEQ ambient air monitoring sites in Texas

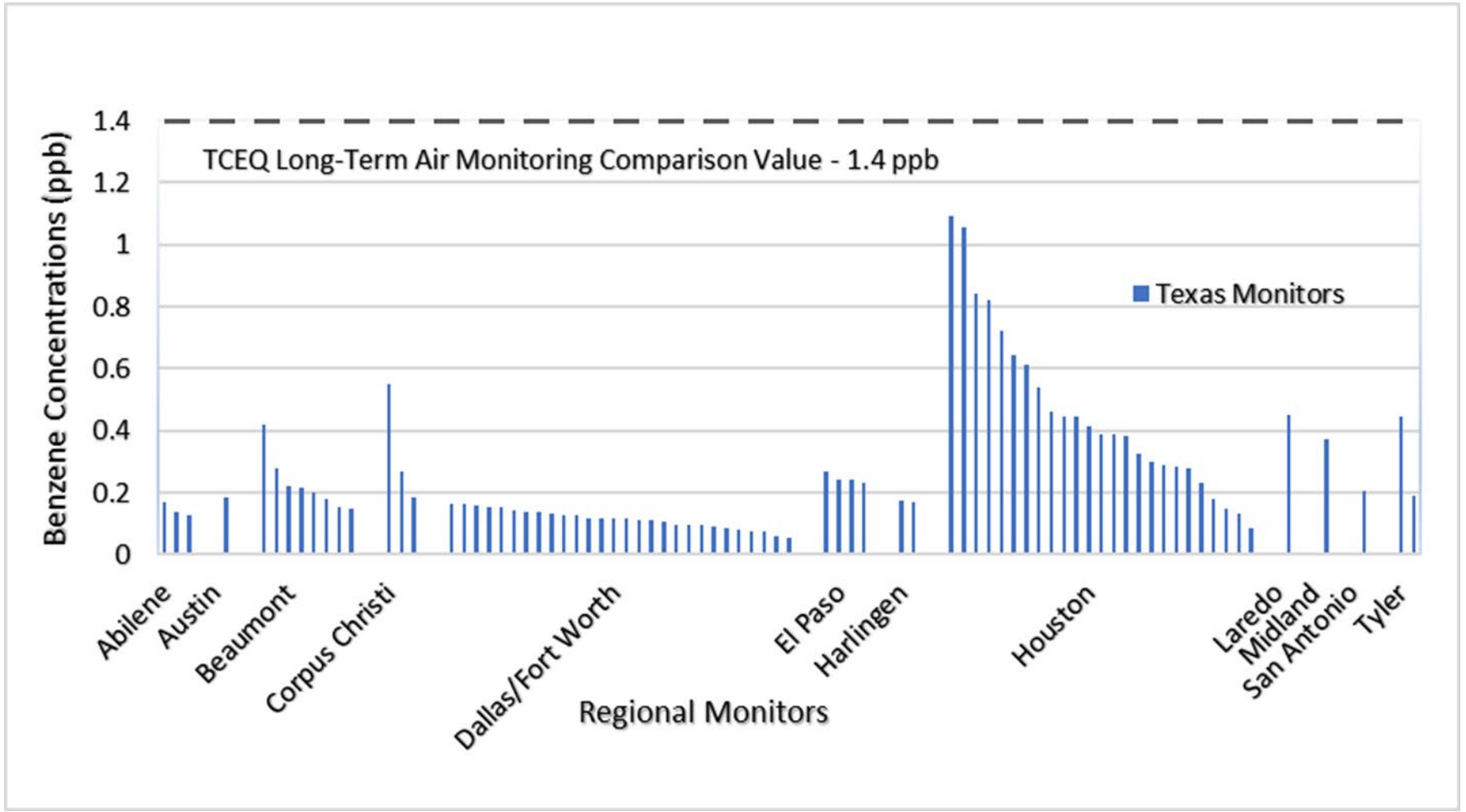


Source: TCEQ Air monitoring Division

Long-term average concentrations for all monitored volatile organic compounds (VOCs) in 2018

- Annual averages for all monitored VOCs were below their respective long-term air monitoring comparison values (AMCVs), except for vinyl chloride reported at one of five industrial monitoring locations at Point Comfort in region 14, Corpus Christi.
- Measured concentrations of VOCs (including levels of vinyl chloride at Point Comfort) would not be expected to cause adverse acute or chronic health or vegetation effects.
- Benzene is of particular focus because it is one of the main risk drivers for human health effects related to air quality.
- In 2018, all monitors in Texas had annual average benzene concentrations below the state's long-term AMCV.

Average Benzene Concentrations at Monitoring Sites in Texas in 2018



Short-term average concentrations for all monitored VOCs in 2018

- Short-term average concentrations of all monitored VOCs were below their respective AMCVs except for a single-hour benzene concentration in region 12, Houston, and hydrogen sulfide (H_2S) In region 6, El Paso.
- A single one-hour concentration of benzene in region 12 was 1.02 times higher than the one-hour AMCV but was still well below concentrations where health effects would be expected to occur.
- Reported concentrations of H_2S collected at the El Paso Lower Valley monitor exceeded the state 30-min H_2S standard 157 times; thus, it is likely that conditions would have been odorous at times
- However, direct health effects from exposure to H_2S are not expected to occur.
- This area of El Paso is currently on the APWL (APWL0601) for H_2S.

Air Pollutant Watch List (APWL)

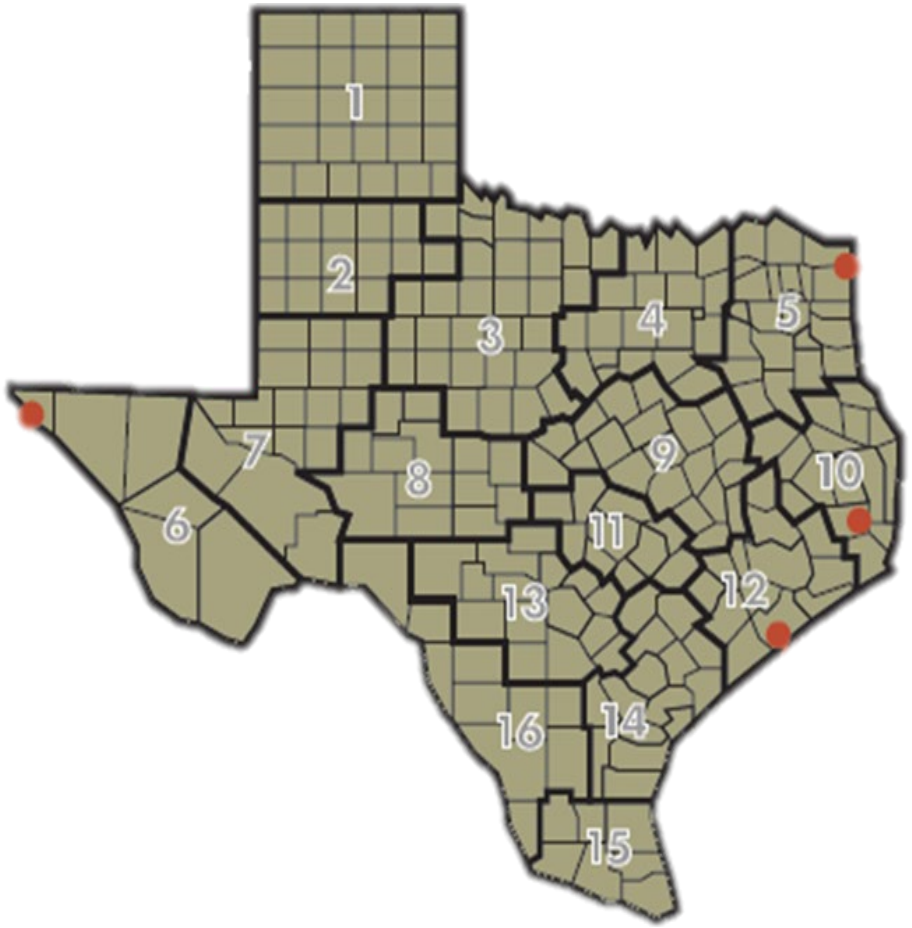
- The APWL is a TCEQ program designed to address areas in Texas where data show persistent, elevated concentrations of air toxics.
- More information regarding the TCEQ APWL program can be accessed at https://www.tceq.texas.gov/toxicology/apwl
- The TCEQ has used the APWL process to address areas of concern and delist pollutants and/or areas from the APWL.

Current APWL areas in Texas

Air Pollutant Watch List Areas

APWL	City	County	Pollutant(s)	Added
0501	N/A	Bowie and Cass	Hydrogen sulfide	1999
0601	El Paso	El Paso	Hydrogen sulfide	2004
1001	Evadale	Jasper	Hydrogen sulfide	2003
1201	Freeport	Brazoria	Arsenic, cobalt, nickel, vanadium	2005

Air Pollutant Watch List Sites



Data Source: TCEQ, APWL program

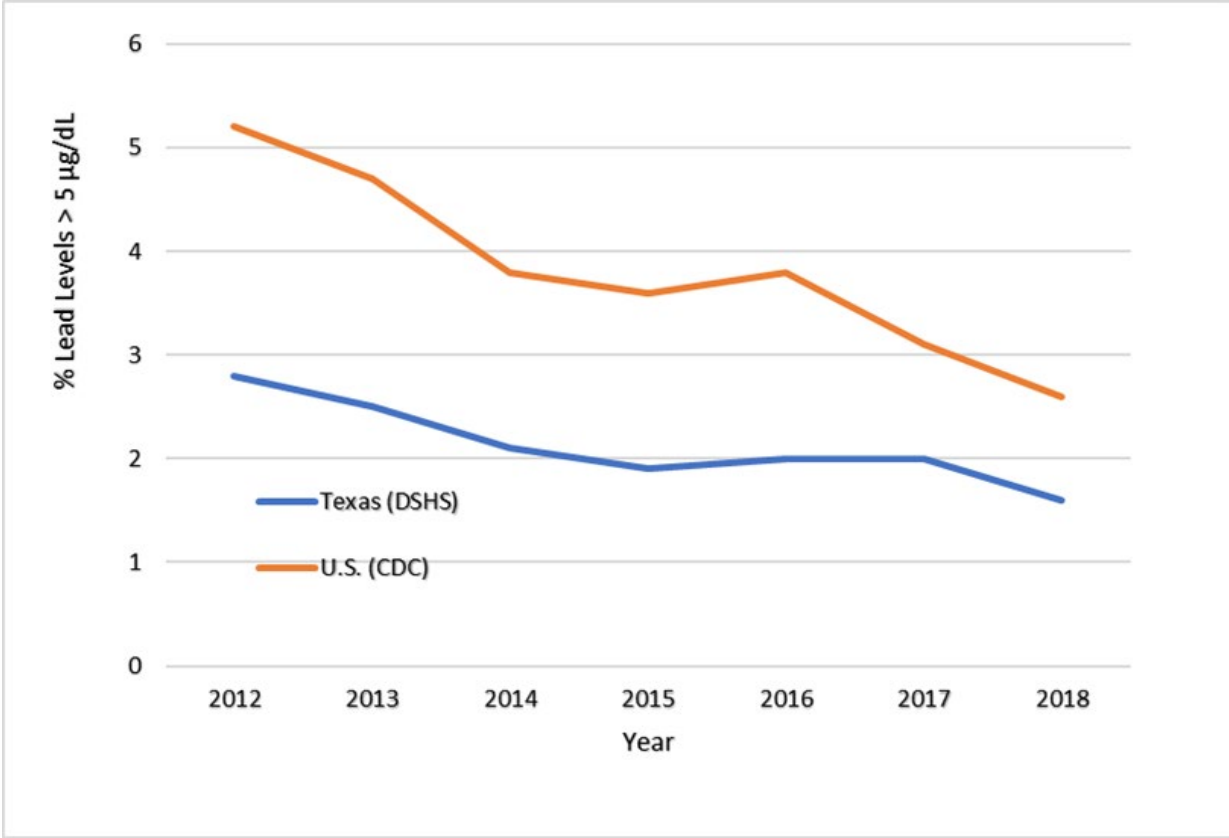
Health Indicators

- Health indicators are quantitative or qualitative measures that can be used to assess the health of a given population.
- In epidemiology studies, air quality is often linked to premature death, cancer, and damage to the respiratory and cardiovascular systems.
- In order to gain a better understanding of the health of Texans in the various regions of the state, TCEQ TD began routinely reviewing health data collected by the Texas Department of State Health Services (DSHS) and the Centers for Disease Control and Prevention (CDC).
- All data presented on the following pages are estimates, because it may only include a sample of the population.
- Self-reported and under-reported cases of disease and illness are also limitations of the data sets.
- Differences in results from various reporting agencies may also occur.

Blood Lead Levels in Children

- According to the Texas Childhood Lead Poisoning Prevention Program (TX CLPPP) statewide elevated blood lead levels (>5 µg/dL) in children have demonstrated a decreasing trend from 2012-2018.
- In 2021, CDC lowered the blood lead reference value from 5 to 3.5 µg/dL.
- Figures based upon data received and processed as of April 21, 2021.
- Some data may be incomplete. Data are provisional and are subject to change.

Percent Elevated Blood Lead Levels in Children (<6 years of age)

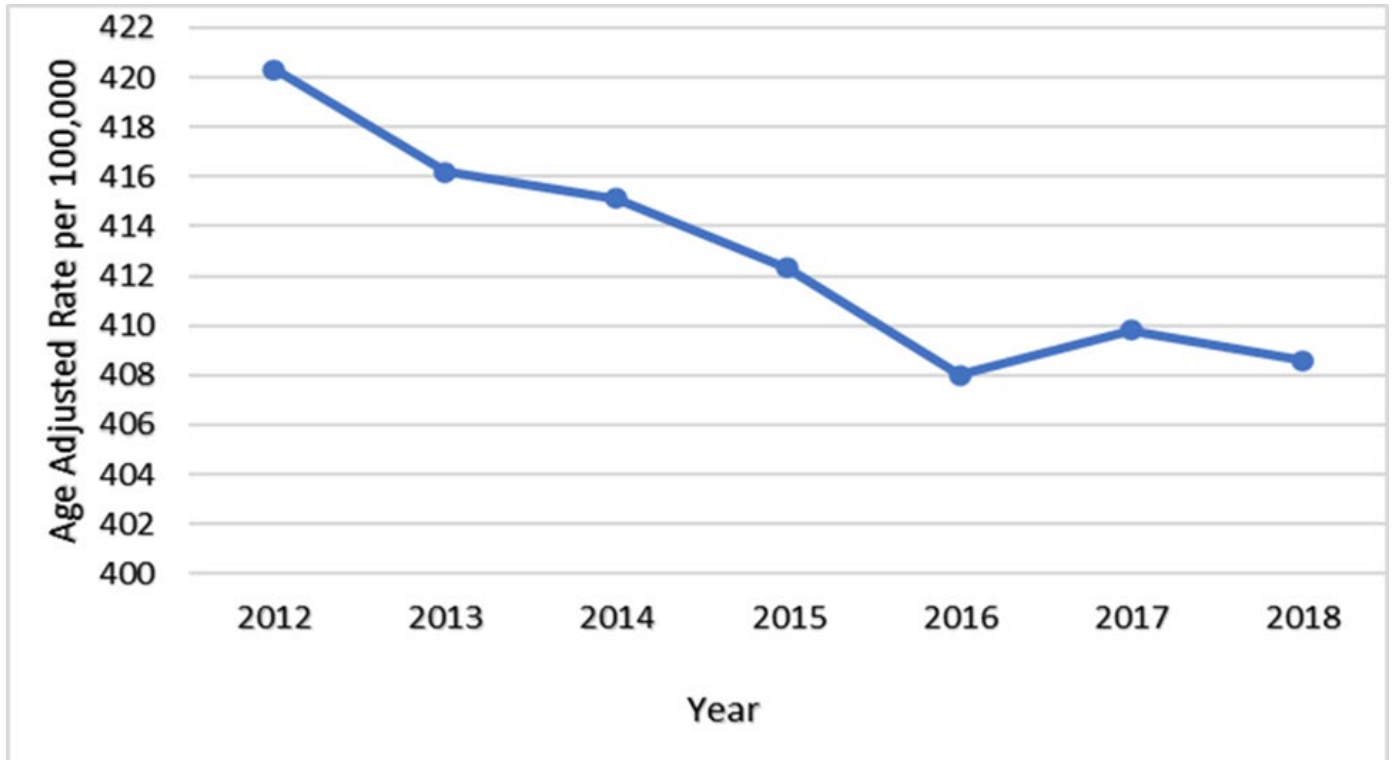


Data Source: Texas Childhood Lead Poisoning Prevention Program, Data Statistics and Prevention, and CDC's National Surveillance Data

Cancer Incidence Rates in Texas

- According to the Texas Cancer Registry, statewide cancer incidence rates in Texas have demonstrated a decreasing trend from 2012 to 2018 (the most recent rates currently available).

Cancer Incidence Rates in Texas, 2012–2018

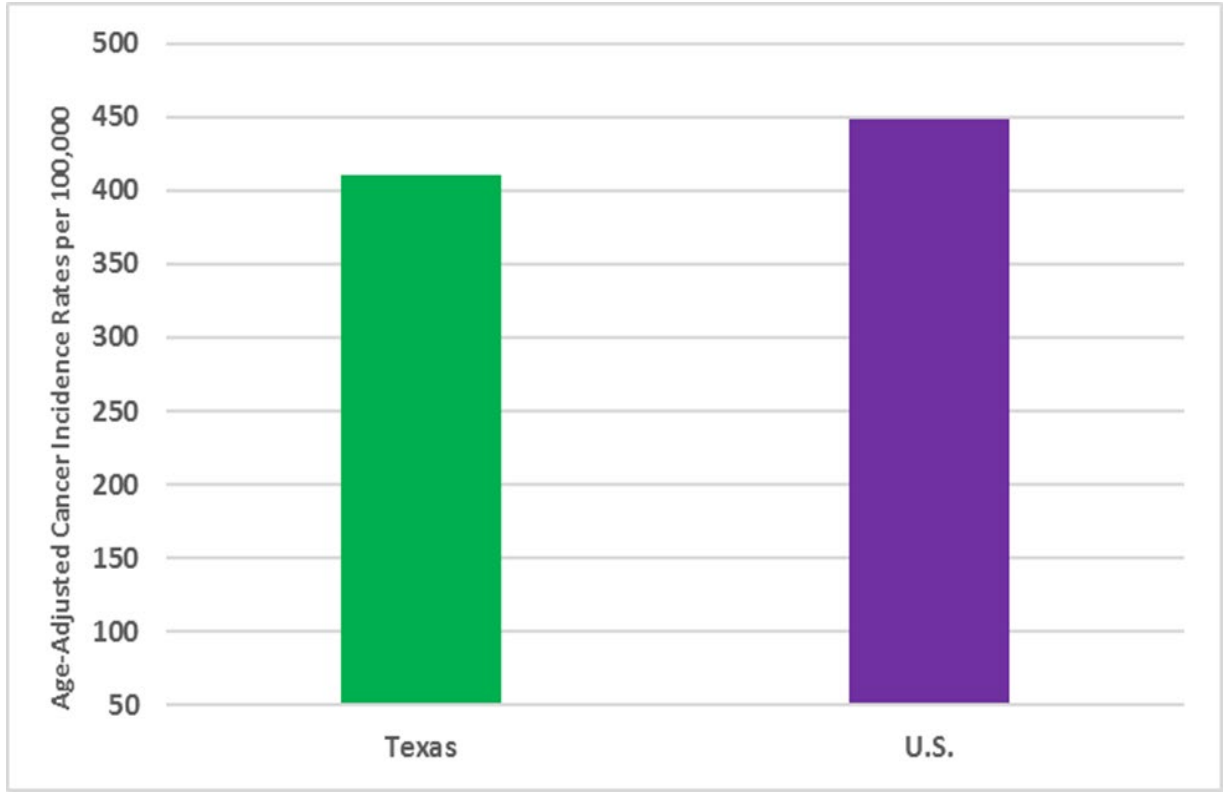


Data Source: Texas Cancer Registry

Average Cancer Incidence Rates in Texas and United States

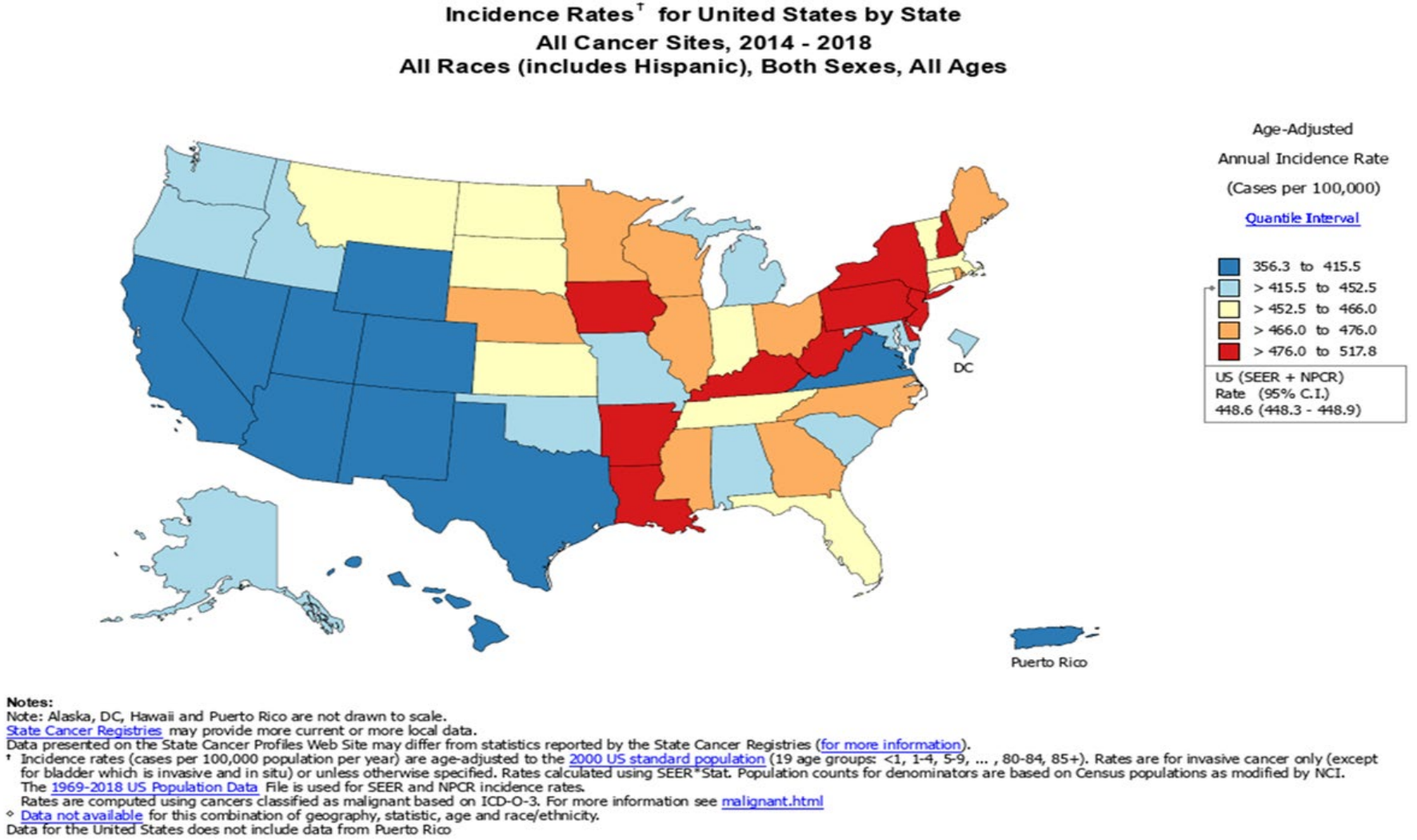
- According to the United States Surveillance, Epidemiology, and End Results Program (SEER), statewide cancer incidence rates (all cancers) in Texas from 2014- 2018 are amongst the lowest in the United States.
- Available data indicate that Texans have no more, or less, cancer than many other states, and the nation as a whole, even though Texas has more industry than any other state.
- The environment is only one factor that may contribute to adverse health outcomes such as cancer.

2014–2018 Average Age-Adjusted Cancer Incidence Rates per 100,000



Data Source: Texas Cancer Registry and the CDC's National Program of Cancer Registries Cancer Surveillance System

Cancer Incidence Rates for the United States, 2014–2018



Data Source: CDC's National Cancer Institute

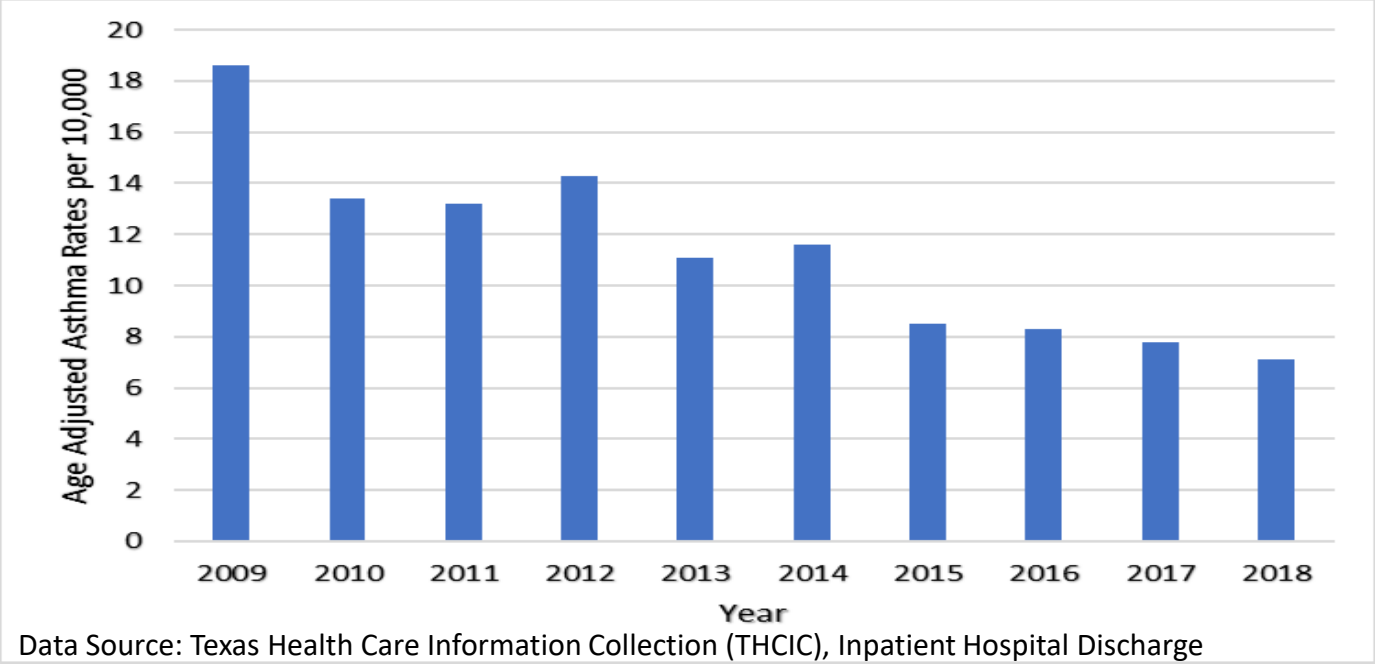
Risk factors for cancer

- Personal or family history of cancer
- Tobacco use/smoking
- Obesity
- Alcohol consumption
- Some types of viral infections, such as human papillomavirus (HPV)
- Exposure to carcinogenic chemicals
- Exposure to radiation, including ultraviolet radiation from the sun
- Older age

Asthma Hospital Discharge Rates in Texas

- In 2018, for every 10,000 children, 7.1 asthma hospitalizations occurred annually in Texas.
- This represents a decrease of more than 2-fold compared to 2009, when the age-adjusted asthma hospitalization rate was 18.6 per 10,000.

Age-Adjusted Asthma Hospital Discharge Rates in Texas, 2009–2018

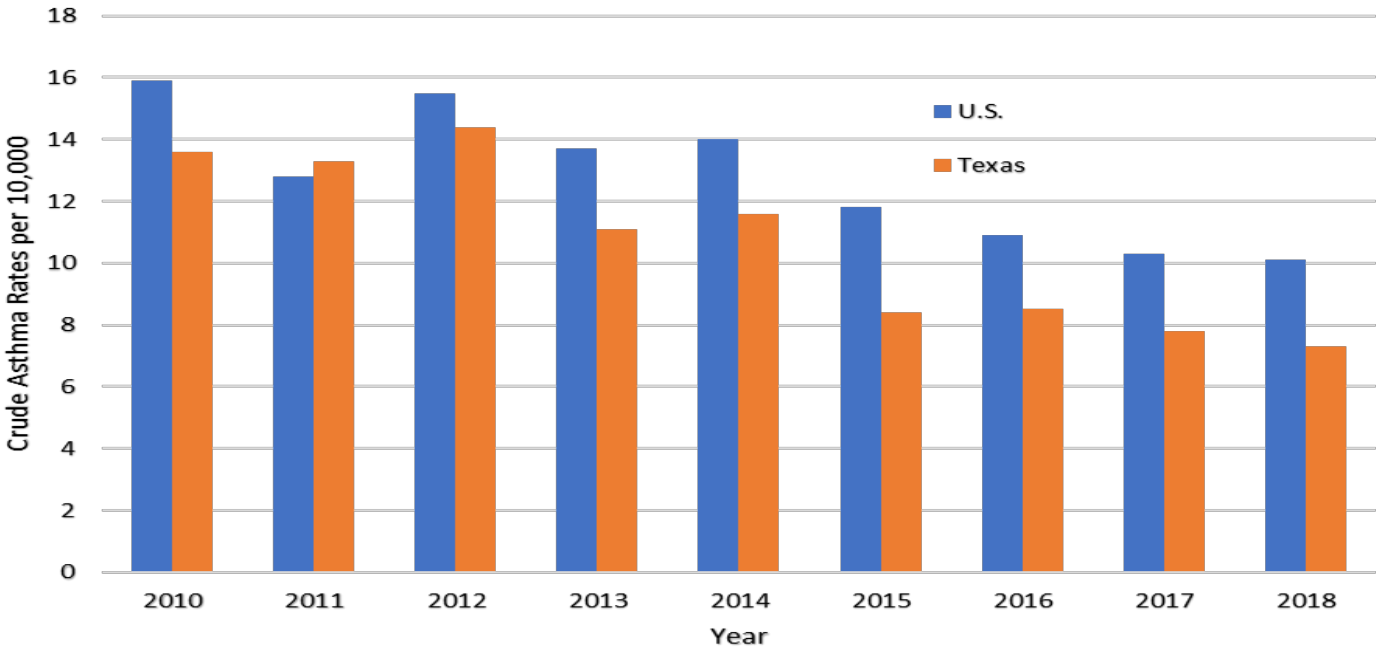


Data Source: Texas Health Care Information Collection (THCIC), Inpatient Hospital Discharge Public Use Data File, 2009-2018

Crude Asthma Hospital Discharge Rates in Texas and United States

- In 2018, the crude national asthma hospitalization rate for children under 18 was 10.1 per 10,000 compared to the crude rate of 7.3 per 10,000 for children under 18 in Texas.

Crude Asthma Hospital Discharge Rates, 2010–2018



Data Source: Data Source: Texas Health Care Information Collection (THCIC), Inpatient Hospital Discharge Public Use Data File, CDC, National Center for Environmental Health

Risk factors for asthma

- Family history of asthma
- Viral respiratory infection in infancy or childhood
- Atopy/allergies
- Occupational exposure to dust or chemical fumes
- Tobacco smoking, maternal smoking during pregnancy, or exposure to secondhand smoke
- Exposure to air pollution
- Obesity

Leading Causes of Death in Texas, 2018

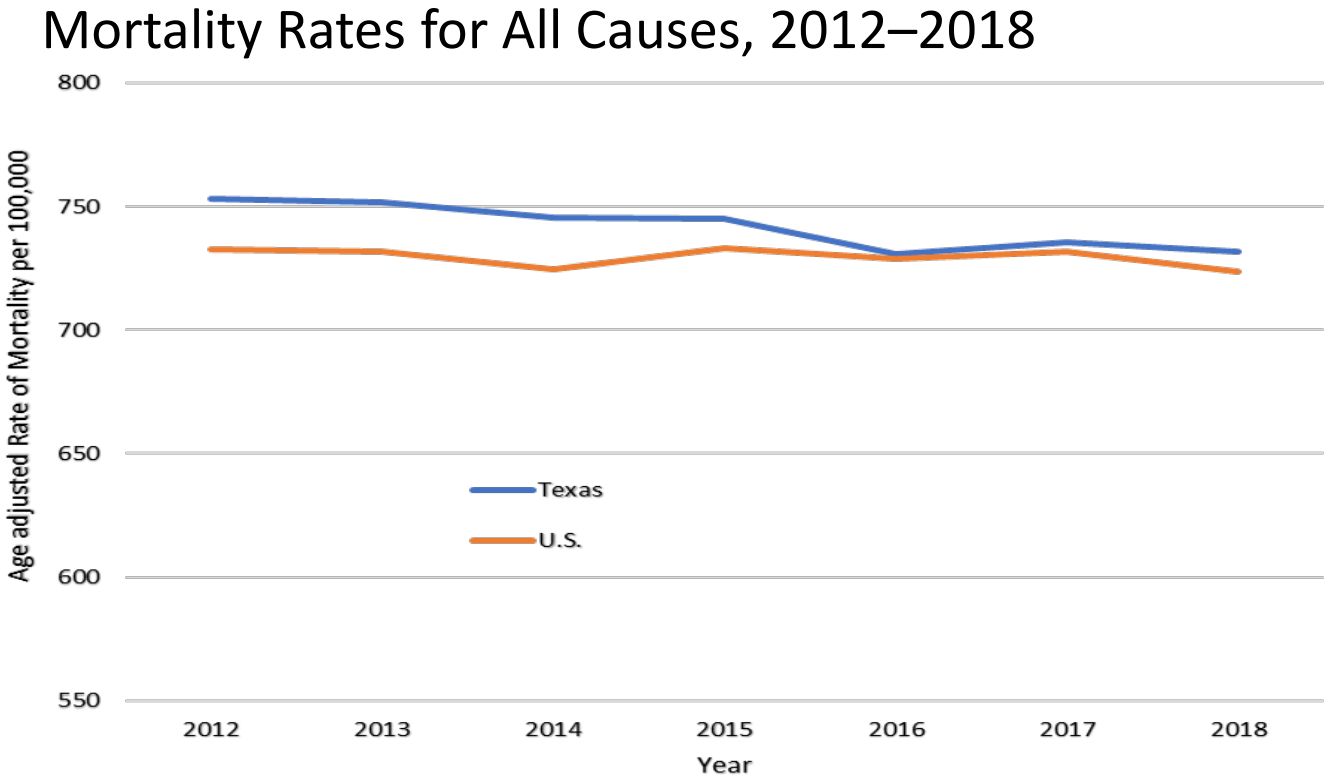
Top 5 leading causes of death in Texas,2018

5 Leading Causes of Death	Deaths	Crude Rate per 100,000	Age-Adjusted Rate per 100,000
Diseases of heart	46763	162.9	170
Malignant neoplasms	40866	142.4	142.9
Cerebrovascular diseases	10810	37.7	40.3
Chronic lower respiratory diseases	10766	37.5	39.7
Accidents (unintentional injuries)	10646	37.1	37.7

Data Source: Centers for Disease Control and Prevention, National Center for Health Statistics, Underlying Cause of Death

All Cause Mortality Rates in Texas and United States

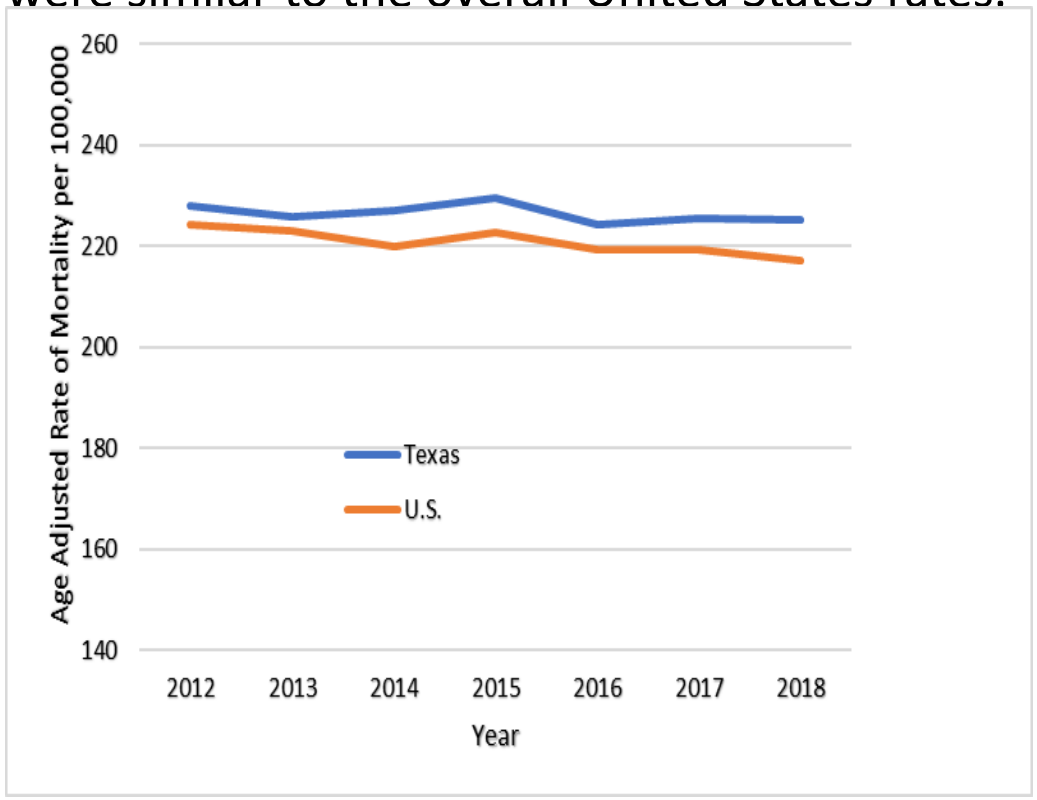
- From 2012 to 2018, Texas mortality rates for all causes per 100,000 were similar to the overall United States rates.



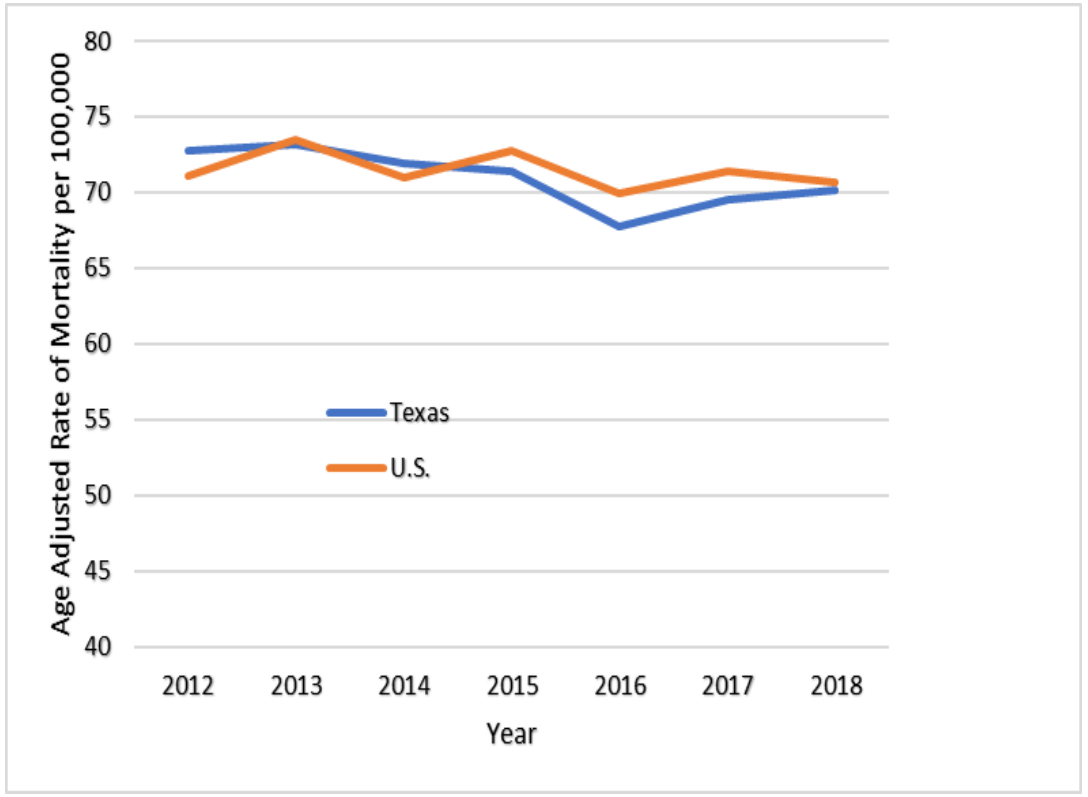
Data Source: Centers for Disease Control and Prevention, National Center for Health Statistics, Underlying Cause of Death

Mortality Rates for diseases of circulatory and Respiratory systems in Texas and United States

From 2012 to 2018, Texas mortality rates for diseases of the circulatory system per 100,000 were similar to the overall United States rates.



From 2012 to 2018, Texas mortality rates for diseases of the respiratory system per 100,000 were similar to the overall United States rates.



Data Source: Centers for Disease Control and Prevention, National Center for Health Statistics, Underlying Cause of Death

Conclusion

- TCEQ Environmental Health Update helps to:
  - monitor trends in the state of the environment.
  - monitor trends in health outcomes linked to environmental hazards and exposures.
  - compare the environmental health status of geographic areas.
  - monitor the effectiveness of policies and other interventions on environmental health.
  - raise awareness about environmental health issues.
  - initiate further investigations into links between the environment and health.
- Overall, Texas environmental health indicators were similar, and in some cases, better than national averages.

THANK YOU

QUESTIONS