

KEYNOTE: Radon exposure prevention and lung cancer screening

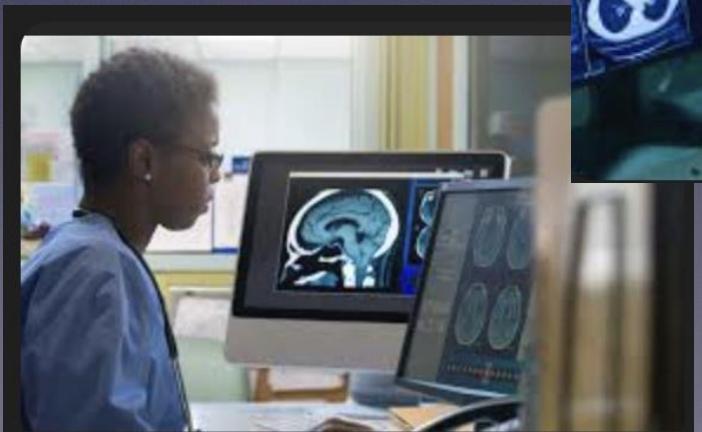
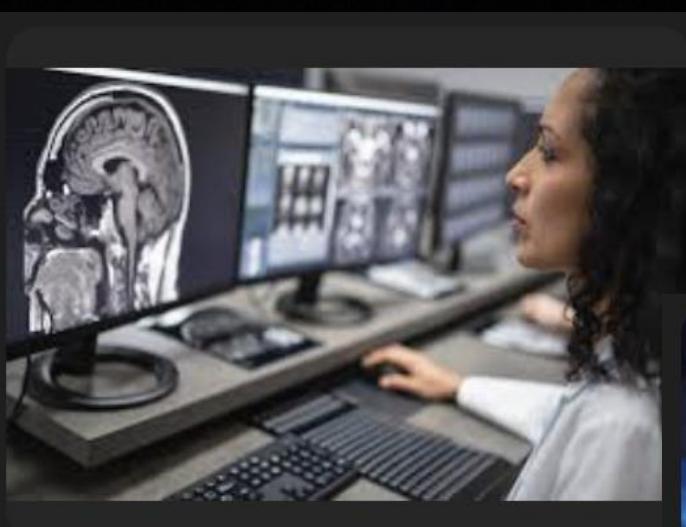
Dr. Chivonne Harrigal, Chief Radiologist and Medical Director
of Radiology Services, Cancer Care Specialists

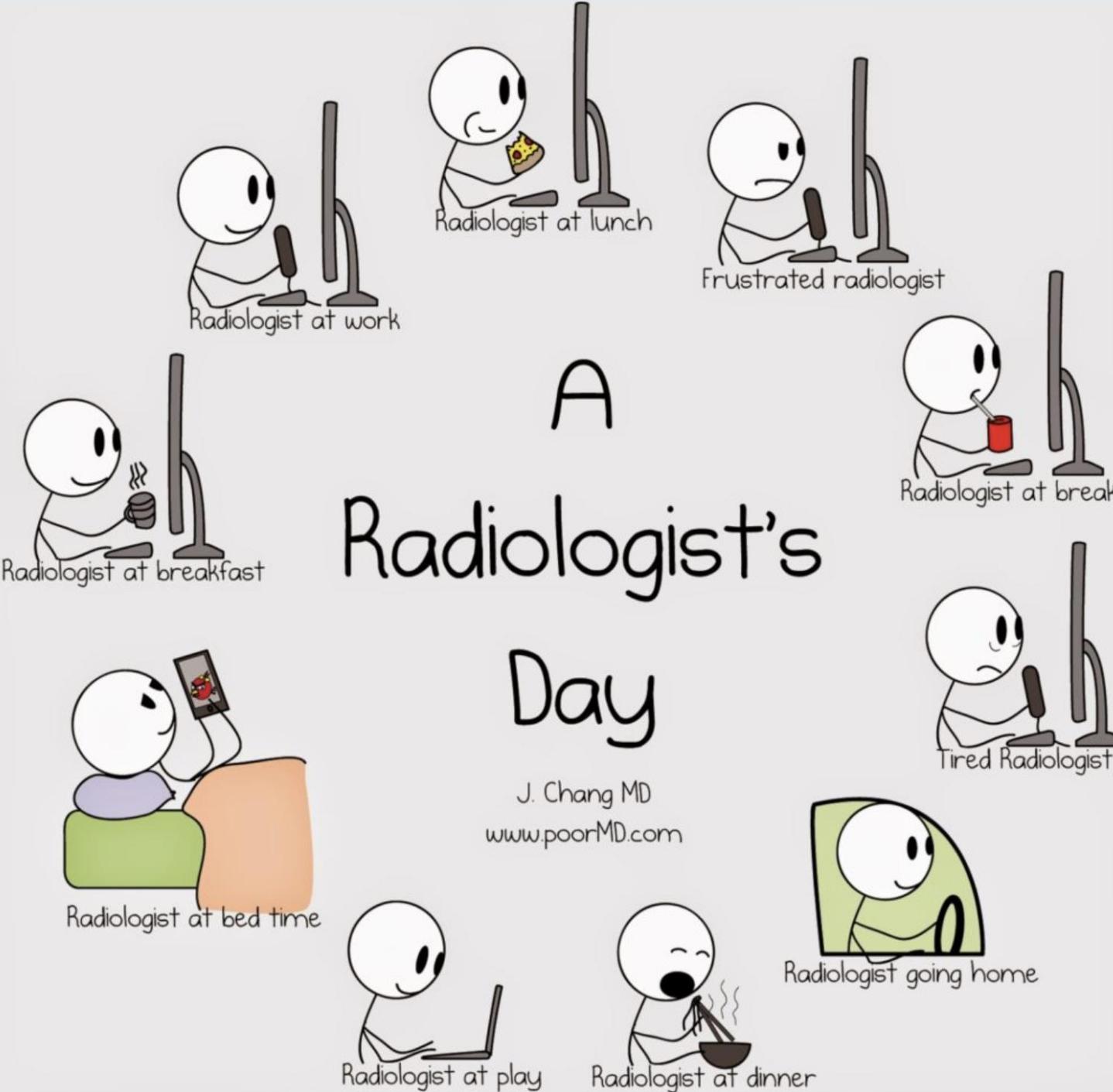
Lung Cancer Screening Saves Lives

Chivonne Harrigal, M.D.
Radiologist
Stateline, Nevada

Thank you!

Why am I here?





A few years ago...

#1. Heard about radon. Got my home tested.



Christine Kelly

Radon Program Officer

📞 Office: (775) 784-4848

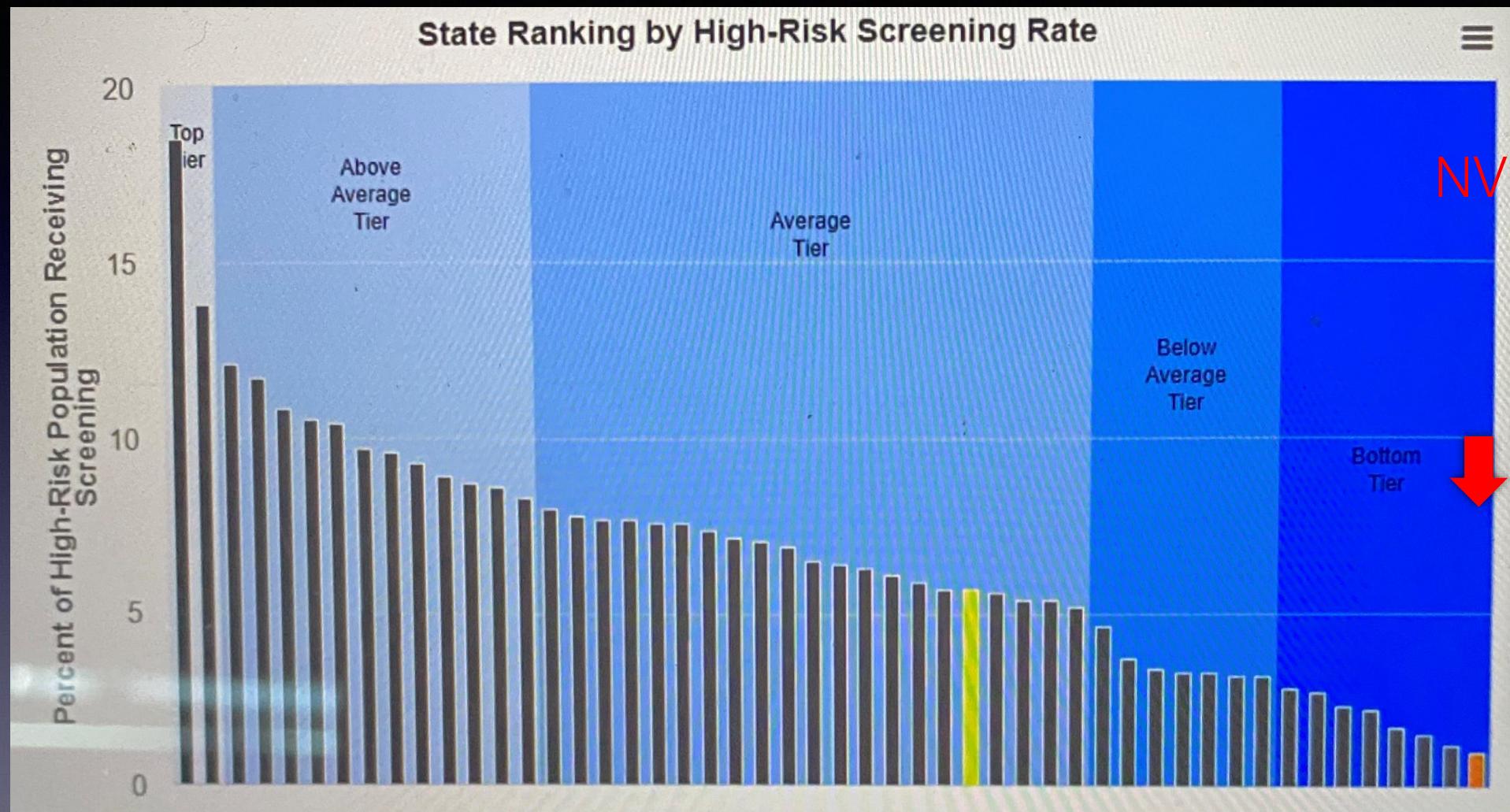
📠 Fax: (775) 784-4881

✉️ Email: chrisk@unr.edu

📍 Address: 4955 Energy Way, Reno, Nevada 89502

📍 Representing: [Washoe County](#)

#2. Saw state rankings for lung cancer screening.



American Lung Association, lung.org

Why do we care about Radon?

Radon is a big deal!

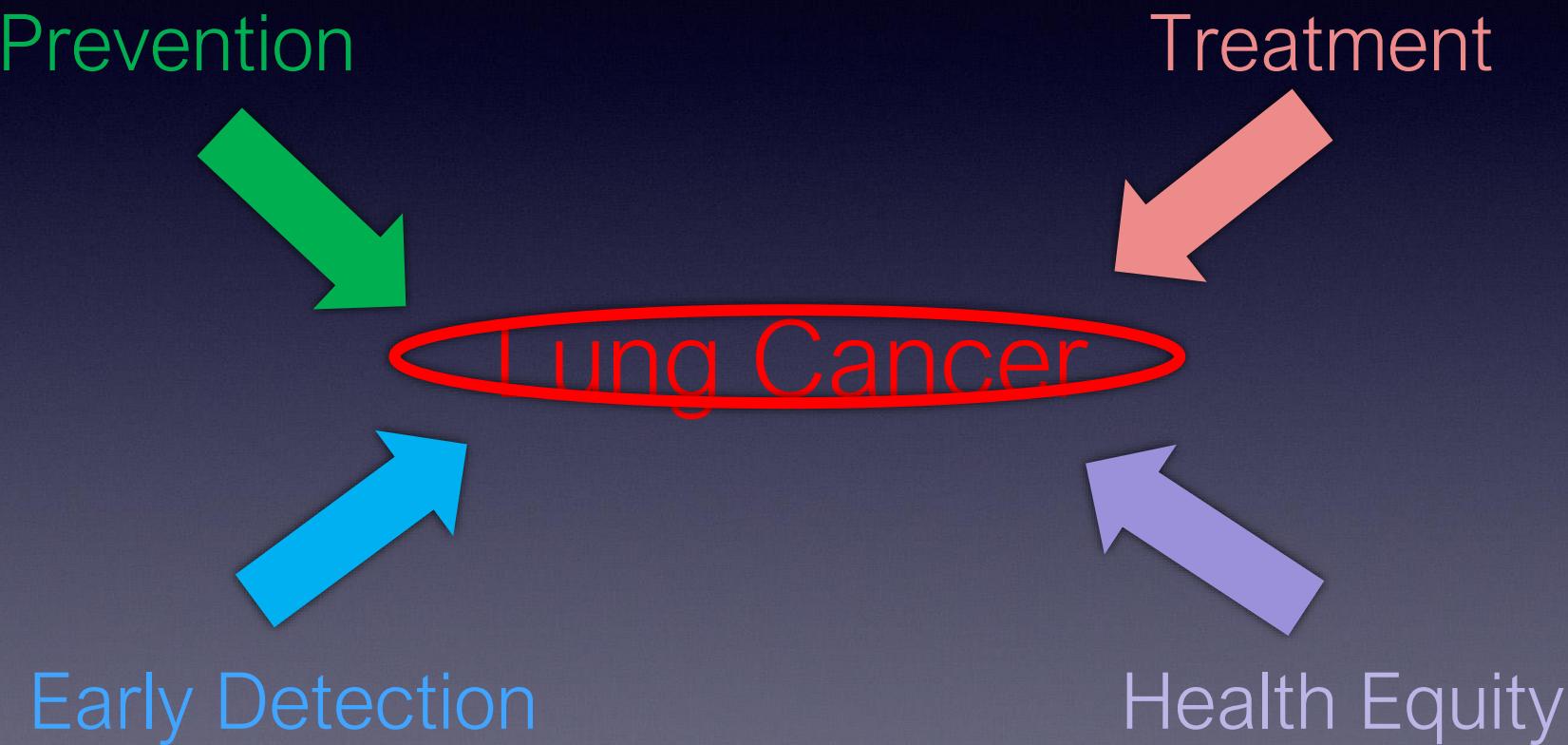
What is Radon?

- Radioactive gas produced from decay of Uranium in soil
- Moves up from the ground into your home
- 2nd leading cause of lung cancer in US (after smoking)!

Why care about Radon?

- Leading cause of lung cancer in non-smokers
- Take corrective action/mitigation if high levels are found
- Test your homes for radon!

Saving lives from lung cancer



Saving lives from lung cancer

- Prevention: smoking, radon, air pollution
- Early Detection: screening
- Treatment: biomarker, immunotherapy, targeted
- Health Equity: reducing racial, economic and rural health disparities

Saving lives from lung cancer

- Prevention: smoking, radon, air pollution
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Saving lives from lung cancer

- Prevention: smoking, radon, air pollution
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- Treatment: biomarker, immunotherapy, targeted
- Health Equity: reducing racial, economic and rural health disparities

Why do we care about lung
cancer?

Lung cancer is the leading cause of cancer death in men and women.

Lung cancer kills more people
than breast, colon and prostate
cancers combined!

Cancer Incidence

Estimated New Cases						
			Males	Females		
Prostate	268,490	27%		Breast	287,850	31%
Lung & bronchus	117,910	12%		Lung & bronchus	118,830	13%
Colon & rectum	80,690	8%		Colon & rectum	70,340	8%
Urinary bladder	61,700	6%		Uterine corpus	65,950	7%
Melanoma of the skin	57,180	6%		Melanoma of the skin	42,600	5%
Kidney & renal pelvis	50,290	5%		Non-Hodgkin lymphoma	36,350	4%
Non-Hodgkin lymphoma	44,120	4%		Thyroid	31,940	3%
Oral cavity & pharynx	38,700	4%		Pancreas	29,240	3%
Leukemia	35,810	4%		Kidney & renal pelvis	28,710	3%
Pancreas	32,970	3%		Leukemia	24,840	3%
All Sites	983,160	100%		All Sites	934,870	100%

Cancer Incidence

Estimated New Cases			
	Males	Females	
Prostate	268,490 27%		Breast 287,850 31%
Lung & bronchus	117,910 12%		Lung & bronchus 118,830 13%
Colon & rectum	80,690 8%		Colon & rectum 70,340 8%
Urinary bladder	61,700 6%		Uterine corpus 65,950 7%
Melanoma of the skin	57,180 6%		Melanoma of the skin 42,600 5%
Kidney & renal pelvis	50,290 5%		Non-Hodgkin lymphoma 36,350 4%
Non-Hodgkin lymphoma	44,120 4%		Thyroid 31,940 3%
Oral cavity & pharynx	38,700 4%		Pancreas 29,240 3%
Leukemia	35,810 4%		Kidney & renal pelvis 28,710 3%
Pancreas	32,970 3%		Leukemia 24,840 3%
All Sites	983,160 100%		All Sites 934,870 100%

Cancer Deaths

Estimated Deaths					
		Males	Females		
Lung & bronchus	68,820	21%	Lung & bronchus	61,360	21%
Prostate	34,500	11%	Breast	43,250	15%
Colon & rectum	28,400	9%	Colon & rectum	24,180	8%
Pancreas	25,970	8%	Pancreas	23,860	8%
Liver & intrahepatic bile duct	20,420	6%	Ovary	12,810	4%
Leukemia	14,020	4%	Uterine corpus	12,550	4%
Esophagus	13,250	4%	Liver & intrahepatic bile duct	10,100	4%
Urinary bladder	12,120	4%	Leukemia	9,980	3%
Non-Hodgkin lymphoma	11,700	4%	Non-Hodgkin lymphoma	8,550	3%
Brain & other nervous system	10,710	3%	Brain & other nervous system	7,570	3%
All Sites	322,090	100%	All Sites	287,270	100%

Cancer Deaths

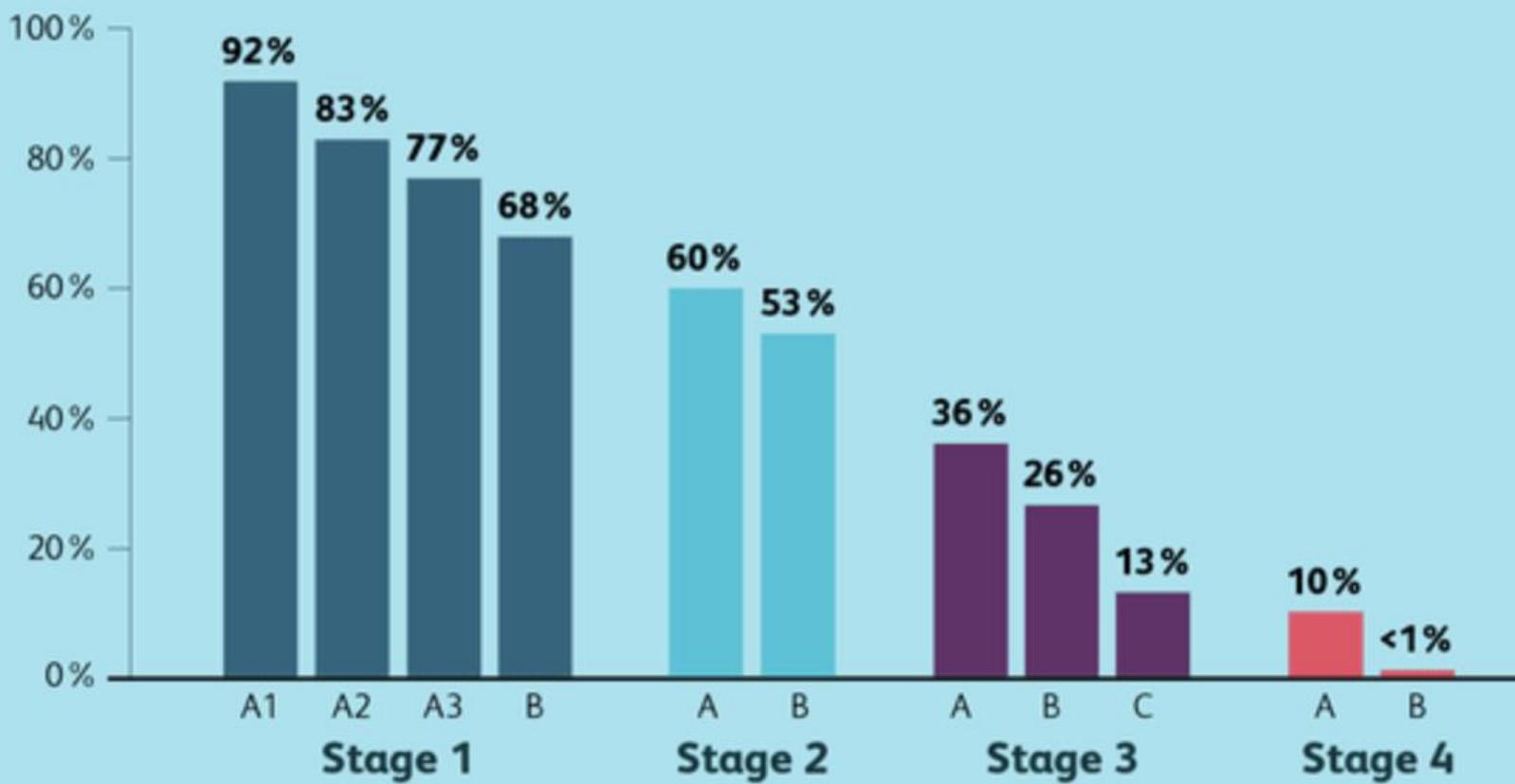
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Brain & other nervous system	10,710 3%		Brain & other nervous system 7,570 3%
All Sites	322,090 100%		All Sites 287,270 100%

4 out of 5 people diagnosed
with lung cancer will die from
lung cancer.

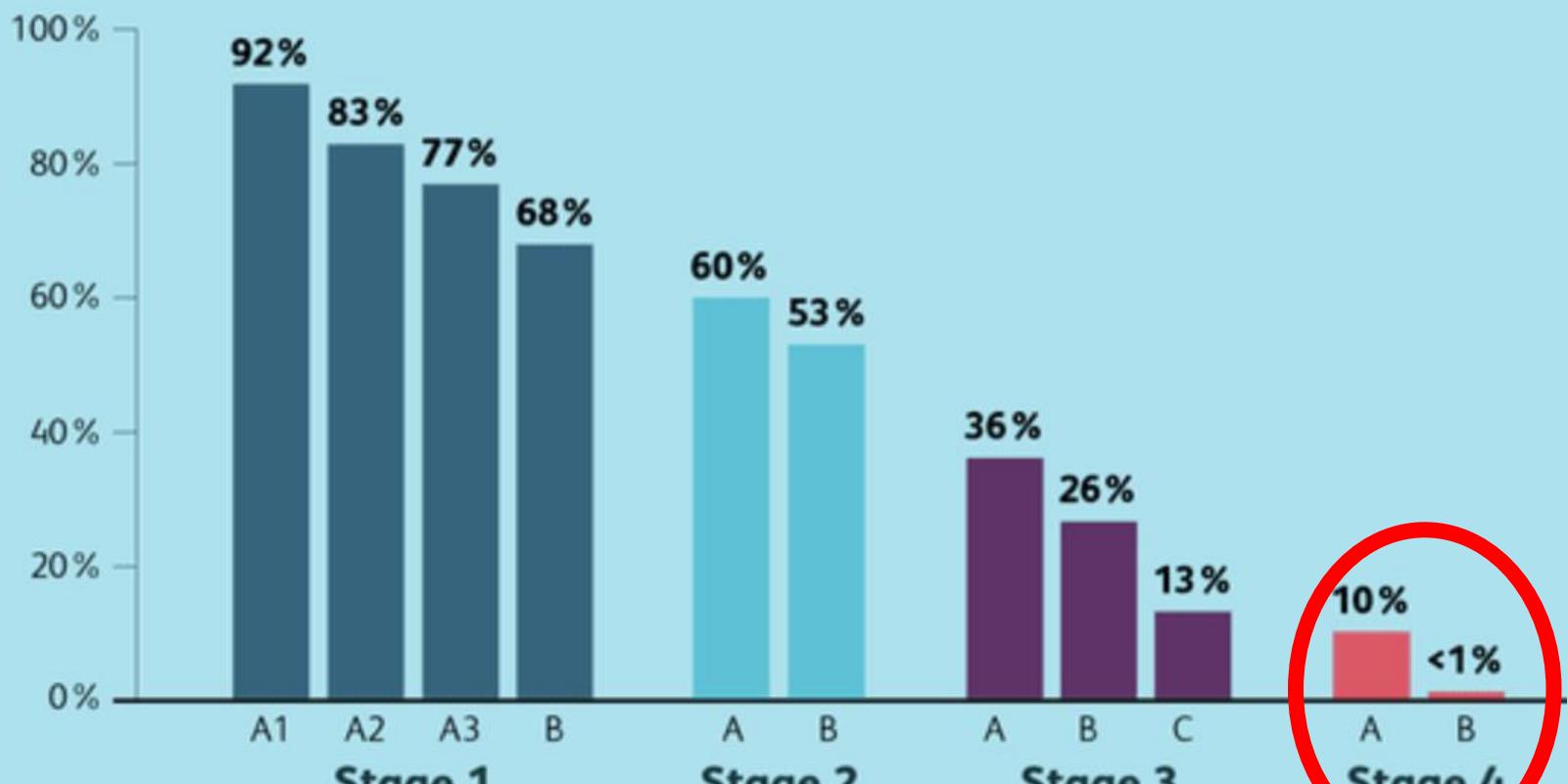
Why is lung cancer
so deadly?

Because it is usually found
too late.

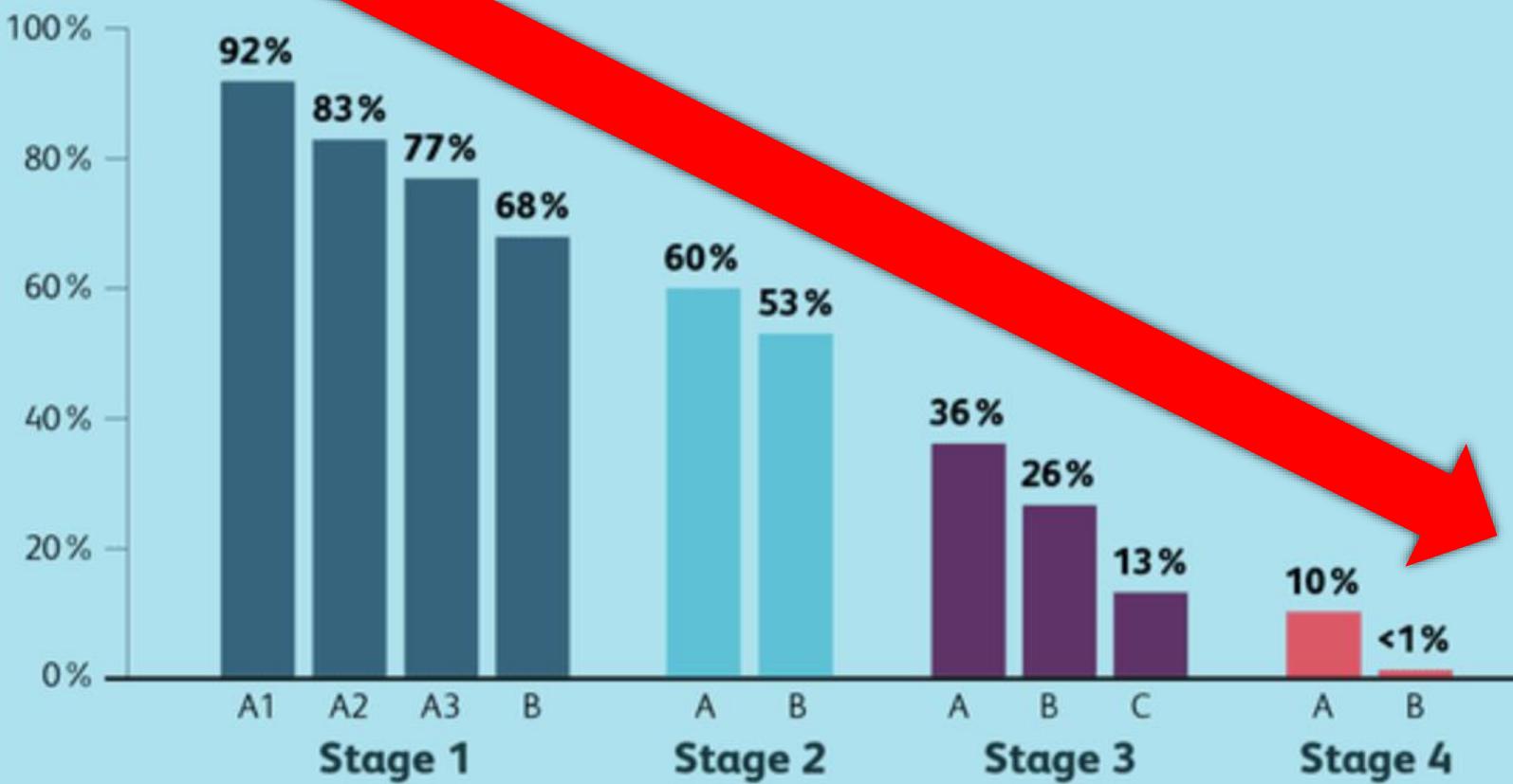
Non-Small Cell Lung Cancer: 5-Year Survival Rates



Non-Small Cell Lung Cancer: 5-Year Survival Rates



Non-Small Cell Lung Cancer: 5-Year Survival Rates



Clinical outcome is directly related
to the stage at diagnosis.

Earlier detection is **Critical!**

Pop quiz!

Why do we screen for cancer?

Because cancer screening saves
lives through **early detection**.

The **earlier** we catch a cancer, the more likely a patient will **survive** from that cancer.

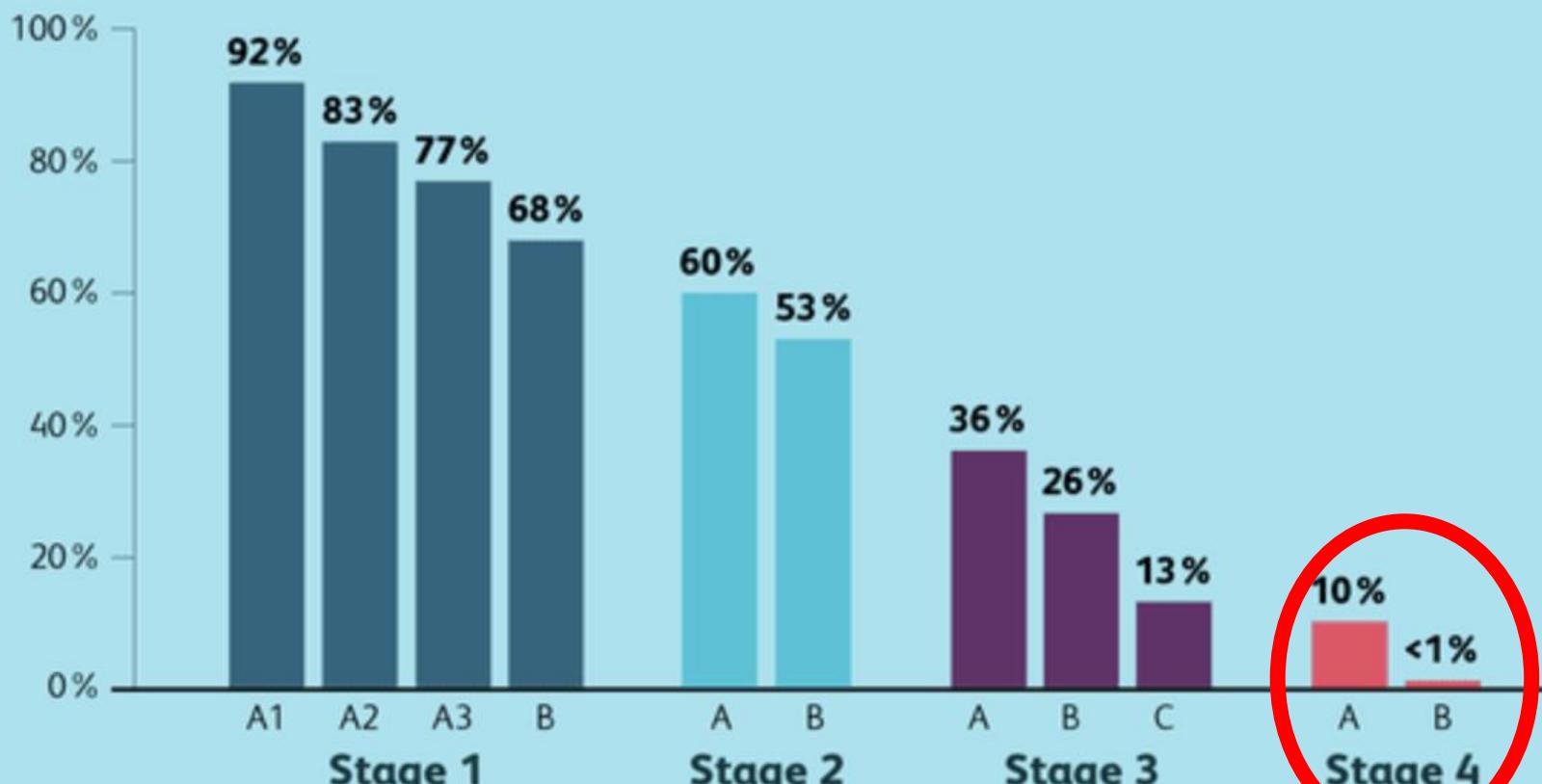
The **later** we catch a cancer, the
more likely a patient will **die** from
that cancer.

Lung Cancer Screening

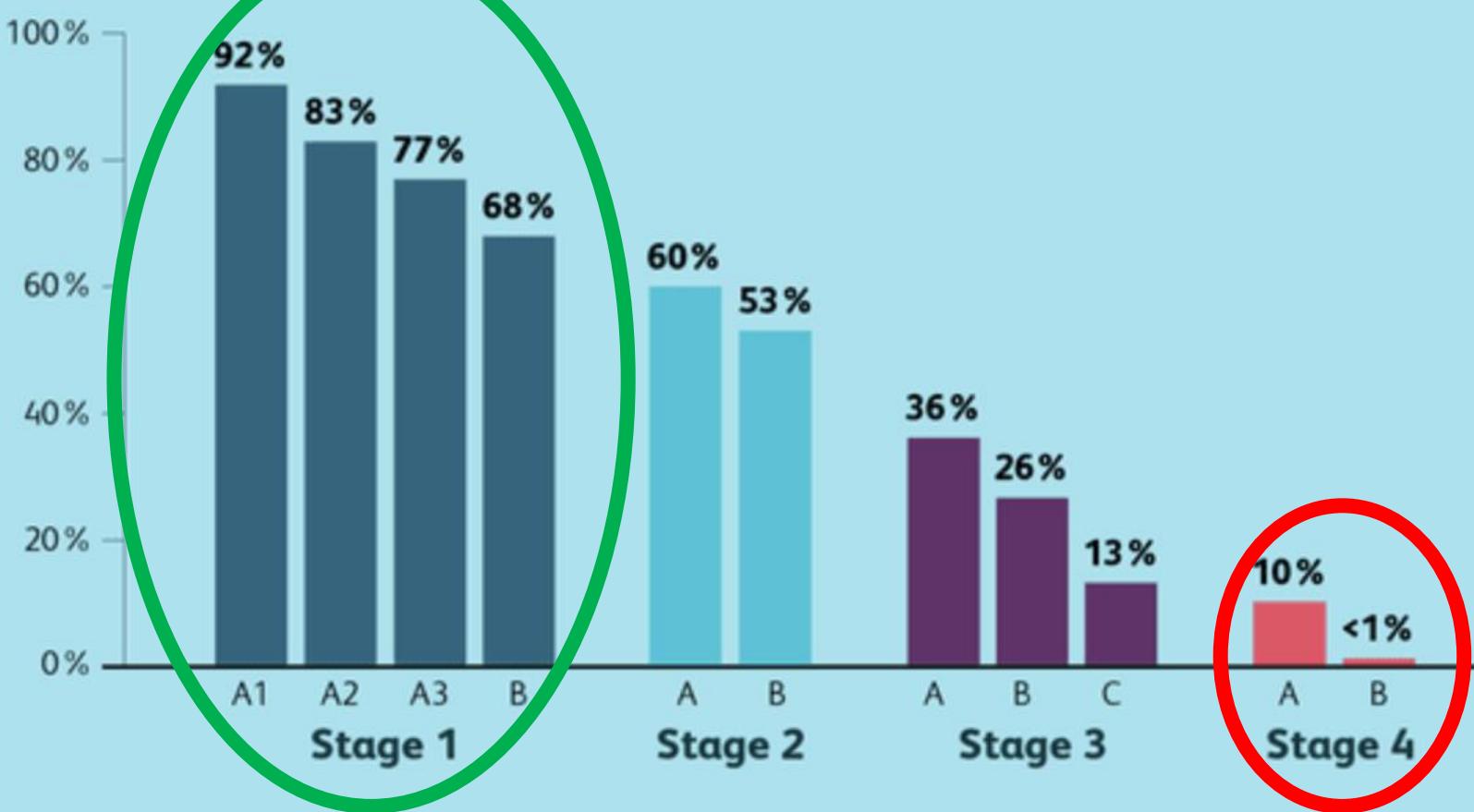
- Only 16% of lung cancers are stage 1 when diagnosed without screening
- 55-85% of lung cancers are stage 1 when diagnosed with screening

Stage Shift through Screening.

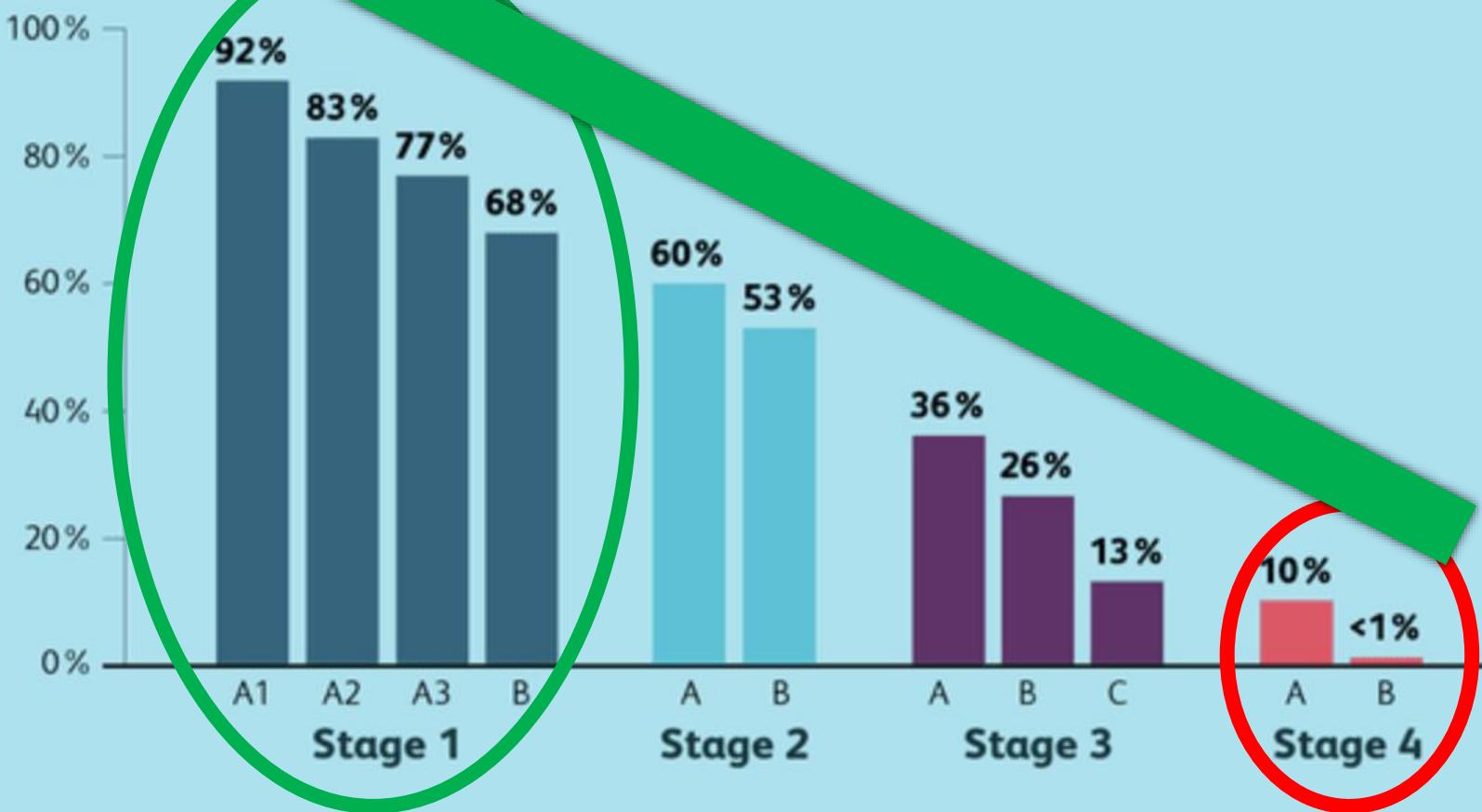
Non-Small Cell Lung Cancer: 5-Year Survival Rates



Non-Small Cell Lung Cancer: 5-Year Survival Rates

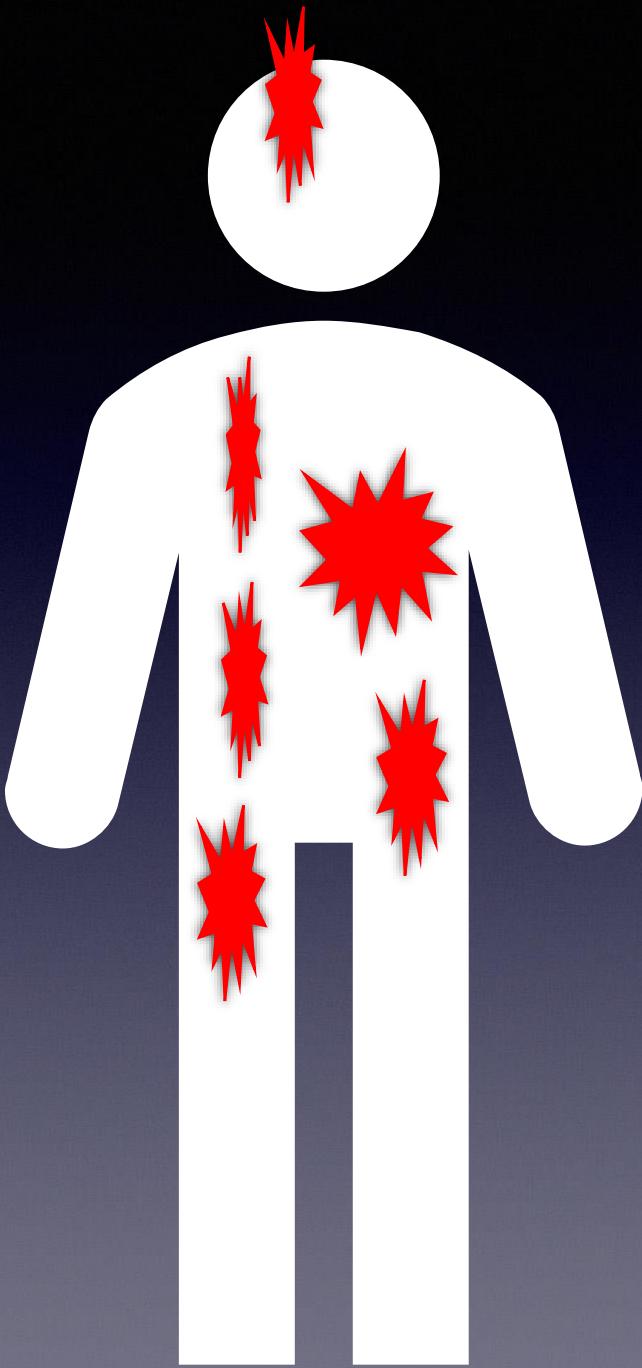


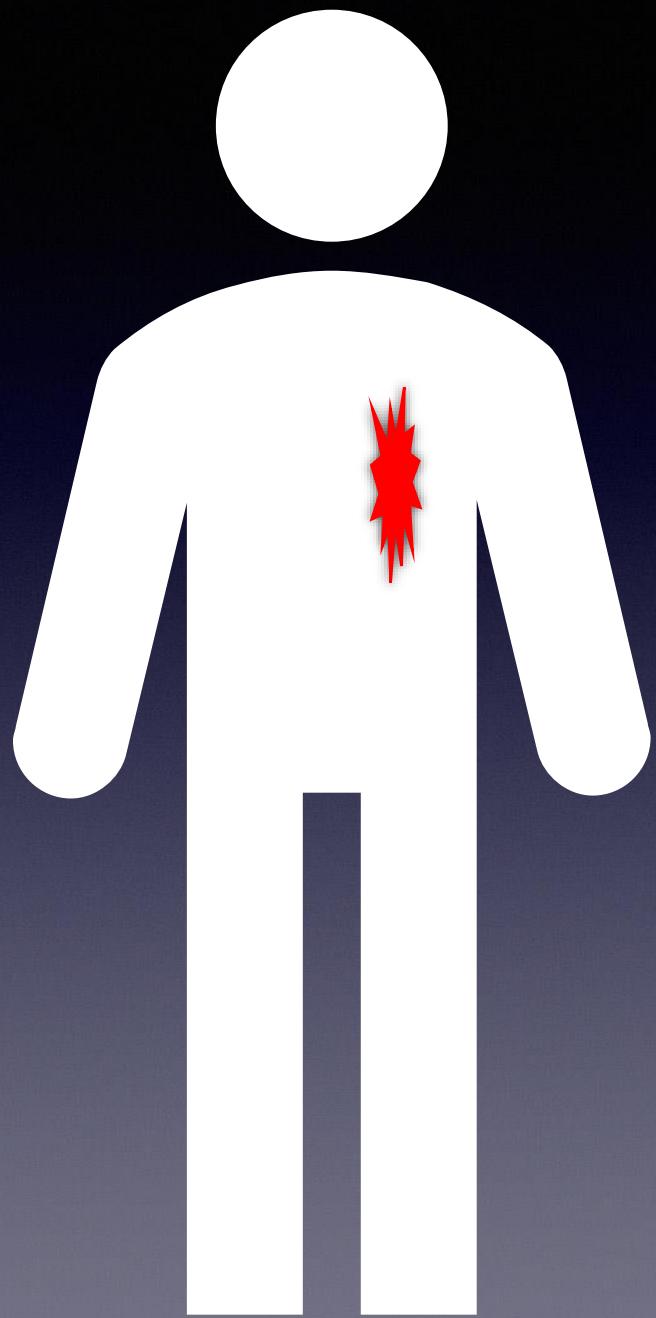
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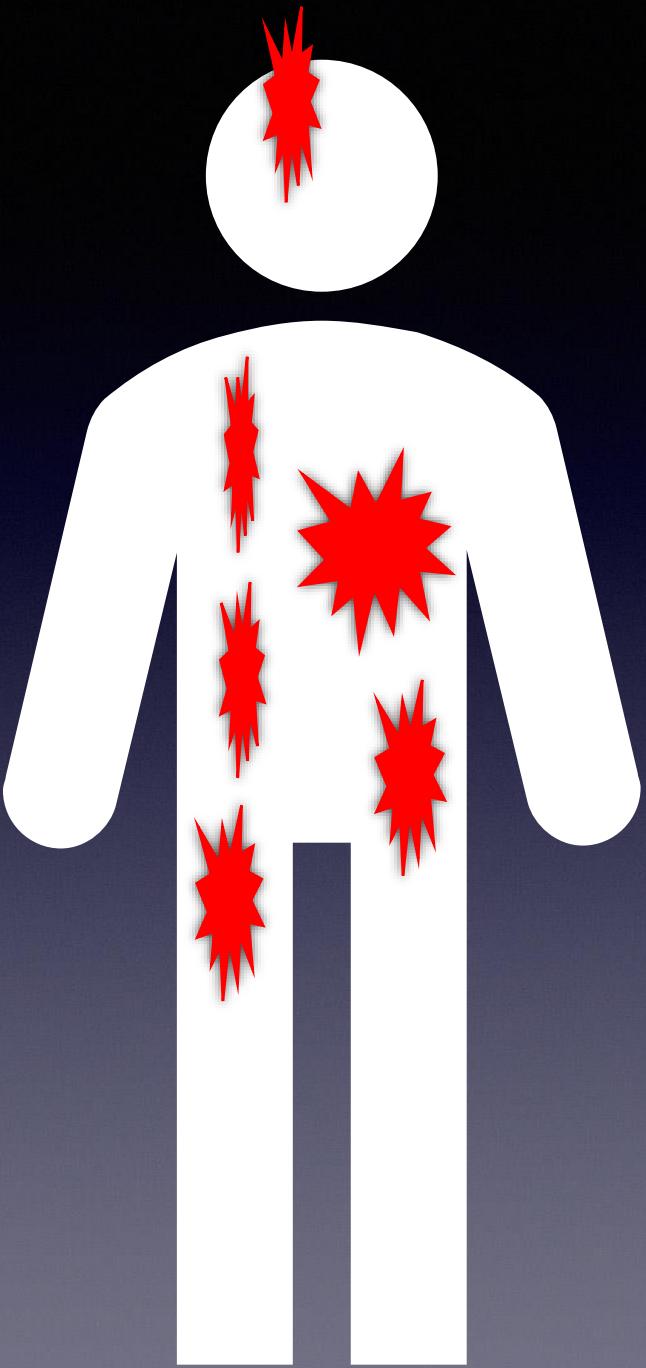


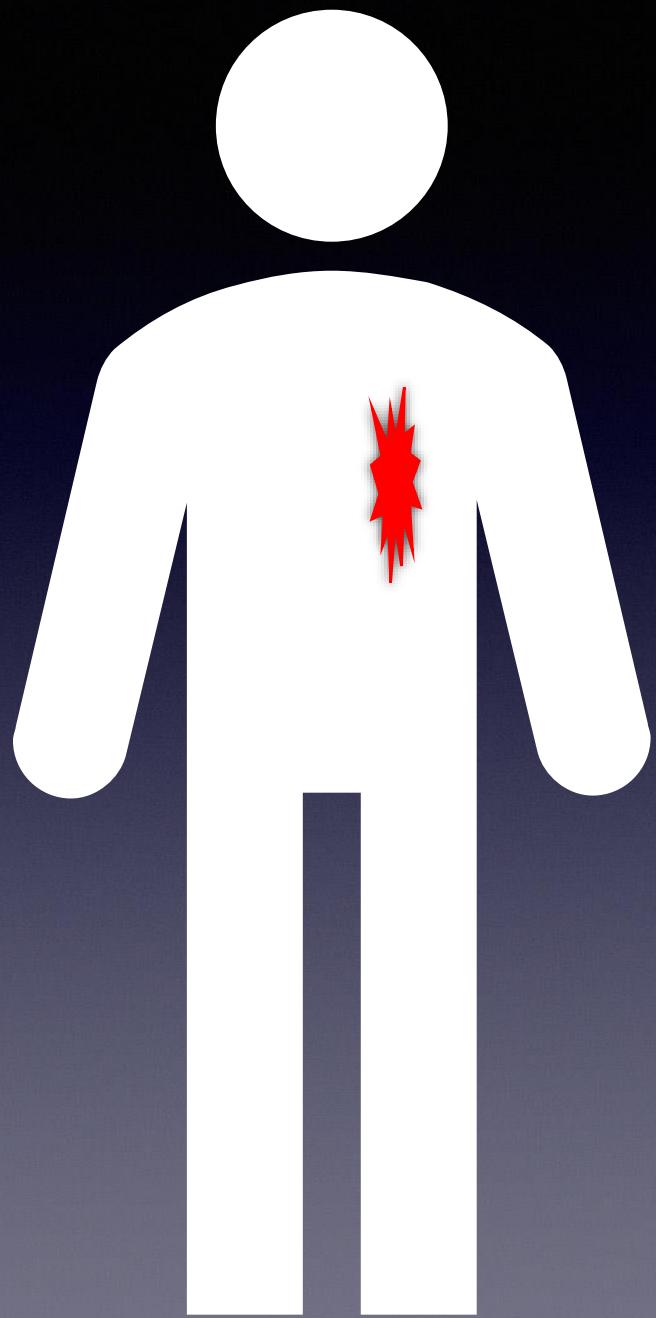
Stage shift, on the
patient level

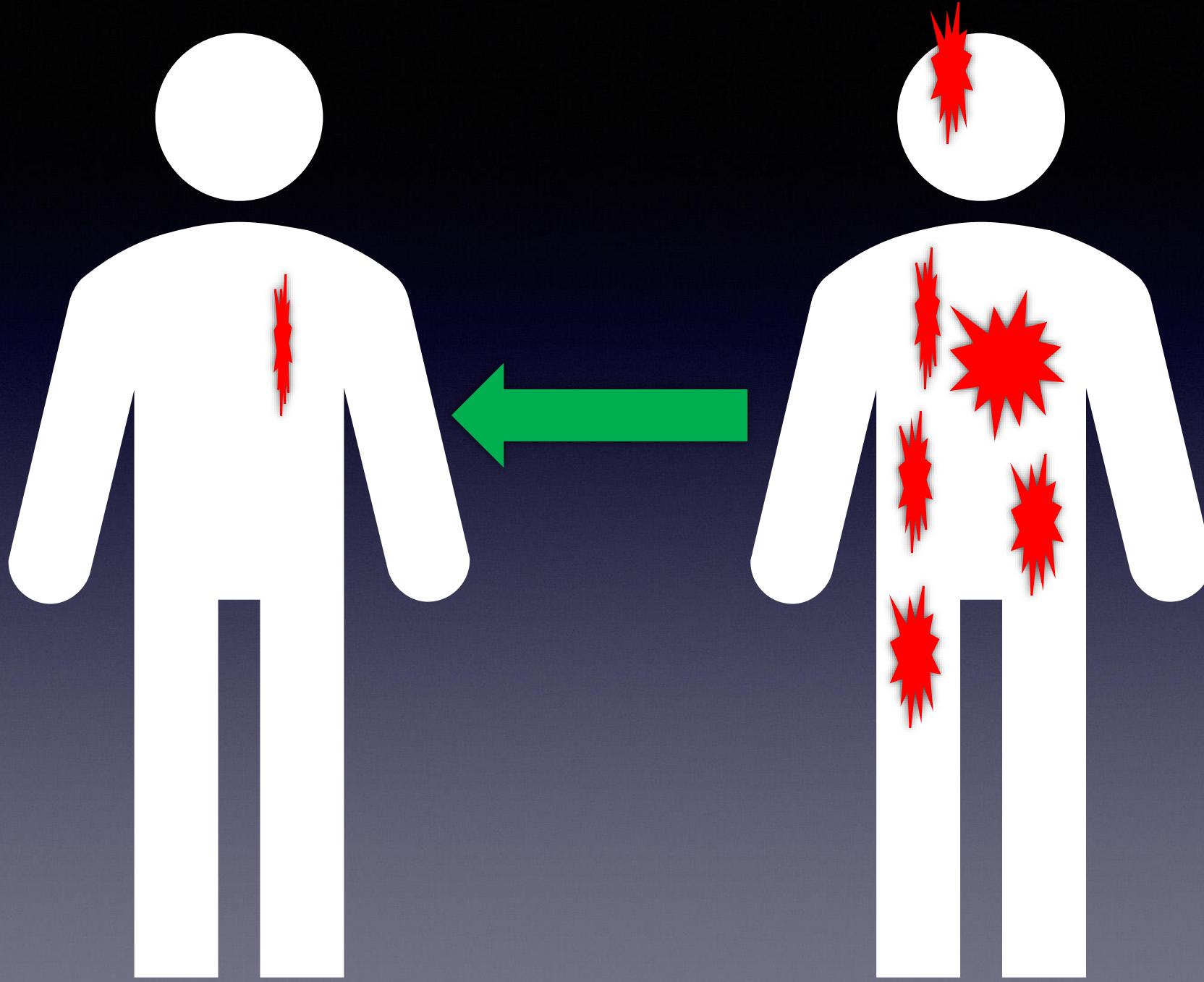












Lung cancer and
early detection:
Screening tools.

Chest X-rays?

Chest ~~X~~ rays?



Chest CT!

Low Dose CT scan (LDCT)
has been shown to save lives.

What is a Chest CT?

Screening Chest CT

- X-ray based radiology exam, aka “CAT scan”
- Lay on back
- Go into a “tube” like a donut/bagel
- Hold breath for 5-10 seconds
- Machine takes pictures
- No IV, no needles





Data supporting LDCT

National Lung Screening Trial (NLST)

NLST trial

- Prospective randomized control trial US, 2011
- CXR vs. LDCT
- 53,452 high risk people, ages 55-74
- Annual screening for 3 years
- Lung Cancer Mortality

NLST trial

- 20% decrease in mortality from lung cancer
- 7% decrease in all cause mortality
- LDCT superior to CXR
- Stage 1: 58% baseline, 63% year 2, 69% year 3
- Average effective radiation dose 1.5 mSv

NELSON trial

- Dutch-Belgium trial, results released in 2020
- 16,000 people, ages 50-74
- Decrease in mortality from lung cancer
 - 24% in men, 33% in women

Stage 1: 65% baseline, 76% year 2, 73% year 3

Lung Cancer Screening 101

Normal CT

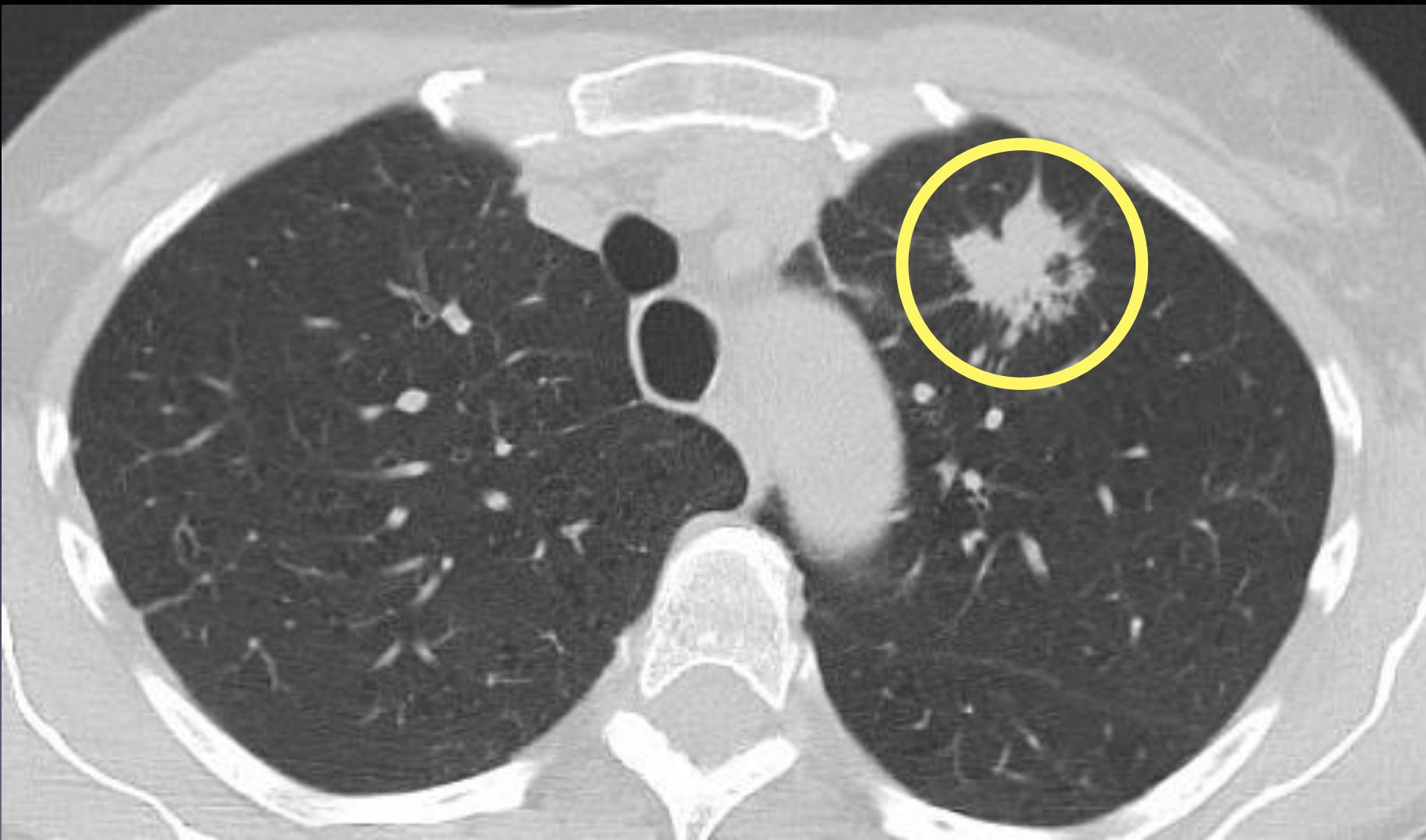


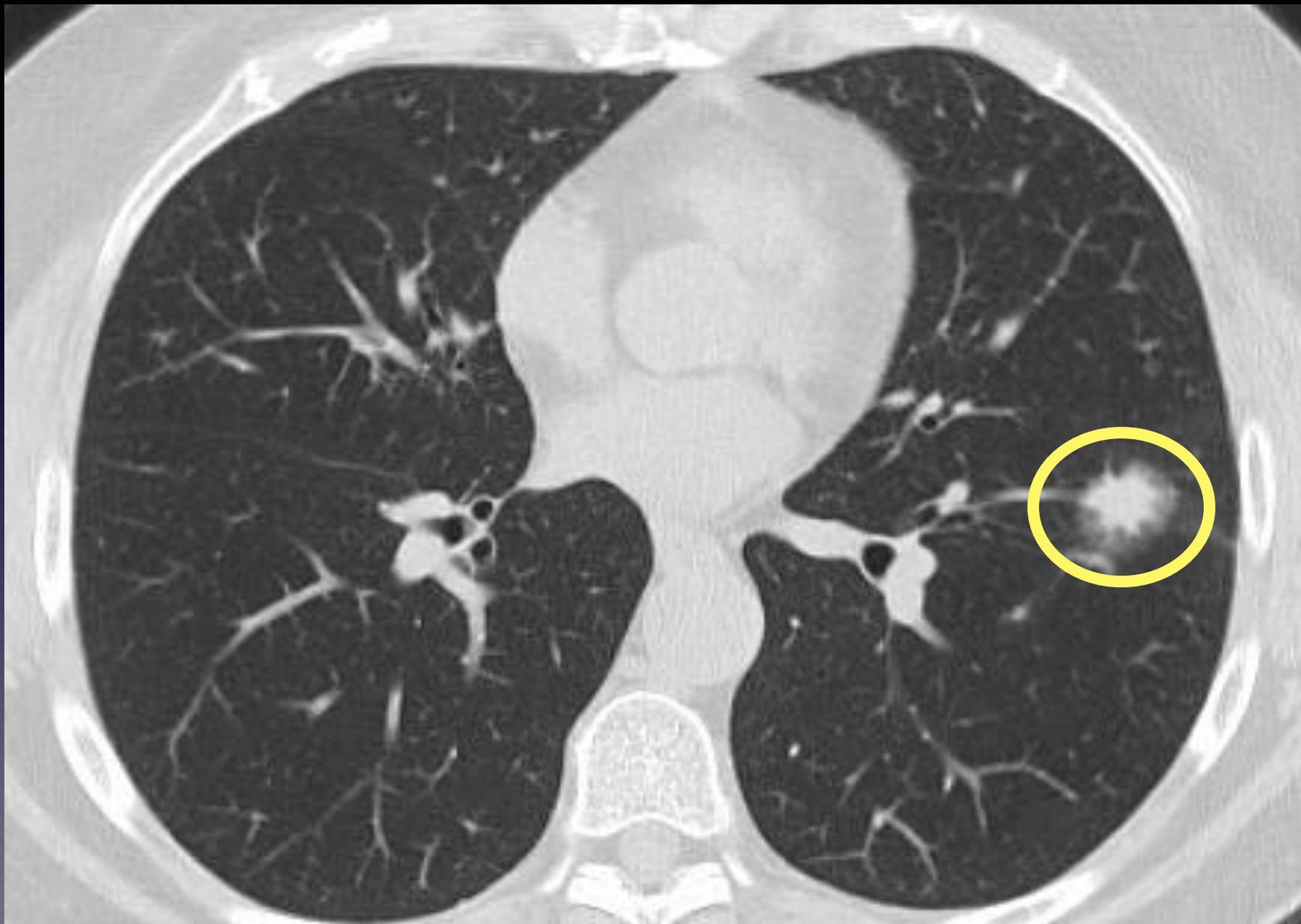
Abnormal CT









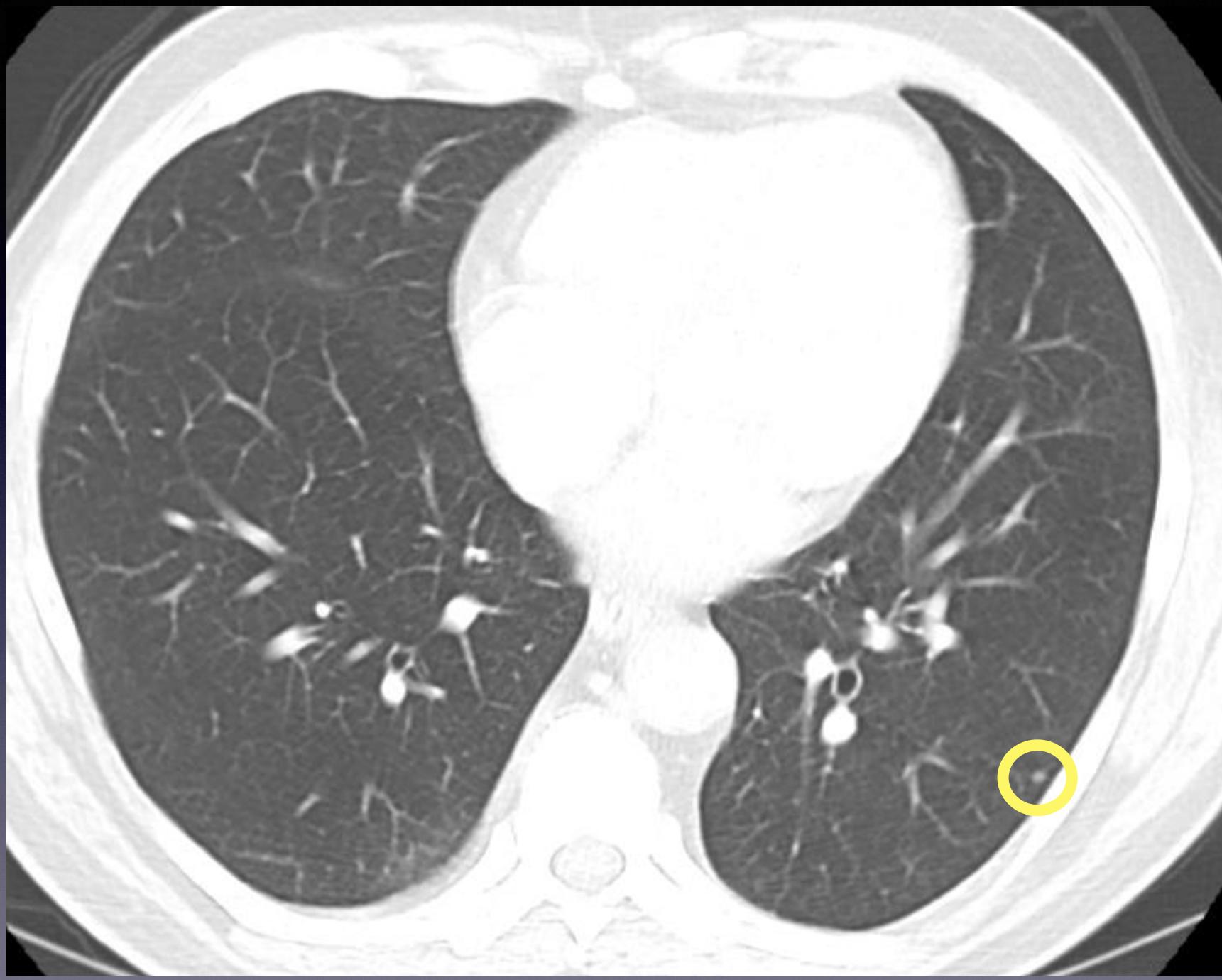


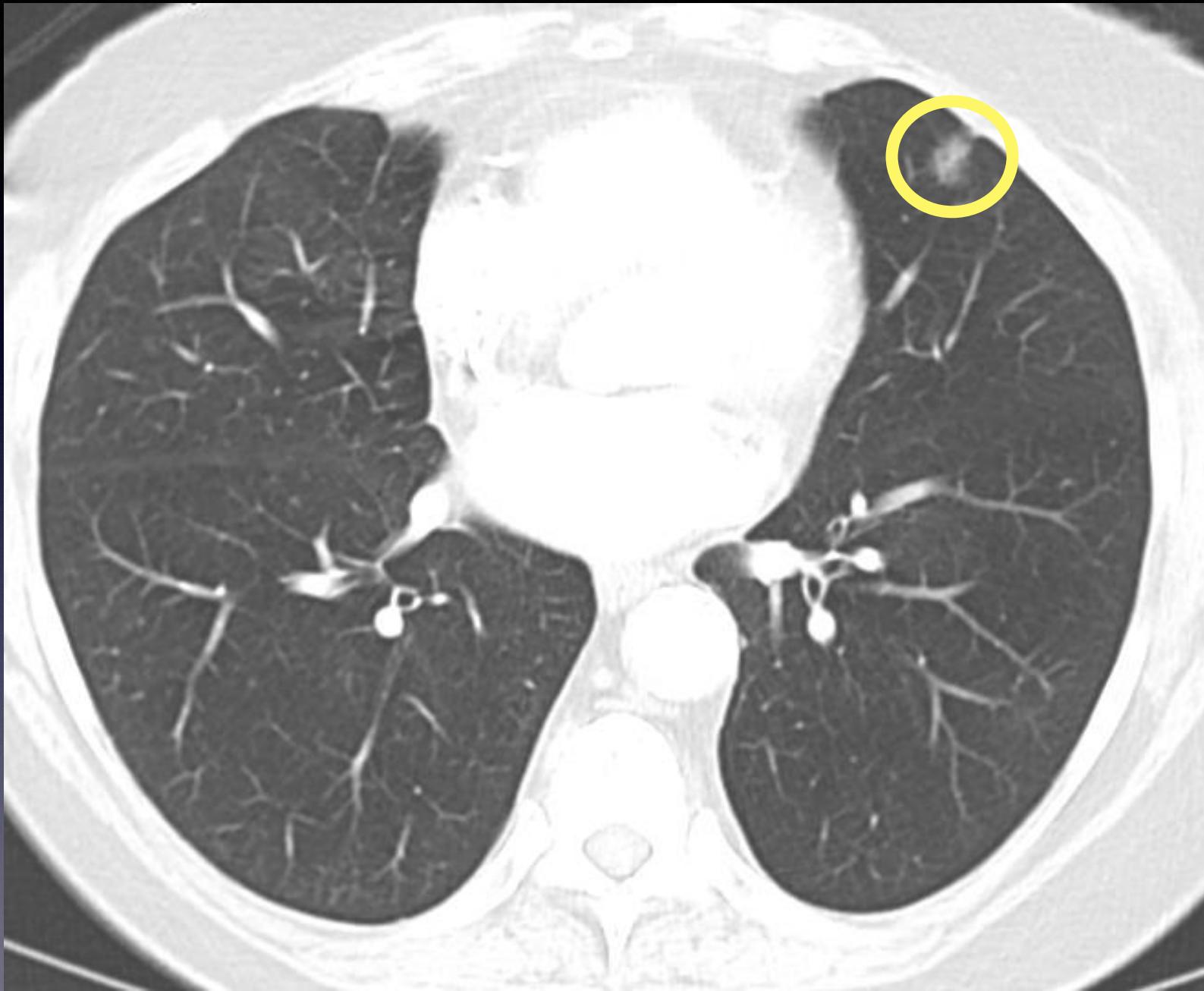


No screening tool is perfect.

Cons of LDCT

- Cost
- Time
- False positive
- Biopsy complications
- Overdiagnosis
- Incidental findings
- Radiation, <6 months background radiation, 1.5 mSv





LDCT is a successful lung cancer screening exam that saves lives.

New updated
lung cancer screening
recommendations in 2021!

Final Recommendation Statement

Lung Cancer: Screening

March 09, 2021

Recommendations made by the USPSTF are independent of the U.S. government. They should not be construed as an official position of the Agency for Healthcare Research and Quality or the U.S. Department of Health and Human Services.



Ages 50-80 years with
20 pack year smoking hx.
Currently smoke or quit
within 15 years.

“50-80-20-15”

Don't qualify for free screening right now

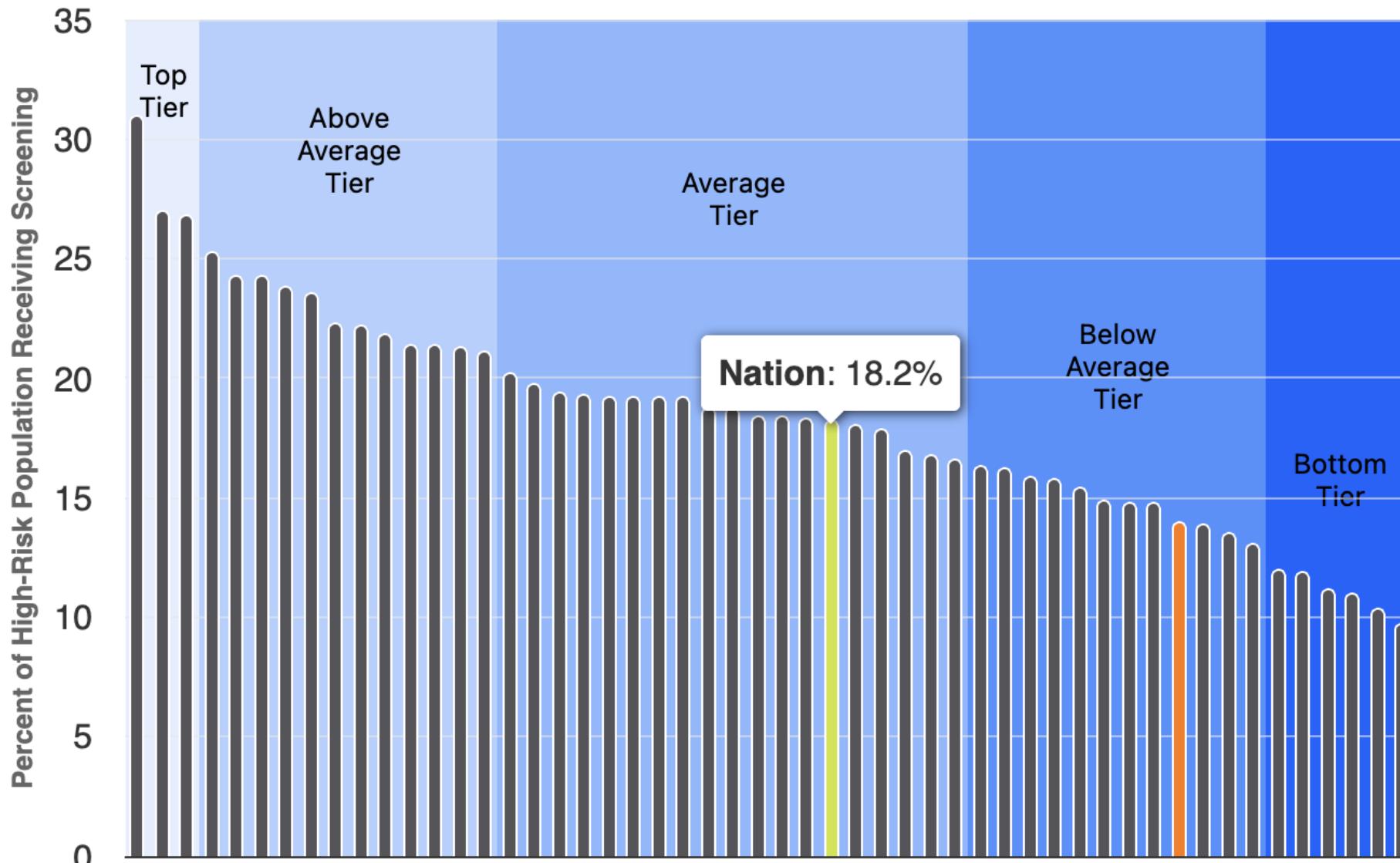
- 2nd hand smoke
- Occupational exposure
- Radon exposure

Screening rates with LDCT?

Terrible.

Only 18.2% of eligible high-risk
people screened
in the US in 2025.

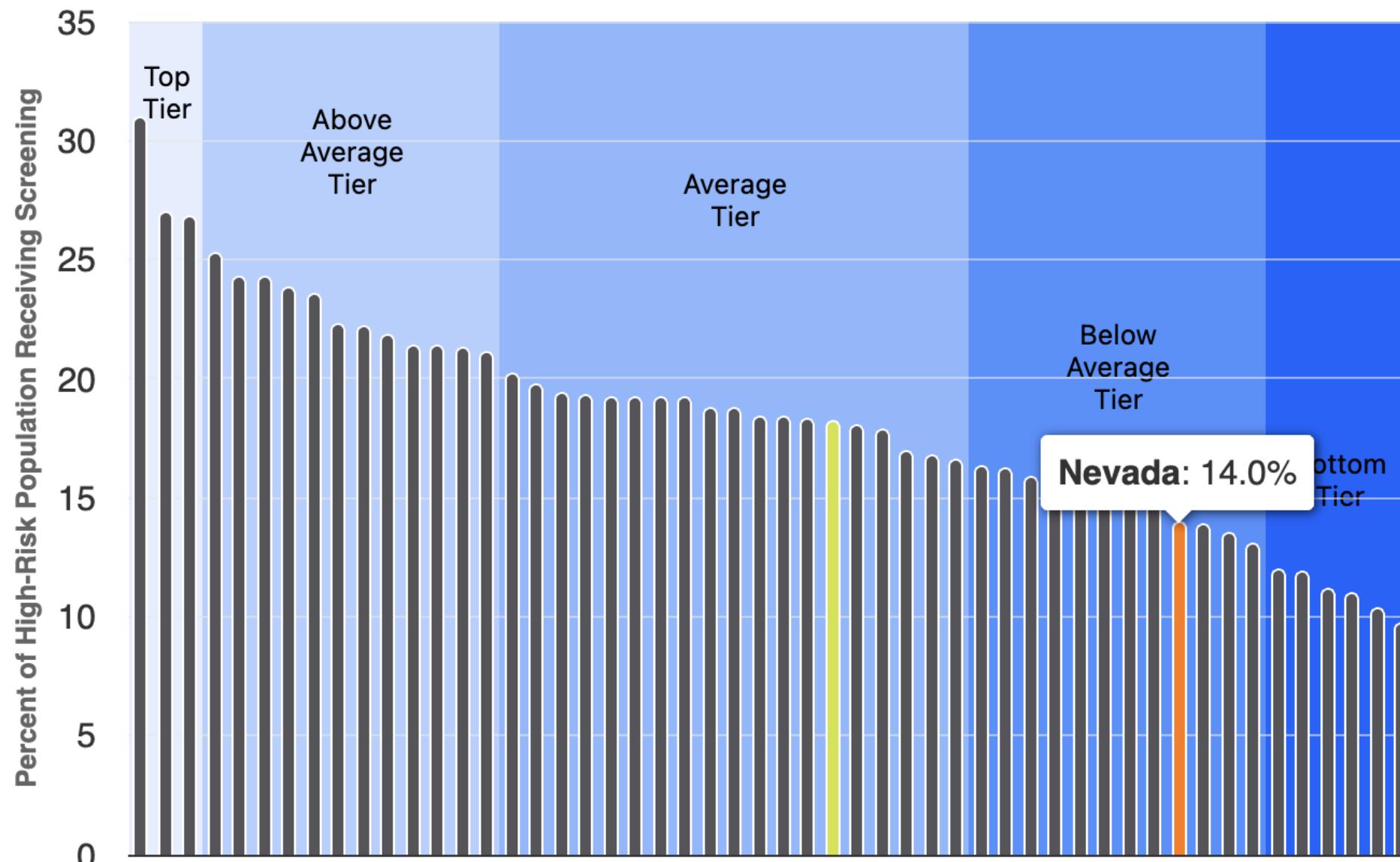
State Ranking by High-Risk Screening Rate



Nevada?

Only 14% of high-risk people are
screened
in Nevada,
below the national average of
18.2%.

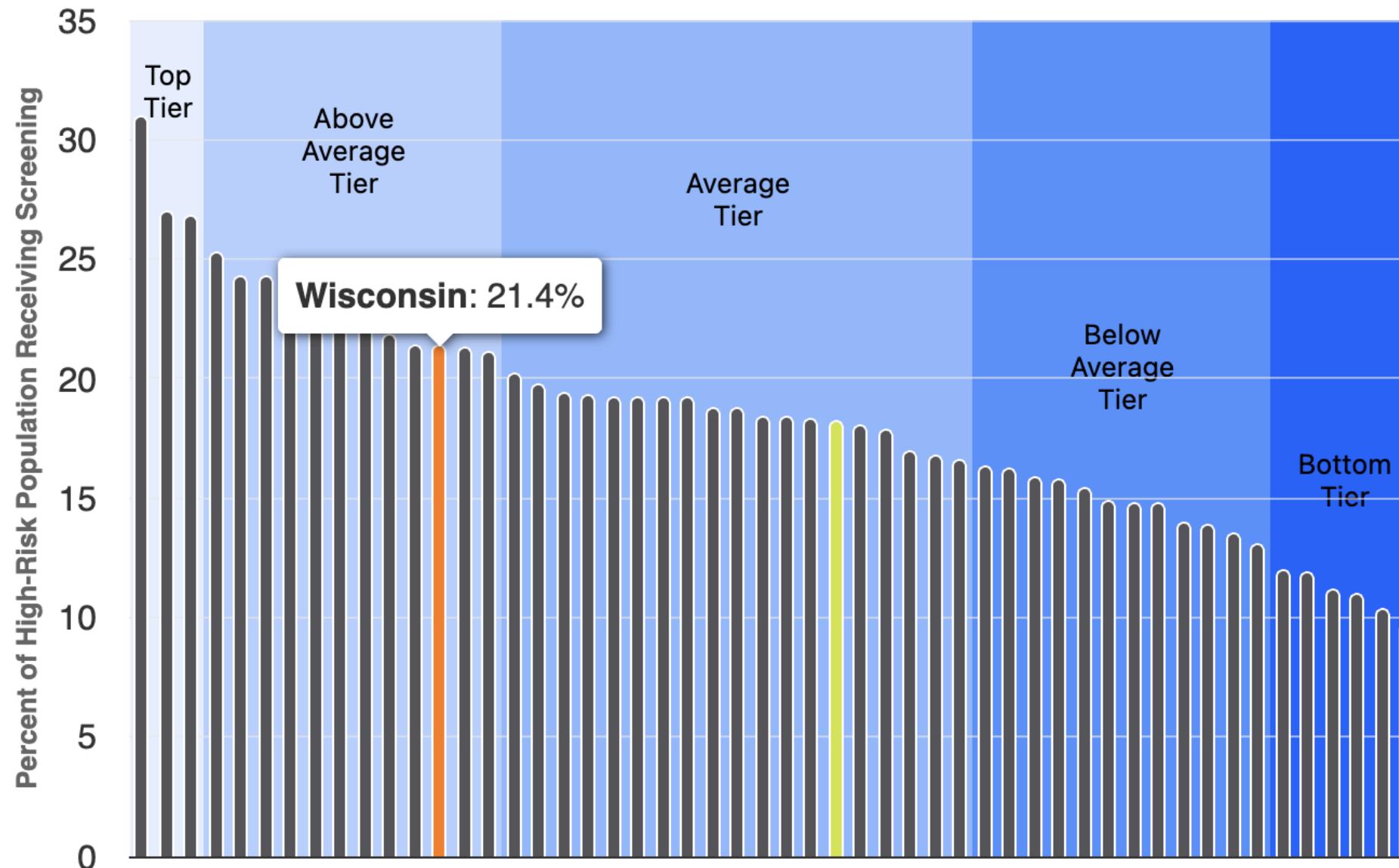
State Ranking by High-Risk Screening Rate



Wisconsin?

21.4% of high-risk people are
screened
in Wisconsin,
which is above the national
average of 18.2%.

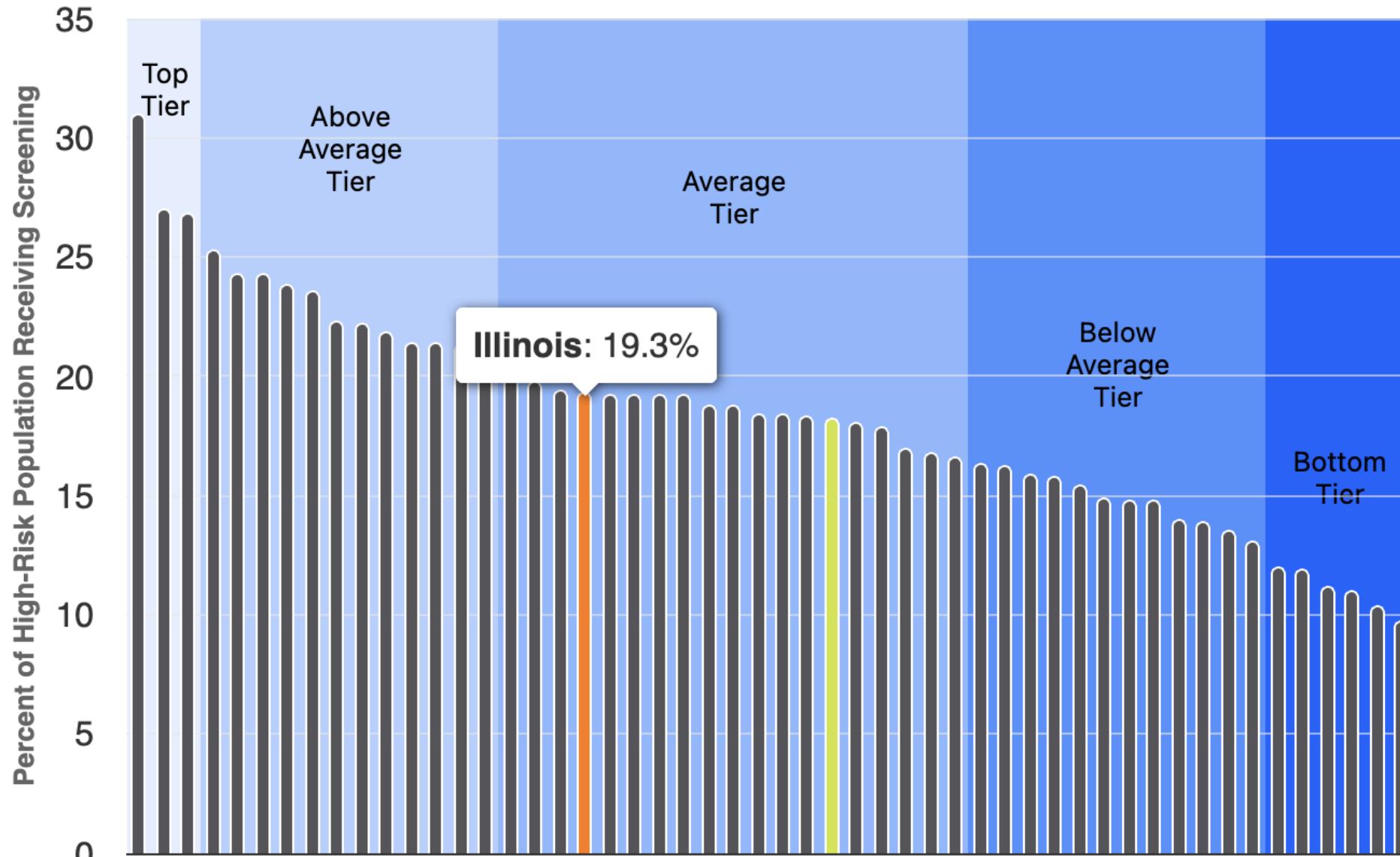
State Ranking by High-Risk Screening Rate



Illinois?

19.3% of high-risk people are
screened
in Illinois,
which is slightly higher than the
national average of 18.2%.

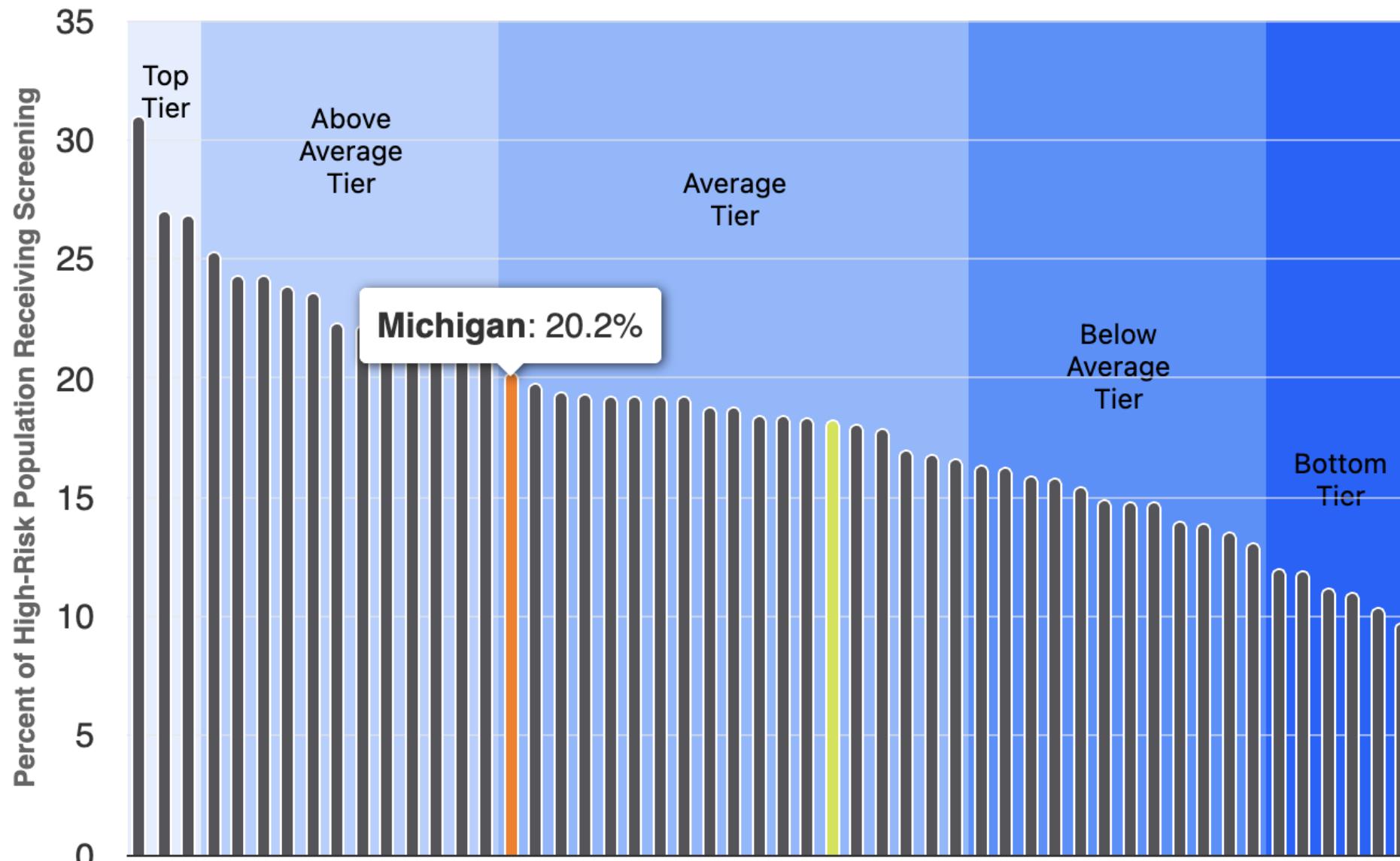
State Ranking by High-Risk Screening Rate



Michigan?

20.2% of high-risk people
are screened
in Michigan,
which is slightly higher
than the national average
of 18.2%.

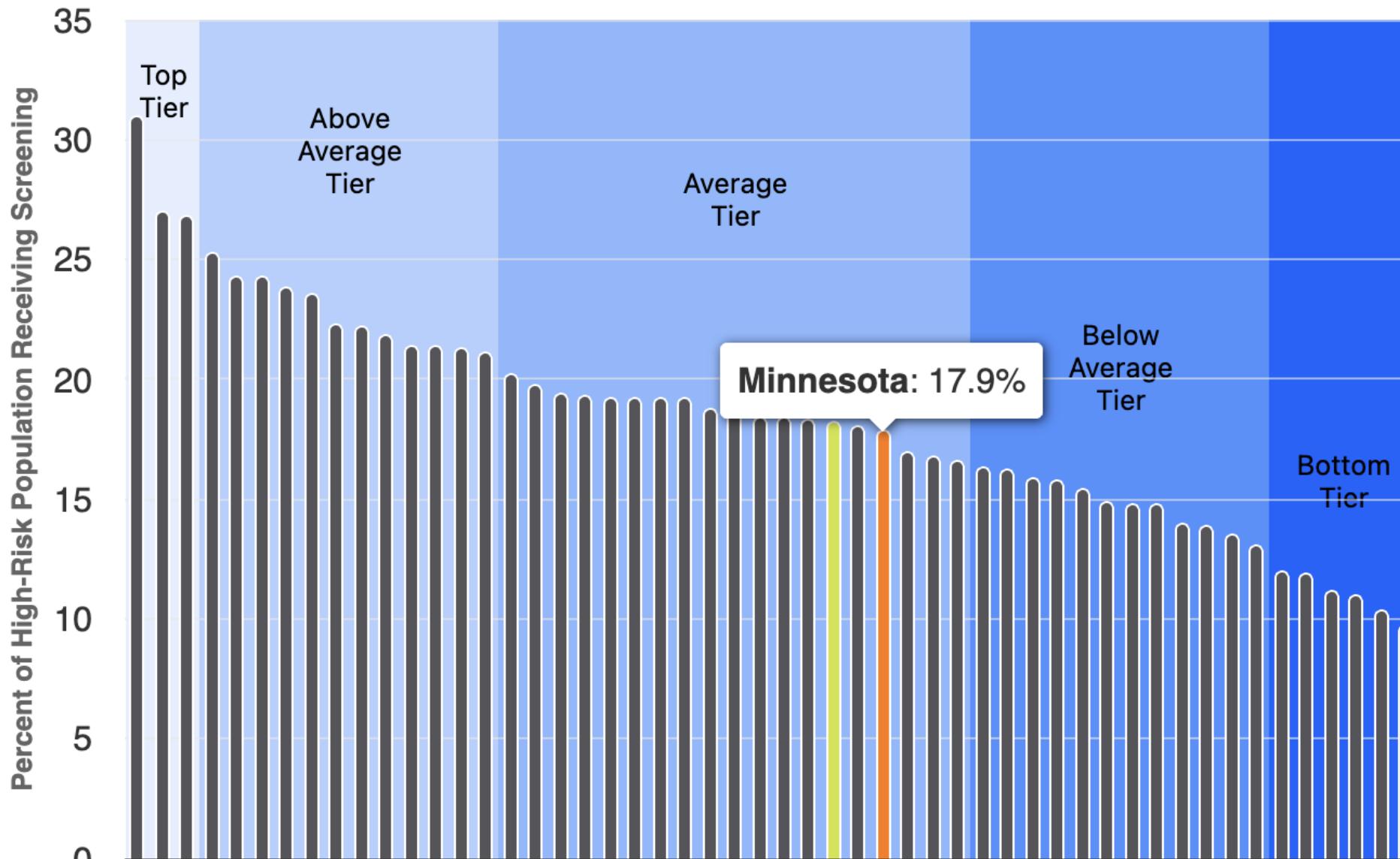
State Ranking by High-Risk Screening Rate



Minnesota?

17.9% of high-risk people
are screened
in Minnesota,
which is slightly lower
than the national average
of 18.2%.

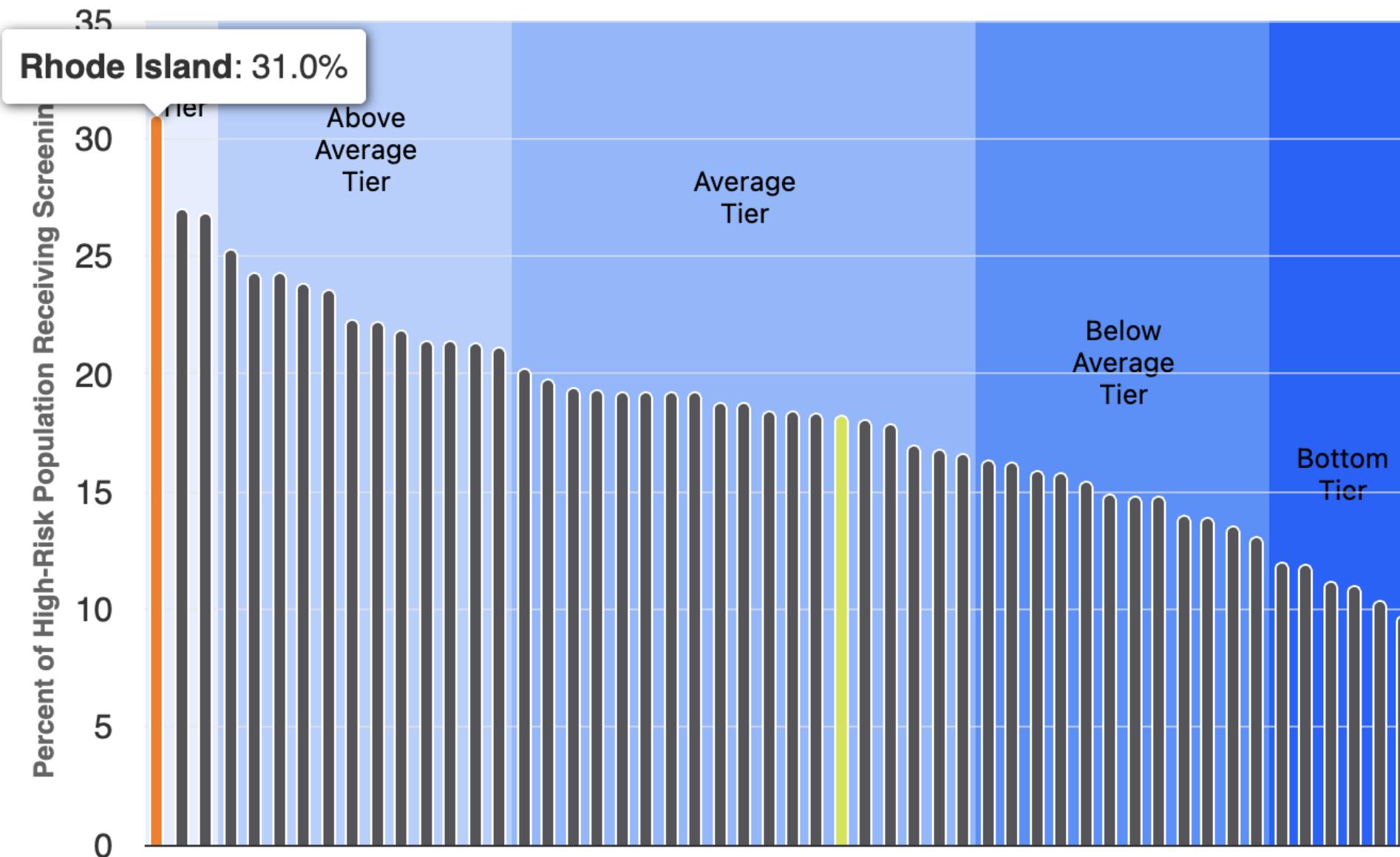
State Ranking by High-Risk Screening Rate



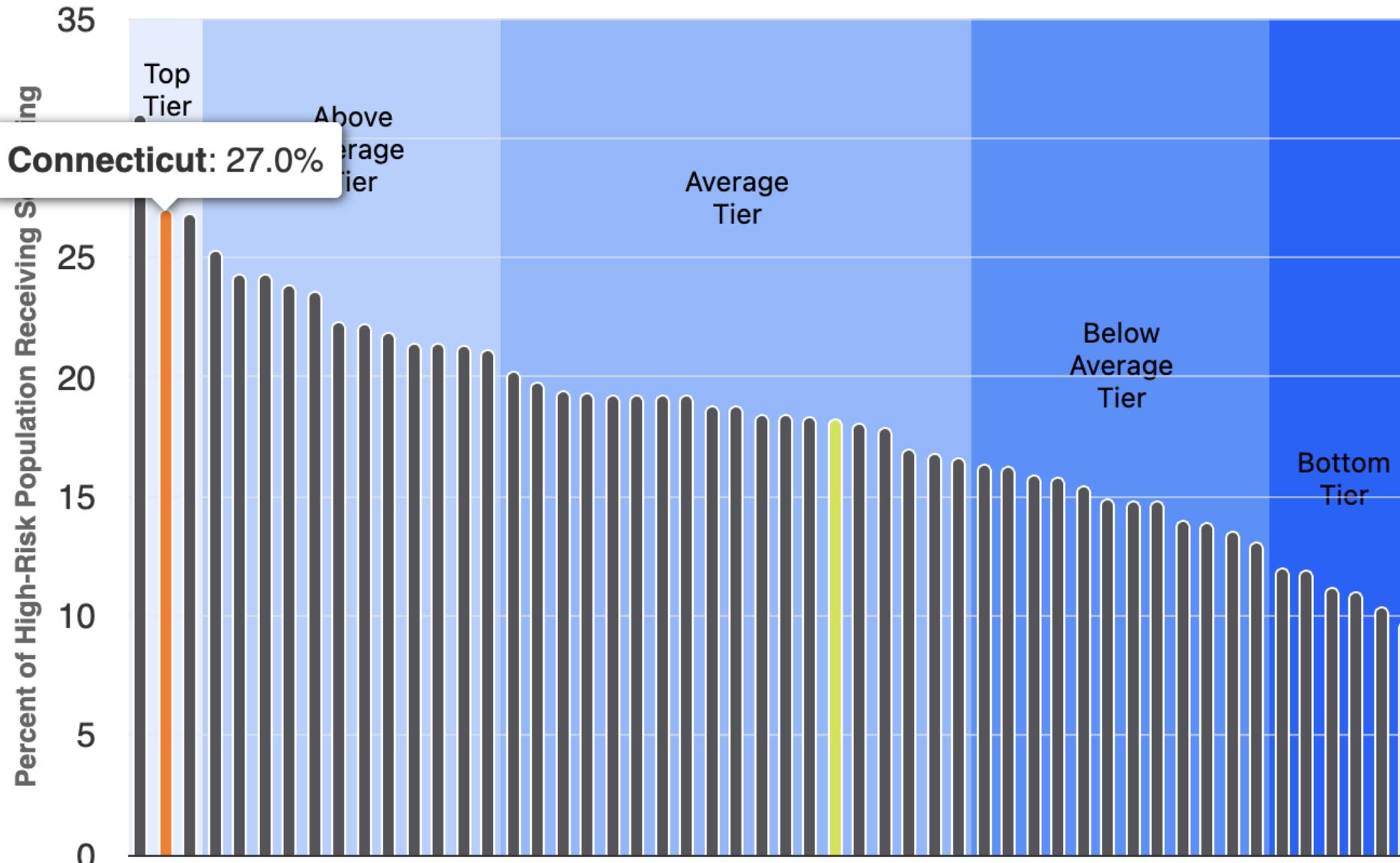
Top 3 states?

State Ranking by High-Risk Screening Rate

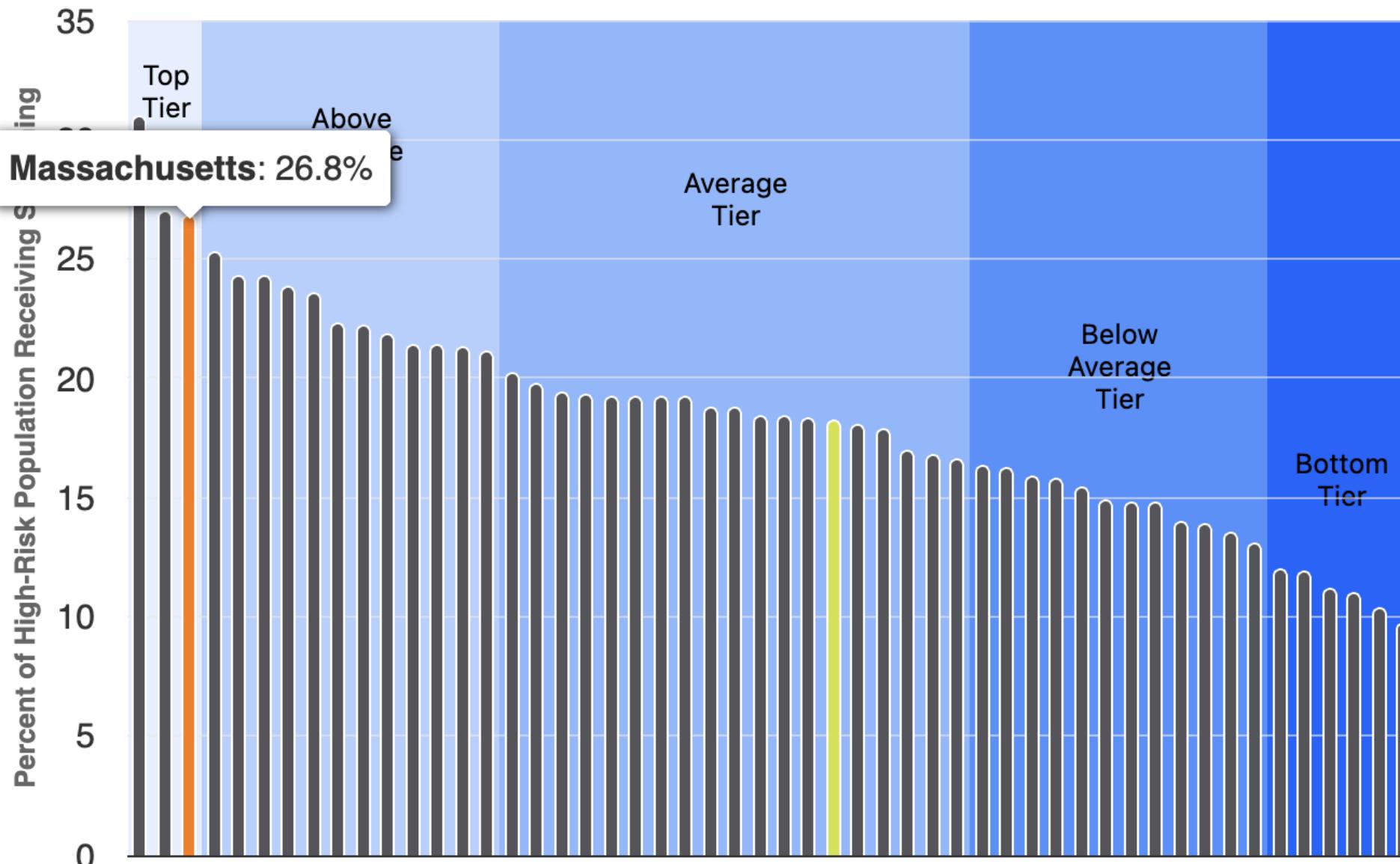
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State Ranking by High-Risk Screening Rate

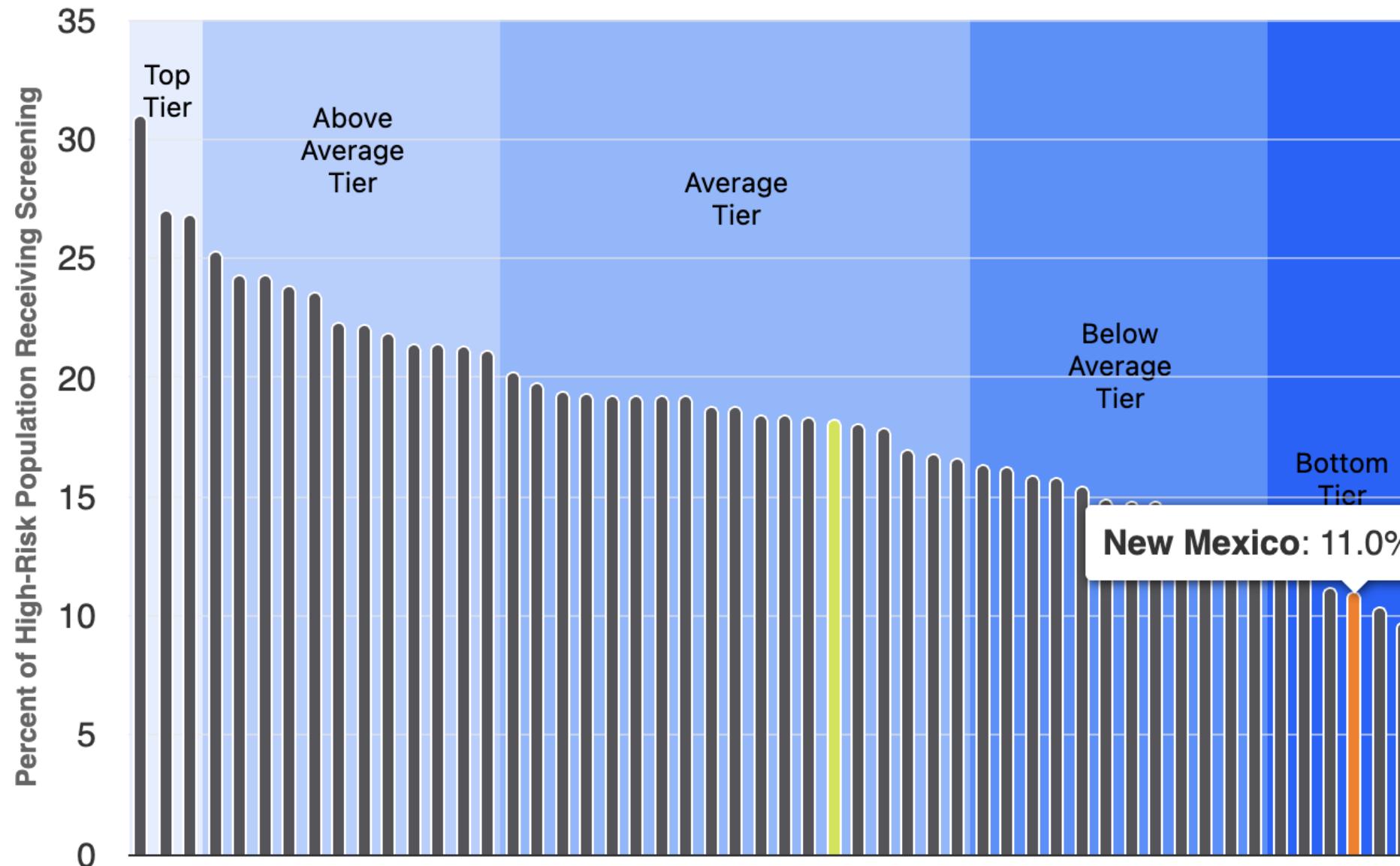


State Ranking by High-Risk Screening Rate

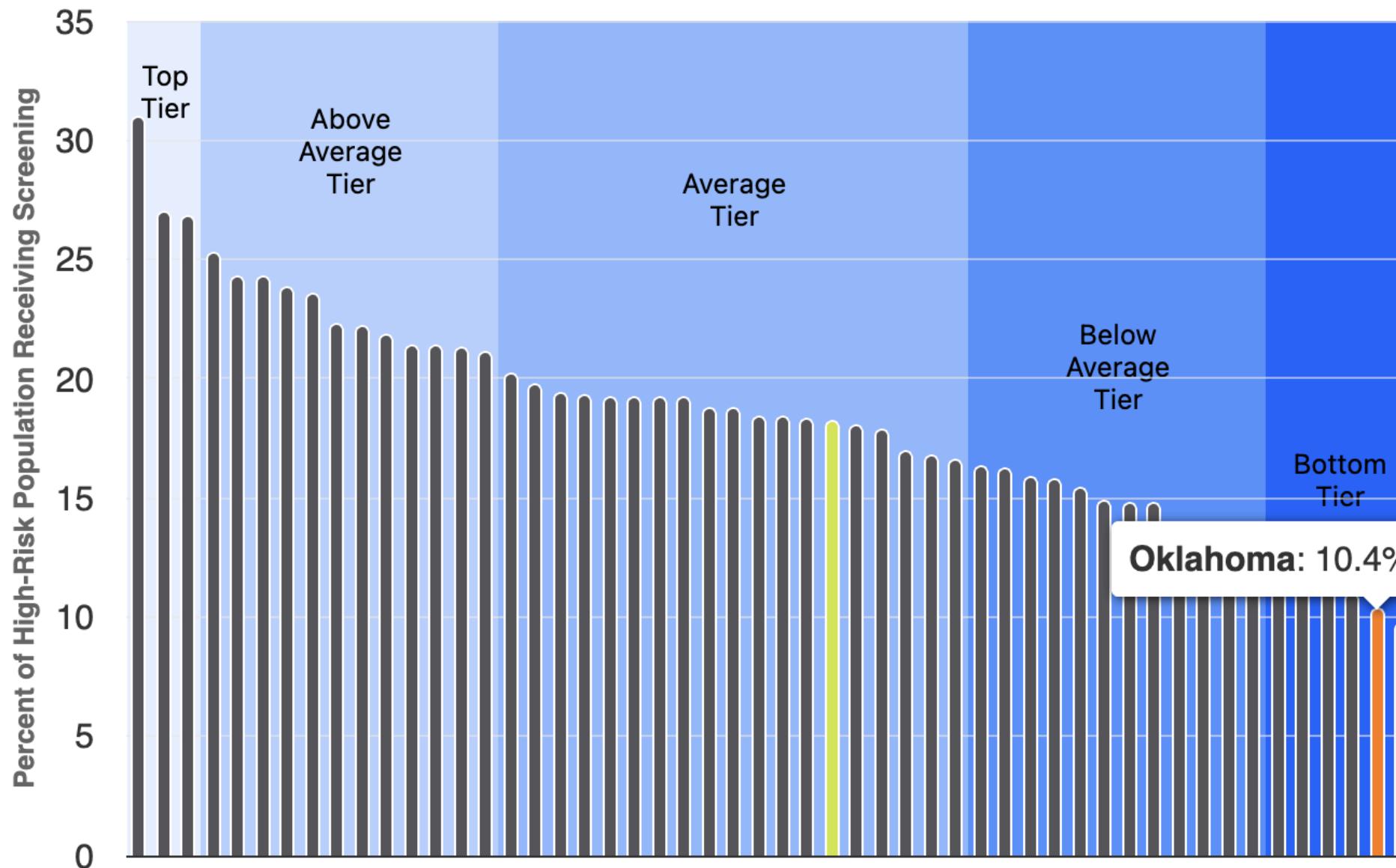


Bottom 3 states?

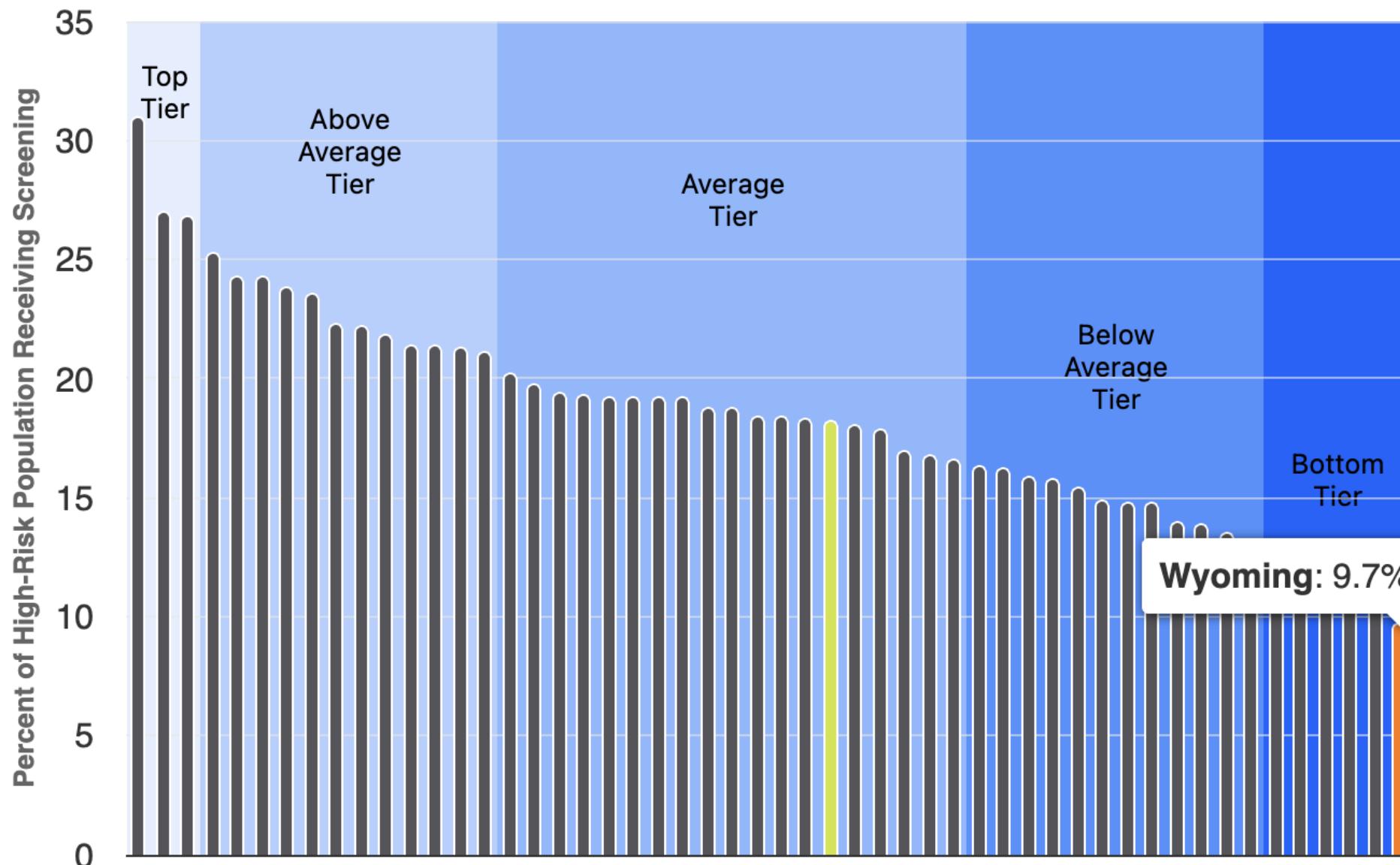
State Ranking by High-Risk Screening Rate



State Ranking by High-Risk Screening Rate



State Ranking by High-Risk Screening Rate

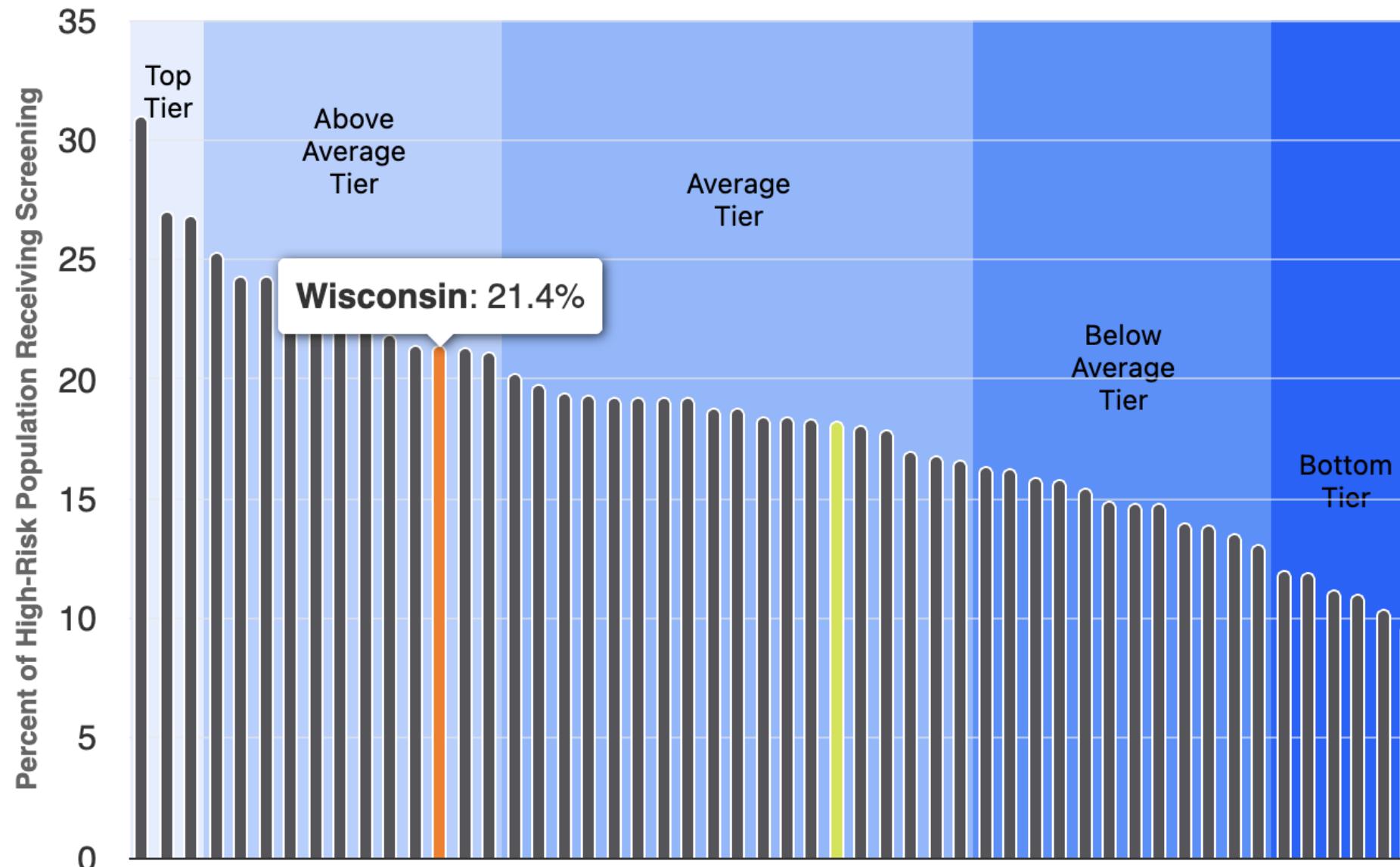


We have to fix this.

How?

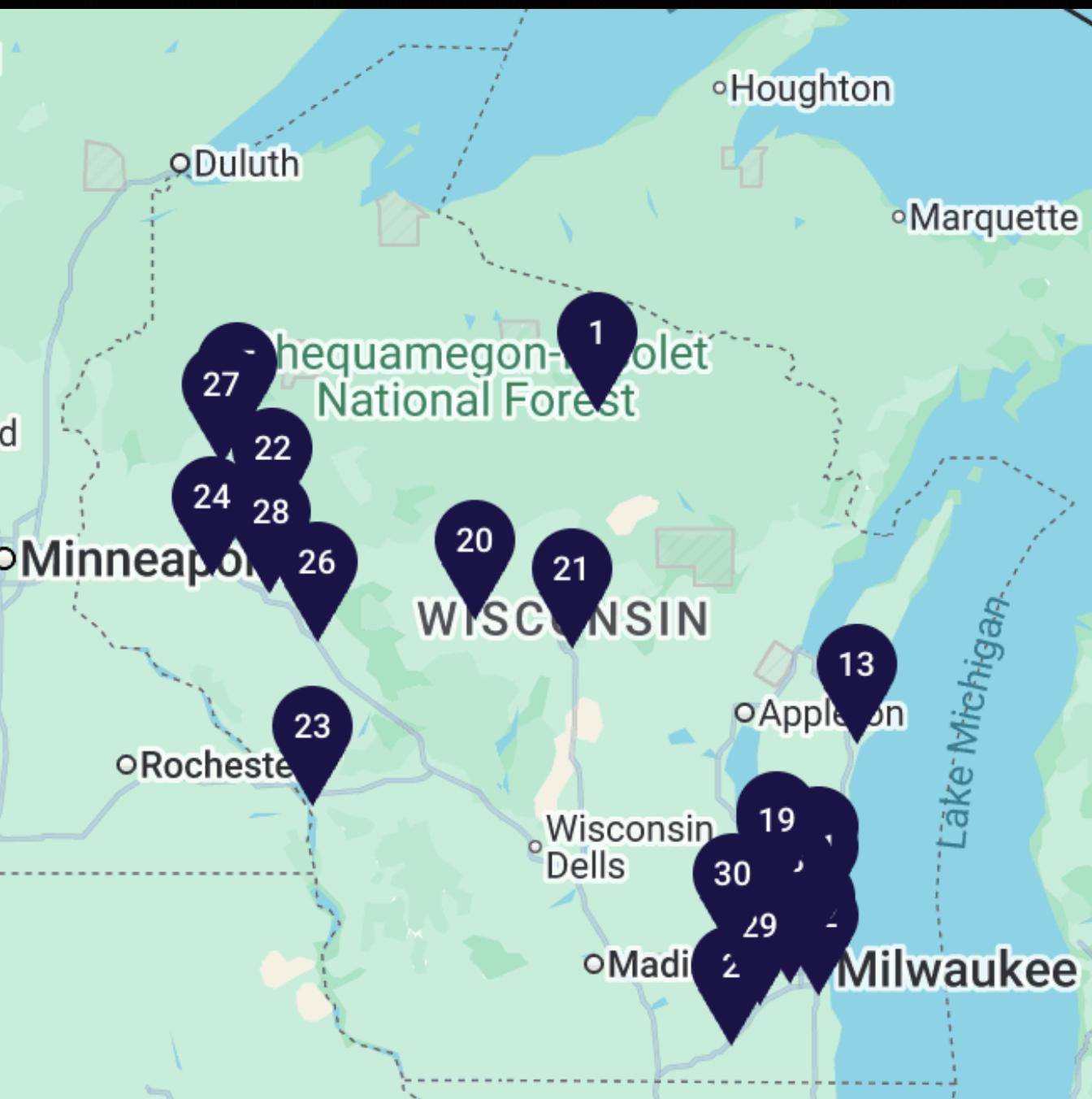
Time out.

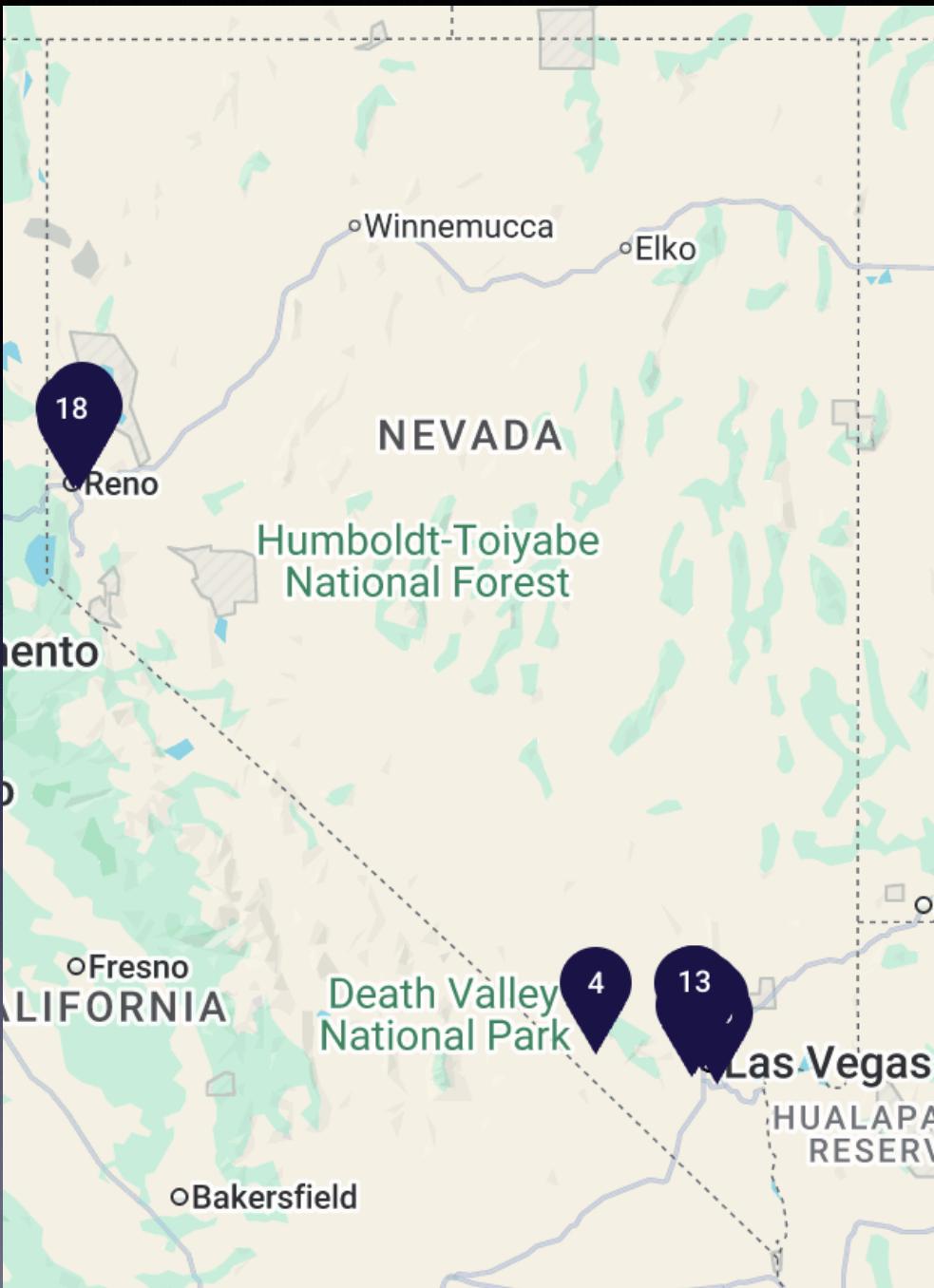
State Ranking by High-Risk Screening Rate



2 issues about
lung cancer in
Wisconsin:

#1. Screening Deserts and
Radon Testing Deserts.





#2. Indigenous Peoples and
lung cancer.

Highlighted Disparity

Indigenous peoples in Wisconsin are most likely to be diagnosed with lung cancer

Indigenous Peoples:

- The rate of new lung cancer cases is 97.7 per 100,000 population among Indigenous peoples (American Indians/Alaska Natives) in Wisconsin, significantly higher than the rate of 39.8 among Indigenous Peoples nationally, and significantly higher than the rate of 54.8 among white individuals in Wisconsin.

Indigenous Peoples in Wisconsin and Lung Cancer

- Higher incidence of cancer
- More likely to be diagnosed at later stage
- Lower screening rates
- Barriers to screening and care

How do we improve
lung cancer
screening rates?

Increase LDCT rates

- 1. Increase numbers of LDCT facilities
- 2. Reduce barriers to LDCT
- 3. Improve provider and community awareness of LDCT
- 4. Improve Health Equity: reducing racial, economic and rural health disparities
- 5. Collaboration

Awareness campaigns

ALA Saved By The Scan Commercial



Savedbythescan.org

 American Lung Association

[Call the Lung HelpLine](#) [Ask a Question](#)

Shop Blog LONG FORCE Help & Support Login

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Lung Health & Diseases [Quit Smoking](#) [Clean Air](#) [Research & Reports](#) [Policy & Advocacy](#) [Get Involved](#) [DONATE](#)

[Home](#) > [Lung Health & Diseases](#) > [Lung Disease Lookup](#) > [Lung Cancer](#) > Lung Cancer Screening

Saved By The Scan

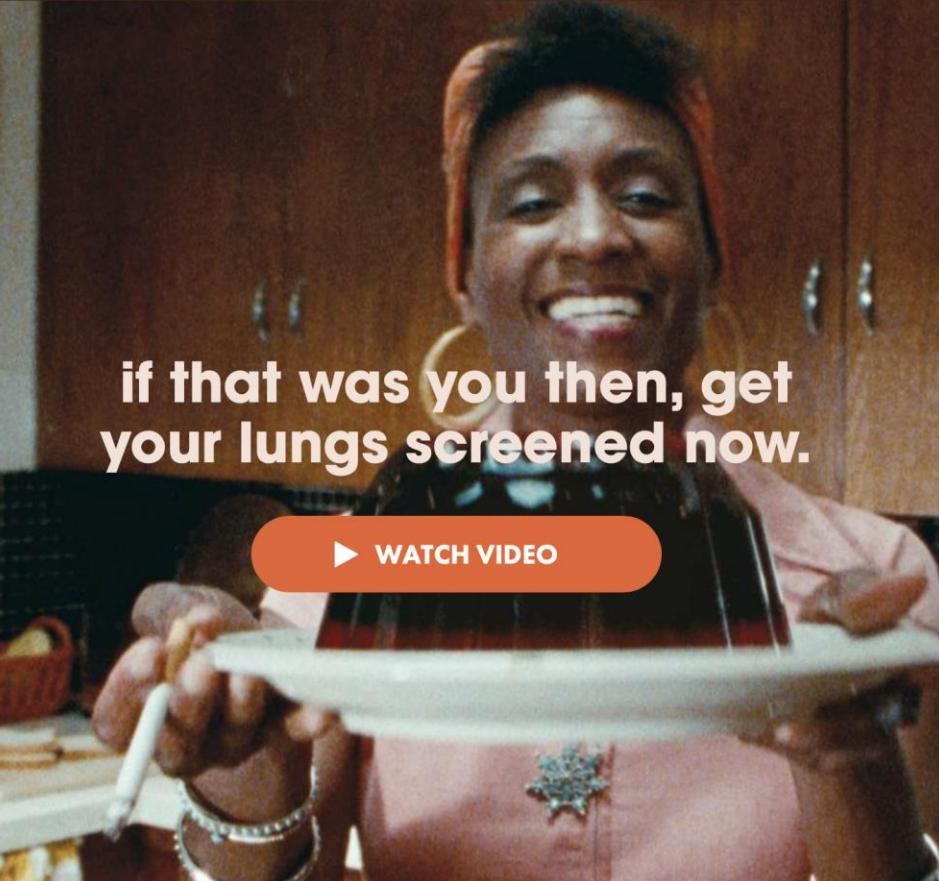
If you smoked, this new low-dose CT lung cancer screening test and eligibility quiz could save your life.

Take the quiz to see if you should get screened.

[TAKE THE QUIZ](#)



Screenyourlungs.org



if that was you then, get your lungs screened now.

▶ WATCH VIDEO

ESPAÑOL → 中

HOME SCREENING QUIZ RESOURCES

Knowing what's going on with your lungs is easier than you think. Take this quiz to see if you meet certain criteria for screening.

TAKE THE QUIZ

Go2foundation.org



The image shows a medical professional in white scrubs assisting a patient who is lying on a table inside a CT scan machine. The professional is smiling and looking at the patient. The background shows a hospital setting with medical equipment.

GO2 FOUNDATION FOR LUNG CANCER
Empower Everyone. Ignore No One.

Home What is Lung Cancer Risk & Early Detection **Treatments & Side Effects** Resources & Support Get Involved

About Screening

Lung cancer screening saves lives.



[Home](#) [About the Ribbons](#) [News](#) [Events](#) [Stories](#) [Community](#) [FAQs](#) [About Us](#)

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It's time to change the lung cancer story.



The White Ribbon Project promotes awareness about lung cancer by changing public perception of the disease.

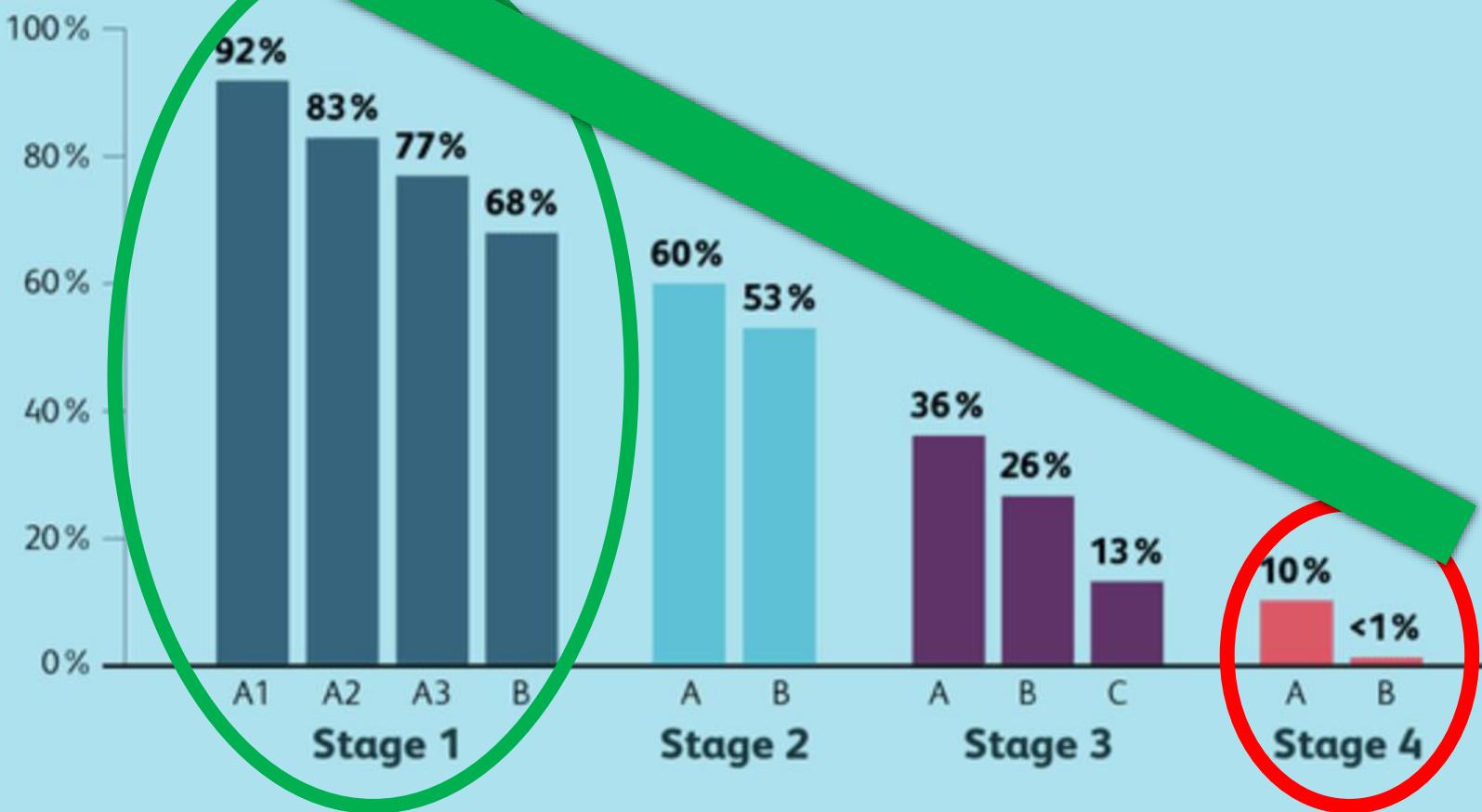
Community awareness

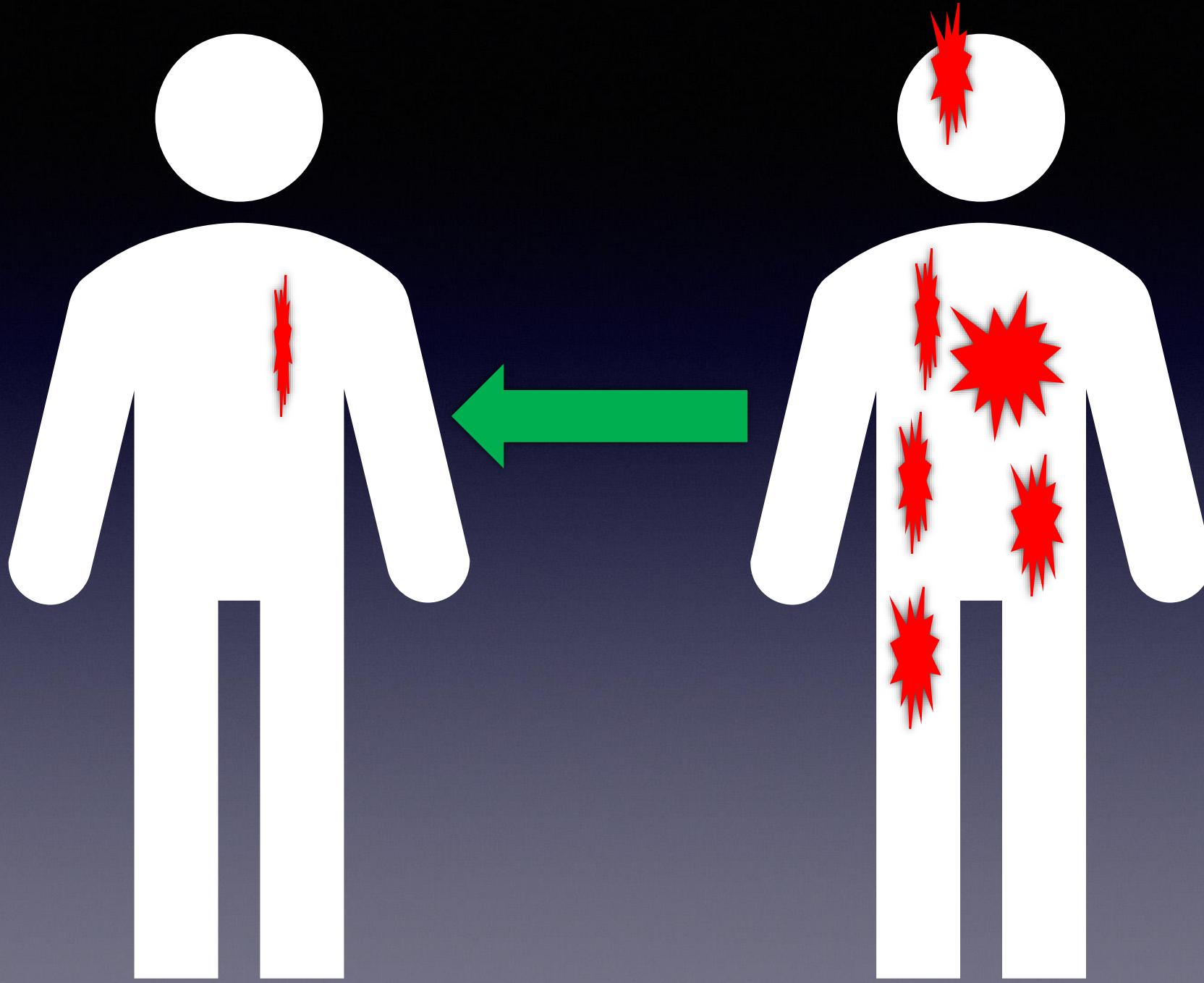
- Normalize/Promote LDCT for healthy lifestyle
- “Saved by the Scan” and Scan-a-thon events
- Increase support for people with lung cancer
- November is Lung Cancer Awareness Month
- Reduce stigma, White Ribbon Project

Save lives from
lung cancer.

Stage Shift through Screening!

Non-Small Cell Lung Cancer: 5-Year Survival Rates





Screening Saves Lives.

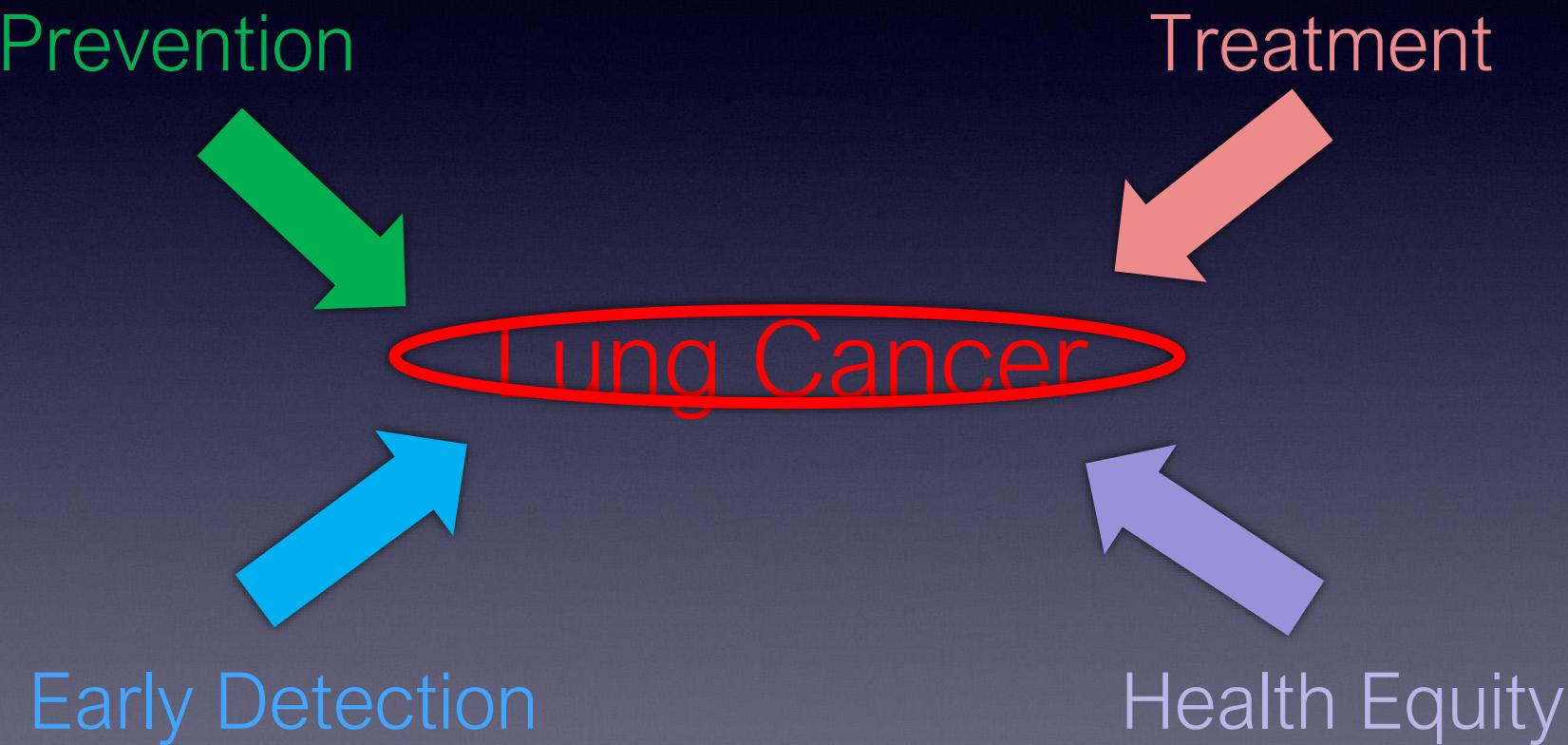
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Saving lives from lung cancer



Resources

- American Lung Association Lung.org
- American Cancer Society Cancer.org
- Savedbythescan.org, Screenyourlungs.org
- Go2foundation.org
- Awareness & Support: thewhiteribbonproject.org

Thank you!

Questions and Comments?

Contact info:
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