Tobacco-Related Cancers in Allegheny County, 2012

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Preface

Malignant neoplasms (cancers) are the second leading cause of death in Allegheny County. Tobacco use is a significant contributor to developing many types of malignant neoplasms. Among all cancers, cancer of the trachea, bronchus and lung is the leading cause of cancer deaths. [1] (National Cancer Institute, 2016). Smokers are 25 times more likely to develop lung cancer than those who have never smoked.[2] (American Cancer Society, 2014). Besides lung cancer, tobacco use may also increase the risk for getting other cancers, such as cancer of the lip, oral cavity and pharynx, cancer of the esophagus, cancer of the stomach, cancer of the pancreas, cancer of the larynx, cancer of the kidneys and renal pelvis, and cancer of the bladder.[3] (National Cancer Institute, 2014).

In 2012, malignant neoplasms were responsible for 3,095 deaths to residents of Allegheny County. Deaths from cancer accounted for 23% of all deaths for county residents. In Allegheny County 23% of adults currently smoke, which is 5% higher than the mean value of all counties in Pennsylvania[4] (Allegheny County Health Department, 2015) and leads to over $635 million in health care costs every year.[5] (Allegheny County Health Department, 2015)

2012 Tobacco-Related Cancers by Race and Sex

For Allegheny County, as well as Pennsylvania and the United States, the age-adjusted mortality rate for cancer of the trachea, bronchus and lung is the leading tobacco-related cancer mortality for each race and sex group. Within all the race and sex groups, black males have the highest age-adjusted rate for cancer of the trachea, bronchus and lung (139.0 per 100,000 population), followed by white males (99.1 per 100,000 population), black females (77.8 per 100,000 population) and white females (65.1 per 100,000 population). These rankings are the same for Pennsylvania. However, for the United States the age-adjusted rate for cancer of the trachea, bronchus and lung among white females (58.3 per 100,000 population) is slightly higher than that of black females (53.9 per 100,000 population). The Allegheny County rates for cancer of the trachea bronchus and lung for both white males and black females are significantly higher than that for the United States.

Among whites in Allegheny County, Pennsylvania and the United States, the age-adjusted mortality rates for all eight tobacco-related malignant neoplasms discussed in this report are higher for males than females. Among blacks in Allegheny County age-adjusted mortality rates for each of the eight tobacco-related malignant neoplasms are higher for males than females with the exception of pancreatic cancer. For Pennsylvania and the United States, the age-adjusted mortality rates for each of the eight tobacco-related cancers are higher for black males than for black females.

Table 1. Age-adjusted mortality rates of tobacco-related malignant neoplasms in Allegheny County in 2012 by race and sex.

Name of malignant neoplasm (Based on ICD-10)	White				Black			
	Male		Female		Male		Female	
	Age-adjusted rate	95% CI (low, hi)	Age-adjusted rate	95% CI (low, hi)	Age-adjusted rate	95% CI (low, hi)	Age-adjusted rate	95% CI (low, hi)
Bladder	15.4	(11.6, 19.3)	4.5	(2.8, 6.2)	22.8	(7.0, 38.6)	11.5	(3.0, 20.1)
Esophagus	12.3	(8.9, 15.6)	2.4	(1.2, 3.6)	4.6	(-1.8, 11.1)	1.3	(-1.2, 3.7)
Larynx	2.0	(0.6, 3.3)	0.1	(-0.1, 0.3)	6.7	(-2.6, 16.1)	1.8	(-1.7, 5.2)
Pancreas	19.2	(15.0, 23.4)	14.9	(11.8, 18.0)	32.2	(14.7, 49.6)	36.3	(21.1, 51.5)
Stomach	4.7	(2.6, 6.8)	3.8	(2.3, 5.3)	23.7	(8.2, 39.1)	1.7	(-1.6, 5.1)
Kidney and renal pelvis	9.5	(6.5, 12.5)	5.5	(3.6, 7.5)	8.6	(0.2, 16.9)	4.8	(-0.6, 10.3)
Lip, oral cavity and pharynx	2.7	(1.0, 4.3)	2.2	(1.0, 3.4)	3.2	(-3.1, 9.6)	3.5	(-1.3, 8.3)
Trachea, bronchus and lung	99.1	(89.4,108.7)	65.1	(58.3, 71.8)	139.0	(103.2, 174.8)	77.8	(55.8, 99.8)

Age-adjusted mortality rate: number of deaths per 100,000 population in specified race/sex group.
Standard Population: 2000 U.S. Std. Million

Table 2. Age-adjusted mortality rates of tobacco-related malignant neoplasms in Pennsylvania in 2012 by race and sex.

Name of malignant neoplasms (Based on ICD-10)	White				Black			
	Male		Female		Male		Female	
	Age-adjusted rate	95% CI (low, hi)	Age-adjusted rate	95% CI (low, hi)	Age-adjusted rate	95% CI (low, hi)	Age-adjusted rate	95% CI (low, hi)
Bladder	13.5	(12.4, 14.7)	3.2	(2.8, 3.7)	10.3	(6.85, 14.9)	7.7	(5.4, 10.7)
Esophagus	14.2	(13.1, 15.4)	2.1	(1.8, 2.6)	6.6	(4.0, 10.1)	3.2	(1.8, 5.2)
Larynx	3.0	(2.5, 3.6)	0.6	(0.4, 0.9)	Suppressed	Suppressed	Suppressed	Suppressed
Pancreas	20.8	(19.4, 22.3)	15.1	(14.1, 16.2)	23.3	(18.3, 29.3)	22.2	(18.2, 26.9)
Stomach	5.7	(4.9, 6.4)	2.8	(2.4, 3.3)	13.5	(9.7, 18.2)	6.4	(4.4, 9.1)
Kidney and renal pelvis	8.8	(7.9, 9.8)	4.1	(3.8, 4.7)	11.0	(7.4, 15.6)	3.7	(2.2, 5.9)
Lip, oral cavity and pharynx	4.8	(4.0, 5.4)	2.0	(1.6, 2.4)	6.2	(3.7, 9.6)	Suppressed	Suppressed
Trachea, bronchus and lung	92.1	(89.1, 95.0)	56.6	(54.4, 58.6)	113.7	(101.8, 126.6)	75.6	(67.9, 83.9)

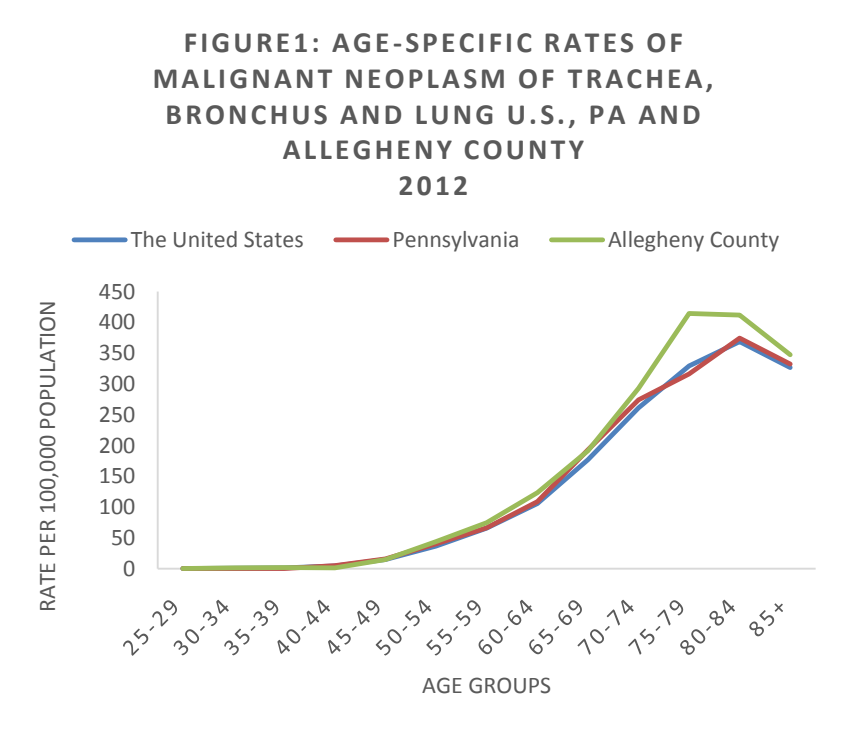
Age-adjusted mortality rate: number of deaths per 100,000 population in specified race/sex group.
Standard Population: 2000 U.S. Std. Million.
The label "Suppressed" is displayed when counts fall below the determined "cut-off" value and the conditions for suppression are met.

Table 3. Age-adjusted mortality rates of tobacco-related malignant neoplasms in the US in 2012 by sex, race.

Name of malignant neoplasms (Based on ICD-10)	White				Black			
	Male		Female		Male		Female	
	Age-adjusted rate	95% CI (low, hi)	Age-adjusted rate	95% CI (low, hi)	Age-adjusted rate	95% CI (low, hi)	Age-adjusted rate	95% CI (low, hi)
Bladder	12.5	(12.2, 12.7)	3.4	(3.3, 3.5)	8.2	(7.5, 8.9)	3.7	(3.3, 4.0)
Esophagus	11.9	(11.6, 12.1)	2.3	(2.2, 2.4)	9.6	(9.0, 10.3)	3.0	(2.7, 3.3)
Larynx	2.7	(2.6, 2.8)	0.6	(0.5, 0.6)	5.2	(4.8, 5.8)	0.9	(0.7, 1.1)
Pancreas	19.6	(19.3, 19.9)	14.6	(14.4, 14.8)	22.5	(21.4, 23.5)	19.3	(18.5, 20.1)
Stomach	5.8	(5.6, 6.0)	3.1	(3.0, 3.2)	13.0	(12.3, 13.9)	6.5	(6.1, 7.0)
Kidney and renal pelvis	8.9	(8.7, 9.1)	3.8	(3.7, 3.9)	8.6	(7.9, 9.2)	3.4	(3.1, 3.8)
Lip, oral cavity and pharynx	5.8	(5.7, 6.0)	2.1	(2.0, 2.2)	7.8	(7.2, 8.4)	2.0	(1.8, 2.3)
Trachea, bronchus and lung	86.9	(86.36, 87.5)	58.3	(57.8, 58.8)	106.9	(104.6, 109.2)	53.9	(52.6, 55.2)

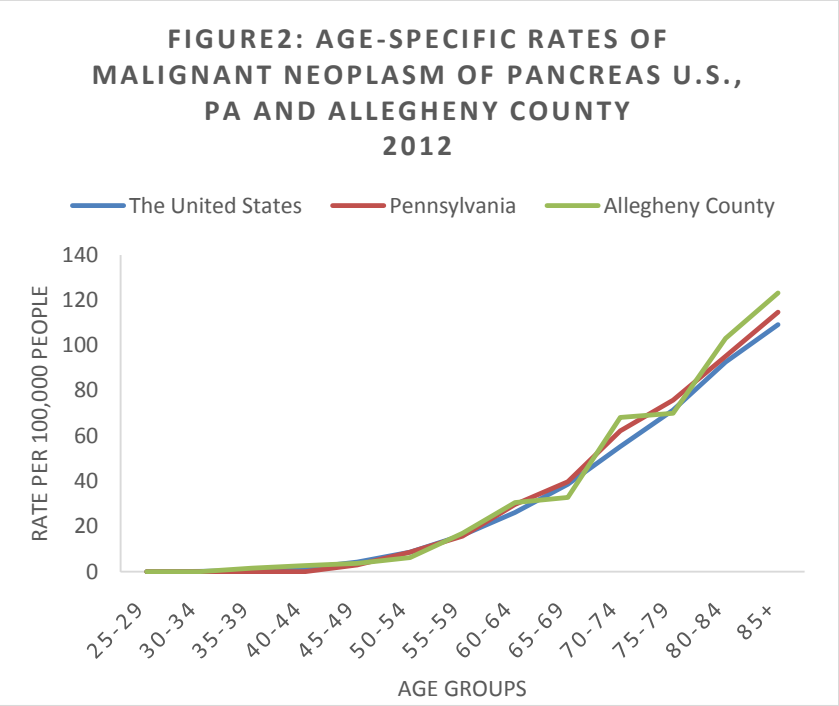
Age-adjusted mortality rate: number of deaths per 100,000 population in specified race/sex group.
Standard Population: 2000 U.S. Std. Million.

2012 Age-specific Rates of Tobacco-related Cancers in Allegheny County, Pennsylvania and the United States



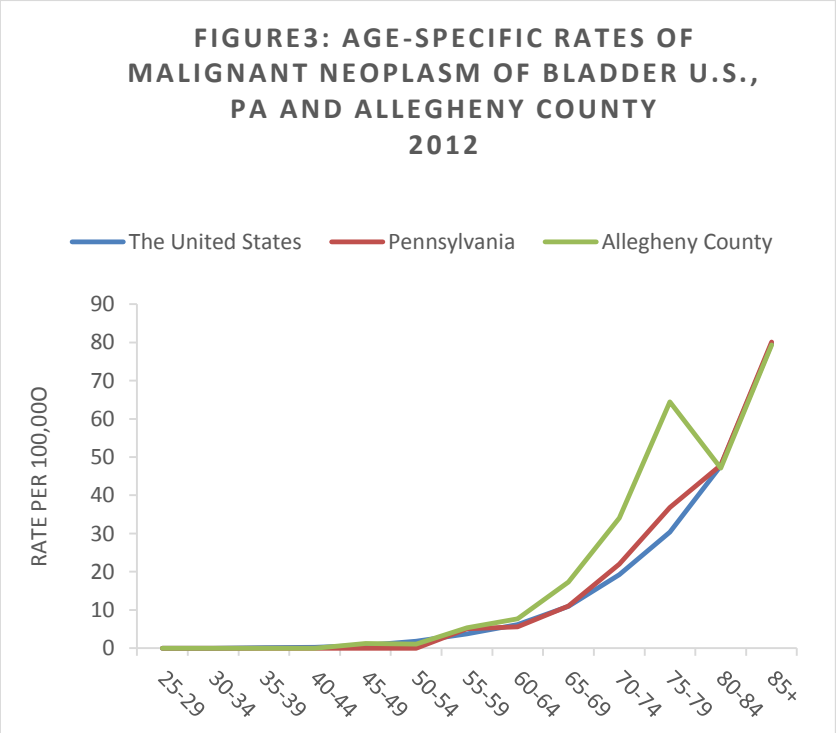
Malignant neoplasm of trachea, bronchus and lung

The age-specific mortality rates for malignant neoplasms of the trachea, bronchus and lung by age group in Allegheny County, Pennsylvania and the United States in 2012 are similar before the age of 74. After the age of 75, the rates for Allegheny County are higher than those of Pennsylvania and the U.S., peaking at 414.74 per 100,000 people aged 75 to 79. For the age group 85 and older the rates decrease.



Malignant neoplasm of pancreas

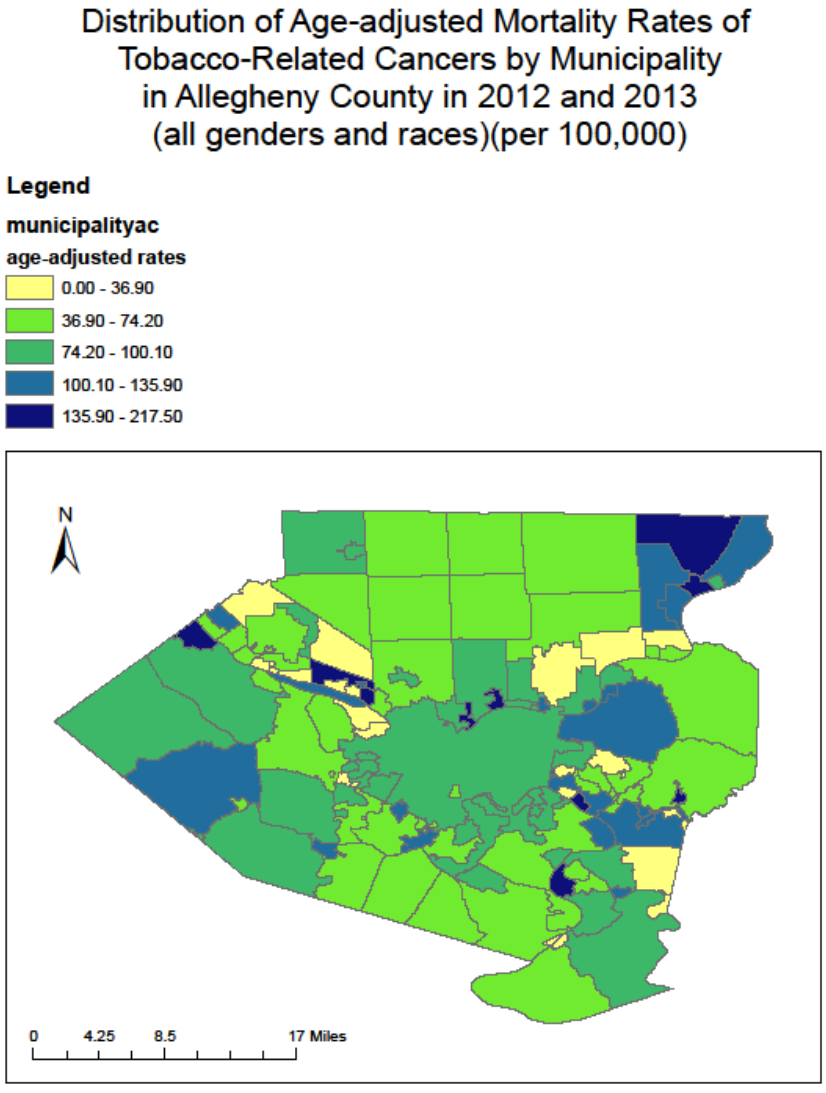
The age-specific mortality rates for malignant neoplasm of the pancreas by age group for Allegheny County, Pennsylvania and the U.S. share similar patterns in 2012. The rates climb steadily from age 25, and peak after age 85. For the age group 85+, the rate for Allegheny County (123.1) is slightly higher, than both Pennsylvania (114.7) and the U.S. (109.2).



Malignant neoplasm of bladder

The age-specific mortality rates for malignant neoplasms of the bladder by age group for Allegheny County, Pennsylvania and the U.S. are similar before 64 years of age. Between the ages of 65 to 79, the rates for Allegheny County are higher than those of Pennsylvania and the U.S., peaking at 64.5 per 100,000 population aged 75 to 79 years, more than 1.5 times that of Pennsylvania and the U.S. After the age of 80, the rates for Allegheny County, Pennsylvania and the U.S. are nearly identical patterns.

2012-2013 Spatial Distribution of Age-adjusted Mortality Rates (Quintiles) of Tobacco-Related Cancers by Municipality in Allegheny County



Some of the highest age-adjusted mortality rates for tobacco-related cancers can be seen in clusters throughout Allegheny County. In the eastern central portion of the county there is a cluster of nine municipalities whose rates exceed 100 tobacco related deaths per 100,000 population. This cluster contains Pitcairn Borough which has the highest rate (217.5) in the county. In the northeast the townships of East Deer, Fawn, Frazer and Harrison and the borough of Tarentum all have tobacco-related death rates in excess of 100 per 100,000 population. In the northwestern area of Allegheny County the boroughs of Avalon and Ben Avon Heights as well as the townships of Kilbuck and Neville all have high rates of tobacco-related mortality. The second and third highest rates of tobacco-related mortality are in Millvale Borough (197.9) and Etna Borough (172.6).

References

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4. Allegheny County Health Department. (2015). *2012 Allegheny County Mortality Report*. Retrieved from http://www.achd.net/biostats/pubs/pdf/2012_Mortality_Report.pdf

5. Allegheny County Health Department. (2015, November 16). *Live Well Allegheny, Tobacco Free Allegheny Celebrate Tobacco Cessation Week*. Retrieved from http://www.achd.net/pr/pubs/2015release/111615_ACquits.html

Technical Notes

A. SOURCES OF DATA

Allegheny County Resident Death Records

Allegheny County Resident Death Records are collected by medical professionals and completed at the time of death. They are then sent to the Pennsylvania Health Department in Harrisburg, PA, to be filed. The Pennsylvania Department of Health then sends an annual electronic file to the Allegheny County Health Department, Pittsburgh, PA.

The Bureau of Assessment, Statistics, & Epidemiology then reviews each death record to verify residency and census tract. Once all records are verified for accuracy, municipality and City of Pittsburgh neighborhood are added to each record.

Information contained on these records is shared with the Allegheny County Health Department through a cooperative agreement which requires the following disclaimer: *"These data were supplied by the State Health Data Center, Pennsylvania Department of Health, Harrisburg, Pennsylvania. The Pennsylvania Department of Health specifically disclaims responsibility for any analyses, interpretations or conclusions"*

CDC WONDER System: Cancer Statistics

The data used for age-adjusted rates for Pennsylvania and U.S. in this fact sheet come from the CDC WONDER System. CDC WONDER is an online public health information system of the Centers for Disease Control and Prevention (CDC). It is used to provide timely and action-oriented information. The system is created and maintained by public health professionals. The United States Cancer Statistic (USCS) is one of the online databases of CDC WONDER. It provides cancer incidence and mortality information for the public starting in 1999, by year, state and metropolitan statistical areas (MSA), age group, race, sex, ethnicity, cancer classifications and cancer site. The mortality data is provided by the Center for Disease Control and Prevention (CDC), in collaboration with the National Center for Health Statistics (NCHS) and the National Vital Statistics System (NVSS). The USCS automatically create reports with the variables and information requested. The report can include the case counts, deaths, crude mortality rate, and age-adjusted mortality rates with 95% confidence intervals. Age-adjusted mortality rates and age-specific rates were calculated using the data of 2012, except for spatial analyses which used 2012 and 2013 data to enlarge the dataset due to small numbers for a single year.

B. DEFINITIONS OF TERMS

ICD-10 Codes

The ICD-10 Code is used to code and classify mortality data from death certificates, which is developed by the National Center for Health Statistics (NCHS), the Federal agency responsible for use of the International Statistical Classification of Diseases and Related Health Problems. The ICD-10 Codes used for this report are as follows: Malignant neoplasms of the lip, oral cavity and pharynx (C00-C14), Malignant neoplasms of the esophagus (C15), Malignant neoplasms of the stomach (C16), Malignant neoplasms of the pancreas (C25), Malignant neoplasms of the larynx (C32), Malignant neoplasms of the trachea, bronchus and lung (C33-C34), Malignant neoplasms of the kidney and renal pelvis (C64-C65), and Malignant neoplasms of the bladder (C67).

Formulas for Rates:

$$AGE-ADJUSTED\ MORTALITY\ RATE_{x-y} = \sum_{i=x}^{y}[(\frac{count_i}{pop_i}) \times 100{,}000 \times (\frac{stdpop_i}{\sum_{j=x}^{y} stdpop_j})]$$

$$AGE-SPECIFIC\ MORTALITY\ RATE = \frac{Number\ of\ deahts\ in\ specified\ age\ group}{Population\ in\ same\ age\ group} \times 100{,}000$$