American Lung Association.

State of Lung Cancer 2020 Report

Introduction

About every two and a half minutes, someone in the U.S. is diagnosed with lung cancer, and 4 in 5 of those diagnosed will ultimately die from the disease. Yet, more Americans than ever are surviving lung cancer. While the disease remains the leading cause of cancer deaths among both women and men, over the past five years, the survival rate has increased by a dramatic 13% to 22.6%.

For the first time, this year's "State of Lung Cancer" report explores the lung cancer burden among racial and ethnic minority groups at the national and state levels. People of color who are diagnosed with lung cancer face worse outcomes compared to white Americans: they are less likely to be diagnosed early, less likely to receive surgical treatment, and more likely to not receive any treatment.

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.

A strategic imperative of the American Lung Association is to defeat lung cancer, and to do so, we use a variety of tactics and 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. It does not reflect the potential impact of the COVID-19 pandemic on cancer diagnosis, treatment, and survival as the data in the report preceded the emergence of the novel coronavirus.

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 and targeted immunotherapies, 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 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.

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.

Our policymakers must do more to protect and expand quality and affordable healthcare coverage and improve access to lung cancer screening and treatment.

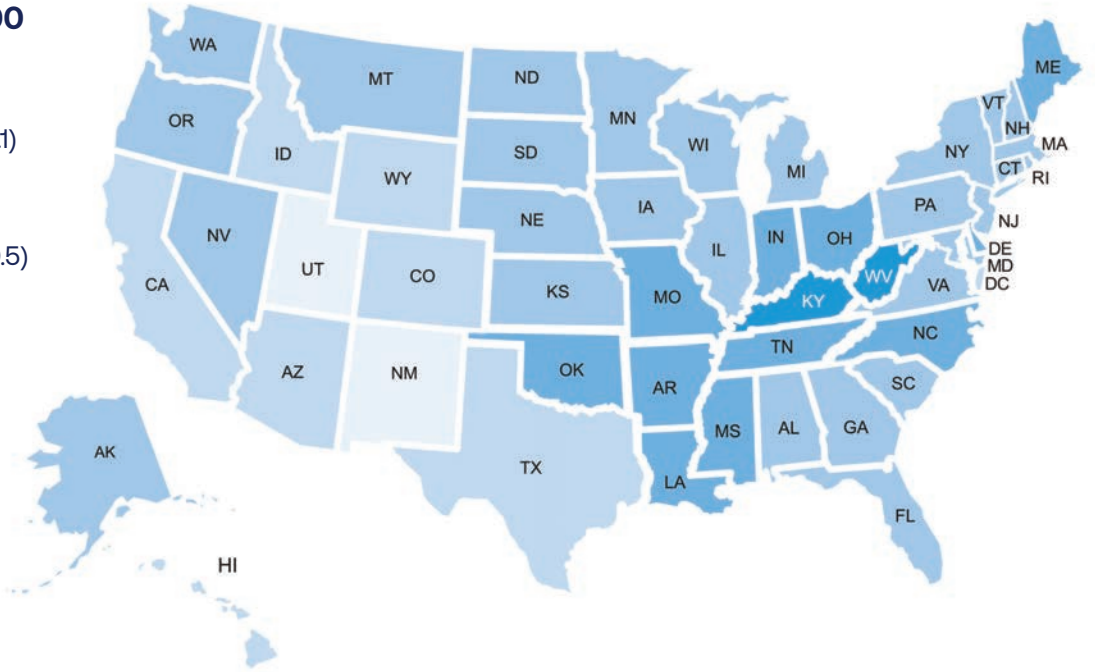
New Cases

More than 228,000 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 2.5 times the incidence rate of Utah. Over the last five years, the rate of new cases decreased 9% nationally.

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 (27.1 - 40.1)
- Above Average (40.1 - 53.1)
- Average (53.1 - 66.2)
- Below Average (66.3 - 79.5)
- Bottom (79.5 - 92.6)

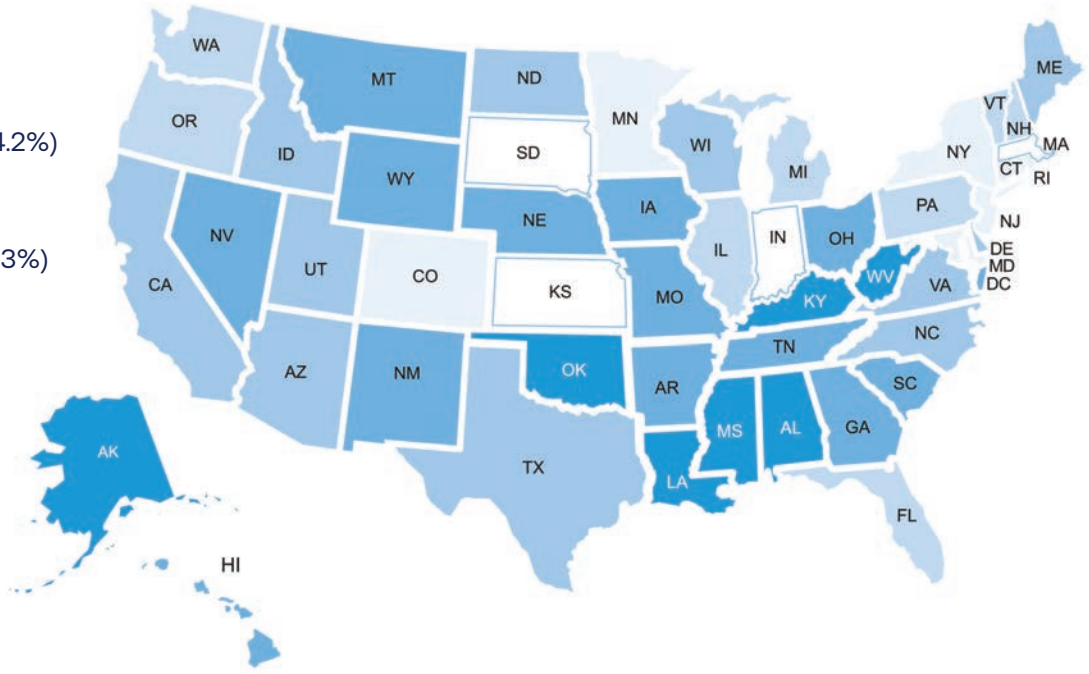


Survival Rate

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 **22.6%**, which is a 13% improvement over the last five years. Connecticut ranked best at 27.1%, while Alabama ranked worst at 17.1%.

Tiers

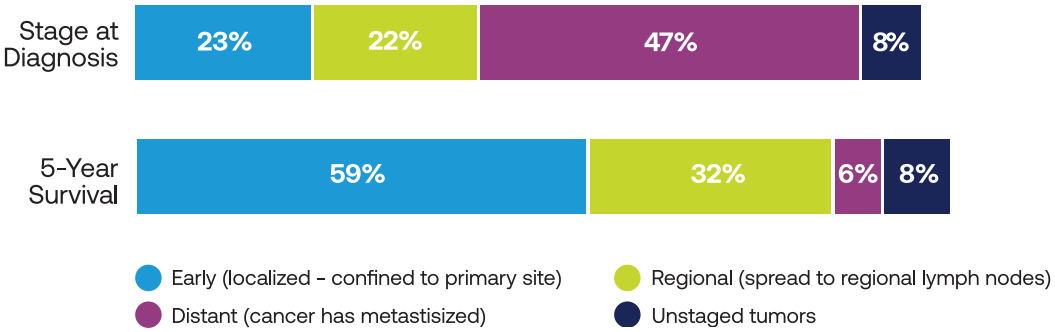
- Top (24.3%-27.1%)
- Above Average (21.4%-24.2%)
- Average (19.4%-21.3%)
- Below Average (18.2%-19.3%)
- Bottom (17.1%-18.1%)
- Data Not Available



Early Diagnosis

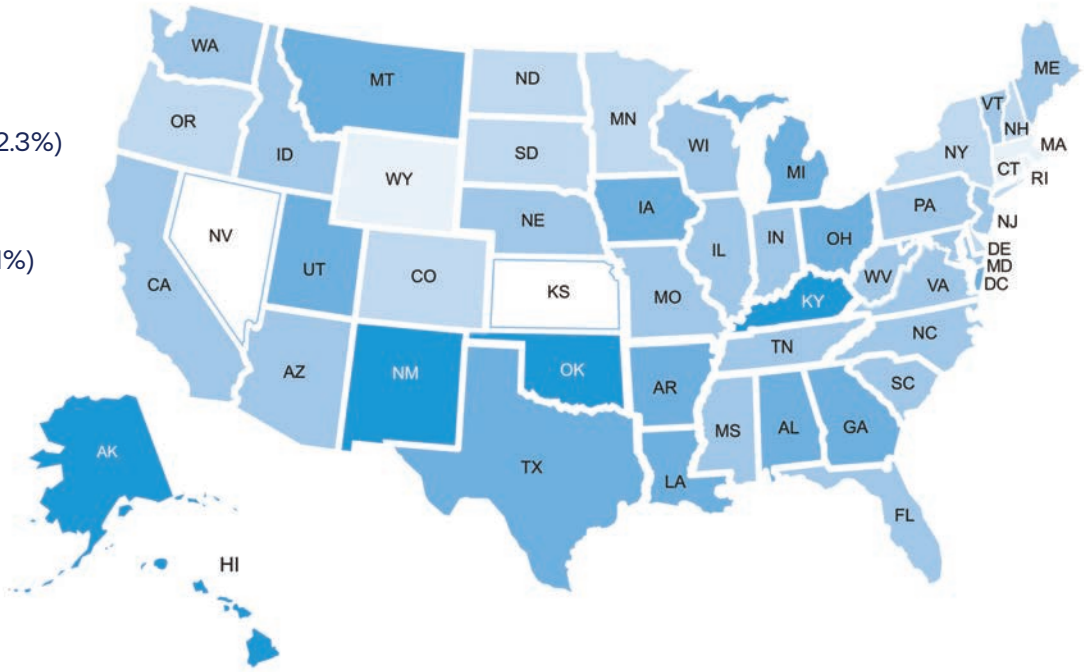
Nationally, **only 23%** of cases are diagnosed at an early stage when the five-year survival rate is much higher (59%). Unfortunately, 47% of cases are not caught until a late stage when the survival rate is only 6%. Early diagnosis rates increased 33% over the last five years nationally and were best in Massachusetts (28.8%) and worst in Hawaii (18.0%).

Stage at Diagnosis and 5-Year Survival Rate



Tiers

- Top (22.4%-24.0%)
- Above Average (20.8%-22.3%)
- Average (19.2%-20.7%)
- Below Average (17.5%-19.1%)
- Bottom (15.9%-17.4%)
- Data Not Available



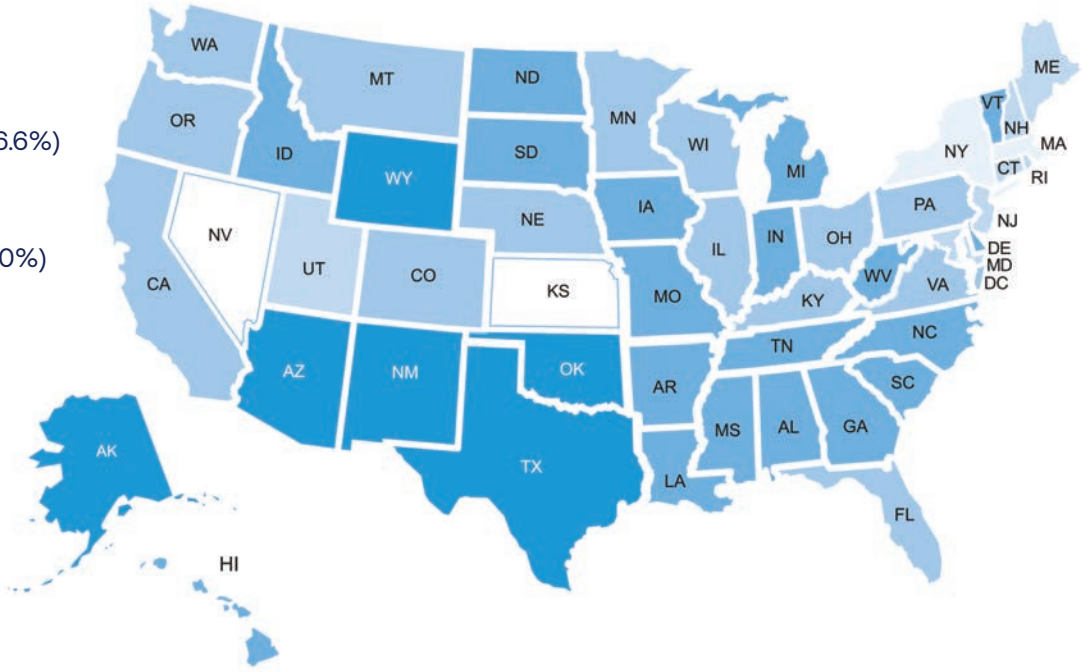
Surgical Treatment

Lung cancer can often be treated with surgery if it is diagnosed at an early stage and has not spread. Nationally, **20.6%** of cases underwent surgery, which was a 3% improvement over the last five years. Rates ranged from best at 30.7% in Massachusetts to worst at 13.0% in New Mexico.

Patients who are not healthy enough to undergo the procedure or whose cancer has spread too widely 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 (26.7%-30.7%)
- Above Average (22.7%-26.6%)
- Average (19.1%-22.6%)
- Below Average (16.0%-19.0%)
- Bottom (13.0%-15.9%)
- Data Not Available

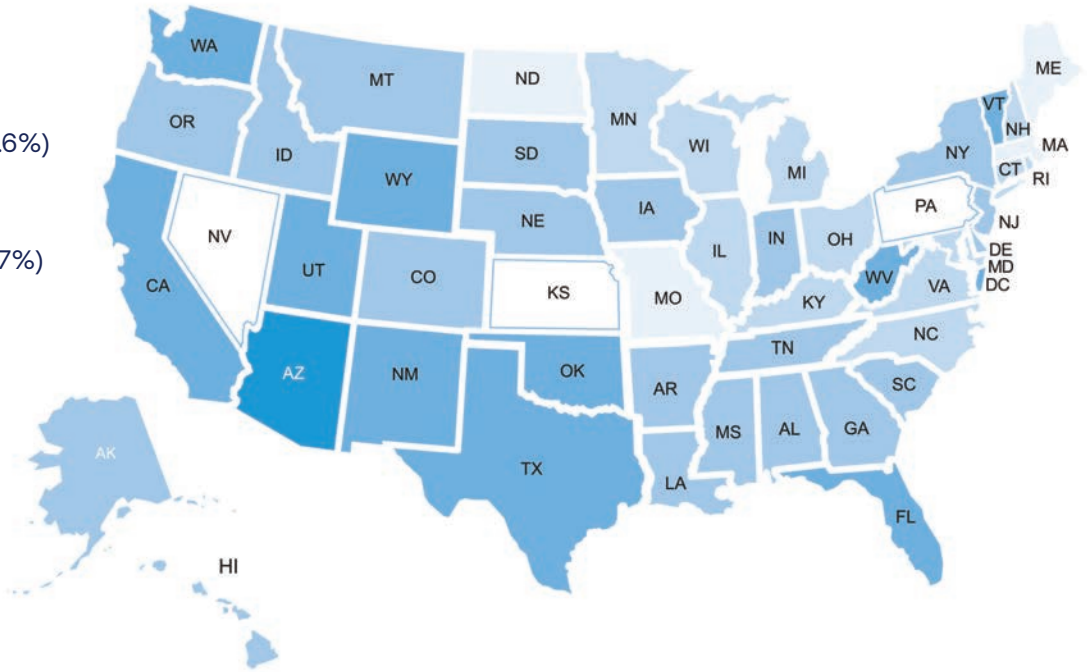


Lack of Treatment

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, **15.2%** of cases did not receive any treatment. Lack of treatment rates improved 8% over the last five years and were best in North Dakota (7.5%) and worst in Arizona (29.5%).

Tiers

- Top (7.5%-10.5%)
- Above Average (10.6%-13.6%)
- Average (13.7%-18.0%)
- Below Average (18.1%-23.7%)
- Bottom (23.8%-29.5%)
- Data Not Available

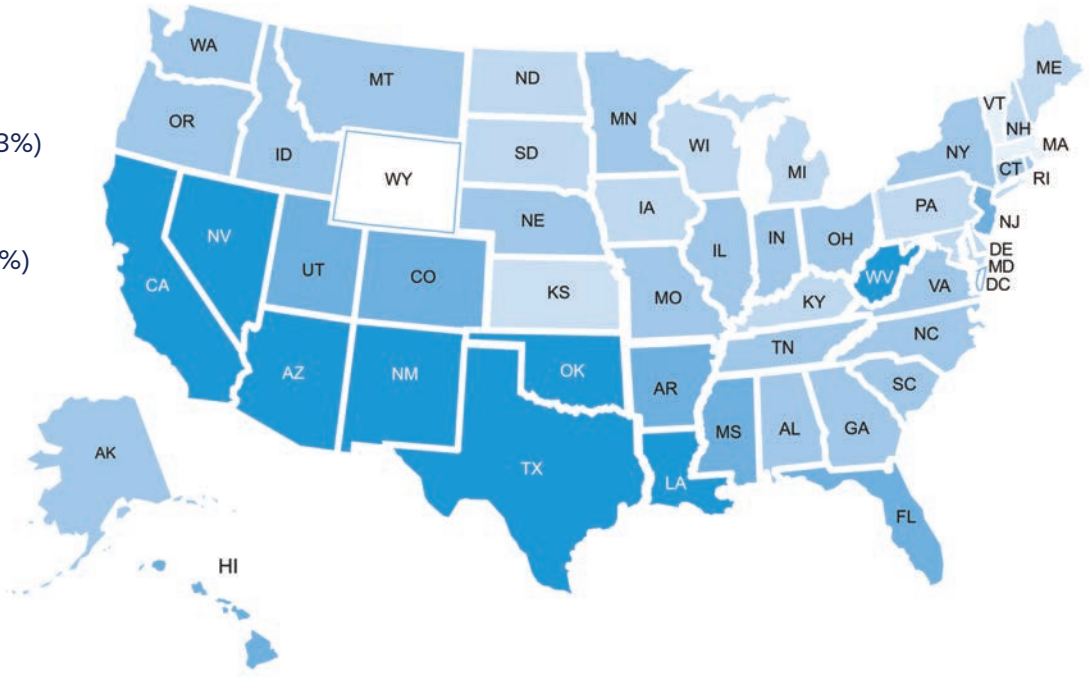


Screening and Prevention

If everyone currently eligible were screened, close to 48,000 lives could be saved. For those ages 55-80 with a 30 pack-year history who still smoke or have quit within the last 15 years, 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. For screening to be most effective, more of the high-risk population should be screened annually—currently screening rates are very low among those at high risk. Nationally, **only 5.7%** of those at high risk were screened. Massachusetts has the highest screening rating at 18.5%, while Nevada has the lowest at 1.0%.

Tiers

- Top (13.4%-18.5%)
- Above Average (8.3%-13.3%)
- Average (4.7%-8.2%)
- Below Average (2.9%-4.6%)
- Bottom (1.0%-2.8%)
- Data Not Available



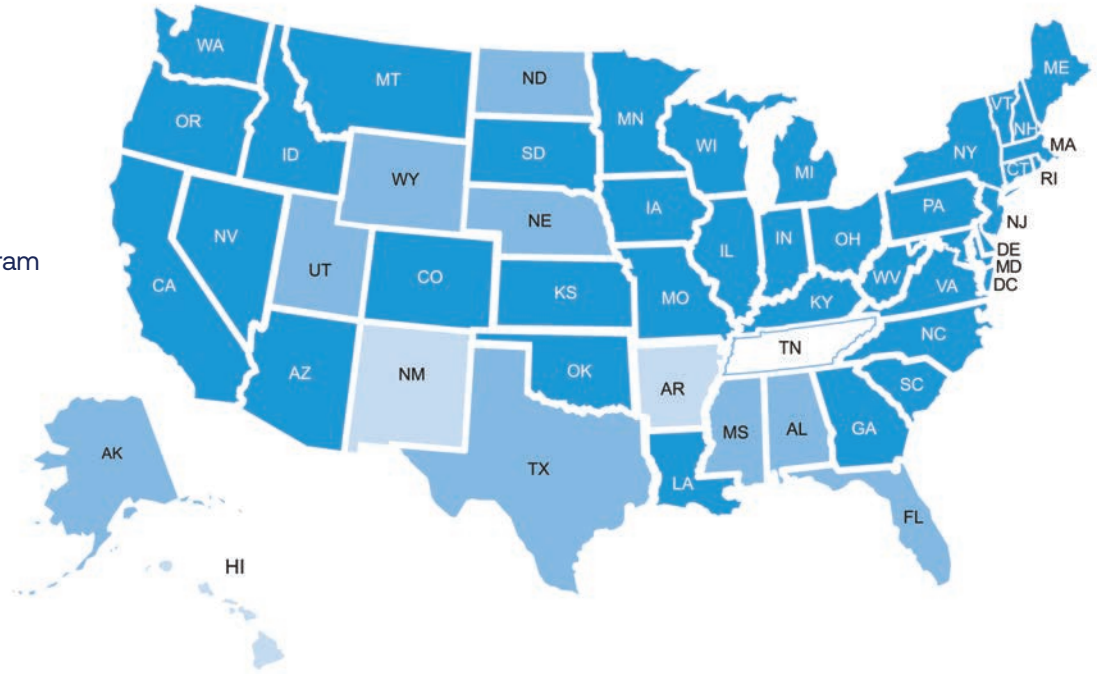
Medicaid Coverage

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 **38** Medicaid fee-for-service programs cover lung cancer screening, **9** programs do not provide coverage, and **3** states did not have information available on their coverage policy.

Coverage

- Covered
- Not Covered
- No Information Available
- No Fee-for-Service Program



Racial Disparities

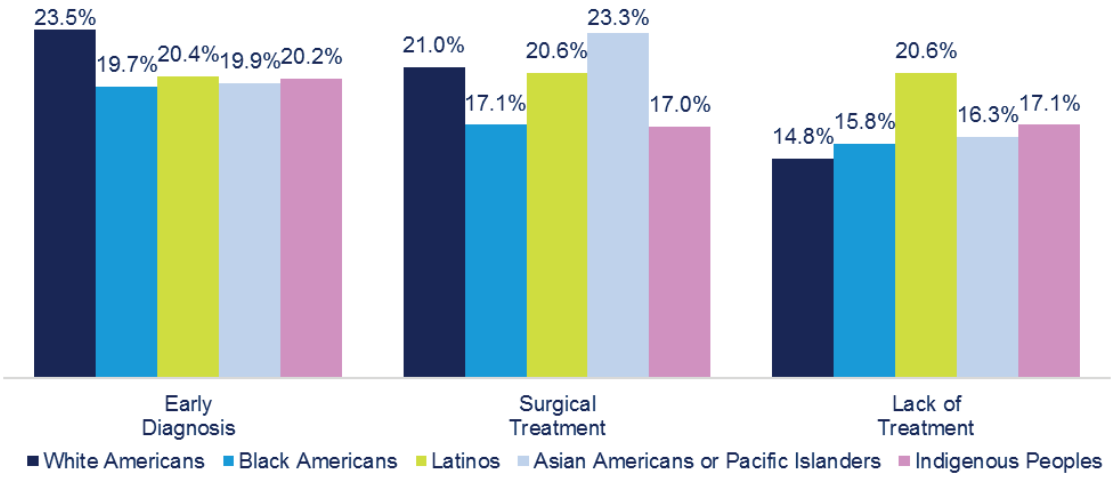
Everyone deserves the opportunity to lead a full and healthy life. Sadly, systemic issues have contributed to health disparities, including for those facing lung cancer. People of color who are diagnosed with lung cancer face worse outcomes compared to white Americans because they are less likely to be diagnosed early, less likely to receive surgical treatment, and more likely to not receive any treatment. About half of the 30 million uninsured Americans are people of color, and research is clear that having health coverage impacts people's medical care and ultimately their health outcomes. Addressing racial disparities in healthcare coverage is critical to addressing racial disparities in lung cancer care.

Black Americans with lung cancer were 16% less likely to be diagnosed early, 19% less likely to receive surgical treatment, and 7% more likely to not receive any treatment compared to white Americans.

Latinos with lung cancer were 13% less likely to be diagnosed early, 2% less likely to receive surgical treatment, and 39% more likely to not receive any treatment compared to white Americans.

Asian Americans or Pacific Islanders with lung cancer were 15% less likely to be diagnosed early and 10% more likely to not receive any treatment compared to white Americans. However, unlike other groups, they were 11% more likely to receive surgical treatment compared to white Americans.

Indigenous Peoples (American Indians/Alaska Natives) with lung cancer were 14% less likely to be diagnosed early, 19% less likely to receive surgical treatment, and 15% more likely to not receive any treatment compared to white Americans.



Prevention

Keys to prevention include raising awareness about tobacco use, exposure to radon gas, air pollution and secondhand smoke, all of which are known to cause lung cancer. Despite having a good understanding of these risk factors, 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 share 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 Americans or regions of the country have benefited equally.
- **Secondhand 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. This report's sister, "State of Tobacco Control," grades states for efforts to protect public spaces 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 radon rates than others, but any home can have elevated levels. The U.S. Environmental Protective Agency (EPA) has set an action level of 4 pCi/L (picocuries per liter of air). At or above this level of radon, the EPA recommends you take corrective measures to reduce your exposure to radon gas. The report highlights counties and their predicted average indoor radon level.
- **Exposure to year-round particle pollution** in the air has been shown to cause lung cancer. Each year the American Lung Association puts out the "State of the Air" report. The 2020 "State of the Air" report found that more than 20.8 million people lived in counties that had unhealthy levels of air pollution in all categories from 2016 to 2018.

Summary

- The lung cancer survival rate increased 13% over the last five years nationally to 22.6%, but the disease still remains the leading cause of cancer death in the United States.
- People of color who are diagnosed with lung cancer face worse outcomes compared to white Americans: they are less likely to be diagnosed early, less likely to receive surgical treatment and more likely to not receive any treatment.
- Nationally, only 22.9% of cases are diagnosed at an early stage when the five-year survival rate is much higher (59.0%).
- Lung cancer screening with low-dose CT scans has been recommended for those at high risk since 2013, but only 5.7% of those eligible were screened in 2019.
- 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 and take action to improve lung cancer patients' access to quality and affordable health care.

The report takes a look 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 outcomes that are impacted by racial disparities, decreasing exposure to radon and secondhand smoke, and eliminating tobacco use.

This report provides unique information for federal and state officials, policymakers, 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, radon zones, 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 2013-2017 and includes malignant lung and bronchus tumors. This data is based on the North American Association of Central Cancer Registries (NAACCR) December 2019 data submission. In the U.S., registries also participate in the National Cancer Institute's 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 and Nevada are for 2012-2016 and from CDC's WONDER Online Database United States Cancer Statistics as data from these states 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.

Survival rates are the age-standardized percent of cases still alive five years after diagnosis for cases diagnosed in years 2010-2016. These data are from Cancer in North America: 2013-2017 Volume Four: Cancer Survival in the United States and Canada 2010-2016 from NAACCR. Survival data was not available for four states.

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.

Methodology and Data Sources

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 2019. We believe this registry represents most lung cancer screenings as it is the only approved registry at this time, and screening facilities are required to submit data on all lung cancer screenings to it in order to meet Medicare eligibility requirements.

This research was supported by the ACR's National Radiology Data Registry (NRDR). The views expressed in this report represent those of the authors, and do not necessarily represent the official views of the NRDR or the ACR. The authors wish to thank the Lung Cancer Screening Registry steering committee and ACR staff for the use of registry data.

The number of people at high risk for lung cancer was based on USPSTF criteria, which defines high risk as ages 55-80 years of age; 30 or more pack-year history of smoking (one pack a day for 30 years, two packs a day for 15 years, etc.); and are a current smoker, or have quit within the last 15 years. Data from CDC's 2015 National Health Interview Survey and 2018 Behavioral Risk Factor Surveillance System (BRFSS) were also used to estimate the number of people at high risk for lung cancer.

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.

Smoking rates are 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 2018 BRFSS.

The number of counties in each state by radon zone comes from the Environmental Protection Agency's Map of Radon Zones.

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

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