

Lung cancer screening among Medicaid older adults in New Jersey, 2017–2022

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Lung Cancer Screening Among Medicaid Older Adults in New Jersey, 2017-2022**Short Running Title (<40 characters):** Medicaid Lung Cancer ScreeningsJoy Xie, BA¹Adriana Corredor-Waldron, PhD²Xiaoling Yun, MS³Jose Nova, MS³Anita Y. Kinney, PhD^{4,5}Jennifer Tsui, PhD MPH⁶Joel C. Cantor, ScD³Ann M. Nguyen, PhD MPH³¹ Rutgers Robert Wood Johnson Medical School, New Brunswick, NJ, USA² Department of Economics, NC State University, Raleigh, NC, USA³ Center for State Health Policy, Rutgers University, New Brunswick, NJ, USA⁴ Rutgers Cancer Institute, New Brunswick, NJ, USA⁵ Department of Biostatistics and Epidemiology, Rutgers School of Public Health, Piscataway, NJ, USA⁶ Keck School of Medicine, University of Southern California, Los Angeles, CA, USA

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Condensed Abstract: Routine lung cancer screenings almost doubled from 2019 to 2022 among New Jersey Medicaid enrollees ages 55-75, indicating a quick and successful rebound from the COVID-19 pandemic. Continued efforts are needed to increase the overall lung cancer screening rate and ensure equitable access.

Data Availability: Data sharing is not possible under the existing data use agreement between the study team and the New Jersey Division of Medical Assistance and Health Services. However, detailed data tables used to generate the figures and tables can be made available upon request to the study team. Ann M. Nguyen and Adriana Corredor-Waldron had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

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Abstract

Objective: Routine lung cancer screenings (LCS) were disrupted during the COVID-19 pandemic. The study objective is to describe LCS trends longitudinally and by sociodemographic characteristics among New Jersey Medicaid enrollees aged 55–75 years who were potentially LCS-eligible from 2017–2022.

Methods: This descriptive analysis used 2017-2022 New Jersey Medicaid claims data. The analytical sample included 317,763 enrollees aged 55-75 who were potentially LCS-eligible. LCS eligibility was identified using claims-based indicators of smoking history and status. Rates were stratified by age, sex, race-ethnicity, Medicaid dual eligibility status, and geographic region. Pearson's chi-squared tests assessed within-group differences.

Results: LCS rates were lowest in April 2020 (3.45 per 1,000 LCS-eligible enrollees). By August 2020, rates rebounded to pre-pandemic levels (15.53 per 1,000), peaking in November 2022 (35.22 per 1,000). The younger group (55-64 years old) consistently had higher rates than the older (65-75). Rates for non-Hispanic Black enrollees showed the largest change among racial-ethnic groups (16.0 per 1,000 in 2019; 52.9 per 1,000 in 2022).

Conclusions: This study suggests that rates rebounded due to increased public attention to lung health, broadening of LCS eligibility guidelines, and statewide screening initiatives. Future research should examine which factors drove the changes and whether changes sustained.

Keywords: lung cancer screening; Medicaid; COVID-19; disparities; older adults

1. Introduction

Lung cancer screening (LCS) rates are challenging to estimate due to the complexities of identifying the eligible population, leading to them being less frequently reported in the literature than rates for other preventable cancers.¹ This complexity may have also contributed to a lack of public awareness of LCS guidelines, leading to lower screening rates.² As the COVID-19 pandemic catastrophically changed cancer care,³ these trends persisted and magnified; studies report an average global decline of 20% in newly diagnosed lung cancer cases, with evidence indicating that sociodemographic factors contributed to screening disparities during the pandemic.⁴ A systemic change in the United States (U.S.) may have also negatively impacted LCS rates during the pandemic; in April 2020, an expert panel recommended delaying annual LCS so that low-dose computed tomography (CT), typically used for LCS, could be available for COVID-19 diagnosis. Thus, it is important to examine the impact of the COVID-19 pandemic on LCS rates in the U.S.

New Jersey is an important state to study LCS, as it is one of the most racially and ethnically diverse states and is ranked in the top 15 for new lung cancer incidence, despite rates decreasing by 10% in the last 5 years.⁵ According to the American Lung Association's 2024 State of Lung Cancer Report, only 20% of those at high risk in New Jersey were screened, ranking ninth among all states.^{6,7} There thus remains room for improvement, especially to ensure early cancer detection among vulnerable populations.

Medicaid, which provides insurance coverage for low-income people, families and children, pregnant people, the elderly, and people with disabilities, is a cornerstone of health insurance coverage in New Jersey, becoming an even larger source of coverage during the pandemic due to continuous enrollment provisions and a volatile job market.⁸ From 2019 to 2022, the percentage of New Jersey residents enrolled in Medicaid increased from 24% to 26%. As lung cancer is a leading cause of cancer mortality in New Jersey,⁹ it is important to identify if

Medicaid enrollees are receiving the screening as recommended, especially Black and White women, who have lung cancer as the second most prevalent cancer.¹⁰

Among the limited U.S. literature on LCS rates throughout the pandemic,^{11–13} none have focused on Medicaid. Medicaid populations are important to study because they face distinct barriers to preventive care.¹⁴ Studies have also shown disparities in cancer screening rates between Medicaid demographic and geographic characteristics.¹⁰ Examining trends in screening rates within this population can clarify whether the recovery observed in broader populations^{11–13} also occurred among lower-income and medically vulnerable patients. The study objective is to describe LCS trends longitudinally and by sociodemographic characteristics (age, sex, race-ethnicity, Medicaid dual eligibility status, geographic region) among New Jersey Medicaid enrollees aged 55-75 years who were potentially LCS-eligible from 2017-2022.

2. Methods

2.1 Study Design and Population

This study is a retrospective, descriptive trend analysis to estimate the rate of routine LCS among New Jersey Medicaid enrollees ages 55-75 from 2017-2022. Two approaches were used to describe: (1) longitudinal screening rates from 2017-2022, and (2) sociodemographic characteristics of screening rates from 2019-2022. The first allows for examination of routine LCS trends over time. The second allows for examination of routine LCS disparities in the pre-pandemic year (2019), during the pandemic height (2020), and in the years following the COVID-19 vaccine rollout (2021-2022). Analysis of restricted data was approved by the Institutional Review Board at [redacted] and [redacted]. This study was approved by the Protection of Human Subjects Committee at [redacted] under protocol Pro2022000341.

We used secondary data from the Medicaid Management Information System, the New Jersey Medicaid claims and encounter data. The dataset includes information on Medicaid-paid encounters for Medicaid enrollees, whether paid fee-for-service or through a managed care

organization, and enrollee characteristics. For the variables of interest, there was no missing data.

The unit of analysis was the Medicaid enrollee. Across the years (2017-2022), the starting sample included 1,699,259 Medicaid enrollees aged 55-75. This was 264,406 for 2017; 267,925 for 2018; 270,403 for 2019; 271,829 for 2020; 292,495 for 2021; and 332,201 for 2022. The potentially LCS-eligible population was then identified using the inclusion criteria: high risk for lung cancer, defined as having any history or present use of tobacco or nicotine, identified in the claims data using International Classification of Disease (ICD) and Current Procedural Terminology (CPT) codes from Healthcare Effectiveness Data and Information Set value sets (**Supplement A**). Use of ICD and CPT codes for identifying smoking in claims is a validated best practice, shown to have limited sensitivity but high specificity.¹⁹ As smoking history and status are not directly captured in claims,¹⁵ our approach (modeled on validated methodology¹⁶) was designed to align with key LCS criteria from the U.S. Preventive Services Task Force guidelines (**Table 1**),^{17,18} serving as a proxy for identifying potentially LCS-eligible enrollees. Applying the inclusion criteria resulted in a sample of 317,763 enrollees. This was 46,667 for 2017; 51,473 for 2018; 54,192 for 2019; 49,284 for 2020; 56,204 for 2021; and 59,943 for 2022. Over the years, the resulting sample ranged from 18-20% of the full sample. Finally, we excluded enrollees with a history of relevant cancer diagnosis (malignant neoplasm of lung) or medical history (personal history of malignant neoplasm of lung), as these conditions suggest that cancer screenings are not routine. None were excluded, as no enrollees in the sample at this point had these conditions. The resulting analytical sample consisted of 317,763 Medicaid enrollees aged 55-75 who were potentially LCS-eligible. It is not possible to distinguish those eligible for LCS per the 2012 U.S. Preventive Services Task Force guidelines from the 2021 guidelines.

The screened enrollee population was identified using the administrative claims code for low-dose CT, the standard procedure for LCS recommended by the U.S. Preventive Services

Task Force. These procedures and codes were informed by prior work.^{10,20} **Supplement B** lists the inclusion and exclusion codes.

2.2. Measures

Receipt of LCS (outcome variable) was defined as one or more claims or encounters for low-dose CT, identified in any procedure field of the record (**Supplement B**). Claims were collapsed to the enrollee level and used to identify the LCS-eligible population following the criteria described above. The longitudinal analysis used calendar month (January 2017–December 2022); stratified analysis used calendar year (2019–2022).

Sociodemographic variables were age (55–64, 65–75 years), sex (female, male), race-ethnicity (single Medicaid field with the categories: Hispanic, non-Hispanic White, non-Hispanic Black, non-Hispanic Asian, other), Medicaid dual eligibility status (dually eligible, not dually eligible), and county of enrollee's residence. We grouped counties into five regions: Urban; Suburban; Exurban; South/Philadelphia; and Shore.²¹

2.3. Statistical Analysis

To describe LCS trends longitudinally from 2017-2022, descriptive statistics were conducted at the monthly level. First, the “rate” of enrollees screened was calculated by dividing the total number of unique Medicaid enrollees screened per month by the total number of potentially LCS-eligible enrollees in the same month. Rates were multiplied by 1,000 to enhance interpretation. The enrollee is counted more than once per year if there are repeat low-dose CTs. Next, these rates were plotted from 2017-2022 using Excel® with event markers (month of the New Jersey stay-at-home order, release of COVID-19 vaccine to the general public, publication of the revised LCS guidelines by the U.S. Preventive Services Task Force,¹⁸ COVID-19 Delta variant peak, and COVID-19 Omicron variant peak²²). To further examine the impact of the pandemic, we plotted a linear extrapolation of the pre-pandemic period (i.e., regression of the screening rate by time), and, to account for possible seasonality effects, we applied a seasonal adjustment using the X-13ARIMA-SEATS program.²³

Next, to describe LCS trends by sociodemographic characteristics (age, sex, race-ethnicity, Medicaid dual eligibility status, geographic region) from 2019-2022, descriptive statistics were conducted by year. Rates were calculated using the same procedures using year instead of month as the study period and stratifying by the sociodemographic variables. The enrollee is counted only once per year. We then performed bivariate analyses using Pearson's chi-squared test to determine whether sociodemographic characteristic trends were statistically different within groups at a p-value of 0.05. Data analyses were conducted using SAS® Version 8.3²⁴ and Stata®/MP 18.²⁵

3. Results

The longitudinal monthly LCS rate trends from 2017-2022 are shown in **Figure 1**. From 2017-2019, the LCS rate for Medicaid enrollees (aged 55-75) was higher over time, with 6.11 per 1,000 potentially LCS-eligible enrollees in January 2017 and 8.37 per 1,000 in January 2019. April 2020 had the lowest rate in the 6-year period (3.45 per 1,000). Except for 2020, all years exhibited a similar pattern: rates oscillated yet rose throughout the year, peaking in November.

By August 2020, rates rebounded to pre-pandemic levels (15.53 per 1,000) and rose quickly, reaching 21.92 per 1,000 in October 2020. From January 2021 onward, the screening rate was generally higher over time, with dips coinciding with COVID-19 variant outbreaks. The rate was at its highest in November 2022 (35.22 per 1,000). Comparatively, November 2017 had a rate of 6.93 per 1,000, and November 2019 had a rate of 15.07 per 1,000 – indicating that the November monthly rate quintupled between 2017-2022 and more than doubled between 2019-2022. These trends were present in linear extrapolation of the pre-pandemic trends and seasonality adjustments (**Supplement C**).

For the LCS trends by sociodemographic characteristics from 2019–2022, a description of the analytical sample is given in **Table 2**. The total number of 55-75 year old Medicaid

enrollees who were potentially LCS-eligible varied by year (i.e., 54,192 in 2019 and 59,943 in 2022), explained by the Medicaid population continuous enrollment provisions.⁸ The proportion of females remained consistent at 49%, and there were no significant changes in the distribution of race-ethnicity or geographic region. The proportion in the older age group (65-75) changed from 25% to 31%, and Medicaid dual eligibility status changed from 41% to 44%. Enrollees were distributed consistently across the five geographic regions, with the fewest in the exurban group.

The LCS trends by sociodemographic characteristics from 2019–2022 are shown in **Table 3**. The bivariate analysis found that all within-groups, except sex, were statistically different at $p < 0.05$. Overall, we found that the annual screening rate was 26.4 per 1,000 potentially LCS-eligible enrollees in 2019 and 72.7 per 1,000 in 2022. Differences between age groups narrowed slightly: enrollees aged 55–64 had higher rates than those aged 65–75 in both 2019 and 2022 (75.0 vs. 67.6 per 1,000), but the absolute difference reduced from 9.4 to 7.4 per 1,000. In contrast, differences by sex were larger in 2022 than in 2019, with the female-male difference growing from 2.3 per 1,000 in 2019 to 9.8 per 1,000 in 2022, although rates did not differ significantly by sex overall ($p = 0.655$). Enrollees with Medicaid dual eligibility status went from 17.0 per 1,000 in 2019 to 68.5 per 1,000 in 2022.

Racial and ethnic differences were larger in 2022 than in 2019 relative to non-Hispanic White enrollees. In 2019, the LCS rate was 34.0 per 1,000 potentially LCS-eligible non-Hispanic White enrollees, compared with 18.4 among Hispanic enrollees and 16.0 among non-Hispanic Black enrollees, corresponding to absolute differences of 15.6 and 18.0 per 1,000, respectively. By 2022, the rate among non-Hispanic White enrollees had risen to 90.5 per 1,000, compared with 54.9 among Hispanic enrollees and 52.9 among non-Hispanic Black enrollees, widening these differences to 35.6 and 37.6 per 1,000, respectively. Rates among non-Hispanic Asian enrollees remained similar to those among non-Hispanic White enrollees over time. In sum, rates were higher in 2022 than in 2019 across all racial-ethnic groups, while differences relative

to non-Hispanic White enrollees were larger in 2022 for Hispanic and non-Hispanic Black enrollees. Non-Hispanic Black enrollees had a 230.8% relative change from 2019 to 2022 but remained the group with the lowest screening rate in 2022.

Geographic differences were also larger in 2022 than in 2019: the gap between the highest- and lowest-rate regions was from 17.3 per 1,000 potentially LCS-eligible in 2019, when rates ranged from 21.6 in urban areas to 38.9 in exurban areas compared with 33.0 per 1,000 in 2022, when rates ranged from 56.6 in urban areas to 89.6 in exurban areas. Thus, although screening rates were higher in 2022 than in 2019 across all groups, age-related differences were modestly smaller, whereas racial-ethnic and geographic differences were similar or larger.

4. Discussion

Our study was novel, as it focuses on LCS rates among the Medicaid population, disaggregates findings by demographic and geographic variables, and spans several years beyond the peak pandemic year – offering insights into the recovery of LCS among a patient population highly impacted by the pandemic. This study confirms that the pandemic's impact on LCS among older adults is clear and consistent with prior literature focused on the general population. Similar to the other studies, our analysis revealed a dramatic utilization drop-off in 2020, followed by a gradual rebound in subsequent months, with the rebound rate varying by demographic group and geographic variables.^{11–13} Interestingly, our findings also differ from the literature. While Henderson et al. reported a return to pre-COVID-19 levels,¹³ others noted that LCS levels have not yet fully returned to pre-pandemic levels.^{11,26,27} Our study population experienced a more pronounced recovery, with LCS surpassing pre-pandemic levels by August 2020.

For demographic differences, we found distinctions from the literature. Romatoski et al. reported similar results to ours regarding age, noting that the older population had lower LCS rates.²⁸ This trend may be attributable to the increased difficulty older individuals faced in

scheduling and traveling to medical appointments during the pandemic or concerns about potential COVID-19 exposure in healthcare settings.¹² For racial-ethnic minority groups, some studies found that the Hispanic population had the lowest LCS rates.^{28,29} In our study, the Hispanic and non-Hispanic Black populations were among the two lowest rates. This could be potentially due to accessibility and language barriers for learning about lung cancer prevention and subsequently getting screened. For geographic differences, one study saw that rural populations had lower LCS rates during the pandemic.²⁹ In our analysis, urban areas were observed to have the lowest screening rates, though New Jersey notably lacks designated rural areas. For sex differences, Romatoski et al. reported that older females had lower LCS rates, whereas Poghosyan et al. found that men exhibited increased screening rates post-pandemic. We observed higher LCS rates among women, although this was not statistically significant. This finding aligns with recent trends indicating a rising incidence of lung cancer among women, potentially influenced by increased alcohol consumption and slower smoking cessation.³⁰ Another possible explanation is growing evidence that women may derive a greater lung cancer mortality benefit from low-dose CT screening than men, which could influence referral practices among primary care clinicians.³¹

There are several possible explanations for the striking trajectory of screening rates in this study. First, our longitudinal trends reveal that, historically, LCS utilization was low even pre-pandemic; there was opportunity to grow. Second, there may have been low public awareness of LCS pre-pandemic, in part due to its complex eligibility criteria.² The pandemic increased public awareness of lung health, which may have contributed to higher screening rates. For example, news outlets like the New York Times published articles such as, “Now is the time to take care of your lungs. Here’s how.”³² Third, the 2021 guideline change increased the LCS eligibility population, including lowering the pack-year threshold from 30 to 20. Finally, there is growing support for LCS evidenced by an increasing number of research endeavors studying post-COVID-19 lung health.

Several factors may have been particularly relevant to Medicaid enrollees. Continuous Medicaid enrollment provisions during the pandemic may have helped maintain insurance coverage and access to preventive services, while enrollment growth may have included newly enrolled individuals completing delayed or previously inaccessible screening. In addition, New Jersey's targeted efforts to expand LCS through local cancer screening initiatives may have increased screening awareness, referrals, and utilization among healthcare systems serving Medicaid populations. Notably, New Jersey's ScreenNJ initiative, launched in 2017 through the New Jersey Department of Health and coordinated by the Rutgers Cancer Institute, included targeted efforts to increase routine LCS in 2017-2019.^{33,34}

4.1. Limitations

The study has limitations. First, while screening rates are estimated in this study, the true statewide Medicaid screening rates and guideline adherence cannot be determined from the data. Nonetheless, the rates reported in this study follow best practices¹⁹ and are still useful as they estimate the magnitude and variation of change. Second, our study did not use the full age range for recommended LCS, as our dataset was limited to 55-75. Third, it is not possible to assess whether a screened enrollee met the LCS eligibility criteria. Fourth, as Medicaid enrollment increased during the study period, it is possible that rising rates in the rebound years reflect newly eligible enrollees catching up on care. Finally, although low-dose CT is highly specific to screening, claims data may still be affected by incomplete coding and provider billing practices.³⁵ Efforts were made to include a comprehensive list of claims codes consistent with prior work and literature.¹⁰ This study also has several strengths. It uses multiple years of state Medicaid claims data to characterize LCS patterns in an understudied population. The analysis also examines differences by demographic and geographic variables, allowing for more detailed assessments of screening variations.

5. Conclusion

This study demonstrates success in one state to regain pre-pandemic progress, even surpassing previous LCS rates for its Medicaid enrollees. There remains work to be done, however, as LCS is still underutilized compared to screenings for other preventable cancers. Government, health systems, and healthcare organizations can capitalize on the recent increased interest in lung health to encourage the use of evidence-based LCS to reduce cancer mortality. Moving forward, to more accurately understand screening rates, future approaches may benefit from employing strategies to fully capture smoking history and status necessary to identify LCS-eligible patients, and from artificial intelligence tools to link and assess screening eligibility in unstructured electronic medical records. Altogether, there are many opportunities – in practice and in research – to reduce care gaps for Medicaid enrollees and to ensure equitable access to LCS for all.

Author CRediT

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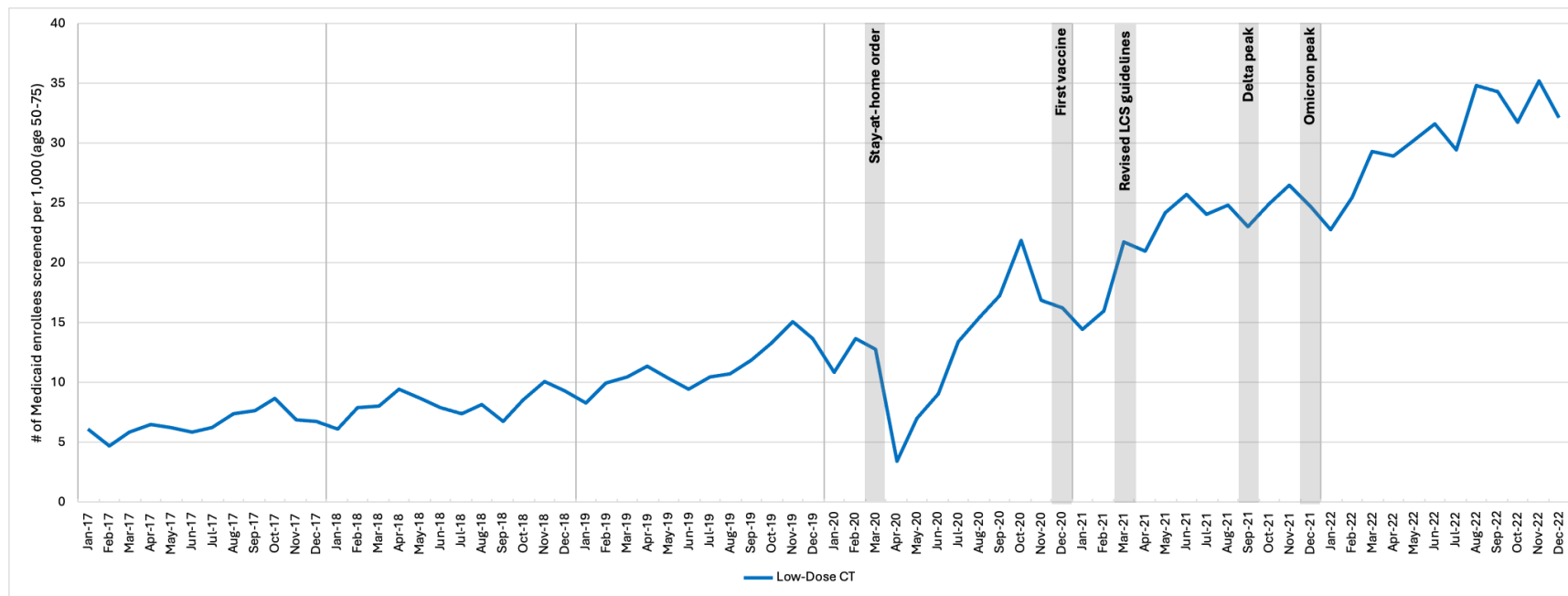
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References

1. Lung Cancer Screening. Accessed March 24, 2025.
https://progressreport.cancer.gov/detection/lung_cancer
2. Meister M. Confusion around lung cancer screening contributes to low screening rates. Prevent Cancer Foundation. November 1, 2023. Accessed May 21, 2025.
<https://preventcancer.org/news/confusion-around-lung-cancer-screening-contributes-to-low-screening-rates/>
3. Dhada S, Stewart D, Cheema E, Hadi MA, Paudyal V. Cancer Services During the COVID-19 Pandemic: Systematic Review of Patient's and Caregiver's Experiences. *Cancer Manag Res.* 2021;13:5875-5887. doi:10.2147/CMAR.S318115
4. Savva A, Christodoulou P, Michaeloudes C, Farazi PA. Impact of the COVID-19 Pandemic on Lung Cancer Screening and Diagnosis: A Systematic Review. *Cancers (Basel).* 2026;18(14):2238. doi:10.3390/cancers18142238
5. Centers for Disease Control and Prevention. U.S. Cancer Statistics: Cancer Statistics At a Glance, Leading Cancer Cases and Deaths, All Races and Ethnicities, Male and Female, 2019. Accessed February 23, 2023. <https://gis.cdc.gov/grasp/USCS/DataViz.html>
6. American Lung Association. *State of Lung Cancer 2024*. American Lung Association; 2024. <https://www.lung.org/getmedia/12020193-7fb3-46b8-8d78-0e5d9cd8f93c/SOLC-2024.pdf>
7. Centers for Disease Control and Prevention. 2022 BRFSS Survey Data and Documentation. December 2, 2023. Accessed August 6, 2026.
https://www.cdc.gov/brfss/annual_data/annual_2022.html
8. Khorrami P, Sommers BD. Changes in US Medicaid Enrollment During the COVID-19 Pandemic. *JAMA Network Open.* 2021;4(5):e219463.
doi:10.1001/jamanetworkopen.2021.9463
9. Lung Cancer Statistics | How Common is Lung Cancer? Accessed May 7, 2025.
<https://www.cancer.org/cancer/types/lung-cancer/about/key-statistics.html>
10. Tsui J, Michael M, Koller M, et al. Trends in Cancer Screening among Medicaid Enrollees in New Jersey: 2011–2017. Published online May 2021. Accessed February 17, 2022.
<http://www.cshp.rutgers.edu/Downloads/12040.pdf>
11. Lang M, Yeung T, Shepard JAO, et al. Operational Challenges of a Low-Dose CT Lung Cancer Screening Program During the Coronavirus Disease 2019 Pandemic. *CHEST.* 2021;159(3):1288-1291. doi:10.1016/j.chest.2020.10.045
12. Patt D, Gordan L, Diaz M, et al. Impact of COVID-19 on Cancer Care: How the Pandemic Is Delaying Cancer Diagnosis and Treatment for American Seniors. *JCO Clin Cancer Inform.* 2020;(4):1059-1071. doi:10.1200/CCI.20.00134
13. Henderson LM, Benefield T, Bosemani T, Long JM, Rivera MP. Impact of the COVID-19 Pandemic on Volumes and Disparities in Lung Cancer Screening. *Chest.* 2021;160(1):379-382. doi:10.1016/j.chest.2020.12.033

14. Corallo B, Moreno S. Analysis of National Trends in Medicaid and CHIP Enrollment During the COVID-19 Pandemic | KFF. Kaiser Family Foundation. April 4, 2023. Accessed August 6, 2026. <https://www.kff.org/covid-19/analysis-of-recent-national-trends-in-medicaid-and-chip-enrollment/>
15. Triplette M, Donovan LM, Crothers K, Madtes DK, Au DH. Prediction of Lung Cancer Screening Eligibility Using Simplified Criteria. *Annals ATS*. 2019;16(10):1280-1285. doi:10.1513/AnnalsATS.201903-239OC
16. Wiley LK, Shah A, Xu H, Bush WS. ICD-9 tobacco use codes are effective identifiers of smoking status. *J Am Med Inform Assoc*. 2013;20(4):652-658. doi:10.1136/amiajnl-2012-001557
17. Moyer VA, U.S. Preventive Services Task Force. Screening for lung cancer: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med*. 2014;160(5):330-338. doi:10.7326/M13-2771
18. US Preventive Services Task Force, Davidson KW, Barry MJ, et al. Screening for Colorectal Cancer: US Preventive Services Task Force Recommendation Statement. *JAMA*. 2021;325(19):1965. doi:10.1001/jama.2021.6238
19. Desai RJ, Solomon DH, Shadick N, Iannaccone C, Kim SC. Identification of smoking using Medicare data — a validation study of claims-based algorithms. *Pharmacoepidemiology and Drug Safety*. 2016;25(4):472-475. doi:10.1002/pds.3953
20. Nguyen AM, Corredor-Waldron A, Liu FY, et al. Breast, Cervical, and Colorectal Cancer Screening Among New Jersey Medicaid Enrollees: 2017-2022. *JCO Clin Cancer Inform*. 2025;(9):e2500055. doi:10.1200/CCI-25-00055
21. Koning A. New Jerseyans' Ratings of Where They Live and Neighborhood Safety Are Positive Overall, but Sharply Divided by Race, Ethnicity and Other Demographics. Rutgers Eagleton Institute of Politics. February 6, 2024. Accessed August 19, 2024. <https://eagletonpoll.rutgers.edu/wp-content/uploads/2024/02/Rutgers-Eagleton-Poll-Crime-and-Safety-02.06.24-FINAL-PUBLIC-PDF.pdf>
22. The State of New Jersey. New Jersey COVID-19 Data Dashboard. New Jersey COVID-19 Information Hub. 2024. Accessed August 10, 2024. <https://covid19.nj.gov/forms/datadashboard>
23. U.S. Census Bureau. *X-13ARIMA-SEATS Reference Manual Version 1.1*. Center for Statistical Research and Methodology; 2017:297. <https://www2.census.gov/software/x-13arima-seats/x-13-data/documentation/docx13as.pdf>
24. SAS Institute. SAS. Published online 2024.
25. StataCorp LP. Stata Statistical Software: Release 18. Published online 2023. <https://www.stata.com/stata-news/news38-2/>
26. Burus T, Lei F, Huang B, et al. COVID-19 and Rates of Cancer Diagnosis in the US. *JAMA Netw Open*. 2024;7(9):e2432288. doi:10.1001/jamanetworkopen.2024.32288

27. Doan C, Li S, Goodwin JS. Breast and Lung Cancer Screening Among Medicare Enrollees During the COVID-19 Pandemic. *JAMA Netw Open*. 2023;6(2):e2255589. doi:10.1001/jamanetworkopen.2022.55589
28. Romatoski KS, Chung SH, Kenzik K, et al. Delay and Disparity in Observed vs Predicted Incidence Rate of Screenable Cancer During the COVID-19 Pandemic. *J Am Coll Surg*. 2023;237(3):420-430. doi:10.1097/XCS.0000000000000772
29. Poghosyan H, Sarkar S, Richman I, Pietrzak RH, Carter-Bawa L, Cooley ME. A Brief Report of Lung Cancer Screening Utilization Before, During, and in the Later Stages of the COVID-19 Pandemic in the United States. *JTO Clinical and Research Reports*. 2024;5(9). doi:10.1016/j.jtocrr.2024.100705
30. Abbott B. Younger Women Are Now More At-Risk for Cancer Than Men. *WSJ*. January 16, 2025. Accessed March 24, 2025. <https://www.wsj.com/health/healthcare/younger-women-are-now-more-at-risk-for-cancer-than-men-0092e6cf>
31. Silvestri GA, Ward RC, Scott RJ, Katki H, Landy R, Young RP. Why Women Appear to Have Better Outcomes When Undergoing Screening for Lung Cancer. *Ann Am Thorac Soc*. 2025;22(6):925-933. doi:10.1513/AnnalsATS.202408-863OC
32. Schlanger Z. Now Is the Time to Take Care of Your Lungs. Here's How. *The New York Times*. March 27, 2020. Accessed March 24, 2025. <https://www.nytimes.com/2020/03/27/climate/climate-pollution-coronavirus-lungs.html>
33. Steinberg MB, Young WJ, Miller Lo EJ, et al. Electronic Health Record Prompt to Improve Lung Cancer Screening in Primary Care. *Am J Prev Med*. 2023;65(5):892-895. doi:10.1016/j.amepre.2023.05.016
34. Kota KJ, Ji S, Bover-Manderski MT, Delnevo CD, Steinberg MB. Lung Cancer Screening Knowledge and Perceived Barriers Among Physicians in the United States. *JTO Clin Res Rep*. 2022;3(7):100331. doi:10.1016/j.jtocrr.2022.100331
35. Freeman JL, Klabunde CN, Schussler N, Warren JL, Virnig BA, Cooper GS. Measuring Breast, Colorectal, and Prostate Cancer Screening With Medicare Claims Data. *Medical Care*. 2002;40(8):IV.

Figure 1. Rate of Medicaid enrollees screened for lung cancer per 1,000 enrollees (age 55-75) in New Jersey, 2017-2022

Note. Only New Jersey Medicaid enrollees who are ages 55-75 are included. Lung cancer screenings (LCS) were identified by claim codes corresponding with low-dose computed tomography (low-dose CT). Rate is calculated as the unique number of New Jersey Medicaid enrollees divided by the total number of enrollees in the month who meet the inclusion and exclusion criteria, multiplied by 1,000.

Table 1. U.S. Preventive Services Task Force guidelines for lung cancer screening

Year	Age	Smoking History	Smoking Status
December 31, 2013 – March 8, 2021	Adults aged 55-80	30 pack-year smoking history	Currently smoke or have quit within the past 15 years
March 9, 2021 – present	Adults aged 50-80	20 pack-year smoking history	

Source. U.S Preventive Services Task Force^{17,18}

Table 2. Description of the 2019-2022 analytical sample, comprised of New Jersey Medicaid enrollees who were potentially eligible for lung cancer screening by enrollee demographics and geographic region

	2019 N (%)	2020 N (%)	2021 N (%)	2022 N (%)
Total	54,192 (100.0)	49,284 (100.0)	56,204 (100.0)	59,943 (100.0)
Sex				
Female	26,715 (49.3)	24,017 (48.7)	27,685 (49.3)	29,430 (49.1)
Male	27,477 (50.7)	25,267 (51.3)	28,519 (50.7)	30,513 (50.9)
Age Group				
55-64	40,460 (74.7)	36,293 (73.6)	40,496 (72.1)	41,634 (69.5)
65-75	13,732 (25.3)	12,991 (26.4)	15,708 (27.9)	18,309 (30.5)
Race-Ethnicity				
Hispanic	6,781 (12.5)	6,134 (12.4)	7,368 (13.1)	7,947 (13.3)
Non-Hispanic White	23,701 (43.7)	21,968 (44.6)	25,039 (44.6)	26,964 (45.0)
Non-Hispanic Black	16,751 (30.9)	15,236 (30.9)	17,096 (30.4)	17,834 (29.8)
Non-Hispanic Asian	1,039 (1.9)	921 (1.9)	1,155 (2.1)	1,274 (2.1)
Other	5,920 (10.9)	5,025 (10.2)	5,546 (9.9)	5,924 (9.9)
Medicaid Dual Eligibility				
Dual Eligibility Status	21,970 (40.5)	20,350 (41.3)	23,878 (42.5)	26,589 (44.4)
Geographic Region				
Urban	12,517 (23.1)	11,053 (22.4)	12,526 (22.3)	13,032 (21.7)
Suburban	15,542 (28.7)	13,742 (27.9)	15,708 (27.9)	16,947 (28.3)
Exurban	4,214 (7.8)	4,007 (8.1)	4,719 (8.4)	5,031 (8.4)
South / Philadelphia	12,785 (23.6)	11,892 (24.1)	13,377 (23.8)	14,118 (23.6)
Shore	9,133 (16.9)	8,589 (17.4)	9,872 (17.6)	10,815 (18.0)

Note. Only New Jersey Medicaid enrollees, ages 55-75 are included. Regions are defined as: Urban (Essex, Hudson County); Suburban (Bergen, Mercer, Middlesex, Passaic, Union); Exurban (Hunterdon, Morris, Somerset, Sussex, Warren); South/Philadelphia (Burlington, Camden, Cape May, Cumberland, Gloucester, Salem); Shore (Atlantic, Monmouth, Ocean).

Table 3. Trends in lung cancer screening among New Jersey Medicaid enrollees, 2019-2022, by demographics and geographic region

	2019		2020		2021		2022		% rate change from 2019 to 2020	% rate change from 2020 to 2021	% rate change from 2021 to 2022	% rate change from 2019 to 2022
	# of potentially LCS-eligible enrollees screened	Rate of enrollees screened per 1,000	# of potentially LCS-eligible enrollees screened	Rate of enrollees screened per 1,000	# of potentially LCS-eligible enrollees screened	Rate of enrollees screened per 1,000	# of potentially LCS-eligible enrollees screened	Rate of enrollees screened per 1,000				
Total	1,431	26.4	1,566	31.8	3,087	54.9	4,359	72.7	20.3	72.9	32.4	175.4
Sex												
Female	737	27.6	827	34.4	1,650	59.6	2,287	77.7	24.8	73.1	30.4	181.7
Male	694	25.3	739	29.2	1,437	50.4	2,072	67.9	15.8	72.3	34.8	168.9
Age Group*												
55-64	1,165	28.8	1,187	32.7	2,233	55.1	3,122	75.0	13.6	68.6	36.0	160.4
65-75	266	19.4	379	29.2	854	54.4	1,237	67.6	50.6	86.4	24.3	248.8
Race-Ethnicity*												
Hispanic	125	18.4	143	23.3	271	36.8	436	54.9	26.5	57.8	49.2	197.6
Non-Hispanic White	807	34.0	885	40.3	1,726	68.9	2,440	90.5	18.3	71.1	31.3	165.8
Non-Hispanic Black	268	16.0	325	21.3	668	39.1	944	52.9	33.3	83.2	35.5	230.8
Non-Hispanic Asian	36	34.6	33	35.8	96	83.1	116	91.1	3.4	132.0	9.5	162.8
Other	195	32.9	180	35.8	326	58.8	423	71.4	8.7	64.1	21.5	116.8
Medicaid Dual Eligibility*												
Dual Eligibility Status	373	17.0	606	29.8	1,297	54.3	1,822	68.5	75.4	82.4	26.2	303.6
Geographic Region*												
Urban	270	21.6	277	25.1	549	43.8	738	56.6	16.2	74.9	29.2	162.5
Suburban	376	24.2	373	27.1	718	45.7	1,057	62.4	12.2	68.4	36.5	157.8
Exurban	164	38.9	168	41.9	356	75.4	451	89.6	7.7	79.9	18.8	130.3
South / Philadelphia	388	30.3	482	40.5	841	62.9	1,175	83.2	33.6	55.1	32.4	174.2
Shore	233	25.5	266	31.0	623	63.1	938	86.7	21.4	103.8	37.4	240.0

Note. Only New Jersey Medicaid enrollees, ages 55-75 are included. Lung cancer screenings were identified by claim codes corresponding with low-dose computed tomography. Regions are defined as: Urban (Essex, Hudson County); Suburban (Bergen, Mercer, Middlesex, Passaic, Union); Exurban (Hunterdon, Morris, Somerset, Sussex, Warren); South/Philadelphia (Burlington, Camden, Cape May, Cumberland, Gloucester, Salem); Shore (Atlantic, Monmouth, Ocean). * refers to $p < 0.01$ for a Pearson chi-squared test of within-group differences.

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Highlights

- One of the first post-COVID-19 reports of lung cancer screening among state Medicaid
- Lung cancer screening nearly doubled 2019-2022 among New Jersey Medicaid older adults
- Screening disparities persisted throughout the pandemic
- Largest gains were in dual-eligible (Medicare and Medicaid) and Black enrollees
- Demonstrates a claims-based method to assess screening disparities