

# Cancer in Clay County

*Whitney Zahnd, PhD & Amanda Kahl, MPH*

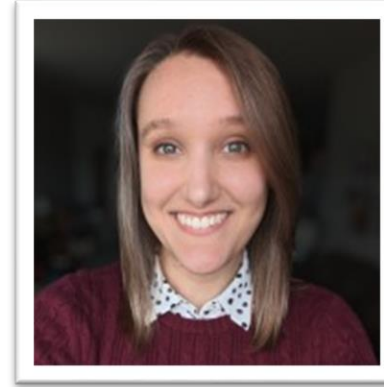
July 24, 2025

# Who we are



## **Whitney Zahnd, PhD**

- Assistant Professor, University of Iowa College of Public Health
- Past-president of the Iowa Rural Health Association
- Member of the Cancer Epidemiology and Population Sciences Program, Holden Comprehensive Cancer Center
- Research: rural-urban differences in cancer prevention, incidence and outcomes, access to care



## **Amanda Kahl, MPH**

- Epidemiologist, Iowa Cancer Registry
- Research: rural-urban differences in treatment and quality of cancer care; cancer registry data quality

# 99 Counties Project Team



Iowa Cancer  
Consortium

[www.canceriowa.org](http://www.canceriowa.org)



**IOWA**  
HEALTH CARE

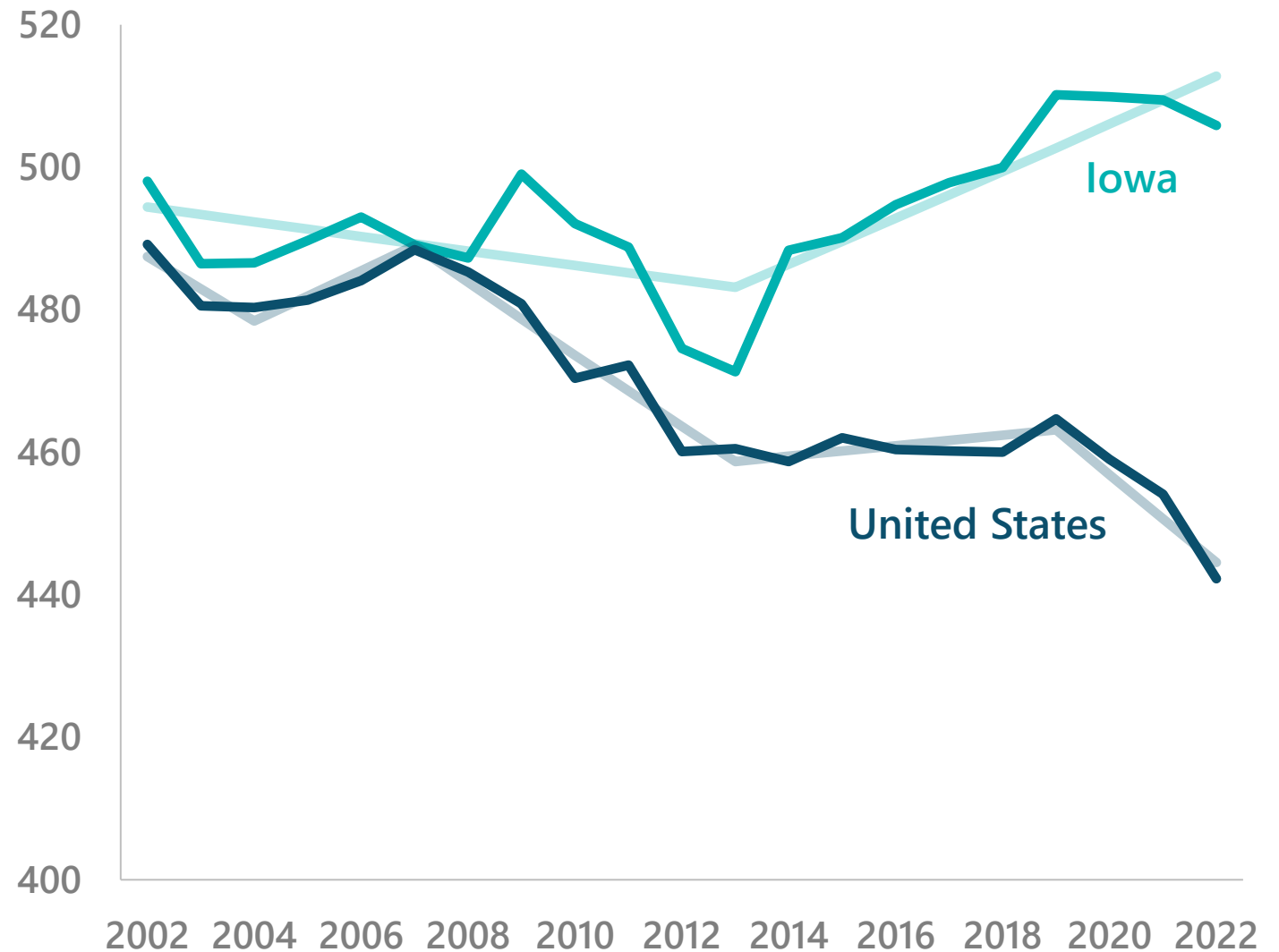
Holden Comprehensive  
Cancer Center

**IOWA**™ | Health and  
Human Services

*"Statistics are people  
with the tears wiped away"*

*Dr. Irving Selikoff*

Iowa has the **#2**  
highest rate of new  
cancers in the U.S.

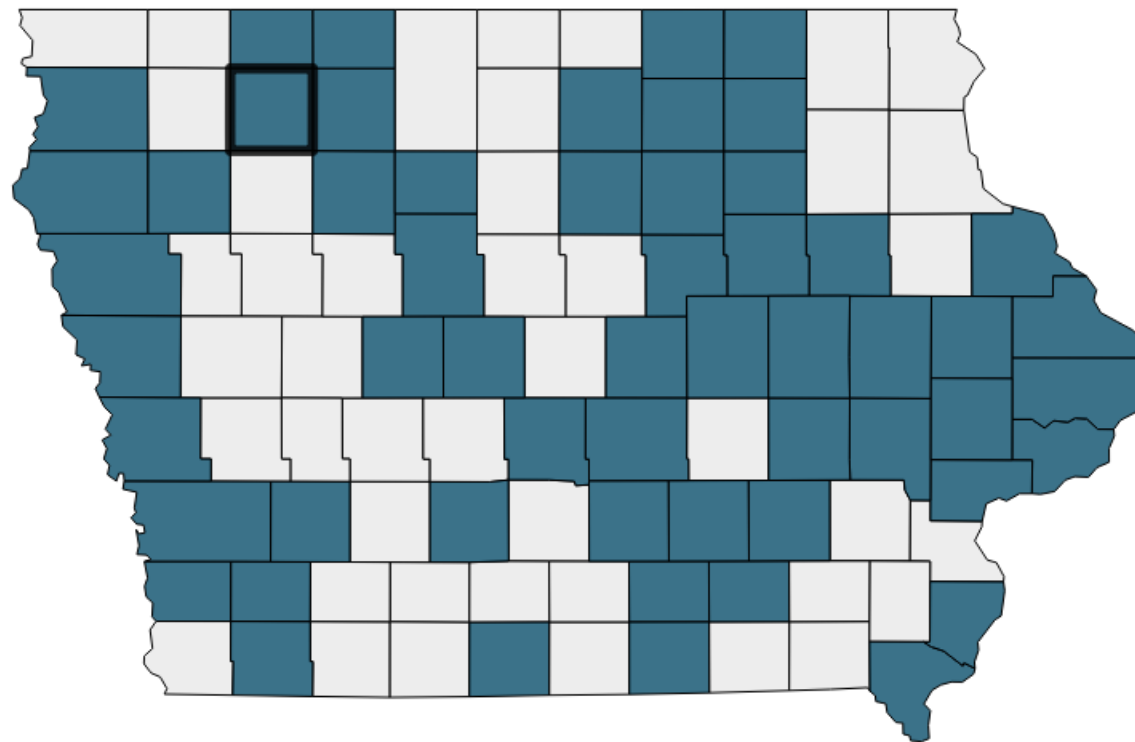


2020 data not included

# Over half of Iowa's counties have a higher incidence rate than the U.S.

**56** Counties with rates **OVER** the national average

**0** Counties below the national average



■ Above National rates  
■ Similar to National rates

# About the Project

**Goal:** to enhance community engagement & education around cancer prevention and control across all of Iowa's 99 counties.



Present county-specific cancer data



Listen



Provide  
Resources



Recommend  
actions

# There are Many Cancer Control Partners in Iowa

## State Government



### Governor

- Implement state laws
- Advance and pursue policies and programs

### Iowa Legislature

- Propose and vote on legislation
- Appropriate money to state agencies and programs
- Create and modify Iowa laws



### Bureau of Chronic, Congenital and Inherited Conditions

#### Comprehensive Cancer Control Program

Cancer prevention, screening, survivorship

Care for Yourself  
(Breast & Cervical  
Cancer Program)

Colorectal Cancer  
Screening Program

### Bureau of Environmental Health Services

- Track environmental health-related diseases
- Assist local boards of health

### Local (County) Public Health Services/Boards of Health

- Address health priorities and health disparities
- Promote healthy living
- Protect against environmental hazards
- Assure access to health services

Unity Point, MercyOne, Great River, Avera, Mayo, Methodist, Gundersen, Sanford and numerous independent **health systems, hospitals and clinics across Iowa**

Provide cancer prevention, screening, treatment, and survivorship services



Iowa Cancer  
Consortium

Advocate, collaborate, plan



### Iowa Cancer Action Network

Advocate for better policies

### ACS Iowa

Help with cancer treatment and recovery



Holden Comprehensive  
Cancer Center

Iowa's only NCI Designated  
Cancer Center

Health Care, research,  
education



STATE HEALTH REGISTRY OF IOWA

Data, research, education

## UI Research Centers



Cancer Prevention and Control Research Network



Center for Health Effects of  
Environmental Contamination



environmental health sciences  
research center



# Iowa Cancer Registry Goals



**Assemble & report data** on new cancers, cancer deaths, & survival



Respond to **data requests** from organizations & individuals



**Support studies** for cancer prevention, research & education

# Federal Funding for Cancer Control in Iowa

- The Iowa Cancer Registry is funded in part with Federal funds from the **National Cancer Institute (National Institutes of Health)**, Department of Health and Human Services, under Contract No. HHSN261201800012I
- The Cancer in Iowa: 99 Counties Project is specifically funded by Federal funds from the **National Cancer Institute** through grant award: 5R01CA254628-04S2, and through National Cancer Institute funds provided to the University of Iowa Holden Comprehensive Cancer Center (P30CA086862)
- The Iowa Cancer Consortium acknowledges the **Centers for Disease Control and Prevention (CDC)** for its funding support under cooperative agreement NU58DP007103 awarded to the Iowa Department of Health and Human Services (Iowa HHS).

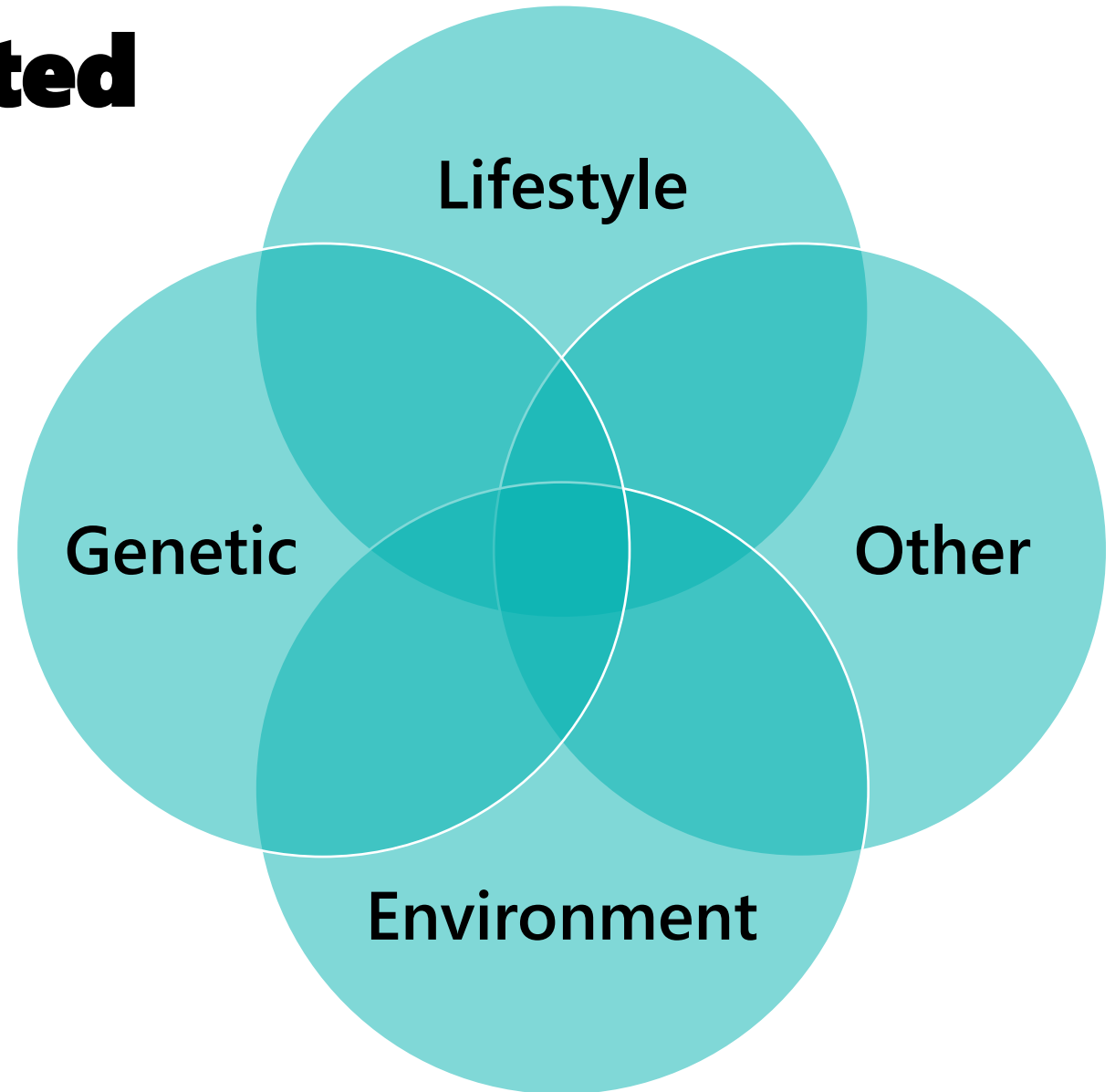
The contents of this presentation are solely the responsibility of the authors and do not necessarily represent the official views of CDC or the National Institutes of Health/National Cancer Institute.



# **Background on Cancer**

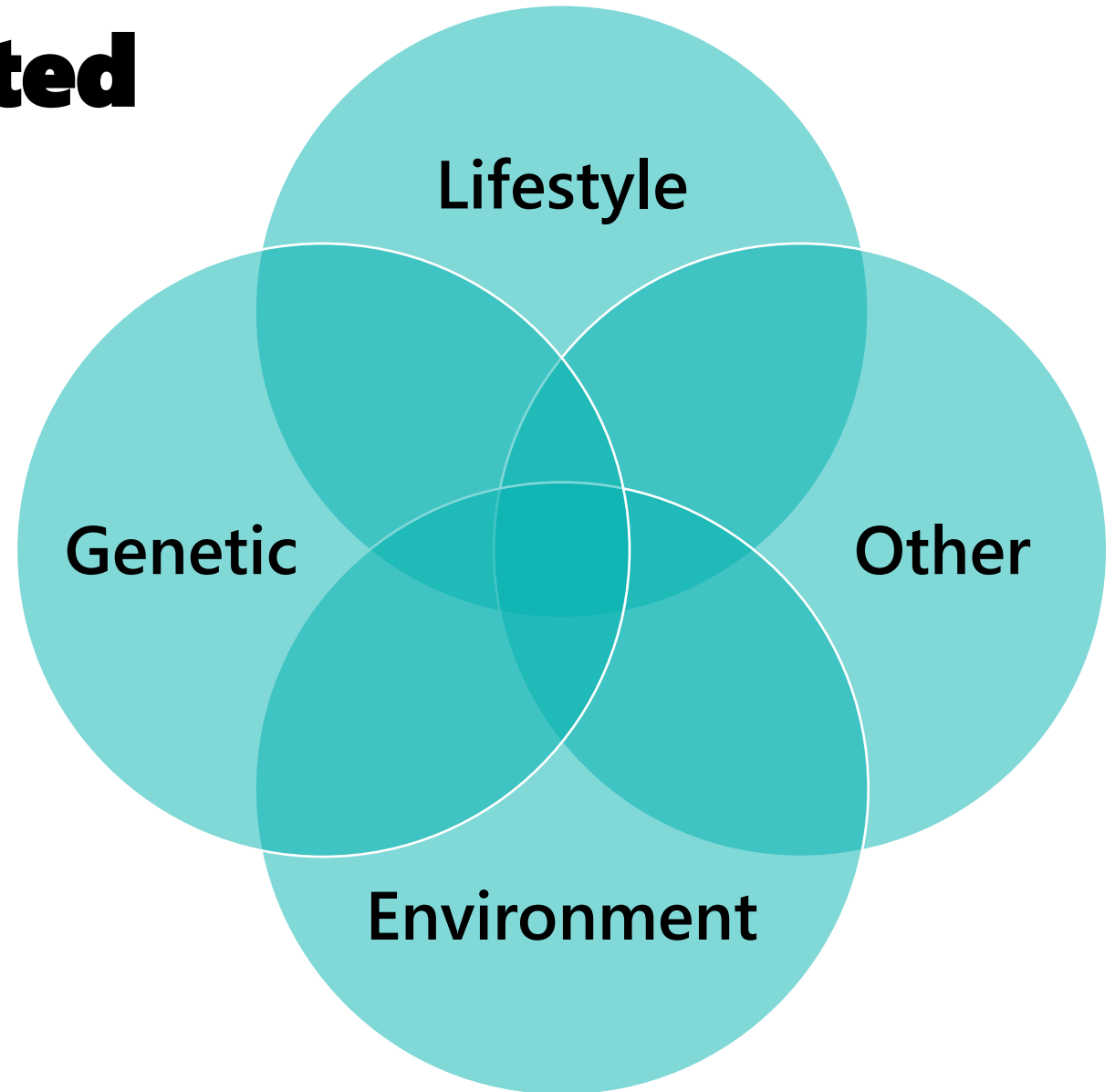
# Cancer is Complicated

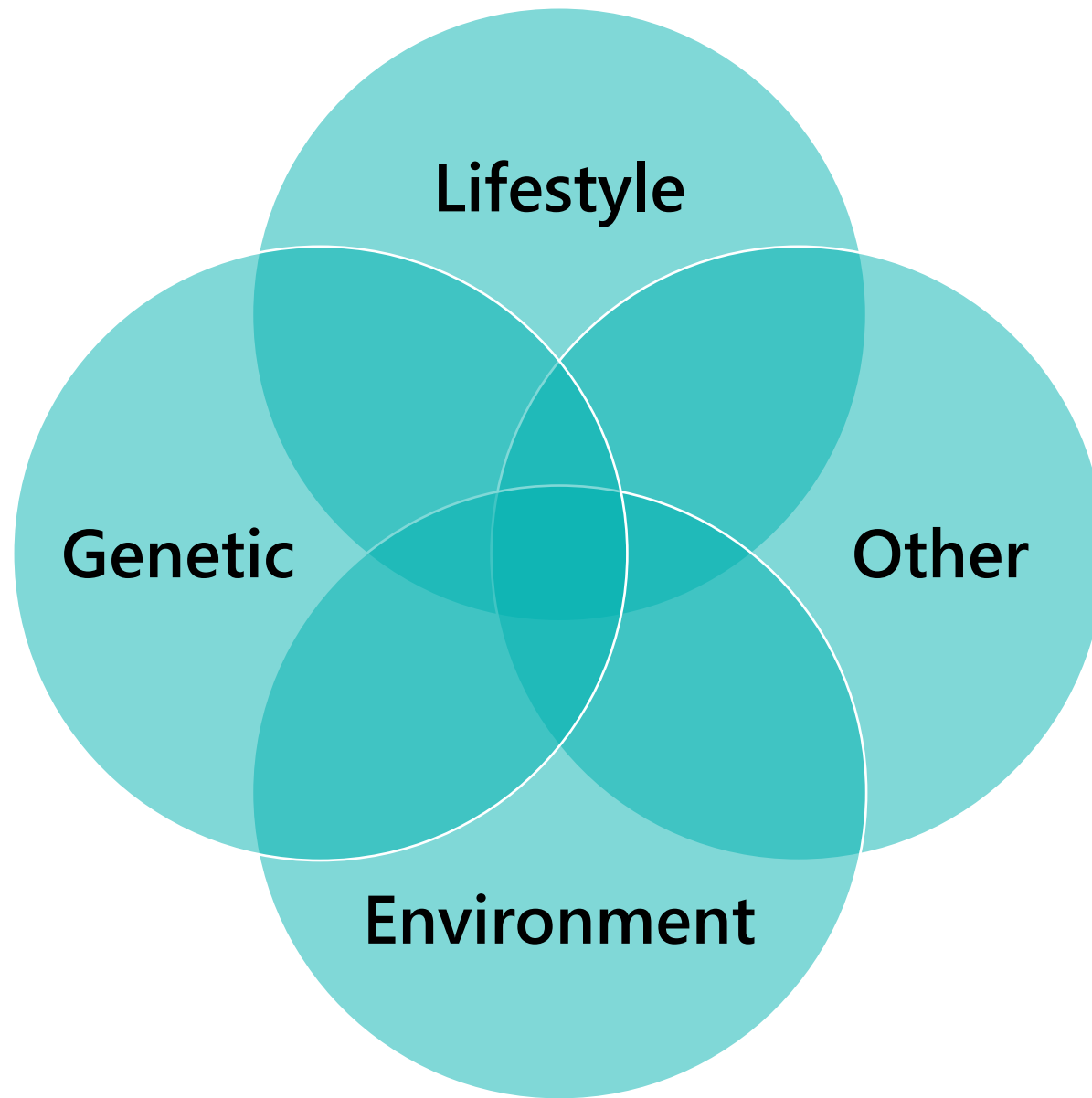
There is no one cause of cancer; it is a combination of different **genetic, lifestyle, and environmental** risk factors that change the function of cells



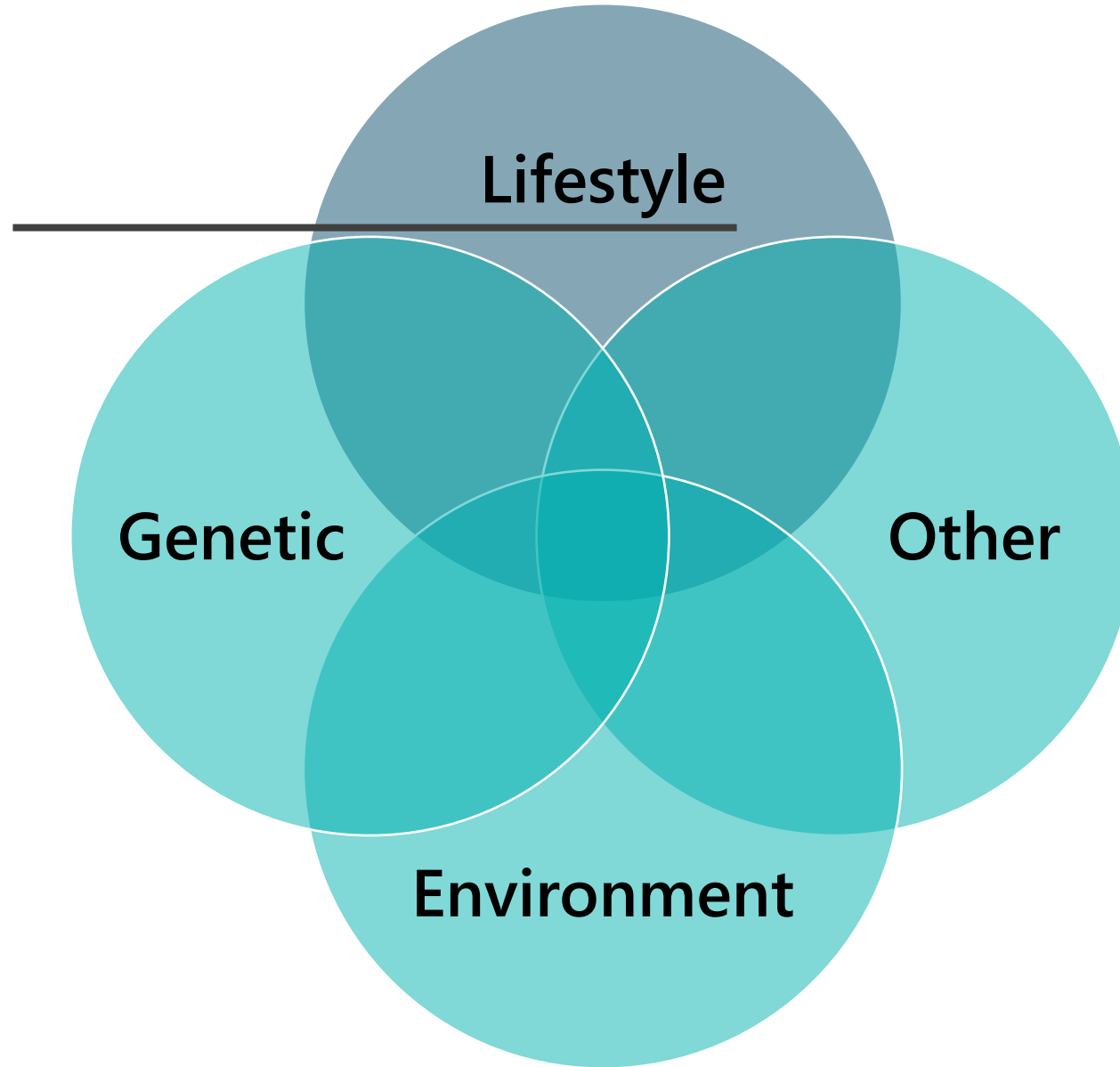
# Cancer is Complicated

**Risk factors** are things that increase your chances of getting cancer

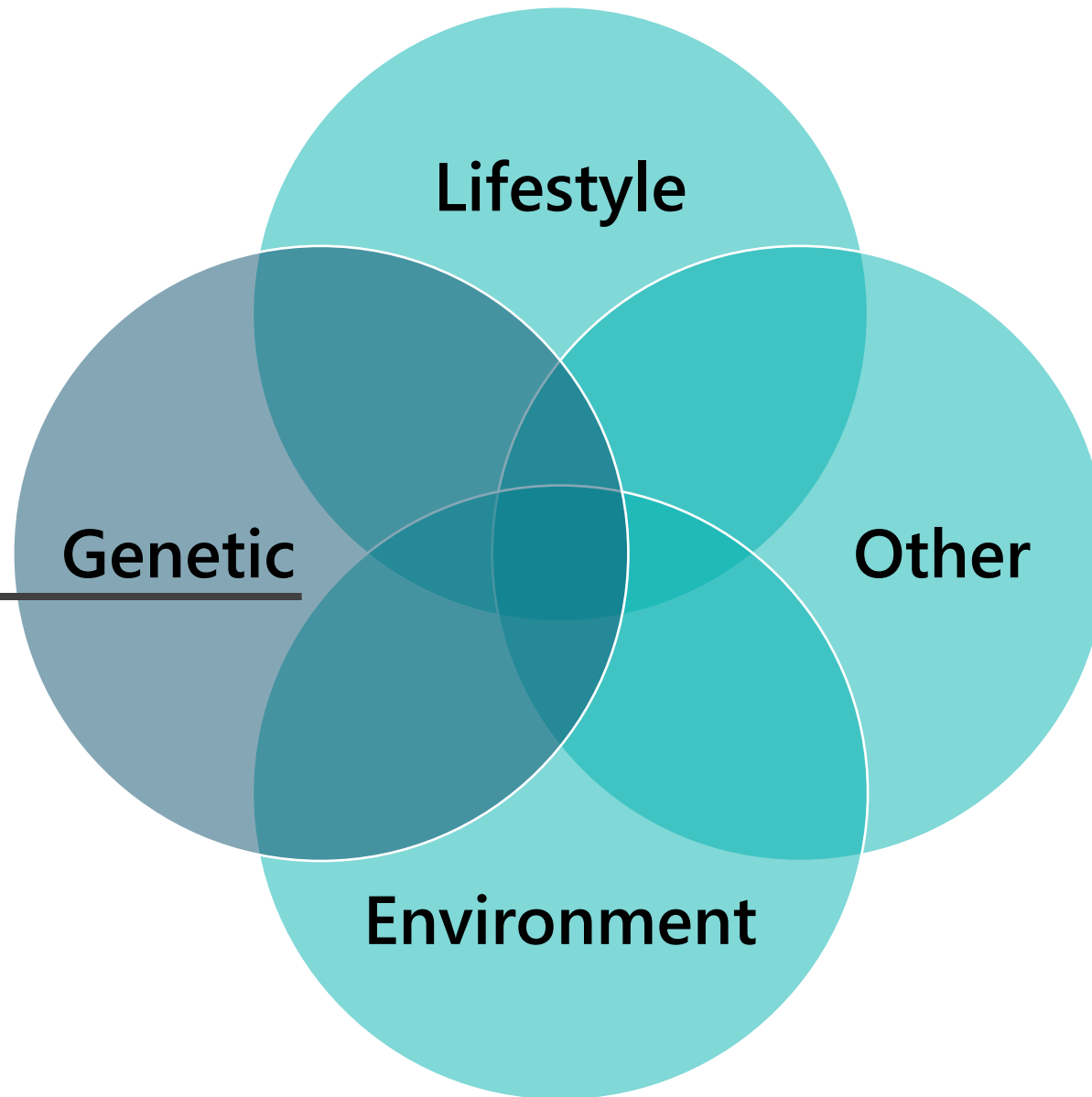




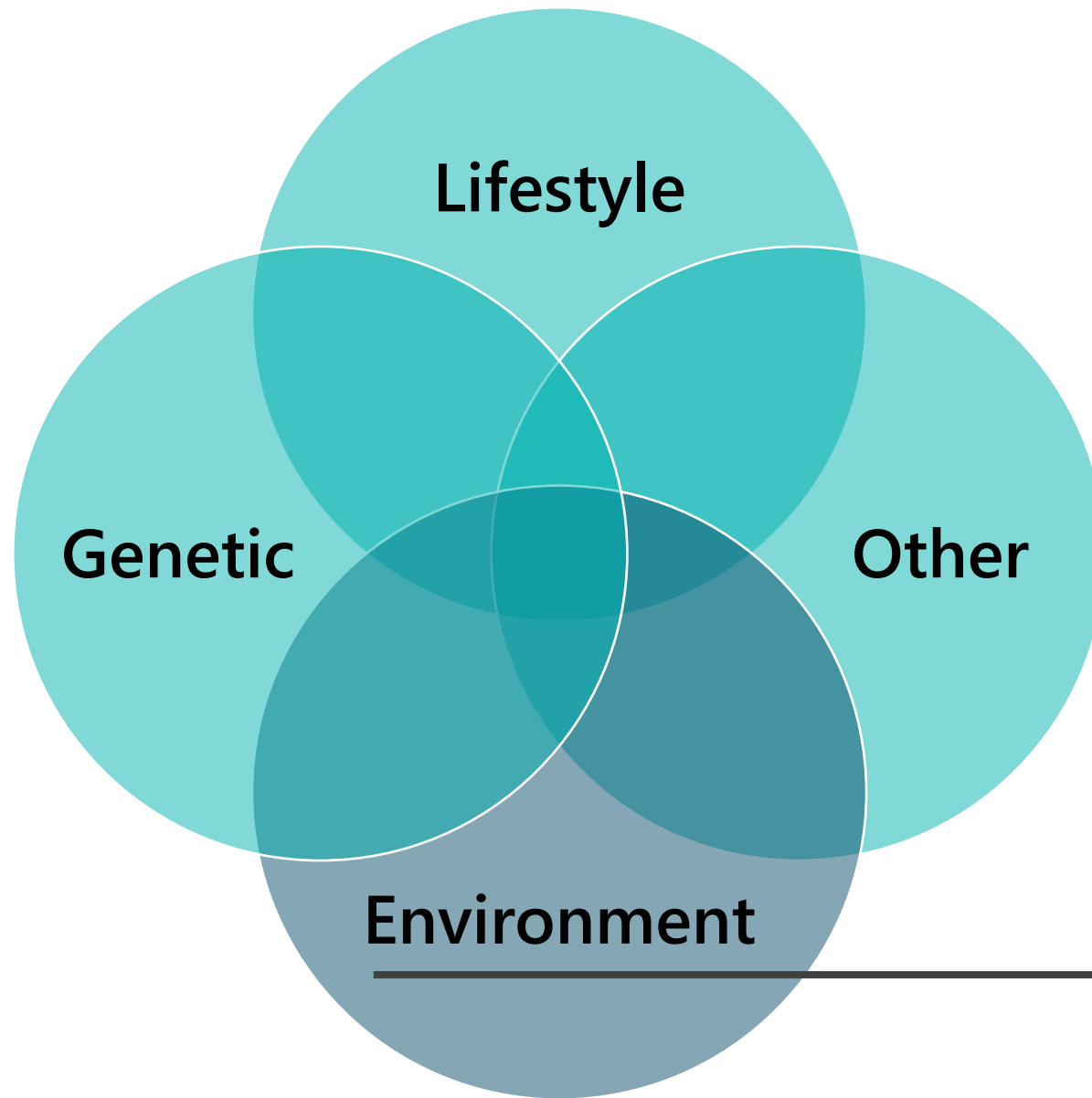
- Tobacco
- Alcohol
- Unhealthy diet
- Not being physically active
- Sunburns



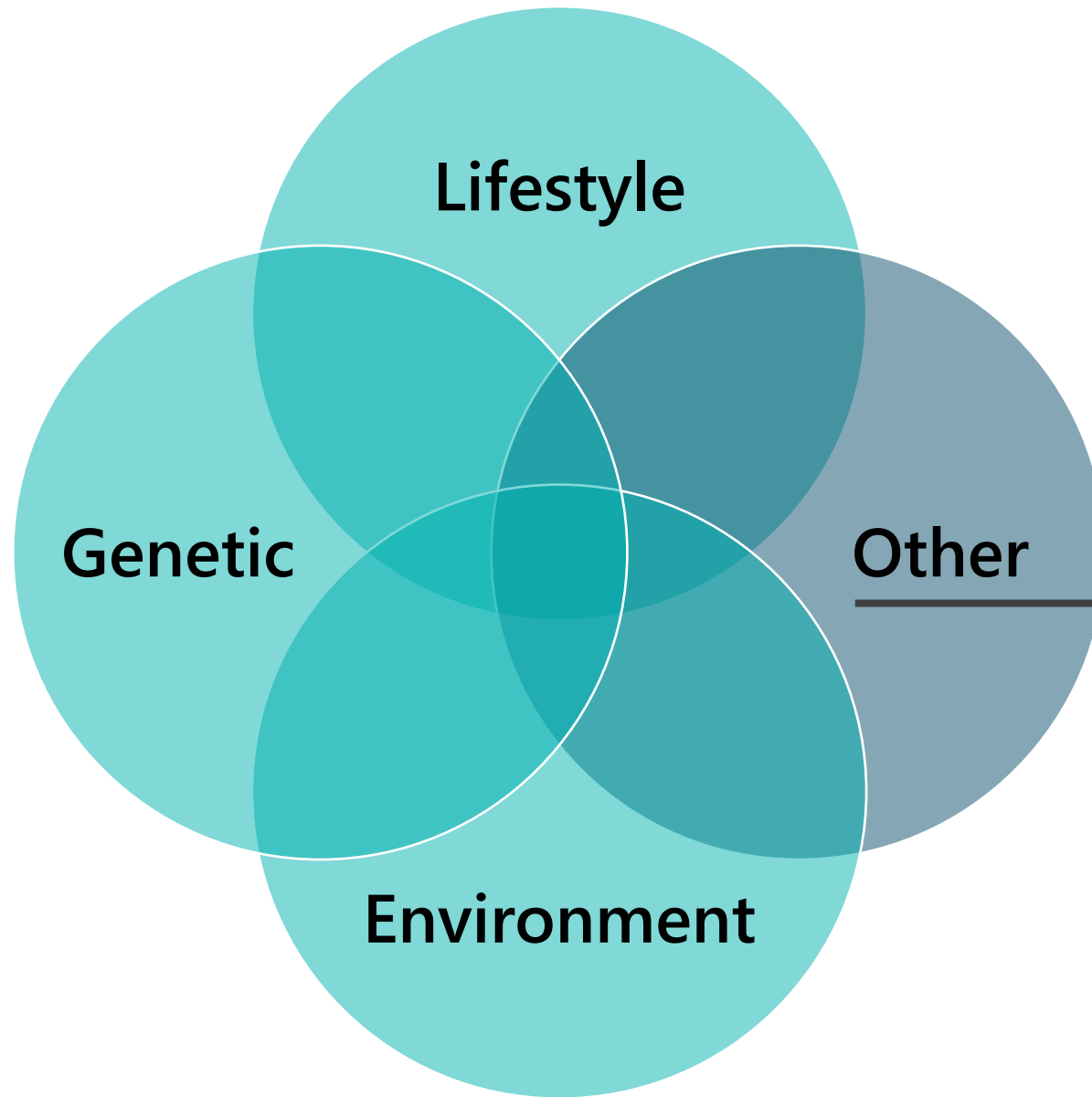
- Family history of cancer
- Random mutations







- Exposure to chemicals
- Radiation



- **Aging**
- Viruses (HPV, HIV)
- Medical conditions like chronic inflammation

# Cancer & the Environment

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- Many Iowans understandably have questions about potential links between environmental exposures and cancer
- This is an important area of continued research, and Iowans are right to ask questions and be cautious
- ICR, along with other population-based cancer registries, do not collect data on environmental risk factors, but we do share our data with researchers to support studies of cancer & environmental risk factors

# Risk Factors

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- There can be many years between exposure to risk factors & cancer development, which makes it difficult to prove connections.
  - For example, lung cancer may not occur until 30 years after a person starts smoking
- Today we will focus on things you can do to reduce your cancer risk. These things can be addressed at the state, community, and individual levels.



# **Key Terms**

# Incidence & Mortality

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- Incidence
  - Number of **new cases** of cancer occurring during a specified time period in a population
- Mortality
  - Number of **deaths** from cancer that occur during a specified time period in a population

# Rates & Counts

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- Counts
  - The **number** of new cases diagnosed or deaths from cancer
- Age-Adjusted Rates
  - Addresses the question: *If the size and age of the populations were the same, would there be a difference in outcomes?*
  - Adjusts the counts to give a **# per 100,000 people**

# **Stage definition used today**

- Early Stage includes
  - Localized: cancer is limited to the place where it started, with no sign that it has spread
- Late Stage includes
  - Regional: cancer has spread to nearby lymph nodes, tissues, or organs
  - Distant: cancer has spread to distant parts of the body

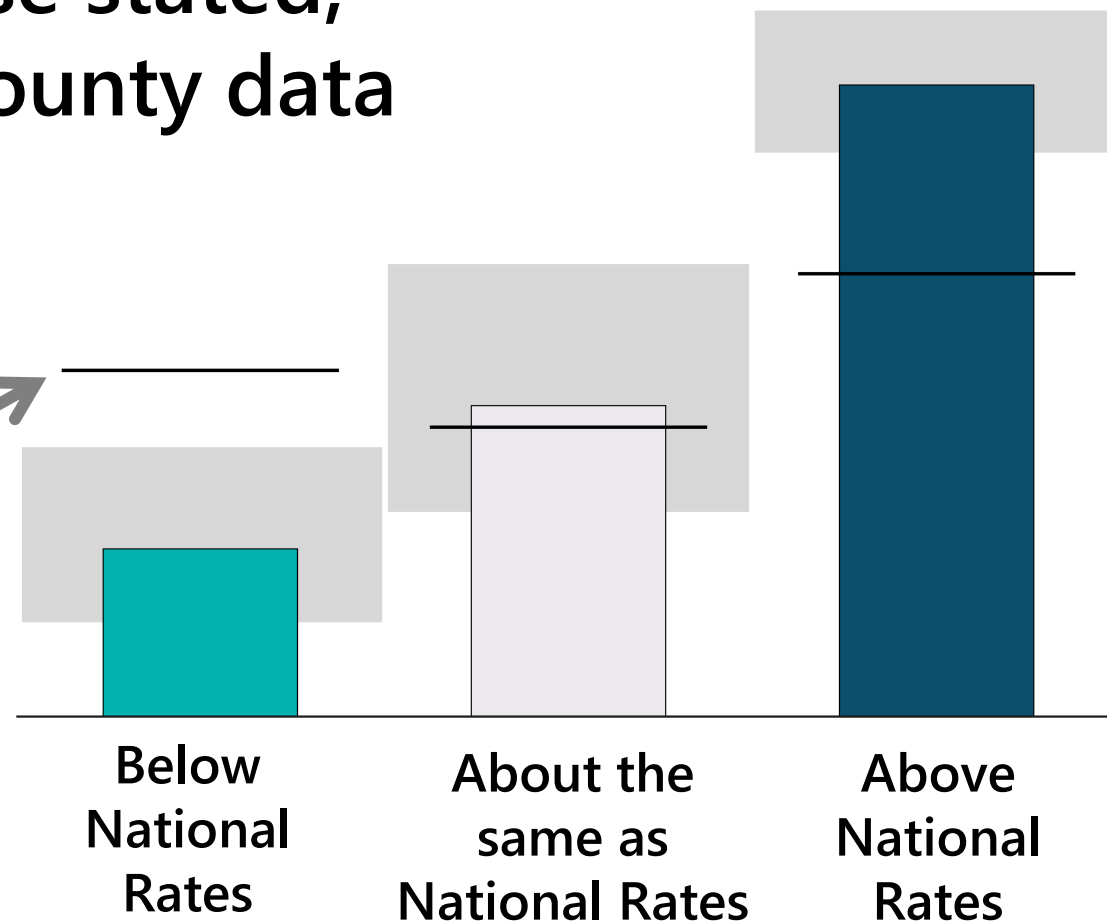
<https://www.cancer.gov/about-cancer/diagnosis-staging/staging>



# How to read the graphs

Unless otherwise stated,  
bars are your county data

Black lines on  
bar graphs  
are United  
States data



Grey boxes on  
bar graphs are  
95% Confidence  
Intervals.

These are used to  
determine if rates  
are statistically  
different from  
each other



# **Cancer in Clay County**

# New Cancers in Clay County

All cancer types, average counts and rates, 2017-2021

Each year, there are about

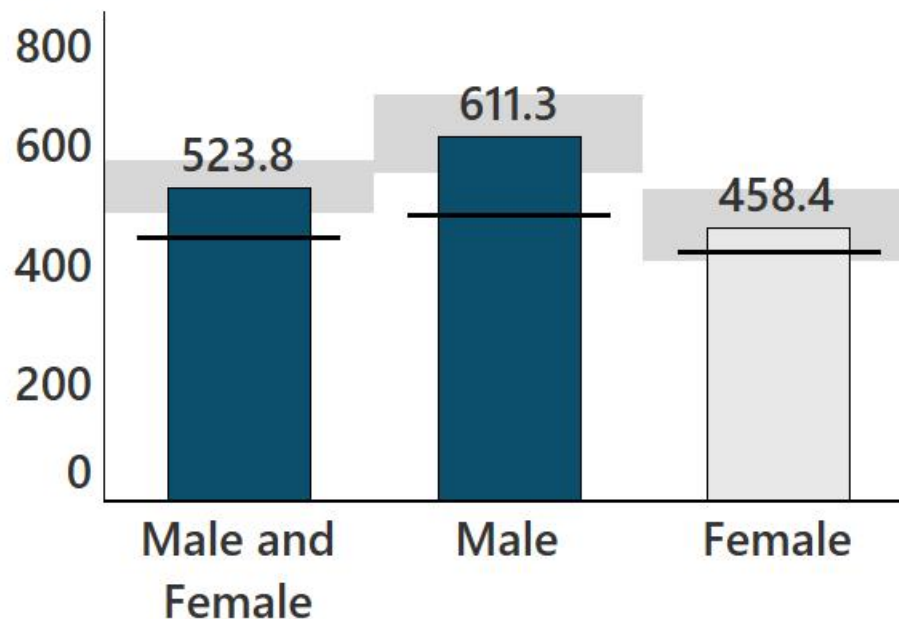
**127**

new cancers diagnosed in  
Clay County

Cancer incidence rates in Clay County  
are **higher than the U.S. average**

Ranks #14 of 99 counties

Cancer incidence rates are typically  
higher in men than women



Age-Adjusted rate per 100,000 (2017-2021)

# Cancer deaths in Clay County

All cancer types, average counts and rates, 2018-2022

Each year, there are about

**32**

cancer deaths in Clay County

Cancer mortality rates in Clay County are  
**lower than the U.S. average**

Ranks #93 of 99 counties

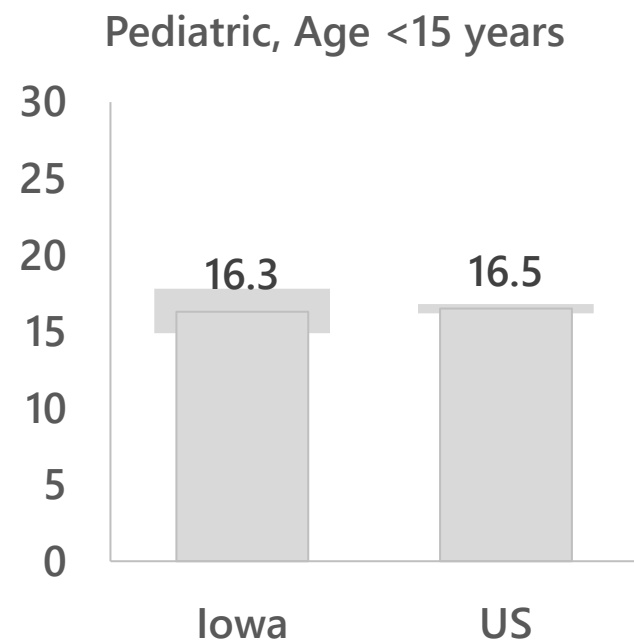
Cancer mortality rates are typically  
higher in men than women



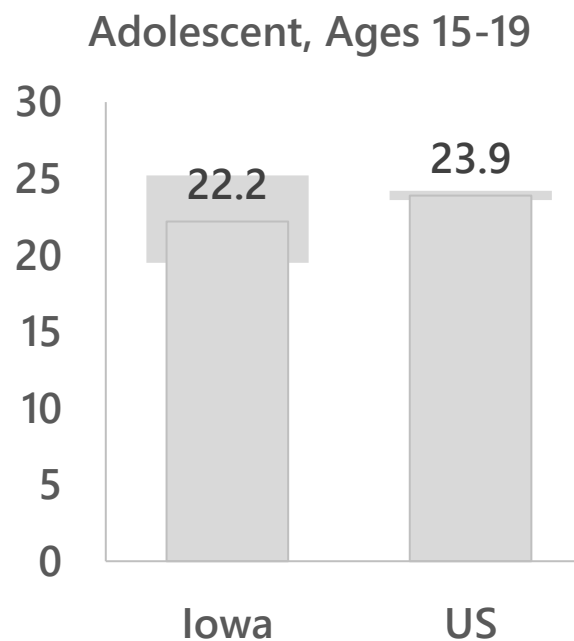
Age-Adjusted rate per 100,000 (2018-2022)

# Pediatric, Adolescent, and Young Adult New Cancers in Iowa

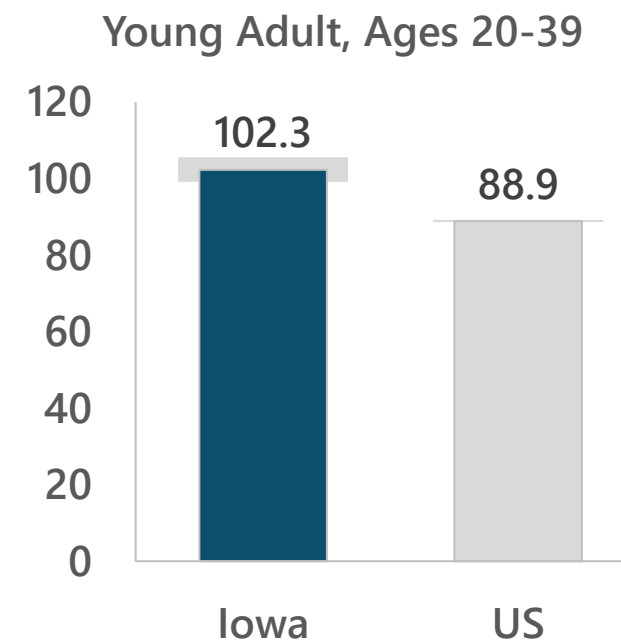
Pediatric cancer incidence rates in Iowa are **not different** than the U.S. rate



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

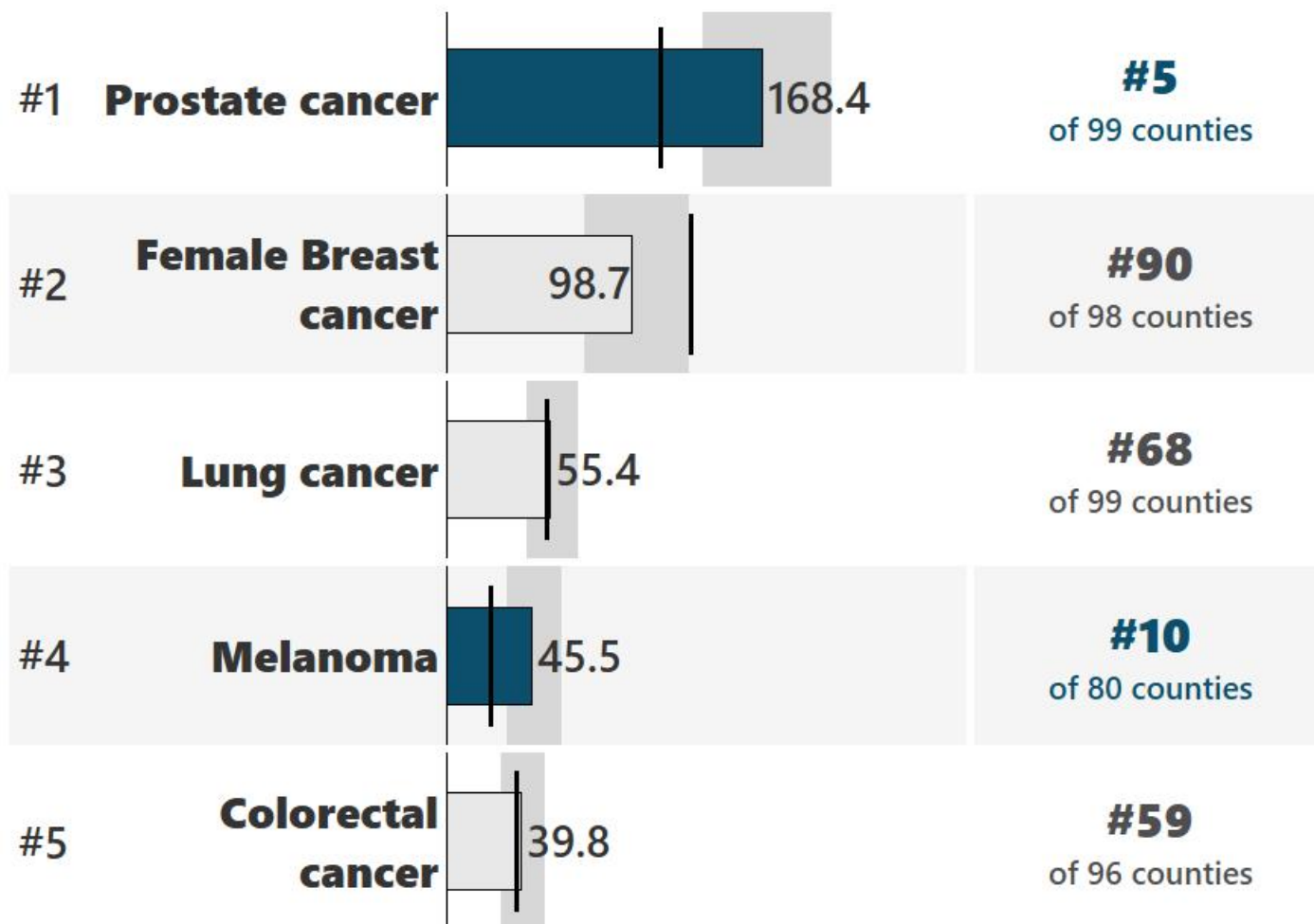


Young Adult cancer incidence rates in Iowa **are higher** than the U.S. rate



Age-Adjusted incidence rate per 100,000 (2018-2022)

# Top cancers in Clay County



Age-Adjusted rate per 100k, 2017-2021

Rank compared to other counties, where #1 is highest in the state

# #1 | Prostate cancer

Each year in Clay County,  
there are about...

**20**

New Cases per year

**<6**

Deaths per year

Clay County

168.4

Statewide

125.9

United States

113.2

Clay County

*\*Too few cases to show rates*

Statewide

19.8

United States

18.8

#1

#2

#3

#4

#5

Age-Adjusted Rate per 100,000  
Incidence (2017-2021); Mortality (2018-2022)

# Prostate Cancer Screening

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## Screening Guidelines

Screening test: Prostate-specific antigen (PSA) blood test

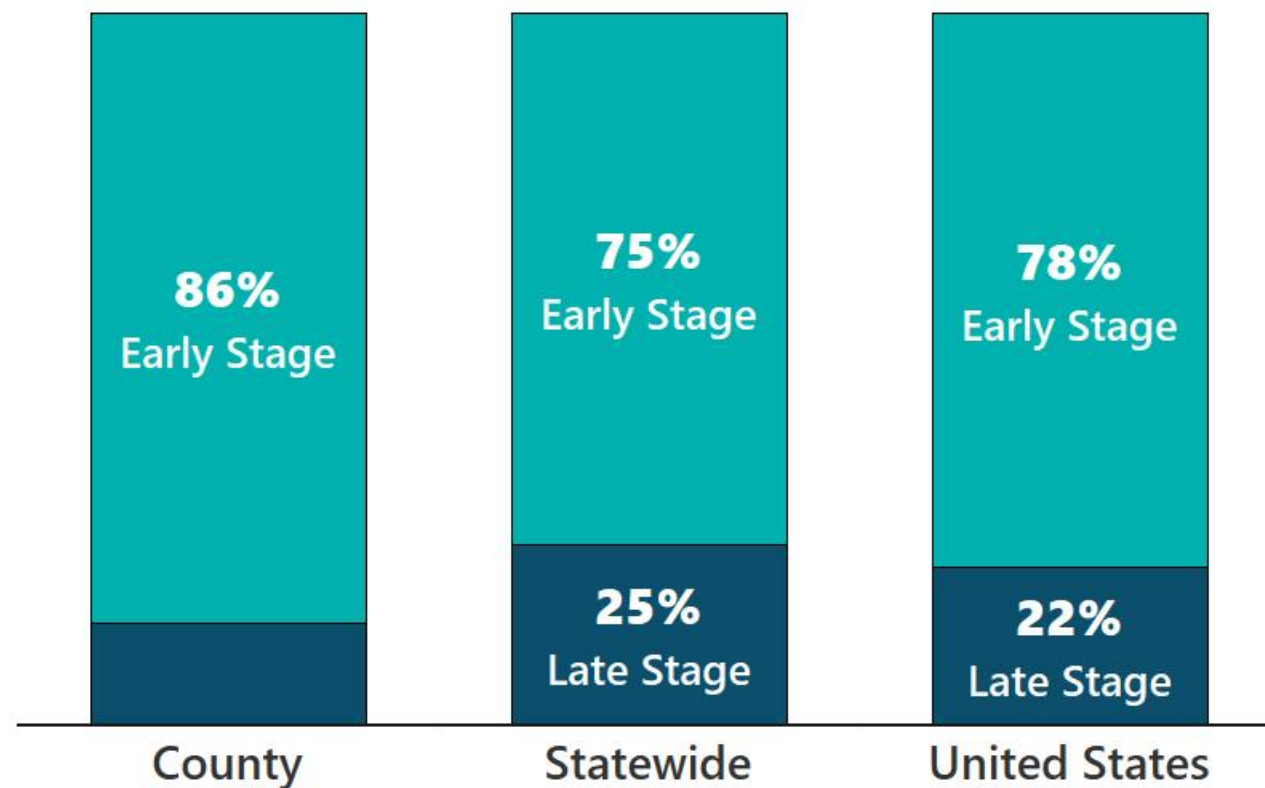
Men who are 55-69 years old, discuss with your doctor if  
a PSA test is right for you

(U.S. Preventative Services Task Force)



# #1 | Prostate cancer Stage at Diagnosis

Early stage = Easier to treat, Higher survival rates



**14%**  
Diagnosed at a Late Stage

#1

#2

#3

#4

#5

## #2 | Female Breast cancer

Each year in Clay County,  
there are about...

**13**

New Cases per year

**<6**

Deaths per year

Clay County

98.7

Statewide

136.9

United States

129.8

Clay County

*\*Too few cases to show rates*

Statewide

17.8

United States

19.2

#1

#2

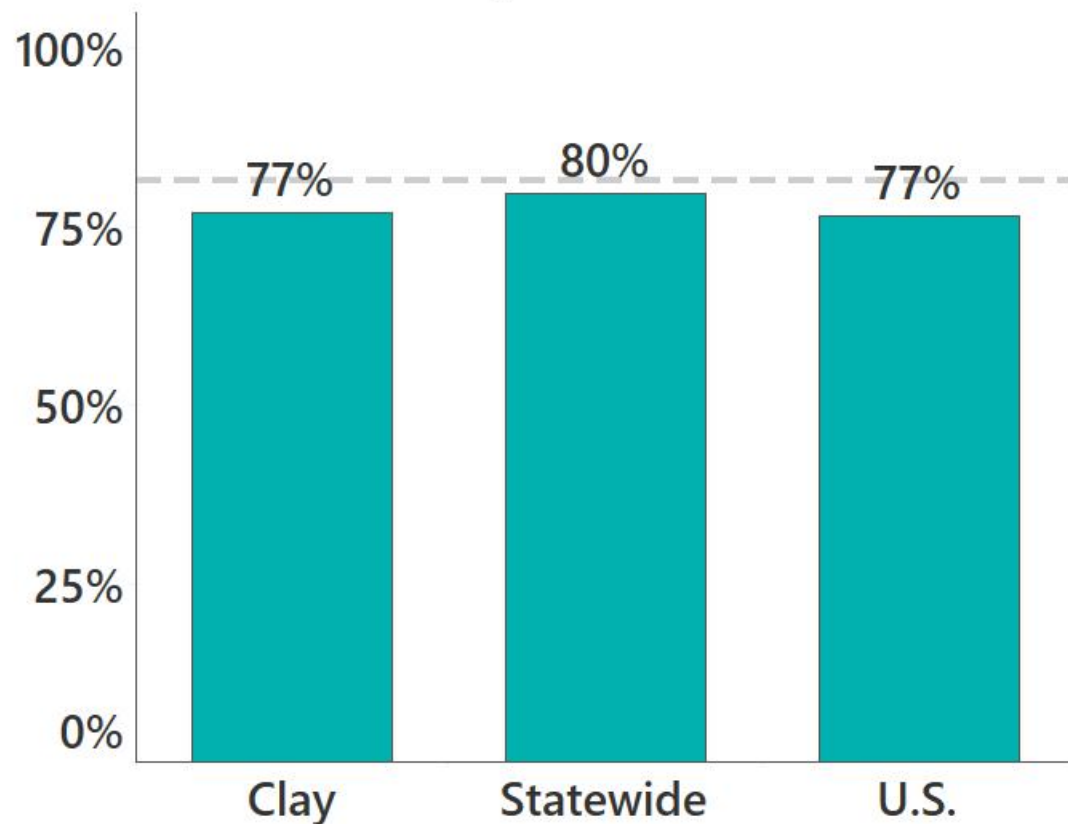
#3

#4

#5

# Breast Cancer Screening

Women age 50+ who are up to date with their breast cancer screening



## Screening Guidelines

Women ages 40-74 should screen with a mammogram every 2 years

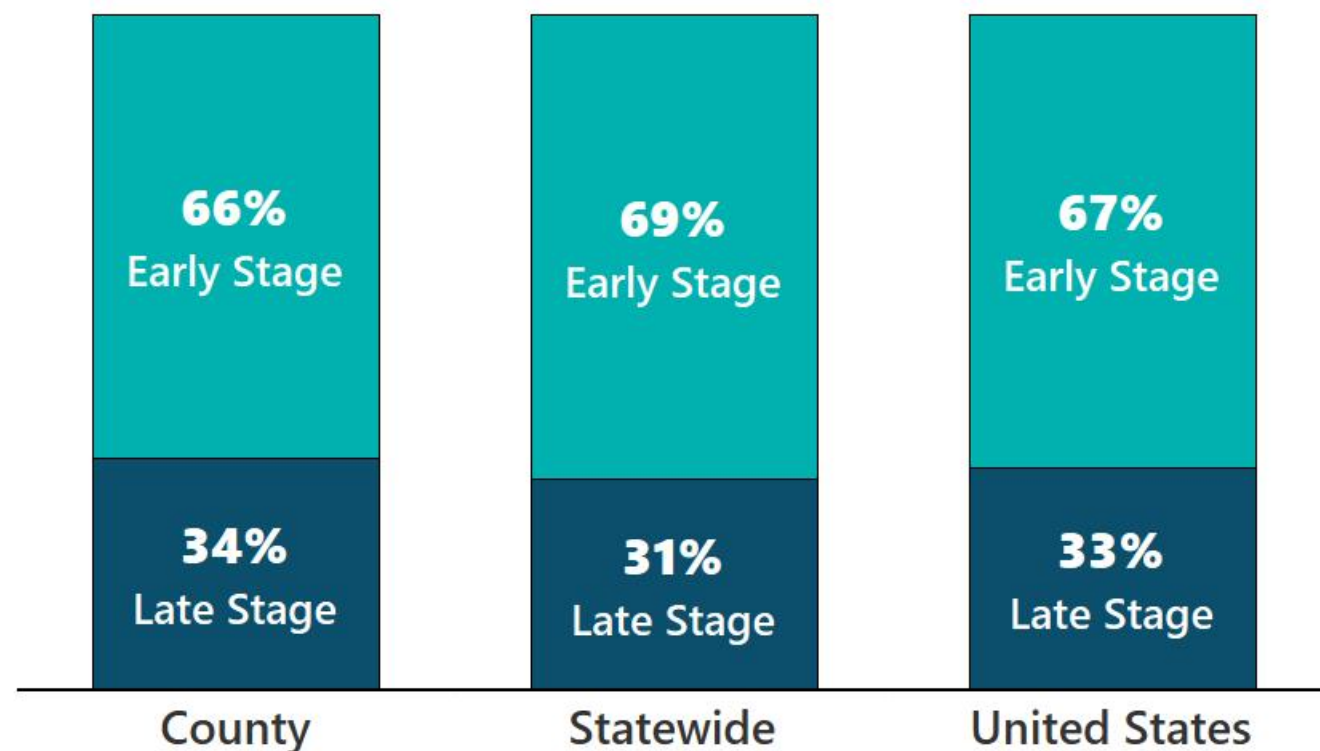
Talk to your doctor if you have a family history of breast cancer

(U.S. Preventative Services Task Force)

*Data from 2022 BRFSS  
Goal: 81.4% by 2027*

## #2 | Female Breast cancer | Stage at Diagnosis

Early stage = Easier to treat, Higher survival rates



**34%**  
Diagnosed at a Late  
Stage

#1

#2

#3

#4

#5

# The Care for Yourself – Breast and Cervical Cancer Program (CFY-BCC)

**We provide free breast and cervical cancer screenings across Iowa.**

- ▶ CFY-BCC is also called the Iowa Breast and Cervical Cancer Early Detection Program.
- ▶ CFY-BCC serves Iowans between 21 and 64 years of age.
- ▶ Are at or earn less than 250% of the Federal Poverty Level.
- ▶ Call (866) 339-7909 to speak to a confidential coordinator immediately.
- ▶ CFY-BCC coordinators are available to help you Monday-Friday, 8:00 a.m. to 4:00 p.m.



<https://hhs.iowa.gov/public-health/cancer/cfy>



# #3 | Lung cancer

Each year in Clay County,  
there are about...

**15**

New Cases per year

**7**

Deaths per year

Clay County

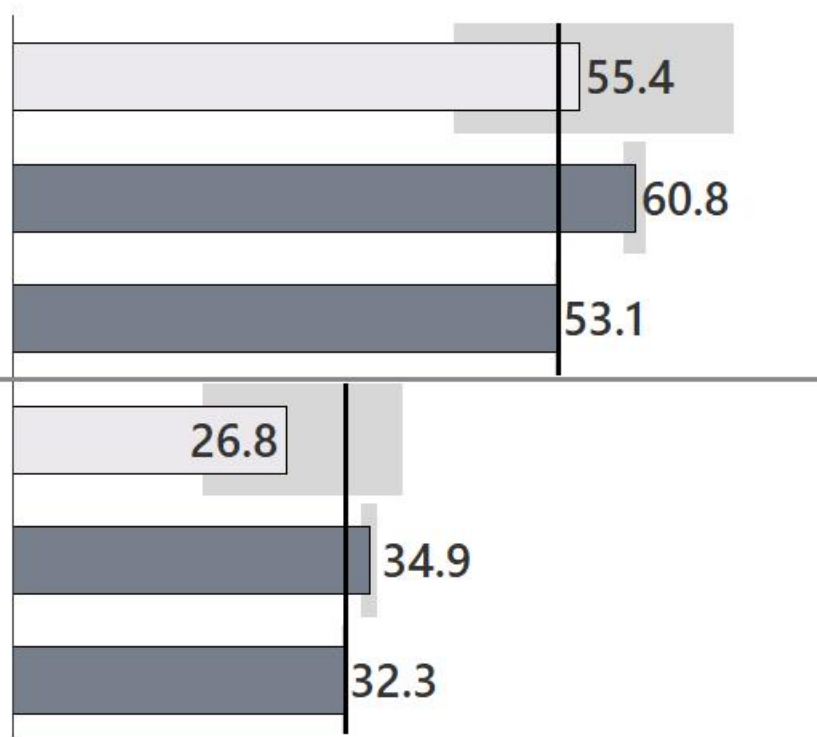
Statewide

United States

Clay County

Statewide

United States



#1

#2

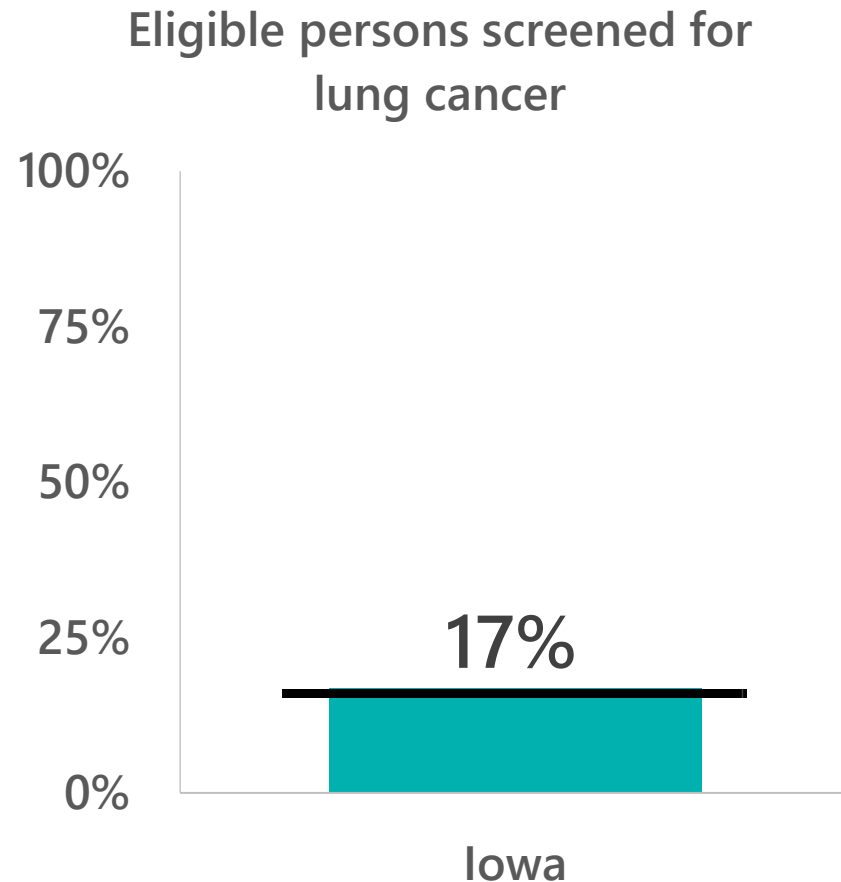
#3

#4

#5

Age-Adjusted Rate per 100,000  
Incidence (2017-2021); Mortality (2018-2022)

# Lung Cancer Screening



## Screening Guidelines

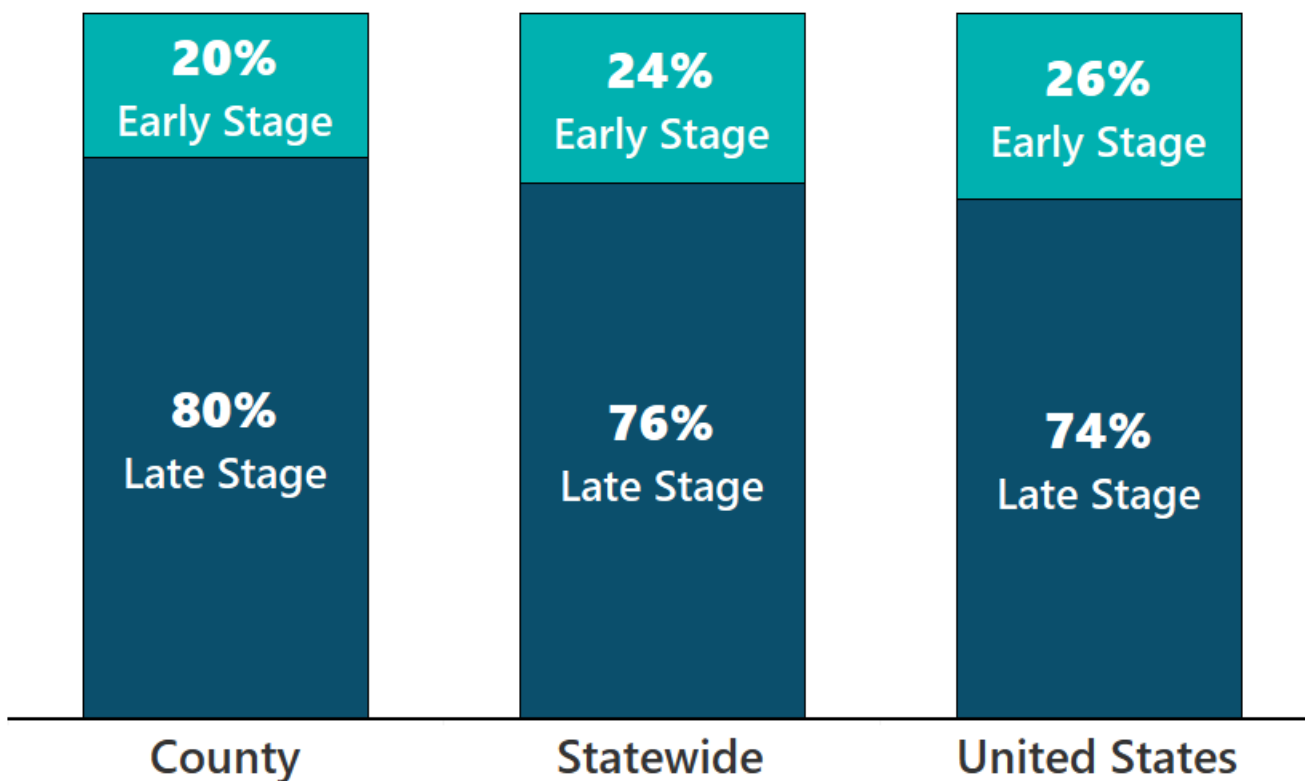
### Low-dose CT scan

If you have smoked in the last 15 years and are between the ages 50-80 years talk to your doctor about being screened for lung cancer

(U.S. Preventative Services Task Force)

# #3 | Lung cancer | Stage at Diagnosis

Early stage = Easier to treat, Higher survival rates

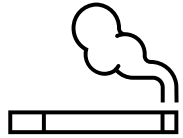


**80%**  
Diagnosed at a Late  
Stage





# Lung Cancer Risk Factors



Smoking is #1 cause of lung cancer



Radon is #2 leading cause of lung cancer  
Test your home for radon and mitigate

People who smoke that are exposed to radon are  
at a **10 to 20 times higher** risk of developing  
lung cancer than non-smokers

**Learn more about Radon testing  
and mitigation:**

Iowa Health & Human Services  
[hhs.iowa.gov/radiological-health/radon](https://hhs.iowa.gov/radiological-health/radon)

Iowa Cancer Consortium  
[canceriowa.org/radon/](https://canceriowa.org/radon/)

# #4 | Melanoma

Each year in Clay County,  
there are about...

9

New Cases per year

Clay County

45.5

Statewide

31.4

United States

22.7

<6

Deaths per year

Clay County

*\*Too few cases to show rates*

Statewide

2.6

United States

2.0

#1

#2

#3

#4

#5

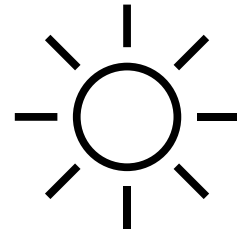
Age-Adjusted Rate per 100,000  
Incidence (2017-2021); Mortality (2018-2022)

# What can you do to prevent melanoma?

~92% of melanoma cases are attributable to UV exposure



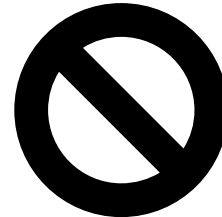
Wear broad spectrum sunscreen with at least SPF 30



Avoid being in the sun between 10am – 2pm



Wear long sleeves and hats and sit in the shade when outdoors



Do not use indoor tanning beds

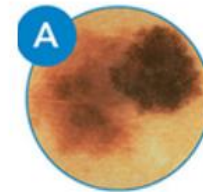
Just one indoor tanning session increases a person's chances of developing melanoma by 20%

Using a tanning bed before age 35 increase a person's risk for melanoma by 75%

# Melanoma Self-Exams

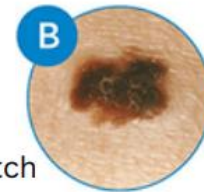
Perform regular self-examinations using a mirror. **If you find new spots or changes in existing spots** talk to your doctor.

Most moles and brown spots are harmless, but following the **ABCDE's** can help you detect melanoma early.



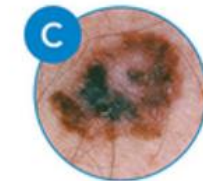
**A** is for  
**Asymmetry**

the shape of one half does not match the other



**B** is for  
**Border**

the edges are ragged, blurred, or irregular



**C** is for  
**Color**

color is uneven and may include shades of black, brown, or tan



**D** is for  
**Diameter**

there is a change in size, usually an increase



**E** is for  
**Evolving**

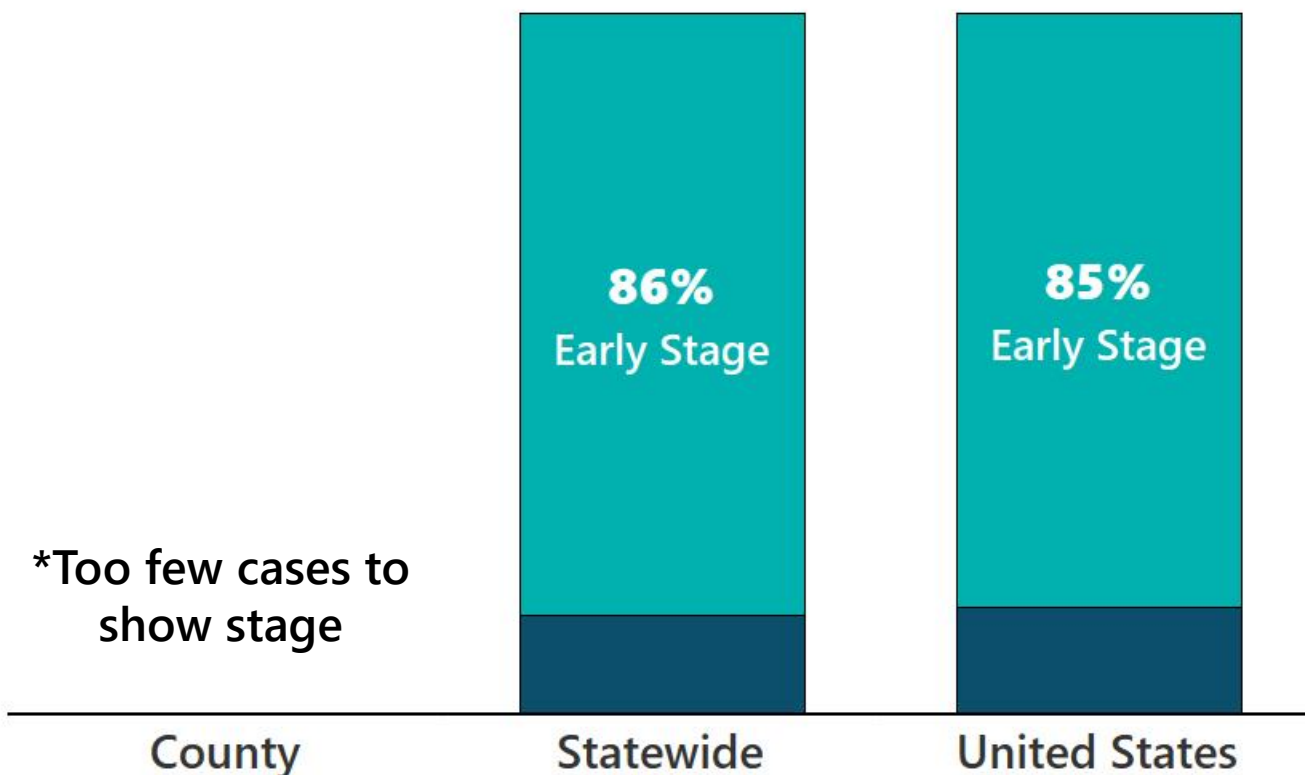
the mole has changed over the past few weeks or months

American Academy of Dermatologist

[Check out the Iowa Cancer Registry Melanoma Spotlight](#)

# #4 | Melanoma | Stage at Diagnosis

Early stage = Easier to treat, Higher survival rates



# #5 | Colorectal cancer

Each year in Clay County,  
there are about...

**11**

New Cases per year

**<6**

Deaths per year

Clay County

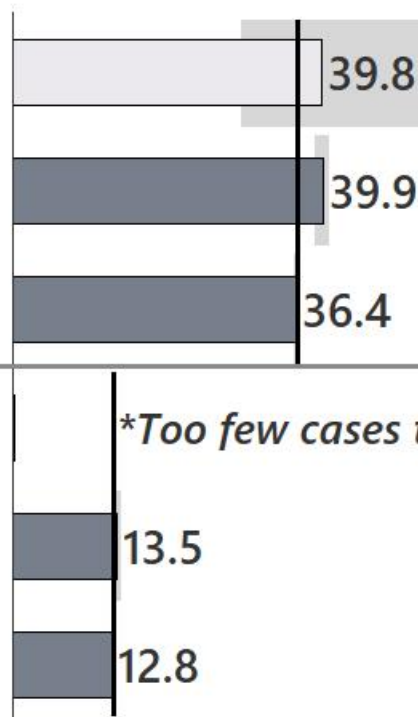
Statewide

United States

Clay County

Statewide

United States



Age-Adjusted Rate per 100,000  
Incidence (2017-2021); Mortality (2018-2022)

#1

#2

#3

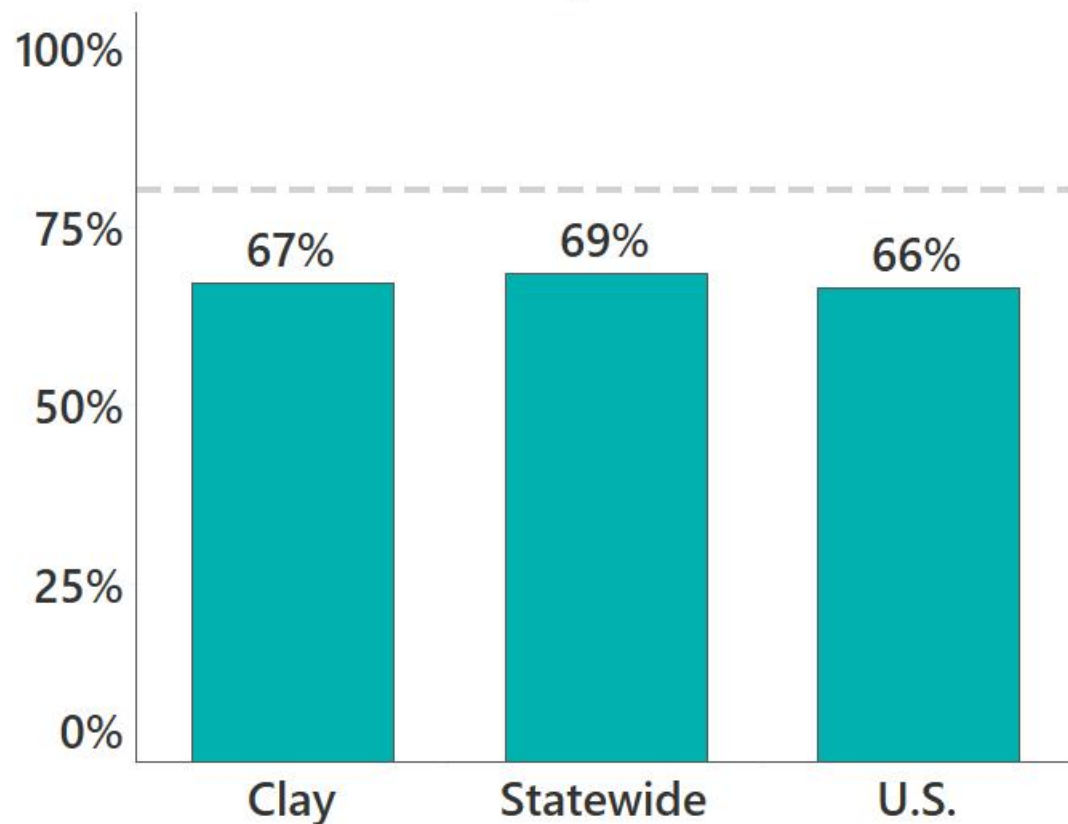
#4

#5



# Colorectal Cancer Screening

Adults ages 45-75 who are up to date with their colorectal cancer screening



## Screening Guidelines

Adults ages 45-75 can screen with either (1) an at-home, stool-based test, or (2) a colonoscopy.

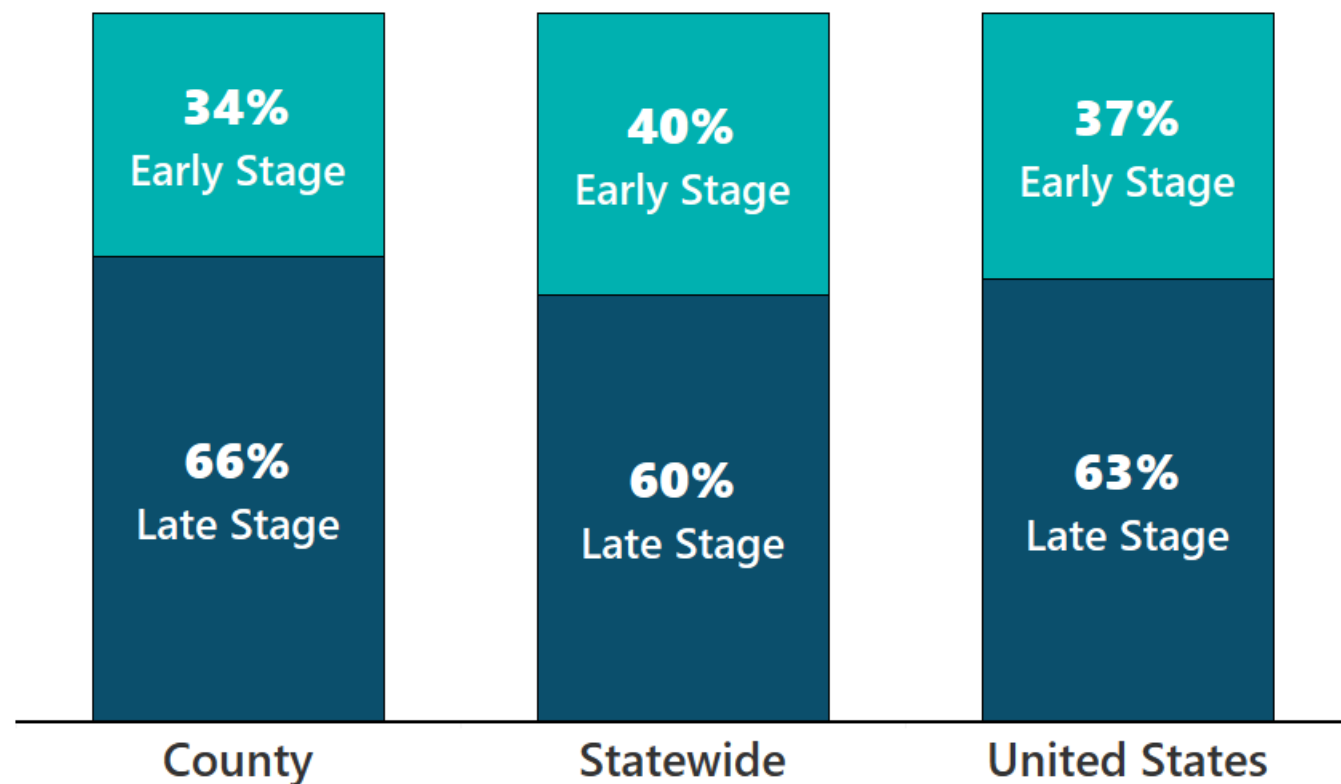
Talk to your doctor about which is best for you.

(U.S. Preventative Services Task Force)

*Data from 2022 BRFSS  
Goal: 80% by 2027*

# #5 | Colorectal cancer | Stage at Diagnosis

Early stage = Easier to treat, Higher survival rates



**66%**  
Diagnosed at a Late  
Stage

#1

#2

#3

#4

#5



# Iowa Get Screened (IGS): Colorectal Cancer Program

**We partner with Iowa's Federally Qualified Health Centers (FQHCs) and local public health agencies to increase colorectal cancer screening.**

Through a collaboration with the Iowa Primary Care Association (Iowa PCA) and FQHCs, the program serves low-income Iowans, ages 45-75, to:

- ▶ Increase the number of cancers prevented
- ▶ Increase the diagnosis of early-stage colorectal cancer
- ▶ Reduce colorectal cancer incidence and mortality in the state



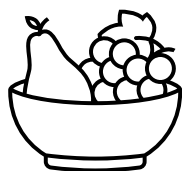
<https://hhs.iowa.gov/public-health/cancer/colorectal-cancer-screening-program>

# How can you reduce your risk for cancer?

~**40%** of cancers in the US are attributable to modifiable risk factors  
(i.e., smoking, alcohol, diet, infections, etc.)



Do not smoke or use  
any form of tobacco  
Make your home  
smoke-free



Enjoy a healthy diet



Avoid too much sun,  
use sun protection



Limit alcohol  
consumption



Be physically active



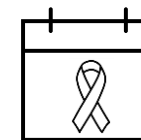
Vaccinate against  
Hepatitis B and HPV



Reduce indoor and  
outdoor air pollution  
(including radon)



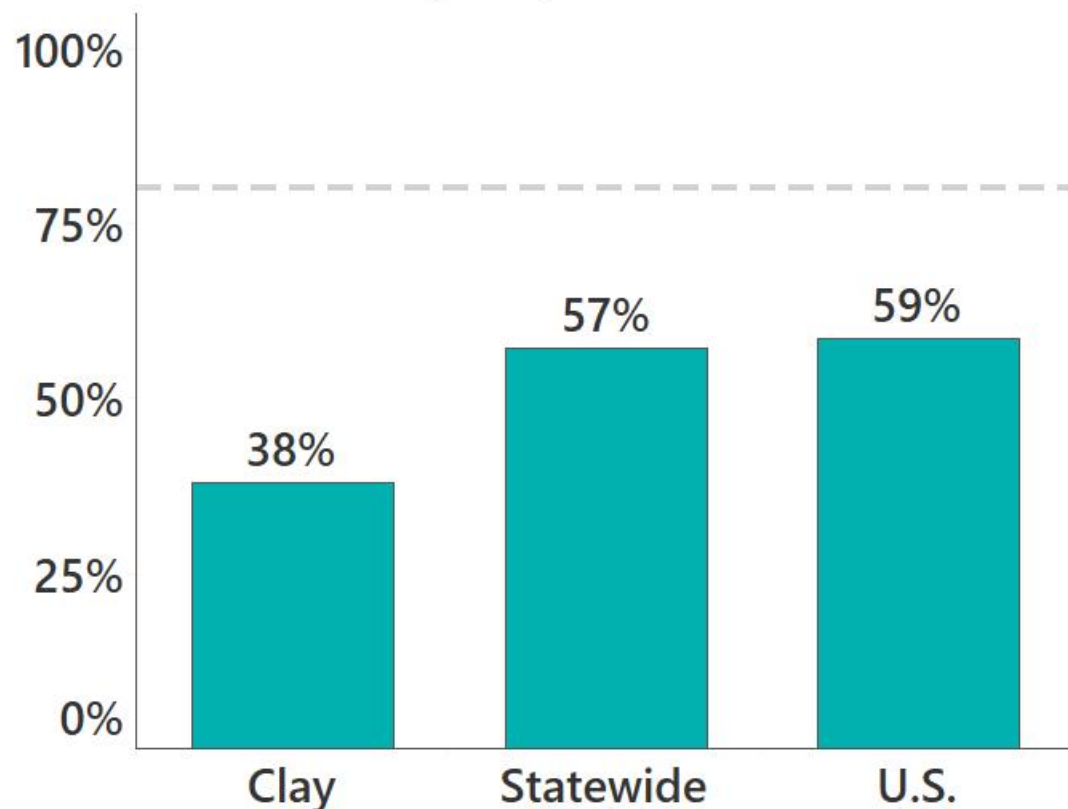
Decrease excess  
body weight



Get the appropriate  
cancer screenings for you!

# A vaccine that prevents cancer: HPV

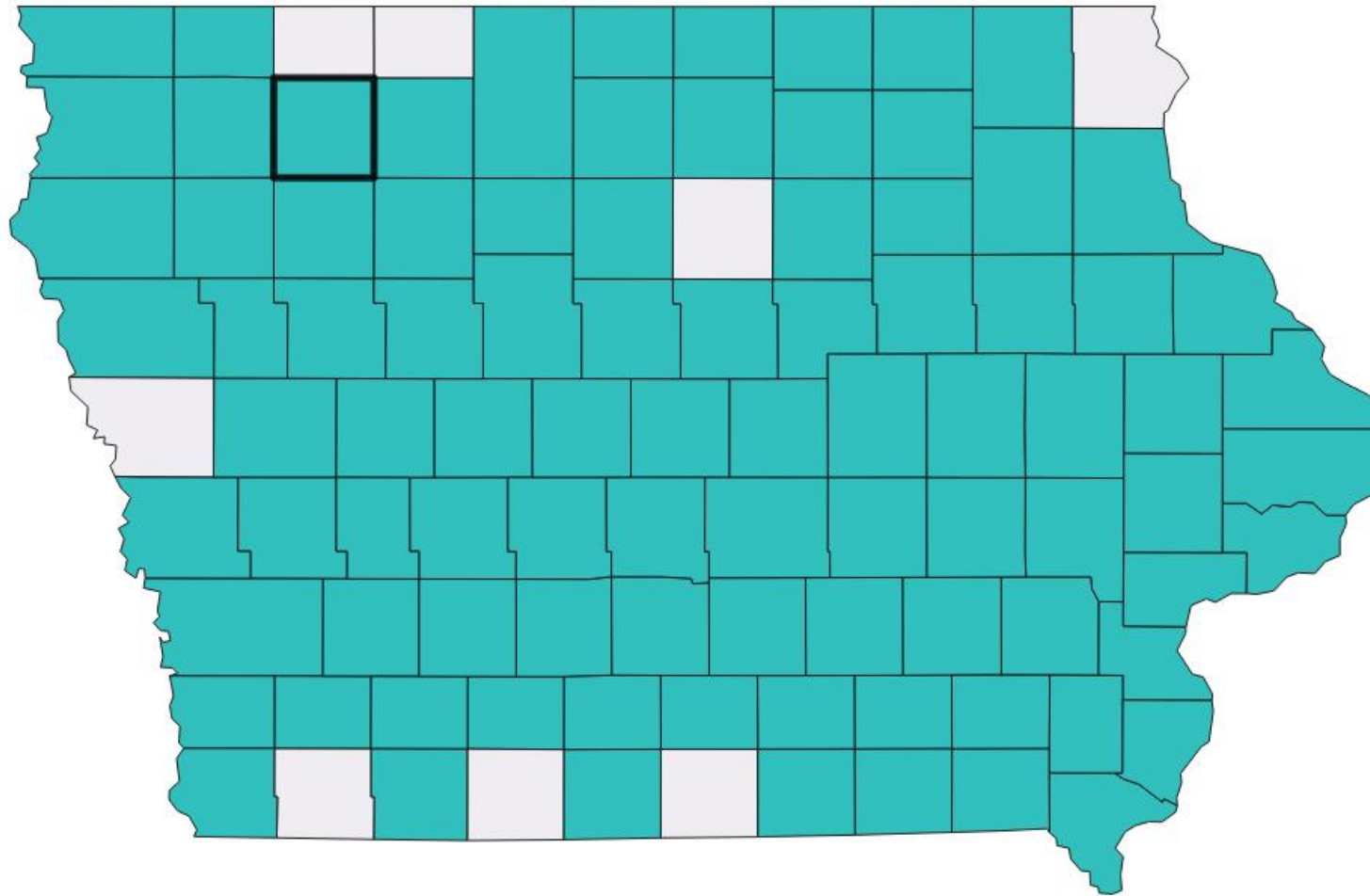
Adolescents ages 13-15 who have completed their HPV vaccine series (2022)



- HPV infection can cause cancers of the cervix, mouth and throat, anus, rectum, penis, vulva, and vagina.
- Iowa has the highest rate of oropharyngeal cancer in the U.S.
- Vaccine provides safe, effective, and lasting protection against HPV, thus reducing cancer risk
- Recommended at age 11 or 12 years, when immune response is best & before HPV exposure

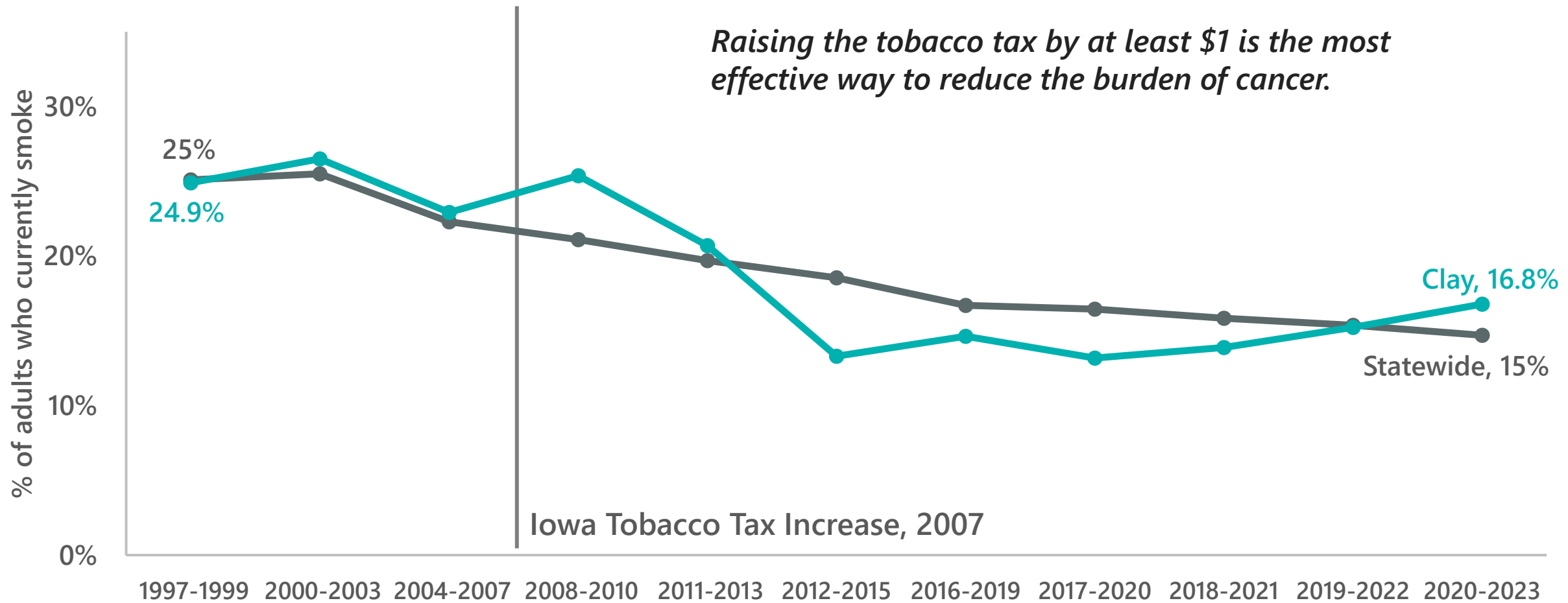
*Data from 2022 IHHS & NIS-Teen  
Goal: 80% by 2027*

decreased in **92%** of Iowa counties



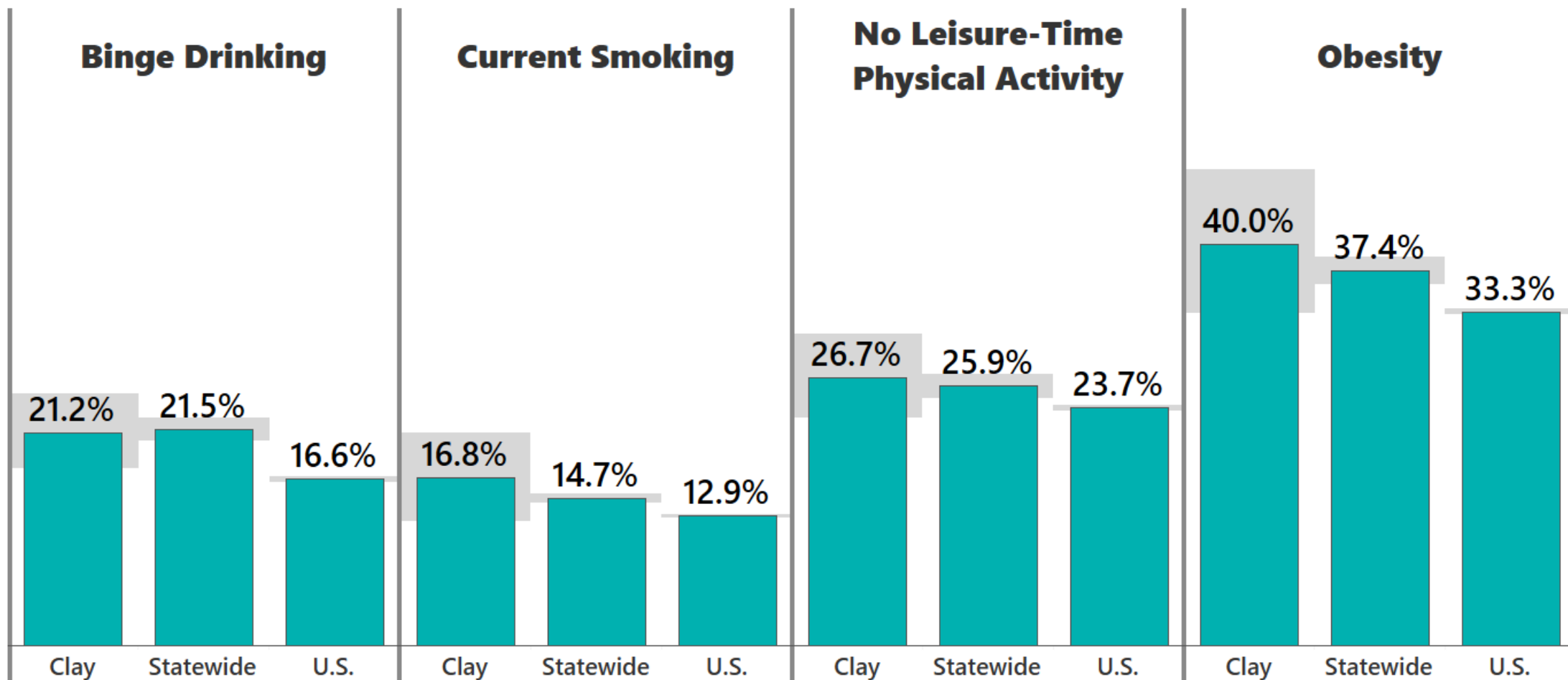
# After the last increase to the tobacco tax was passed in 2007, smoking rates **decreased\*** in Clay County

*\* Determined by comparing data from 2004-2007 combined to 2011-2013 combined*



# Other Cancer Risk Factors

**Lower  
is  
better**



# Want to know your cancer risk?

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Take the American Cancer Society's cancer risk assessment to learn more about what factors might affect your personal cancer risk and actions you can take to help lower your risk.

<https://acscancerrisk360.cancer.org/>



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# **Resources** to help understand and address cancer in Iowa communities



# Iowa Comprehensive Cancer Control Program (CCCCP)

**We work with partners to prevent cancer whenever possible and support cancer survivors across Iowa.**

- ▶ The CCCCp partners with many organizations, including the Iowa Cancer Consortium, Iowa's cancer coalition.
- ▶ CCCCp is involved in the revision and implementation of the Iowa Cancer Plan.
- ▶ Currently CCCCp is focused on increasing HPV vaccination, increasing lung cancer screening, and supporting cancer survivors.

<https://hhs.iowa.gov/public-health/cancer>  
<https://canceriowa.org/iowa-cancer-plan/>

# Iowa Cancer Consortium

**Mission:** To advance cancer prevention and control through advocacy, equity, and collaboration.

**Vision:** An Iowa where cancer is not a burden.

A non-profit cancer coalition that provides

- Connections and partnership
- Latest news and cancer updates via email
- Training and educational opportunities
- Grant opportunities and technical assistance
- Free cancer educational materials for distribution
- Virtually-hosted workgroups
- The Iowa Cancer Plan

[www.canceriowa.org](http://www.canceriowa.org)



# Blueprint for cancer control, the *Iowa Cancer Plan*

Chapters with sections that include priorities, strategies, and specific action steps which may be tailored to many settings to guide cancer control activities.

- 1. Health Equity:** identify and eliminate cancer health disparities.
- 2. Prevention and Risk Reduction:** whenever possible, prevent cancer from occurring.
- 3. Early Detection and Screening:** promote the benefits of screening tests to ensure early diagnosis.
- 4. Diagnosis and Cancer-Directed Therapy:** reduce barriers to care, promote evidence-based practices, and encourage participation in clinical trials and other forms of research.
- 5. Survivorship and End-of-Life Care:** ensure resources to optimize quality-of-life for cancer survivors and their families.



[https://canceriowa.org/  
iowa-cancer-plan/](https://canceriowa.org/iowa-cancer-plan/)

# Ways to get involved



## Iowa Cancer Plan

Use to identify strategies aligned with community-specific needs

[canceriowa.org/iowa-cancer-plan/](https://canceriowa.org/iowa-cancer-plan/)



## Iowa Cancer Consortium

Connect for state-wide collaboration and potential community-level funding

[www.canceriowa.org](https://www.canceriowa.org)

## American Cancer Society Cancer Action Network



Engage American Cancer Society Cancer Action Network (ACSCAN) to promote cancer-relevant legislation

[www.fightcancer.org](https://www.fightcancer.org)

## Contact your legislator

Find your legislator at

<https://www.legis.iowa.gov/legislators/find>

**"There is a lot we know about how to reduce our personal cancer risk. There is opportunity for the biggest impact when policies help us do that.**

Effective policies make the healthy choice easier, make the unhealthy choice harder, or provide protections from risk factors that are out of an individual's control."

- Iowa Cancer Consortium

# Policy Examples

## State-level

- Increase the tobacco tax by at least \$1.00
- Raise taxes on alcohol and set minimum unit prices
- Prohibit minors' use of tanning beds

## Community & Organization-level

- Implementing tobacco- and nicotine-free policies
  - Set and enforce limits on the number of places that sell alcohol and the distance between them
  - Reducing out-of-pocket costs for cessation treatments
  - Build communities that provide natural opportunity for physical activity (walkable/ bikeable/ accessible)
  - Ensure access to affordable fresh food
- Providing sunscreen and UV-safety education in outdoor occupational, recreation/tourism, and childcare settings
  - Engaging community health workers, developing clinic-specific interventions, and supporting care navigation
  - Include cancer-relevant strategies in your hospital's community health needs assessments or public health department's needs assessment

# Every community is different

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- **Your expertise is key**
  - Your expertise as community members and leaders and local policy makers is key to answering the question of what to do next. You know best what your community needs and what will work.
- **Cancer control partners** like the Iowa Cancer Registry, the Iowa Cancer Consortium, Iowa HHS, and your local public health department can provide ideas, advise, and help find data, evidence, and other resources, but ultimately you are the experts.
- A good place to start is by **taking stock of the information presented today** and where the opportunities for change might be within your county, town, or organization. Use the Iowa Cancer Plan for inspiration and reach out to the Iowa Cancer Consortium for partnership in moving forward.

# Clay County Resources

## Clay County Public Health

Clay County Public Health partners with local agencies and the Iowa Department of Health & Human Services to prevent disease and injuries, protect against environmental hazards, promote healthy behaviors, provide health education, and prepare for and respond to public health emergencies.



**Spencer Hospital**  
Clay County Public Health

Contact **Clay County Environmental Health** to purchase a radon test or have your private well tested.

<https://claycounty.iowa.gov/environmental-health/>

## Abben Cancer Center

If you receive a cancer diagnosis, having the support of family and friends nearby becomes especially important—and it's reassuring to know you can receive high-quality, compassionate care close to home.

The Abben Cancer Center of Spencer Hospital **offers comprehensive cancer treatment**, including medical and radiation oncology, as well as surgical services. In addition to expert medical care, our team **supports your overall wellness** with services such as **social work, nutrition counseling, financial consultations, certified breast health navigators**, and other educational and support resources.

Visit Spencer Hospital's Abben Cancer Center webpage for more resources on the 5 most common cancers in Clay County:

<https://www.spencerhospital.org/our-services/featured-services/abben-cancer-center/>



**Abben Cancer Center**  
of Spencer Hospital

# Cancer in Iowa: 99 Counties Project Resource Guide

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- Organizations and programs we presented today
- IHHS Programs
  - Tobacco Use Prevention and Control
  - Immunization Program
  - The Hepatitis Program
  - Radon
- Iowa Rural Health Association

## In the next slides we will highlight...

- Cancer Cluster Concerns
- Agricultural Health Study
- Environmental Exposures and Health Risks Fact Sheets
- Center for Health Effects of Environmental Contamination
- Iowa Private Well Grants Program
- Center for Energy & Environmental Education's (CEEE) Environmental Health Program

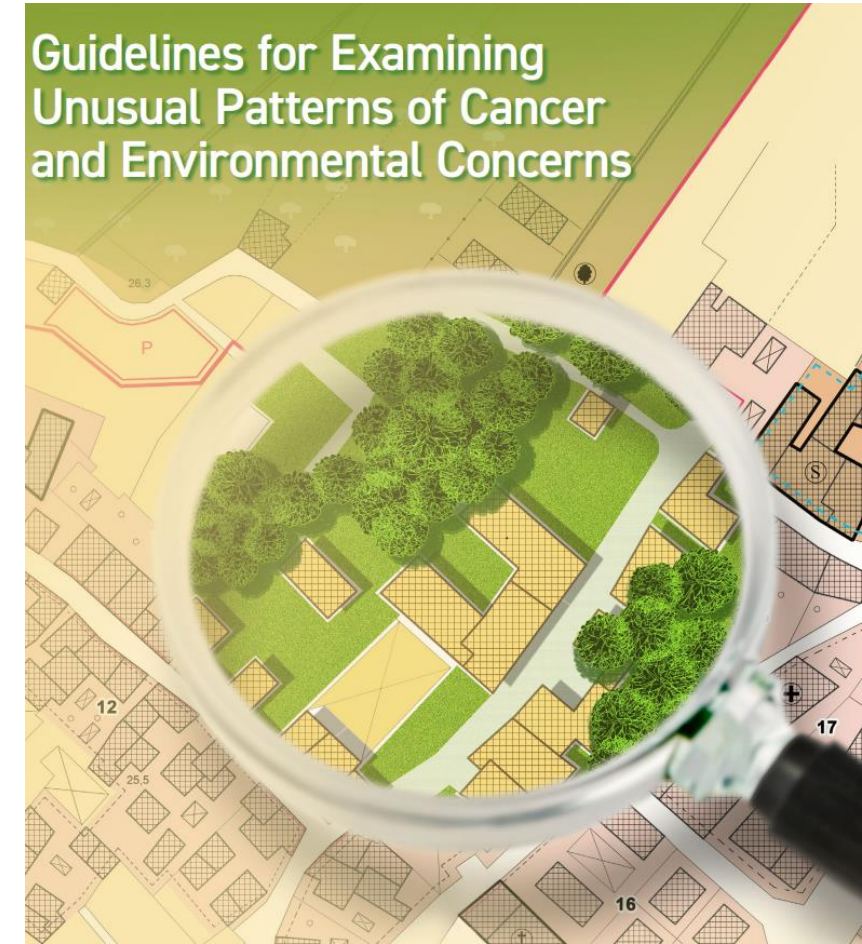


[www.iowacancerregistry.org/99](http://www.iowacancerregistry.org/99)



# What to do if you suspect a cancer cluster in your community

- If you are concerned about cancer excess in your area, please email us at [ICR-CancerConcerns@uiowa.edu](mailto:ICR-CancerConcerns@uiowa.edu)
- We will ask you about:
  - Geographic area of concern
  - Cancer types diagnosed in the area
  - Time frame
  - Exposure(s) of concern
- If possible, ICR will conduct an analysis comparing the expected number of cancers to what's been observed
- A meeting will be held to discuss the results of the analysis and a written copy of the report will be sent to you



# Agricultural Health Study



The Agricultural Health Study (AHS) has been working for more than 30 years to understand factors that impact the health of farmers and their families.

- Includes over 31,000 private and 5,000 commercial pesticide applicators from Iowa
  - Study is also following applicator's spouses and children
- Linked with Iowa Cancer Registry data to study risk of developing cancer among pesticide applicators

The aim of this study is to understand how agricultural, lifestyle, and genetic factors affect the health of farming populations.

[aghealth.nih.gov](https://aghealth.nih.gov)

Visit the Ag Health website to read their annual study updates related to pesticides and other agricultural exposures and cancer.

# Environmental Exposures and Health Risks Fact Sheets

These facts sheets include information on

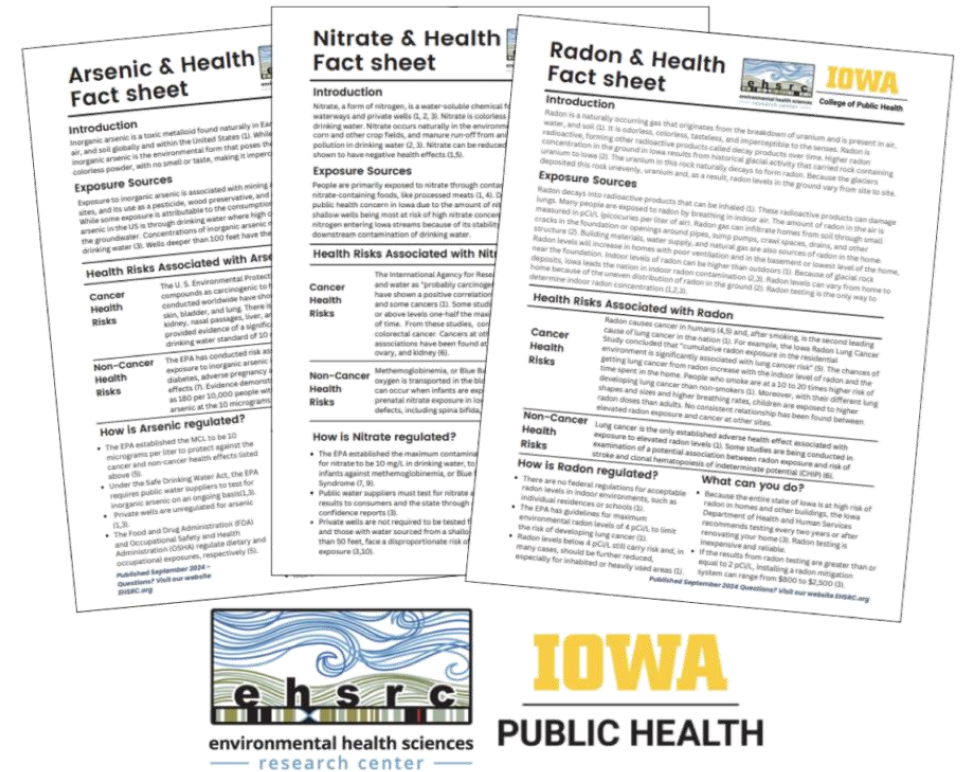
- Cancer and non-cancer health risks for each environmental exposure
- How the exposures are regulated
- What you can do to limit your exposure

## Environmental Health Fact Sheets

- [Arsenic](#)
- [Atrazine](#)
- [Glyphosate](#)
- [Nitrate](#)
- [Radon](#)



## NEW Environmental Exposures & Health Risks Fact Sheets



<https://ehsrc.public-health.uiowa.edu/communityengagement/resources-information/>



# Nitrate & Health Fact sheet



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## Introduction

Nitrate, a form of nitrogen, is a water-soluble chemical found at high concentration in waterways and private wells (1, 2, 3). Nitrate is colorless and has no smell, so it is invisible in drinking water. Nitrate occurs naturally in the environment; however, applying nitrogen fertilizer to corn and other crop fields, and manure run-off from animal feeding operations can contribute to nitrate pollution in drinking water (2, 3). Nitrate can be reduced to nitrite and other compounds, which have been shown to have negative health effects (1,5).

## Exposure Sources

People are primarily exposed to nitrate through contaminated drinking water and food. Nitrate-containing foods, like processed meats (1, 4). Drinking water contaminated with nitrate is a public health concern in Iowa due to the amount of nitrogen fertilizer used in agriculture, with shallow wells being most at risk of high nitrate concentrations (3). Nitrate is the most common nitrogen entering Iowa streams because of its stability and water-solubility, potentially leading to downstream contamination of drinking water.

## Health Risks Associated with Nitrate

### Cancer Health Risks

The International Agency for Research on Cancer (IARC) classifies nitrate in food and water as "probably carcinogenic to humans" (1, 5). Studies conducted in Iowa have shown a positive correlation between exposure to nitrate in the drinking water and some cancers (1). Some studies conducted in Iowa have analyzed cancer risk at or above levels one-half the maximum contaminant level (MCL) over long periods of time. From these studies, consistent associations have been discovered for **colorectal cancer**. Cancers at other sites have been less studied, however, positive associations have been found at levels below the MCL for cancers of the **thyroid, ovary, and kidney** (6).

### Non-Cancer Health Risks

Methemoglobinemia, or Blue Baby Syndrome, is a condition in which not enough oxygen is transported in the blood to the body's tissues (3). Blue Baby Syndrome can occur when infants are exposed to nitrate levels higher than 10 mg/L. Elevated prenatal nitrate exposure in Iowa has also been connected to increased risk of birth defects, including spina bifida, limb deficiencies, and cleft palate (7,8).

## How is Nitrate regulated?

- The EPA established the maximum contaminant level for nitrate to be 10 mg/L in drinking water, to protect infants against methemoglobinemia, or Blue Baby Syndrome (7, 9).
- Public water suppliers must test for nitrate and present results to consumers and the state through consumer confidence reports (3).
- Private wells are not required to be tested for nitrate, and those with water sourced from a shallow well, less than 50 feet, face a disproportionate risk of high nitrate exposure (3,10).

## What can you do?

- Test well water for nitrate once a year if the well is privately-owned.
- Water purification methods that remove nitrate include reverse osmosis, ion exchange, and distillation. Using Brita filters, refrigerator filters, and boiling water are not effective at removing nitrate (7).
- Maintain a healthy diet rich in antioxidants and limited in processed, cured, and red meats (1). **Published September 2024**  
**Questions? Visit our website [EHSRC.org](https://ehsrc.org)**

<https://ehsrc.public-health.uiowa.edu/communityengagement/resources-information/>

# Iowa Private Well Grants Program

## Iowa Health & Human Services

Iowa's [Private Well Grants Program](#) (PWG) provides free water testing to all private well owners and users for the analytes listed. The Iowa DNR recommends that all private well owners have their water tested at least annually.

- [Bacteria/coliform](#) (annually)
- [E.coli/fecal coliform](#) (annually)
- [Nitrate](#) (annually)
- [Arsenic](#) (every 3 years)
- [Manganese](#) (every 3 years)
- [PFAS](#) (requires pre-approval from the DNR)

To get your private well tested, please contact your local county health department.

[County Health Department - contact list](#)

Follow this QR code or the links below to learn more!



<https://hhs.iowa.gov/public-health/environmental-health/private-well-grants>

<https://www.iowadnr.gov/environmental-protection/water-quality/private-well-program/well-testing>

# Center for Health Effects of Environmental Contamination (CHEEC)

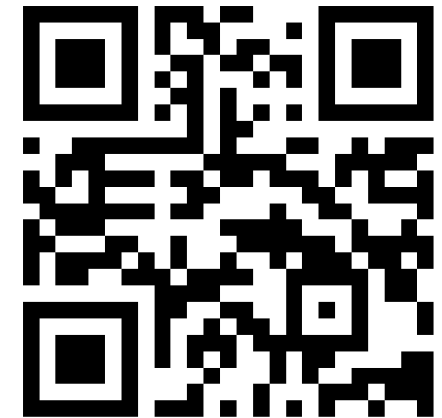
CHEEC

The University of Iowa Center for Health Effects of Environmental Contamination (CHEEC) supports and conducts research to identify, measure and study adverse health outcomes related to exposure to environmental toxins. CHEEC was established through the 1987 Iowa Groundwater Protection Act and has focused its efforts to date mainly on drinking water contaminants.

**For questions about environmental contaminants, please contact Dr. Cwiertny at the email address below.**



David Cwiertny  
Director of CHEEC



[cheec.uiowa.edu](https://cheec.uiowa.edu)

Email: [cheec@uiowa.edu](mailto:cheec@uiowa.edu)

# Center for Energy & Environmental Education's (CEEE) Environmental Health Program

**Highlighting upstream solutions to protect children, climate, and health.**

The Environmental Health Program at the CEEE highlights upstream solutions that protect children, climate, and health, as well as raises awareness about the link between harmful chemicals and their impacts to both people and climate. Our initiatives focus on community practices and state strategies that significantly reduce Iowan's exposure to common hazardous pollutants.

Contact Audrey Tran Lam for more information and resources about how to reduce environmental exposures that may contribute to cancer development.



**[ceee.uni.edu](http://ceee.uni.edu) | [uni-ceee@uni.edu](mailto:uni-ceee@uni.edu)**



**University of Northern Iowa**  
Center for Energy & Environmental Education

# Other initiatives in Iowa

## Understanding Cancer and Environmental Risk Factors in Iowa

A New Initiative from the Iowa Environmental Council and The Harkin Institute



The Harkin Institute and the Iowa Environmental Council are announcing the launch of a new initiative that explores the relationship between environmental risk factors and cancer rates in Iowa.



## STATEWIDE LISTENING SESSIONS

presented by



The Harkin Institute



## Expert Panel

UI Holden Cancer Center is bringing renowned national and international cancer experts together to investigate Iowa's cancer rates

**IOWA**  
HEALTH CARE

Holden Comprehensive  
Cancer Center

<https://www.iaenvironment.org/our-work/cancer-and-environmental-risk-factors-in-iowa/>



# Main Takeaways

Cancer is an important health issue facing your county

There are proven ways to prevent cancer & find it early  
You can avoid risk factors and get screened

Iowa has a strong Cancer Plan, resources, & organizations to help fight cancer

Policy changes at the local and state levels can have a huge impact!  
Please communicate your concerns & needs with your state representatives and local policymakers

**This is only the first step.**

# These slides will be posted

These slides will be posted to the Iowa Cancer Registry website:

[www.iowacancerregistry.org/99](http://www.iowacancerregistry.org/99)



If you have questions, please email us at

[ICR-99countiesproject@uiowa.edu](mailto:ICR-99countiesproject@uiowa.edu)

## Media

If you are a representative of the media and would like more information on this presentation or to speak with someone from the Iowa Cancer Registry, contact [ICR-Media@uiowa.edu](mailto:ICR-Media@uiowa.edu).

# Thank you for attending!

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If you would like to **share your thoughts** on this meeting, please participate in our brief survey. The QR code will direct you to the survey.

This brief survey should take no more than 5-10 minutes of your time.

