Mammography Screening Trends in Vermont: Data from the Vermont Mammography Registry

VTAAC Annual Cancer Summit
November 9, 2023

Brian Sprague, PhD
Professor, Office of Health Promotion Research, Department of Surgery
Program Co-Leader, Cancer Population Sciences, University of Vermont Cancer Center
University of Vermont

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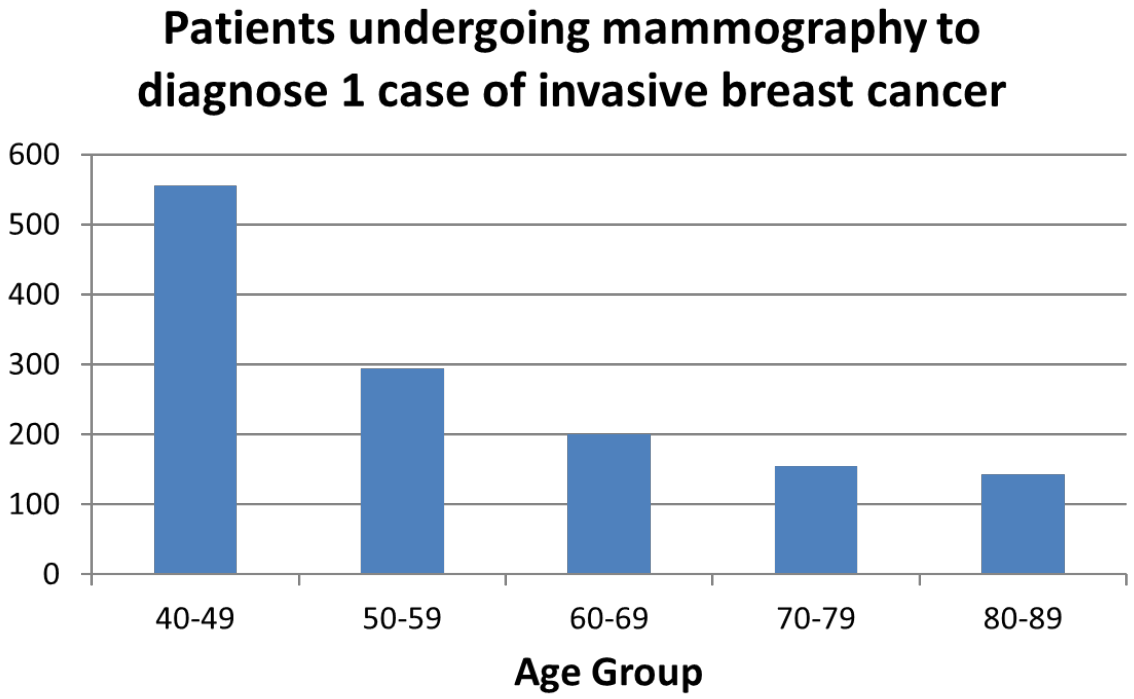
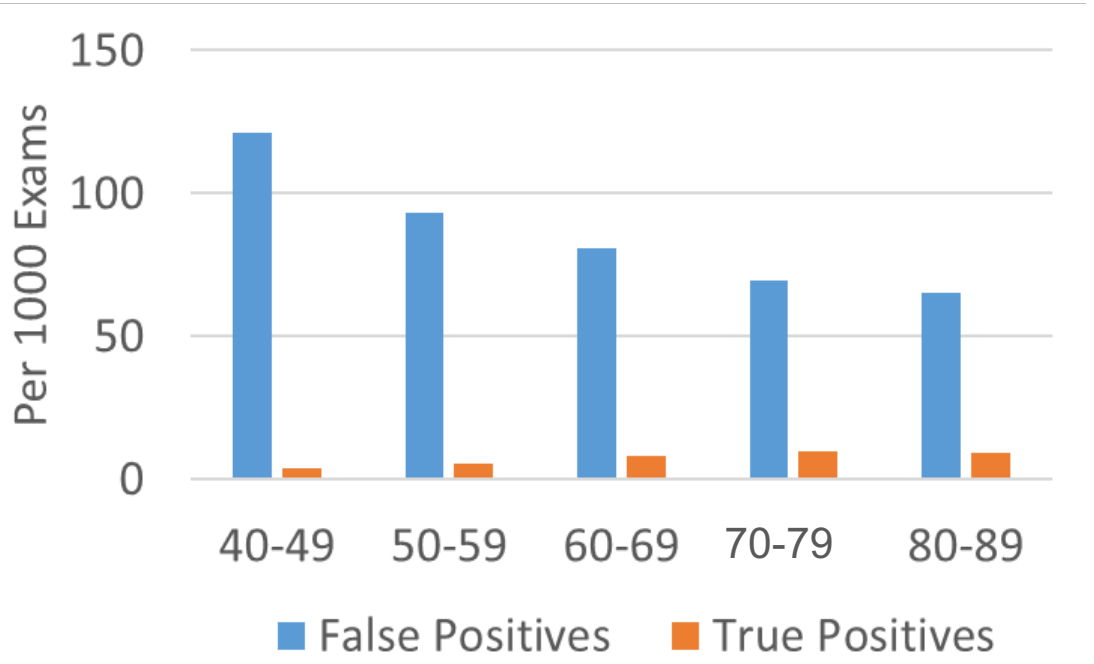
Benefits and Harms of Screening

Benefits	Harms
Reduced morbidity and mortality from breast cancer	Anxiety
	Radiation
	False positives
	Overdiagnosis

Mammography Screening Performance by Age





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Nelson et al., 2016 *Annals of Internal Medicine*

Breast Cancer Screening Recommendations

Age	United States Preventive Services Task Force (pre-2009)	United States Preventive Services Task Force (2010-2023)	United States Preventive Services Task Force (draft 2023)	American Cancer Society (Pre-2015)	American Cancer Society (2015)
40-49	Every 1-2 years	Discuss with doctor; weigh harms and benefits	Biennial mammography	Annual mammography	Annual 45-54
50-74	Every 1-2 years	Biennial mammography	Biennial mammography	Annual mammography	Biennial 55+
75+	Every 1-2 years	No recommendation	No recommendation	Annual mammography if healthy	

American College of Radiology: annual mammography for women aged 40+

Vermont Center on Behavior & Health
The University of Vermont

All groups have always recommended at least biennial mammography for women aged 50 - 74

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American College of Radiology: annual mammography for women aged 40+

COVID PANDEMIC (2020+)

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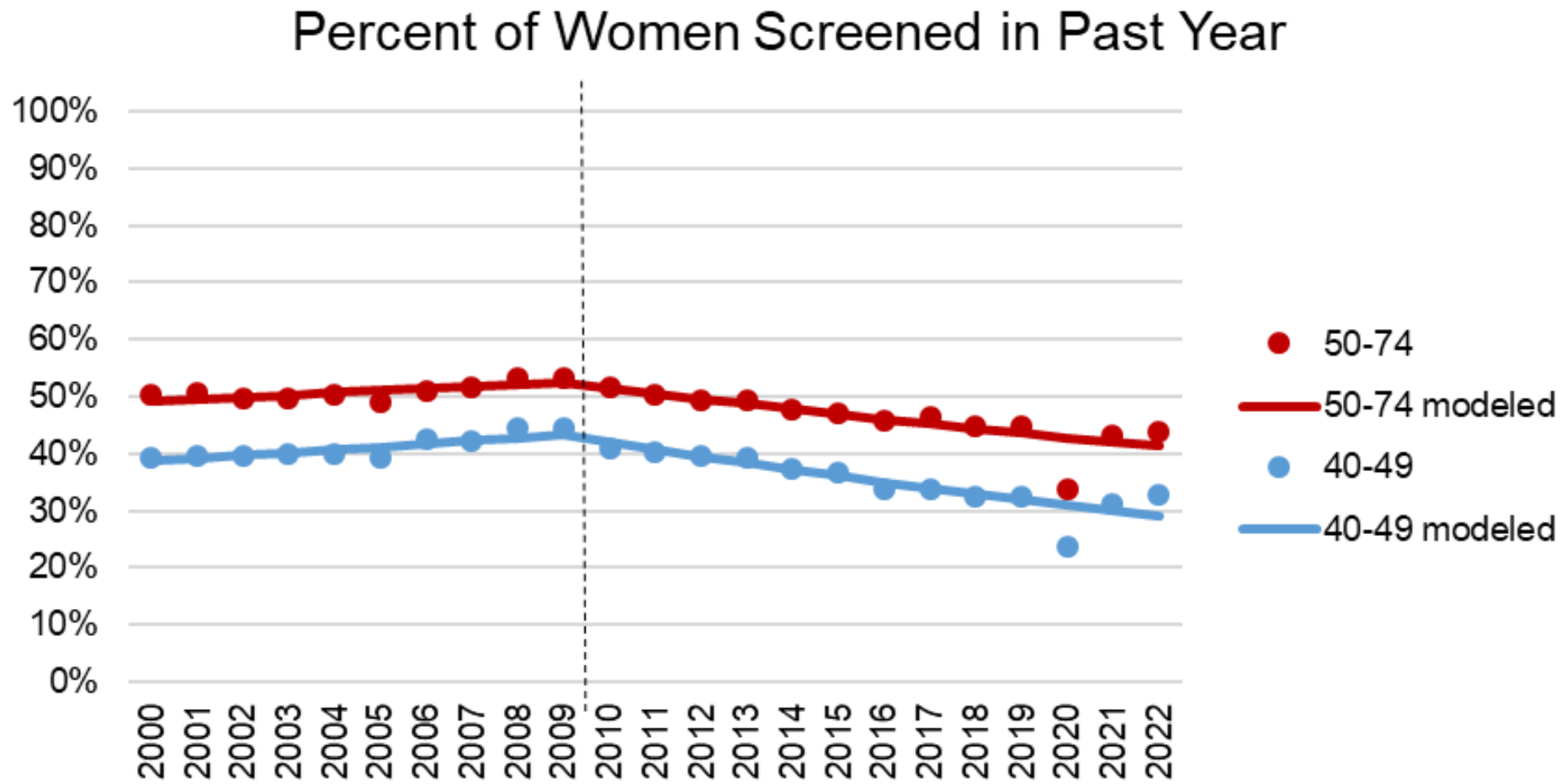
Screening Utilization

- How have mammography screening utilization patterns changed in Vermont over the past 20 years?
  - 2009 USPSTF guideline changes
  - 2015 ACS guidelines changes
  - COVID pandemic
  - Other factors? Economic, healthcare capacity, cultural attitudes, etc.

The Vermont Mammography Registry

- UVM research & quality assurance program evaluating breast cancer screening and diagnosis
  - Established in 1996
  - Funded by research grants from the National Cancer Institute
- A partnership with Vermont healthcare facilities and the Vermont Department of Health
  - Registry includes medical records data from women undergoing breast imaging at radiology facilities in Vermont
    - Statewide 1996-2022 (N=15); reduced scope 2023 forward (N=6)
  - Linkage with the Vermont Cancer Registry

Mammography Screening in Vermont



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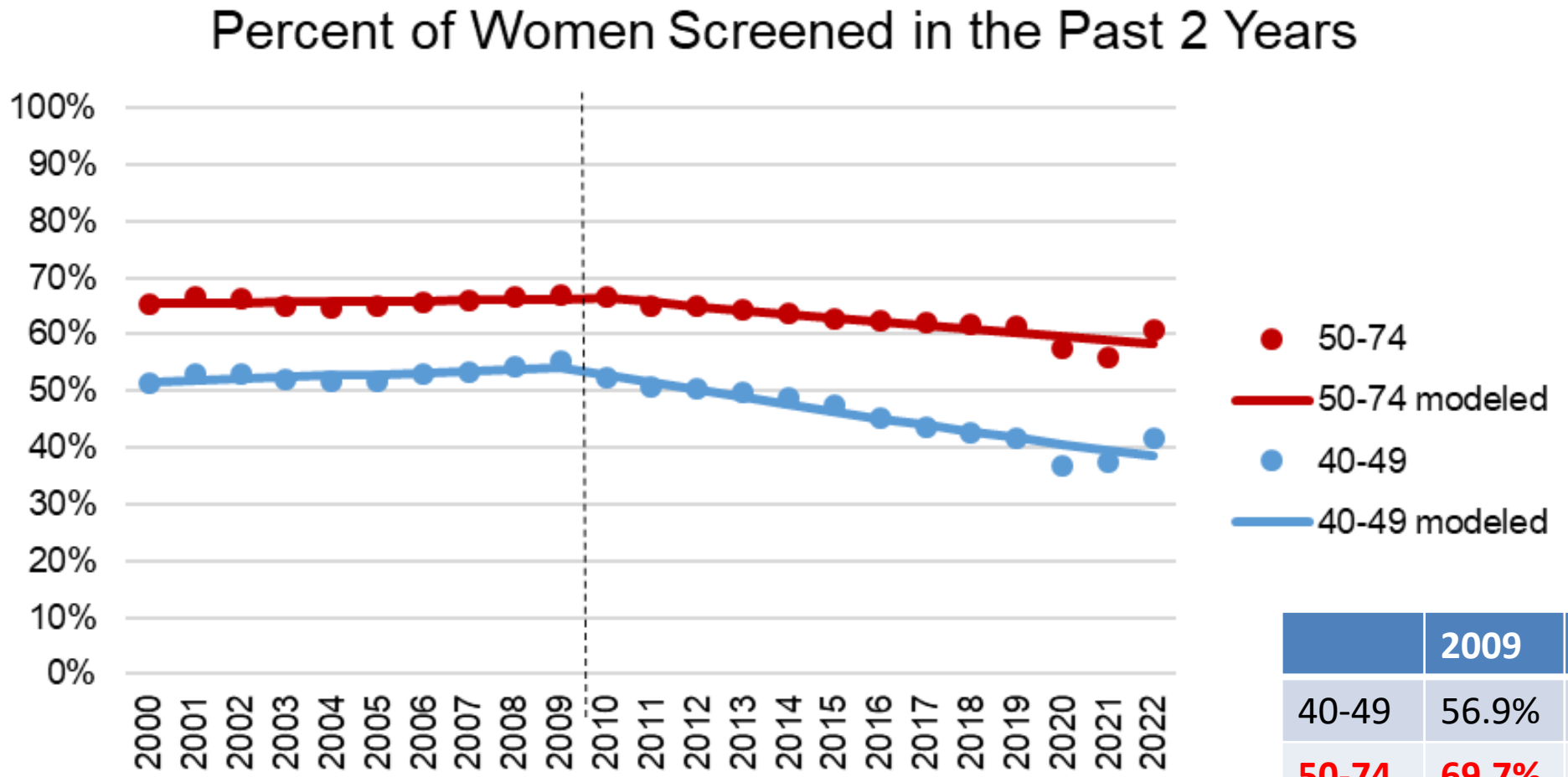
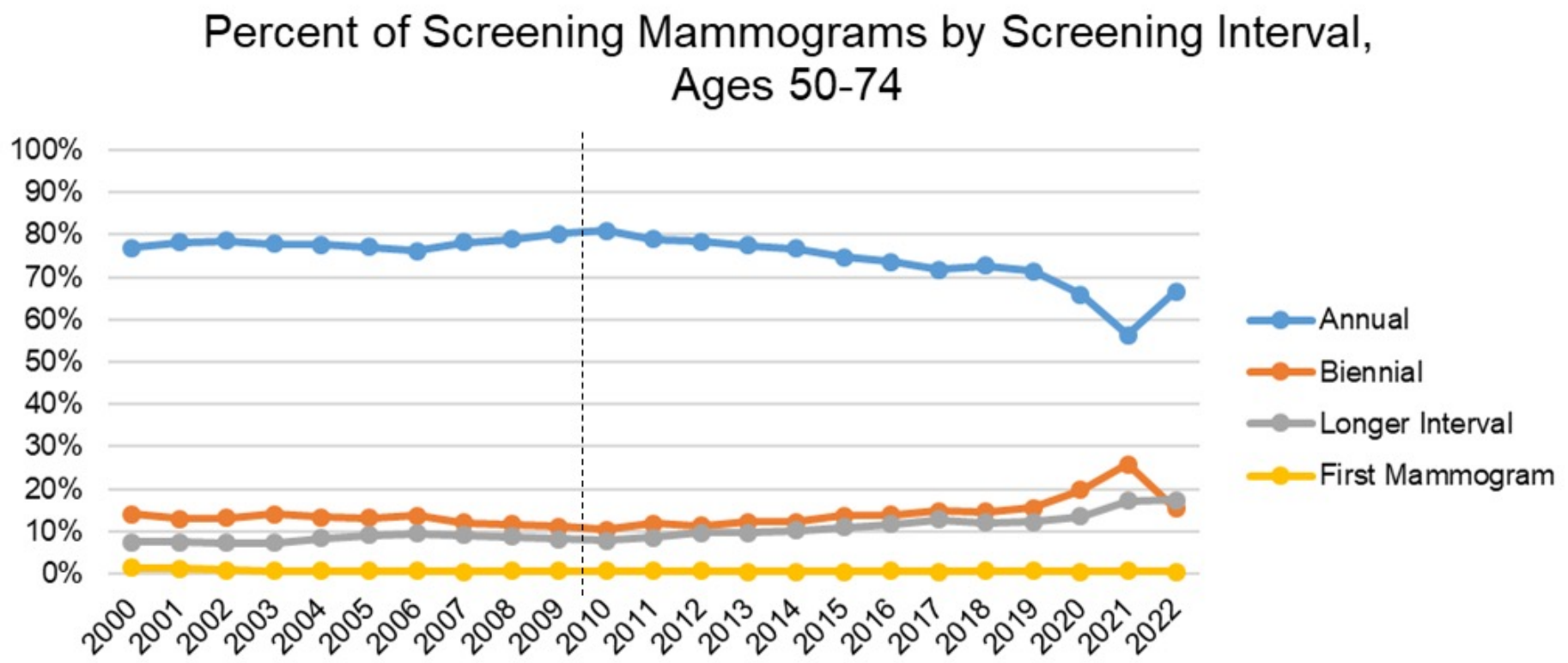
Mammography Screening in Vermont



	2009	2022
40-49	56.9%	43.2%
50-74	**69.7%**	**60.3%**
75+	52.7%	45.8%

Trends in Breast Cancer Screening



Predictors of Return to Screening after the Onset of the Pandemic

- Among 96,538 women screened in Vermont during 2018-2020 prior to the pandemic onset, what factors were associated with lower likelihood of returning to screening by end of 2022?
  - Age 40-44 (RR=0.92) or >=75 (RR=0.77)
  - Black/Native American race and Hispanic ethnicity (RR=0.84-0.91)
  - Lower educational attainment (RR=0.84 for <HS degree)
  - Low risk women (RR=0.95 for low vs. average risk)
  - Little difference by urban/rural

Conclusions

- There is a long-term trend towards reduced screening mammography utilization in Vermont
  - Declining adherence to screening at least every 2 years among women aged 50-74
    - ~60% adherence in Vermont in 2022
  - Little uptake of biennial screening
- Primary drivers of declining screening adherence are unclear
  - Where to focus to reverse these trends?
- Draft USPSTF recommendation returns the routine screening start age to 40 (vs. 50) but maintains biennial screening recommendation
  - Can screening be successfully extended to younger women in an environment where routine screening has been declining?

Acknowledgements

- UVM collaborators
  - Sarah Nowak, Sally Herschorn, Hannah Perry, Michelle Sowden, Don Weaver, Pam Vacek, Peter Kaufman
- Vermont Mammography Registry Staff
  - Mark Bowman, Meghan Farrington, Cindy Groseclose, Denis Nunez, Dusty Quick, Tiffany Sharp, Ben Isenhart, Kathy Howe
  - Trainees Cate Odde, Amy Chang
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Breast Cancer Screening Following Guideline Changes

Sarah Nowak, PhD

November 9, 2023

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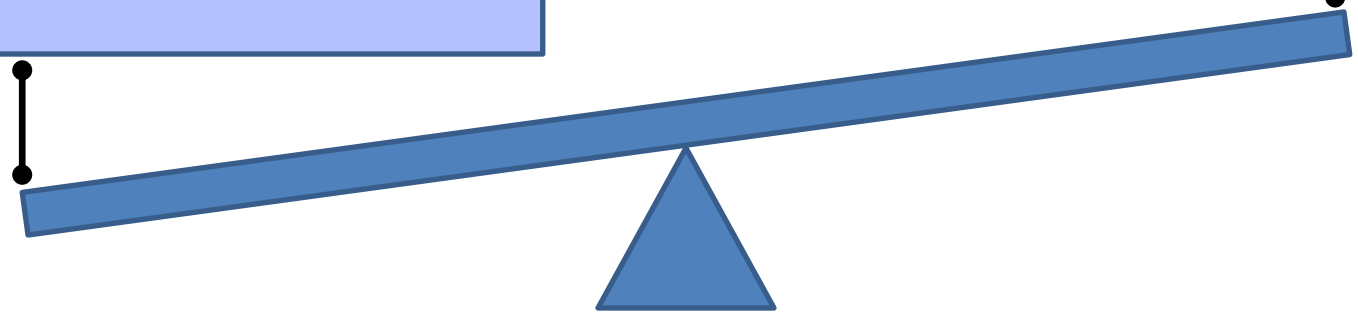
What is Overscreening?

- False positives
  - Complications
  - Worry
- Overdiagnosis
  - Patient undergoes unnecessary treatment

Harms

- Reduced morbidity and mortality from cancer

Benefits



US Preventive Services Task Force Breast Cancer Screening Recommendations

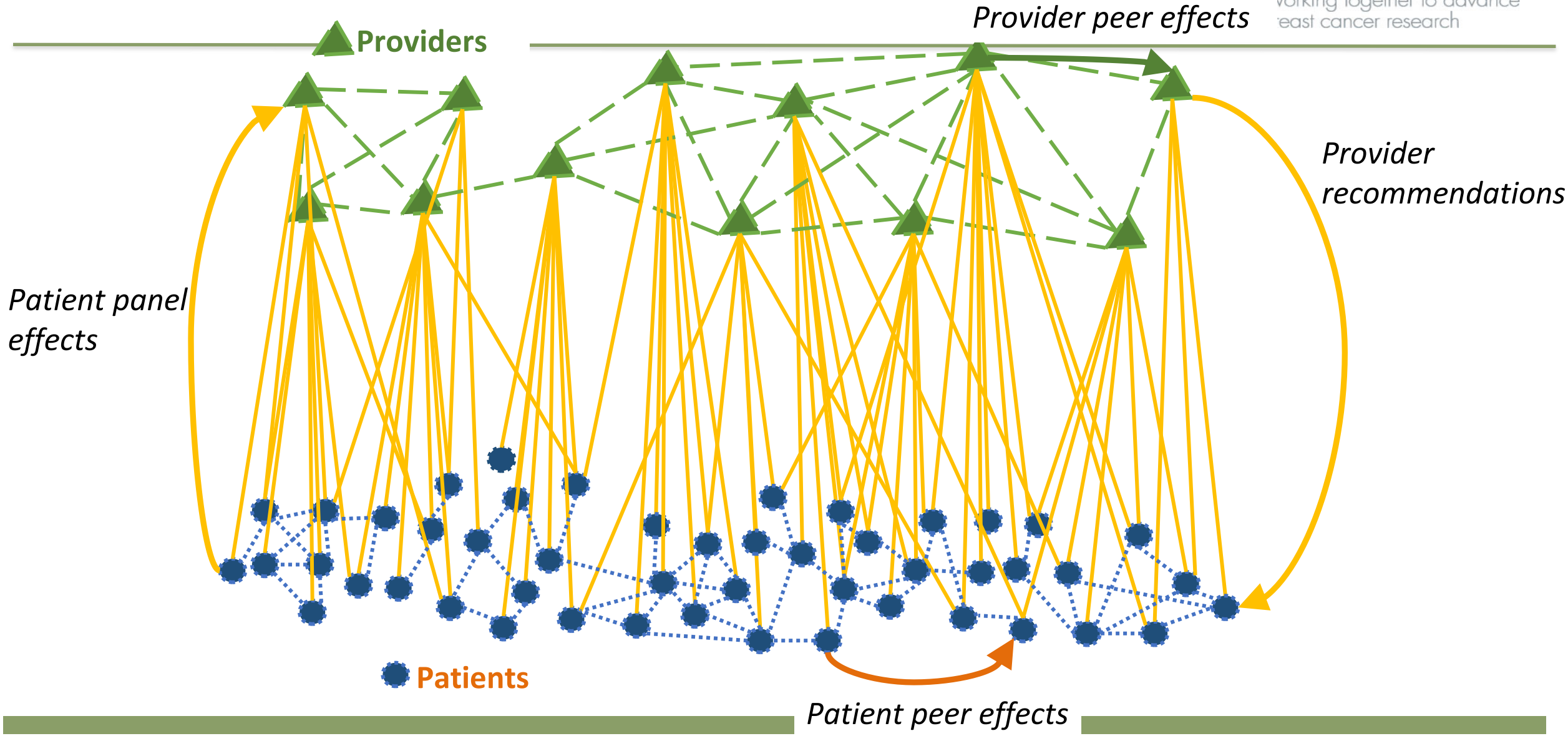
- In 2009, the USPSTF recommend screening:
  - **Later** – start routine at age 50, not age 40
  - **Less often** – screen biannually, rather than every 1-2 years for women age 50-74

  Insufficient evidence about screening women ages 75+

- Draft 2023 guidelines recommend starting screening at age 40

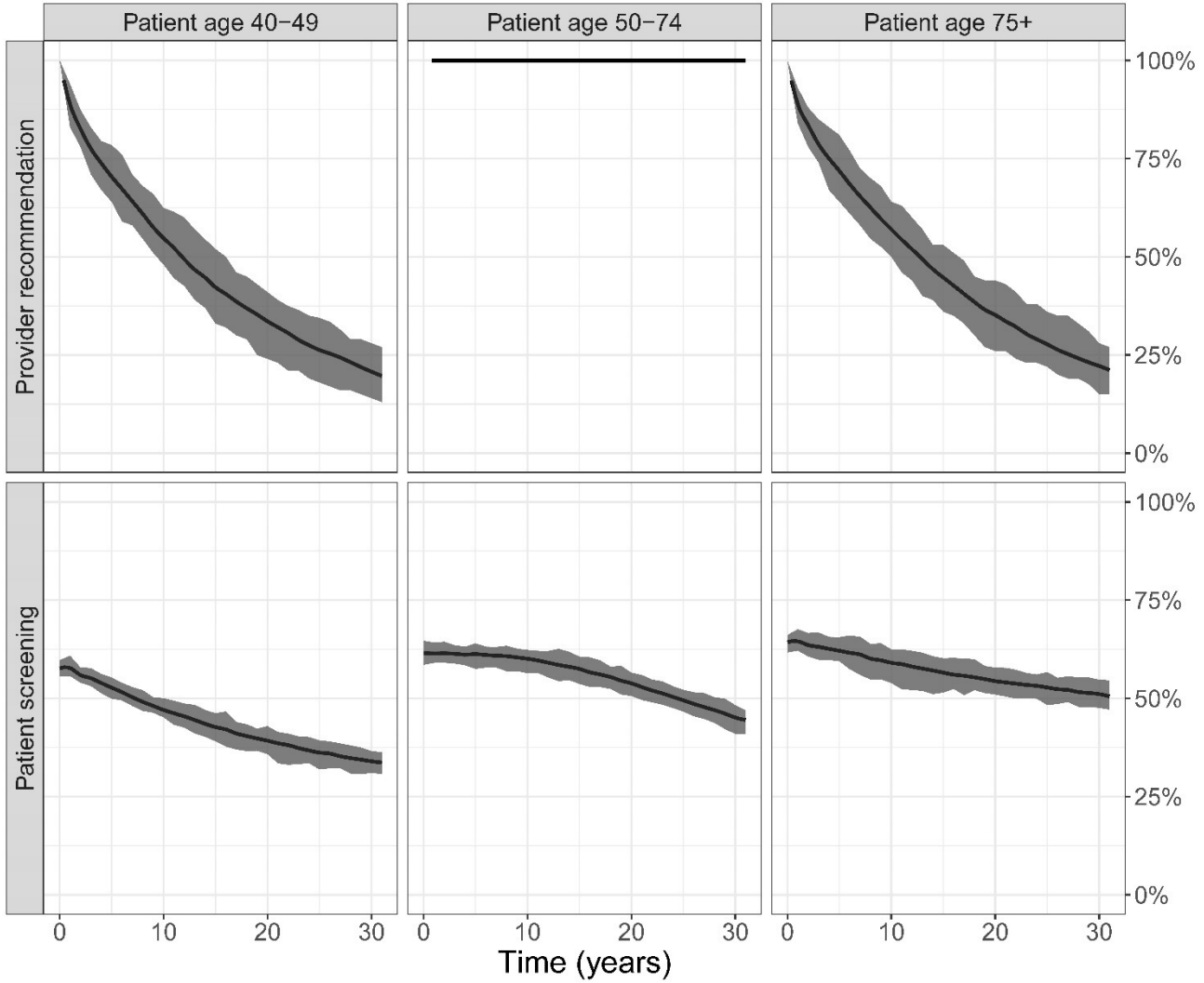
The Patient-Provider Network

Breast Cancer Surveillance Consortium
BCSC
Working together to advance breast cancer research



Provider Recommendations and Patient Screening (hypothetical)

Breast Cancer Surveillance Consortium
BCSC
Working together to advance breast cancer research



Shading represents 95% CI

Nowak SA, Parker AM, Radhakrishnan A, Schoenborn N, Pollack CE. Using an Agent-based Model to Examine Deimplementation of Breast Cancer Screening. Medical Care. 2020 Nov. DOI: 10.1097/mlr.0000000000001442.

Spillover Effects in VT?

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Registry-based Study of Trends in Breast Cancer Screening Mammography before and after the 2009 U.S. Preventive Services Task Force Recommendations

Brian L. Sprague, Kenyon C. Bolton, John L. Mace, Sally D. Herschorn, Ted A. James, Pamela M. Vacek, Donald L. Weaver, Berta M. Geller

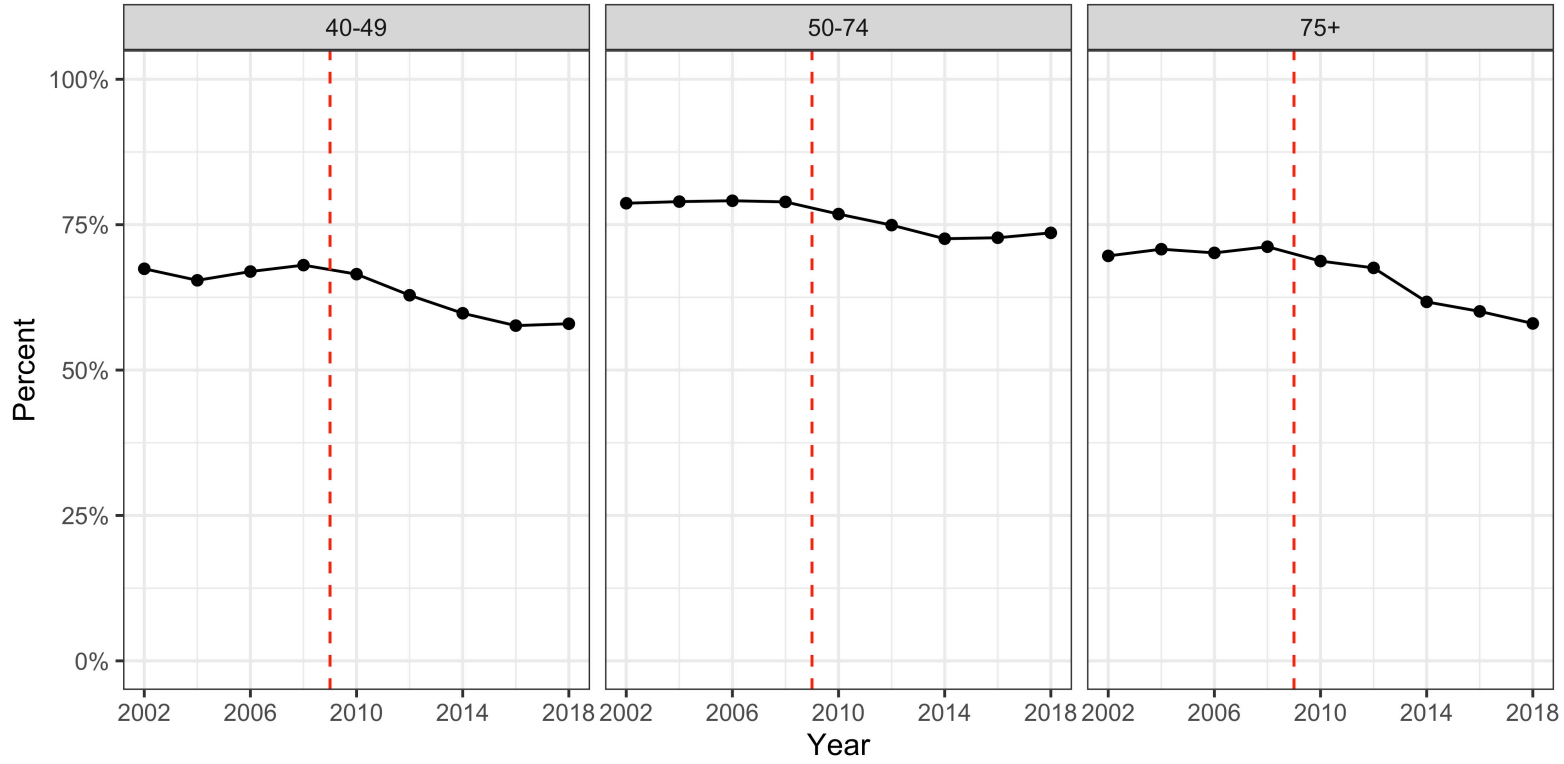
Author Affiliations

Published Online: Feb 1 2014 | https://doi.org/10.1148/radiol.13131063

"The age-specific patterns in utilization were generally consistent with the USPSTF recommendations, although there was also evidence that the percentage of women aged 50–74 years screened in the past 2 years declined since 2009."

US Trends Show Possible Decline in Mammography in All Age Groups After 2009 – up to 2018

Percent of women reporting mammography screening in the past 2 years by age group



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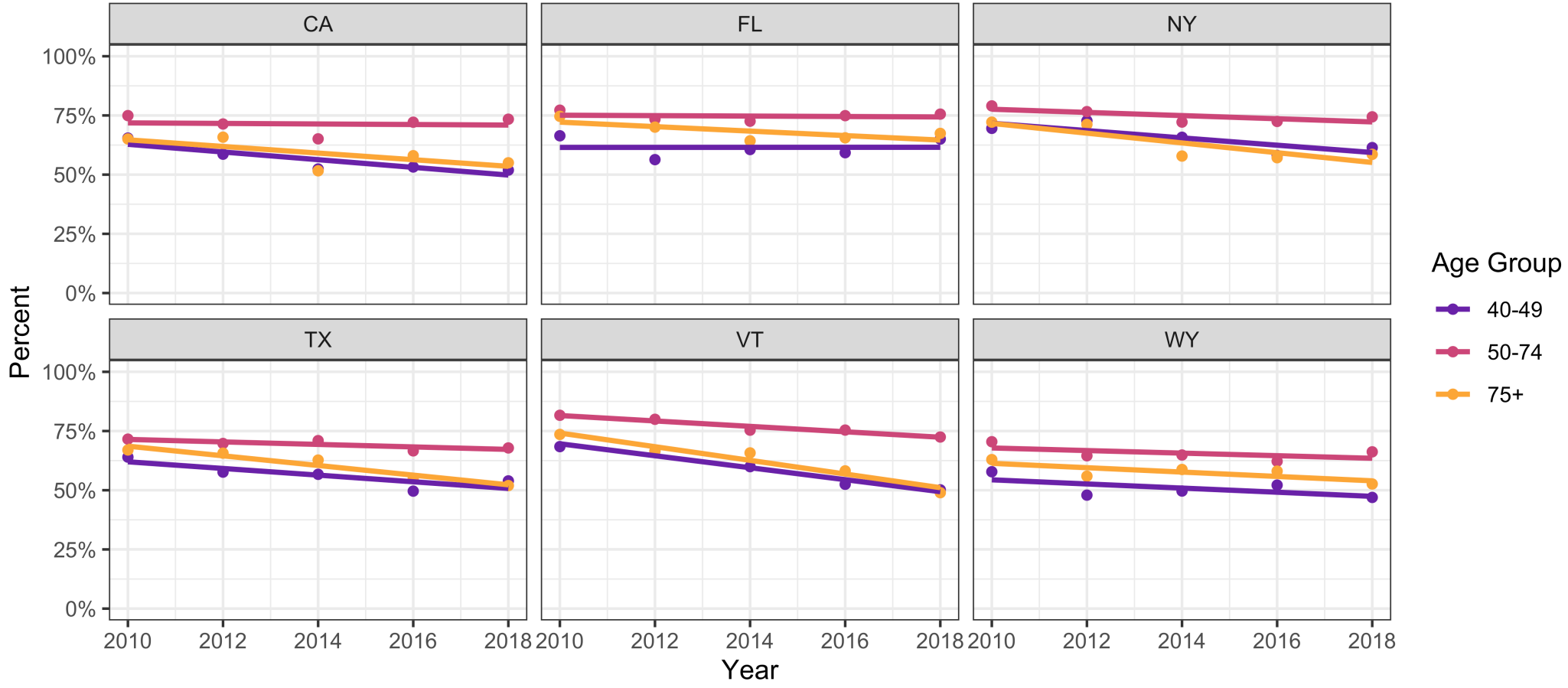
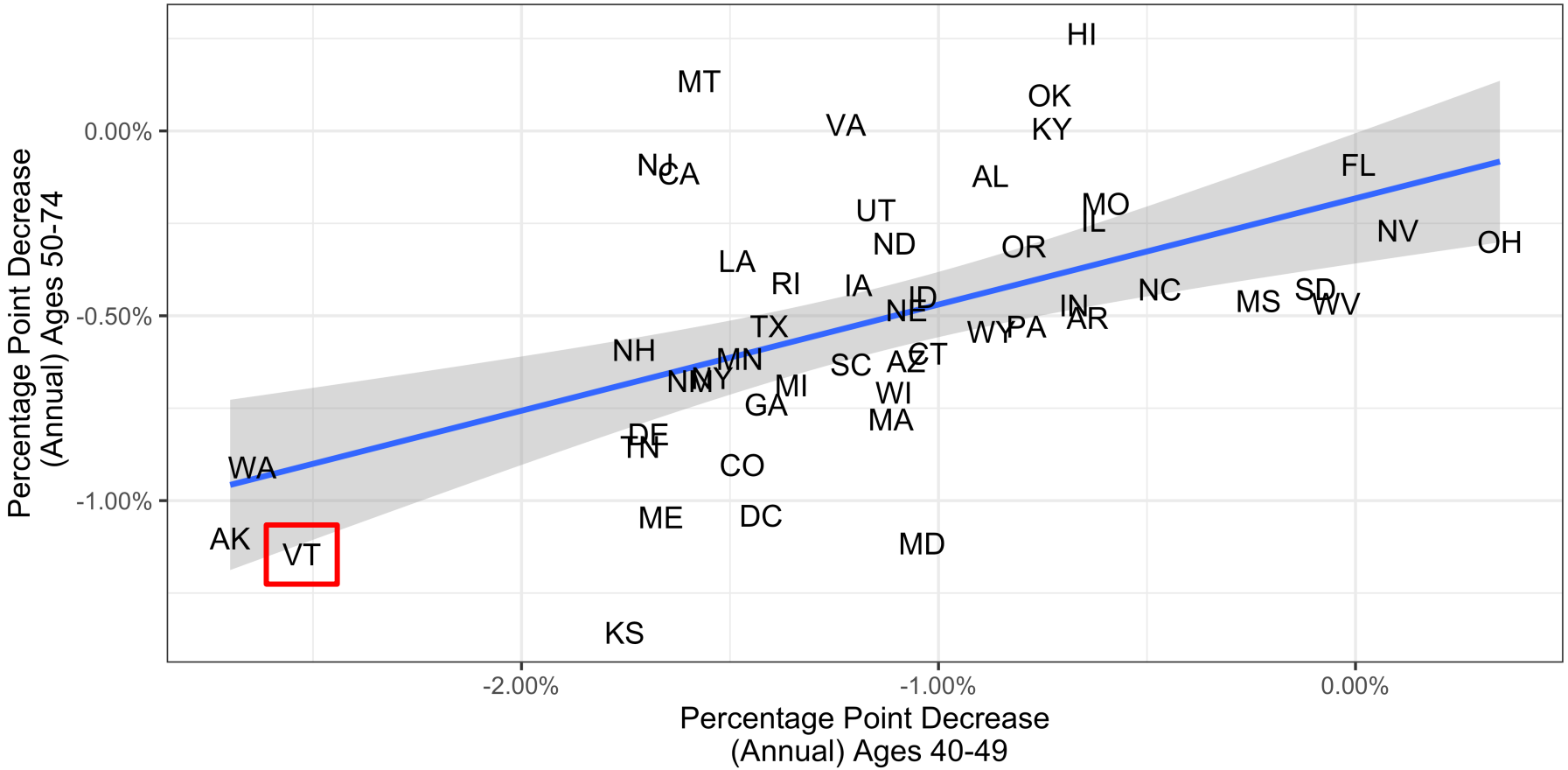
Nowak, S. A., Wilcock, A. D., & Sprague, B. L. (2023). Spillover After Mammography Guideline Change: Evidence From State-Level Trends. *American Journal of Preventive Medicine*.

State Trends in Percent of Women with Mammogram in Past 2 Years, by Age Group 2010-2018



Relationship Between Changes in Screening for Women Ages 40-49 and Ages 50-74 (changes from 2010-2018)



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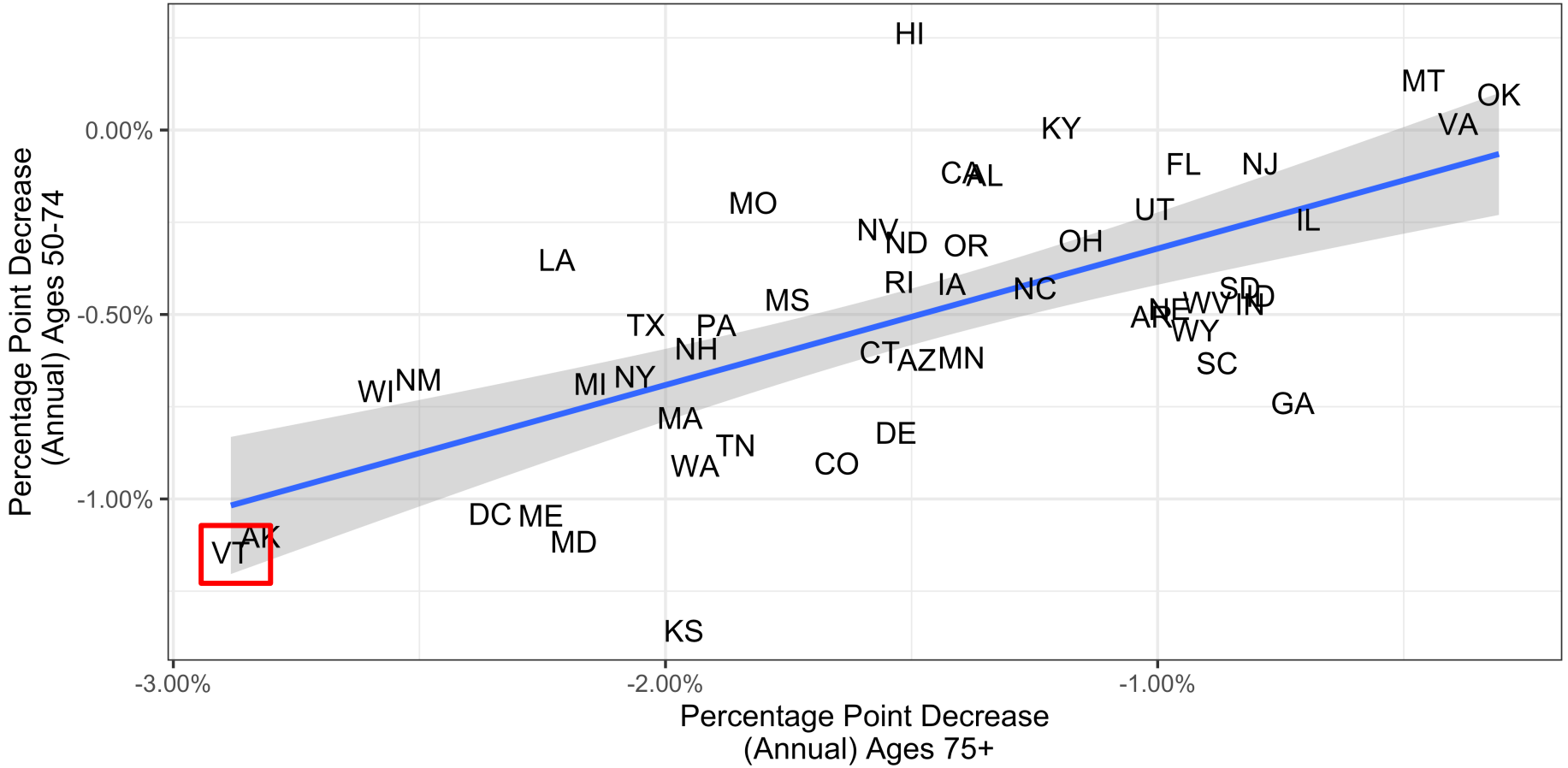
Relationship Between Changes in Screening for Women Ages 40-49 and Ages 75+ (changes from 2010-2018)



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Next steps – why did this happen?

- Patient peer effects
- Provider effects – over-generalizing new evidence
- Negative halo
- Other state-level variables (capacity limitations?)

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Questions?

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