

Rural Cancer Screening Disparities

February 23, 2024

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Conflict of Interest

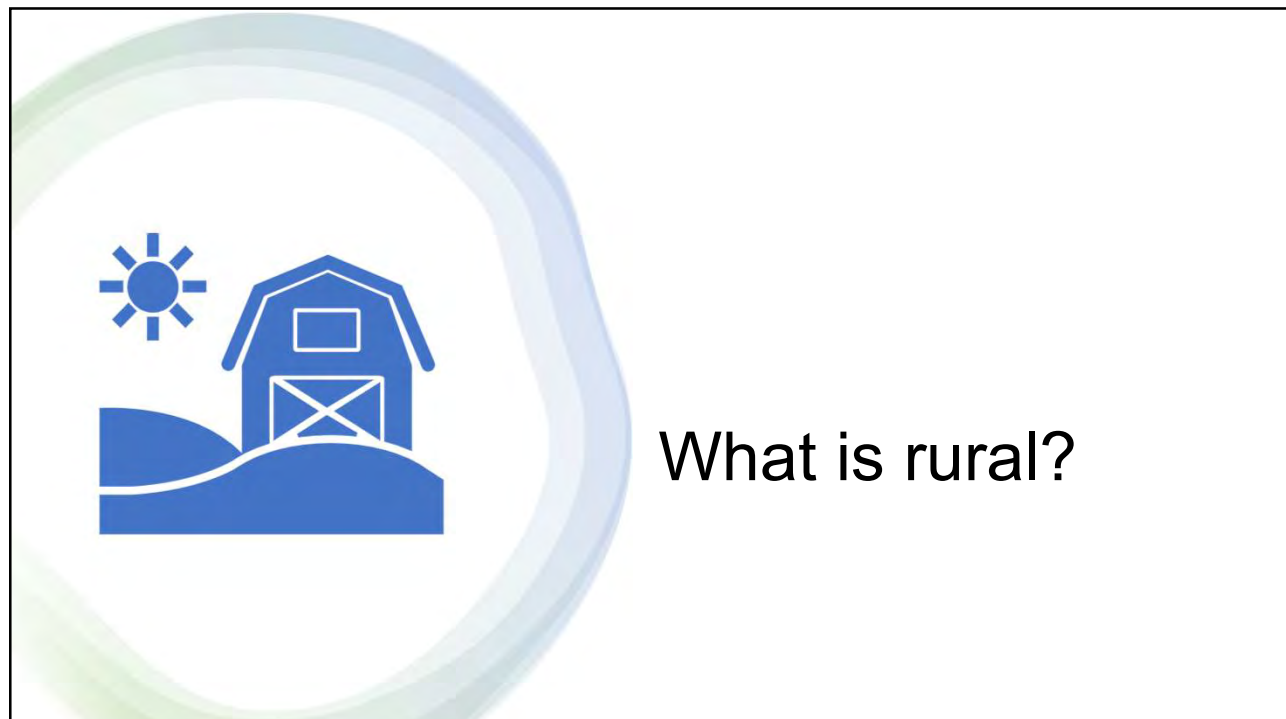
I DO NOT have any financial relationships to disclose

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Objectives

1. Describe heterogeneities within rural populations in the United States
2. Describe the links between lower cancer screening rates and higher cancer incidence and mortality rates in rural populations in the United States
3. Review statistics on cancer screening and screening rates in Nebraska
4. Identify factors that are associated with lower cancer screening rates among rural residents
5. Discuss examples and results of cancer screening interventions for rural residents

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Two Americas

- URBAN - Diverse, metropolitan, successful
- RURAL - White, and declining “Shrinking rural”
- In reality, rural diversity is growing over the last decade
 - Population of non-metropolitan fell by about 0.5% between 2010-2020
 - Increasing diverse rural population

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Rural Classification Schemes - Examples

Governing Agency	Classification System	Geographic Unit	Rural Definition	Potential Advantages or Disadvantages
US Census Bureau ⁶⁶	UA: Geographical areas of \geq 50,000 people UC: Geographical area of 2,500-49,999 people	Census blocks, and block groups	All territory, population, and housing units located outside of UAs or UCs	Pros: Census blocks are more stable than ZIP code areas, which change annually Uses the smallest geographic unit available Cons: Areas identified as rural may change each decade as definitions are based on results of decennial census Census data not often used by Medicaid, Medicare, or insurance companies
US OMB	Metropolitan statistical areas: Core counties with \geq 1 UAs and outlying counties that are economically tied through work commuting Nonmetropolitan counties: Outside the bounds of metropolitan areas and include the following: Micropolitan statistical areas: Any nonmetropolitan county with a UC of at least 10,000 people and outlying counties that are economically tied through work commuting Noncore counties: All counties not containing a UC	County	Nonmetropolitan counties, including micropolitan and noncore counties	Pros: Many national health data sets use counties as their geographical unit of measurement County boundaries remain very stable over time Cons: Use of these measurements may not accurately represent the population as county size varies and large counties can contain both urban and rural areas
USDA-ERS	RUCAs: Classify US census tracts using population density, urbanization, and daily commuting Whole numbers (1-10) delineate metropolitan, micropolitan, small town, and rural commuting areas These groups are further subdivided into 21 secondary codes on the basis of commuting flows (local or to another census tract) RUCCs: Divide OMB categories into smaller geographical units Three metropolitan subdivisions on the basis of size Six nonmetropolitan subdivisions on the basis of their degree of urbanization and proximity to metropolitan areas	Census tract, ZIP code approximation	Primary RUCA codes \geq 4 (micropolitan area core, population \leq 49,999)	Pros: RUCAs are measured at the census tract level, which may be transformed into ZIP code tabulation areas Method provides a measure of functional relationships while using a more specific geographic unit than OMB Cons: If using census tract, same issues listed for census data above If using ZIP code tabulation areas, ZIP codes often change annually
		County	All nonmetropolitan counties	Pros: Can help minimize the effects of variations in county size Cons: The same as for OMB classification

Abbreviations: OMB, Office of Management and Budget; RUCAs, rural-urban commuting areas; RUCCs, rural-urban continuum codes; UA, urbanized area; UC, urbanized cluster; USDA-ERS, US Department of Agriculture Economic Research Service.

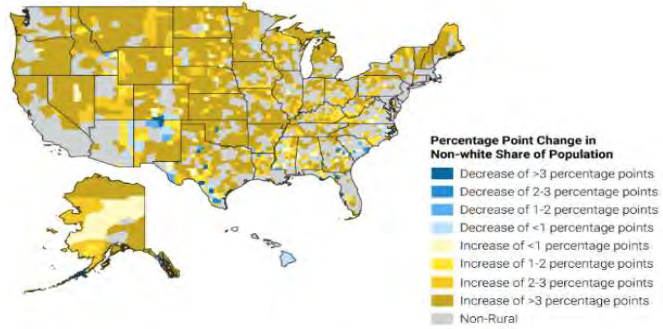
Source: Wercholak (2022) doi.org/10.1200/OP.22.00122

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Rural America became more racially and ethnically diverse over the last decade

- Racial/ethnic minority population in 2020
 - 24% of rural
 - 42.2% of metro

Figure 1. Percentage changes in racial/ethnic minority population 2010-2020



Source: Brookings analysis of 2010 and 2020 Census data.

B Metropolitan Policy Program
at BROOKINGS

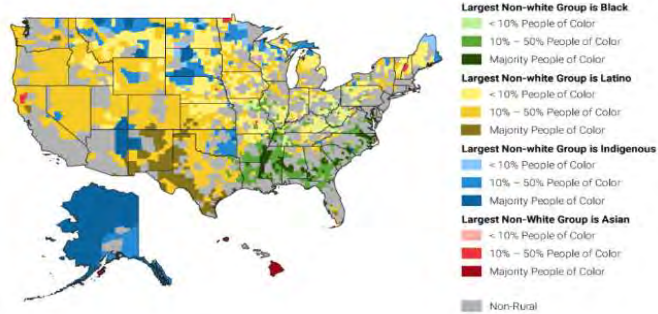
Source: Brookings Institute [Mapping rural America's diversity and demographic change](#) | Brookings

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The distribution of people of color in rural America is complex

Highly regionalized variations in the concentration of Black Americans, Latino Americans, and Indigenous Americans

Figure 2. Percentage of different racial/ethnic minority populations 2020



Source: Brookings analysis of 2020 Census data.

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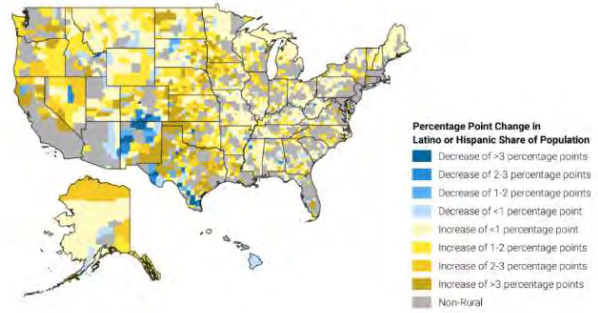
Source: Brookings Institute [Mapping rural America's diversity and demographic change](#) | Brookings

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Latino populations continued to drive diversity in rural America

Expanding diversity is largely driven by growth in the rural Latino population

Figure 3. Percentage changes in Hispanic population 2010-2020



Source: Brookings analysis of 2010 and 2020 Census data.

B Metropolitan Policy Program at BROOKINGS

Source: Brookings Institute [Mapping rural America's diversity and demographic change](#) | Brookings

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Rural cancer disparities

LINMC

At 45, I thought I was too young to get colon cancer. I'm so glad I took the FIT test — it was simple and affordable, and helped me catch the cancer early.

Right now, even if you don't have any symptoms, there could be a small tumor in your colon or rectum. FIT gives you the power to detect this cancer early. Waiting for symptoms might be too late.

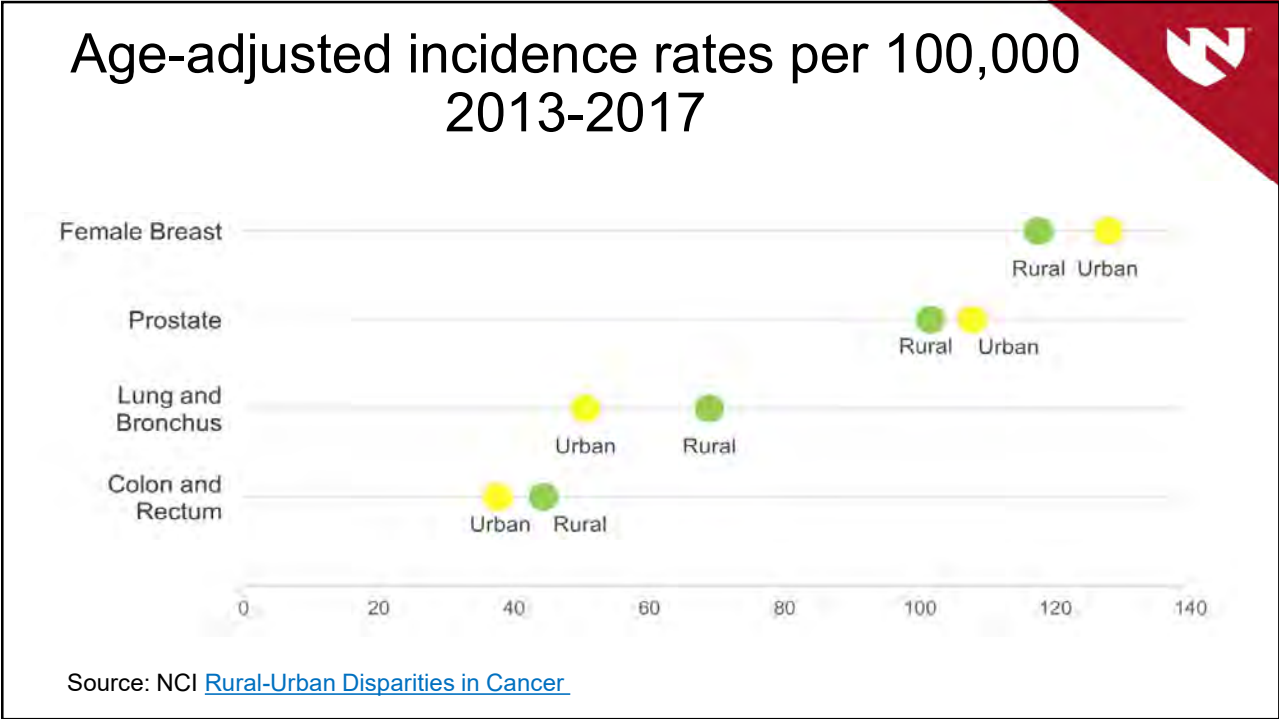
Take the FIT test now and take control of your health.



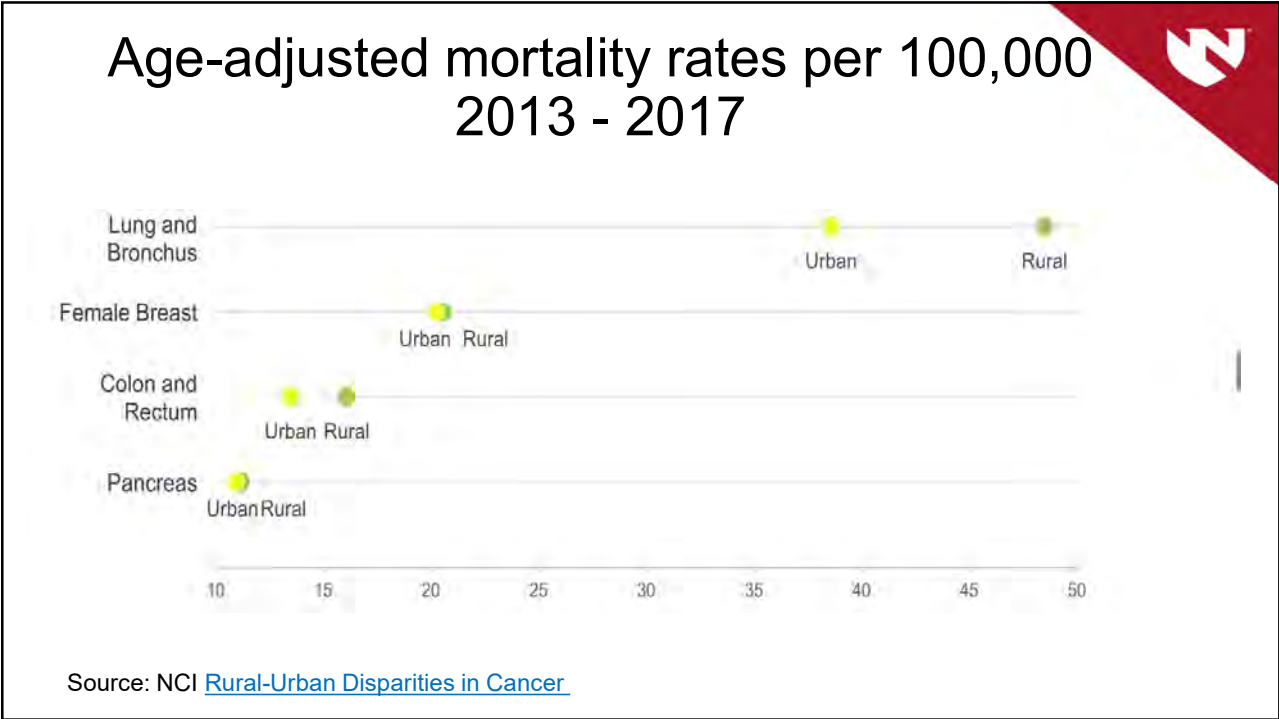
Are you 45 or older?
If so, you are eligible to take FIT, an easy-to-use stool test that can be done in the privacy of your home.

- Fecal Immunochemical Test (FIT):
- Stool test
 - Effective
 - Easy to do (5 minutes or less in your home)
 - No liquids/prep to drink
 - No needles
 - No special changes to diet or medication

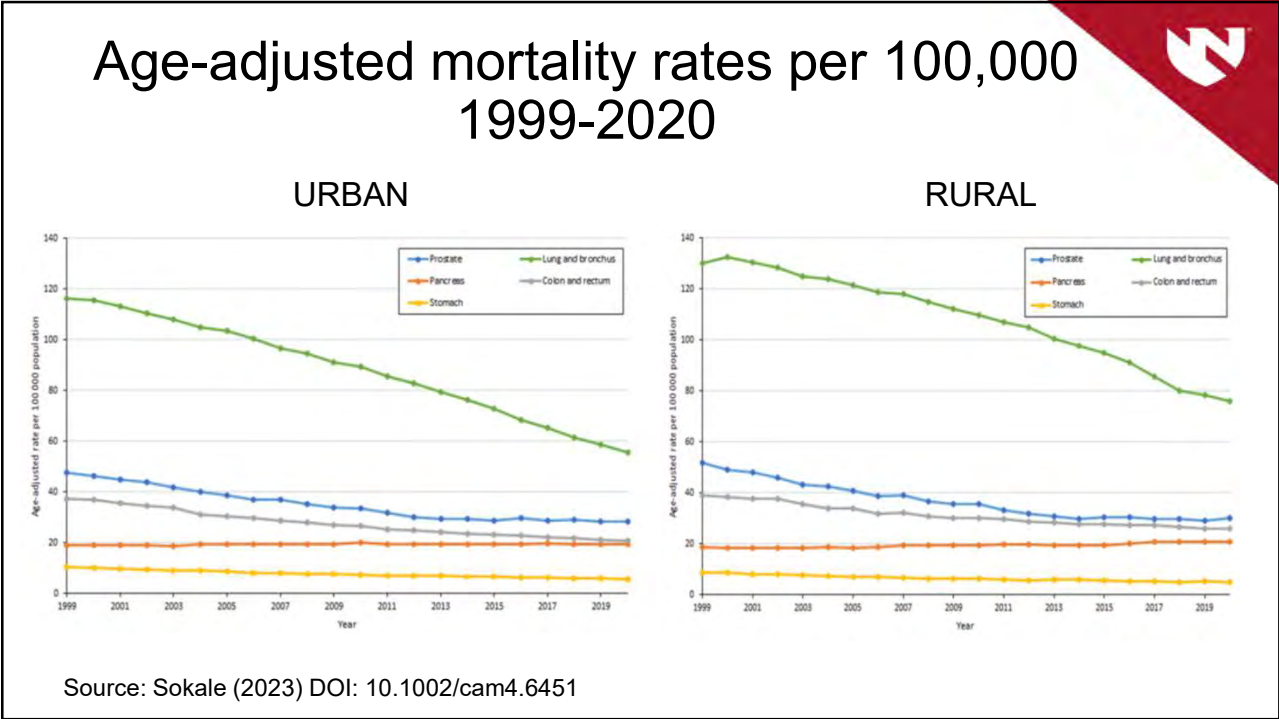
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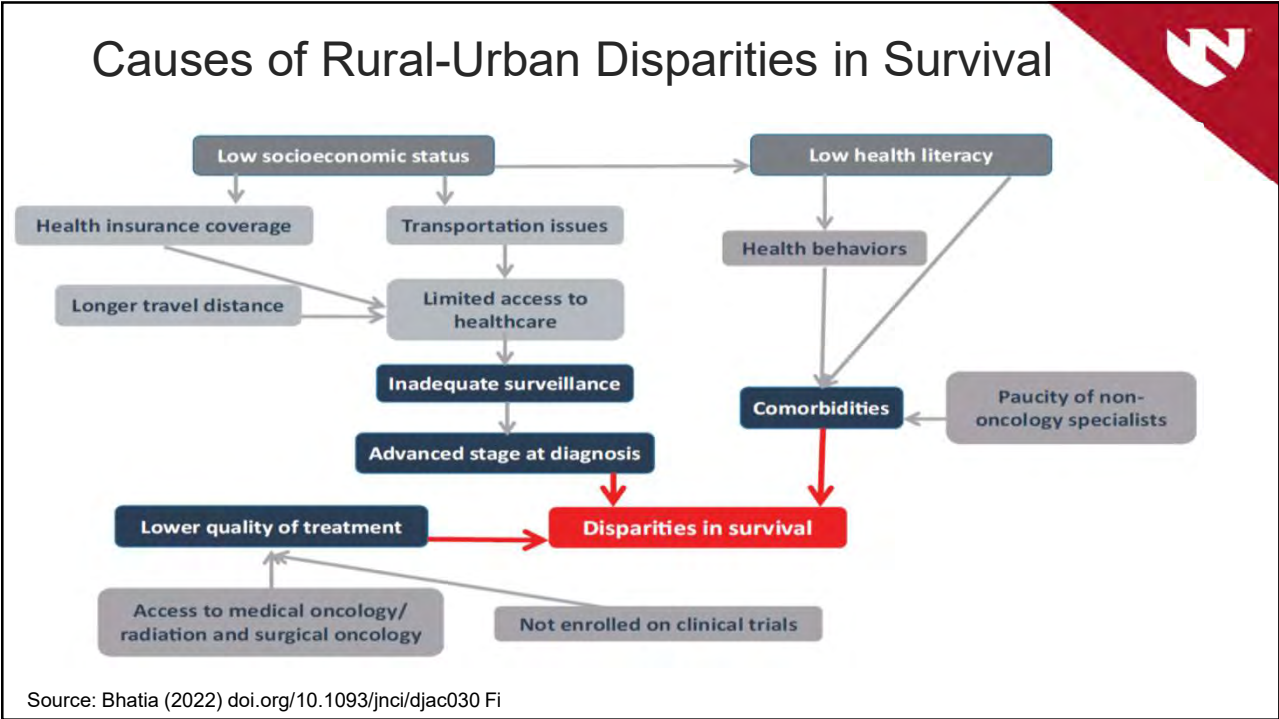
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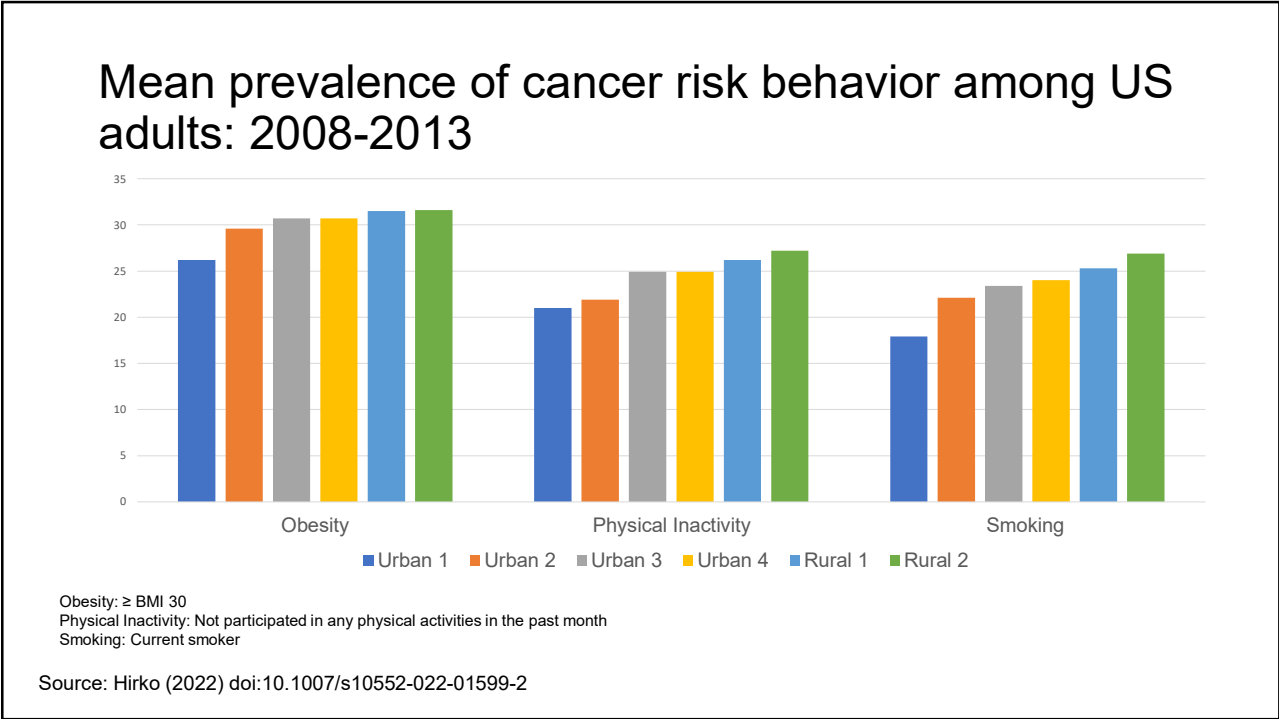
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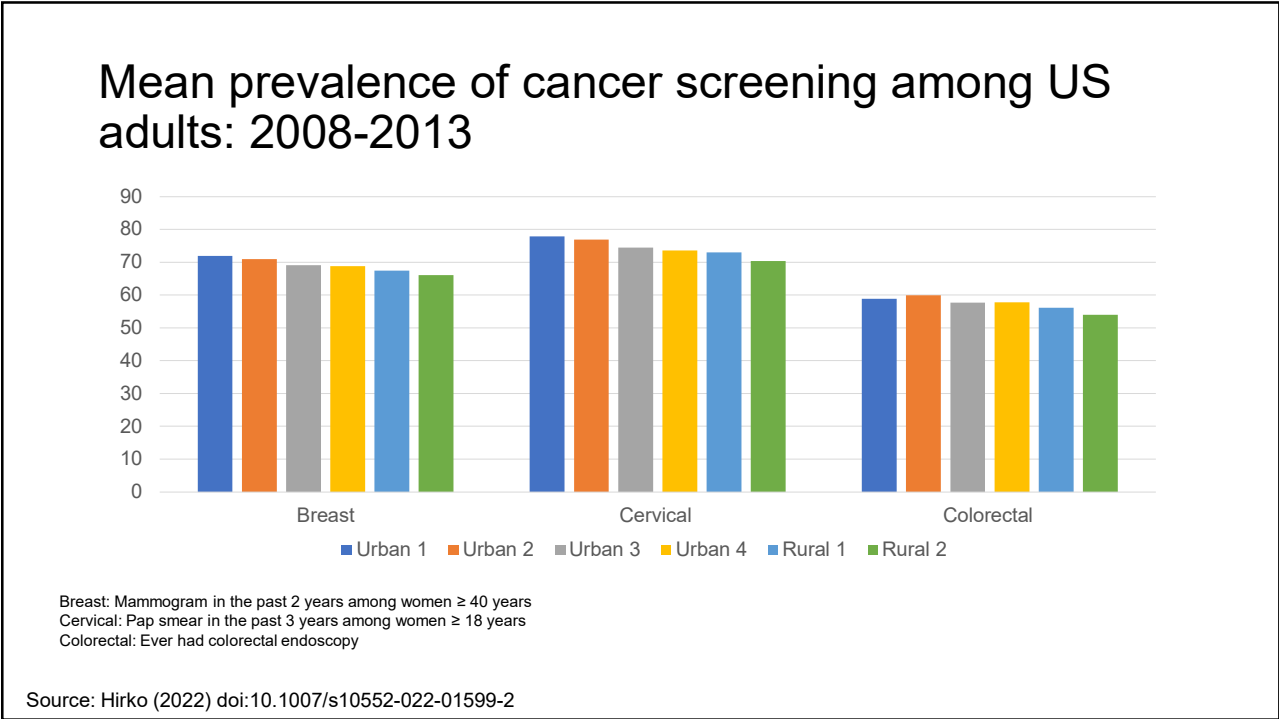
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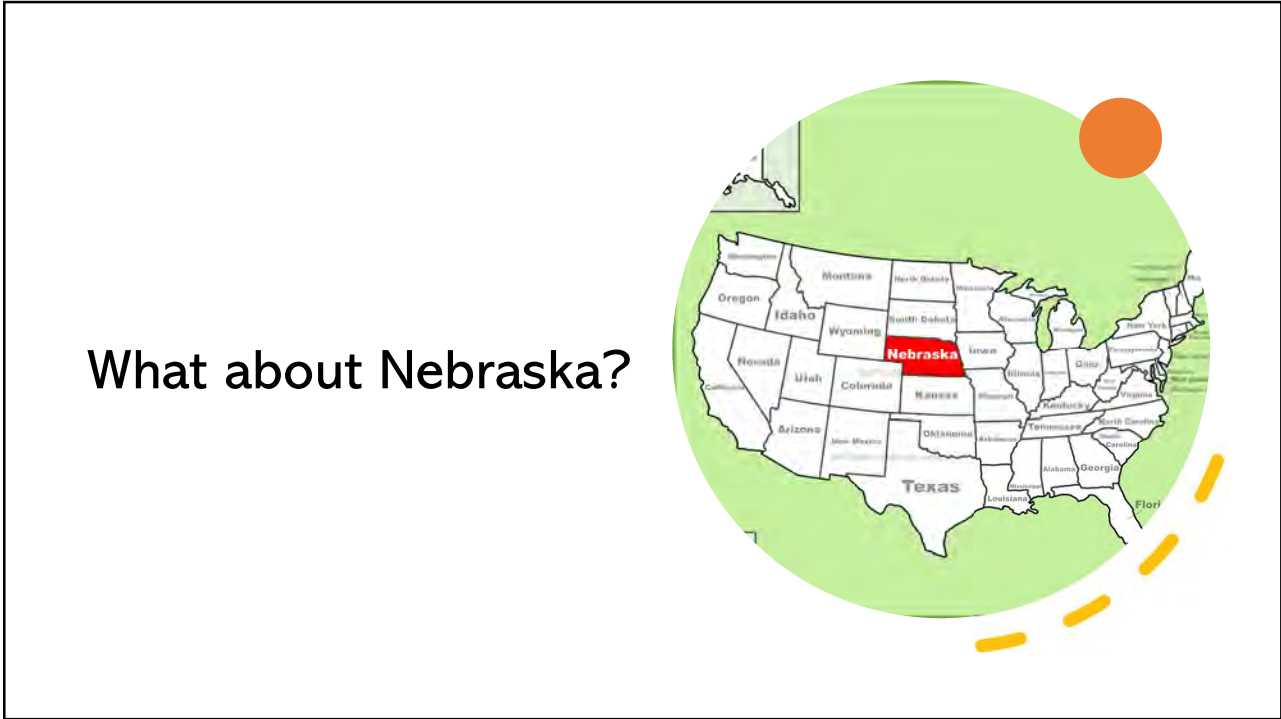
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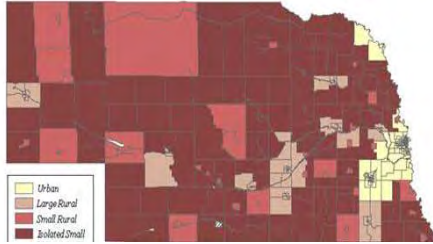
FPBCC Catchment Area is the Entire State of Nebraska

Catchment area selection justifications:

1. A matrix cancer center, the only NCI designated cancer center in Nebraska
2. 99% of cancer patients seen are from Nebraska
3. Conducts educational, clinical, and research activities and implements evidence-based cancer control efforts across the state
4. Conducts clinical trials at 6 affiliated cancer clinics (North Platte, Grand Island, Hasting, Kearney, Lincoln, and Norfolk)
5. UNMC has 4 satellite campuses
6. FPBCC receives state funding for cancer research, and faculty conducts catchment-focused research

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Understand the Catchment Area Population



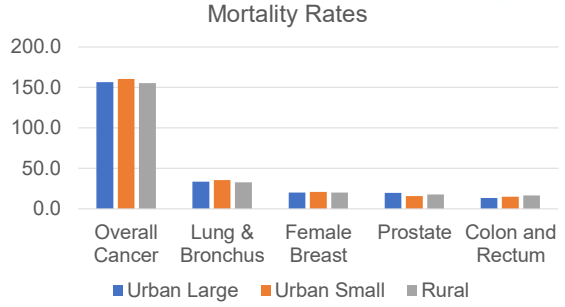
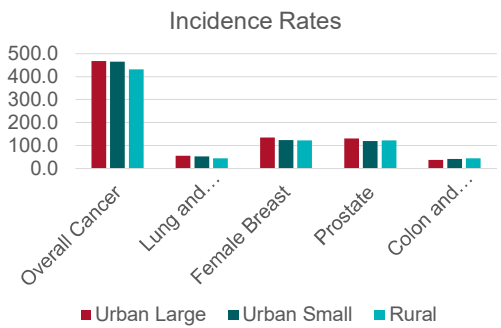
77,348 square miles
1.9 million population
48 rural
31 frontier
 14 urban
 93 total counties

Attribute	US	Nebraska
Population	334,914,895	1,978,379
Female	50%	50%
White	59%	77%
Black	14%	5%
American Indian/ Alaska Native	1%	2%
Hispanic	19%	12%
Rural	21%	29%
College Educated	34%	34%
Poverty	12%	11%
Uninsured	9%	8%
Food insecurity	11%	11%
Food Stamp	12%	8%
Unemployment rate (%)	5%	3%

Source: American Community Survey 2022

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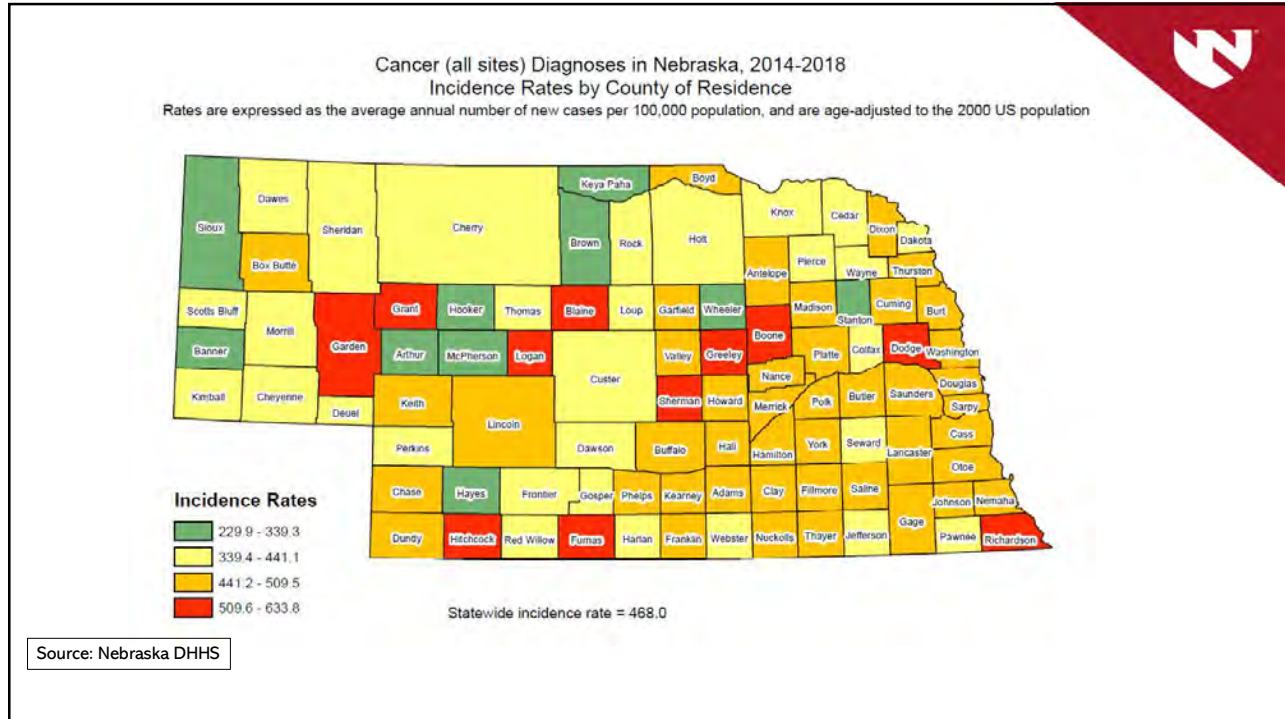
Age-Adjusted Cancer Rates per 100,000 by Rurality: 2016-2020



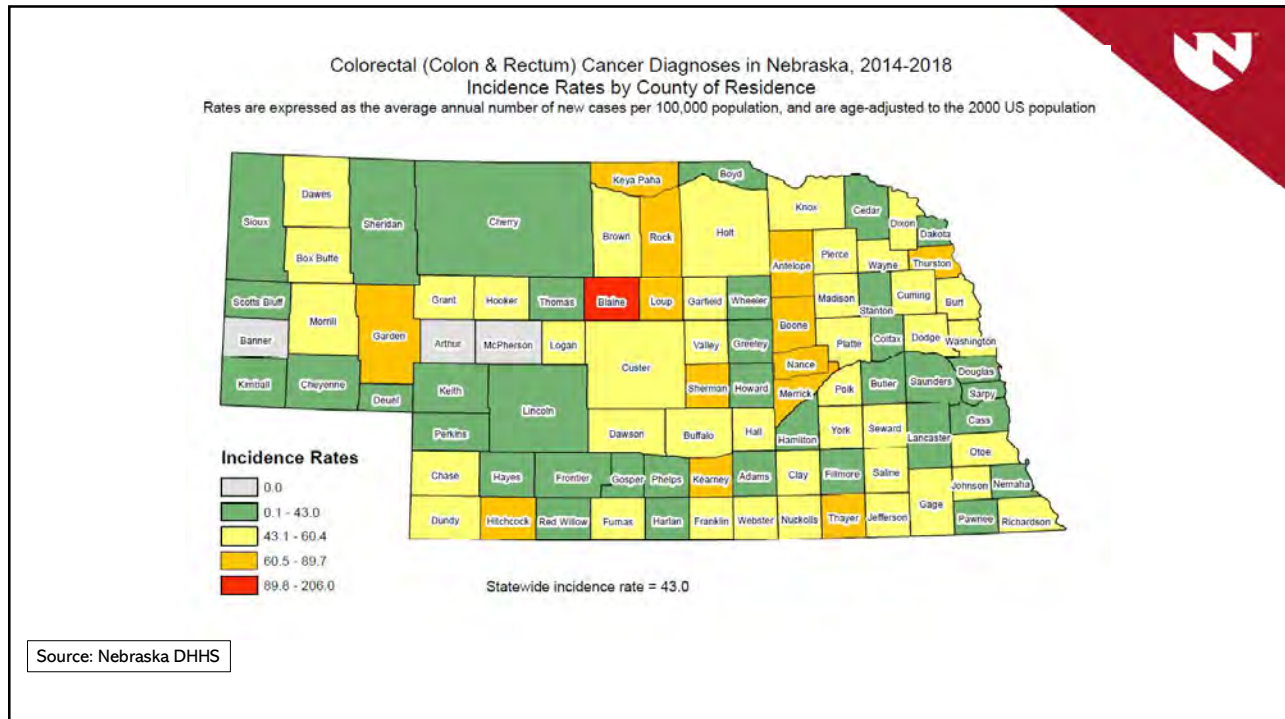
There are NO statistically significant differences by rurality

Source: Nebraska DHHS

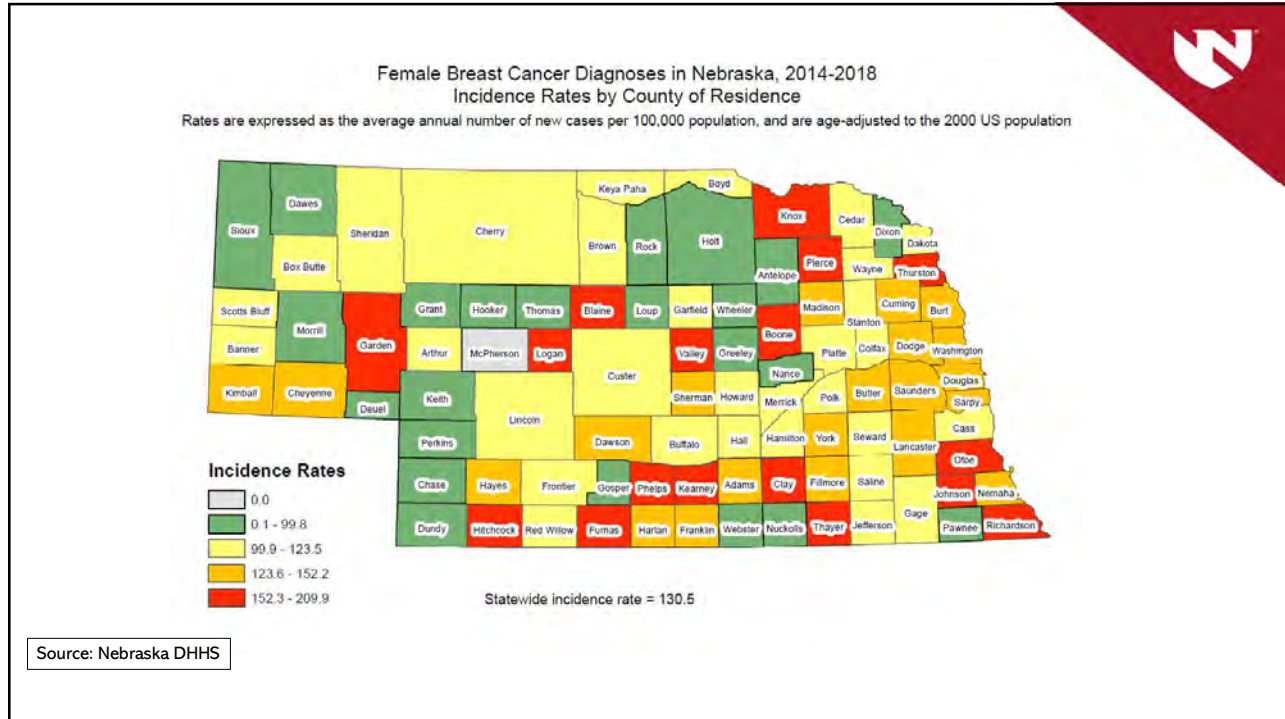
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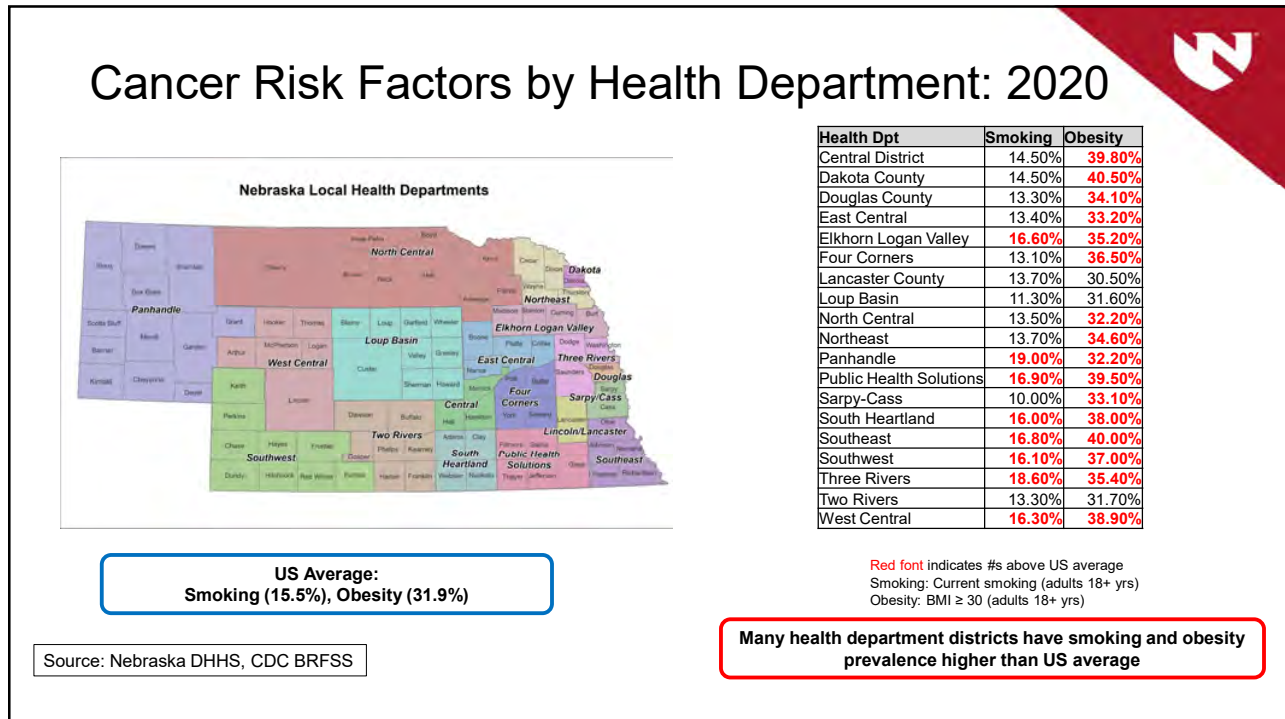
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Cancer Screening by Health Department: 2020



Health Dpt	Breast	Cervical	Colorectal
Central District	75.6%	73.4%	71.6%
Dakota County	75.7%	78.4%	69.8%
Douglas County	83.0%	81.5%	75.9%
East Central	78.0%	83.2%	68.9%
Elkhorn Logan Valley	76.6%	74.9%	69.5%
Four Corners	72.4%	77.7%	69.6%
Lancaster County	74.4%	78.6%	75.2%
Loup Basin	75.5%	78.7%	68.0%
North Central	69.0%	61.5%	66.7%
Northeast	79.0%	77.1%	71.2%
Panhandle	58.6%	73.9%	56.9%
Public Health Solutions	81.7%	75.2%	64.0%
Sarpy-Cass	80.0%	77.0%	78.2%
South Heartland	72.8%	75.5%	71.2%
Southeast	76.5%	68.1%	57.3%
Southwest	67.7%	76.6%	67.4%
Three Rivers	76.2%	71.3%	78.8%
Two Rivers	63.9%	76.3%	72.2%
West Central	69.3%	67.0%	68.4%

US Average:
Breast (78.3%), Cervical (77.7%), CRC (74.3%)

Red font indicates #s below US average
 Breast: Mammogram past 2 years (women 50-75 yrs)
 Cervical: Pap past 3 years (women 21-65 yrs)
 Colorectal: Up-to-date per USPSTF

Many health department districts have screening rates lower than US average

Source: Nebraska DHHS, CDC BRFSS

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So, what can we do?

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Community Preventive Services Task Force Findings


























Intervention	Breast Cancer	Cervical Cancer	Colorectal Cancer
Interventions Engaging Community Health Workers	Recommended (strong evidence) April 2019	Recommended (strong evidence) April 2019	Recommended (strong evidence) April 2019
Multicomponent Interventions	Recommended (strong evidence) August 2016	Recommended (strong evidence) August 2016	Recommended (strong evidence) August 2016
Patient Navigation Services	Recommended (strong evidence) July 2022	Recommended (sufficient evidence) July 2022	Recommended (strong evidence) July 2022

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Provider-Oriented Interventions

Intervention	Breast Cancer	Cervical Cancer	Colorectal Cancer
Provider Assessment and Feedback	Recommended (sufficient evidence) October 2009	Recommended (sufficient evidence) October 2009	Recommended (sufficient evidence) October 2009
Provider Incentives	Insufficient Evidence October 2009	Insufficient Evidence October 2009	Insufficient Evidence October 2009
Provider Reminder and Recall Systems	Recommended (strong evidence) February 2006	Recommended (strong evidence) February 2006	Recommended (strong evidence) February 2006

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Client-Oriented Interventions			
Intervention	Breast Cancer	Cervical Cancer	Colorectal Cancer
Client Incentives	 Insufficient Evidence July 2010	 Insufficient Evidence July 2010	 Insufficient Evidence July 2010
Client Reminders	 Recommended (strong evidence) July 2010	 Recommended (strong evidence) July 2010	 Recommended (strong evidence) July 2010
Group Education	 Recommended (sufficient evidence) October 2009	 Insufficient Evidence October 2009	 Insufficient Evidence October 2009
Mass Media	 Insufficient Evidence October 2009	 Insufficient Evidence October 2009	 Insufficient Evidence October 2009
One-on-One Education	 Recommended (strong evidence) March 2010	 Recommended (strong evidence) March 2010	 Recommended (strong evidence) March 2010
Reducing Client Out-of-Pocket Costs	 Recommended (sufficient evidence) October 2009	 Insufficient Evidence October 2009	 Insufficient Evidence October 2009
Reducing Structural Barriers	 Recommended (strong evidence) March 2010	 Insufficient Evidence March 2010	 Recommended (strong evidence) March 2010
Small Media	 Recommended (strong evidence) December 2005	 Recommended (strong evidence) December 2005	 Recommended (strong evidence) December 2005

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Review of Review Articles on Rural Populations

- Atere-Roberts (2020) doi.org/10.1007/s10552-020-01340-x
- Liuy (2023) doi.org/10.1080/13557858.2022.2056145
- Robertson (2021) doi: 10.1111/jrh.12550
- Robli (2022) doi.org/10.1371/journal.pone.0273375
- Rodriguez-Gomez (2020) doi.org/10.1016/j.ijnurstu.2019.103401
- Zhang (2022) doi.org/10/3390/ijerph19116874

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Interventions Effective in Rural Populations



Programs that incorporated health worker or navigator E-health intervention



E-health interventions: Education delivered through video, digital media



Multi-component or multi-strategy interventions

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Future Directions

- Interventions
 - Should be locally adapted
 - Involve local community members during development
 - Involve healthcare providers and systems
 - Incorporate technology
 - More interventions that use multiple components / strategies
- Policies:
 - Need to address lack of healthcare infrastructure and providers
 - Need to address insurance coverage of cancer screening tests
 - Sustainability of interventions
 - Consider cost-benefit analysis

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