


Lung Cancer Screening

Mary Reid, MSPH, PhD


Chief of Cancer Screening and Survivorship
Roswell Park Comprehensive Cancer Center

New Cancers and Cancer Deaths

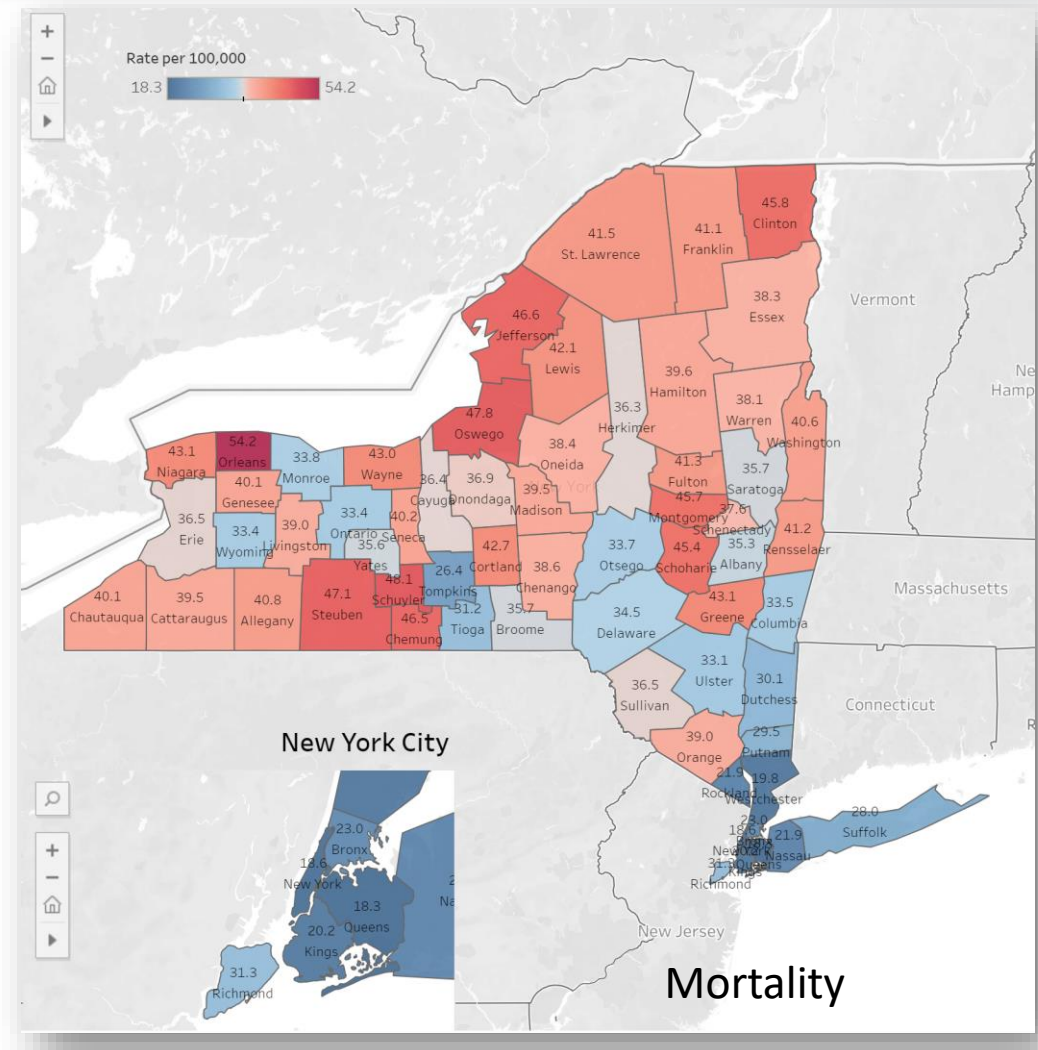
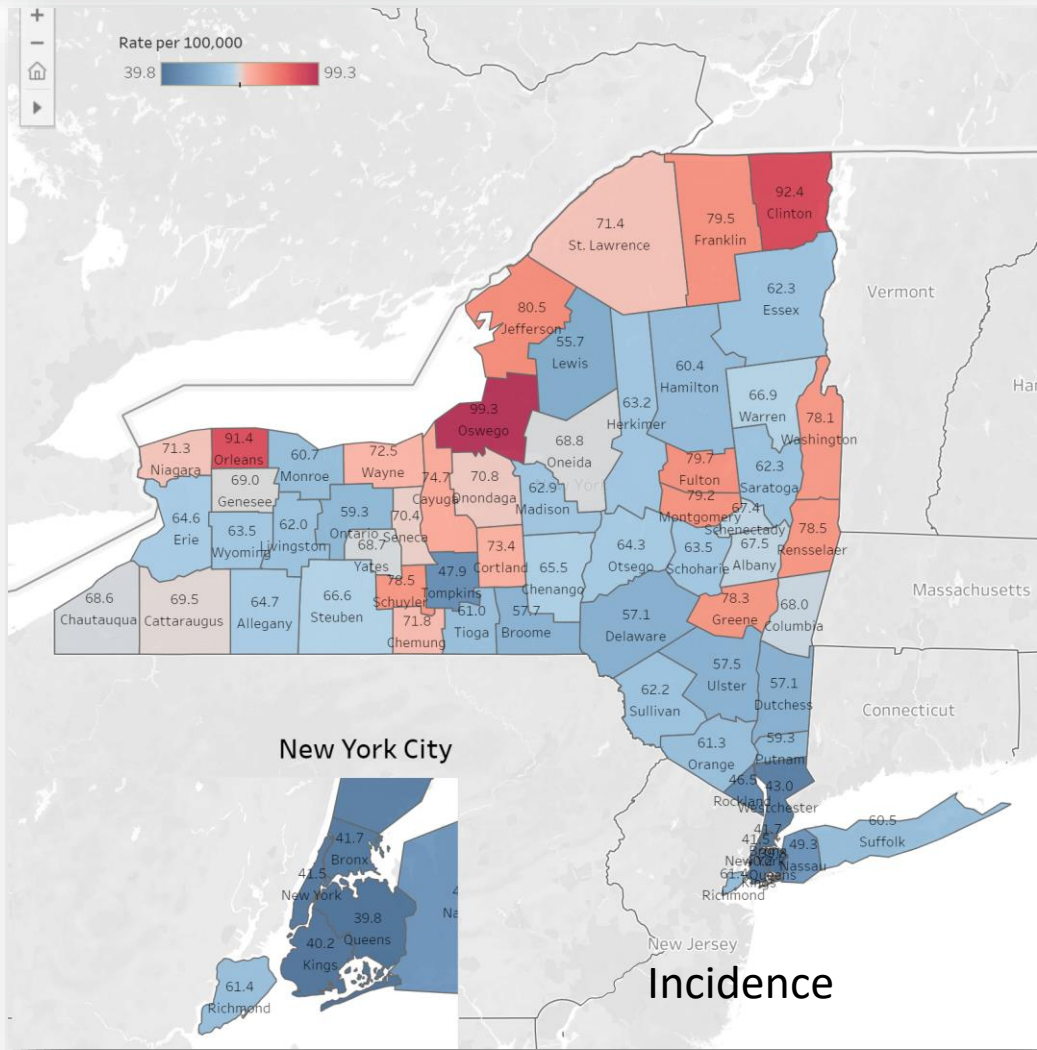
Estimated New Cases

		Males		Females		
Prostate	288,300	29%		Breast	297,790	31%
Lung & bronchus	117,550	12%		Lung & bronchus	120,790	13%
Colon & rectum	81,860	8%		Colon & rectum	71,160	8%
Urinary bladder	62,420	6%		Uterine corpus	66,200	7%
Melanoma of the skin	58,120	6%		Melanoma of the skin	39,490	4%
Kidney & renal pelvis	52,360	5%		Non-Hodgkin lymphoma	35,670	4%
Non-Hodgkin lymphoma	44,880	4%		Thyroid	31,180	3%
Oral cavity & pharynx	39,290	4%		Pancreas	30,920	3%
Leukemia	35,670	4%		Kidney & renal pelvis	29,440	3%
Pancreas	33,130	3%		Leukemia	23,940	3%
All Sites	1,010,310	100%		All Sites	948,000	100%

Estimated Deaths

		Males		Females		
Lung & bronchus	67,160	21%		Lung & bronchus	59,910	21%
Prostate	34,700	11%		Breast	43,170	15%
Colon & rectum	28,470	9%		Colon & rectum	24,080	8%
Pancreas	26,620	8%		Pancreas	23,930	8%
Liver & intrahepatic bile duct	19,000	6%		Ovary	13,270	5%
Leukemia	13,900	4%		Uterine corpus	13,030	5%
Esophagus	12,920	4%		Liver & intrahepatic bile duct	10,380	4%
Urinary bladder	12,160	4%		Leukemia	9,810	3%
Non-Hodgkin lymphoma	11,780	4%		Non-Hodgkin lymphoma	8,400	3%
Brain & other nervous system	11,020	3%		Brain & other nervous system	7,970	3%
All Sites	322,080	100%		All Sites	287,740	100%

Incidence and Mortality



Who Gets Lung Cancer?

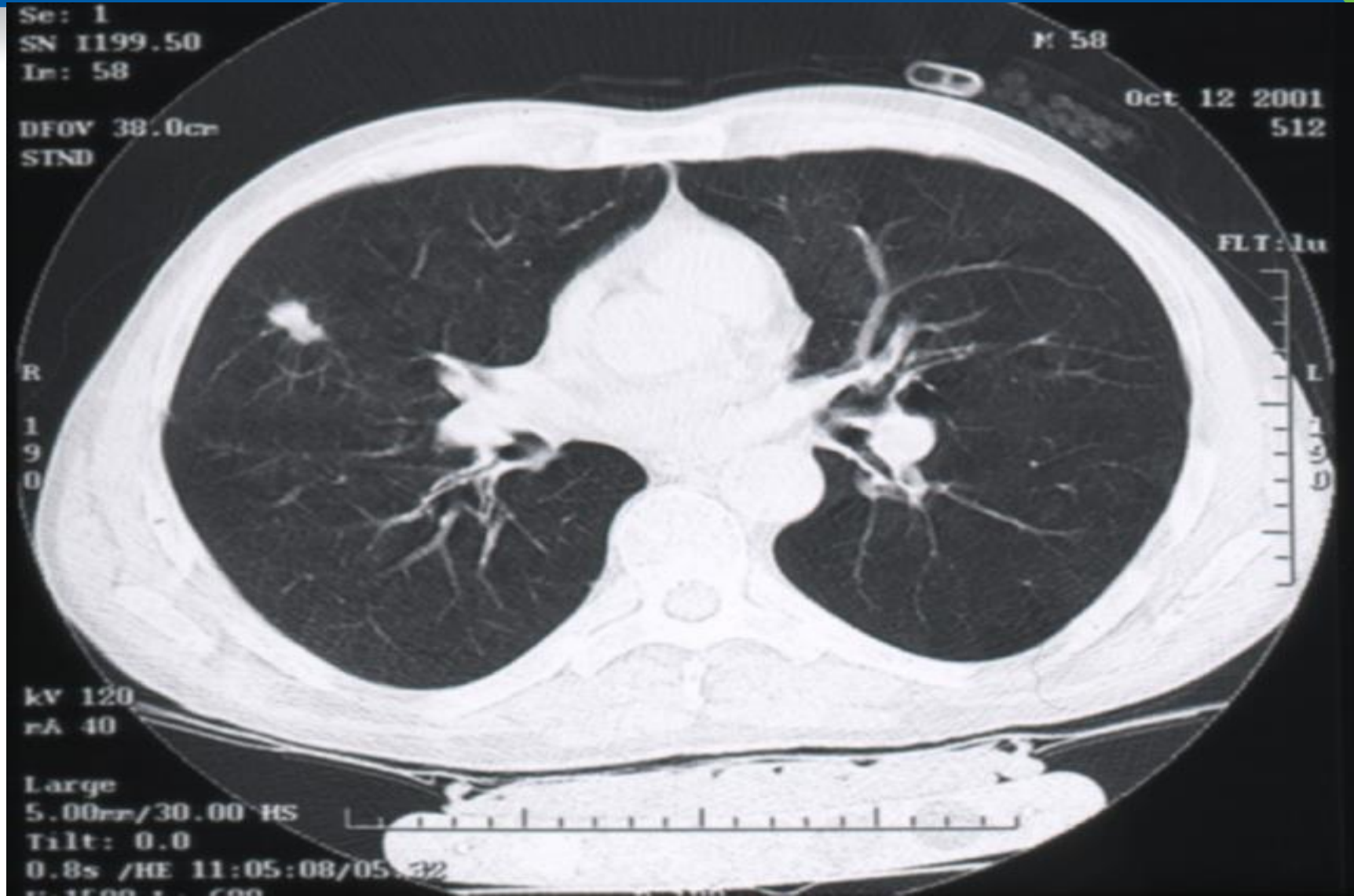
- Smokers (80% of lung cancers)
- 1 in 9 smokers gets lung cancer
- 50% of cases are now in former smokers
- Incidence in non-smokers is increasing (age <50, women)

The Results from the National Lung Cancer Screening Trial (NLST)

NLST Study Design

- Randomized clinical trial
- A total of 53,454 men and women were recruited.
- Ages 55 – 74
- A cigarette history of at least 30 packyears
- Quit within 15 years
- Randomized to either the Low Dose CT or Chest X-ray groups

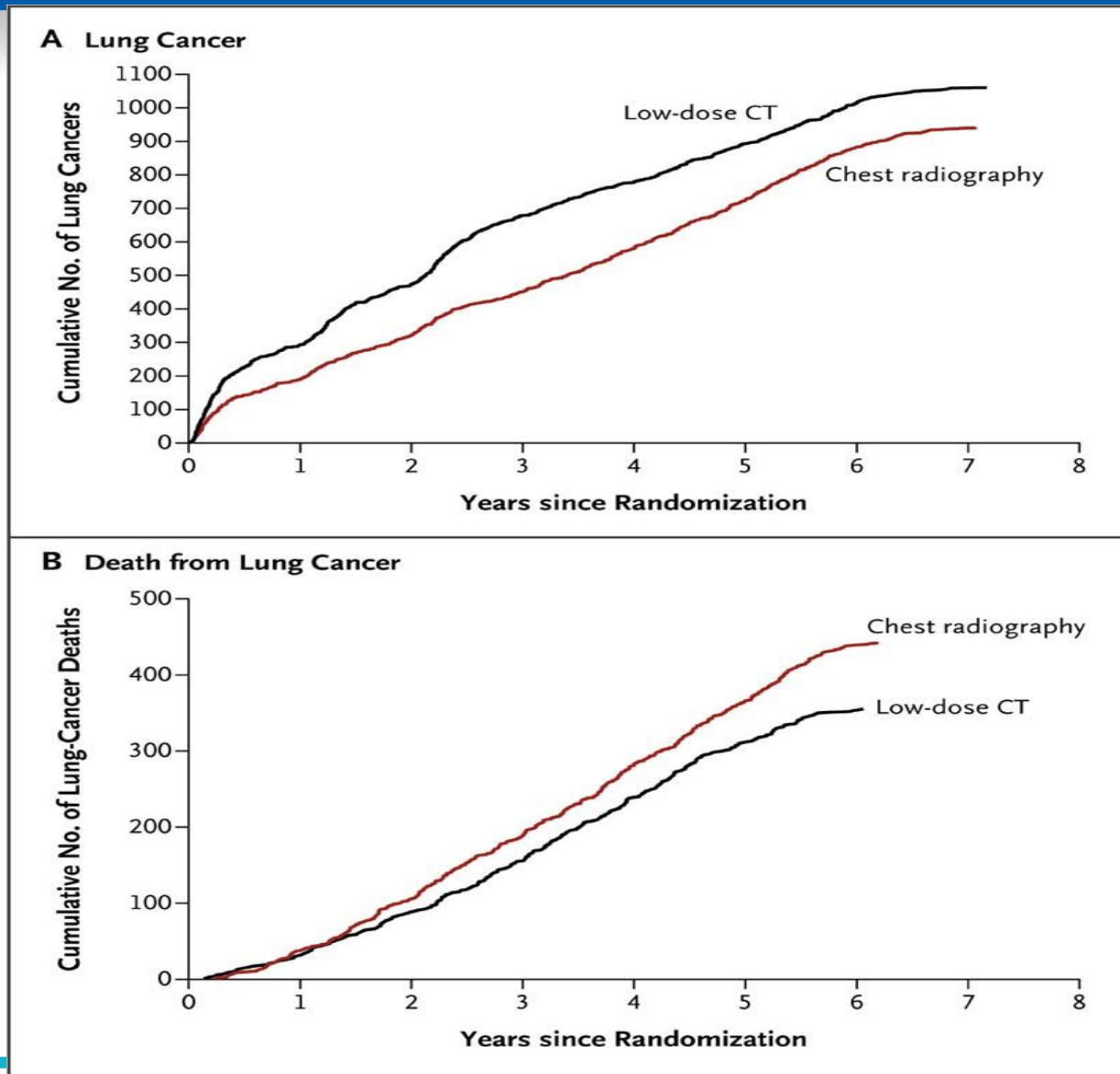
Low Dose CT with Lung Cancer



Chest X-ray with Lung Cancer



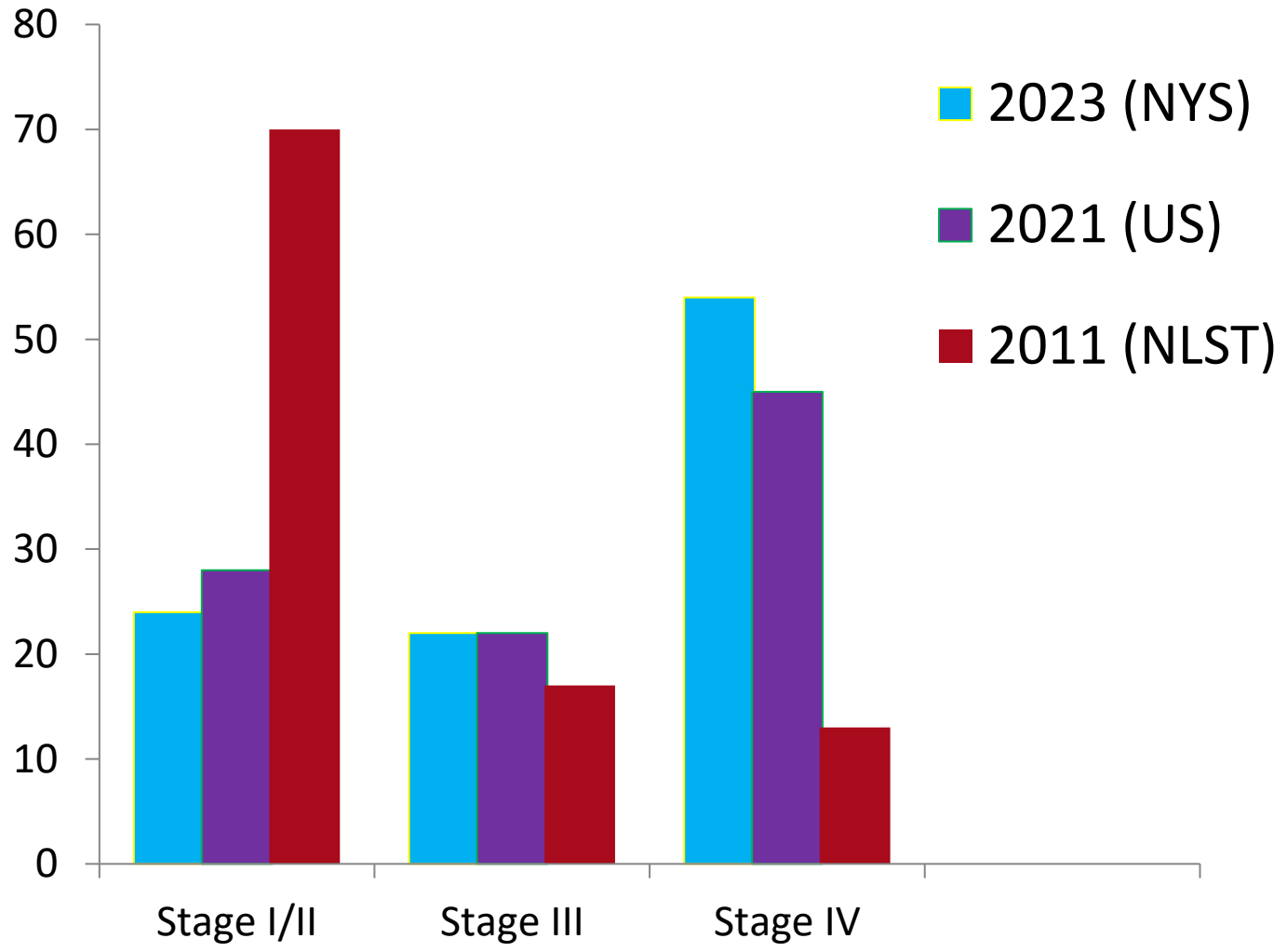
Cumulative Lung Cancers Detected and Deaths from Lung Cancer in NLST



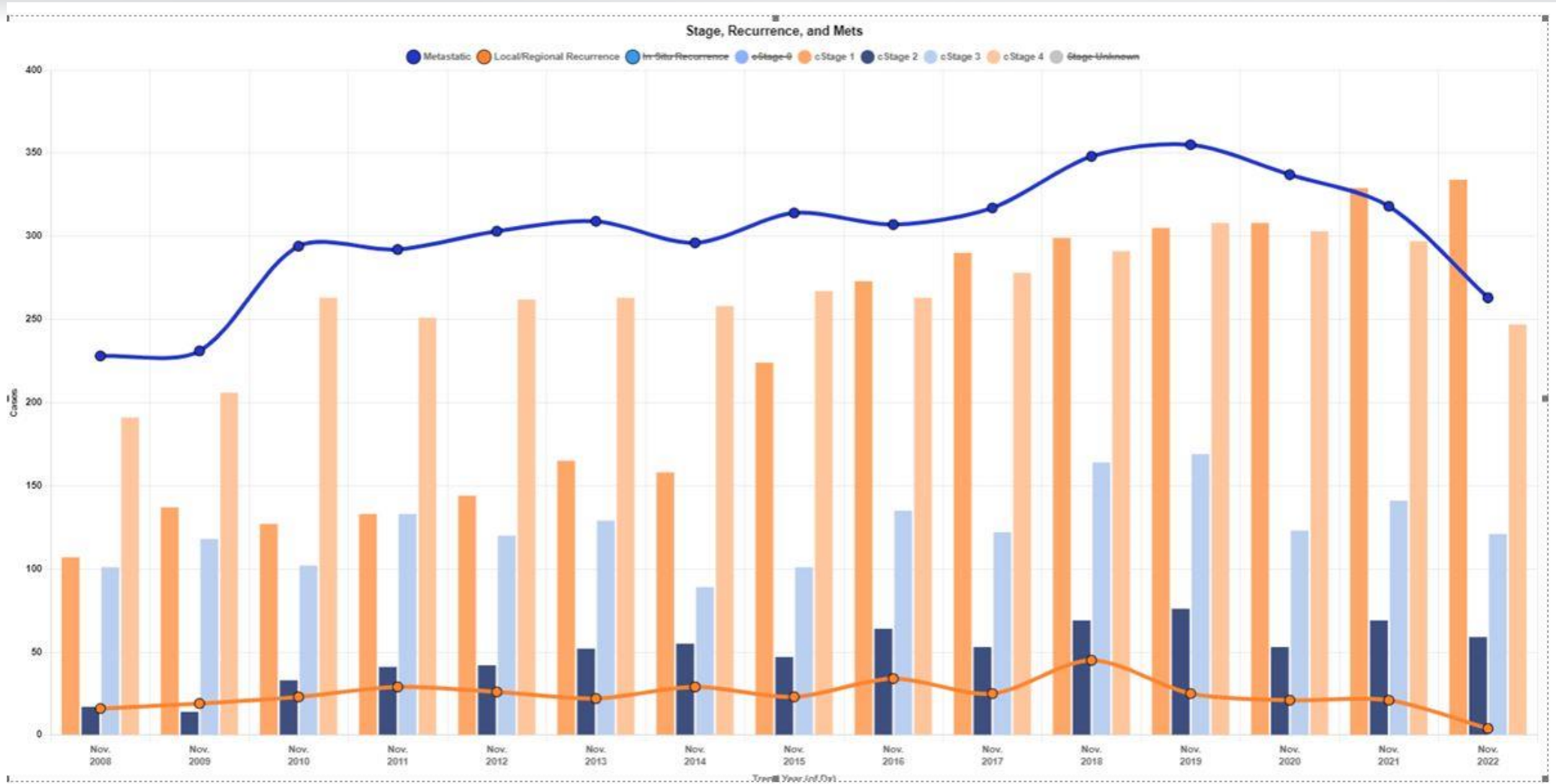
LDCT resulted in 649 cancers (3.6% of the positive screens)

CXR resulted in 279 cancers (5.5% of the positive screens)

The Shift in Stage with Screening



Lung Cancer Diagnoses at Roswell



Stage 1 Dx:
 2008 = 21%
 2022 = 38%

Stage 1+2 Dx:
 2022 = 45%

**Local Regional
 Recurrence is
 decreasing**

Advantages of LDCT Screening

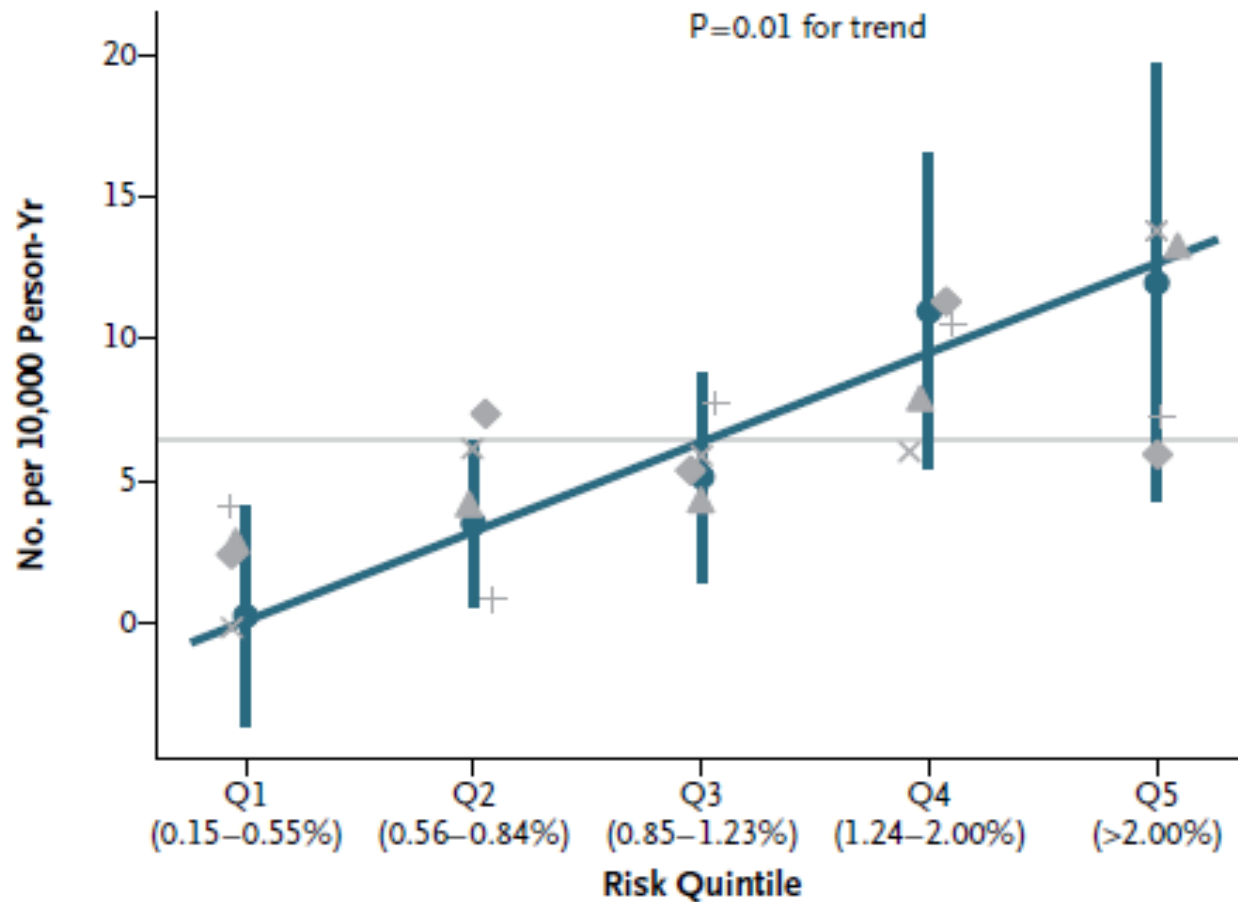
- Low Dose CT is effective at finding early disease (70% of cancers found early) and improving survival
- An early lung cure is less expensive than treating advanced cancers (5-10 times)
- Detects cardiac plaques, abdominal aneurysms, asbestosis, lung disease, other cancers (breast, kidney, lymphoma)

Eligible for Lung Cancer Screening

- 50-79 years old
- ≥ 20 pack years
(1 pack per day for 20 years)
- Quit smoking within 15 years
(No required by NCCN)

Efficacy of Low-Dose CT Screening, According to Risk Quintile

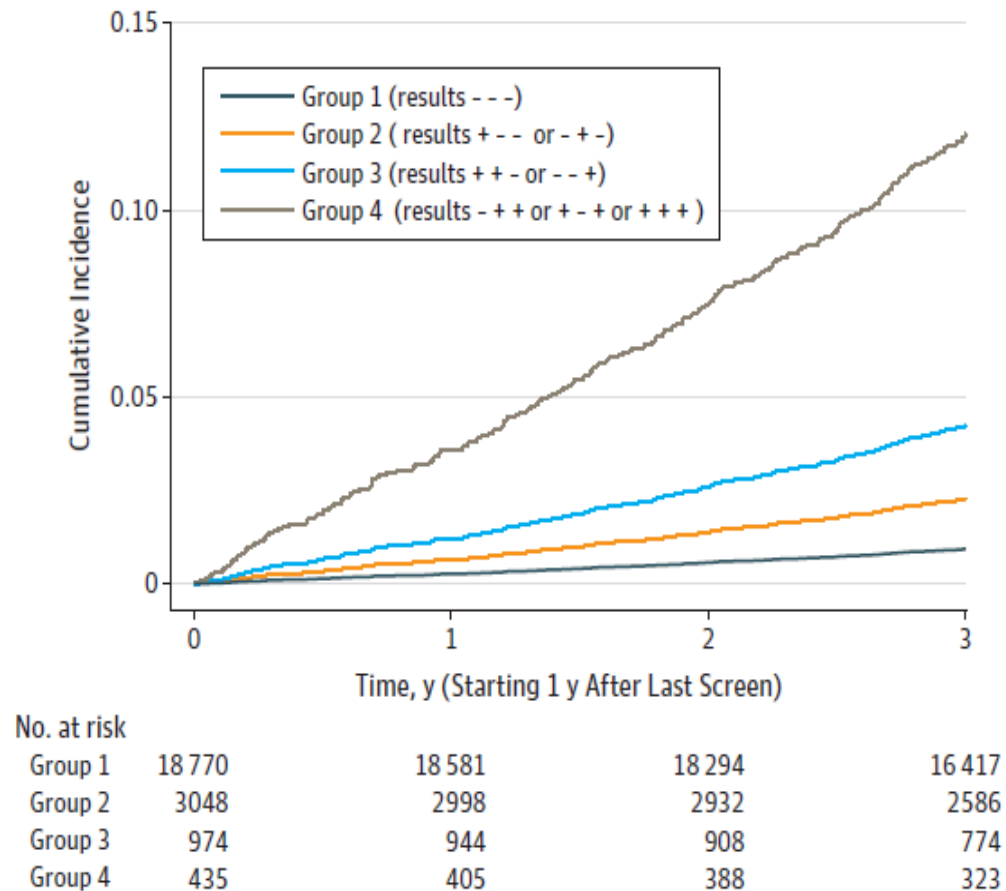
B Lung-Canc Deaths Prevented by Low-Dose CT



- Age
- Pack-years
- Years since quit
- COPD
- FDR with lung cancer
- Body mass index
- **Q5: 161 LDCT to save a life versus**
- **Q1: 5200 LDCT to save a life**

Validation of Risk Model Including LDCT Results

Figure 2. Cumulative Incidence of Lung Cancer in the National Lung Screening Trial Low-Dose Computed Tomography Group Occurring 1 to 4 Years After the Last Low-Dose Computed Tomography Screen Among 23 227 Participants^a



Positive LDCTs

- LungRADS 3 or >6 mm nodule
- Increase risk of new lung cancers
- **OR=8.97** 2-3 positive CTs with the last positive (Group 4)
- **Positive LDCT** means **Highest Risk** groups identify the patients in greatest need for frequent screening

Highest Risk Patients

- 50+ Pack Years exposure to cigarettes
- Current Smokers
- Smoked 1 ½ packs of cigarettes per day
- Former smokers quit ≤ 10 years
- Moderate-severe COPD (FEV1 $\leq 70\%$)
- Positive family history in FDR
- History of pneumonia
- History of aerodigestive cancer
- Special populations (first responders, immune compromised, HIV+)

Lung-RADS for Follow-up Schedule

Lung-RADS	Category (%)	Findings	Management
0	Incomplete (1%)	Incomplete, possible infection	0-3 months
1	Negative (39%)	No lung nodule, Benign	12 months
2	Benign (45%)	< 6mm or small non-solid Resolved 3 or 4A	12 months
3	Probably Benign (9%)	6-8mm solid or part solid >30mm non-solid or new	6-months
4A	Suspicious (4%)	≥8 and ≤15mm; part-solid	3-month LDCT PET/CT >8mm solid
4B	Very Suspicious (2%)	≥15 mm solid- new/growing Increase solid >8mm	Diagnostic CT w/o contrast, PET/CT with 8mm solid; tissue sampling
4X	Added Features (1%)	Category 3 or 4 with additional features	
S	Modifier- Potentially Significant (10%)	Significant finding not related to lung cancer	As appropriate

LDCT Radiology Reports should include:

- LungRADS Score guides on schedule of follow-up
- Description of Primary Nodules
 - Size
 - Location
 - Solid Component Size
 - Stable, New, Growing
 - Reference CT Date
- LungRADS **DOES NOT** account for clinical risk factors

Incidental Nodules

- About 30% of all chest computed tomography (CT) scans contain one or more pulmonary nodules.
- Larger nodules can also be seen on chest radiographs.
- Fleischner Society guideline for management of incidental pulmonary nodules recommends:
 - Assess patient risk factors, such as smoking history, exposures and family history
 - Assess nodule risk factors, such as size, density, multiplicity, morphology and growth.

Fleischner Guidelines

A: Solid Nodules*

Nodule Type	Size			Comments
	<6 mm (<100 mm ³)	6–8 mm (100–250 mm ³)	>8 mm (>250 mm ³)	
Single				
Low risk†	No routine follow-up	CT at 6–12 months, then consider CT at 18–24 months	Consider CT at 3 months, PET/CT, or tissue sampling	Nodules <6 mm do not require routine follow-up in low-risk patients (recommendation 1A).
High risk†	Optional CT at 12 months	CT at 6–12 months, then CT at 18–24 months	Consider CT at 3 months, PET/CT, or tissue sampling	Certain patients at high risk with suspicious nodule morphology, upper lobe location, or both may warrant 12-month follow-up (recommendation 1A).
Multiple				
Low risk†	No routine follow-up	CT at 3–6 months, then consider CT at 18–24 months	CT at 3–6 months, then consider CT at 18–24 months	Use most suspicious nodule as guide to management. Follow-up intervals may vary according to size and risk (recommendation 2A).
High risk†	Optional CT at 12 months	CT at 3–6 months, then at 18–24 months	CT at 3–6 months, then at 18–24 months	Use most suspicious nodule as guide to management. Follow-up intervals may vary according to size and risk (recommendation 2A).

B: Subsolid Nodules*

Nodule Type	Size		Comments
	<6 mm (<100 mm ³)	≥6 mm (> 100 mm ³)	
Single			
Ground glass	No routine follow-up	CT at 6–12 months to confirm persistence, then CT every 2 years until 5 years	In certain suspicious nodules < 6 mm, consider follow-up at 2 and 4 years. If solid component(s) or growth develops, consider resection. (Recommendations 3A and 4A).
Part solid	No routine follow-up	CT at 3–6 months to confirm persistence. If unchanged and solid component remains <6 mm, annual CT should be performed for 5 years.	In practice, part-solid nodules cannot be defined as such until ≥6 mm, and nodules <6 mm do not usually require follow-up. Persistent part-solid nodules with solid components ≥6 mm should be considered highly suspicious (recommendations 4A-4C)
Multiple	CT at 3–6 months. If stable, consider CT at 2 and 4 years.	CT at 3–6 months. Subsequent management based on the most suspicious nodule(s).	Multiple <6 mm pure ground-glass nodules are usually benign, but consider follow-up in selected patients at high risk at 2 and 4 years (recommendation 5A).

Nodule Qualities that Require Special Attention and Management

- LungRADS Score of 3 or more (6 mm)
- Any growing Nodule
- New nodule at follow-up CTs that is not a suspected infection
- Suspicious incidental nodule
- Solid Nodules of ≥ 8 mm - 1.4 cm
- Semi-Solid Nodules ≥ 1 cm or solid component > 5 mm
- GGO Lesions ≥ 2 cm
- Incidental Nodules

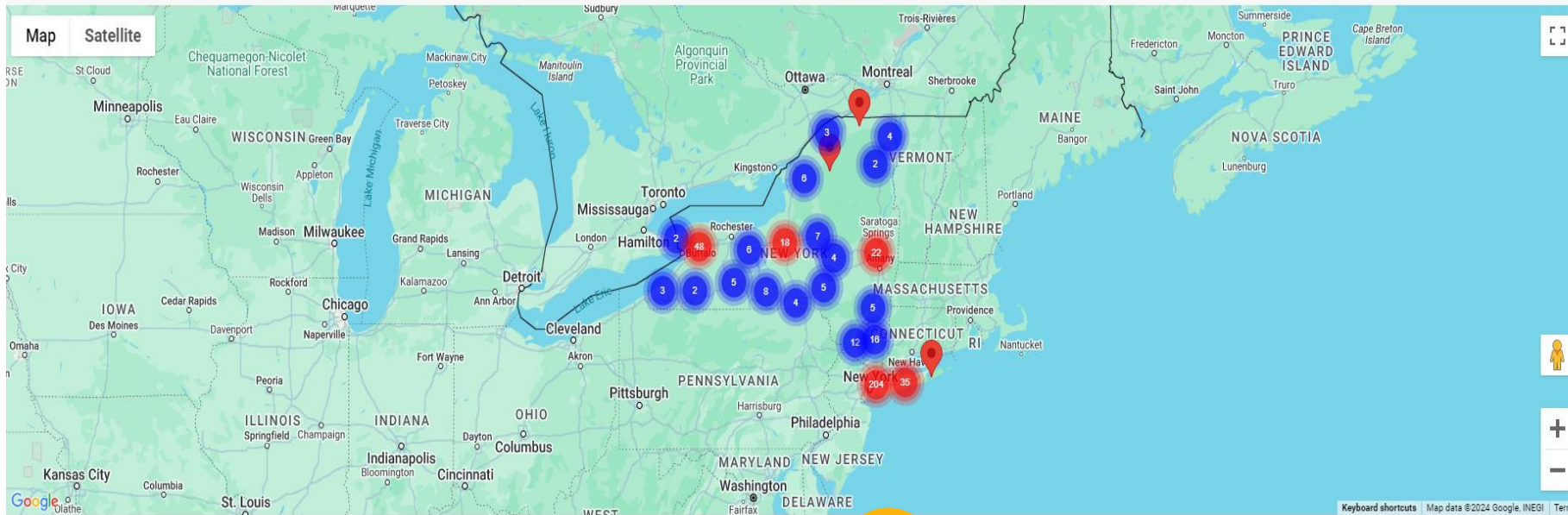
Billing Codes for Screening and Follow-up

- Annual LDCT: 71271
- Follow-up LDCT (<1 year): 71250
- SDM: G0296
- Smoking Cessation:
 - 3-10 minutes 99406
 - >10 minutes 99407

Nodule Qualities that Require Special Management

- Lung Rads Score of 3 or more
- Any growing Nodule
- New nodule at follow-up CTs that is not a suspected infection
- Solid Nodules of ≥ 8 mm- 1.4 cm
- Semi-Solid Nodules ≥ 1 cm or solid component > 5 mm
- GGO Lesions ≥ 2 cm: Refer to RPCI for Multi-D conference

Find your nearest screening location



Total Locations: 424

2:30

5G 62

that. Lung cancer screening helps to find lung cancer early, when it is easier to treat, giving you the best opportunity to have more time to do the things you love with the people you love.

Sponsored by [Genentech](#).

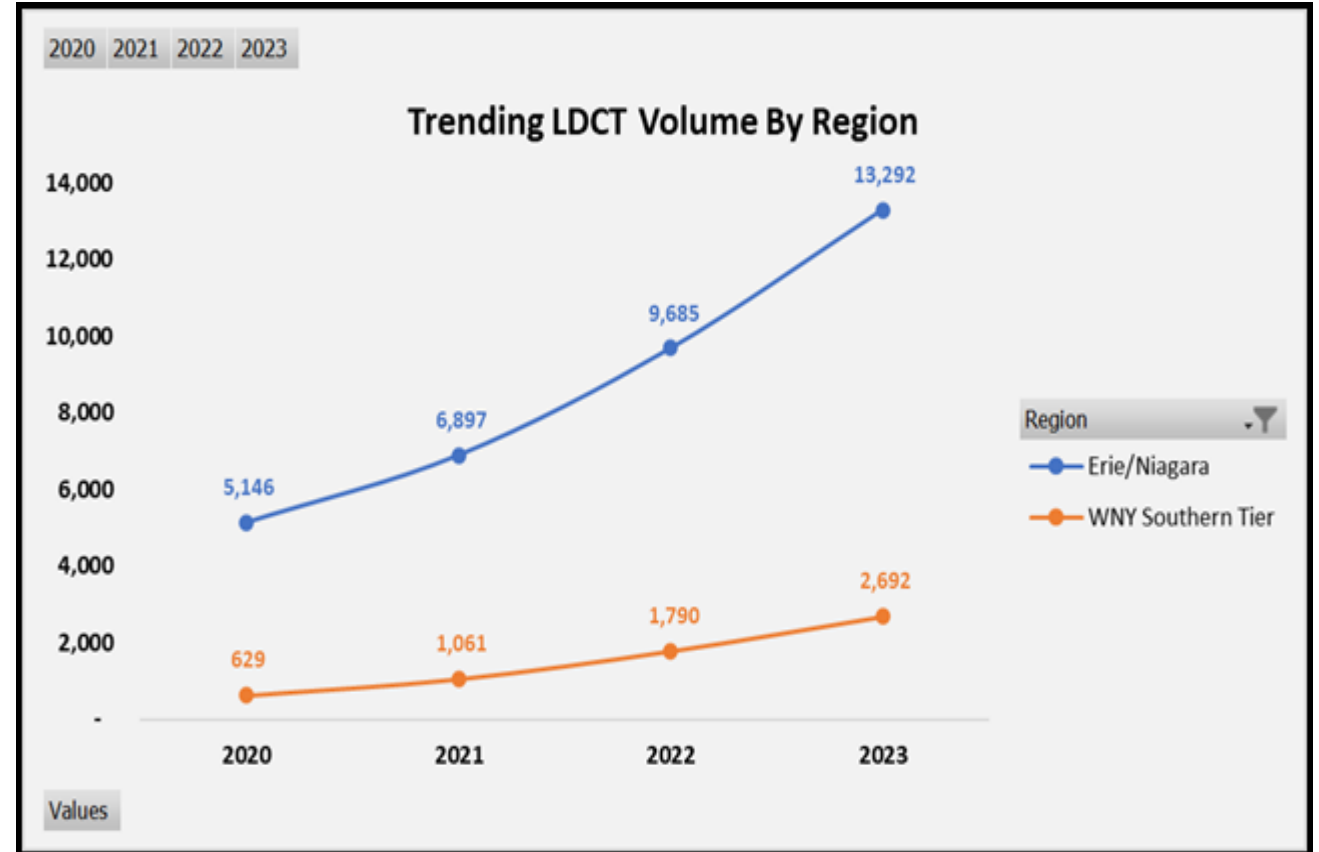


Find your nearest screening location

Changes in Lung Cancer Screening in WNY Since 2020

Low Dose CT Scans: By Patient Origin

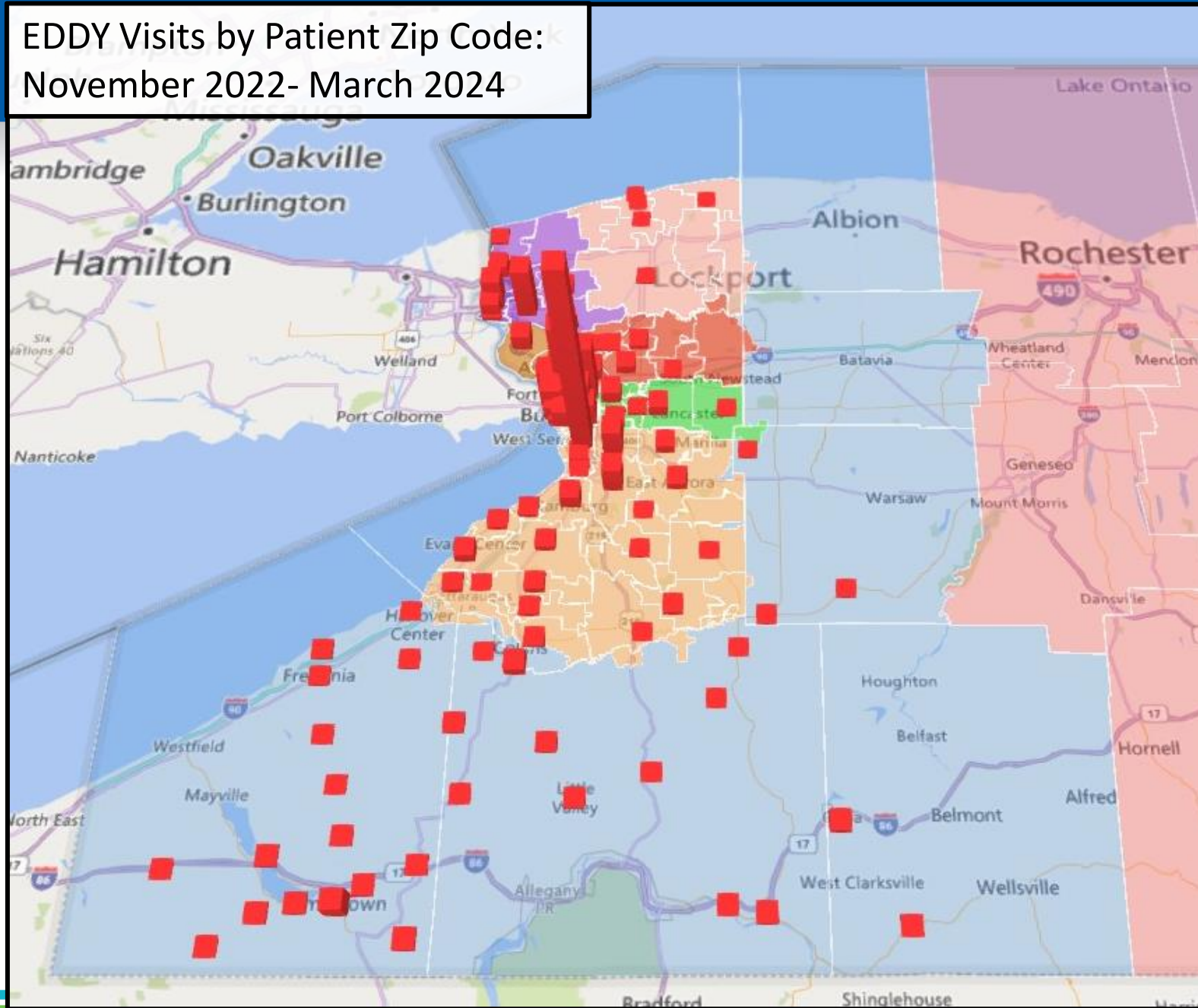
Calendar Year	Erie/Niagara	WNY Southern Tier
2020	5,146	629
2021	6,897	1,061
2022	9,685	1,790
2023	13,292	2,692



Early Detection Driven to You (EDDY)

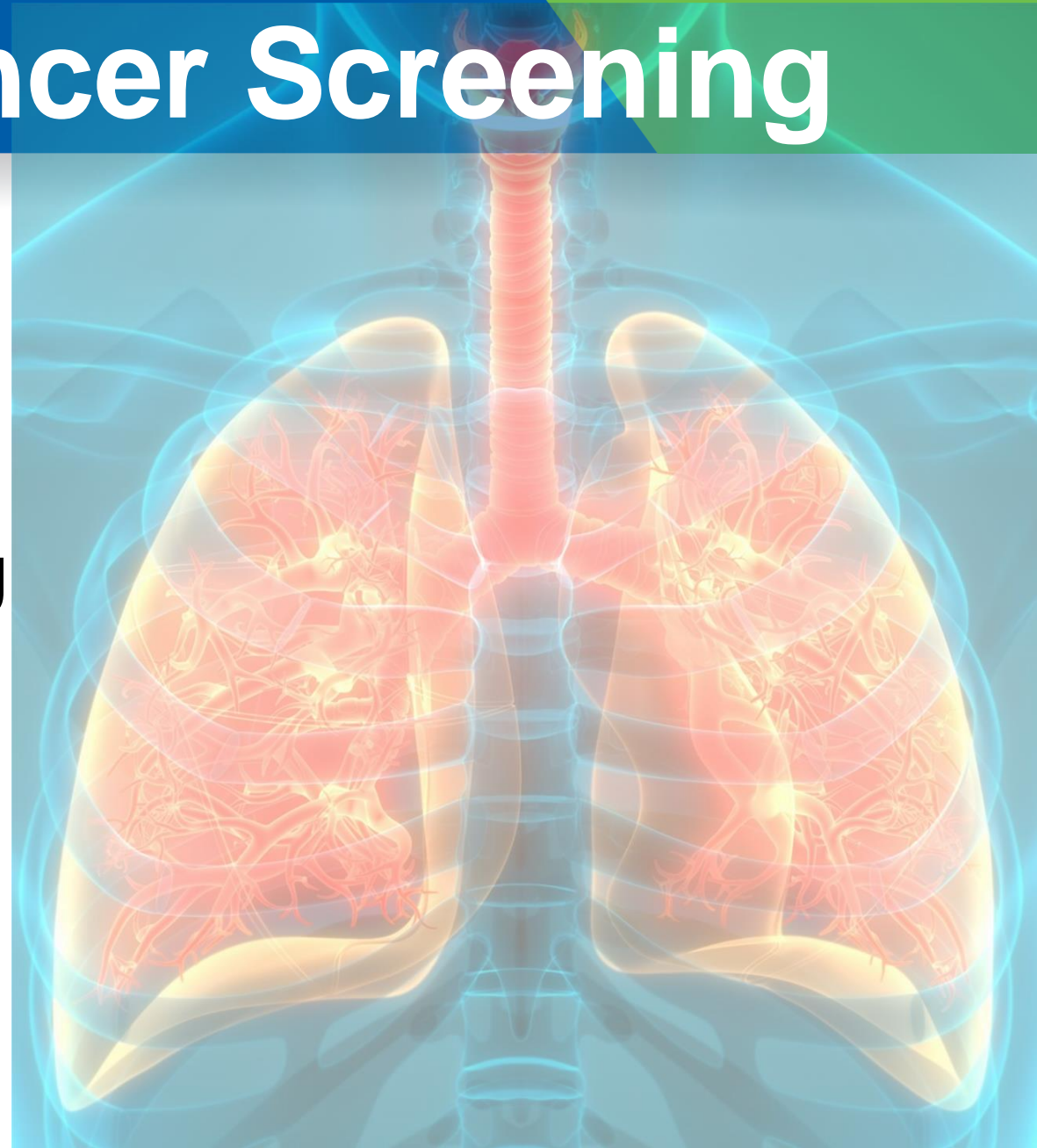


EDDY Visits by Patient Zip Code:
November 2022- March 2024



Barriers to Lung Cancer Screening

- Educational deficits among health care providers and the public
- Required preauthorization and complicated billing
- Burden of shared decision making (SDM) and cessation referrals on practices
- Poor support for managing nodules detected on LDCT



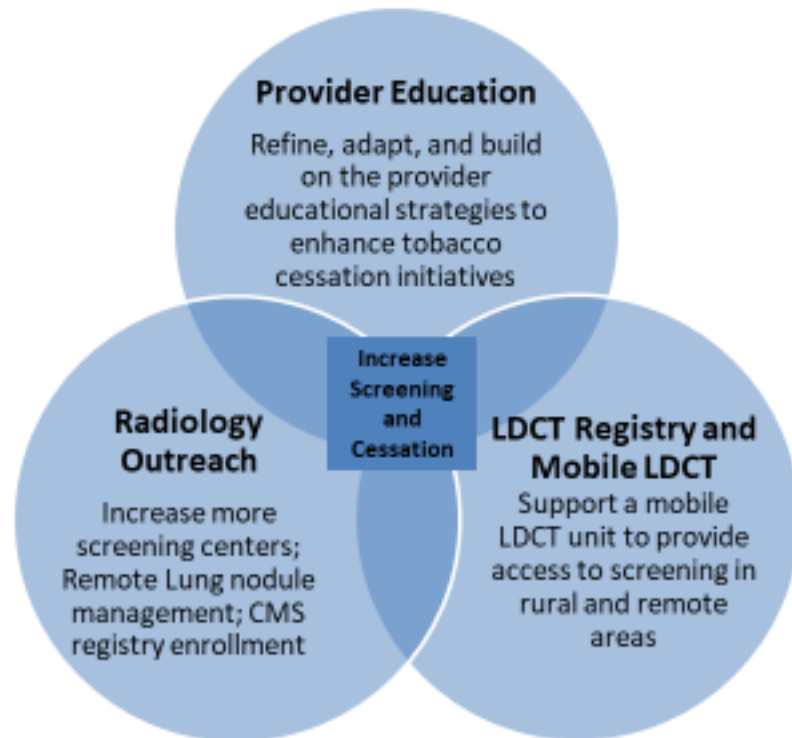
The Burden on Primary Care

Who is the party most responsible for the following?

	Shared Decision-Making	Prior Authorization	Tobacco Cessation	Referral for High-Risk Nodules	Ordering Follow Up Screening/Surveillance	Referral for Incidental or "S" Findings
PCP	0 (0%)	0 (0%)	3 (12%)	1 (4%)	2 (8%)	2 (8%)
Referring Provider	18 (72%)	18 (72%)	15 (60%)	15 (60%)	16 (64%)	15 (60%)
Navigator	5 (20%)	5 (20%)	1 (4%)	4 (16%)	3 (12%)	3 (12%)
The Patient	0 (0%)	0 (0%)	1 (4%)	0 (0%)	0 (0%)	0 (%)
Other	3 (12%)	10 (40%)	6 (24%)	5 (20%)	5 (20%)	6 (24%)

Strategy: Lung Cancer Screening

Developing a Multi-Level Strategy to Reduce Lung Cancer in New York State Through Enhancing Lung Cancer Screening and Smoking Cessation



Addressing barriers to implementation of guideline-driven lung cancer screening including:

- Improving access to LDCT
- Free CMS-approved LDCT registry
- Educating PCPs in the region
- Engaging radiology practices & providing a free second opinion resource for nodule management
- Targeting the most at-risk urban and rural populations
- Coordinating aggressive smoking cessation program

Objectives to Improve Screening Rates

- Systematically engage community partners
- Educate and navigate to increase compliance
- Partner with regional screening facilities
- Screen people in their community
- Ensure guideline adherence among current patients
- Target populations with the highest risk and the highest burden of cancer

Thank you

EDDY Team

Cheryl Raczyk
Tara Pollila
Danielle Skinner
Desire Dienstbier
Jessica Leone
Ashley Giaquinto
Alyssa McNulty
Lindsey Steinwandel
Michael Whyte
Sabrina Miller

Community and Data Team

Mary Croake
Lori Pearce
Paige Robinson
Sarah Falls
Philip Whalen
Emily Siedlecki
Kelsey Simon
Debra Bradley
Britt Holdaway-Kenney
Kathryn Glaser
Whitney Mendel
Christina Crabtree-Ide
Pamela Jarrett



A wide-angle photograph of the Roswell Park Comprehensive Cancer Center. The main building is a large, multi-story structure with a prominent curved section, featuring a mix of brick and glass facades. The words "ROSWELL PARK" are visible on the upper part of the building. In the foreground, there is a well-maintained courtyard with a large green lawn, several trees, and wooden benches. A paved path winds through the courtyard. The sky is blue with scattered white clouds. A teal semi-transparent box is overlaid on the right side of the image, containing the word "Questions" in white text. The top of the image has a blue and green gradient bar, and the bottom has a green bar with a colorful striped pattern.

Questions

ROSWELL PARK COMPREHENSIVE CANCER CENTER