American
Lung
Association.

State of
Lung Cancer
2023 Report

Introduction

About every two minutes, someone in the U.S. is diagnosed with lung cancer, and every day, lung cancer takes the lives of more than 356 of our friends, neighbors and loved ones. But now there's hope as more people in America than ever are surviving lung cancer. While the disease remains the leading cause of cancer deaths, over the past five years, the survival rate has increased by 22% nationally to 26.6%. Additionally, it has increased at a faster pace among communities of color such that it is no longer significantly lower compared to white individuals.

This year's report also examines the lifesaving potential of lung cancer screening, which can detect the disease at an earlier stage when it's more curable, and the importance of advancements in lung cancer research, which holds the promise for better treatment options.

Based on new research, in March 2021, the United States Preventive Services Task Force expanded its recommendation for screening to include a larger age range and more current and former smokers. This dramatically increased the number of women and Black individuals who are considered at high risk for lung cancer. Unfortunately, in 2022, only 4.5% of all those eligible were screened.

For the fourth consecutive year, the "State of Lung Cancer" report explores the lung cancer burden among racial and ethnic groups at the national and state levels. In addition to lower survival rates, people of color who are diagnosed with lung cancer face worse outcomes compared to white individuals: they are less likely to be diagnosed early, less likely to receive surgical treatment, and more likely to not receive any treatment.

A strategic imperative of the American Lung Association is to defeat lung cancer, and to do so, we use a variety of tactics and work with diverse stakeholders to address the disease and its risk factors, including public policy efforts and public health protections, awareness of lung cancer screening and more.

The "State of Lung Cancer" report provides a state-specific understanding of the burden of lung cancer and opportunities to address this deadly disease.

The report also serves as both a guidepost and rallying call, providing policymakers, researchers, healthcare practitioners, as well as patients, caregivers and others committed to ending lung cancer by identifying where their state can best focus its resources to decrease the toll of lung cancer.

The State-by-State Toll of Lung Cancer

While we have seen advances in personalized treatment thanks to biomarker testing, targeted therapy and immunotherapy, and saved more lives through the introduction of lung cancer screening, the burden of lung cancer is not the same everywhere. Treatment, exposure to risk factors, and use and coverage of screening vary from state to state. To save more lives, it's critical to prevent lung cancer when possible and diagnose the disease as early as possible. Additionally, everyone should have access to therapies that may extend or improve the quality of their life.

By better understanding the impact of lung cancer at the state level, we can encourage interventions to save and extend lives. This report considers the following measures of lung cancer burden by state: new cases, survival, early diagnosis, surgical treatment, lack of treatment, screening and prevention, racial disparities and Medicaid fee-for-service program coverage of screening and identifies where each state ranks on each of these measures.

Policymakers must do more to improve access to lung cancer screening and treatment for all.
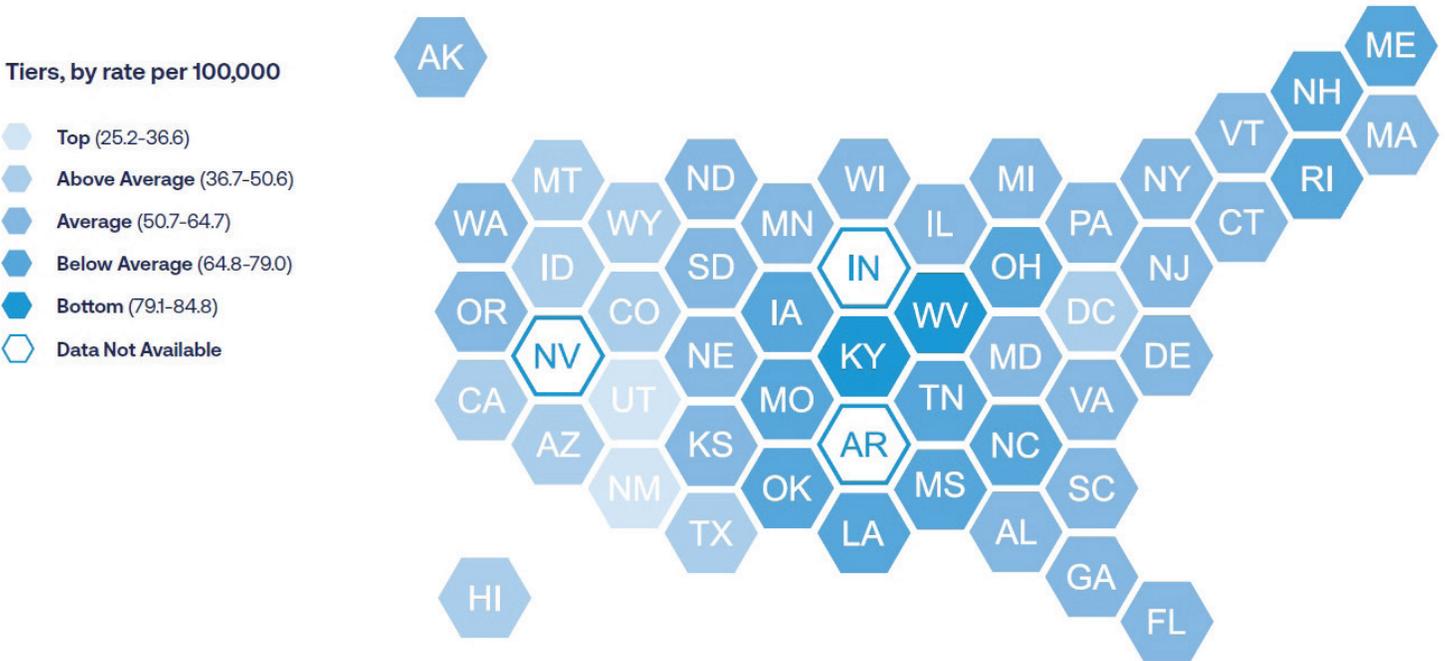
New Cases

Close to **238,000** people will be diagnosed with lung cancer this year, with the rate of new cases varying by state. The report finds that Utah has the nation's **best** lung cancer rate while Kentucky has the **worst** at almost **2.4** times the incidence rate of Utah. Over the last five years, the rate of new cases decreased **8%** nationally.

In 2020, the most recent year of data available for this report, the COVID-19 pandemic disrupted access to medical care, including delays and reductions in cancer diagnoses and screening. This led to a decline in 2020 incidence rates for most cancers, including lung cancer, and should not be interpreted as a reduction in the underlying cancer burden.

There are a variety of risk factors associated with lung cancer, including smoking, exposure to radon gas, air pollution and secondhand smoke. Radon testing and mitigation, healthy air protections, and reducing the smoking rate through tobacco tax increases, smokefree air laws and access to comprehensive quit smoking services are all ways to help prevent new lung cancer cases.

Tiers, by rate per 100,000

- Top (25.2-36.6)
- Above Average (36.7-50.6)
- Average (50.7-64.7)
- Below Average (64.8-79.0)
- Bottom (79.1-84.8)
- Data Not Available

Survival Rate

Lung cancer has one of the lowest five-year survival rates because cases are often diagnosed at later stages, when the disease is less likely to be curable. The national average of people alive five years after a lung cancer diagnosis is **26.6%**, which is a **22%** improvement over the last five years. Rhode Island ranked best at **33.3%**, while Oklahoma ranked worst at **21.2%**.

Tiers

- Top (29.5%–33.3%)
- Above Average (25.6%–29.4%)
- Average (23.2%–25.5%)
- Below Average (22.2%–23.1%)
- Bottom (21.2%–22.1%)
- Data Not Available

Early Diagnosis

Nationally, **only 26.6%** of cases are diagnosed at an early stage when the five-year survival rate is much higher (63%). Unfortunately, **44%** of cases are not caught until a late stage when the survival rate is only 8%. Early diagnosis rates increased **9%** over the last five years nationally and were best in Massachusetts **(33.3%)** and worst in Hawaii **(20.3%)**.

Early diagnosis rates did not decrease significantly in 2020, despite the impact of the COVID-19 pandemic on access to medical care.

Stage at Diagnosis and 5-Year Survival Rate

Stage at Diagnosis	27%	22%	44%	8%

5-Year Survival	63%	35%	8%	15%

- ● Early (localized – confined to primary site)
- ● Distant (cancer has metastisized)
- ● Regional (spread to regional lymph nodes)
- ● Unstaged tumors

Tiers

- Top (29.8%-33.3%)
- Above Average (26.2%-29.7%)
- Average (23.6%-26.1%)
- Below Average (21.9%-23.5%)
- Bottom (20.3%-21.8%)
- Data Not Available

Surgical Treatment

Lung cancer can often be treated with surgery if it is diagnosed at an early stage and has not spread. Nationally, **20.8%** of cases underwent surgery, which was a **4%** improvement over the last five years. Rates ranged from best at **31.3%** in Massachusetts to worst at **13.5%** in New Mexico.

Surgical treatment rates decreased by 4% in 2020, likely due to the impact of the COVID-19 pandemic on access to medical care.

Patients who are not healthy enough to undergo the procedure or whose cancer has spread may not be candidates for surgery. Other treatments may be recommended instead of or in addition to surgery, such as chemotherapy, radiation, targeted therapy or immunotherapy. This report focuses on surgical treatment because it is more likely to be curative.

Tiers

- Top (27.1%-31.3%)
- Above Average (22.8%-27.0%)
- Average (19.3%-22.7%)
- Below Average (16.4%-19.2%)
- Bottom (13.5%-16.3%)
- Data Not Available

Lack of Treatment

There are multiple reasons why patients may not receive treatment after diagnosis. Some of these reasons may be unavoidable, but no one should go untreated because of lack of provider or patient knowledge, stigma associated with lung cancer, fatalism after diagnosis, or cost of treatment. Nationally, **20.6%** of cases did not receive any treatment. Rates improved **2%** over the last five years and were best in North Dakota **(14.3%)** and worst in New Mexico **(31.5%)**.

Lack of treatment rates increased by 5% in 2020, likely due to the impact of the COVID-19 pandemic on access to medical care.

Tiers

- Top (13.2%-16.3%)
- Above Average (16.4%-19.4%)
- Average (19.5%-23.1%)
- Below Average (23.2%-27.3%)
- Bottom (27.4%-31.5%)
- Data Not Available

Screening and Prevention

Lung cancer screening gives us hope in the effort to defeat lung cancer and represents an opportunity to save more lives. Screening with annual low-dose CT scans can reduce the lung cancer death rate by up to 20%, by detecting tumors at early stages when the cancer is more likely to be curable. Lung cancer screening has saved 80,000 additional years of life leading to $40 million in savings, which would increase to 500,000 additional years of life and $500 million if all those eligible had been screened (Phillipson et al, 2023).

Based on new research, in March 2021, the United States Preventive Services Task Force (USPSTF) expanded its recommendation for screening to include a larger age range and more current and former smokers. This dramatically increased the number of women and Black individuals who are considered at high risk for lung cancer. At the same time, the requirement for screening facilities to participate in the lung cancer screening registry in order to receive reimbursement from Medicare for screening scans was removed, which may have led to a decrease in reported scans, especially in some states.

High risk is defined as:

	USPSTF Guidelines 2013-2021	USPSTF Guidelines 2021
Age	55-80 years	50-80 years
Smoking History	30 or more pack years (this means 1 pack a day for 30 years, 2 packs a day for 15 years, etc.)	20 or more pack years (this means 1 pack a day for 20 years, 2 packs a day for 10 years, etc.)
Smoking Status	Current smoker or quit within the last 15 years	

For screening to be most effective, more of the high-risk population should be screened annually—currently screening rates remain low among those at high risk. Nationally, only **4.5%** of those at high risk were screened. Massachusetts has the best screening rate at **11.9%**, while California has the worst at **0.7%**, although this likely does not represent all scans and may not reflect screenings in large, regional managed care providers.

Tiers

- Top (9.4%-11.9%)
- Above Average (6.9%-9.3%)
- Average (4.7%-6.8%)
- Below Average (2.7%-4.6%)
- Bottom (0.7%-2.6%)
- Data Not Available
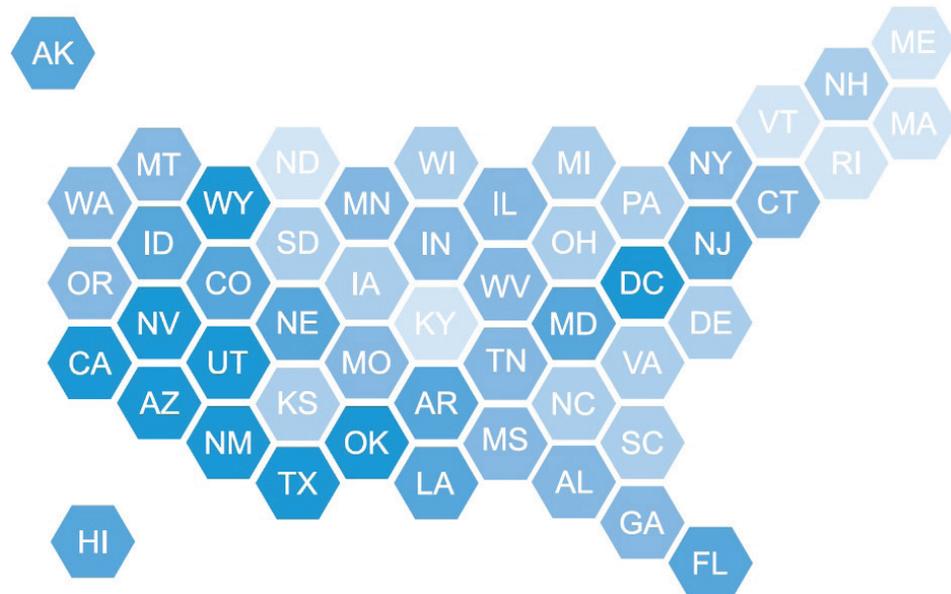
Medicaid Coverage

State Medicaid programs are one of the only healthcare payers not required to cover lung cancer screening for the traditional Medicaid population. If screening is covered, Medicaid programs may use different eligibility criteria, require prior authorization or charge individuals for their scans.

The American Lung Association analyzed lung cancer screening coverage policies in state Medicaid fee-for-service programs to assess the current status of lung cancer screening coverage for the Medicaid population. We found that **49** state Medicaid fee-for-service programs cover lung cancer screening and **one** program does not provide coverage.

Coverage

- No
- Yes
- Yes, using updated guidelines
- No Fee-for-Service Program
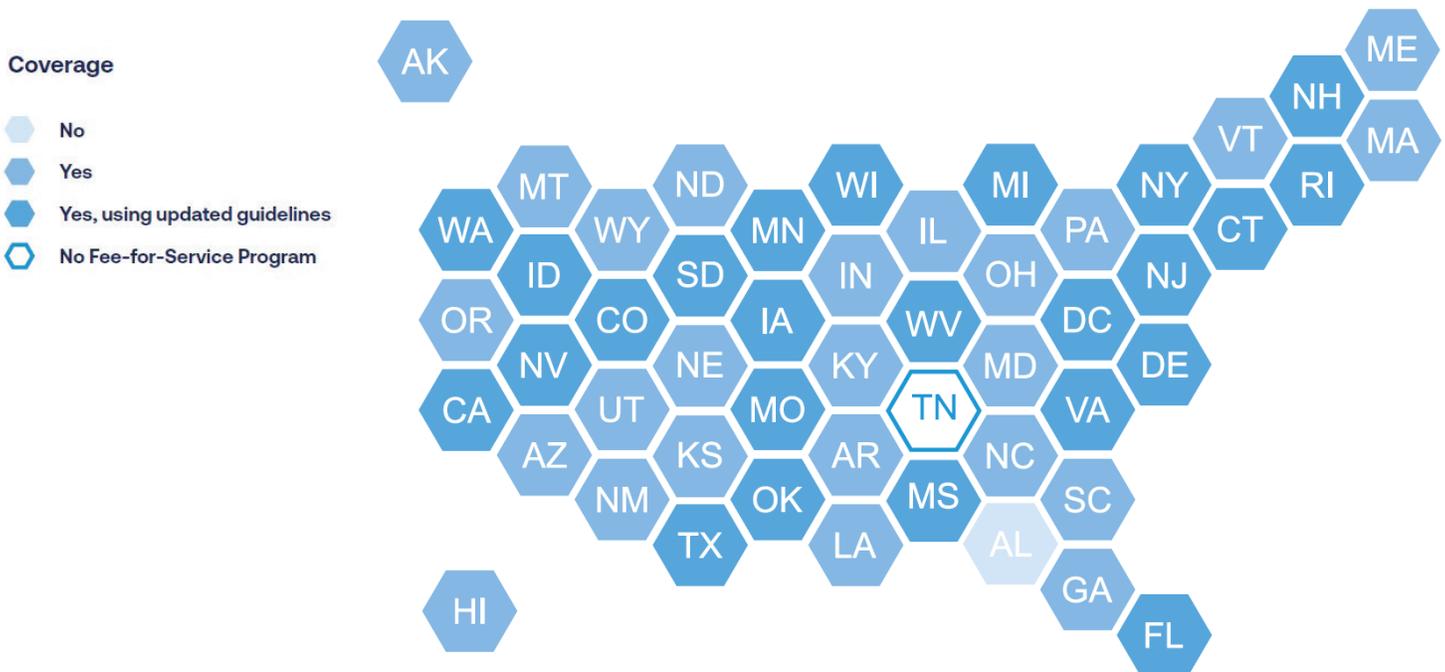
Black individuals with lung cancer were 15% less likely to be diagnosed early, 19% less likely to receive surgical treatment, 11% more likely to not receive any treatment, and 16% less likely to survive five years compared to white individuals.

	Black Individuals	White Individuals
Early Diagnosis	23%	27%
Surgical Treatment	17%	21%
Lack of Treatment	22%	20%
Survival	21%	25%

Latino individuals with lung cancer were 16% less likely to be diagnosed early, 30% more likely to not receive any treatment, and 9% less likely to survive five years compared to white individuals. However, they were 2% more likely to receive surgical treatment compared to white individuals.

	Latino Individuals	White Individuals
Early Diagnosis	23%	27%
Surgical Treatment	22%	21%
Lack of Treatment	26%	20%
Survival	23%	25%
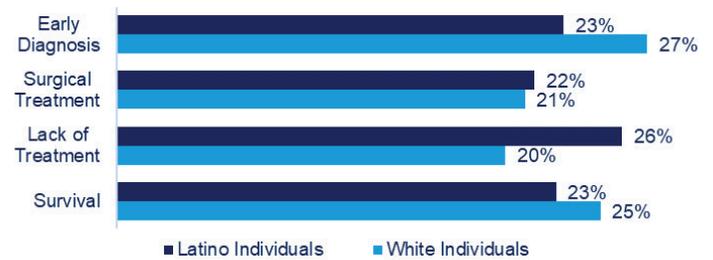
Asian or Pacific Islander individuals with lung cancer were 17% less likely to be diagnosed early compared to white individuals. However, they were 17% more likely to receive surgical treatment, equally likely to not receive any treatment, and 14% more likely to survive five years compared to white individuals.

	Asian or Pacific Islander Individuals	White Individuals
Early Diagnosis	23%	27%
Surgical Treatment	25%	21%
Lack of Treatment	20%	20%
Survival	29%	25%

Indigenous Peoples (American Indians/Alaska Natives) with lung cancer were 14% less likely to be diagnosed early, 23% less likely to receive surgical treatment, 15% more likely to not receive any treatment, and equally likely to survive five years compared to white individuals.

	Indigenous Peoples	White Individuals
Early Diagnosis	24%	27
Surgical Treatment	16%	21%
Lack of Treatment	23%	20%
Survival	22%	25%
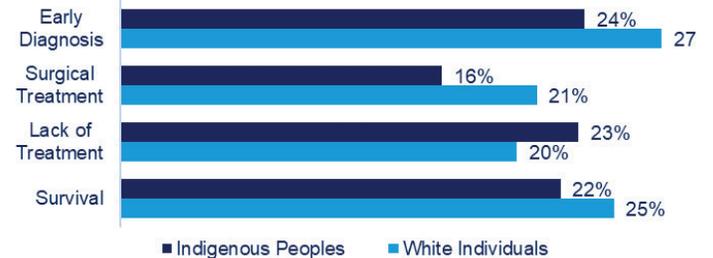
Prevention

Keys to prevention include eliminating tobacco use and curbing exposures to radon, air pollution and secondhand smoke, all of which are known to cause lung cancer. However, it is not always possible to identify the cause of an individual patient's lung cancer. If you have concerns about your risk, because of your exposures or your family history, it is important to discuss this with your doctor.

This report contains information and data on exposures to these risk factors on the state level:

- **Tobacco use** is the leading risk factor for lung cancer, accounting for 80 to 90% of cases. While we have seen historic decreases in the national smoking rate, not all people in America or regions of the country have benefited equally.
- **Secondhand smoke** smoke has also been shown to cause lung cancer. There is no safe level of exposure to secondhand smoke. The "State of Lung Cancer" report highlights that making homes, workplaces and public spaces smokefree air zones, with no smoking allowed, can reduce the risk of exposure. The American Lung Association's "State of Tobacco Control," grades states for laws to protect the public from secondhand smoke.
- **Radon**, a naturally occurring radioactive gas, is the second leading cause of lung cancer and the leading cause among nonsmokers. Radon is a colorless and odorless gas that can seep into homes and buildings. Some geographical areas have naturally higher average radon rates than others, but since any home can be at risk for elevated levels, the only way to know is to do a test. If testing shows interior radon levels at or above the U.S. EPA action level of 4 pCi/L (picoCuries per liter of air) or higher, it is recommended you take corrective measures to reduce your exposure to radon gas. Such measures should also be considered at levels at or above 2 pCi/L. The report highlights the percent of indoor radon tests at or above the EPA action level by state.
- **Exposure to year-round particle pollution** in the air has been shown to cause lung cancer. Each year the American Lung Association releases the "State of the Air" report. The 2023 "State of the Air" report found close to 120 million people are living in places with failing grades for unhealthy levels of air pollution.

Discussion

- The lung cancer survival rate increased 22% over the last five years nationally to 26.6%.
- Lung cancer screening with low-dose CT scans has been recommended for those at high risk since 2013, but only 4.5% of those eligible were screened in 2022.
- People of color who are diagnosed with lung cancer face worse outcomes compared to white individuals, including: less likely to be diagnosed early, less likely to receive surgical treatment and more likely to receive no treatment.
- Nationally, only 26.6% of cases are diagnosed at an early stage when the five-year survival rate is much higher (63%).
- The analysis in the "State of Lung Cancer" serves as a baseline against which future data can be compared, which may be especially beneficial as progress is made on the implementation of lung cancer screening.

Conclusion

As the American Lung Association works toward defeating lung cancer, the goal of the "State of Lung Cancer" report is to empower the public to learn more about lung cancer in their state. Individuals can join the Lung Association's efforts to end lung cancer by asking their member of Congress to co-sponsor H.R. 4286, the Increasing Access to Lung Cancer Screening Act at Lung.org/SOLC.

The report looks at key lung cancer measures to highlight the burden and examine opportunities to better address lung cancer at the state level. The report found that lung cancer rates for every measure vary significantly by state, and that every state can do more to defeat lung cancer, such as increasing the rate of screening among those at high risk, addressing racial disparities that impact lung cancer outcomes, decreasing exposure to radon and secondhand smoke, and eliminating tobacco use.

This report provides unique information for federal and state officials, researchers and those affected by lung cancer and emphasizes the need for resources and action to decrease the toll of lung cancer across the country.

Methodology and Data Sources

The report includes state-specific measures of lung cancer incidence, adult smoking prevalence, estimated percent of radon tests at or above the U.S. EPA action level, five-year survival, early diagnosis, surgery as part of the first course of treatment, lack of treatment, and screening among those at high risk.

Lung cancer incidence, staging, surgical treatment, and lack of treatment data are for years 2016-2020 and includes malignant lung and bronchus tumors. This data is based on the North American Association of Central Cancer Registries (NAACCR) December 2022 data submission. In the U.S., registries also participate in the National Cancer Institute's (NCI) Surveillance, Epidemiology, and End Results (SEER) Program or the Centers for Disease Control and Prevention's (CDC) National Program of Cancer Registries (NPCR) or both. Support for cancer registries is provided by the state, province or territory in which the registry is located.

Incidence data for Kansas are for 2015-2019 from CDC's WONDER Online Database United States Cancer Statistics as data from this state were not included in the NAACCR data submission.

Cases diagnosed at an early stage correspond with local stage from SEER summary staging and are generally equivalent to stage I. Cases diagnosed at a late stage correspond with distant stage from SEER summary staging and are generally equivalent to stage IV.

State survival rates are the age-standardized percent of cases still alive five years after diagnosis for cases diagnosed in years 2013-2019. These data are from NAACCR's CiNA Explorer, an interactive, data visualization tool for quick access to key NAACCR CiNA cancer statistics. Survival data was not available for seven states and the District of Columbia.

Lack of treatment is the percent of lung cancer diagnoses that did not receive any medical treatment generally associated with lung or other cancers, including the following: removal, biopsy or aspiration of regional lymph node; surgical removal of distant lymph nodes or other tissue(s)/organ(s) beyond the primary site; surgery for lung cancer; radiation; chemotherapy; systemic hormonal agents; immunotherapy; other, including experimental, double-blind, and unproven; and transplant or endocrine surgery or radiation.

Screening rates were determined by dividing the number of screening exams meeting United States Preventative Task Force (USPSTF) criteria by the estimated number of people at high risk for lung cancer and recommended for annual screening with low dose computed tomography.

Data on the number of screening exams meeting USPSTF criteria came from the American College of Radiology's (ACR) Lung Cancer Screening Registry State Level Comparison for 2022. Screening rates may be higher in states with large, regional managed care providers that did not share screening data.

Methodology and Data Sources

The number of people at high risk for lung cancer was based on USPSTF criteria from after March 2021, which defined high risk as ages 50-80 years of age; 20 or more pack-year history of smoking (one pack a day for 20 years, two packs a day for 10 years, etc.); and are a current smoker, or have quit within the last 15 years.

Additional years of life gained and economic benefit of screening comes from Philipson TJ, Durie T, Cong Z, Fendrick AM. The aggregate value of cancer screenings in the United States: full potential value and value considering adherence. BMC Health Services Research. 2023; doi.org/10.1186/s12913-023-09738-4.

To assess current coverage of lung cancer screening in state Medicaid fee-for-service programs, the Lung Association surveyed state Medicaid programs to obtain information on coverage of low dose CT scans for individuals at high risk for lung cancer and reviewed publicly available coverage policies. Results are current as of October 2023.

Smoking rates include the percent of adults who have ever smoked 100 or more cigarettes and currently smoke on some days or all days using data from the 2021 BRFSS.

Radon estimates for each state are primarily based on the latest percent of county-level pre-mitigation radon tests from occupied interior spaces at or above the U.S. Environmental Protection Agency action level of 4 pCi/L (picoCuries per liter of air) from CDC's National Environmental Public Health Tracking for 2008-2017, weighted by U.S. Census Bureau 2019 estimates of county populations.

Additional methodological information is available in the online version of this report at Lung.org/solc.

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