

# Tobacco and Cancer

in Texas 2012



*Texas Cancer Registry*



## A SPECIAL THANKS FOR THE DEDICATION AND HARD WORK OF CANCER REGISTRARS AND OTHERS RESPONSIBLE FOR DATA COLLECTION ACROSS TEXAS.

The Texas Department of State Health Services (DSHS) and Cancer Prevention and Research Institute of Texas (CPRIT) work collaboratively in support of the Texas Cancer Registry (TCR) and the fight against cancer.

### RECOGNITION OF FUNDING SOURCES

Maintaining a statewide cancer registry that meets both National Program of Cancer Registries and Centers for Disease Control and Prevention (CDC) high quality data standards and North American Association of Central Cancer Registries (NAACCR) gold certification is accomplished through collaborative funding efforts.

In 2005, the Texas Legislature provided additional funding for the Texas Cancer Registry to achieve and maintain national high quality data standards and certification. With this new funding, the TCR attained both CDC high quality data standards and gold certification from NAACCR for the first time in 2005. These standards have been maintained through funding from the Texas Department of State Health Services, the Higher Education Coordinating Board, and now through the Cancer Prevention and Research Institute of Texas.

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## Introduction

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Tobacco use remains the leading cause of preventable disease and deaths in the United States and Texas, causing more deaths than alcohol, AIDS, automobile crashes, homicide, suicide, and illegal drug use combined.<sup>1</sup> Tobacco use has long been associated with significant health problems such as heart disease, stroke, emphysema, diabetes, and particularly cancer. The first modern studies linking tobacco use and lung cancer were published in the 1950's.<sup>2</sup> Since that time, numerous studies have been conducted examining potential harmful health effects from the use of tobacco.

In 2004, the U.S. Surgeon General released, “The Health Consequences of Smoking: A Report of the Surgeon General” that concluded that cigarette smoking is conclusively linked to lung, oral cavity and pharynx, larynx, esophagus, bladder, pancreas, kidney, cervix, stomach, and acute myeloid leukemia cancers.<sup>3</sup> In addition, there was evidence indicating a possible causal relationship between smoking and cancers of the colon, rectum, and liver. Other tobacco products, including chewing tobacco, snuff, and cigars remain strong risk factors for many of these same types of cancer, especially mouth and throat cancers. It is estimated that 30% or more of cancer deaths could be prevented if tobacco use were eliminated.<sup>4</sup>

Passive exposure to smoking is also of great concern. Secondhand smoke is a known carcinogen, and secondhand smoke is estimated to cause 3,000 lung cancer deaths among nonsmokers in the U.S. each year.<sup>5</sup> In 2006, the U.S. Surgeon General released “The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General”, which concluded that secondhand smoke is causally related to lung, breast, cervix and nasopharyngeal cancers.<sup>6</sup>

This report describes the impact of tobacco-related cancers on Texas from 2005–2009 and what is expected in 2012. This includes all the cancers determined to be conclusively linked to tobacco use by the 2004 Surgeon General's report. It must be noted that not all of the cancer diagnoses described in this report can be attributed to tobacco use but this report summarizes the burden of cancers in which tobacco use is a strong risk factor. This report describes each cancer, the number of Texans newly diagnosed and deceased, as well as which race and ethnic populations are most affected.

## Overview of Tobacco-Related Cancers in Texas

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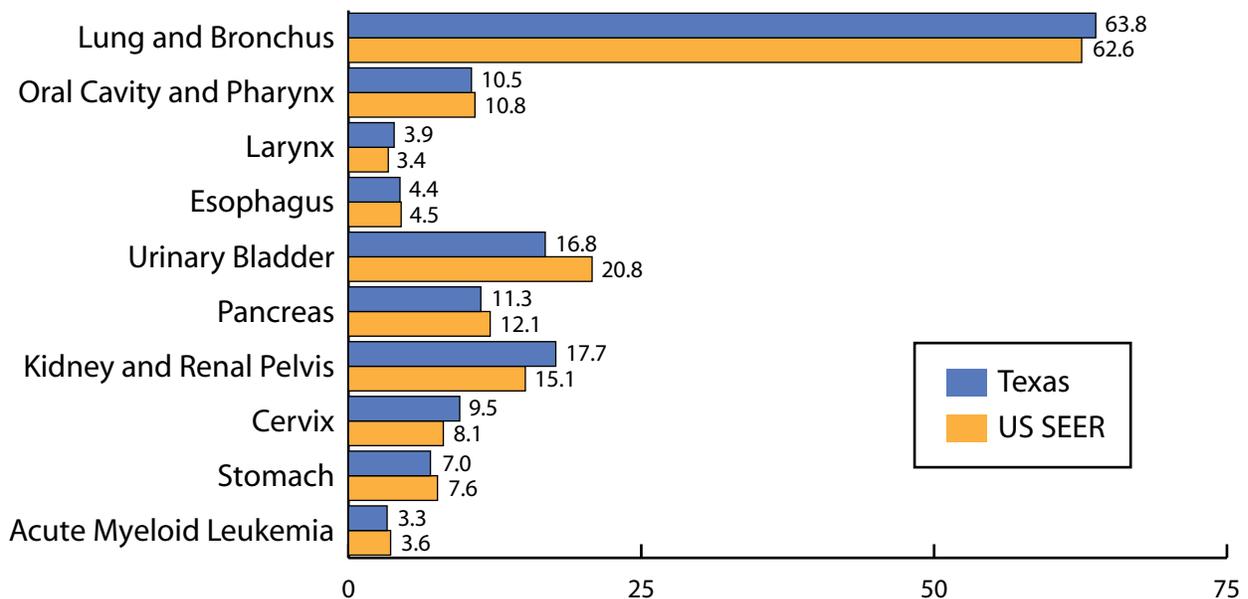
It is estimated that in 2012, 33,121 Texans were newly diagnosed and 18,394 died from cancers of the lung, oral cavity and pharynx, larynx, esophagus, bladder, pancreas, kidney, cervix, stomach, and acute myeloid leukemia cancers (Table 1). From 2005–2009, these cancers accounted for over 31% of all newly diagnosed cancers and 47% of all cancer deaths. Incidence rates among Texans are higher for lung, larynx, kidney, and cervix cancers when compared with the U.S. Surveillance and Epidemiology End Results Program (SEER) (Figure 1). Mortality rates are also higher in Texas than the U.S. for kidney, stomach and cervix cancers (Figure 2).<sup>7</sup>

**Table 1. Expected New Tobacco-Related Cancer Cases and Deaths by Primary Site, Texas, 2012**

Type	Expected New Cases			Expected Deaths		
	Total	Male	Female	Total	Male	Female
All Tobacco-Related Cancer Sites Combined	33,121	20,033	13,089	18,394	10,926	7,468
Oral Cavity & Pharynx	2,456	1,776	680	603	427	176
Esophagus	1,042	843	199	849	687	162
Stomach	1,731	1,065	666	954	570	383
Pancreas	2,569	1,354	1,214	2,286	1,226	1,060
Larynx	959	789	170	269	228	42
Lung	14,555	8,447	6,108	10,608	6,229	4,379
Cervix	1,255	0	1,255	392	0	392
Urinary Bladder	3,626	2,792	834	803	578	225
Kidney & Renal Pelvis	4,141	2,540	1,601	1,077	717	360
Acute Myeloid Leukemia	787	426	361	553	263	289

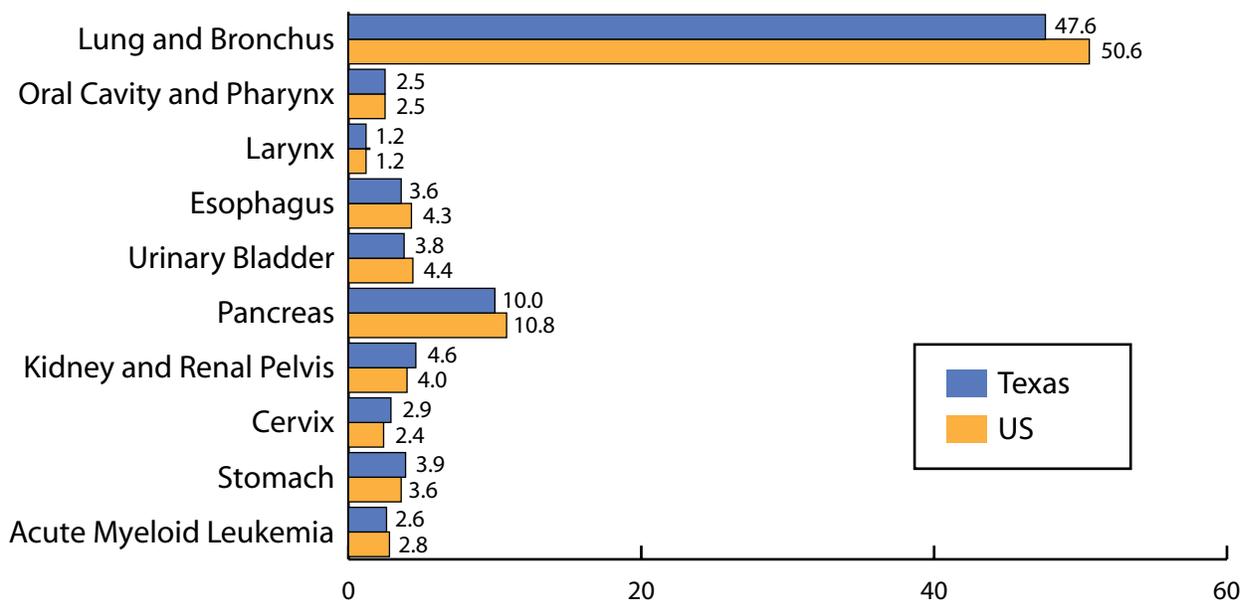
New cases were estimated by applying age-, sex-, and race/ethnic-specific incidence rates for Texas 2004-2008, to the Texas 2012 population. Melanoma, breast and prostate cancer expected cases were estimated by applying California 2004-2008 age-, sex-, and race/ethnic-specific incidence rates to the Texas 2012 population. California rates were used for these sites due to additional case-ascertainment methods used in California, and similar race and ethnic populations. Expected deaths estimated by applying age-, sex-, and race/ethnic-specific mortality rates for Texas, 2007-2008, to the Texas 2012 population. Totals may not sum due to rounding. Texas 2012 population projections were provided by the Center for Health Statistics, Texas Department of State Health Services.

**Figure 1. Tobacco-Related Cancer Incidence Rates, Texas and U.S. SEER, 2005-2009**



Rates are per 100,000 and age-adjusted to the 2000 U.S. standard. Source: Texas Cancer Registry ([www.dshs.state.tx.us/tcr](http://www.dshs.state.tx.us/tcr)) SEER\*Stat Database, 1995-2009, Incidence, Texas statewide, Texas Department of State Health Services, created December 2011, based on NPCR-CSS Submission, cut-off 11/23/11; U.S. SEER: Incidence SEER 18 Regs Research Data, Nov 2011 Sub. Vintage 2009 Pops (2000-2009).

**Figure 2. Tobacco-Related Cancer Mortality, Texas and U.S., 2005–2009**



Rates are per 100,000 and age-adjusted to the 2000 U.S. standard. Source: Texas: Texas Cancer Registry ([www.dshs.state.tx.us/tcr](http://www.dshs.state.tx.us/tcr)) SEER\*Stat Database, 1990–2009 Mortality, Texas statewide, Texas Department of State Health Services (created 01/25/2012). U.S.: Mortality – All COD, Aggregated with State, Total U.S. (1990-2009).

Racial and ethnic disparities exist in relation to tobacco-related cancers. Blacks in Texas bear a disproportionate burden of these cancers, experiencing by far the highest *incidence* for three of the ten tobacco-related cancers (lung, larynx, and pancreas) examined in this report. Even more disconcerting is that blacks also experienced the statistically significantly highest *mortality* for four of the ten tobacco-related cancers — lung, oral cavity and pharynx, larynx, and pancreas — when compared with other Texas race and ethnic groups.

## Lung and Bronchial Cancer, Texas, 2005–2009

Texans Newly Diagnosed: 65,226

Texan Lives Lost: 48,207

Highest Diagnosis Rate: Black men

Highest Death Rate: Black men

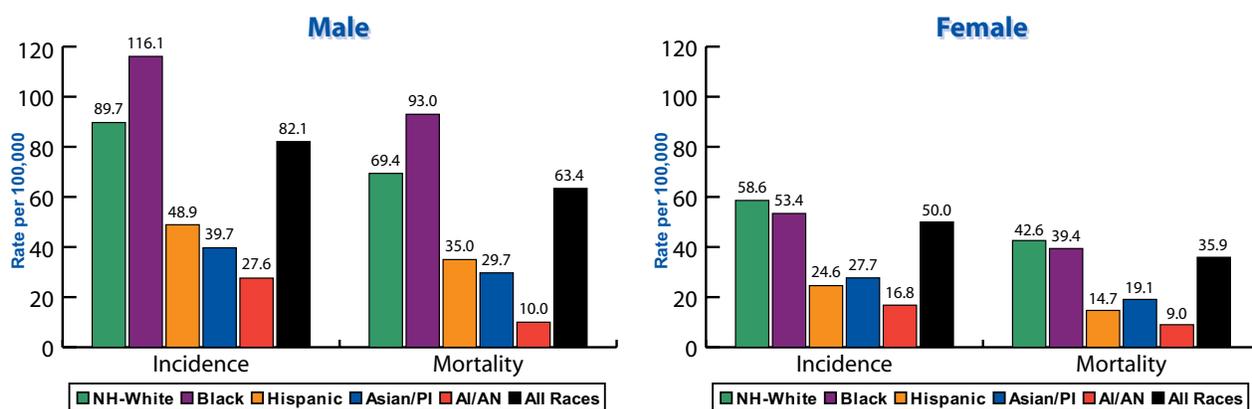
The association between lung cancer and smoking is well documented, and based on the “2004 U.S. Surgeon General’s Report on the Health Consequences of Smoking”, it is estimated that almost 90% of lung cancer deaths are due to smoking.<sup>3</sup> Rarely detected at an early, treatable stage, lung cancer is one of the most difficult cancers to treat and very often fatal. Overall, only 15% of Texans diagnosed with lung cancer are alive five years later, and nearly 60% of patients die within one year of diagnosis.

The best protection against lung cancer is to never begin smoking. It has been repeatedly shown that nonsmokers have much lower rates of lung cancer as well as other smoking-related cancers.

However, the argument that “it’s too late to quit smoking” because the damage has already been done is simply not true. While ex-smokers are still at a higher risk of lung cancer than nonsmokers, this risk declines with each year of not smoking. After ten years, the risk among ex-smokers begins to approach that of nonsmokers.<sup>8,9</sup>

The American Cancer Society estimates 226,160 new cases of lung cancer were diagnosed in the U.S. in 2012, and an estimated 160,340 people died of these cancers in that same year.<sup>10</sup> For Texas in the same year, it is estimated that 14,555 new cases of lung cancer and 10,608 deaths occurred. Lung cancer is the leading cause of cancer death among Texas men and women, and the second most commonly diagnosed cancer in each gender. Black men bear an especially large lung cancer burden. Black men in Texas had the highest incidence rate of lung cancer among all racial and ethnic groups for the years 2005–2009. In addition, black men had over two times the mortality rate of Hispanic men, and 34% higher mortality than non-Hispanic whites. Among women, non-Hispanic whites had both the highest incidence and the highest mortality rates from lung cancer, with rates over twice as high as Hispanic women.

**Figure 3. Lung and Bronchial Cancer, by Sex, Race, and Ethnicity, Texas, 2005–2009**



Incidence Source: Texas Cancer Registry ([www.dshs.state.tx.us/tcr](http://www.dshs.state.tx.us/tcr)) SEER\*Stat Database, 1995–2009 Incidence, Texas statewide, Texas Department of State Health Services, created December 2011, based on NPCR-CSS Submission, cut-off 11/23/11.

Mortality Source: Texas Department of State Health Services, Center for Health Statistics.

Rates are per 100,000 and age-adjusted to the 2000 U.S. standard population.

~ Rate is not shown if number of cases or deaths is fewer than 16.

## Oral Cavity and Pharyngeal Cancer, Texas, 2005–2009

Texans Newly Diagnosed: 11,747

Texan Lives Lost: 2,674

Highest Diagnosis Rate: Non-Hispanic White men

Highest Death Rate: Black men

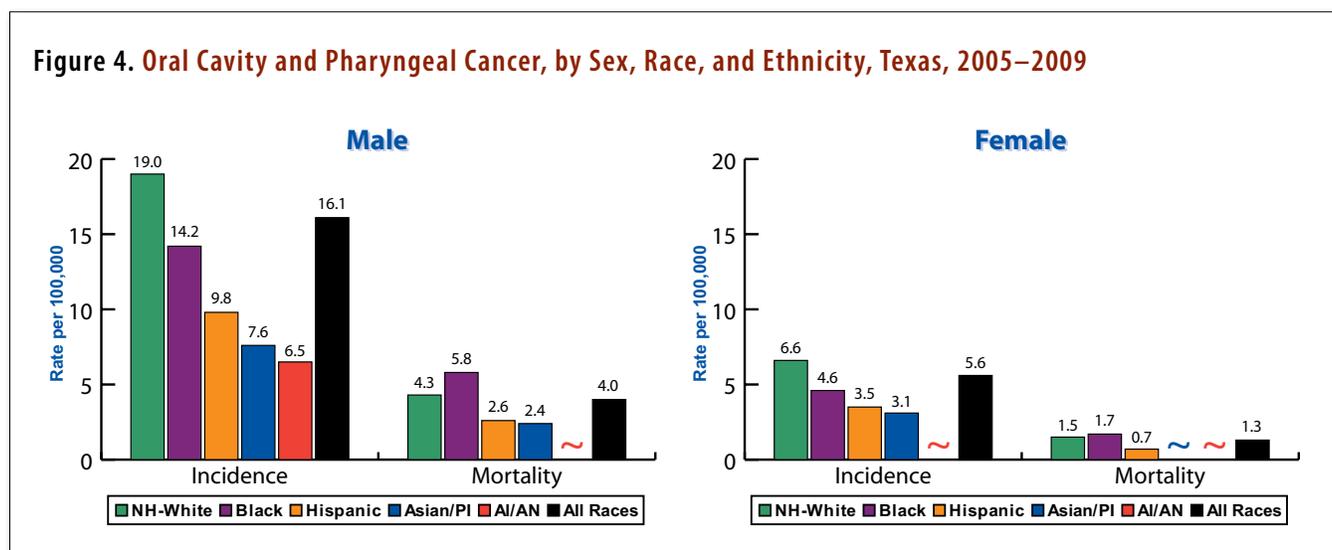
While tobacco use is most often associated with lung cancer, it is also a major risk factor for cancers of the head and neck. Two of the most common tobacco-related sites for cancers of the head and neck are the oral cavity (tongue and mouth) and pharynx (throat). Using tobacco products increases

the likelihood of getting head and neck cancer up to 10 or more times than that of someone who does not use tobacco.<sup>11</sup> Almost 90% of people with cancers of the oral cavity or pharynx report use of tobacco products.<sup>12</sup> Importantly, research has shown that the risk of developing oral and pharyngeal cancer declines rapidly after quitting smoking with little to no elevated risk among former smokers after ten years.<sup>13</sup>

All tobacco use is a major risk factor for oral and pharyngeal cancer but some people believe that smokeless tobacco is still a “safe” alternative to smoking. In 1986, the U.S. Surgeon General released a report specifically addressing the dangers of smokeless tobacco, warning that smokeless tobacco use represented a significant health risk. This is especially true when examining cancers of the oral cavity. The risk of cancer of the cheek and gums is almost 50 times higher among long-term smokeless tobacco users.<sup>14</sup> Another important risk factor for oral and pharyngeal cancer is alcohol,<sup>15</sup> and using both alcohol and tobacco has been shown to have an interactive effect, greatly increasing the risk of oral and pharyngeal cancer over either risk alone.<sup>16</sup>

The prognosis for cancers of the oral cavity and pharynx is not good. The five-year survival rate in Texans is only 57.6%, and only 46.0% are still alive after ten years. The treatment plan for oral cancers is usually surgery and sometimes radiation therapy. The surgery can be quite disfiguring to the face, particularly for advanced cancer.

The American Cancer Society estimates 40,250 new cases of oral and pharyngeal cancer were diagnosed in the U.S. in 2012, and an estimated 7,850 people died of these cancers in that same year.<sup>10</sup> In Texas alone there were 2,456 new cases of oral and pharyngeal cancer estimated for 2012, and 603 deaths. Among men in Texas, non-Hispanic whites had the highest incidence and blacks the



Incidence Source: Texas Cancer Registry ([www.dshs.state.tx.us/tcr](http://www.dshs.state.tx.us/tcr)) SEER\*Stat Database, 1995–2009 Incidence, Texas statewide, Texas Department of State Health Services, created December 2011, based on NPCR-CSS Submission, cut-off 11/23/11.  
Mortality Source: Texas Department of State Health Services, Center for Health Statistics.  
Rates are per 100,000 and age-adjusted to the 2000 U.S. standard population.  
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highest mortality rates from oral and pharyngeal cancer. Mortality rates for black men were over twice that of Hispanics and over 37% higher than non-Hispanic whites. Among women, non-Hispanic whites had the highest *incidence* but blacks the highest *mortality* rates from oral and pharyngeal cancer.

## Laryngeal Cancer, Texas, 2005–2009

Texans Newly Diagnosed: 4,192

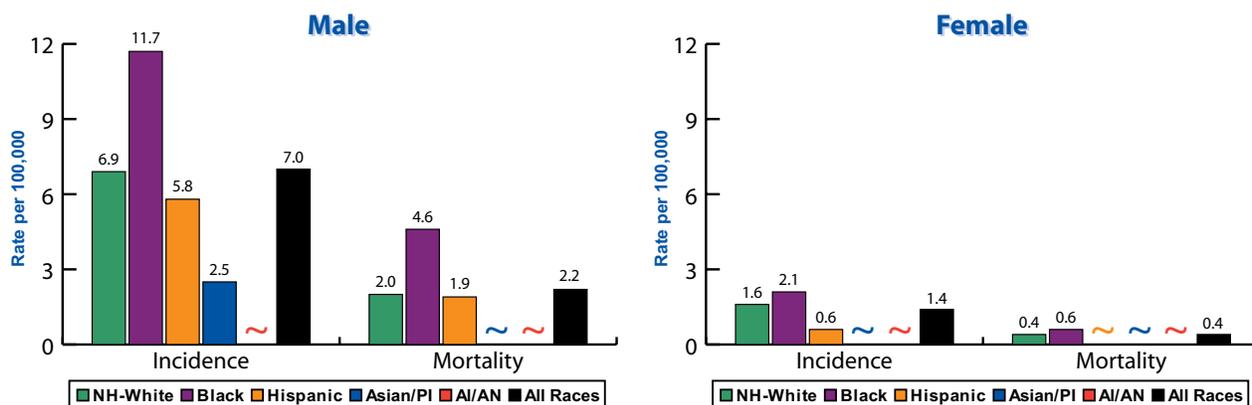
Texan Lives Lost: 1,218

Highest Diagnosis Rate: Black men

Highest Death Rate: Black men

The larynx (voicebox) is located just below the throat in the neck and plays a key role in breathing, swallowing, and talking. The larynx is another common head and neck cancer associated with tobacco use. Smoking is a major risk factor for cancer of the larynx, and the longer and more frequently one smokes, the greater the risk. Smokers have up to ten times the risk for laryngeal cancers than do nonsmokers. Additionally, the risk of laryngeal cancer is even greater among people who drink alcohol in addition to using tobacco.<sup>17</sup> The overall five-year survival rate for laryngeal cancer in Texas residents is 60.1%. However, with almost all treatments for laryngeal cancer, patients generally need therapy to help with speech and swallowing. The American Cancer Society estimates there were 12,360 new cases of laryngeal cancer diagnosed in the U.S. in 2012, and 3,650 deaths.<sup>10</sup> It is estimated that for Texas, there were 959 new cases and 269 deaths due to laryngeal cancer for that same year. In Texas, black men had twice the occurrence of laryngeal cancer than Hispanics, and almost 70% more than non-Hispanic whites for the years 2005–2009. Black men were also over twice as likely to die from laryngeal cancer as non-Hispanic whites. Among women, blacks also have the highest incidence and highest mortality rates from laryngeal cancer.

Figure 5. Laryngeal Cancer, by Sex, Race, and Ethnicity, Texas, 2005–2009



Incidence Source: Texas Cancer Registry ([www.dshs.state.tx.us/tcr](http://www.dshs.state.tx.us/tcr)) SEER\*Stat Database, 1995–2009 Incidence, Texas statewide, Texas Department of State Health Services, created December 2011, based on NPCR-CSS Submission, cut-off 11/23/11.

Mortality Source: Texas Department of State Health Services, Center for Health Statistics.

Rates are per 100,000 and age-adjusted to the 2000 U.S. standard population.

~ Rate is not shown if number of cases or deaths is fewer than 16.

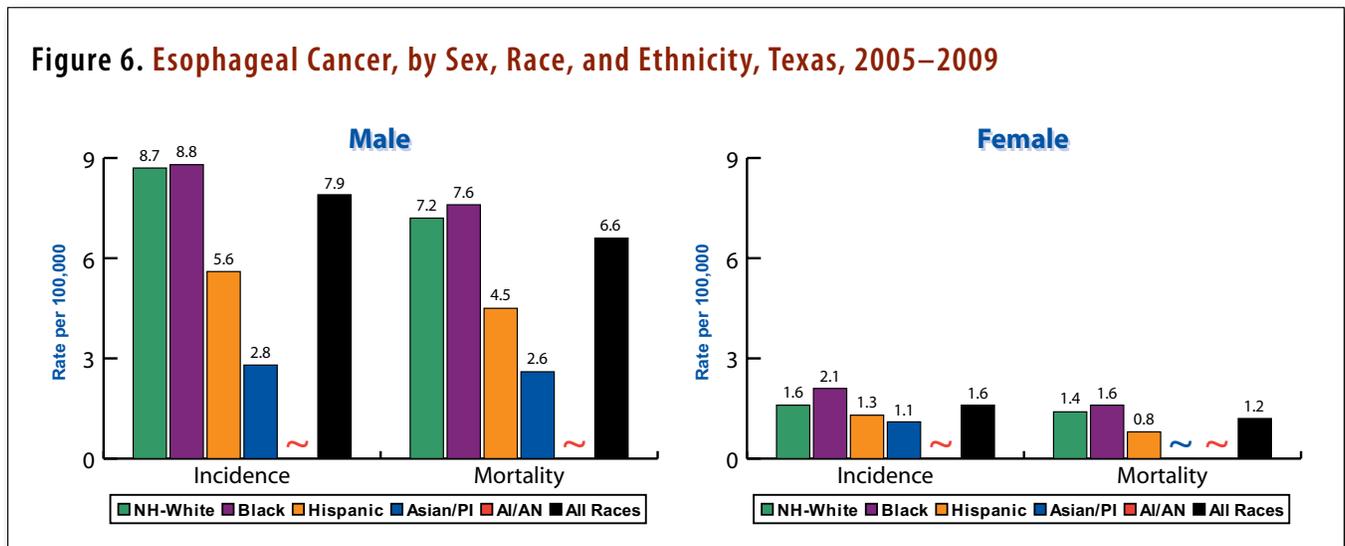
## Esophageal Cancer, Texas, 2005–2009

■ Texans Newly Diagnosed: 4,614  
■ Highest Diagnosis Rate: Black and Non-Hispanic White Men

■ Texan Lives Lost: 3,738  
■ Highest Death Rate: Black and Non-Hispanic White Men

Another cancer strongly associated with tobacco use is esophageal cancer. The esophagus is the tube that carries food from the mouth to the stomach. Cigarette smoking and alcohol use are the most common risk factors associated with esophageal cancer. Both factors are independently associated with esophageal cancer and pose an even greater risk when combined. In the U.S. it is estimated that 90% or more of the risk of esophageal cancer can be attributed to tobacco and alcohol and over half of esophageal cancer deaths can be attributed to smoking alone.<sup>18</sup> Esophageal cancer is a very deadly disease and is rarely curable. The overall five-year survival rate is only 16.6%. Even if diagnosed early (localized stage), only 32.6% will survive for five years.

The American Cancer Society estimates that in the U.S. there were 17,460 new cases of this cancer in 2012 and 15,070 people died of the disease.<sup>10</sup> It is estimated that 1,042 new cases of esophageal cancer were diagnosed in Texas and 849 deaths occurred. For the years 2005–2009, black and Non-Hispanic white men in Texas had the highest incidence and mortality rates of esophageal cancer when compared with Hispanics or other races of men. Among women, blacks also have the highest incidence and mortality rates from esophageal cancer.



Incidence Source: Texas Cancer Registry ([www.dshs.state.tx.us/tcr](http://www.dshs.state.tx.us/tcr)) SEER\*Stat Database, 1995–2009 Incidence, Texas statewide, Texas Department of State Health Services, created December 2011, based on NPCR-CSS Submission, cut-off 11/23/11.

Mortality Source: Texas Department of State Health Services, Center for Health Statistics.

Rates are per 100,000 and age-adjusted to the 2000 U.S. standard population.

~ Rate is not shown if number of cases or deaths is fewer than 16.

## Urinary Bladder Cancer, Texas, 2005–2009

Texans Newly Diagnosed: 16,968

Texan Lives Lost: 3,747

Highest Diagnosis Rate: Non-Hispanic white men

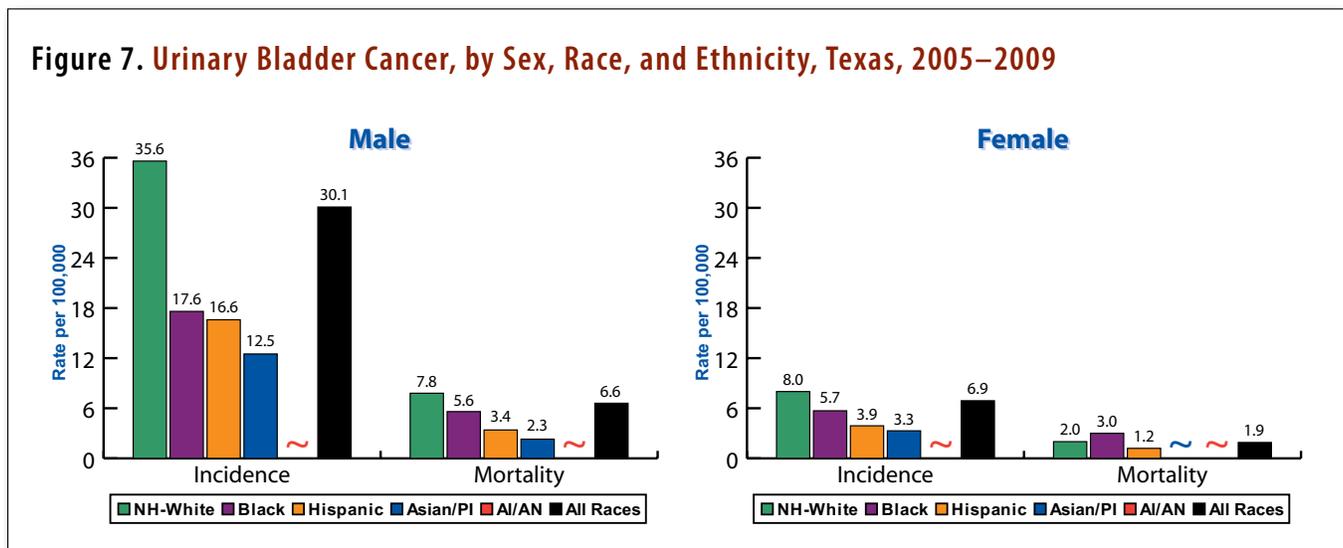
Highest Death Rate: Non-Hispanic white men

Smoking is an important risk factor for bladder cancer.<sup>10</sup> Cigarette smoking increases the risk of bladder cancer three times that of a nonsmoker, and may be responsible for as much as 60% of bladder cancer cases.<sup>19</sup> Research has shown up to a 60% reduction in bladder cancer risk for smokers who quit, with an almost immediate reduction in risk upon quitting.<sup>20</sup>

The overall five-year survival rate for bladder cancer in Texans is 75%. When detected at an early (in situ) stage, the five-year survival rate is as high as 94.4%. Early detection is critical, as once bladder cancer progresses to a late stage, five-year survival drops to only 9.2%.

The American Cancer Society estimates that 73,510 new cases of bladder cancer were diagnosed in the U.S. during 2012, and 14,880 people died of the disease.<sup>10</sup> In Texas, there were an estimated 3,626 new cases of bladder cancer diagnosed in 2012 and 803 deaths. For the years 2005–2009, non-Hispanic white men had the highest incidence and mortality of bladder cancer. Among women, non-Hispanic whites had the highest incidence, but blacks the highest mortality rate from urinary bladder cancer.

**Figure 7. Urinary Bladder Cancer, by Sex, Race, and Ethnicity, Texas, 2005–2009**



Incidence Source: Texas Cancer Registry ([www.dshs.state.tx.us/tcr](http://www.dshs.state.tx.us/tcr)) SEER\*Stat Database, 1995–2009 Incidence, Texas statewide, Texas Department of State Health Services, created December 2011, based on NPCR-CSS Submission, cut-off 11/23/11.

Mortality Source: Texas Department of State Health Services, Center for Health Statistics.

Rates are per 100,000 and age-adjusted to the 2000 U.S. standard population.

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## Pancreatic Cancer, Texas, 2005–2009

**Texans Newly Diagnosed: 11,618**  

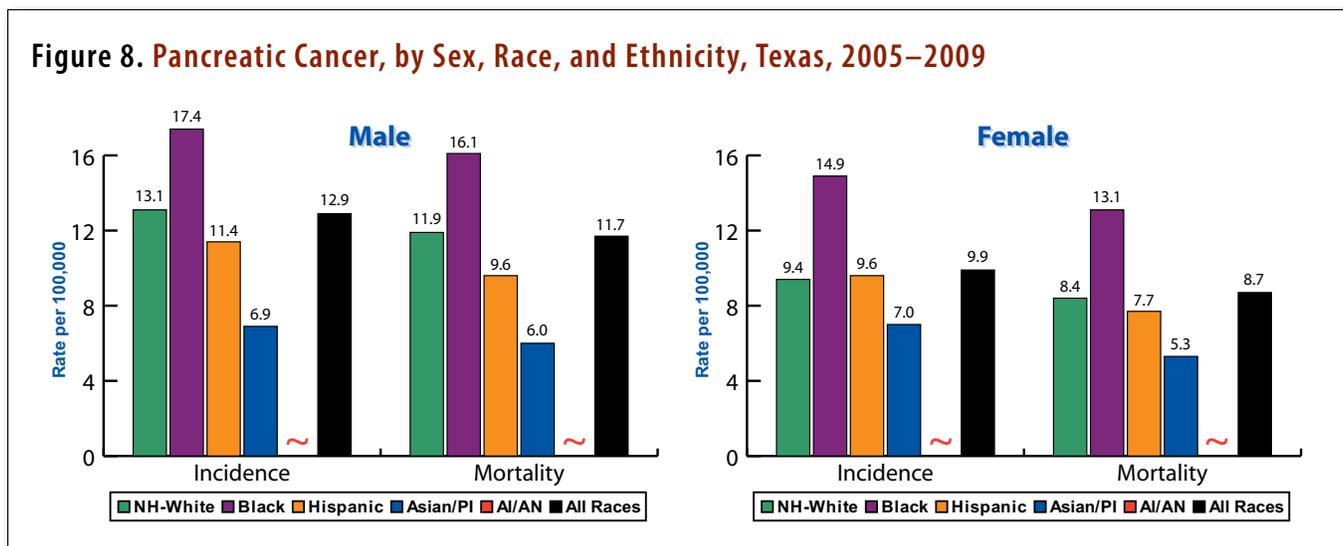
**Highest Diagnosis Rate: Black men**

**Texan Lives Lost: 10,216**  

**Highest Death Rate: Black men**

The pancreas is a large gland located behind the stomach deep inside the body cavity. It serves critical functions in both digestion and the production of hormones, such as insulin. Smoking is a very important risk factor for cancer of the pancreas. Pancreatic cancer rates for smokers are more than twice that of nonsmokers, and heavy smokers have six times the risk. Smokers who quit reduce their risk of pancreatic cancer; studies have shown little to no difference in risk between nonsmokers and long-term ex-smokers.<sup>21</sup>

While not as common as other cancers, pancreatic cancer is one of the most deadly. The survival rates for pancreatic cancer are among the worst for any cancer. Only 8.1% of newly diagnosed cases in Texas survive five years, and only 27.5% even survive the first year. Pancreatic cancer is rarely diagnosed at an early stage, as there are usually no symptoms during the early course of the disease. As a result, only 10 to 20% of patients are candidates for surgical treatment, which offers the best chance of a cure.<sup>22</sup> The American Cancer Society estimates that 43,920 new cases of pancreatic cancer were diagnosed in the U.S. during 2012, and 37,390 died of the disease.<sup>10</sup> In Texas there were 2,569 estimated cases of pancreatic cancer diagnosed in 2012 and 2,286 deaths. Black men in Texas had the highest incidence and mortality rates of pancreatic cancer when compared to Hispanic and non-Hispanic whites for the years 2005–2009. Among women, blacks had the highest incidence and mortality rates from pancreatic cancer.



Incidence Source: Texas Cancer Registry ([www.dshs.state.tx.us/tcr](http://www.dshs.state.tx.us/tcr)) SEER\*Stat Database, 1995-2009 Incidence, Texas statewide, Texas Department of State Health Services, created December 2011, based on NPCR-CSS Submission, cut-off 11/23/11.

Mortality Source: Texas Department of State Health Services, Center for Health Statistics.

Rates are per 100,000 and age-adjusted to the 2000 U.S. standard population.

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## Kidney and Renal Pelvis Cancer, Texas, 2005–2009

Texans Newly Diagnosed: 19,072

Texan Lives Lost: 4,735

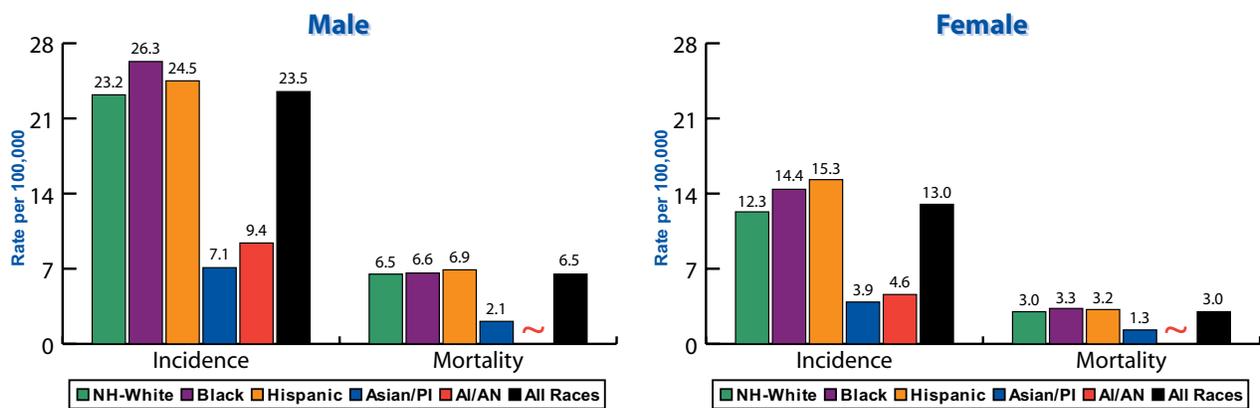
Highest Diagnosis Rate: Black, Non-Hispanic White and Hispanic Men

Highest Death Rate: Black, Non-Hispanic White and Hispanic Men

Tobacco use is a major risk factor for kidney cancer. The harmful chemicals in tobacco are absorbed into the bloodstream, and can become highly concentrated in the kidneys. Research shows that smokers are more likely to develop kidney cancer than nonsmokers, and heavy smokers may experience two to two and one-half times the risk. The longer a person smokes, the higher the risk; though risk decreases for those who quit smoking.<sup>23</sup> The overall five-year survival rate for kidney cancer in Texas is 67.0%, but as with most cancers, the earlier the disease is detected, the better the outcome. The five-year survival rate for those Texans with kidney cancer diagnosed and treated in the early stages is 88.3%.

The American Cancer Society estimates that 64,770 new cases of kidney cancer were diagnosed in the U.S. during 2012 and over 13,570 died of the disease.<sup>10</sup> In Texas, it is estimated that 4,141 new cases of kidney cancer were diagnosed in 2012 and 1,077 deaths occurred. Men experienced higher kidney cancer incidence and mortality compared to women, both in the U.S. and Texas.<sup>7</sup> Incidence and mortality of kidney and renal pelvis cancer are much higher in non-Hispanic whites, Blacks and Hispanics, than in Asian/Pacific Islanders and American Indians/Alaskan Natives, and this is true for both genders.

**Figure 9. Kidney and Renal Pelvis Cancer, by Sex, Race, and Ethnicity, Texas, 2005–2009**



Incidence Source: Texas Cancer Registry ([www.dshs.state.tx.us/tcr](http://www.dshs.state.tx.us/tcr)) SEER\*Stat Database, 1995–2009 Incidence, Texas statewide, Texas Department of State Health Services, created December 2011, based on NPCR-CSS Submission, cut-off 11/23/11.

Mortality Source: Texas Department of State Health Services, Center for Health Statistics.

Rates are per 100,000 and age-adjusted to the 2000 U.S. standard population.

~ Rate is not shown if number of cases or deaths is fewer than 16.



## Cervical Cancer, Texas, 2005–2009

Texans Newly Diagnosed: 5,471

Texan Lives Lost: 1,684

Highest Diagnosis Rate: Hispanic women

Highest Death Rate: Black and Hispanic women

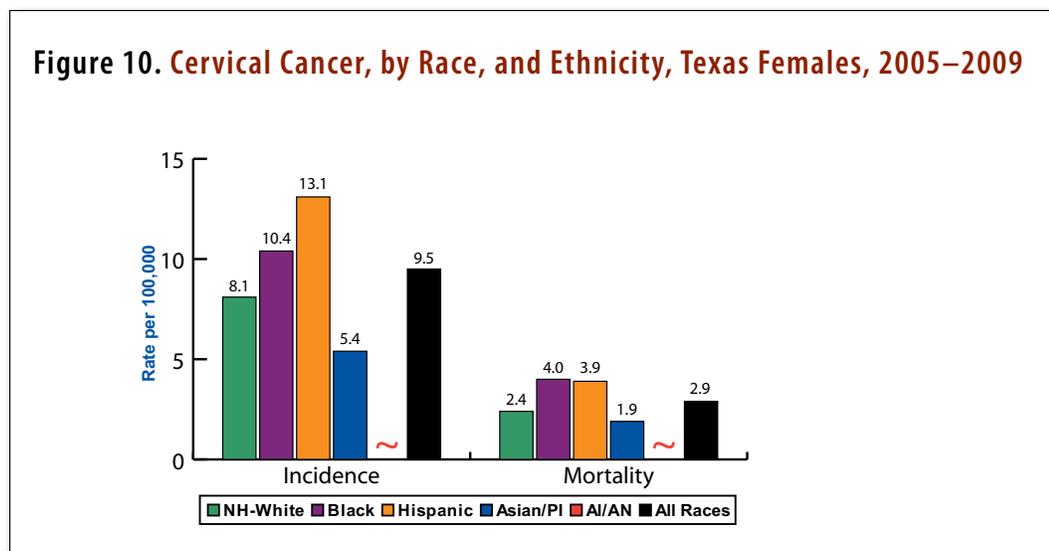
The cervix is the lower part of the uterus and connects the uterus to the vagina. Cervical cancer develops very slowly. In the early stages, some cells begin to change and become abnormal. These changes may not be true cancer, but have the potential to develop into cancer if left untreated. These early abnormal cells can be detected by routine Pap tests. As a result, cervical cancer is among the most preventable of all cancers.

While not as commonly associated with tobacco use as other cancers, women who smoke are twice as likely as nonsmokers to get cervical cancer. The harmful chemicals in tobacco are absorbed by the bloodstream, carried to other parts of the body, and have been found in the cervical mucus of women who smoke. Researchers are still studying how these substances damage the DNA of cells in the cervix and may contribute to the development of cervical cancer.<sup>24</sup> Human papillomavirus (HPV) infection has also been established as a major cause of cervical cancer, and smoking has been further shown to increase risk in HPV positive women.<sup>25</sup>

Mortality due to cervical cancer in the U.S. has significantly decreased over the past decades, mainly due to tests that can detect cervical cancer at an early stage.<sup>26</sup> The five-year survival rate for pre-invasive lesions in Texas is 100%, and is over 89% for all early-stage cervical cancers. Yet, the American Cancer Society estimates that 4,220 women in the U.S. died in 2012 from cervical cancer.<sup>10</sup>

The American Cancer Society estimates that over 12,170 new cases of invasive cervical cancer were diagnosed in the U.S. during 2012 and there were 4,220 deaths.<sup>10</sup> In Texas, it is estimated that 1,255 cases were diagnosed and 392 died in that same year. For the years 2005–2009, Hispanic women in Texas had the highest incidence of cervical cancer, followed closely by blacks. These rates were over 62% and 25% higher than non-Hispanic white women, respectively.

Between 2005 and 2009, 1,684 women in Texas died of cervical cancer, with the highest mortality rate among blacks — a rate almost twice as high as in non-Hispanic whites.



Incidence Source: Texas Cancer Registry ([www.dshs.state.tx.us/tcr](http://www.dshs.state.tx.us/tcr)) SEER\*Stat Database, 1995-2009 Incidence, Texas statewide, Texas Department of State Health Services, created December 2011, based on NPCR-CSS Submission, cut-off 11/23/11.  
 Mortality Source: Texas Department of State Health Services, Center for Health Statistics.  
 Rates are per 100,000 and age-adjusted to the 2000 U.S. standard population.  
 ~ Rate is not shown if number of cases or deaths is fewer than 16.

## Stomach Cancer, Texas, 2005–2009

Texans Newly Diagnosed: 7,326

Texan Lives Lost: 3,991

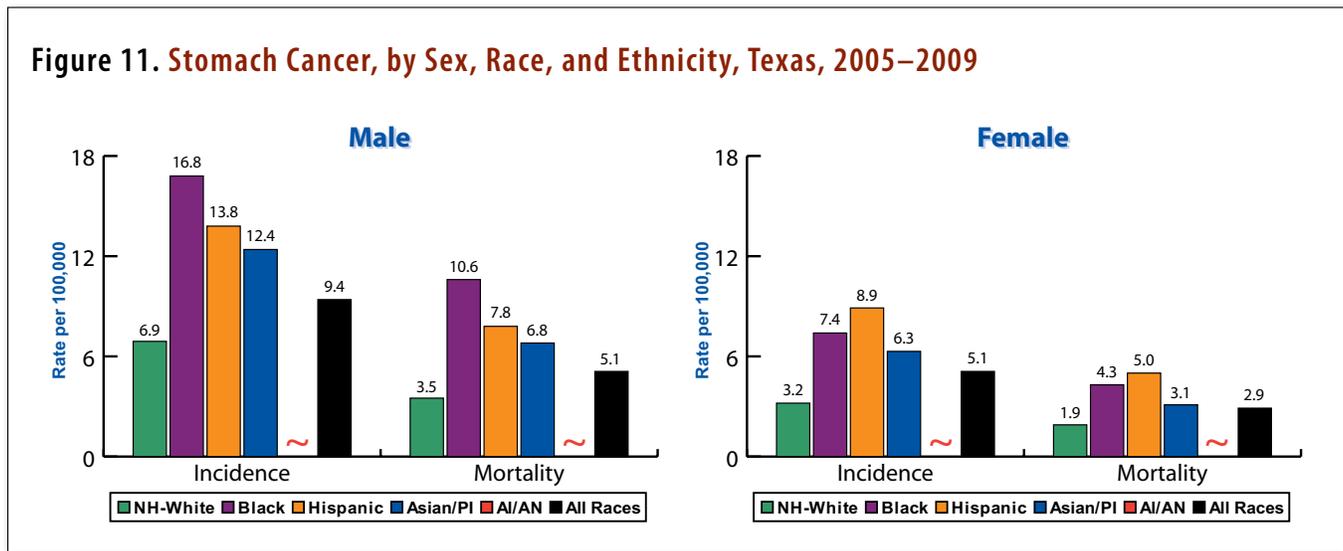
Highest Diagnosis Rate: Black men

Highest Death Rate: Black men

Although there are other factors that are important in the etiology of stomach cancer, smoking has been determined to be a causal factor for many stomach cancer cases and deaths.<sup>2</sup> The 5-year survival for all stomach cancers in Texans is 24.9%, increasing to a 5-year survival of 55.4% for those cases (only 25.2% of all cases) that are diagnosed at an early stage of disease.

The American Cancer Society estimates that 21,320 new cases of stomach cancer were diagnosed in the U.S. in 2012, and an estimated 10,540 people died of this cancer in the same year.<sup>10</sup> For Texas, it is estimated that 1,731 new cases and 954 deaths occurred in 2012. During 2005–2009, black men in Texas had the highest incidence and the highest mortality rates from stomach cancer. Among women, Hispanics had the highest incidence and mortality rates of stomach cancer, while blacks

had the highest mortality. Stomach cancer incidence and mortality rates in both black and Hispanic women were more than twice as high as in non-Hispanic whites.



Incidence Source: Texas Cancer Registry ([www.dshs.state.tx.us/tcr](http://www.dshs.state.tx.us/tcr)) SEER\*Stat Database, 1995–2009 Incidence, Texas statewide, Texas Department of State Health Services, created December 2011, based on NPCR-CSS Submission, cut-off 11/23/11.  
 Mortality Source: Texas Department of State Health Services, Center for Health Statistics.  
 Rates are per 100,000 and age-adjusted to the 2000 U.S. standard population.  
 ~ Rate is not shown if number of cases or deaths is fewer than 16.

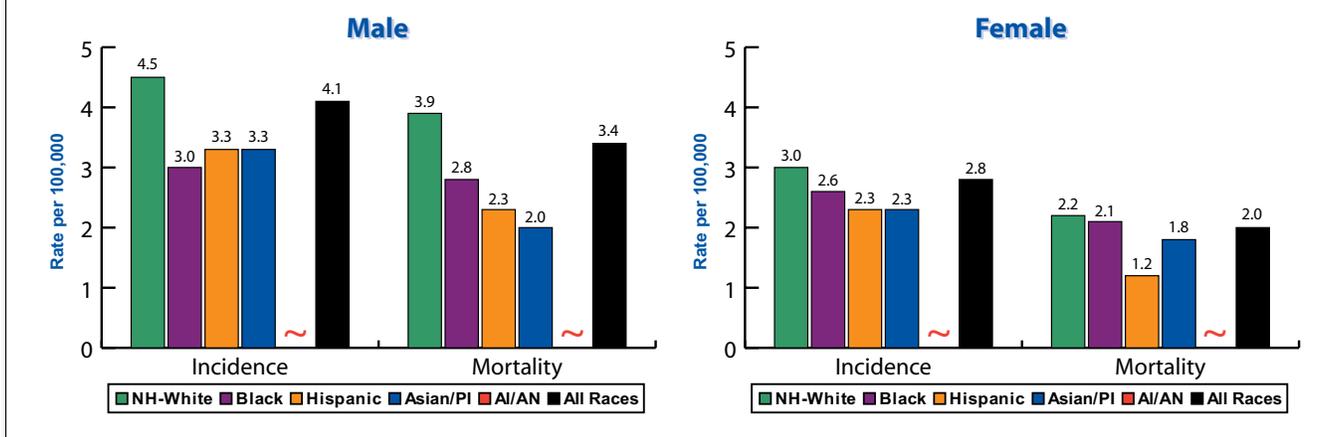
## Acute Myeloid Leukemia, Texas, 2005–2009

- Texans Newly Diagnosed: 3,555
- Texan Lives Lost: 2,656
- Highest Diagnosis Rate: Non-Hispanic white men
- Highest Death Rate: Non-Hispanic white men

Acute myeloid leukemia is the most common acute leukemia in adults and is a cancer that starts in a person’s bone marrow. Smoking is considered to be causally related to this cancer.<sup>2</sup> However, unlike many other tobacco-related cancers, acute myeloid leukemia is more strongly related to the cumulative effects of long-term smoking and risk does not appear to abate after tobacco cessation. It has been estimated that smoking contributes up to 58% of acute myeloid leukemia deaths.<sup>2</sup> The five-year survival rate for acute myeloid leukemia in Texas is 24.8%, considerably lower than for other major types of leukemia.

The American Cancer Society estimates 13,780 new cases of acute myeloid leukemia were diagnosed in the U.S. in 2012 and an estimated 10,200 people died of this cancer in the same year.<sup>10</sup> For Texas, it is estimated that 787 new cases and 553 deaths occurred. Non-Hispanic white men in Texas had both the highest incidence and the highest mortality rates for acute myeloid leukemia. Among women, non-Hispanic whites also had the highest incidence and the highest mortality rates from acute myeloid leukemia.

**Figure 12. Acute Myeloid Leukemia by Sex, Race, and Ethnicity, Texas, 2005–2009**



Incidence Source: Texas Cancer Registry ([www.dshs.state.tx.us/tcr](http://www.dshs.state.tx.us/tcr)) SEER\*Stat Database, 1995–2009 Incidence, Texas statewide, Texas Department of State Health Services, created December 2011, based on NPCR-CSS Submission, cut-off 11/23/11.

Mortality Source: Texas Department of State Health Services, Center for Health Statistics.

Rates are per 100,000 and age-adjusted to the 2000 U.S. standard population.

~ Rate is not shown if number of cases or deaths is fewer than 16.

## Trends in Tobacco-Related and All Other Cancers in Texas, 2000–2009

During 2000–2009 there were statistically significant decreases in the incidence rates of cancers of the lung and bronchus, larynx, stomach, urinary bladder, acute myeloid leukemia (AML) in men and women combined, and in cervical cancer among women (Table 2). For lung and bronchial cancer, the significant decrease was also seen in both men and in women individually, but the decreases in cancers of the larynx, urinary bladder, and stomach were statistically significant only in men. There were no statistically significant changes in incidence rates for cancers of the oral cavity and pharynx, esophagus, or pancreas, though there was an increase in kidney cancer. It is important to note that all of these cancer sites may have some cases influenced by risk factors other than tobacco.

The 2000–2009 decline in *incidence* of tobacco-related cancers was also accompanied by improved *mortality*. Decreased mortality was statistically significant for cancers of the lung and bronchus, oral cavity and pharynx, larynx, esophagus, kidney, and stomach. It occurred in both men and women except for larynx in men only, and esophagus in women only. Women experienced a significant decline in cervical cancer mortality. There were no significant changes in mortality rates for bladder, pancreas, and AML (Table 3). These decreases in cancer incidence and mortality in Texas are similar to the U.S. as a whole, where incidence of tobacco-related cancers began declining in 1999,<sup>1</sup> and tobacco-related cancer mortality began declining in 1991.<sup>27, 28</sup>

To determine if the decrease in overall cancer mortality over the last 20 years<sup>27, 28</sup> occurred in both tobacco-related and non-tobacco-related cancers in Texas, we examined overall trends in all tobacco-related sites combined versus all non-tobacco-related sites combined. Trends were further examined by race and ethnicity to determine if incidence and mortality declines were consistent for all races

**Table 2. Trend Analysis, Tobacco-Related Cancer Incidence in Texas, 2000–2009**

Type	Total EAPC	Male EAPC	Female EAPC
All Tobacco-Related Cancer Sites Combined	-0.8*	-1.2*	-0.4
All Other (Non-Tobacco-Related Cancers)	-0.4	-0.7	-0.1
Lung and Bronchus	-1.6*	-2.3*	-0.8*
Oral Cavity and Pharynx	-0.2	-0.3	-0.7
Larynx	-1.9*	-2.3*	-0.9
Esophagus	0.1	0.4	-1.5
Urinary Bladder	-0.7*	-0.7*	-1.2
Pancreas	0.4	0.0	0.7
Kidney and Renal Pelvis	2.1*	1.8*	2.3*
Cervix (F)	~	~	-1.9*
Stomach	1.2*	-1.9*	-0.4
Acute Myeloid Leukemia	-1.6*	-2.0	-1.1

APCs were calculated using weighted least squares method. \* The APC is significantly different from zero ( $p < 0.05$ ). ~ Statistic could not be calculated. Prepared by the Texas Department of State Health Services, Cancer Epidemiology and Surveillance Branch, Texas Cancer Registry. Source: Texas Cancer Registry ([www.dshs.state.tx.us/tcr](http://www.dshs.state.tx.us/tcr)) SEER\*Stat Database, 1995–2009 Incidence, Texas statewide, Texas Department of State Health Services, created December 2011, based on NPCR-CSS Submission, cut-off 11/23/11.

**Table 3. Trend Analysis, Tobacco-Related Cancer Mortality in Texas, 2000–2009**

Type	Total EAPC	Male EAPC	Female EAPC
All Tobacco-Related Cancer Sites Combined	-2.0*	-2.5*	-1.5*
All Other (Non-Tobacco-Related Cancers)	-1.9*	-2.1*	-1.9*
Lung and Bronchus	-2.5*	-3.3*	-1.5*
Oral Cavity and Pharynx	-1.8*	-1.4*	-2.7*
Larynx	-2.8*	-3.3*	-2.4*
Esophagus	-1.3*	-0.9	-3.7*
Urinary Bladder	0.0	0.1	-1.1
Pancreas	-0.3	-0.5	0.0
Kidney and Renal Pelvis	-1.6*	-1.7*	-1.9*
Cervix (F)	~	~	-2.8*
Stomach	-3.5*	-4.0*	-3.3*
Acute Myeloid Leukemia	-0.5	-0.5	-0.9

APCs were calculated using weighted least squares method. \* The APC is significantly different from zero ( $p < 0.05$ ). ~ Statistic could not be calculated. Prepared by the Texas Department of State Health Services, Cancer Epidemiology and Surveillance Branch, Texas Cancer Registry. Source: Texas Cancer Registry ([www.dshs.state.tx.us/tcr](http://www.dshs.state.tx.us/tcr)) SEER\*Stat Database, 1995–2009 Incidence, Texas statewide, Texas Department of State Health Services, created 01/25/12.

and ethnic groups. Table 4 shows the average annual percent changes (APC) values for each race and for Hispanics in Texas for 2000–2009. Statistically significant declines in overall cancer incidence for most races and ethnicities (All Races combined, Blacks and Hispanics) were driven by declines in tobacco-related cancers, since non-tobacco-related cancers did not decline significantly. In contrast, cancer *mortality* rates for both tobacco-related and non-tobacco-related cancers significantly declined in almost every racial and ethnic group examined (only in Asian/Pacific Islanders were mortality declines in non-tobacco-related cancers not statistically significant). Though both tobacco-related and non-tobacco-related cancer mortality were declining during 2000–2009, APC declines were greater for tobacco-related cancers, for all races and ethnicities except non-Hispanic whites.

**Table 4. Trends in Cancer Incidence and Mortality, Texas Residents, 2000–2009, All Tobacco-Related Cancers Combined and All Other Cancers Combined By Race and Ethnicity**

<b>Incidence by Race, Ethnicity</b>	<b>All tobacco-related sites combined APC (95% C.I.)</b>	<b>All other sites (non-tobacco-related) APC (95% C.I.)</b>
All Races	-0.8* (-1.3 – -0.3)	-0.4 (-0.9 – 0.1)
White Non-Hispanic	-0.4 (-0.8 – 0.0)	-0.4 (-1.0 – 0.1)
Black	-1.3* (-2.1 – -0.5)	-0.4 (-1.1 – 0.3)
Hispanic	-1.4* (-2.0 – -0.7)	0.0 (-0.4 – 0.3)
Asian/Pacific Islander	-1.4 (-3.3 – 0.6)	0.0 (-1.3 – 1.3)
<b>Mortality by Race, Ethnicity</b>		
All Races	-2.0* (-2.2 – -1.8)	-1.9* (-2.1 – -1.6)
White Non-Hispanic	-1.7* (-2.1 – -1.4)	-1.9* (-2.2 – -1.6)
Black	-2.6* (-3.4 – -1.8)	-2.1* (-2.5 – -1.7)
Hispanic	-2.1* (-2.8 – -1.4)	-1.6* (-2.3 – -0.8)
Asian/Pacific Islander	-1.9* (-3.7 – -0.1)	-1.2 (-2.5 – 0.1)

APCs were calculated by weighted least squares method.\* The APC is significantly different from zero ( $p < 0.05$ ). ~ Statistic could not be calculated. Prepared by the Texas Department of State Health Services, Cancer Epidemiology and Surveillance Branch, Texas Cancer Registry. All tobacco-related sites include: Oral&pharynx, Lung & Bronchus, Larynx, Esophagus, Stomach, Pancreas, Urinary Bladder, Kidney & Renal Pelvis, Cervix (rate in both genders), and Acute Myeloid Leukemia. Incidence Source: Texas Cancer Registry ([www.dshs.state.tx.us/tcr](http://www.dshs.state.tx.us/tcr)) SEER\*Stat Database, 1995–2009 Incidence, Texas statewide, Texas Department of State Health Services, created December 2011, based on NPCR-CSS Submission, cut-off 11/23/11. Mortality Source: Texas Cancer Registry ([www.dshs.state.tx.us/tcr](http://www.dshs.state.tx.us/tcr)) SEER\*Stat Database, 1990–2009 Mortality, Texas statewide, Texas Department of State Health Services (created 01/25/2012).



## Racial and Ethnic Disparities in Tobacco-Related Cancer Incidence and Mortality in Texas

In this report we have listed, for each tobacco-related cancer in Texas, the gender, race, and ethnic groups experiencing the highest incidence and mortality rates. In this section we summarize these disparities. As in the U.S. as a whole, men in Texas have higher cancer incidence and mortality rates than women for all sites combined,<sup>29</sup> and this holds true as well for the subset of cancers that are tobacco-related, and in each race and ethnic group. The only exception is cervical cancer which occurs only in women.

One might expect that those groups with the highest cancer incidence rates would also experience the highest cancer mortality rates, and indeed, this is often the case. However, there are two important exceptions to this generalization (See disparity Tables 5(a) and 5(b)), which can be at least partially explained by differences in smoking prevalence by race and ethnicity (Table 6).

1. For oral and pharyngeal cancer, non-Hispanic whites developed these tumors at the highest rates, but blacks experienced the highest mortality rates. The incidence disparity may be explained by the fact that non-Hispanic white men had over twice the prevalence of smokeless tobacco use (an important risk factor for oral and pharyngeal cancer) in 2008–2010 compared with black men (Table 7), but it does not explain the higher mortality in black men. Racial differences in two factors — promptness of treatment and good oral hygiene, both of which are associated with mortality — may account for the higher cancer mortality experienced by black men (Table 8).
2. For cervical cancer, Hispanic women develop these cancers at the highest rate, but black women experience the highest mortality rates. Historically, Hispanic women have long had the highest

**Table 5a. Rate Comparisons, Ten Highest Incidence Rates, Texas, 2005–2009**

Site	All	Male*	Female*
Oral Cavity and Pharynx	Non-Hispanic White*	Non-Hispanic White*	Non-Hispanic White*
Lung and Bronchus	Black*	Black*	Non-Hispanic White*
Larynx	Black*	Black*	Black <sup>ns</sup>
Esophagus	Black <sup>ns</sup>	Black <sup>ns</sup>	Black <sup>ns</sup>
Stomach	Black <sup>ns</sup>	Black*	Hispanic*
Pancreas	Black*	Black*	Black*
Urinary Bladder	Non-Hispanic White*	Non-Hispanic White*	Non-Hispanic White*
Kidney and Renal Pelvis	Hispanic <sup>ns</sup>	Black <sup>ns</sup>	Hispanic <sup>ns</sup>
Cervix (F)	Hispanic*	~	Hispanic*
Acute Myeloid Leukemia	Non-Hispanic White*	Non-Hispanic White <sup>ns</sup>	Non-Hispanic White <sup>ns</sup>
All Tobacco-Related Cancer Sites Combined	Black*	Black*	Black*

\* If highest race/gender group is statistically significantly greater than the next highest race or race and gender group (not including All Races).

<sup>ns</sup>If highest race is not significantly different from some other race or race and gender group.

~Not applicable.

**Table 5b. Rate Comparisons, Ten Highest Mortality Rates, Texas, 2005–2009**

Site	All	Male*	Female*
Oral Cavity and Pharynx	Black*	Black*	Black <sup>ns</sup>
Lung and Bronchus	Black*	Black*	Non-Hispanic White*
Larynx	Black*	Black*	Black <sup>ns</sup>
Esophagus	Black <sup>ns</sup>	Black <sup>ns</sup>	Black <sup>ns</sup>
Stomach	Black <sup>ns</sup>	Black*	Hispanic <sup>ns</sup>
Pancreas	Black*	Black*	Black*
Urinary Bladder	Non-Hispanic White <sup>ns</sup>	Non-Hispanic White*	Black*
Kidney and Renal Pelvis	Hispanic <sup>ns</sup>	Hispanic <sup>ns</sup>	Black <sup>ns</sup>
Cervix (F)	Black <sup>ns</sup>	~	Black <sup>ns</sup>
Acute Myeloid Leukemia	Non-Hispanic White*	Non-Hispanic White*	Non-Hispanic White <sup>ns</sup>
All Tobacco-Related Cancer Sites Combined	Black*	Black*	Black*

\* If highest race/gender group is statistically significantly greater than the next highest race or race and gender group (not including All Races).

<sup>ns</sup>If highest race is not significantly different from some other race or race and gender group.

~Not applicable.

cervical cancer incidence rate, which may be at least partially explained by low rates of cervical cancer screening. A review of self-reported cervical cancer screening behavior from 2002–2010 using data from the Texas Department of State Health Services’ Behavioral Risk Factor Surveillance System on-line query tool reveals that Texas Hispanic women consistently reported the lowest rates of cervical cancer screening among all races and ethnic groups in Texas. This does not, however, explain the high mortality rates in Texas black women.

In addition, there are sex and race-ethnicity differences in terms of which groups are most highly affected:

1. In men, blacks experienced the highest incidence and mortality rates for lung cancer (same pattern as for both sexes combined), while in women, non-Hispanic whites experienced the

**Table 6. Estimated Prevalence of Current Smokers,\* Ages 18+, Texas, 2008–2010**

Race	Sex	Sample Size	%	95% C.I.	
				Lower	Upper
Texas-All Races	<b>Totals</b>	40,174	17.4	16.6	18.2
	Male	14,364	20.9	19.6	22.3
	Female	25,810	14.0	13.3	14.8
White, Non-Hispanic	<b>Totals</b>	25,057	18.4	17.5	19.4
	Male	9,413	19.8	18.3	21.4
	Female	15,644	17.1	16.0	18.2
Black, Non-Hispanic	<b>Totals</b>	2,771	18.7	16.4	21.2
	Male	819	21.4	17.3	26.1
	Female	1,952	16.4	14.1	18.9
Asian/Hawaiian/Pacific Islander, Non-Hispanic	<b>Totals</b>	774	10.6	6.0	18.1
	Male	343	15.1	7.7	27.4
	Female	431	4.6	2.4	8.5
American Indian/Alaskan Native, Non-Hispanic	<b>Totals</b>	317	30.9	23.1	39.9
	Male	149	32.5	22.1	45.0
	Female	168	28.1	18.4	40.4
Any Hispanic	<b>Totals</b>	10,471	15.9	14.5	17.5
	Male	3,314	23.5	20.8	26.4
	Female	7,157	8.6	7.5	9.8

\*A current smoker is someone who has smoked 100 cigarettes in their lifetime and continue to smoke some or every day.

All reported rates are weighted for Texas demographics and the probability of selection.

Non-Hispanic excludes Hispanic and Unknown Hispanic. Hispanic excludes Unknown Hispanic.

Source: Texas Behavioral Risk Factor Surveillance System Dataset, Statewide BRFSS Survey, 2008–2010 combined Community Assessment Team, Center for Health Statistics, Texas Department of State Health Services.

**Table 7. Estimated Prevalence of Current Smokless Tobacco Use,\* Ages 18+, Texas, 2008–2010**

Race	Sex	Sample Size	%	95% C.I.	
				Lower	Upper
Texas-All Races	<b>Totals</b>	35,674	4.0	3.6	4.5
	Male	12,853	7.1	6.3	8.0
	Female	22,821	1.1	0.9	1.4
White, Non-Hispanic	<b>Totals</b>	22,176	5.4	4.8	6.1
	Male	8,403	9.8	8.6	11.1
	Female	13,773	1.1	0.8	1.5
Black, Non-Hispanic	<b>Totals</b>	2,631	2.8	1.9	4.1
	Male	776	4.4	2.6	7.2
	Female	1,855	1.6	1.0	2.4
Asian/Hawaiian/Pacific Islander, Non-Hispanic	<b>Totals</b>	665	2.5	1.0	6.1
	Male	302	3.2	1.0	9.4
	Female	363	1.4	0.4	4.9
American Indian/Alaskan Native, Non-Hispanic	<b>Totals</b>	297	4.9	2.4	10.0
	Male	138	7.4	3.3	15.4
	Female	159	0.6	0.1	2.5
Any Hispanic	<b>Totals</b>	9,187	1.9	1.4	2.5
	Male	2,919	2.9	2.0	4.3
	Female	6,268	0.9	0.6	1.3

\*A current smokeless tobacco user is someone who uses chewing tobacco, snuff, or snus, some or every day.

All reported rates are weighted for Texas demographics and the probability of selection.

Non-Hispanic excludes Hispanic and Unknown Hispanic. Hispanic excludes Unknown Hispanic.

Source: Texas Behavioral Risk Factor Surveillance System Dataset, Statewide BRFSS Survey, 2008–2010 combined Community Assessment Team, Center for Health Statistics, Texas Department of State Health Services.

highest incidence and mortality. Smoking prevalence data are consistent with these findings (Table 6): among men, blacks have the highest smoking prevalence; and among women, non-Hispanic whites have the highest smoking prevalence (based on 2008–2010 data).

2. In men, blacks experienced the highest bladder cancer incidence and mortality rates. But in women, even though blacks did not have the highest bladder cancer incidence rate, they still experienced the highest bladder cancer mortality.
3. In men, blacks experienced the highest stomach cancer incidence and mortality rates. But in women, Hispanics experienced the highest incidence and mortality.
4. In both men and women, incidence and mortality from acute myeloid leukemia were higher in non-Hispanic whites than for any other race or ethnicity.

**Table 8. Estimated Prevalence of Oral Health Screening, Ages 18+, Texas, Residents, 2002–2010**

	Sample Size	%	95% C.I.	
			Lower	Upper
<i>Last visited a dentist or dental clinic for any reason within previous 12 months?</i>				
<b>Texas Total</b>	47,647	60.4	59.7	61.2
<b>Race/Ethnicity</b>				
White	29,505	66.6	65.6	67.5
Black	3,627	54.6	52.0	57.1
Hispanic	12,595	50.2	48.7	51.7
Other	1,436	63.0	58.9	67.0
<i>Had teeth cleaned within previous 12 months?</i>				
<b>Texas Total</b>	43,636	59.4	58.7	60.2
<b>Race/Ethnicity</b>				
White	27,118	64.8	63.8	65.7
Black	3,281	50.9	48.2	53.6
Hispanic	11,497	51.2	49.6	52.8
Other	1,299	63.8	59.4	67.9

All reported rates are weighted for Texas demographics and the probability of selection. Prepared using complex sample design from SPSS v20. Non-Hispanic excludes Hispanic and Unknown Hispanic. Hispanic excludes Unknown Hispanic. Source: Texas Behavioral Risk Factor Surveillance System Dataset, Statewide BRFSS Survey, 2002–2010 combined (even years). Community Assessment Team, Center for Health Statistics, Texas Department of State Health Services.

## Additional Cancers Under Study

There is still considerable new research on the use of tobacco products and cancer, and we continue to learn about additional cancer sites that are influenced by tobacco use. In this report we presented only those cancer sites that were listed in the 2004 U.S. Surgeon General’s report, but other cancer sites have been studied since that time that show strong associations with tobacco use.

Other cancers that have more recently been linked to tobacco use include those of the colon and rectum, liver, ovary, ureter, female breast, chronic myeloid leukemia, and childhood acute lymphocytic leukemia. For some of these sites there is sufficient evidence of the carcinogenic effect of tobacco, and for others there is only limited evidence of an association. Colon and rectum, liver (hepatocellular carcinoma only), ovary, ureter, and chronic myeloid leukemia are all sites that have been found to have sufficient evidence of an association with smoking by the International Agency for Research on Cancer, while female breast cancer was found to have limited evidence of an association.<sup>30</sup>

Furthermore, childhood acute lymphocytic leukemia was found by IARC to have limited association with *parental* smoking, and this has also been confirmed in a more recent case-control study.<sup>31</sup> If all of these sites were added to the ten we have already included (Table 1), there would be an additional 32,270 expected cases of tobacco-related cancer in 2012 in Texas, for a total of 65,391 expected Texas cases. Therefore, even if tobacco use only slightly increases the risk of these cancers, it would still contribute to a substantial number of tobacco-related cancers and deaths in Texas.



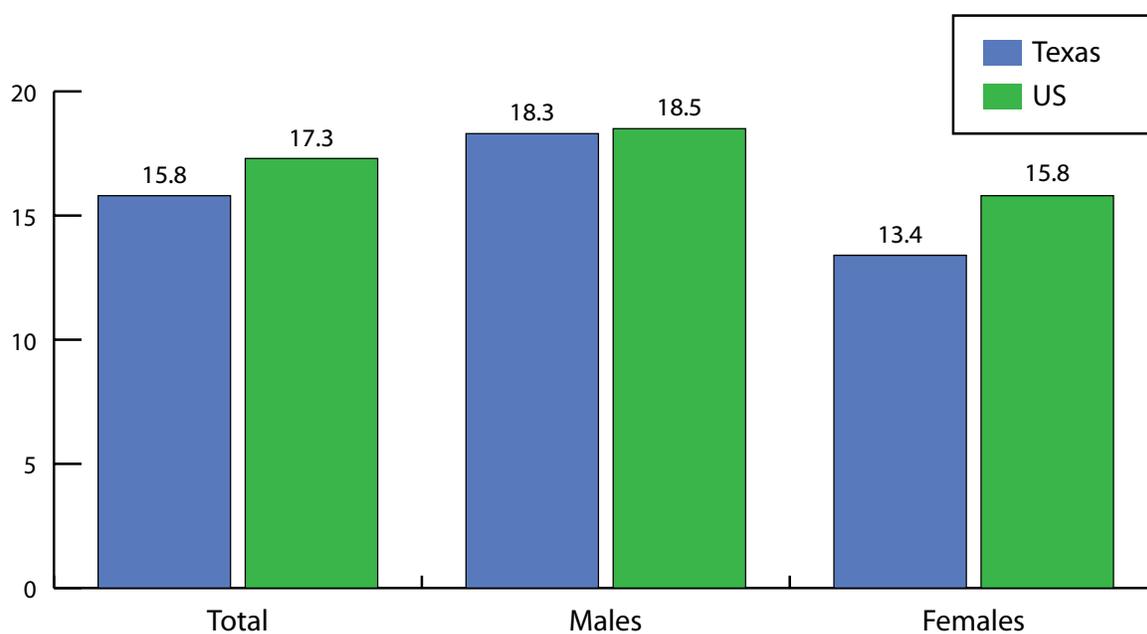
## Tobacco Use in Texas

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Based on data from the Texas Department of State Health Services Behavioral Risk Factor Surveillance System,<sup>32</sup> in 2010 an estimated 2.9 million Texas adults, or 15.8% of the adult population, were current smokers. This is slightly lower than the national overall prevalence (17.1%) but while the prevalence in Texas men was similar to the national prevalence among men, prevalence was much lower among Texas women compared to national prevalence in women (Figure 13). For 2008–2010, American Indians/Alaskan Natives smoked at the highest rates (30.9%), and the Asian/Pacific Islanders at the lowest rates (10.6%). In men, non-Hispanic blacks, non-Hispanic whites, and Hispanics all had a similar smoking prevalence (ranging from 19.8% to 23.5%), but in women, Hispanics smoked at a much lower rate (8.6%) than either non-Hispanic whites (17.1%) or blacks (16.4%) (Table 6). Fortunately, smoking has been on the decline in the U.S. for many years, and in Figure 14 we show the declining trends in current smokers in Texas, and the U.S., for 2000–2010.

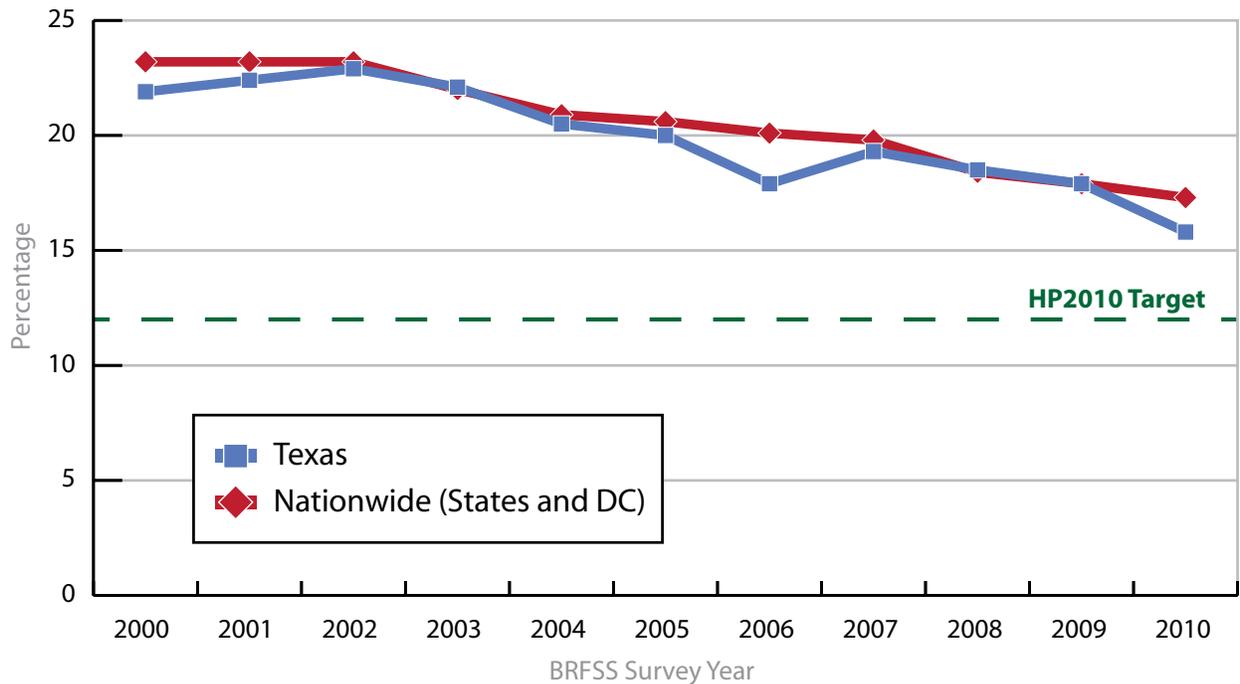
The toll of tobacco use in Texas is substantial. The annual cost of tobacco use in Texas is estimated in excess of \$12.5 billion for direct costs and lost productivity, with approximately \$1.6 billion covered by Medicaid.<sup>33</sup> This situation is not expected to improve, considering rising health care costs, millions of Texas adults and thousands of youth still smoking, and inadequate funding for an effective and comprehensive tobacco prevention program. Texas currently spends (FY 2012) only 2.0% of the CDC recommended amount for tobacco prevention and cessation.<sup>34</sup> The estimated annual portion spent by the tobacco industry for marketing to Texans is \$622 million,<sup>35</sup> while the amount spent by Texas on tobacco prevention for 2012 is \$5.5 million (2.0% of CDC recommendation of \$266.3 million).

**Figure 13. Prevalence of Current Cigarette Smoking, BRFSS, Texas and the US, 2010**



Source: CDC, Behavioral Risk Factor Surveillance System Prevalence and trends data: <http://apps.nccd.cdc.gov/brfss/>.

**Figure 14. Prevalence of Current Smokers, BRFSS, 2000–2010, Texas and U.S.**



Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, February, 2013.  
 HP 2020 Objectives: <http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicid=41>

## Summary

Tobacco use remains the leading preventable cause of death and disease in the U.S. and Texas and is a major risk factor for a number of cancers that affect thousands of Texans each year. In 2012 it is estimated that 18,394 Texans died (47% of total expected cancer deaths) and another 33,121 were diagnosed (30% of total expected cancer diagnoses) with a tobacco-related cancer. Although not all of these cases and deaths can definitively be attributed solely to tobacco use or secondhand smoke, tobacco use contributes to the large majority. Significant health disparities also exist, with black men and women in Texas experiencing a disproportionate amount of the tobacco-related cancer burden.

Overall, black men in Texas experienced the highest *incidence* rates for *three* — lung, larynx and pancreas — and the highest *mortality* rates for *four* — adding oral cavity and pharynx — of the ten tobacco-related cancers. The only other groups with significantly higher incidence or mortality rates for some sites were non-Hispanic white men (higher incidence of oral cavity/pharyngeal and bladder, and highest mortality from bladder and AML), and Hispanic women (highest incidence of cervical cancer).



Although much is known about the significant social and economic toll, tobacco use remains a significant public health problem in Texas. More than 10 years after the Texas Tobacco Settlement, smoking rates in Texans remain near the median for all states in the U.S., though smoking rates among Texas high school students are well above national average.<sup>36</sup> Adequately funded comprehensive tobacco prevention programs, which address smoke-free policies, smoking cessation and prevention of tobacco initiation among youth, have shown to be extremely effective in other states and are needed to meet tobacco reduction and cancer prevention goals.

## Data Sources and Technical Notes

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Texas cancer incidence data are based on cases reported to the Texas Cancer Registry, a legislatively mandated statewide cancer registry implemented in 1979 and with full state coverage beginning in 1995, and located within the Texas DSHS. Texas cancer mortality data are based on data obtained from the DSHS Center for Health Statistics and compiled by TCR.

The estimated numbers of cancers in 2012 (all malignant cancers plus in situ bladder) were estimated by the TCR by applying California 2004–2008 age, sex, and race/ethnic incidence rates to the 2012 Texas population. Projected 2012 cancer deaths are estimated by applying Texas 2007–2008 age, sex, and race/ethnicity-specific average annual mortality rates to the 2012 Texas population. More detailed information, including county level incidence and mortality data, can be found in TCR electronic and printed publications on-line at [www.dshs.state.tx.us/tcr](http://www.dshs.state.tx.us/tcr) or [www.cancer-rates.info/tx](http://www.cancer-rates.info/tx).

## Population Data

Population data used in the calculation of age-adjusted rates were provided by the U.S. Census Bureau's Population Estimates Program and modified by the NCI using the special processing procedures for counties affected by Hurricane's Rita and Katrina (as described on the SEER website: <http://seer.cancer.gov/popdata/>). Population data by age, sex, race and ethnicity represent the 2010 U.S. Bureau of the Census classification by race and ethnicity and are consistent with the NCI SEER Program. For this report, these groups are referred to as non-Hispanic white (white of non-Hispanic/non-Spanish origin), black, Hispanic, Asian or Pacific Islander, and American Indian or Alaskan

Native. Hispanic ethnicity is derived from the North American Association of Central Cancer Registries (NAACCR) Hispanic Identification Algorithm (NHIA) and Hispanics can be of any race.

## Data Analysis

Average annual incidence and mortality rates were age-adjusted using the direct method. Age-adjustment eliminates the effects of differences in the age structure between populations and allows direct comparisons of rates. All rates in this report are age-adjusted to the 2000 U.S. standard population utilizing 19 age groups.

Incidence and mortality rates were calculated using SEER\*Stat software, a software developed by SEER to analyze population-based cancer registry data, and provides the age-adjusted incidence and mortality rates and confidence intervals for standard cancer sites and site groups recognized by the SEER program. More information about this software can be found on the SEER website: <http://seer.cancer.gov/seerstat>.

To make comparisons of statistical differences in rates, the rates were generated along with their 95% confidence intervals, and the confidence intervals were compared. Overlapping rates were not considered statistically significantly different. If the confidence intervals did not overlap they were considered statistically significantly different.

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