

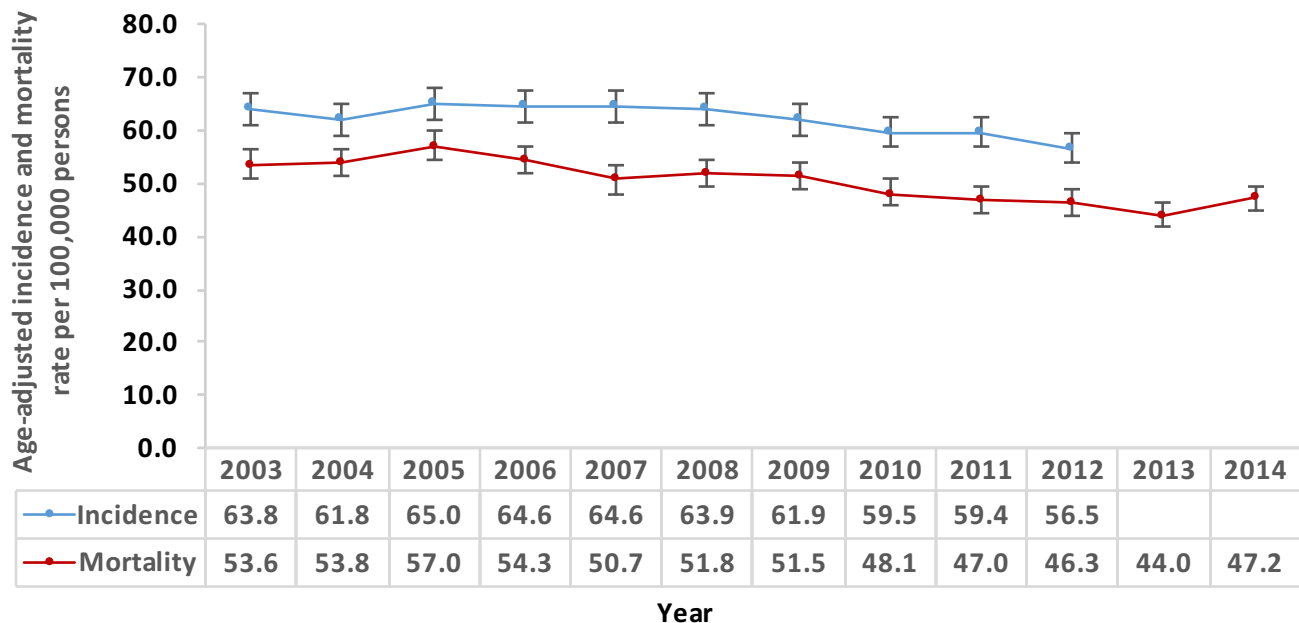
## CHAPTER 3: PROFILES OF SELECTED CANCERS – LUNG AND BRONCHUS

Lung cancers are usually grouped into two main types, small cell and non-small cell, which grow differently and are treated differently. Non-small cell lung cancer is more common than small cell lung cancer.<sup>4</sup> Cigarette smoking is the number one preventable cause of lung cancer. The disease can also be caused by exposure to secondhand smoke, asbestos, or radon.<sup>5</sup> In Kansas, lung cancer is the leading cause of cancer death, and the second most commonly diagnosed cancer overall.

### Lung Cancer Incidence and Mortality

On average, each year more than 1,800 lung cancers are diagnosed among Kansas residents and more than 1,500 Kansans die of the disease. Age-adjusted lung cancer incidence rates have decreased significantly during the period 2003-2012, and the age-adjusted lung cancer mortality rates have also decreased significantly during the period of 2003-2014 (Figure 3-1). In 2012, the age-adjusted lung cancer incidence rate in Kansas was 56.5 cases per 100,000 persons (95% confidence interval: 53.9 to 59.2). In 2014, the age-adjusted lung cancer mortality rate in Kansas was 47.2 deaths per 100,000 persons (95% confidence interval: 44.8 to 49.6).

**Figure 3-1. Age-adjusted lung cancer incidence and mortality rates, Kansas 2003-2014.**



Source: 2003-2012 Kansas Cancer Registry. 2003-2014 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE. Cancer incidence data for 2009 were not available at the time the document was created. Rates were age-adjusted to the U.S. 2000 standard population using the direct method. See Technical Appendix for details on how rates were calculated. Vertical bars indicate 95% confidence intervals. Lung cancer incidence was defined as ICD-O-3 codes C340-C349 (excluding histology codes 9590-9989) with a behavior code indicating invasive malignancy. Lung cancer mortality was defined as ICD-10 code C34.

<sup>4</sup> Johnson DH, Blot WJ, Carbone DP, et al. Cancer of the lung: non-small cell lung cancer and small cell lung cancer. In: Abeloff MD, Armitage JO, Niederhuber JE, Kastan MB, McKenna WG. Clinical Oncology. 4th ed. Philadelphia, Pa: Churchill Livingstone Elsevier; 2008.

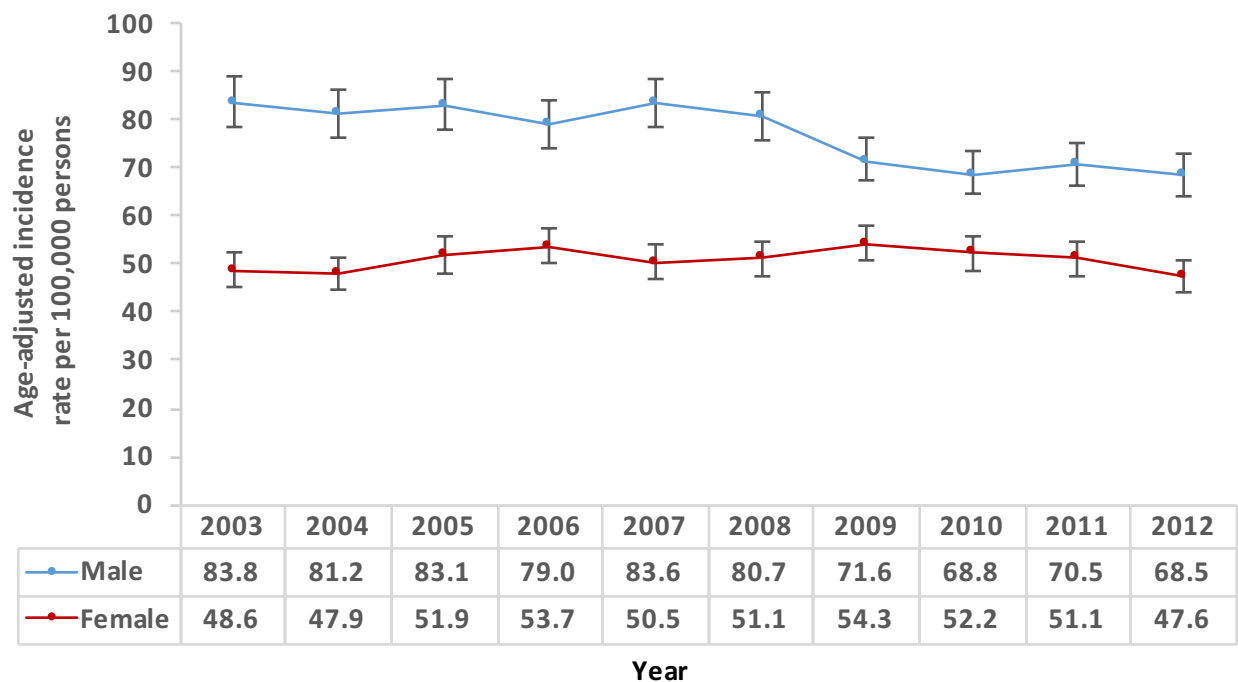
<sup>5</sup> Alberg AJ, Ford FG, Samet JM. Epidemiology of lung cancer: ACCP evidence-based clinical practice guidelines (2nd edition). Chest 2007;132(3 Suppl):295-555.

## Lung Cancer Incidence among Gender Groups

Age-adjusted lung cancer incidence rates were significantly higher for males as compared to females during the period 2003-2012. In 2012, there were 68.5 cases of lung cancer per 100,000 males (95% confidence interval: 64.2 to 73.0) and 47.6 cases of lung cancer per 100,000 females (95% confidence interval: 44.3 to 51.0) (Figure 3-2). Age-adjusted lung cancer incidence rates has decreased significantly among males but not in females from 2003 to 2012.



**Figure 3-2. Age-adjusted lung cancer incidence rates by gender and year, Kansas 2003-2012.**

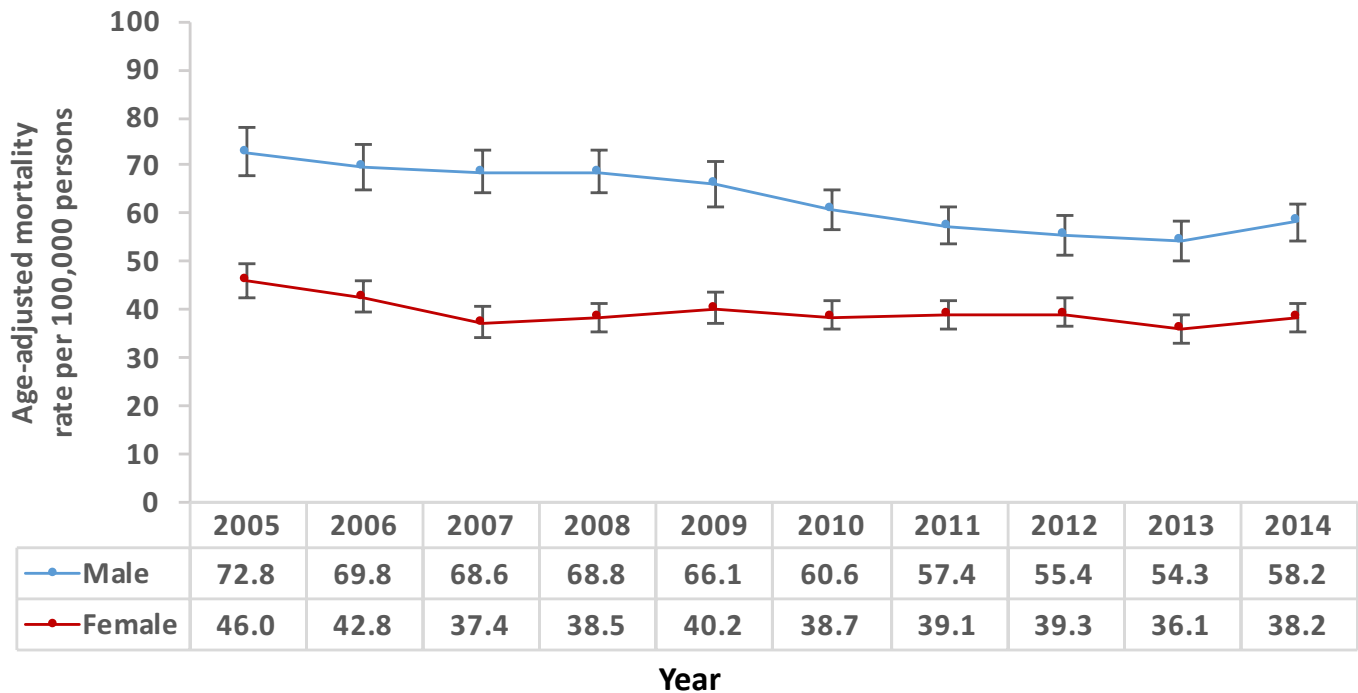


Source: 2003-2012 Kansas Cancer Registry. Rates were age-adjusted to the U.S. 2000 standard population using the direct method. See Technical Appendix for details on how rates were calculated. Vertical bars indicate 95% confidence intervals. Lung cancer incidence was defined as ICD-O-3 codes C340-C349 (excluding histology codes 9590-9989) with a behavior code indicating invasive malignancy.

## Lung Cancer Mortality among Gender Groups

Age-adjusted lung cancer mortality rates were significantly higher for males as compared to females during the period 2005-2014. In 2014, there were 58.2 lung cancer deaths per 100,000 males (95% confidence interval: 54.3 to 62.3) and 38.2 lung cancer deaths per 100,000 females (95% confidence interval: 35.4 to 41.3) (Figure 3-3). Age-adjusted lung cancer mortality rates have decreased significantly for both males and females from 2005 to 2014.

**Figure 3-3. Age-adjusted lung cancer mortality rates among gender groups, Kansas 2005-2014.**

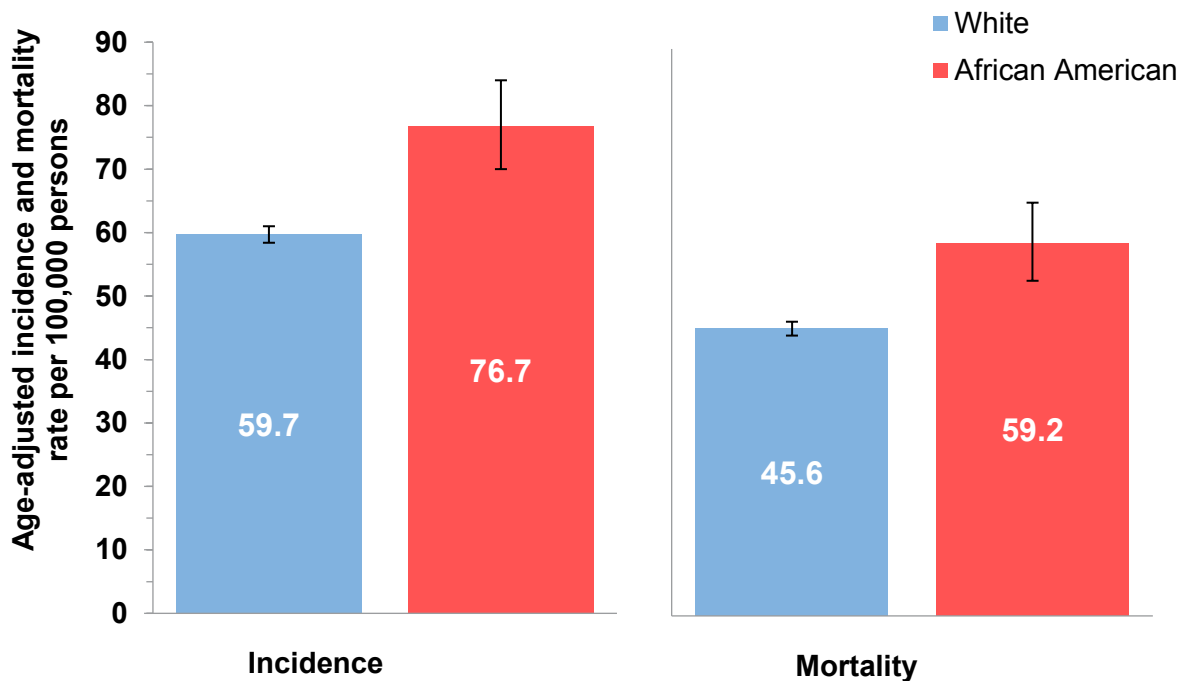


Source: 2005-2014 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE. Rates were age-adjusted to the U.S. 2000 standard population using the direct method. See Technical Appendix for details on how rates were calculated. Vertical bars indicate 95% confidence intervals. Lung cancer mortality was defined as ICD-10 code C34.

## Lung Cancer Incidence and Mortality among Race Groups

The age-adjusted lung cancer incidence rate was significantly higher for African American Kansans (76.7 cases per 100,000 persons; 95% confidence interval: 70.0 to 84.0) than for white Kansans (59.7 cases per 100,000 persons; 95% confidence interval: 58.4 to 61.0) during the period 2008-2012 (Figure 3-4). Similarly, the age-adjusted lung cancer mortality rate was significantly higher for African American Kansans (59.2 deaths per 100,000 persons; 95% confidence interval: 53.2 to 65.6) than for white Kansans (45.6 deaths per 100,000 persons; 95% confidence interval: 44.5 to 46.7) during the period 2010-2014.

**Figure 3-4. Age-adjusted lung cancer incidence (2008-2012) and mortality (2010-2014) rates among race groups, Kansas 2008-2014.**

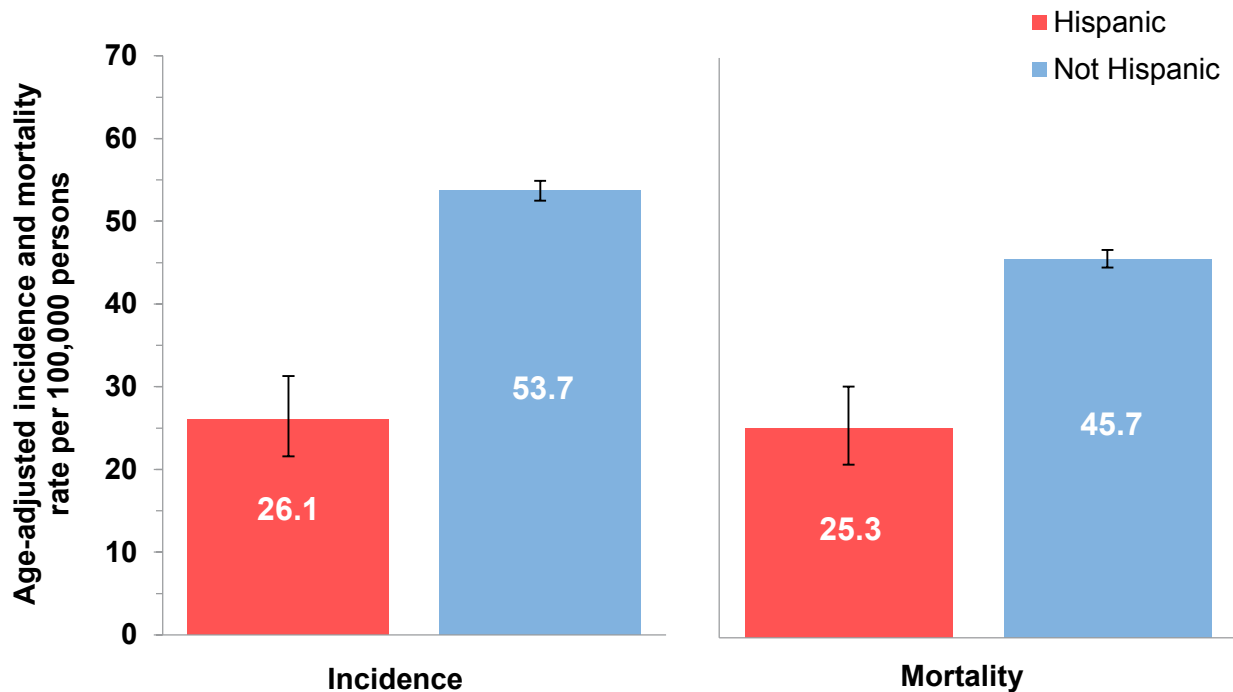


Source: 2008-2012 Kansas Cancer Registry. 2010-2014 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE. Rates were age-adjusted to the U.S. 2000 standard population using the direct method. See Technical Appendix for details on how rates were calculated. Vertical bars indicate 95% confidence intervals. Lung cancer incidence was defined as ICD-O-3 codes C340-C349 (excluding histology codes 9590-9989) with a behavior code indicating invasive malignancy. Lung cancer mortality was defined as ICD-10 code C34.

## Lung Cancer Incidence and Mortality among Ethnic Groups

The age-adjusted lung cancer incidence rate was significantly lower for Hispanic Kansans (26.1 cases per 100,000 persons; 95% confidence interval: 21.6 to 31.3) than for non-Hispanic Kansans (53.7 cases per 100,000 persons; 95% confidence interval: 52.5 to 54.9) during the period 2008-2012 (Figure 3-5). Also, the age-adjusted lung cancer mortality rate was significantly lower for Hispanic Kansans (25.3 deaths per 100,000 persons; 95% confidence interval: 20.9 to 30.3) than non-Hispanic Kansans (45.7 deaths per 100,000 persons; 95% confidence interval: 44.7 to 46.8) during the period of 2010-2014 (Figure 3-5).

**Figure 3-5. Age-adjusted lung cancer incidence (2008-2012) and mortality (2010-2014) among ethnic groups, Kansas 2008-2014.**



Source: 2008-2012 Kansas Cancer Registry. 2010-2014 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE. Rates were age-adjusted to the U.S. 2000 standard population using the direct method. See Technical Appendix for details on how rates were calculated. Vertical bars indicate 95% confidence intervals. Lung cancer incidence was defined as ICD-O-3 codes C340-C349 (excluding histology codes 9590-9989) with a behavior code indicating invasive malignancy. Lung cancer mortality was defined as ICD-10 code C34. Hispanics were defined as persons of Mexican, Puerto Rican, Cuban, South or Central American, Other Spanish, Spanish not otherwise specified, or Dominican Republic ethnicity. Persons with Spanish surname only or unknown ethnicity were excluded.

## Lung Cancer Late Stage Diagnosis

Among gender group in Kansas, the age-adjusted late stage lung cancer incidence rate dropped significantly among males from 2003-2007 (60.6 cases per 100,000 persons; 95% CI: 58.7 to 62.6) to 2008-2012 (53.8 cases per 100,000 persons; 95% CI: 52.1 to 55.6). However, the late stage age-adjusted lung cancer incidence rate did not differ significantly for females between 2003-2007 and 2008-2012 (Table 3-1).

Among race group in Kansas, the age-adjusted late stage lung cancer incidence rate dropped significantly among Whites from 2003-2007 (46.5 cases per 100,000 persons; 95% CI: 45.3 to 47.7) to 2008-2012 (43.5 cases per 100,000 persons; 95% CI: 42.4 to 44.6). However, the late stage age-adjusted lung cancer incidence rate did not differ significantly for African Americans, Asian/Pacific Islanders, and American Indian/Alaska Natives between 2003-2007 and 2008-2012 (Table 3-1).

Among ethnicity group in Kansas, the age-adjusted late stage lung cancer incidence rate dropped significantly among Non-Hispanics from 2003-2007 (46.3 cases per 100,000 persons; 95% CI: 45.2 to 47.5) to 2008-2012 (39.5 cases per 100,000 persons; 95% CI: 38.4 to 40.5). In comparison, the late stage age-adjusted lung cancer incidence rate did not differ significantly for Hispanic population during the same time period (Table 3-1).

Among race group in Kansas, the age-adjusted late stage lung cancer incidence rate dropped significantly among Whites from 2003-2007 (46.5 cases per 100,000 persons; 95% CI: 45.3 to 47.7) to 2008-2012 (43.5 cases per 100,000 persons; 95% CI: 42.4 to 44.6). However, the late stage age-adjusted lung cancer incidence rate did not differ significantly for African Americans, Asian/Pacific Islanders, and American Indian/Alaska Natives between 2003-2007 and 2008-2012 (Table 3-1).

**Table 3-1. Age-adjusted late stage lung cancer incidence rates by years and selected characteristics, Kansas, 2003-2012.**

Characteristics	2008-2012			2003-2007		
	Age-adjusted Rate	95% Confidence Interval		Age-adjusted Rate	95% Confidence Interval	
<b>Gender</b>						
Male	53.8	52.1	55.6	60.6	58.7	62.6
Female	36.5	35.2	37.8	35.8	34.5	37.2
<b>Race</b>						
White	43.5	42.4	44.6	46.5	45.3	47.7
African American	59.6	53.7	66.0	57.9	51.8	64.7
Asian/Pacific Islander	33.6	25.5	44.0	20.7	13.9	30.9
American Indian/Alaska Native	28.4	18.8	42.2	22.0	12.8	36.3
<b>Ethnicity</b>						
Hispanic	17.7	14.1	22.1	16.5	12.4	21.7
Non-Hispanic	39.5	38.4	40.5	46.3	45.2	47.5
<b>Population Density</b>						
Rural	41.5	39.8	43.3	45.9	44.1	47.8
Urban	45.6	44.3	47.0	47.0	45.6	48.5

\* Late stage was defined as the combination of regional and distant stage of diagnosis.

Source: 2010-2014 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE. See Technical Appendix for details on how leading causes of cancer death were defined.