

# Lung and Bronchus Cancer Among Never Smokers and Current Smokers in Ohio

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Department of  
Health

## Introduction

Lung and bronchus cancer is the leading cause of cancer incidence (new cases) and cancer-related deaths in Ohio. Approximately 85% of lung and bronchus cancer deaths among adults 30 years old and older are attributable to cigarette smoking.<sup>1</sup> In the United States, about 10% to 20% of lung cancers, or 20,000 to 40,000 lung cancers each year, happen in people who never smoked or smoked fewer than 100 cigarettes in their lifetime.<sup>2</sup>

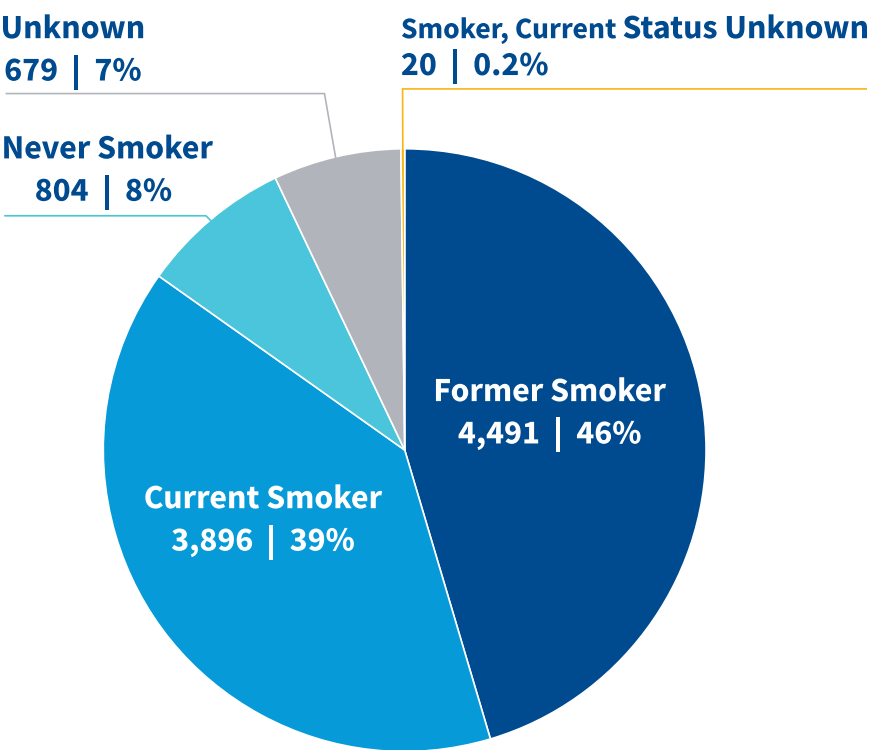
<sup>1</sup> Islami F, Marlow EC, Thomson B, et al. Proportion and number of cancer cases and deaths attributable to potentially modifiable risk factors in the United States, 2019. CA Cancer J Clin. 2024;74(5):405-432. <https://doi.org/10.3322/caac.21858>.

<sup>2</sup> [Lung Cancer Among People Who Never Smoked | Lung Cancer | CDC](#), Centers for Disease Control and Prevention.

## Tobacco Smoking Status

The data item “Tobacco Use Smoking Status” in the North American Association of Central Cancer Registry’s record layout indicates a patient’s past or current tobacco smoking status (i.e., use of cigarettes, cigars, and/or pipes). (Note that this field does not include marijuana, chewing tobacco, e-cigarettes, or vaping devices.) This data item was implemented in 2022 and consists of the following five categories: never smoker; current smoker; former smoker; smoker, current status unknown; and unknown if ever smoked. In Ohio, 39% of lung and bronchus cancer cases were among current smokers, 46% among former smokers, and 8% were among never smokers.

**Figure 1. Tobacco Smoking Status Among Malignant Lung and Bronchus Cancer Cases, Ohio, 2022**



Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2025.

## New Cases

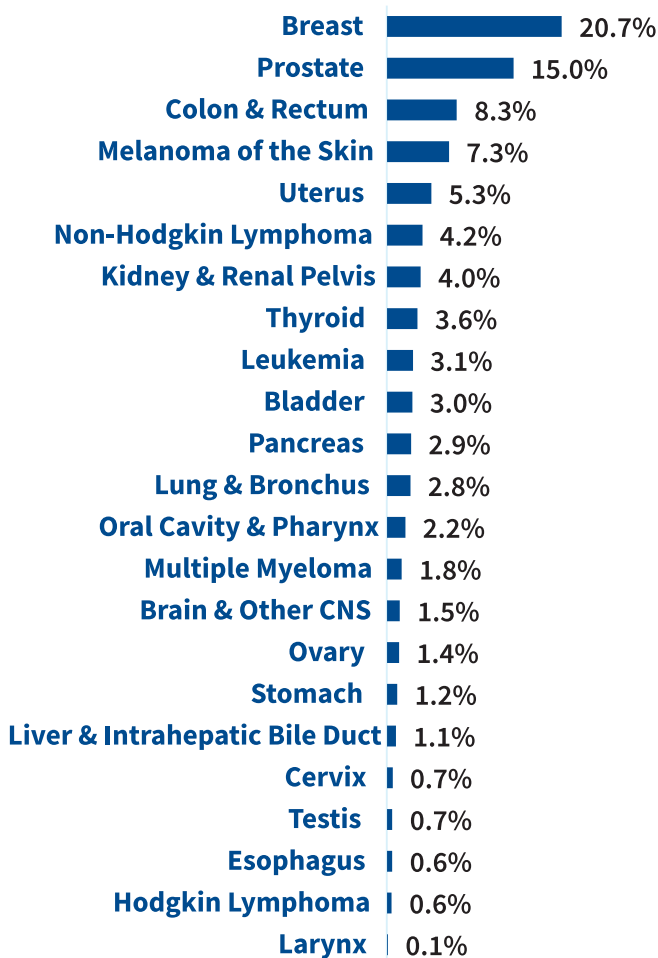
Lung and bronchus cancer made up 13.8% of all newly diagnosed cancer cases in Ohio in 2022, as reported to the Ohio Cancer Incidence Surveillance System (OCISS).<sup>1</sup> A total of 9,891 new cases of lung and bronchus cancer were diagnosed among men and women in Ohio in 2022. Ohio's lung and bronchus cancer incidence rate of 59.9 per 100,000 population was 21% higher than the U.S. incidence rate of 49.4 per 100,000, based on statistics from the Centers for Disease Control and Prevention and the National Cancer Institute.

## Cancers Among Never Smokers and Current Smokers

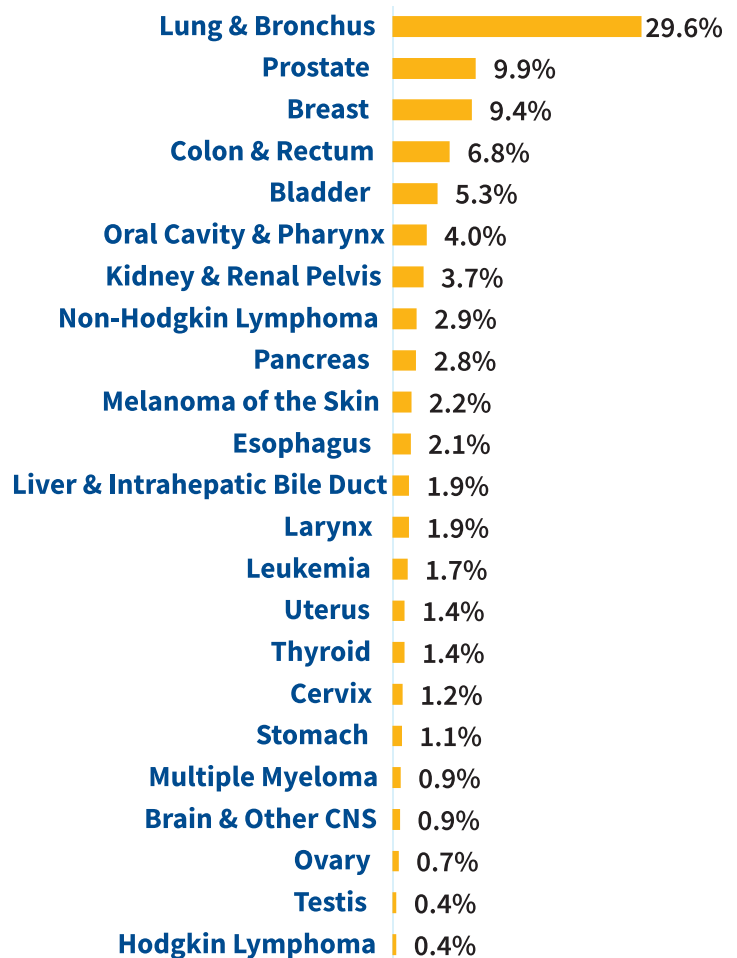
In Figure 2, the percentage of invasive cancers among never smokers is compared with current smokers for 23 sites/types of cancer. Lung and bronchus cancer was the leading cancer for current smokers in Ohio in 2022 (29.6%) but ranked 12th among never smokers (2.8%). Bladder cancer, for which approximately half of cases can be attributed to tobacco smoking (Islami et al.), placed 5th for cancers diagnosed among current smokers and 10th for never smokers.

**Figure 2. Proportion (%) of Invasive Cancers Among Never Smokers and Current Smokers by Site/Type, Ohio, 2022**

### Never Smokers



### Current Smokers

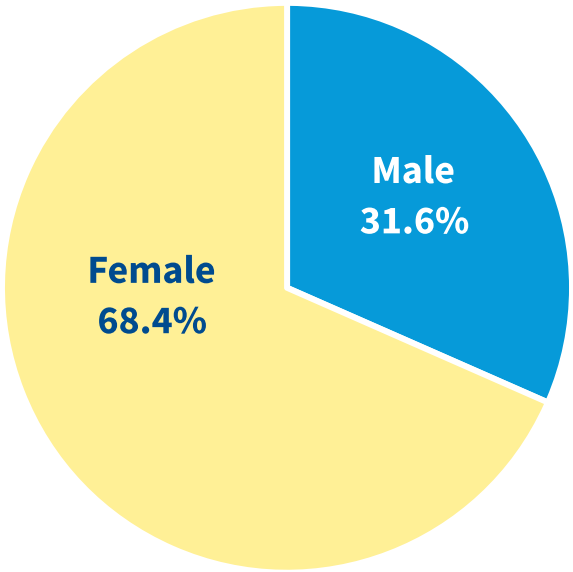


Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2025; Surveillance, Epidemiology, and End Results (SEER) Program SEER\*Stat Database: Incidence – SEER Research Limited-Field Data, 21 Registries, National Cancer Institute, 2025.

## Incidence by Sex

Ohio females who never smoked made up a higher percentage of new lung and bronchus cancer cases (68.4%), compared with males (31.6%) in Ohio in 2022 (Figure 3).

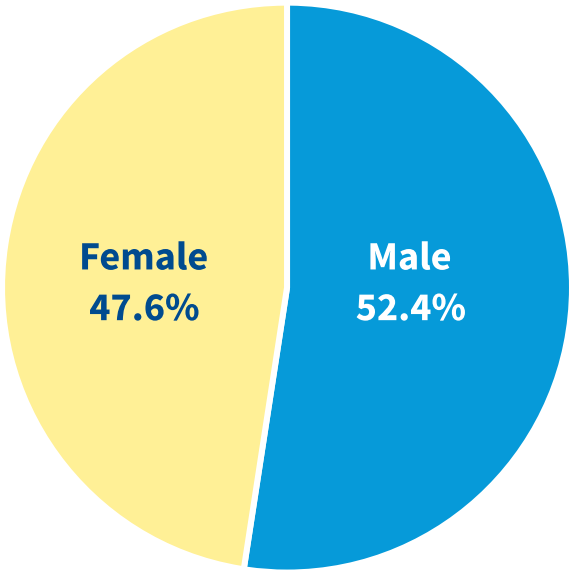
**Figure 3. Proportion (%) of Lung and Bronchus Cancers Among Never Smokers by Sex, Ohio, 2022**



Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2025.

Ohio males who currently smoke made up a higher percentage of new lung and bronchus cancer cases (52.4%), compared with females (47.6%) in Ohio in 2022 (Figure 4).

**Figure 4. Proportion (%) of Lung and Bronchus Cancers Among Current Smokers by Sex, Ohio, 2022**

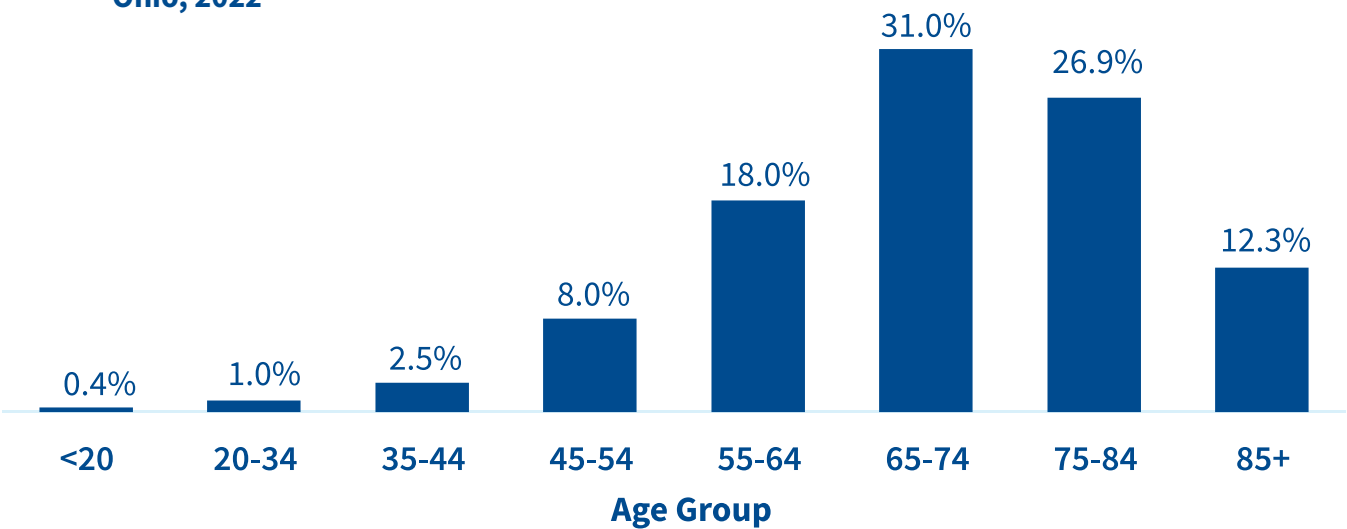


Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2025.

## Incidence by Age Group

As shown in Figure 5, lung and bronchus cancer among never smokers in Ohio was most frequently diagnosed among people ages 65 to 74 (31.0%).

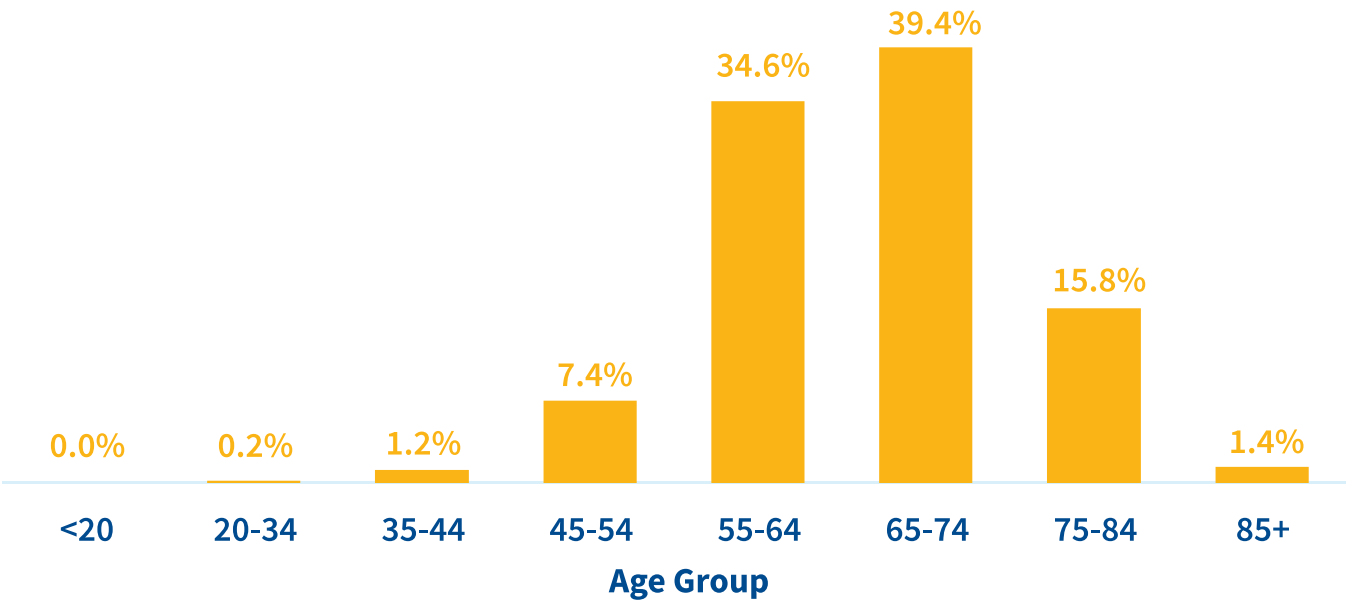
**Figure 5. Proportion (%) of Lung and Bronchus Cancer Cases Among Never Smokers by Age Group, Ohio, 2022**



Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2025.

As shown in Figure 6, similar to never smokers, lung and bronchus cancer among current smokers in Ohio was most frequently diagnosed among people ages 65 to 74 (39.4%). There was a higher percentage of cases diagnosed among people ages 55 to 64 among current smokers (34.6%), compared with never smokers (18.0%).

**Figure 6. Proportion (%) of Lung and Bronchus Cancer Cases Among Current Smokers by Age Group, Ohio, 2022**

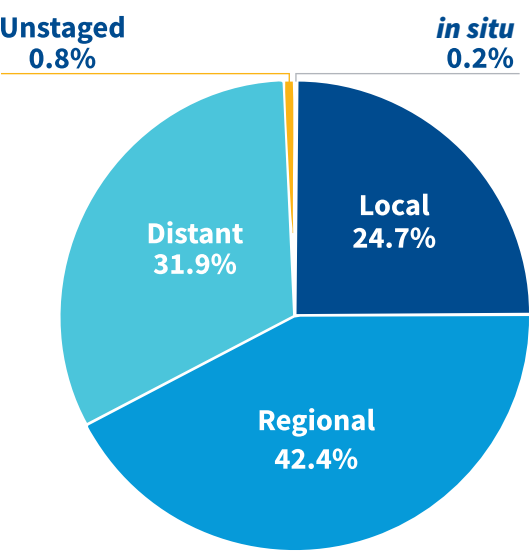


Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2025.

## Stage at Diagnosis

Cancer stage at diagnosis refers to the extent or spread of a cancer in the body and is an important determinant of survival. If cancer cells are present only in the layer of cells (tissue) where they developed and have not spread, the stage is *in situ*. If cancer cells have penetrated beyond the original layer of tissue, the cancer has become invasive and is categorized as local, regional, or distant based on the extent of spread.

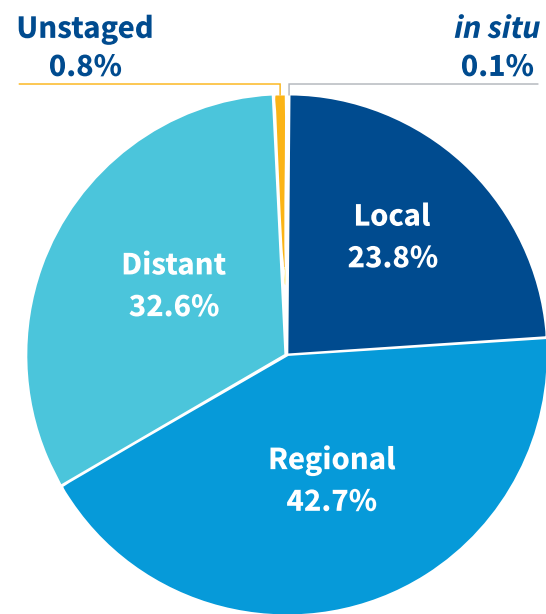
**Figure 7. Proportion (%) of Lung and Bronchus Cancer Cases (%) Among Never Smokers by Stage at Diagnosis, Ohio, 2022**



Among never smokers in Ohio, 24.7% of lung and bronchus cancer cases were diagnosed at a local stage, 42.4% were regional stage, 31.9% were distant stage, and 0.8% were unstaged or of unknown stage at diagnosis (Figure 7).

Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2025.

**Figure 8. Proportion (%) of Lung and Bronchus Cancers Among Current Smokers by Stage at Diagnosis, Ohio, 2022**



Among current smokers in Ohio, 23.8% of lung and bronchus cancer cases were diagnosed at a local stage, 42.7% were regional stage, 32.6% were distant stage, and 0.8% were unstaged or of unknown stage at diagnosis (Figure 8).

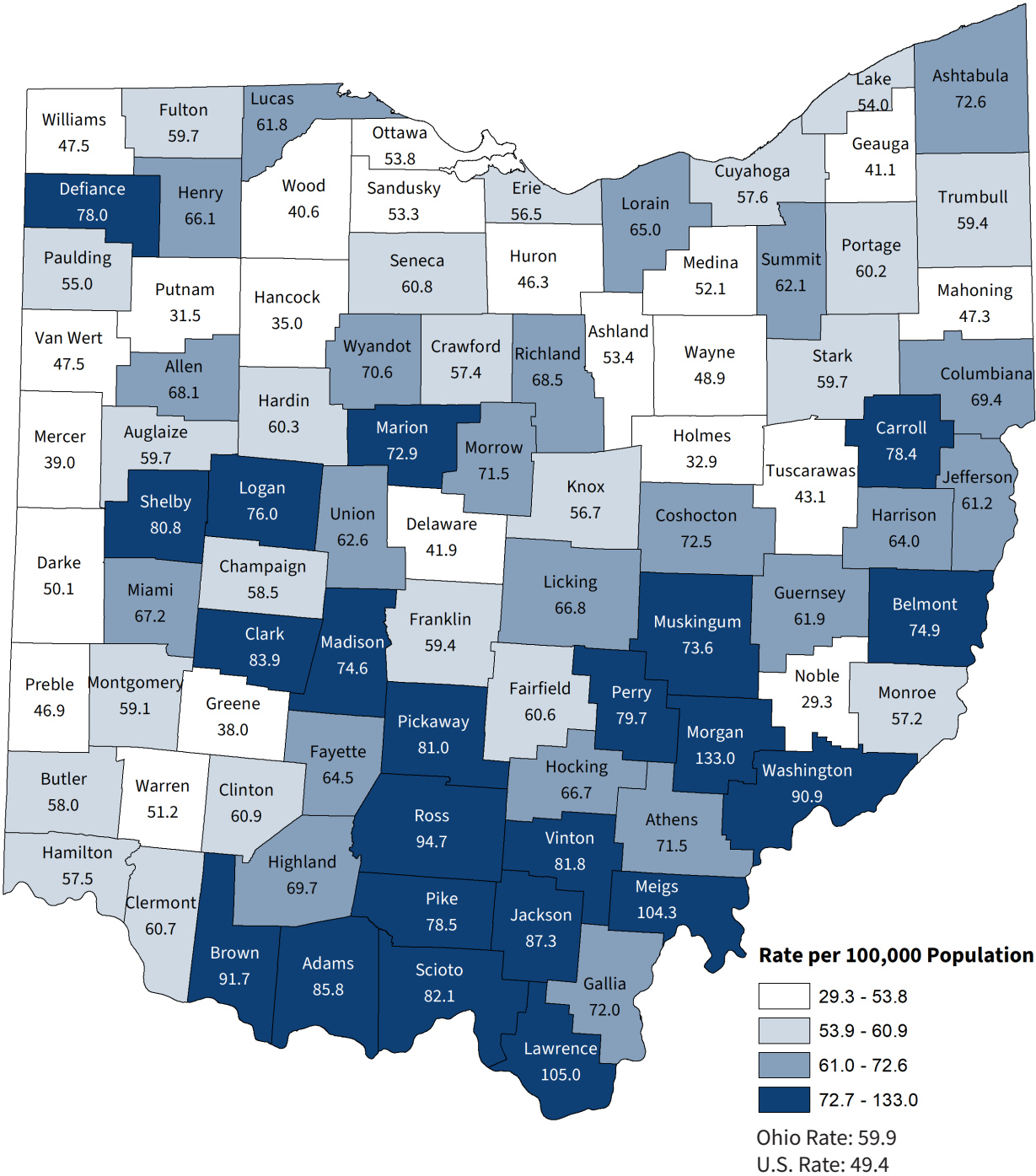
The stage distribution is essentially the same for never smokers and current smokers.

Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2025.

# Lung and Bronchus Cancer Incidence by County

County-specific lung and bronchus cancer incidence rates in Ohio ranged from 29.3 to 133.0 per 100,000 population, compared with Ohio’s rate of 59.9 per 100,000 and the U.S. rate of 49.4 per 100,000. Counties in the southern region of Ohio tended to have higher age-adjusted incidence rates for lung and bronchus cancer in 2022 (Figure 9).

**Figure 9. Age-Adjusted Incidence Rates of Lung and Bronchus Cancer per 100,000 Population by County of Residence, Ohio, 2022**

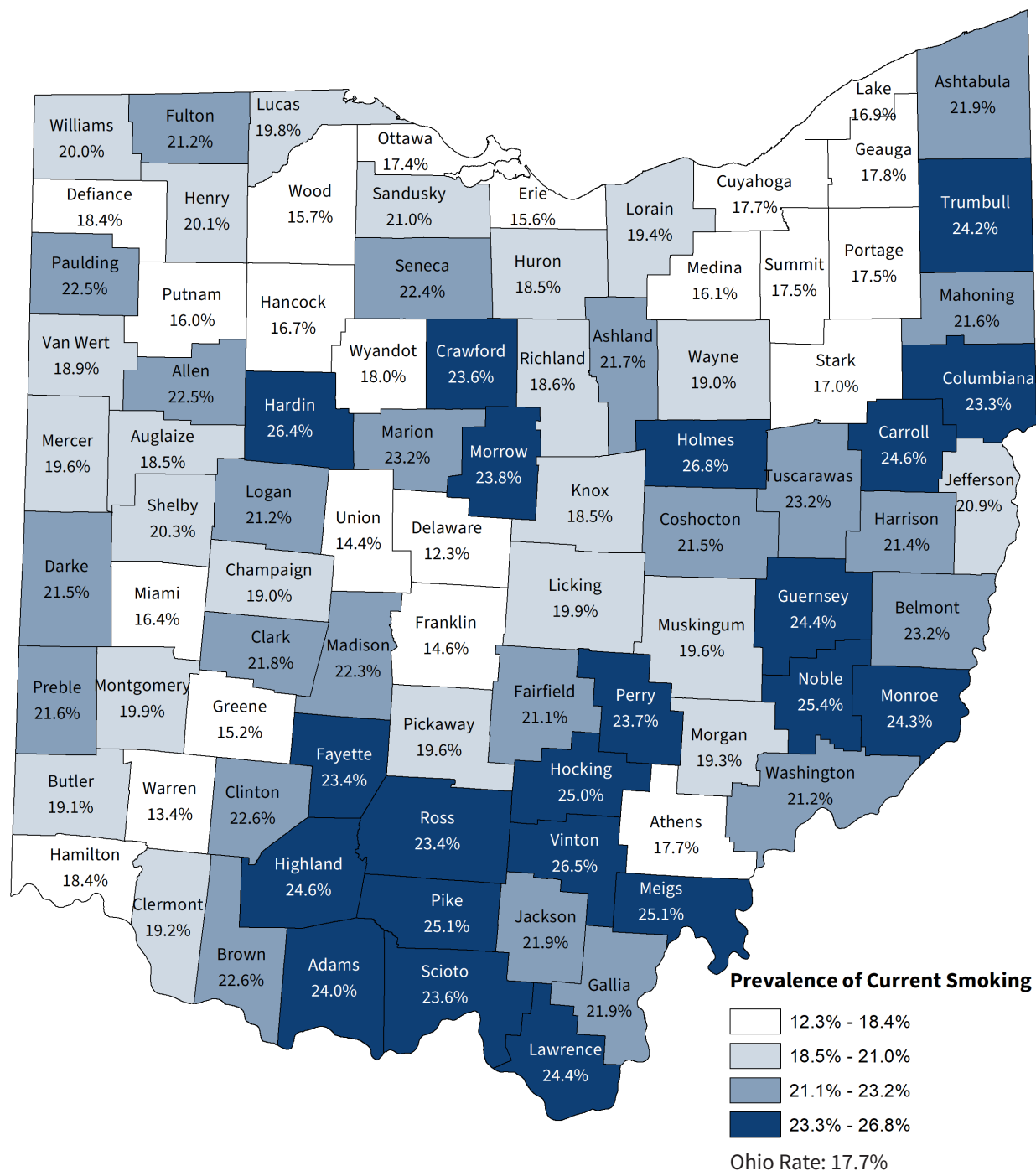


Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2025.

## Adult Smoking

In Ohio, 17.7% of adults were current cigarette smokers in 2022. This percentage of adult current cigarette smokers in Ohio by county ranged from 12.3% to 26.8% (Figure 10).

**Figure 10. Prevalence (%) of Current Cigarette Smoking Among Adults Ages 18 and Older by County of Residence, Ohio, 2022**





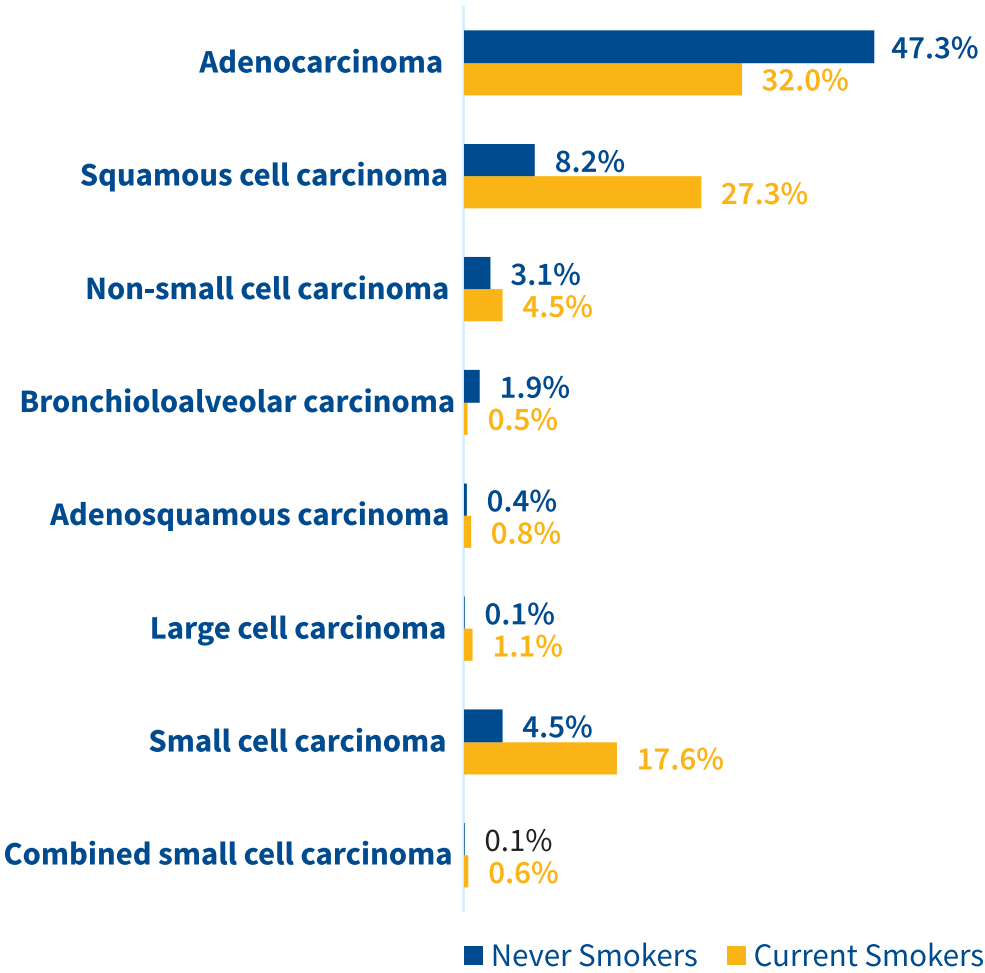
# Histology

Lung and bronchus cancers are usually grouped into two main types, small cell lung cancer (SCLC) and non-small cell lung cancer (NSCLC) and are categorized based on how the cancer cells look under the microscope. These types of lung cancer grow, spread, and are treated in different ways. NSCLC is more common than SCLC.

Subtypes of NSCLC include adenocarcinoma (the most common type), squamous cell carcinoma, non-small cell carcinoma, bronchioalveolar carcinoma, adenosquamous carcinoma, and large cell carcinoma. Subtypes of SCLC include small cell carcinoma and combined small cell carcinoma.

Adenocarcinoma is a type of lung cancer that begins in the cells that line the alveoli and make substances such as mucus. Never smokers in Ohio had a higher percentage of adenocarcinoma (47.3%), compared with current smokers (32.0%) in 2022. Current smokers in Ohio had a higher percentage of squamous cell carcinoma (27.3%), compared with never smokers (8.2%). Current smokers also had a higher percentage of small cell carcinoma (17.6%), compared with never smokers (4.5%) (Figure 11).

**Figure 11.** Proportion (%) of Invasive Lung and Bronchus Cancer Cases Among Never Smokers and Current Smokers by Histology, Ohio, 2022



Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2025.

## Risk Factors

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Anything that increases the chance of getting a disease is called a risk factor. Having one or more risk factors does not mean that a person will develop the disease. Below are some of the risk factors for lung and bronchus cancer.

### Potentially Modifiable Risk Factors:

**Smoking:** Tobacco smoking is the most important risk factor for lung cancer. Cigarette, cigar, and pipe smoking all increase the risk of lung cancer. Tobacco smoking causes about nine out of 10 cases of lung cancer in men and about eight out of 10 cases of lung cancer in women. Risk increases with the amount and duration of use.

**Secondhand smoke:** Exposure to secondhand (environmental) tobacco smoke increases risk. Nonsmokers exposed to secondhand smoke have approximately 20% increased risk of lung and bronchus cancer.

**Radon:** Radon is a cancer-causing gas and is the second leading cause of lung cancer. In people who have never smoked, about 26% of deaths caused by lung cancer have been linked to radon exposure.

**Radiation:** Exposure to radiation is a risk factor for lung cancer. Sources include radiation therapy and imaging tests.

**Occupational exposure:** Workplace exposure to asbestos, arsenic, crystalline silica dust, beryllium, cadmium, nickel compounds, chromium (VI) compounds, tar and soot, mustard gas, chloromethyl ethers, and diesel exhaust increase risk.

**Air pollution:** Exposure to outdoor air pollution, specifically small particles, increases risk.

**Human Immunodeficiency Virus (HIV) infection:** People with HIV infection have increased risk. Since smoking rates are higher in those infected with HIV than in those not infected, it is not clear whether the increased risk of lung cancer is from HIV infection or from being exposed to cigarette smoke.

**Beta carotene:** Taking beta carotene supplements (pills) increases the risk of lung cancer, especially in smokers who smoke one or more packs a day. The risk is higher in smokers who have at least one alcoholic drink every day.

### Non-Modifiable Risk Factors:

**Age:** About two out of three people diagnosed with lung and bronchus cancer are older than 65.

**Sex:** Lung and bronchus cancer is more common among men, compared with women.

**Race:** In the United States, lung and bronchus cancer is more common among White and Black people than among Asians or Pacific Islanders.

**Family history:** People with a relative who has had lung cancer may be twice as likely to have lung cancer than those without a relative with lung cancer. This risk may be due to the tendency for cigarette smoking to run in families or because family members are exposed to secondhand smoke.

## Signs and Symptoms

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Signs and symptoms usually do not occur until the lung and bronchus cancer is advanced and may include:

- Persistent cough.
- Chest discomfort or pain.
- Trouble breathing, wheezing, or hoarseness.
- Bloody sputum (mucus coughed up from the lungs).
- Loss of appetite or weight loss.
- Trouble swallowing.
- Recurring pneumonia or bronchitis.

Any of these symptoms may be caused by cancer or by other, less serious health problems. If you have any of these symptoms, see your healthcare provider.

## Early Detection

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Lung cancer screening with low-dose spiral computed tomography (LDCT) has been shown to reduce lung cancer mortality in people at high risk.

The USPSTF recommends annual screening for lung cancer with LDCT in adults ages 50 to 80 years who have a 20 pack-year smoking history and currently smoke or have quit within the past 15 years. Screening should be discontinued once a person has not smoked for 15 years or develops a health problem that substantially limits life expectancy or the ability or willingness to have curative lung surgery.

## Technical Notes

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**Age-Adjusted Rate:** A summary rate that is a weighted average of age-specific rates, where the weights represent the age distribution of a standard population (direct adjustment). The incidence and mortality rates presented in this report were standardized to the age distribution of the 2000 U.S. Standard Population. Using the direct method, the population was first divided into 19 age groups, i.e., <1, 1-4, 5-9, 10-14, 15-19 ... 85+, and the age-specific rate was calculated for each age group. Each age-specific rate was then multiplied by the standard population proportion for the respective age group.

**Population Data Used to Calculate Rates:** Population estimates were provided by the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) Program. The 2022 Ohio population estimates include 19 age groups and four expanded races by origin.

**Incidence:** The number of cases diagnosed during a specified time period (e.g., 2022). Lung and bronchus cancer cases were defined by the International Classification of Diseases for Oncology, Third Edition (ICD-O-3), and categorized by site codes C340-C349, excluding types 9050-9055, 9140, 9590-9992, in accordance with the SEER Program of the National Cancer Institute.

**Invasive Cancer:** Cancer that has spread beyond the layer of tissue in which it developed and is growing into surrounding, healthy tissues. Invasive cancers consist of those diagnosed at the local, regional, distant, and unstaged/unknown stages. Only invasive cancers were included in the calculation of incidence rates in this document.

**Rate:** The number of cases or deaths per unit of population (e.g., per 100,000 population) during a specified time period (e.g., 2022). Rates may be unstable and are not presented when the case count is less than five.

**Stage at Diagnosis:** The degree to which a tumor has spread from its site of origin at the time of diagnosis. A system of summary staging is often used to group cases into the following stages:

- **In situ** – Noninvasive cancer that has not penetrated surrounding tissue.
- **Local** – A malignant tumor confined entirely to the organ of origin.
- **Regional** – A malignant tumor that has extended beyond the organ of origin directly into surrounding organs or tissues or into regional lymph nodes.
- **Distant** – A malignant tumor that has spread to parts of the body (distant organs, tissues, and/or lymph nodes) remote from the primary tumor.
- **Unstaged/Unknown** – Insufficient information is available to determine the stage or extent of the disease at diagnosis.

## Sources of Data and Additional Information

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### Ohio Cancer Incidence Surveillance System

[Ohio Cancer Incidence Surveillance System \(OCISS\)](#)

[Tobacco Use Prevention and Cessation | Ohio Department of Health](#)

### National Cancer Institute

[Lung Cancer—Patient Version - NCI](#)

[Risk Factors: Tobacco - NCI](#)

### American Cancer Society

[Lung Cancer | American Cancer Society](#)

[Stay Away from Tobacco | American Cancer Society](#)

### To address comments and information requests:

#### Ohio Cancer Incidence Surveillance System (OCISS)

#### Ohio Department of Health

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Columbus, OH 43215

**Phone:** (614) 752-2689

**E-mail:** [ociss@odh.ohio.gov](mailto:ociss@odh.ohio.gov)

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