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Key Drivers of Cancer in Iowa

Evaluate patterns and demographic and behavioral drivers of excess cancers in Iowa

University of Iowa College of Public Health
October 6, 2026

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**“Statistics are people with the tears
wiped away”**

Dr. Irving Selikoff

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Age-adjusted incidence rates of top 10 cancers in Iowa compared to the U.S.

Ages 20+, diagnosis years 2018–2022

Cancer Sites	Iowa's Rank (Out of 50)	Iowa Rate per 100,000 population	U.S. Rate per 100,000 population
Female Breast	13th	192.3	184.1
Prostate	12th	181.6	163.2
Lung and Bronchus	10th	84.0	73.6
Colon and Rectum	8th	56.2	51.2
Melanoma of the Skin	2nd	45.8	32.3
Uterus	6th	42.2	37.7
Bladder	7th	30.5	26.3
Non-Hodgkin Lymphoma	1st	29.8	25.4
Kidney and Renal Pelvis	7th	29.4	24.3
Leukemia	1st	22.4	18.2

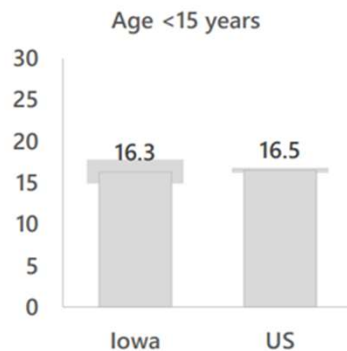
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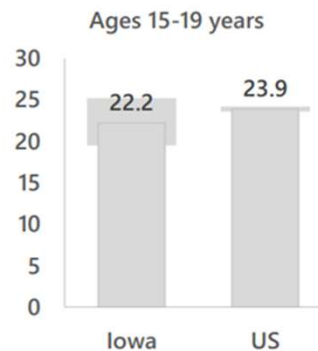
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Age-adjusted incidence rates, all cancers, <20 years of age, 2018-2022

Pediatric cancer incidence rates in Iowa are **not different** than the U.S. rate



Adolescent cancer incidence rates in Iowa are **not different** than the U.S. rate



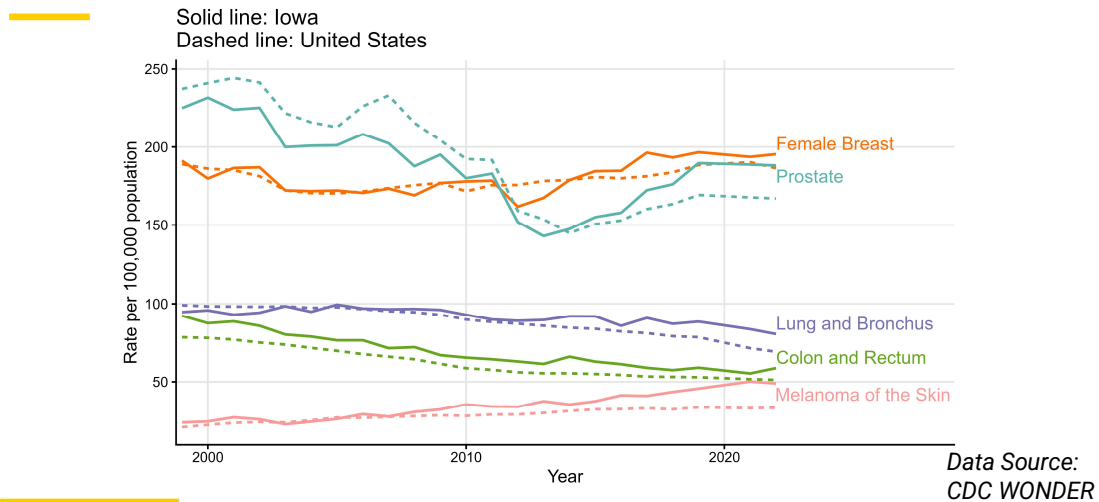
Data Source: SEER*Stat
(CiNA file)

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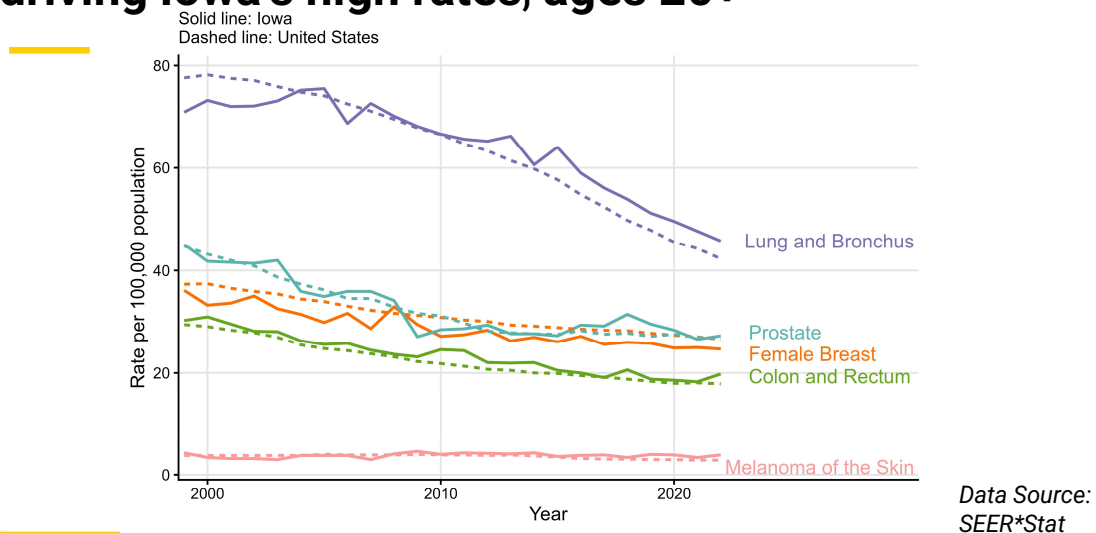
Age-adjusted incidence rates of the five cancers driving Iowa's high rates, ages 20+


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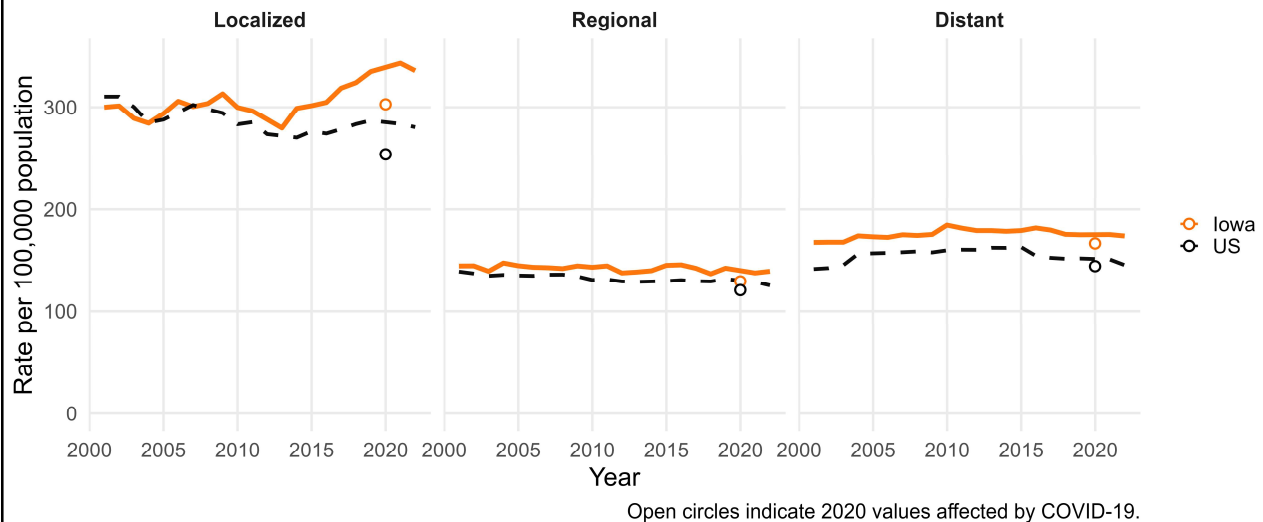
Age-adjusted mortality rates of the five cancers driving Iowa's high rates, ages 20+


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Age-adjusted incidence rates by stage for all cancers and all ages combined



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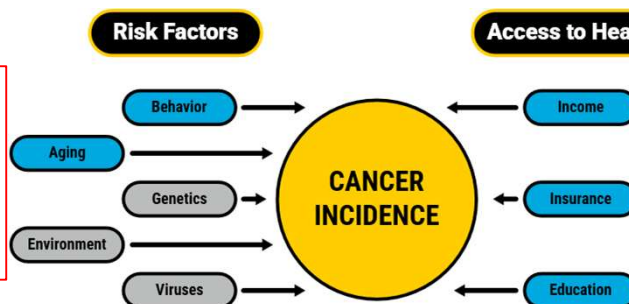
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Cancer is complex

- There is **no one cause of cancer**; it is caused by a **combination of different genetic, behavioral, and environmental risk factors**
- **Access to health care services can also lead to more cancer diagnoses** (e.g., the more people screened for prostate cancer, the more cases diagnosed)

Iowa is higher than U.S. in:

- Binge drinking
- Obesity
- <1 daily serving of vegetables
- Current smoking
- Radon exposure



Iowa is lower than U.S. in percent living below poverty, and is higher in:

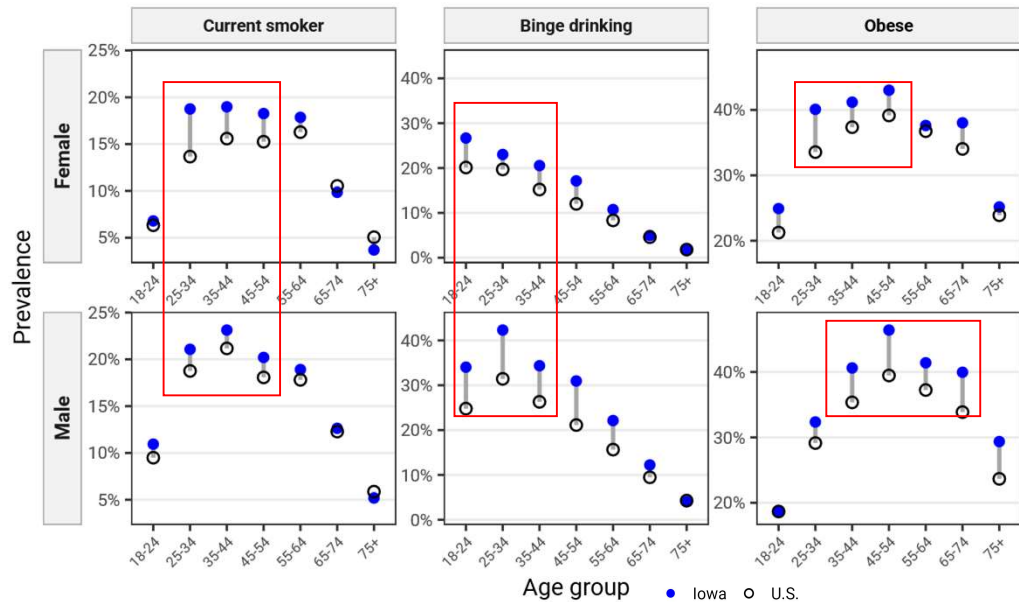
- Health insurance
- High school degree or higher

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Selected behavioral risk factors

By sex and age group, 2018–2022



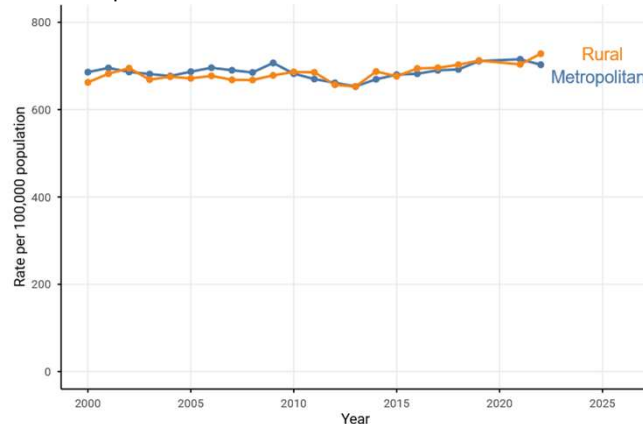
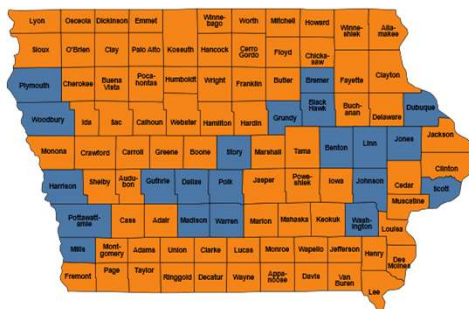
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Cancer incidence trends are similar in metropolitan and rural Iowa

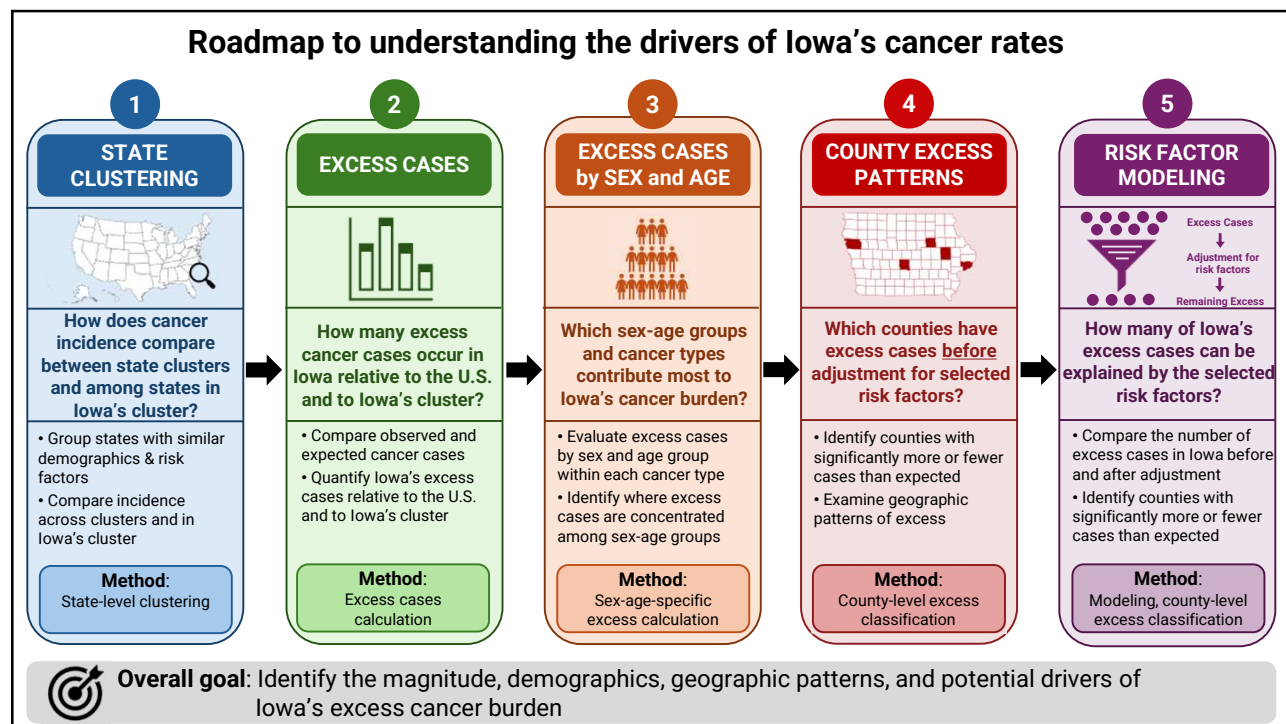
All cancers combined, ages 20+: Age-adjusted incidence rates in metropolitan and rural counties in Iowa



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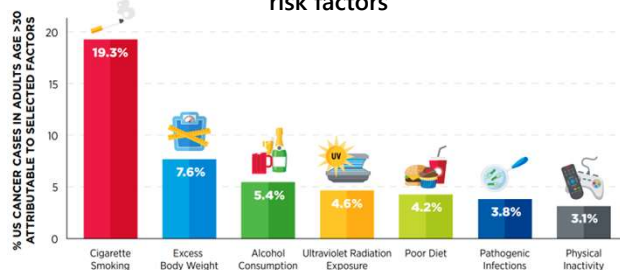
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Why start with demographic and behavioral risk factors (vs. environmental risk factors like nitrates in drinking water)?

~40% of cancers in the US are attributable to modifiable risk factors



American Association for Cancer Research (AACR) Cancer Progress Report 2025

While there is no published estimate that attributes a specific percentage of cancers to better health care access, the evidence is clear that improved access leads to:

- Greater numbers diagnosed with cancer
- Better survival
- Lower mortality

Now that we have developed models with demographic characteristics and behavioral risk factors known to be associated with cancer, we can begin to incorporate variables including nitrate levels in drinking water to determine their relative contribution to Iowa's excess cancer cases (focus of **Year 2** workplan)

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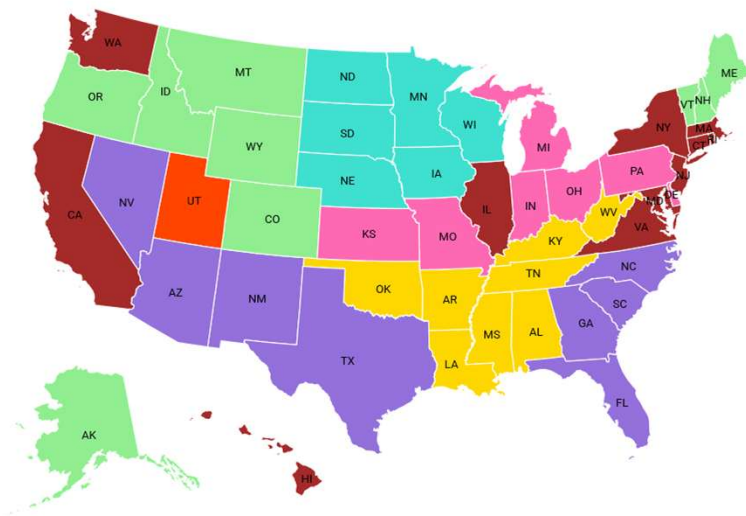
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1. State clustering analysis

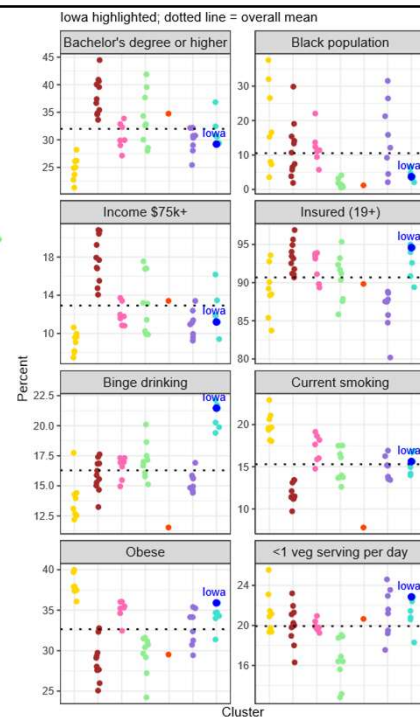
- Which states have the most similar demographic characteristics and behavioral risk factors to Iowa?
- How does cancer incidence compare between state clusters and among states in Iowa's cluster?

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Iowa clusters with several other Midwestern states based on having similar demographic characteristics and behavioral risk factors



Source: BRFSS, ACS

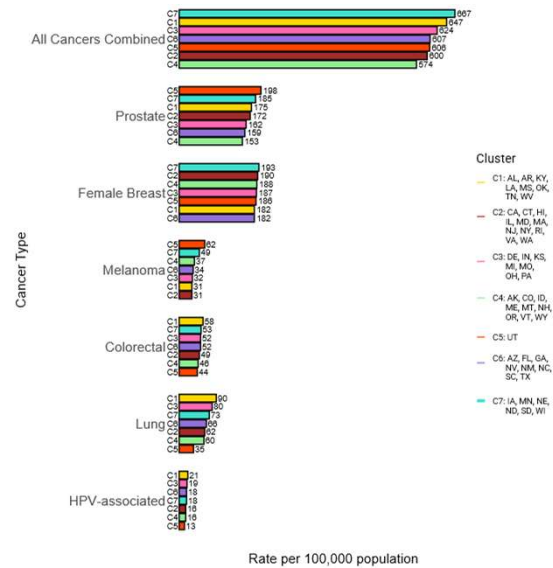


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Age-adjusted incidence rates (ages 20+ years) by state cluster, 2022

- In 2022, Iowa's Midwestern cluster of states had:
 - Highest rate of **all cancers combined** and **female breast** cancer than all other clusters of states in the U.S.
 - 2nd highest rate of **prostate** cancer and **melanoma** (behind Utah)
 - 2nd highest rate of **colorectal** cancer (behind a cluster in the south)
 - 3rd highest rate of **lung** cancer and **HPV-associated** cancers



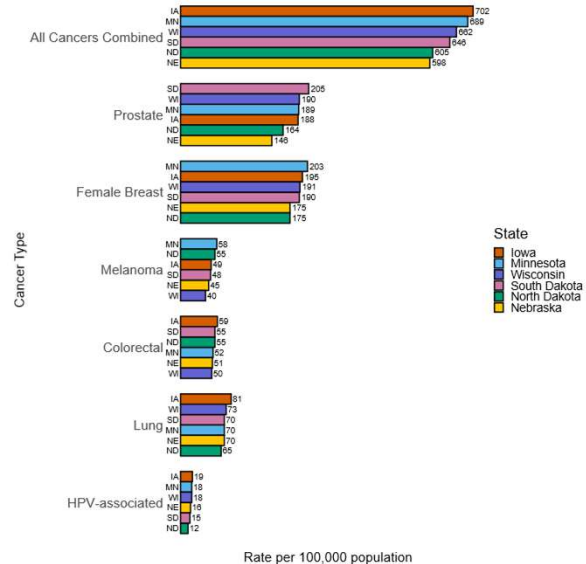
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Age-adjusted incidence rates (ages 20+ years) for states in Iowa's cluster, 2022

- In 2022, Iowa had:
 - Highest rate of **all cancers combined** within its cluster
 - Highest rate of **colorectal** cancer, **lung** cancer, and **HPV-associated** cancers
 - 2nd highest rate of **female breast** cancer (behind Minnesota)
 - 3rd highest rate of **melanoma** (behind Minnesota and North Dakota)
 - 4th highest rate of **prostate** cancer

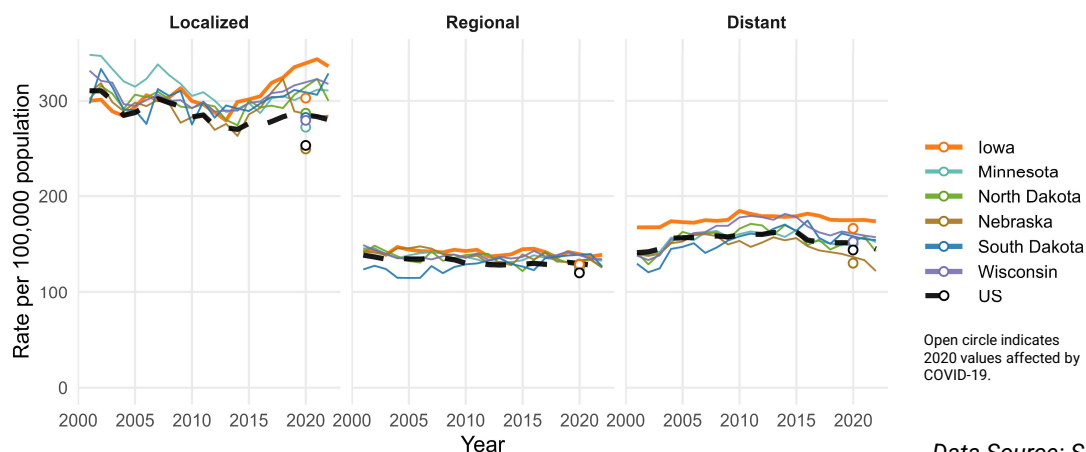


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Age-adjusted incidence rates by stage for states in Iowa's cluster for all cancers, ages 20+



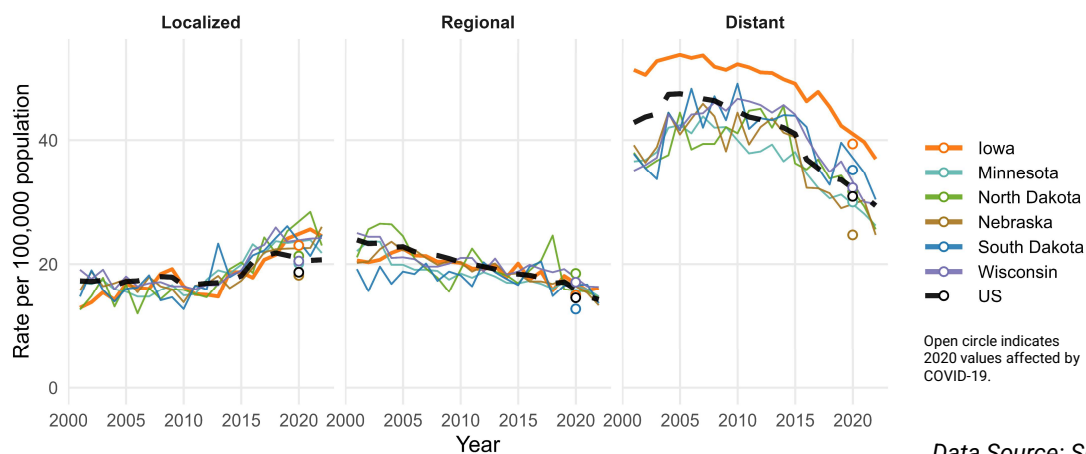
Data Source: SEER*Stat
(CiNA file)

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Age-adjusted incidence rates by stage for states in Iowa's cluster for lung cancer, ages 20+



Data Source: SEER*Stat
(CiNA file)

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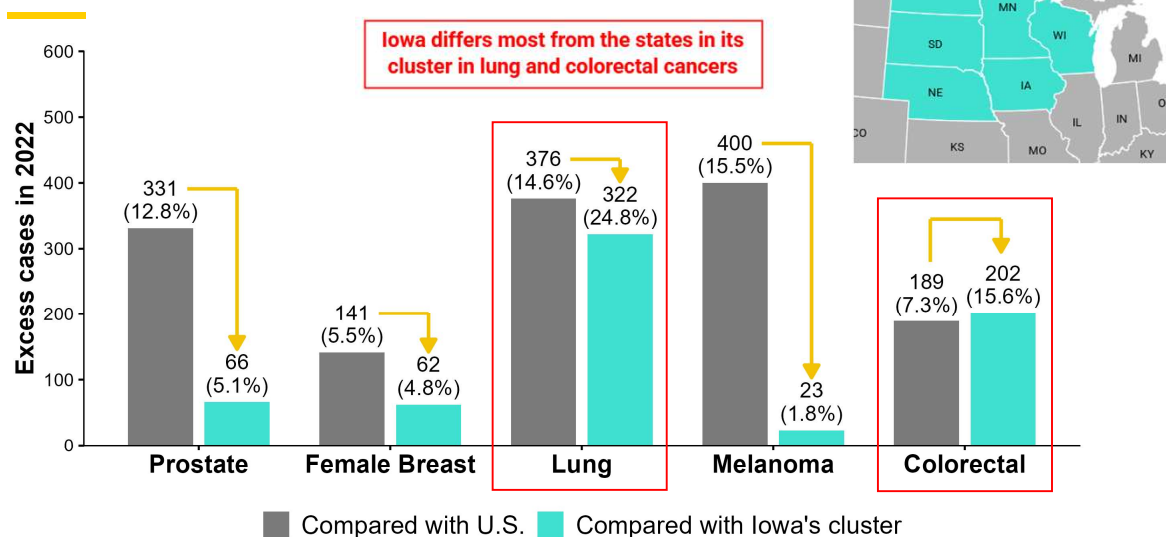
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2. Excess cancer cases

How many excess cancer cases occur in Iowa relative to the U.S. and to Iowa's cluster?

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Iowa's excess cases relative to the U.S. and relative to states in Iowa's cluster



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3. Excess cases by sex and age

Which sex-age groups and cancer types contribute most to Iowa's cancer burden?

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Age distribution of annual excess cancer cases by sex and cancer type in Iowa, 2018–2022 yearly average



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4. Identify counties with excess cancer cases before adjustment for selected risk factors

- Which counties have more cases than expected before adjustment for selected risk factors?

5. Develop models that adjust for selected risk factors and identify counties with remaining excess after adjustment

- How many of Iowa's excess cases can be expected based on selected risk factors?
- Which counties have remaining excess cases after adjustment?

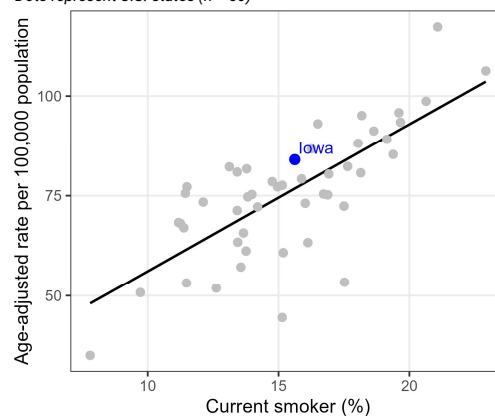
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How does the state-level modeling work?

- The models include behavioral risk factors and demographic characteristics known to be related to cancer
- Using patterns observed across all 50 states, the models estimate how many cancer cases would be expected in a population with those characteristics
- **The result is not a prediction about any individual person**
- Rather, it predicts the number of cancer cases we would expect to see in a state or county

Lung cancer incidence and current smoking prevalence, 2018–2022

Dots represent U.S. states (n = 50)



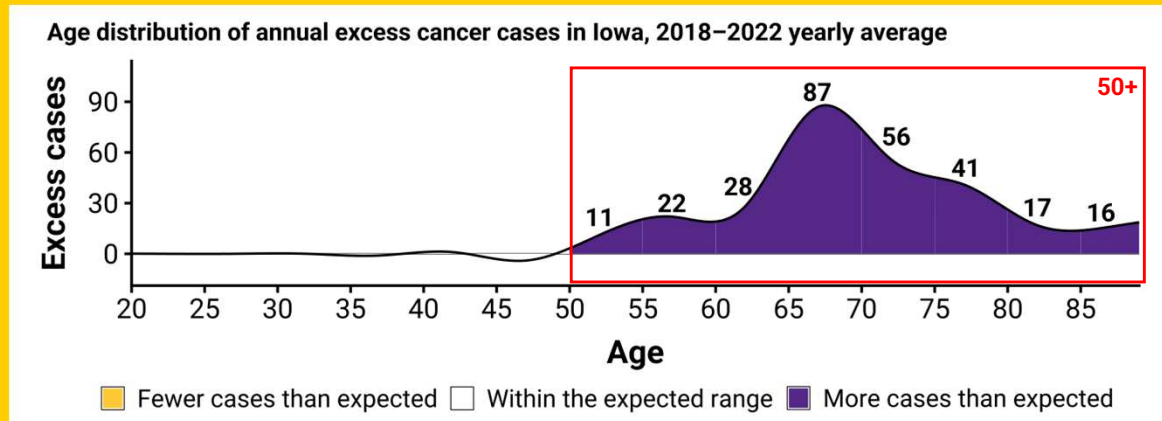
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Prostate Cancer

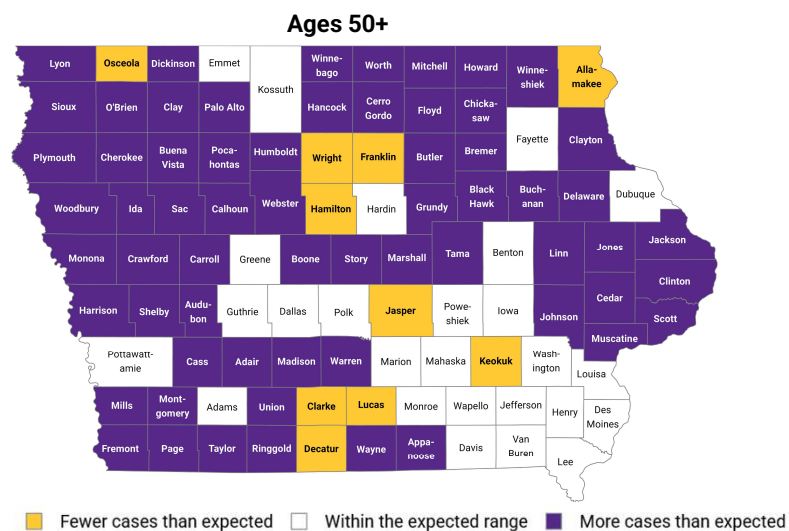
Ages 50+



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Prostate cancer (ages 50+): County excess classification before adjustment for risk factors, 2018–2022

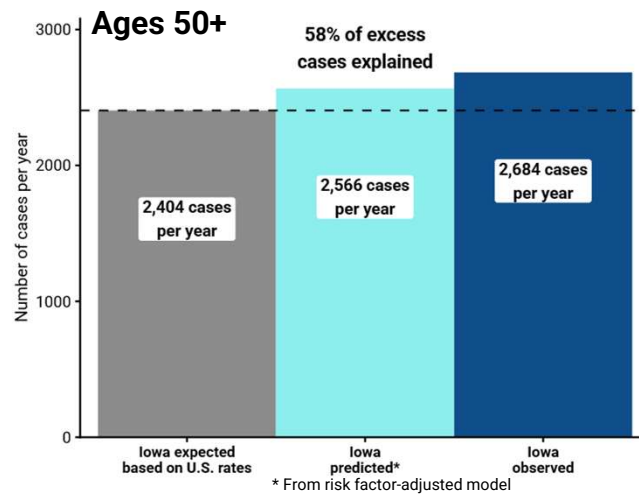


Data Source: Iowa Cancer Registry, CDC WONDER, ACS

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Prostate cancer: Modeling using selected risk factors

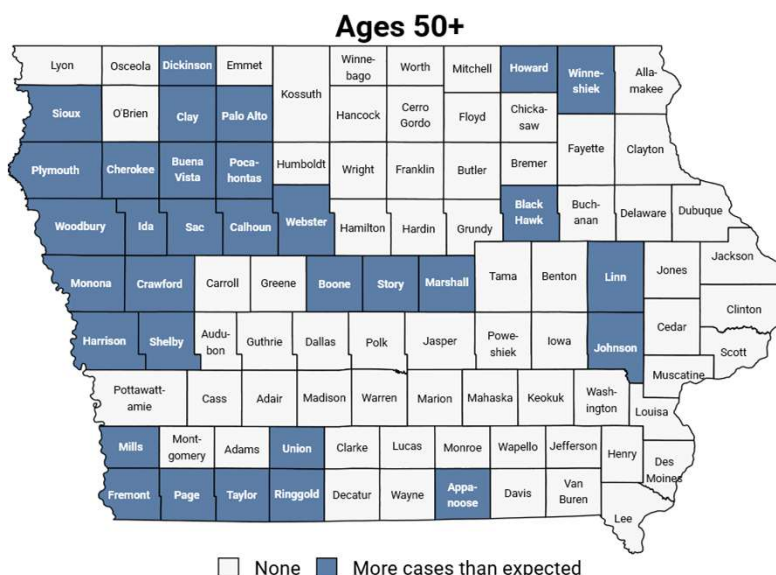


Prostate cancer (2018–2022)	% Binge drinking	% Recent medical checkup	% Insured	% Married	% Obese	% Black population	% Never smoked	% Bachelor's degree or higher	Average median household income	% With PSA test in past 2 years among males ages 40+
Males, ages 50+	✓	✓	✓	✓	✓	✓	✓			

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Prostate cancer: Combined results for counties with more cases than expected after adjustment (2018–2022)



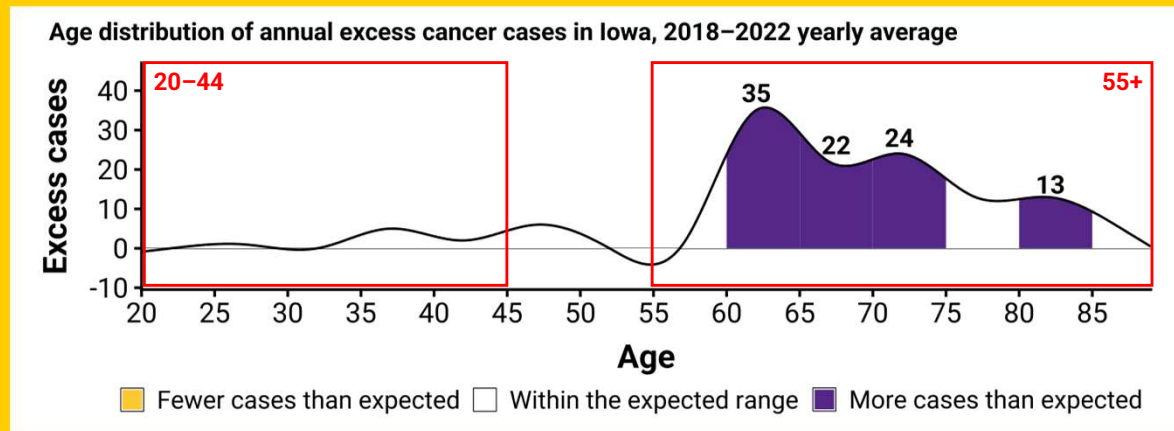
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Female Breast Cancer

Premenopausal (ages 20–44)

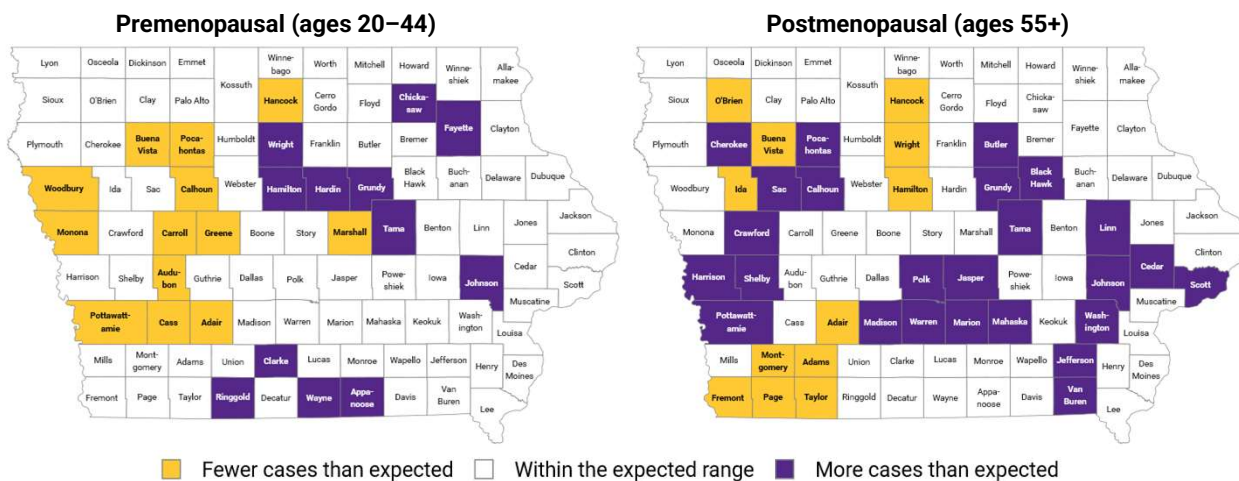
Postmenopausal (ages 55+)



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Female breast cancer (ages 20–44 & 55+): County excess classification before adjustment for risk factors, 2018–2022

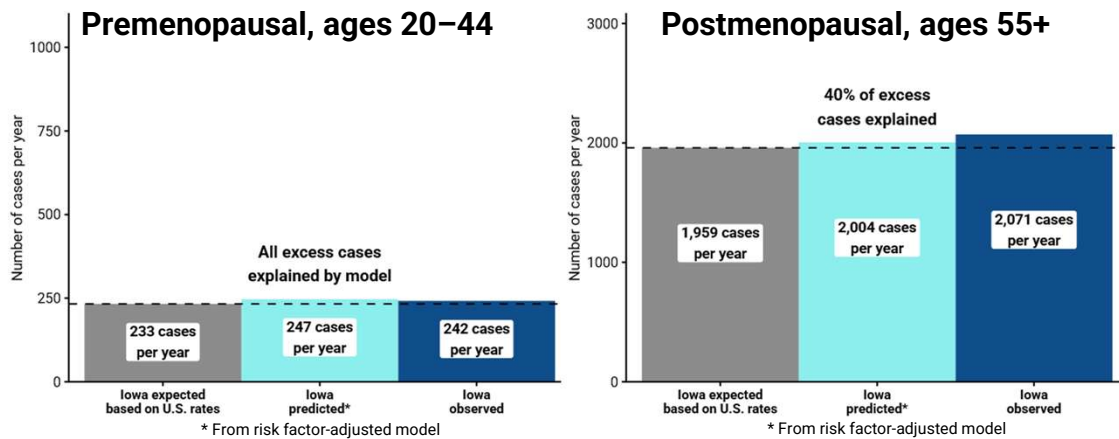


Data Source: Iowa Cancer Registry, CDC WONDER, ACS

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Female breast cancer: Modeling using selected risk factors

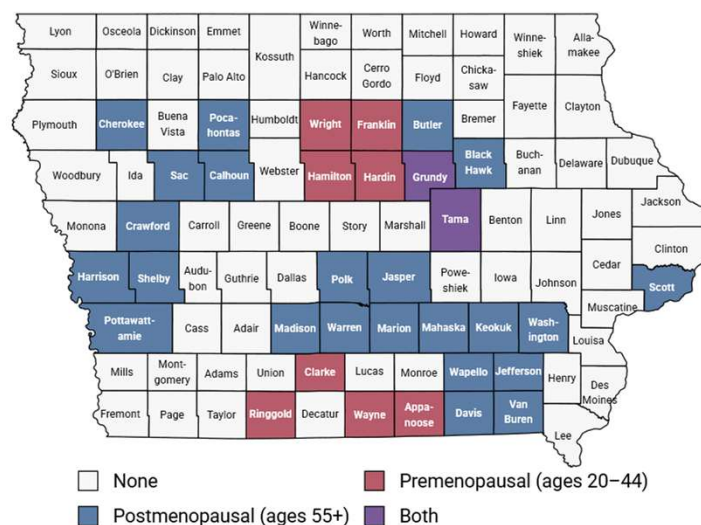


Female breast cancer (2018–2022)	% Binge drinking	% Recent medical checkup	% Bachelor's degree or higher	Average median household income	% Obese	% White population	% With mammogram in past 2 years, females ages 40+	% Any physical activity	% Insured	% Never smoked	Average mother's age at first birth
Premenopausal, ages 20–44	✓	✓	✓	✓							
Postmenopausal, ages 55+	✓		✓		✓	✓	✓				

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Female breast cancer: Combined results for counties with more cases than expected after adjustment (2018–2022)



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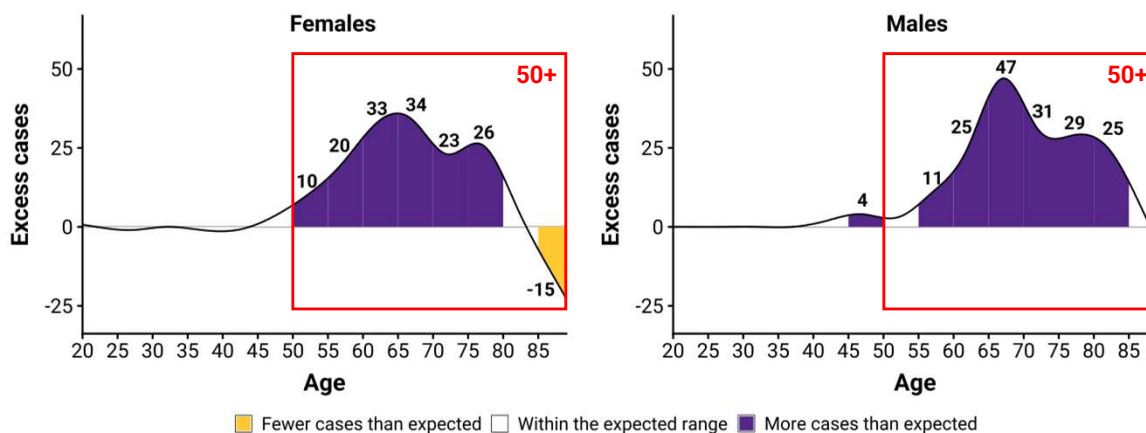
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Lung Cancer

Females ages 50+

Males ages 50+

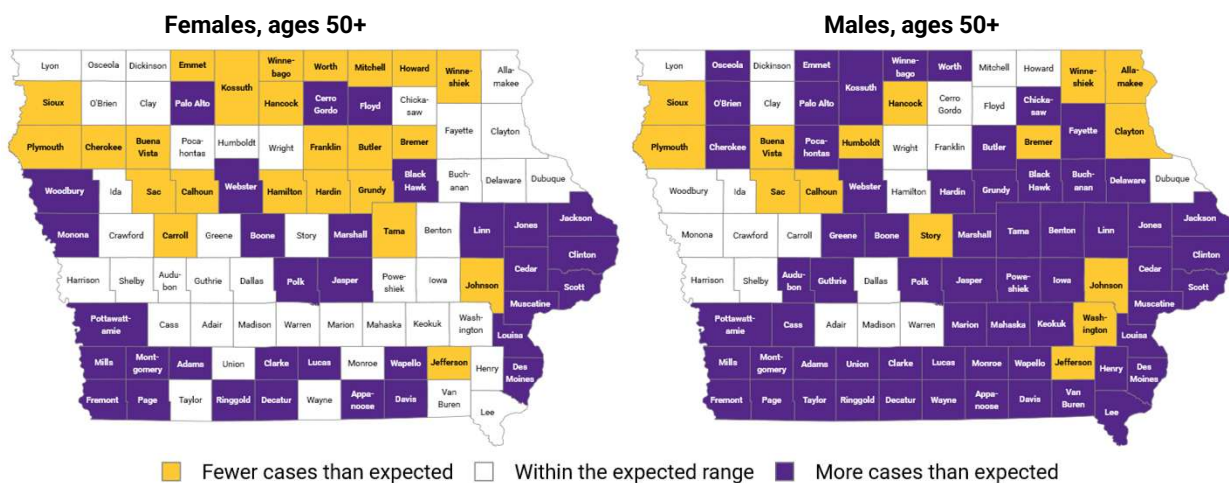
Age distribution of annual excess cancer cases by sex in Iowa, 2018–2022 yearly average



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Lung cancer (ages 50+): County excess classification before adjustment for risk factors, 2018–2022

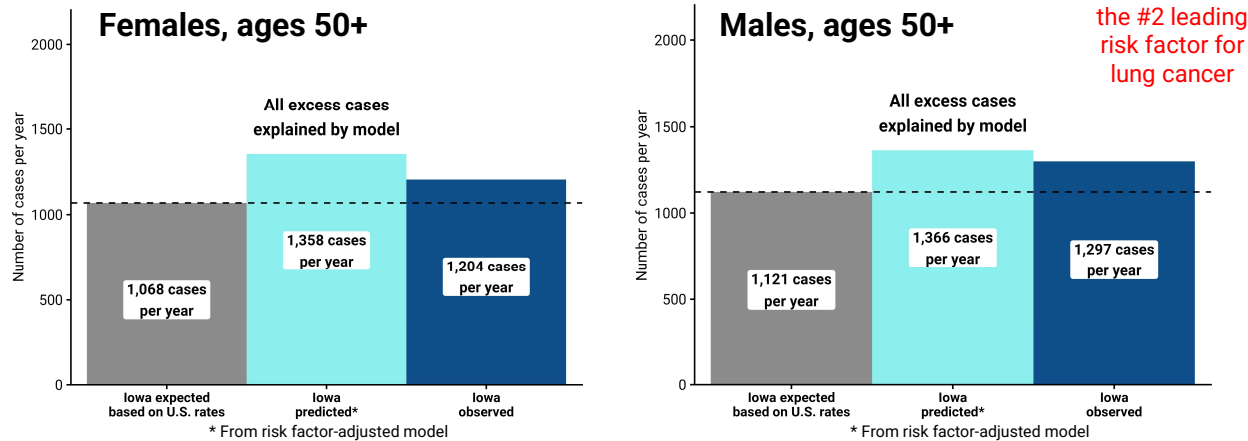


Data Source: Iowa Cancer Registry, CDC WONDER, ACS

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Lung cancer: Modeling using selected risk factors



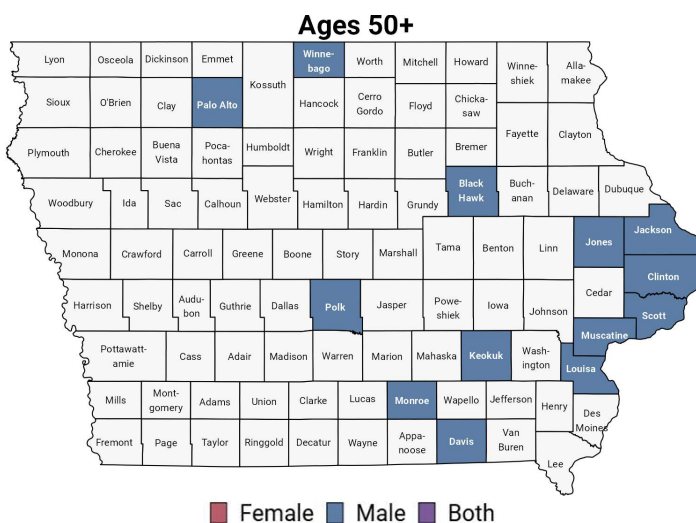
Added radon because it is the #2 leading risk factor for lung cancer

Lung cancer (2018–2022)	% Recent medical checkup	% Bachelor's degree or higher	% Obese	% Black population	% Current smokers	% Occupations with inhalant exposures	% Lung cancer screening	Average median household income	Average county-level radon concentration	% Any physical activity	% Former smokers	% Fruit intake <1/day
Females, ages 50+	✓	✓	✓	✓	✓	✓			✓			
Males, ages 50+	✓		✓		✓		✓	✓	✓			

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Lung cancer: Counties with more cases than expected after adjustment (2018–2022)



- Adjusted for risk factors such as smoking and radon:
 - Males 50+: 13 counties continued to have more cases of cancer than expected
 - Females 50+: no counties with more cancer cases than expected

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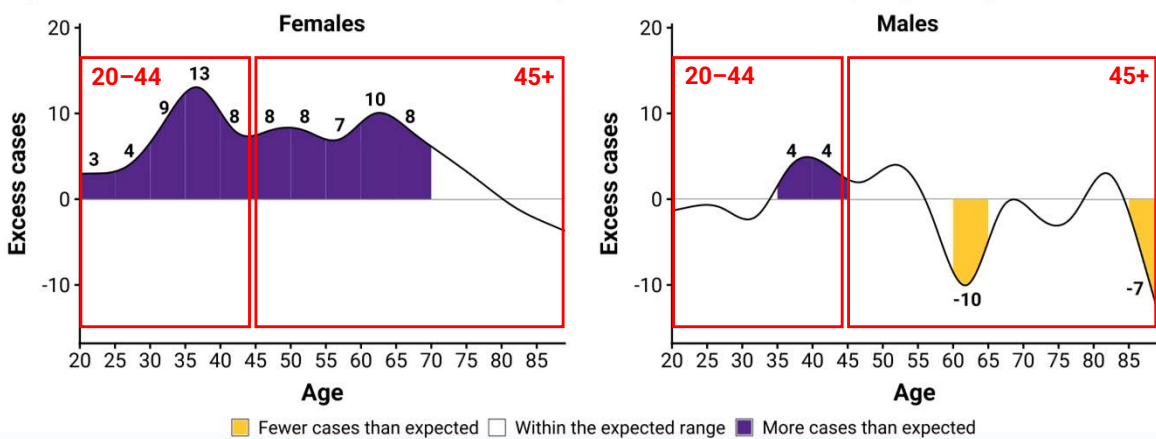
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Melanoma (Non-Hispanic White only)

Females ages 20–44 / Males ages 20–44

Females ages 45+ / Males ages 45+

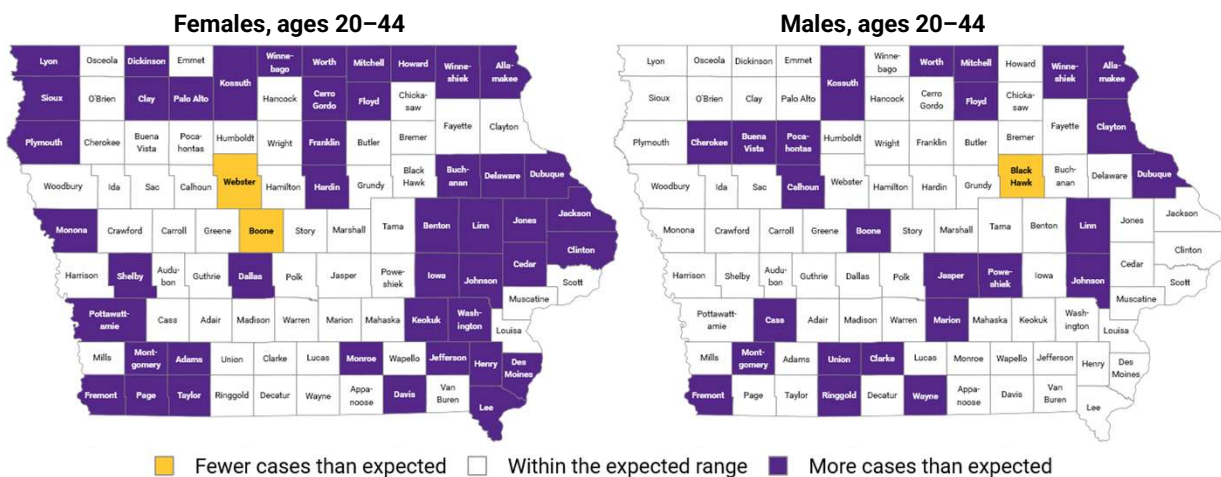
Age distribution of annual excess cancer cases by sex in Iowa, 2018–2022 yearly average



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Melanoma (Non-Hispanic White only, ages 20–44): County excess classification before adjustment for risk factors, 2018–2022



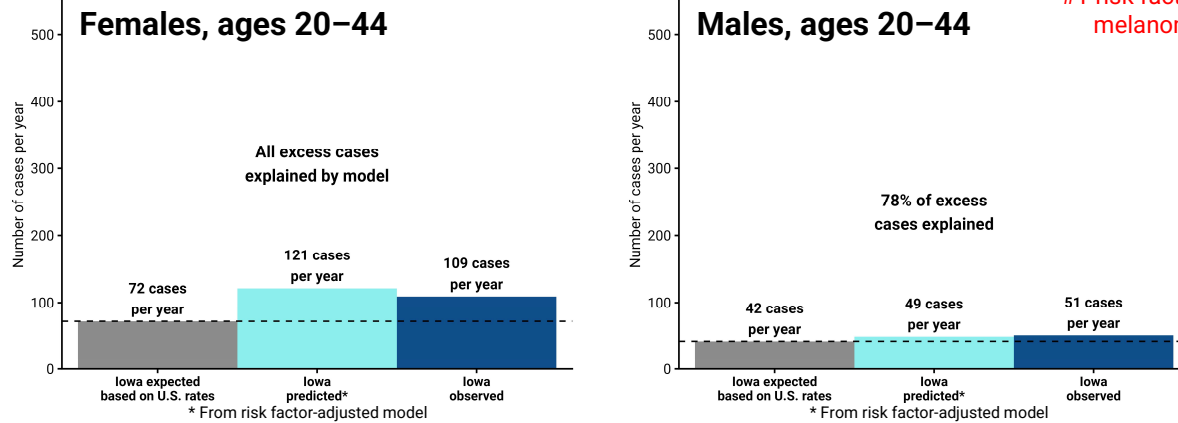
Data Source: Iowa Cancer Registry, CDC WONDER, ACS

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Melanoma (Non-Hispanic White only, ages 20–44): Modeling using selected risk factors

Added UV
exposure
because it is the
#1 risk factor for
melanoma

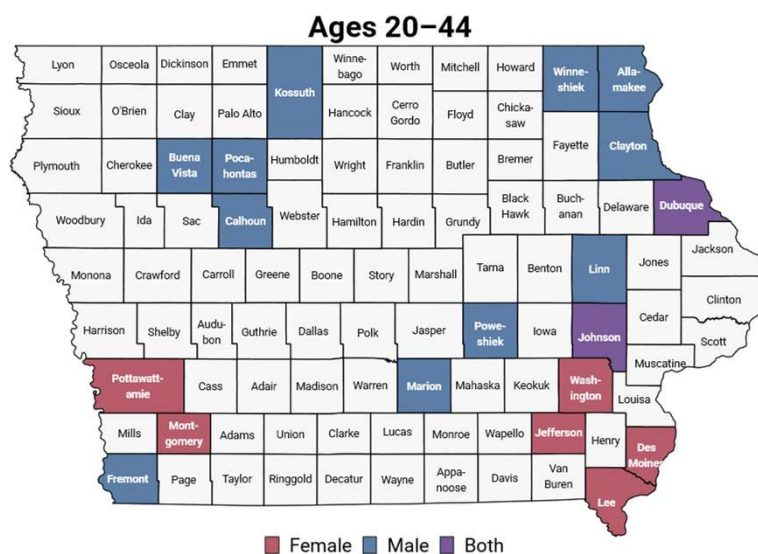


Melanoma (2018–2022)	% Binge drinking	% Recent medical checkup	% Insured	% Married	% Outdoor occupation	% Never smoked	Average UV exposure	% Bachelor's degree or higher	Average median household income	% Obese	% Any physical activity
Females, ages 20–44	✓	✓	✓	✓	✓	✓	✓				
Males, ages 20–44	✓		✓	✓	✓	✓	✓				

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Melanoma (Non-Hispanic White only, ages 20–44): Counties with more cases than expected after adjustment (2018–2022)



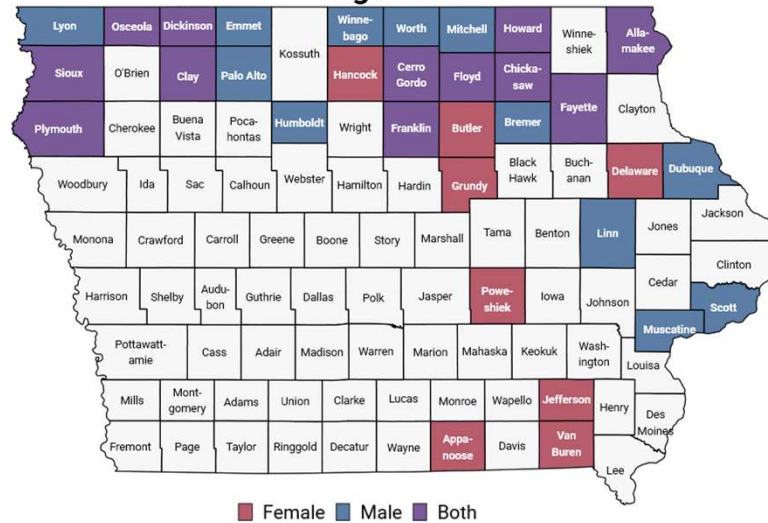
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	% Recent medical checkup	% Bachelor's degree or higher	% Insured	% Outdoor occupation	% Any physical activity	% Never smoked	Average UV exposure	% Binge drinking	Average median household income	% Married	% Obes
Melanoma (2018–2022)											
Females, ages 45+	✓	✓	✓	✓	✓	✓	✓				
Males, ages 45+	✓	✓	✓			✓	✓				

Melanoma (Non-Hispanic White only, ages 45+): Counties with more cases than expected after adjustment (2018–2022)

Ages 45+



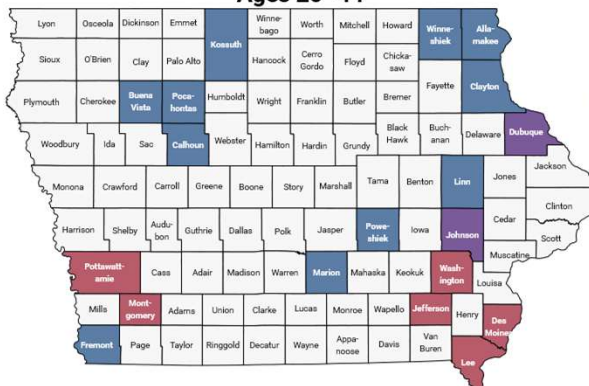
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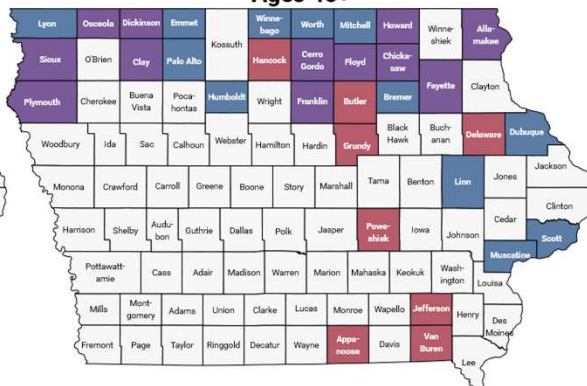
Melanoma (Non-Hispanic White only, ages 20–44 and 45+): Counties with more cases than expected after adjustment (2018–2022)

- No counties with excess for all 4 age-sex groups
- More than expected melanoma cases in northern Iowa

Ages 20–44



Ages 45+



Female Male Both

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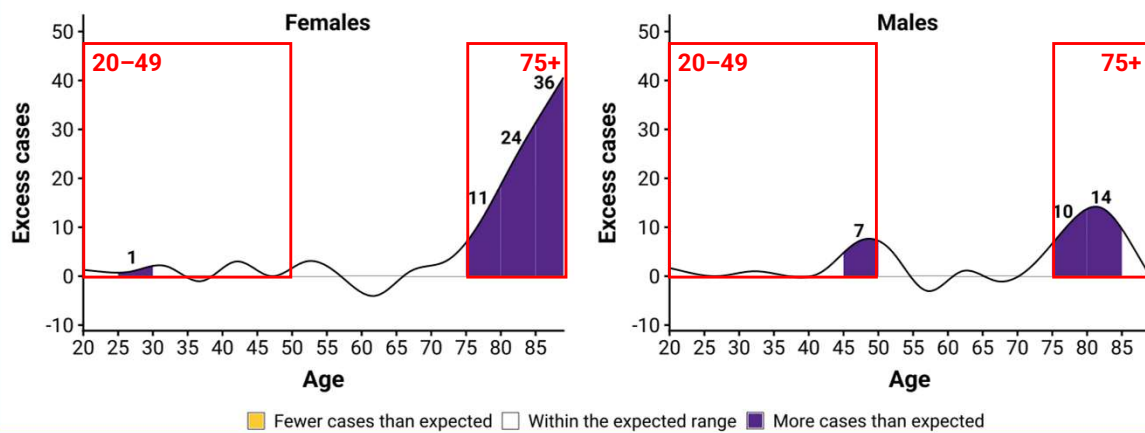
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Colorectal Cancer

Females ages 20–49 / Males ages 20–49

Females ages 75+ / Males ages 75+

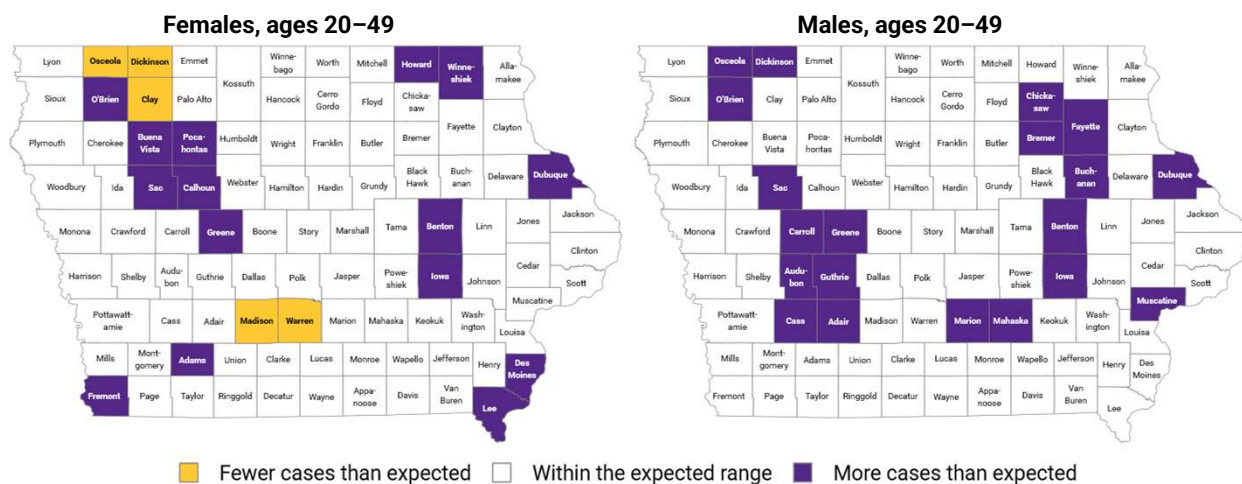
Age distribution of annual excess cancer cases by sex in Iowa, 2018–2022 yearly average



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Colorectal cancer (ages 20–49): County excess classification before adjustment for risk factors, 2018–2022

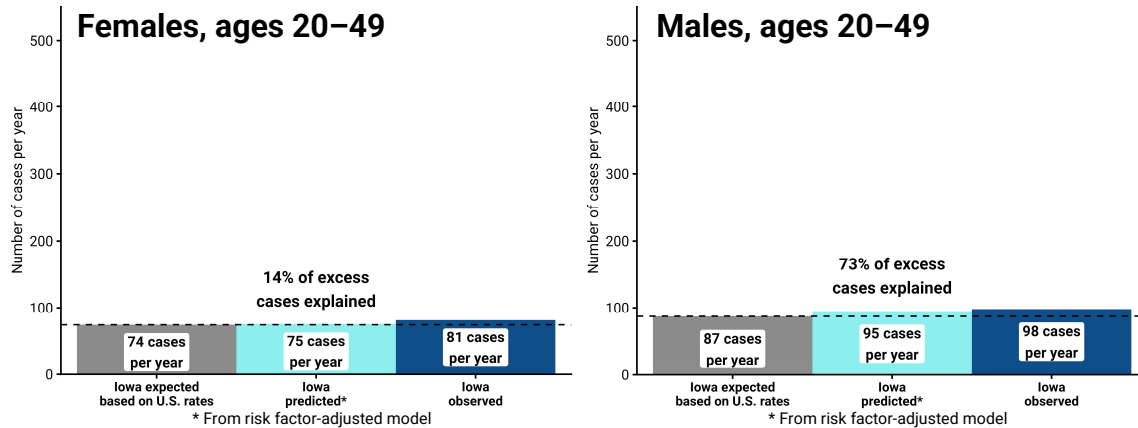


Data Source: Iowa Cancer Registry, CDC WONDER, ACS

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Colorectal cancer (ages 20–49): Modeling using selected risk factors

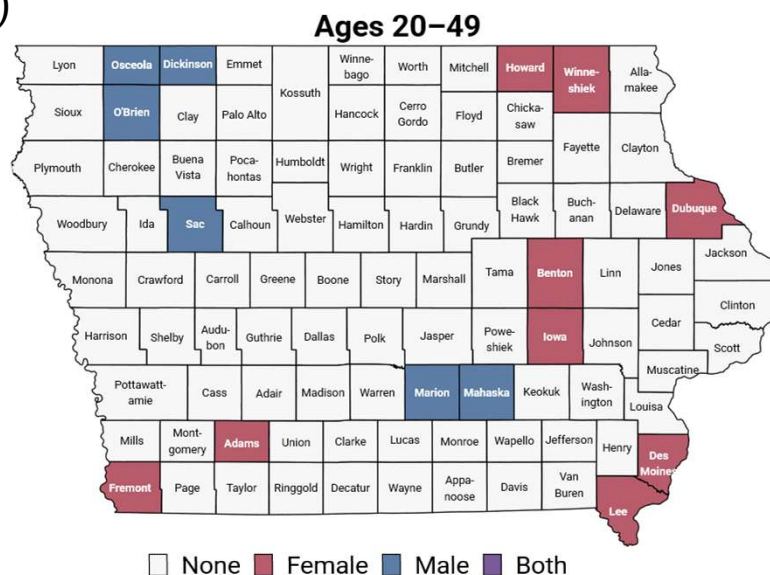


Colorectal cancer (2018–2022)	% Binge drinking	% Colorectal cancer screening	% Fruit intake <1/day	Average median household income	% Bachelor's degree or higher	% Married	% Obese	% Recent medical checkup	% Insured	% Any physical activity	% Black population	% Never smoked	% Vegetable intake <1/day
Females, ages 20–49	✓	✓	✓	✓	✓	✓							
Males, ages 20–49	✓	✓	✓				✓						

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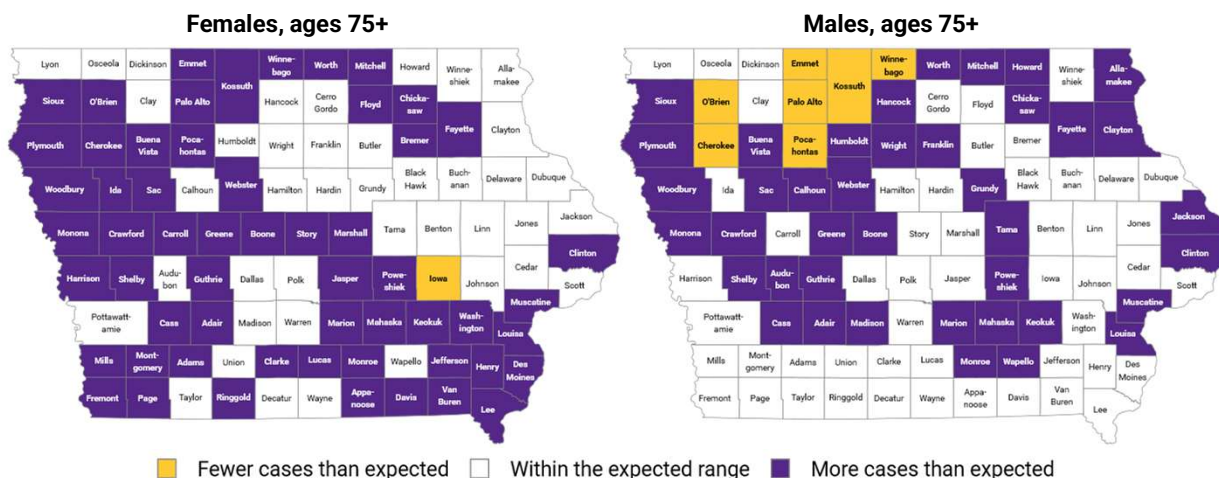
Colorectal cancer (ages 20–49): Combined results for counties with more cases than expected after adjustment (2018–2022)



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Colorectal cancer (ages 75+): County excess classification before adjustment for risk factors, 2018–2022

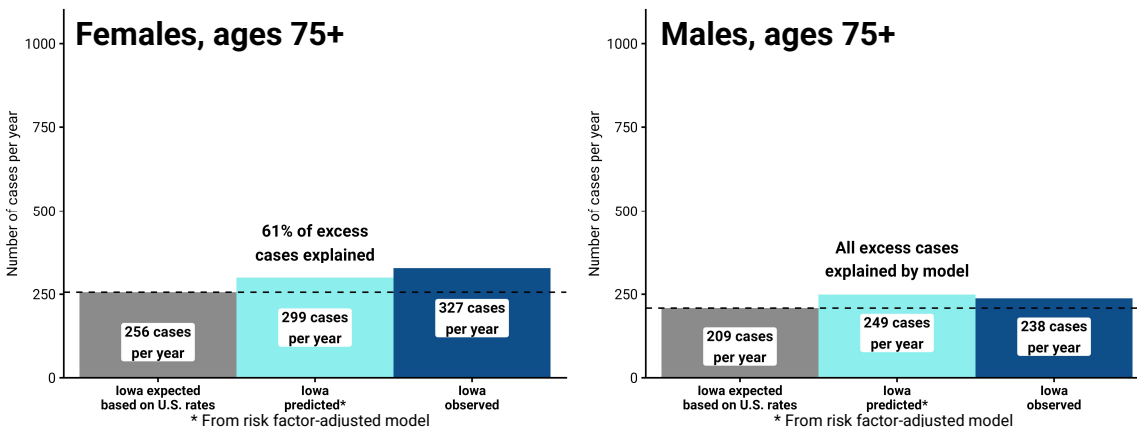


Data Source: Iowa Cancer Registry, CDC WONDER, ACS

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Colorectal cancer (ages 75+): Modeling using selected risk factors

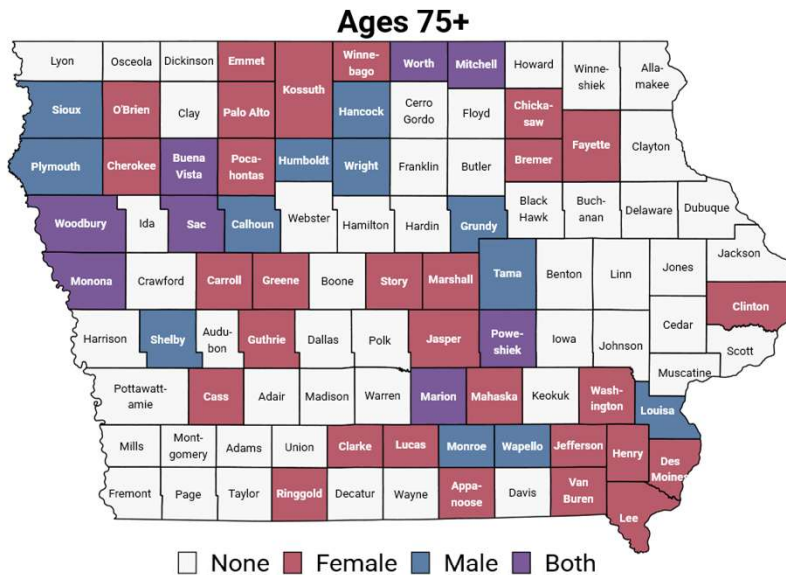


Colorectal cancer (2018–2022)	% Binge drinking	Average median household income	% Married	% Obese	% Any physical activity	% Black population	% Never smoked	% Vegetable intake <1/day	% Colorectal cancer screening	% Recent medical checkup	% Bachelor's degree or higher	% Fruit intake <1/day	% Insured
Females, ages 75+	✓	✓	✓	✓	✓	✓	✓	✓					
Males, ages 75+	✓	✓	✓	✓	✓				✓				

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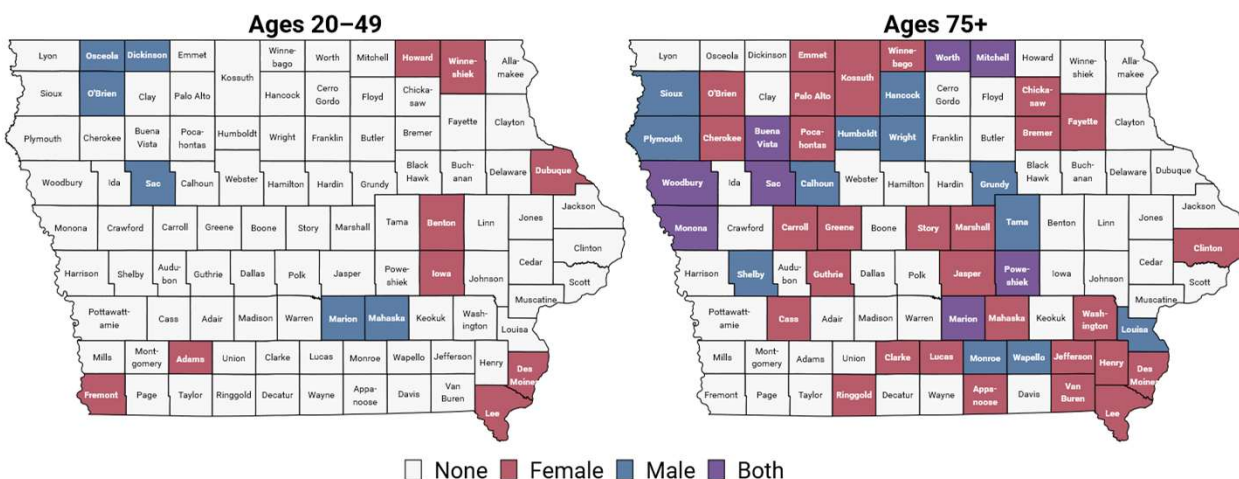
Colorectal cancer (ages 75+): Combined results for counties with more cases than expected after adjustment (2018–2022)



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Colorectal cancer (ages 20–49 and 75+): Combined results for counties with more cases than expected after adjustment (2018–2022)



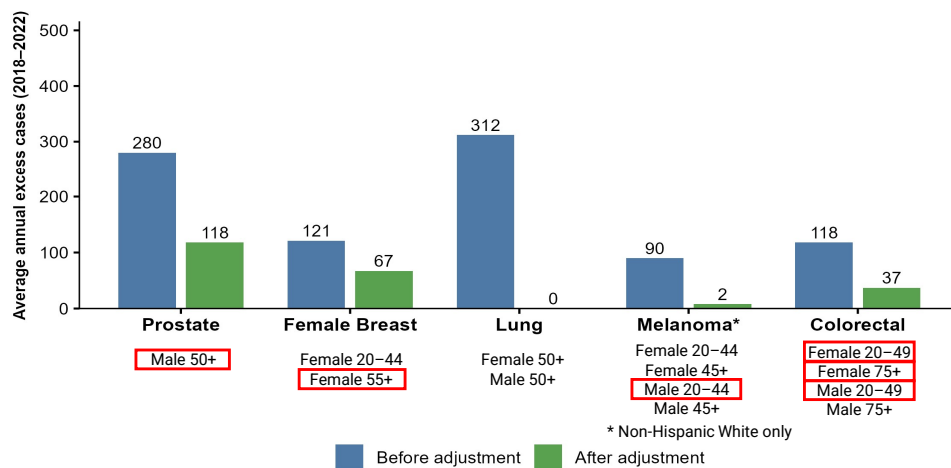
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Summary findings

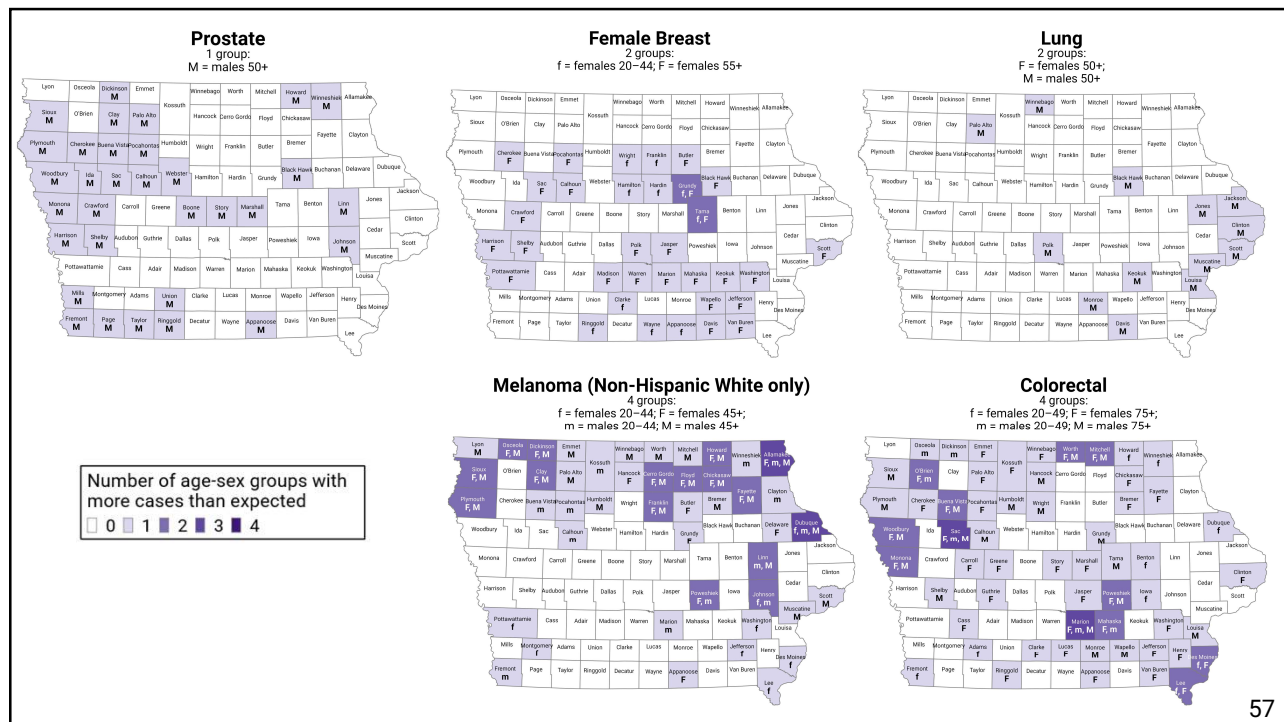
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Average annual excess cases in Iowa by cancer type before and after adjustment for selected risk factors (2018–2022)


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Which counties continued to have more cancer cases than expected after adjustment for selected risk factors?

- Distribution of counties with significantly more cases than expected after adjustment varied by cancer type, age group, and sex
- There were no consistent geographical patterns identified across cancer types, which was expected given that there are very few risk factors associated with all cancer types

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Key Points From Drivers of Cancer in Iowa Analyses



Given Iowa's demographic and behavioral risk factor profile, higher cancer incidence would be expected; selected demographic and behavioral risk factors explained approximately 76% of Iowa's excess cancer burden across the five most common cancers



Results suggest that prevention efforts targeting modifiable risk factors would reduce the number of excess cases of cancer in Iowa



Counties and cancer groups with remaining excess cases may be influenced by additional factors not included in the current analyses



Phase 2 of the project will evaluate other potential contributors to Iowa's elevated cancer incidence, including additional environmental factors, and further investigate populations and geographic areas with persistent excess cancer cases

For details see our website: <https://iphprp.org/cancer-drivers-in-iowa/>

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Community Engagement Requirements (CER) Overview

- ▶ New **federally required rules** under the One Big Beautiful Bill Act (H.R. 1) apply to **certain IHAWP members** ages 19–64 beginning Dec. 1, 2026
- ▶ These requirements are intended to encourage employment, education, job training, volunteer service, and other forms of community involvement.
- ▶ While some states refer to these as "work requirements," Iowa uses the term Community Engagement Requirements.

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Health and
Human Services

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Tuesday Annual Meeting Evaluation

Scan this QR code to evaluate Tuesday's educational sessions

