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Institute for Public Health
Practice, Research and Policy

Tackling Data

Using the Bite, Snack, Meal Approach

2024

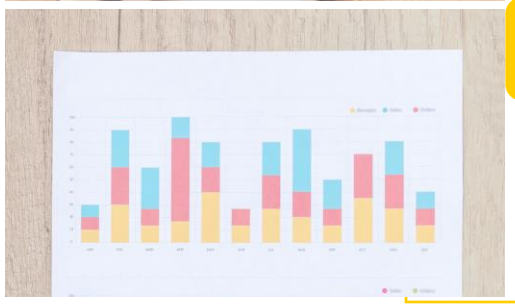
Welcome

Tackling Data

- Advances the participant's knowledge of quantitative data, provides skill building to assist in visualizing and communicating data, and provides supplemental resources

Visualize This

- Advances the participant's ability to identify and communicate the main message from their data and develop the best visualizations to create a story with impact



Disaggregate It

- Advances the participant's understanding of and ability to apply health equity frameworks to public health practice especially interpretation, use, and communication of data to diverse audiences for actionable change in your community

Meet your training team

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Training provided in partnership with the Institute for Public Health Practice, Research and Policy through a contract from the Iowa Department of Health and Human Services

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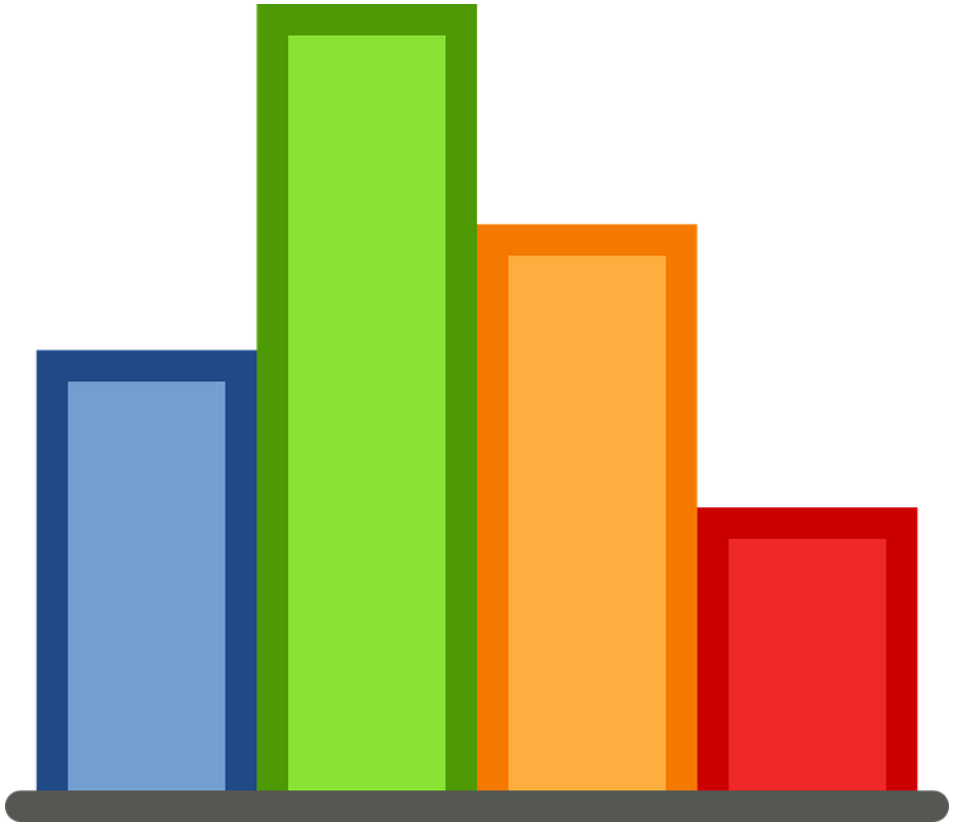


https://www.public-health.uiowa.edu/tackling-data-resources/

The University of Io... | Home | MyUI | ICON | EBPH PRC site | University of Iowa H... | Microsoft Office Ho... | Online Learning Ce... | BHC PHD - External... | All Bookmarks

Tackling Data Resources

At the end of this training course, you will be able to…

- Use and interpret measures of disease frequency in defined populations
- Understand the use of crude and adjusted measures of disease frequency in public health practice
- Develop audience-focused communication strategies using a Bite, Snack, Meal approach

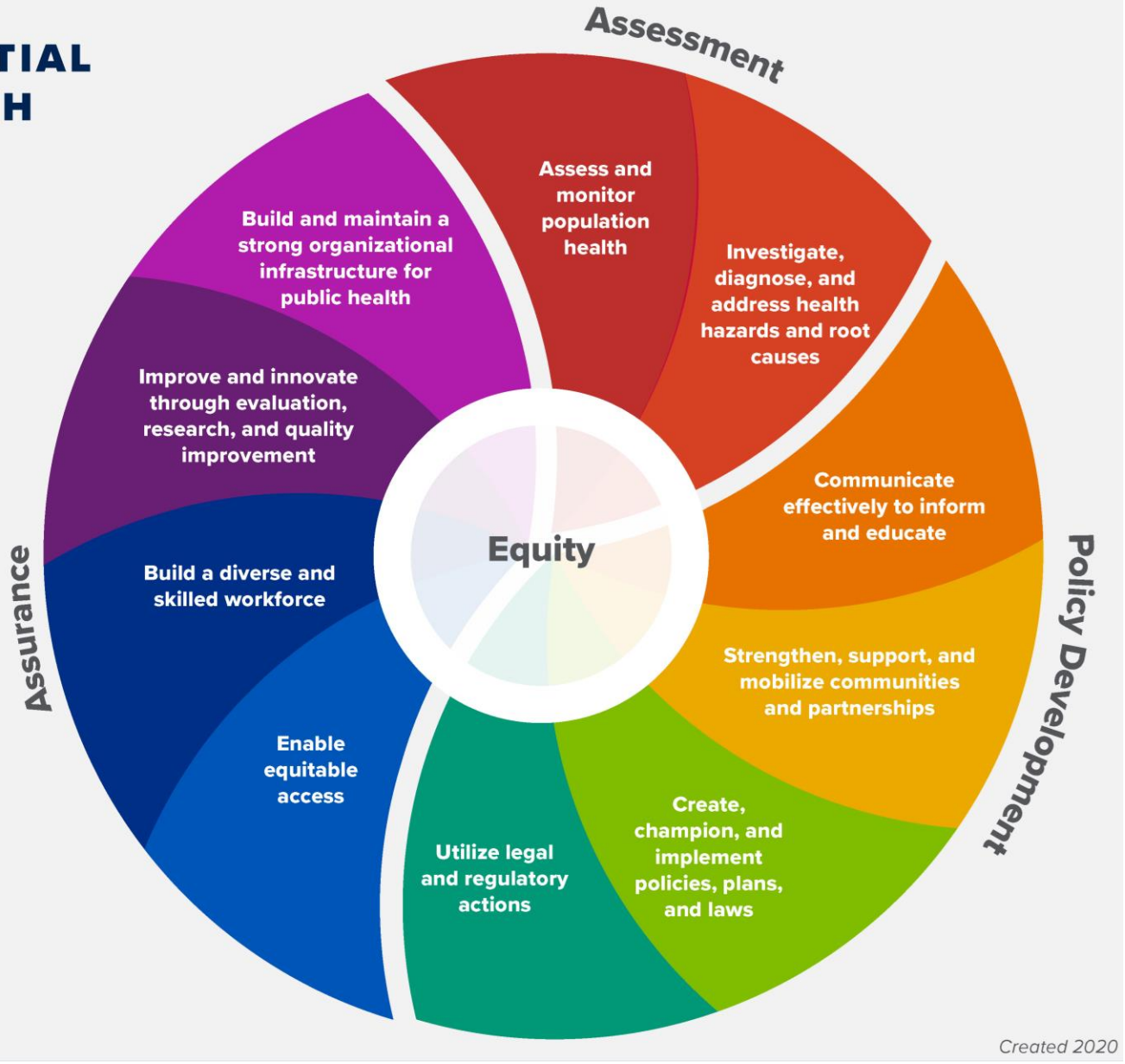
Module 1

Quantifying the Issue

THE 10 ESSENTIAL PUBLIC HEALTH SERVICES

To protect and promote the health of all people in all communities

The 10 Essential Public Health Services provide a framework for public health to protect and promote the health of all people in all communities. To achieve optimal health for all, the Essential Public Health Services actively promote policies, systems, and services that enable good health and seek to remove obstacles and systemic and structural barriers, such as poverty, racism, gender discrimination, and other forms of oppression, that have resulted in health inequities. Everyone should have a fair and just opportunity to achieve good health and well-being.



Created 2020

Module 1 – Part 1

(Peter Drucker)

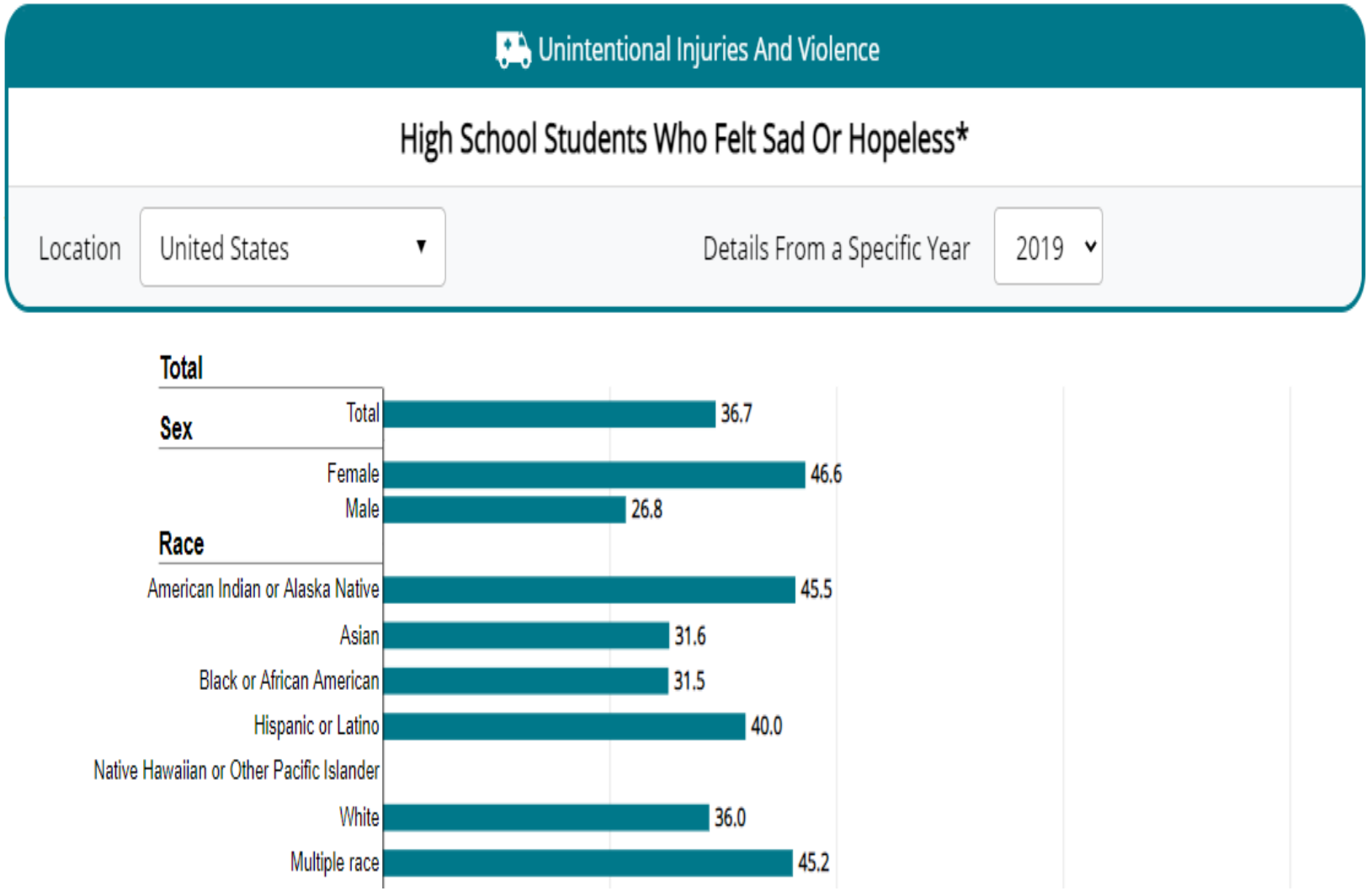
At the end of this module, you will be able to…

- *Measure and characterize disease frequency in defined populations using principles of descriptive epidemiology and surveillance*
- Understand the use of crude and adjusted measures of disease frequency in public health practice
- Develop audience-focused communication strategies using a Bite, Snack, Meal approach (Modules 2 and 3)

Descriptive Epidemiology

- Frequency and the distribution of outcomes and risk factors in populations (patterns by person, place, time)
- Assess the extent of a disease
- Can provide hypotheses of etiologic research

PERSON


Unintentional Injuries And Violence
High School Students Who Felt Sad Or Hopeless*
Location
United States
Details From a Specific Year
2019
Total
Total
36.7
Sex
Female
46.6
Male
26.8
Race
American Indian or Alaska Native
45.5
Asian
31.6
Black or African American
31.5
Hispanic or Latino
40.0
Native Hawaiian or Other Pacific Islander
White
36.0
Multiple race
45.2

Changes in HPV vaccination initiation (>= 1 dose) among 13-17 yr old females in the US from 2009 to 2016

US FDA first approved Gardasil in 2006

PLACE, TIME

a. HPV vaccination rate by state, NIS-Teen 2009[38]

b. HPV vaccination rate by state, NIS-Teen 2016[12]

(Hirth, Human Vaccines & Immunotherapeutics 2019)

Descriptive Epidemiology

- Measures of frequency
- Prevalence vs. incidence
- Role of intermediate indicators

Measures of Frequency

- Counts
  - There were 218 cases of breast cancer in Johnson County in 2017-2019.
- Ratios
  - There were twice as many new cases of breast cancer in White women as compared to Black women in Johnson County in 2017-2019.
- Proportions or Percents
  - 68% of women above the age of 50 yrs in Johnson County are current on mammography screening
- Rates
  - The incidence rate of breast cancer in Johnson County from 2017-2019 was 124.9 per 100,000 women.

Measures of Frequency

Proportions/Percents and Rates give you information about the number of events in your population relative to the population size

Descriptive Epidemiology

- ✓Measures of frequency
- Prevalence vs. incidence
- Role of intermediate indicators

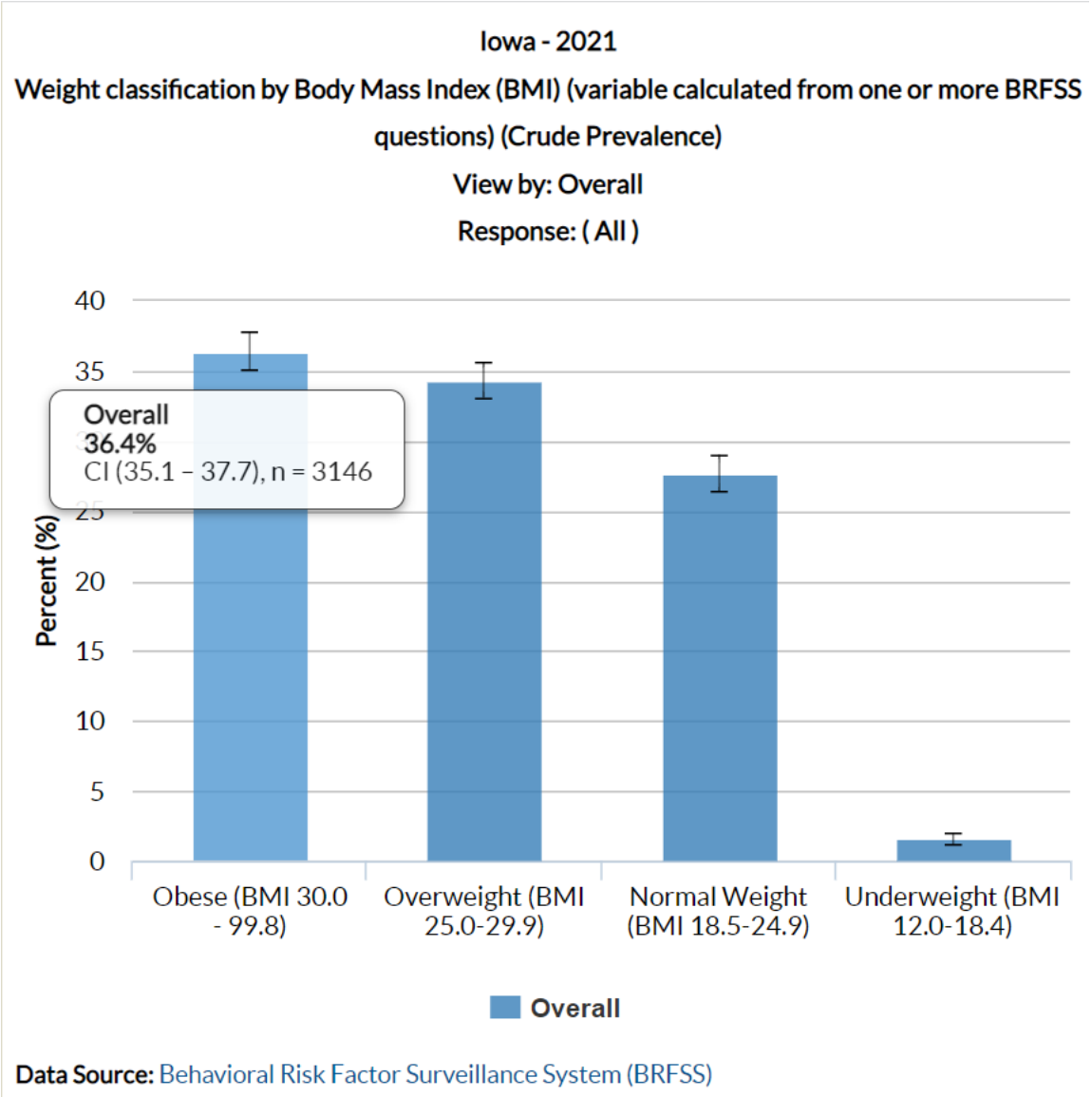
Prevalence vs. Incidence

- Prevalent cases are **existing** cases of disease in the population during a defined period
- Prevalence measures the proportion of individuals in a defined population that have a disease during a defined period relative to the population size. Usually seen as a percent.

- Incident cases are **new** cases of disease that develop in the population at risk during a defined period
- Incidence measures the proportion of individuals in a defined population that develop disease/are diagnosed with disease during a defined period relative to the population at risk. Usually seen as a rate per 100,000 people.

At the time of interview, report your height and weight:

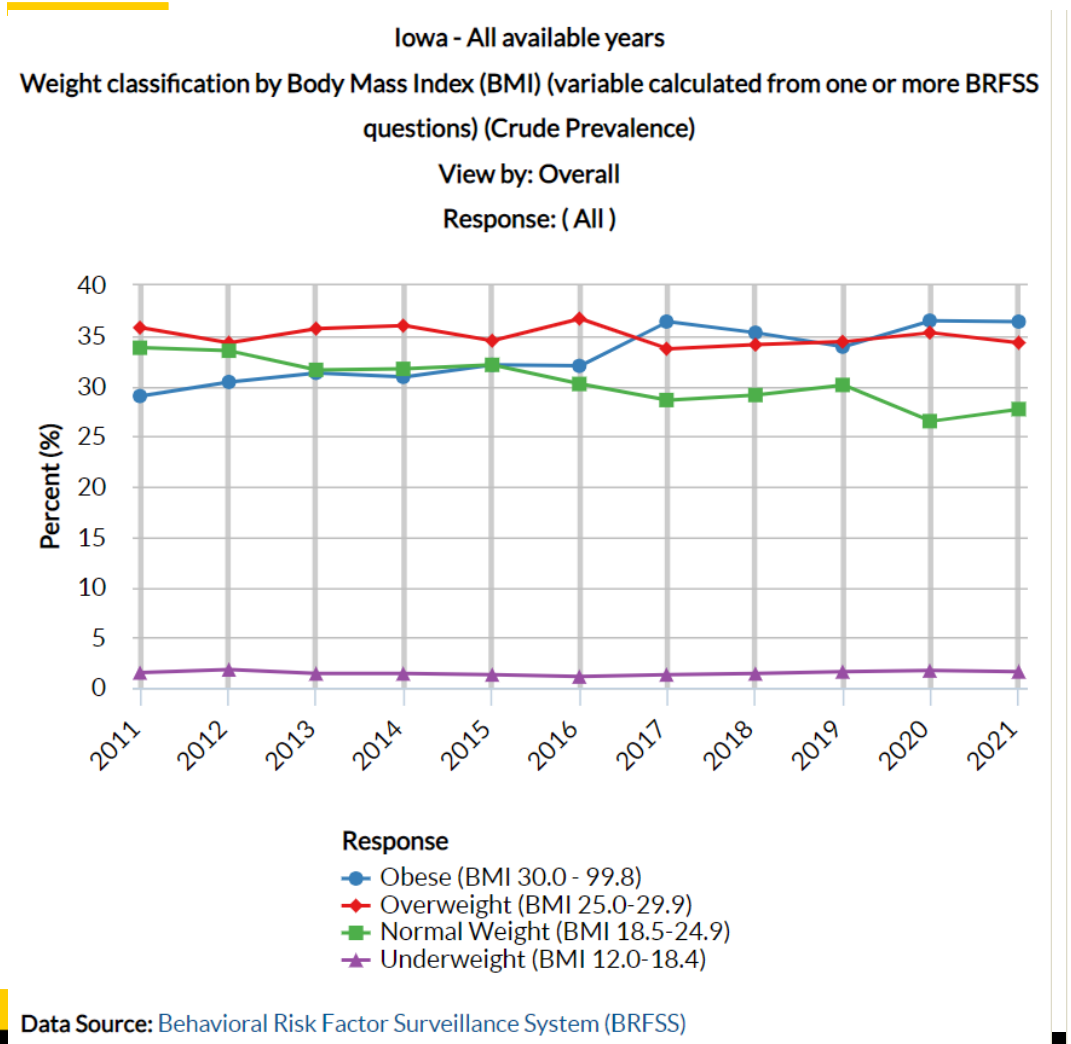
Prevalence of Obesity, Iowa 2021

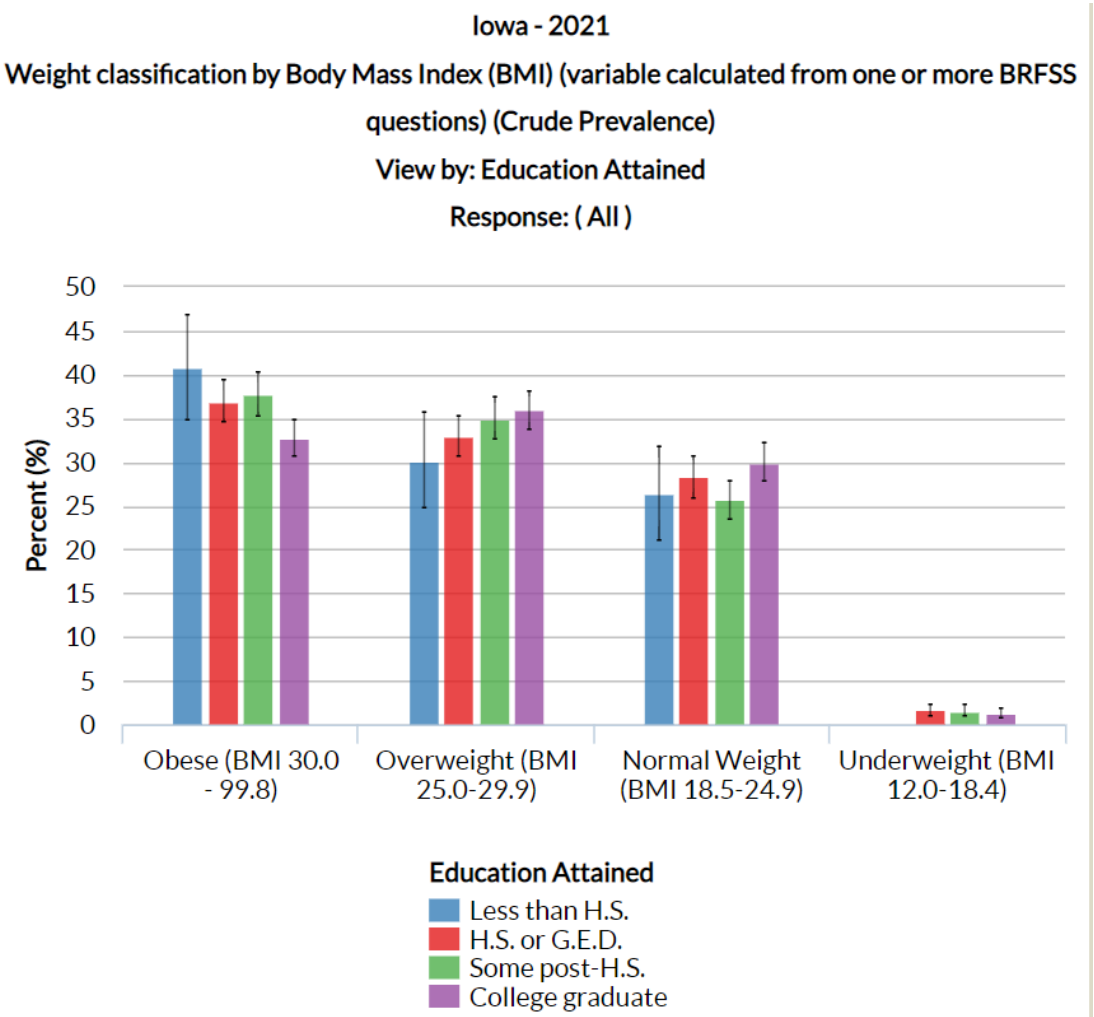


What are some questions you might ask after looking at the prevalence rate for 2021? What do you want to know about obesity in Iowa?

What patterns do we see with Adult Obesity in IA?

What groups have higher/lower rates? What is the pattern over time?





Data Source: Behavioral Risk Factor Surveillance System (BRFSS)

Descriptive Epidemiology

- ✓Measures of frequency
- ✓Prevalence vs. incidence
- Role of intermediate indicators

Role of Intermediate Outcomes

Intermediate outcomes may be used:

- When it is not feasible to wait years to see the effects of a new public health program,

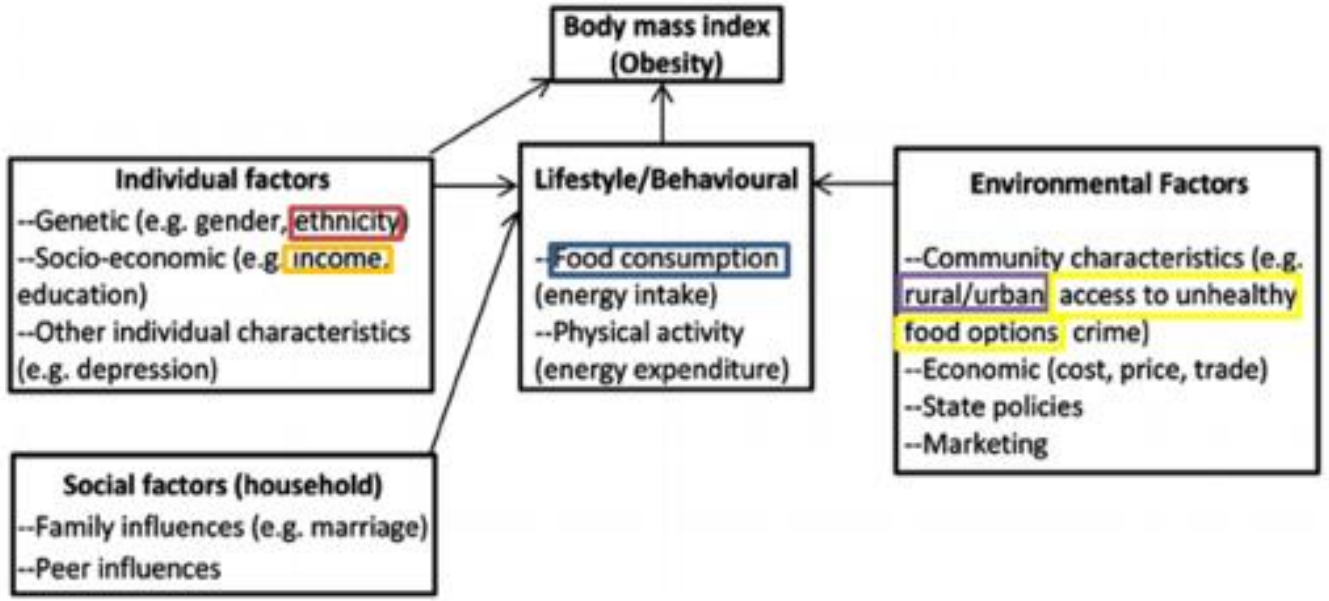
or

- There is sufficient type 1 evidence supporting the relationship between modifiable risk factors and disease reduction

What are some intermediate indicators that we might measure if our long-term goal is to reduce the prevalence of obesity in the US?

What do we know about Obesity?

Conceptual model of obesity in adults:



(Sartorius B., et al., PLoS ONE 2015)

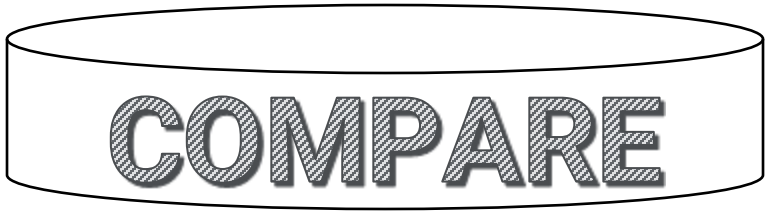
Any Questions?

Module 1 – Part 2

At the end of this module, you will be able to…

- Measure and characterize disease frequency in defined populations using principles of descriptive epidemiology and surveillance
- *Understand the use of crude and adjusted measures of disease frequency in public health practice*
- Develop audience-focused communication strategies using a Bite, Snack, Meal approach (Modules 2 and 3)

Two main features of descriptive epidemiology



Types of Rates—
measuring incidence for less common conditions

- Crude, or **unadjusted**
- Category-specific, or **stratified**
- Standardized, or **adjusted**

Types of Rates

- Crude, or **unadjusted**
- Category-specific, or **stratified**
- Standardized, or **adjusted**

Crude (or Unadjusted) Rates

- Estimate the actual disease frequency for a population
- Can be used to provide data for allocation of health resources and public health planning
- Can be misleading if compared over time or across populations

Crude (or Unadjusted) Rates
Defining your population

- Define disease → Breast Cancer
  - Standard inclusion and exclusion criteria (e.g., invasive, specific ICD-10 codes)
- Define population at risk → IA Females
- Select time frame → 2020

Crude (or Unadjusted) Rates
Calculation methodology

Compute disease rate for year 2020

Number of IA females diagnosed with breast cancer → 2553

Number at females in IA at risk for breast cancer → 1,587,866

Source: CDC WONDER

Crude (or Unadjusted) Rates Calculation methodology

Compute disease rate for year 2020

$$\frac{\textbf{2553}\text{ IA females diagnosed with breast cancer}}{\textbf{1,587,866}\text{ female IA residents}}$$

= **0.001595** breast cancer cases / female IA residents/yr

= **159.5** breast cancer cases / 100,000 female IA residents/yr

We can use this rate to then estimate the number of cases we would expect in 2024 and have an idea of resources that we would need, etc.

Types of Rates

- Crude, or **unadjusted**
- Category-specific, or **stratified**
- Standardized, or **adjusted**

Category-Specific (or Stratified) Rates

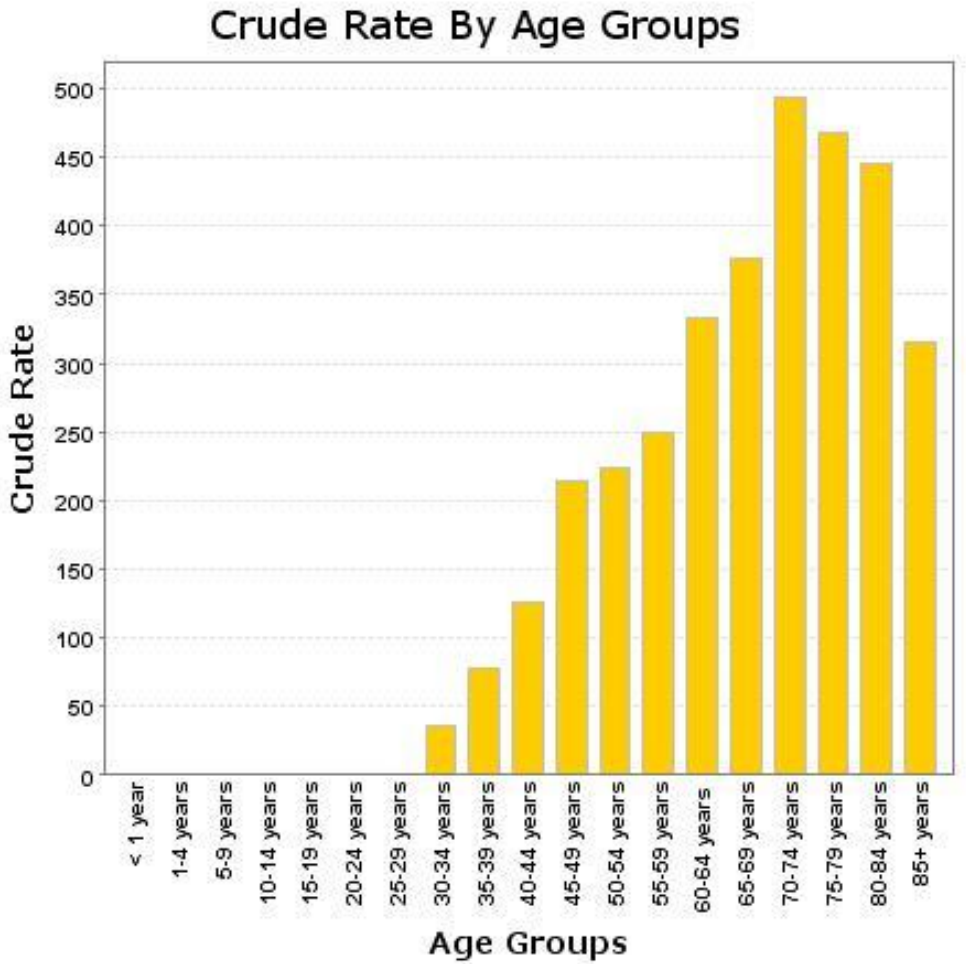
- Can be used for valid comparison of populations by category
- Allow us to disaggregate our data and look at variation across person, place, and time characteristics
- Can be cumbersome if there is a large number of categories to compare

Category-Specific (or Stratified) Rates
Two general categories

- **Age-specific**: crude rates across different age groups
- **"Other"- specific**: crude or standardized rates across different groups
  - Person: sex, race / ethnicity, education, income, health insurance status
  - Place: geographic unit (e.g., county), urban / rural, population density
  - Time: short or long-term trends, cyclic trends, cohort effects
- **BUT** don't forget about **Intersectionality** of characteristics

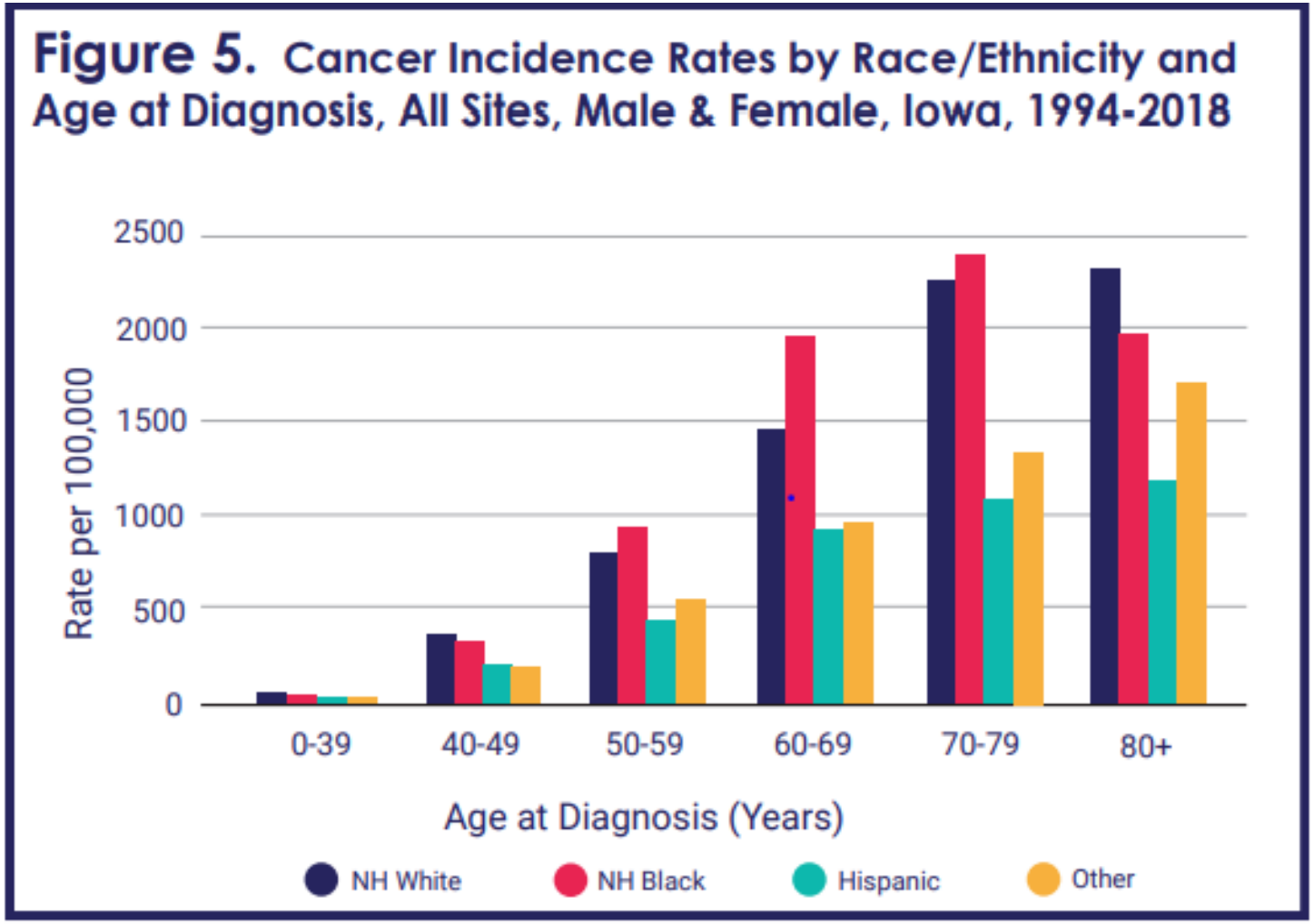
Category-Specific (or Stratified) Rates

Age-Specific Female Breast Cancer Incidence Rates, Iowa 2020



**Suppressed data, (less than 16 cases in the 20-24 and 25-29 years age groups)

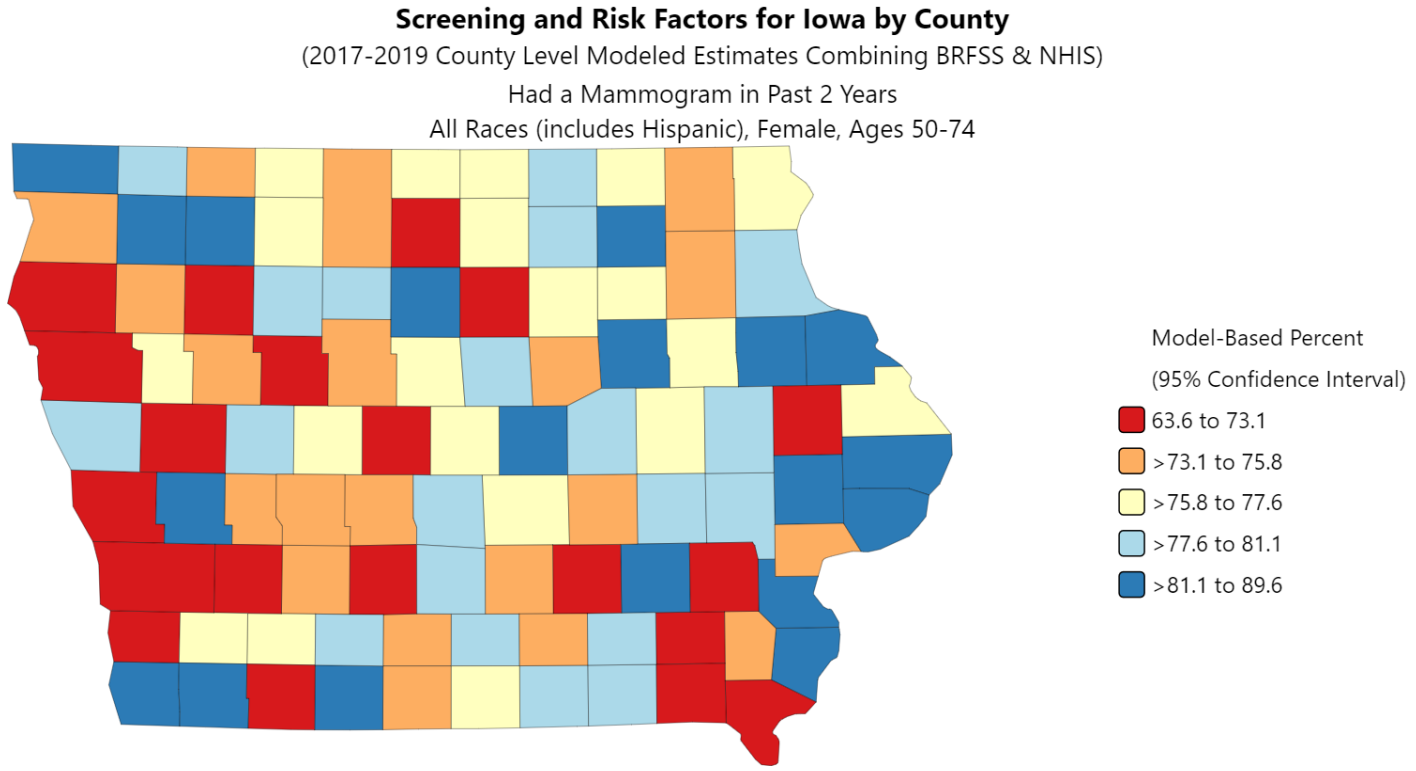
Category-Specific (or Stratified) Rates



Small Area Estimation for Place-specific rates

81.4% of women 50-74 yrs have had a mammogram in the past 2 years!

- **Small area estimation**: uses regression modeling methods to combine different data sources and generate prevalence estimates for small geographic areas



Types of Rates

- Crude, or **unadjusted**
- Category-specific, or **stratified**
- Standardized, or **adjusted**

Are we comparing apples to apples?

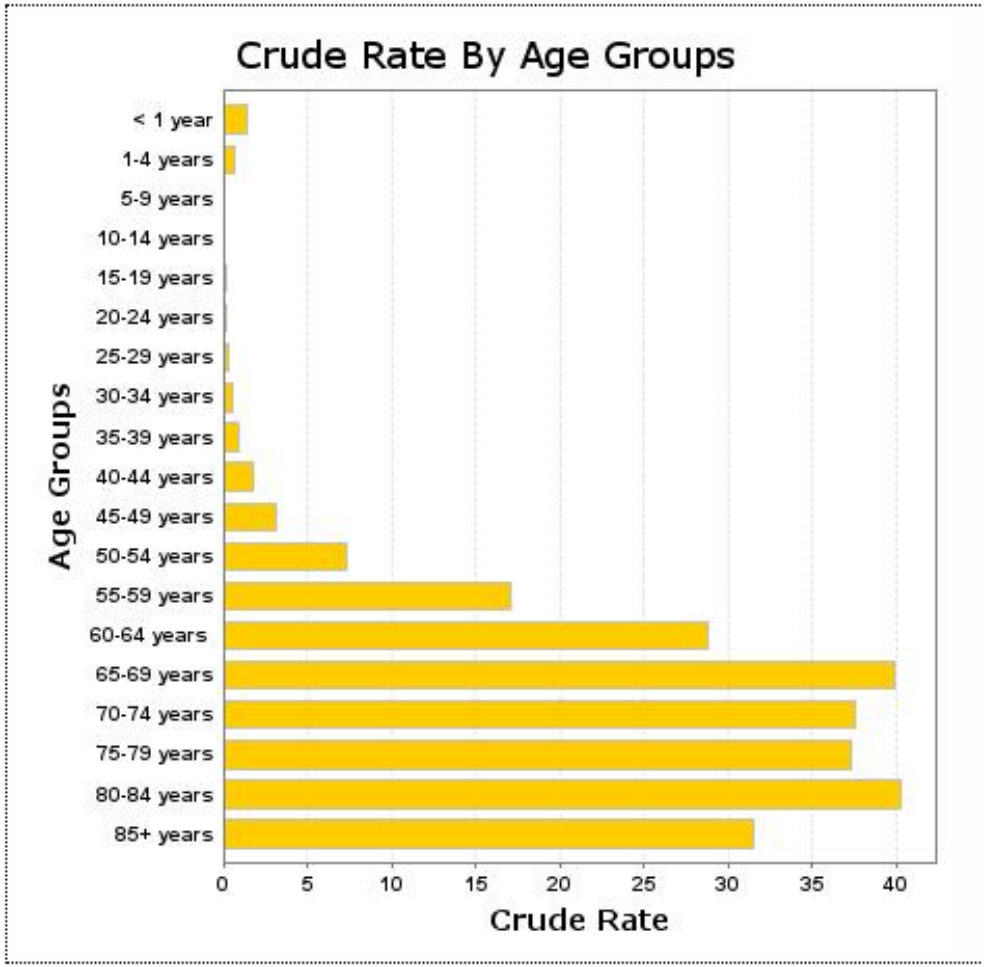
What makes them different and is that important?

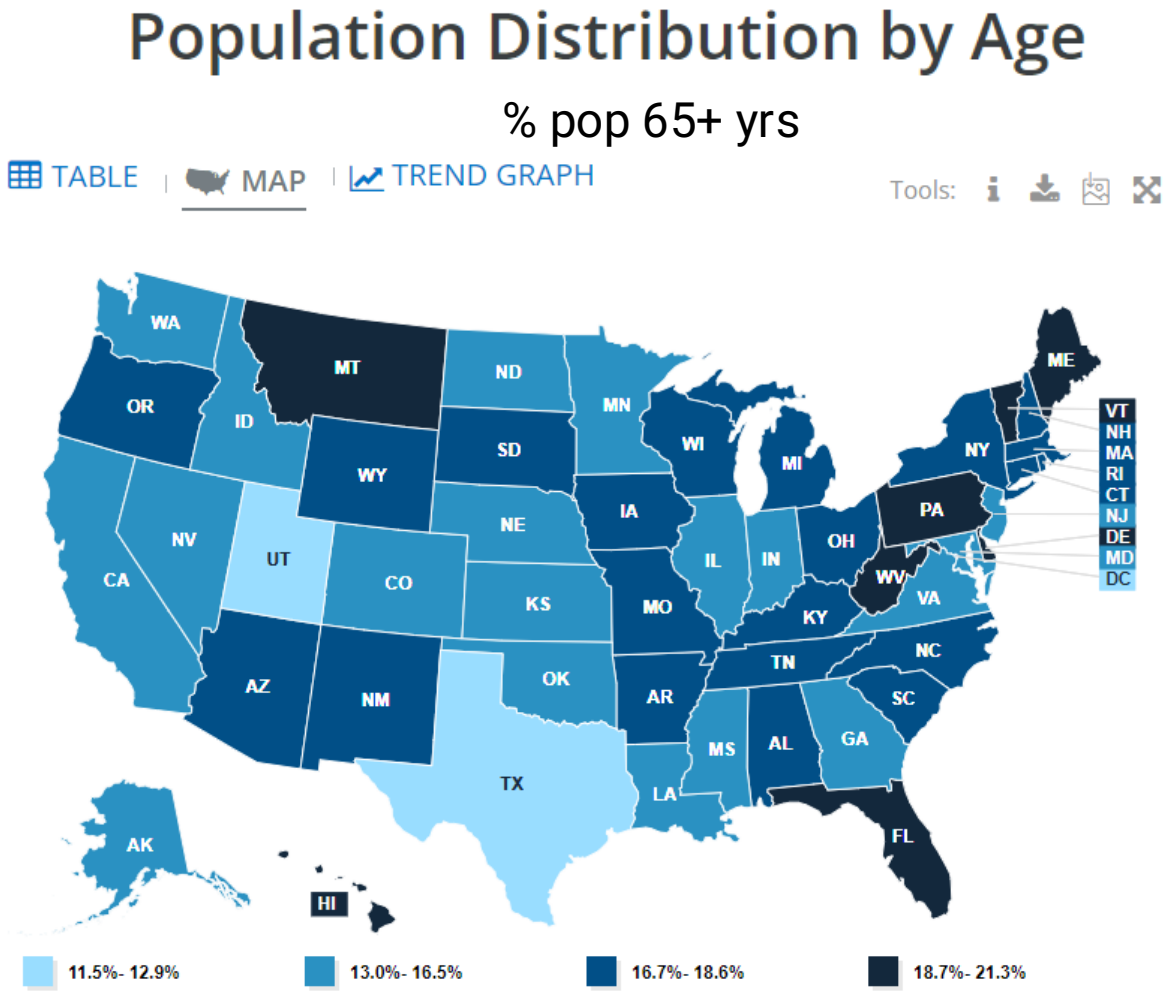
When do we use age-adjusted rates?

When-

- We want to compare two or more groups, **and**
- Disease risk varies by age, **and**
- Distribution of age is different between the groups being compared.

When do we use age-adjusted rates?





Crude Incidence Rates for Liver/Bile Duct Cancer, 2016-2020

State	Count	Population	Crude rate per 100,000
California	22,374	197,231,358	11.3
Colorado	2,466	28,328,067	8.7
Florida	12,867	105,490,104	12.2
Iowa	1,507	15,857,834	9.5
Texas	18,903	142,613,101	13.3

US 2016-2020
Source: CDC WONDER

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Crude vs. Age-Adjusted Incidence Rates for Liver/Bile Duct Cancer, 2016-2020

State	Count	Population	Crude rate per 100,000	Age-Adjusted rate per 100,000
California	22,374	197,231,358	11.3	9.7
Colorado	2,466	28,328,067	8.7	7.4
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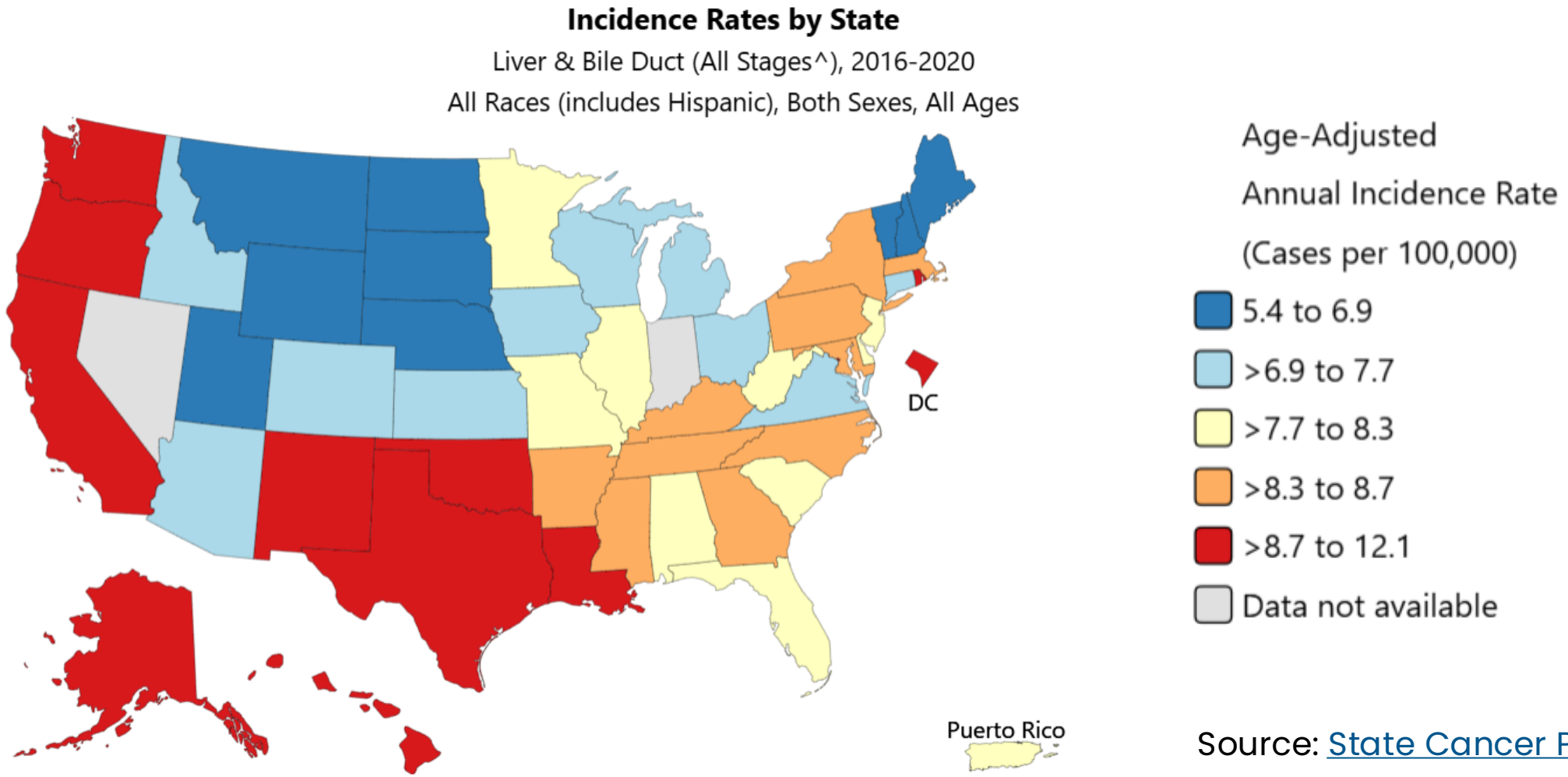
Iowa	1,507	15,857,834	9.5	7.3
Texas	18,903	142,613,101	13.3	12.4

US 2016-2020
Source: CDC WONDER

Age-Adjusted Incidence Rates



Source: [State Cancer Profiles]

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Ok, so now what?

- ***When we age-adjust rates*** to a reference population, we have made the two (or more) populations look the same with regard to age distribution. Now ***any observed differences are due to other factors, not age.***
- If we wanted to try and determine why the age-adjusted rates differ between two populations, we would consider whether the prevalence of other risk factors for liver/bile duct cancer– chronic hep infections, alcohol use, obesity, tobacco use, type 2 diabetes—differ between the populations and may be a target for intervention.

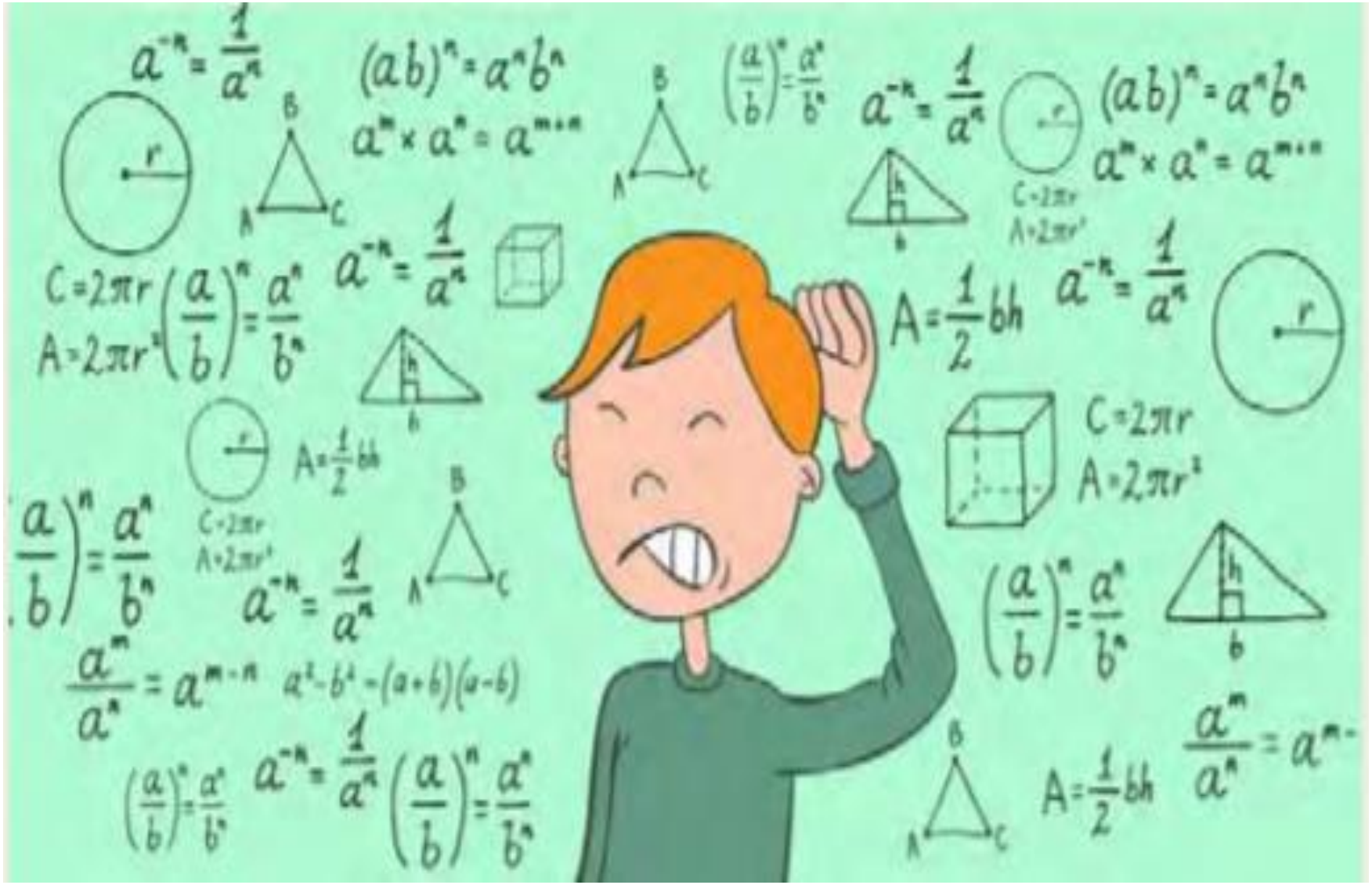
How do I decide what data point(s) to use?

- Should I use a Rate? Percentage? Count?
- Should I show disaggregated data? A trend over time?
- You have to know what data you have available, what tells the story best, and what will be most relevant to your audience.

Any Questions?

Module 2 – Part 1

Using Data to Tell Your Story



Learning Objectives

1. Understand and appreciate the importance of effective data communication to meet public health challenges.

2. Be aware of the principles of effective data communication as applied to different audiences.

3. Learn to use a Bite, Snack, Meal approach to tell your data story.

Houston, we have a problem…

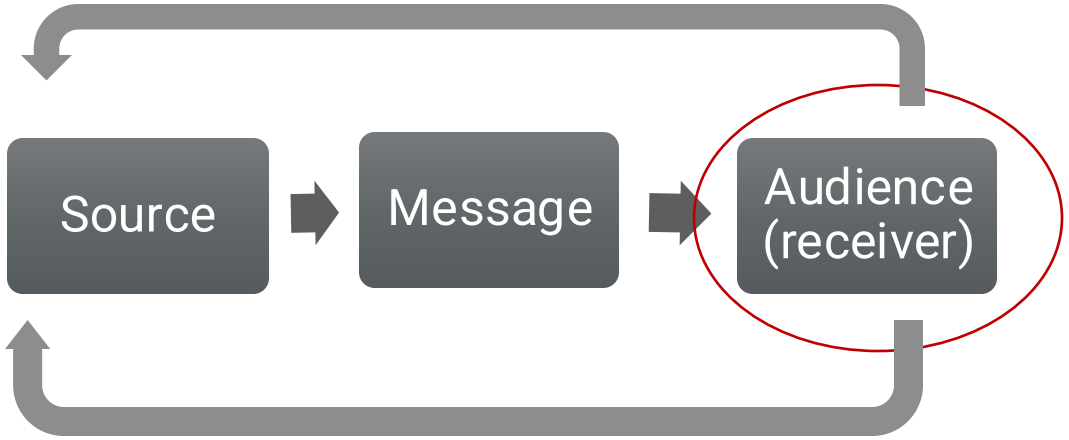
Leading Cancer Sites	Count	Population	Age-Adjusted Rate Per 100,000
Brain and Other Nervous System	22,376	323,405,935	6.3
Breast *	247,506	323,405,935	66.3
Cervix Uteri	12,984	164,162,118	7.7
Colon and Rectum	141,270	323,405,935	37.4
Corpus Uteri	54,930	164,162,118	26.4
Esophagus	17,478	323,405,935	4.4
Gallbladder	4,075	323,405,935	1.1
Kidney and Renal Pelvis	63,639	323,405,935	16.8
Larynx	12,243	323,405,935	3.1
Leukemias	48,082	323,405,935	13.1
Liver	28,254	323,405,935	6.9
Lung and Bronchus	218,229	323,405,935	56.0
Melanoma of the Skin	82,476	323,405,935	22.3
Myeloma	25,286	323,405,935	6.5
Non-Hodgkin Lymphoma	68,403	323,405,935	18.3
Oral Cavity and Pharynx	45,543	323,405,935	11.7
Ovary	20,418	164,162,118	10.3
Pancreas	49,093	323,405,935	12.7
Prostate	192,443	159,243,817	101.4
Stomach	24,146	323,405,935	6.4
Thyroid	47,755	323,405,935	14.0
Urinary Bladder, invasive and in situ	73,469	323,405,935	19.2

Effective Communication

3 Questions to Ask

- What is the purpose of this communication?
- Who will use the information?
- What are the key messages for this audience?

AUDIENCE



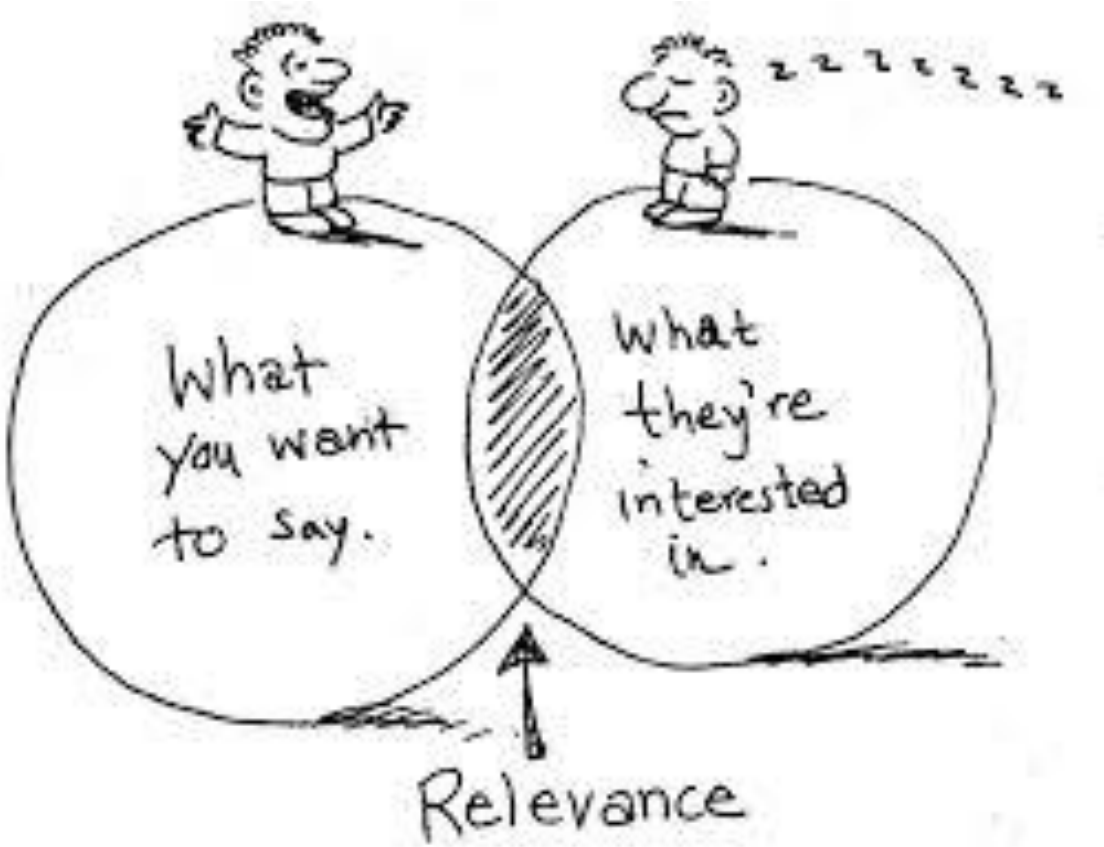
Communicate for someone….. not about something.

AUDIENCE:
Who are you communicating with?

- Elected Officials
- Legislative Staff
- Agency/Organization Leaders
- Community Groups
- Media
- Other?

Connect with your audience

- Understand your audience/ their current position
- What do they care about?
- What are their information needs?
- Where, when and how do they seek information?
- Focus on interests, not positions



Persuading your audience

- The purpose for most communication in public health, but especially with decision makers, is persuasion.

- To persuade is to:
  - Create, strengthen, or change attitudes or behaviors

MESSAGE

Determine your *objectives:*

- What do you want your audience to **think/believe/know**?
- What do you want your audience to **feel?**
- What do you want your audience to **do?**

When would I use graphics to present my data?

- When you can simplify your data into a couple/few bite size pieces
- When you have limited space/time and want to quickly show the scope of a problem
- When you want to tell a story and you've already gotten their attention!

Check out our Visualize This training!

Any Questions?

Module 3

Using a “Bite, Snack, Meal” Approach to Communicating Data

Bite, Snack, Meal

- A method for providing data to a variety of audiences. Some will want just a small piece of information, some will want to know more, and some will want as much information as possible about the topic.

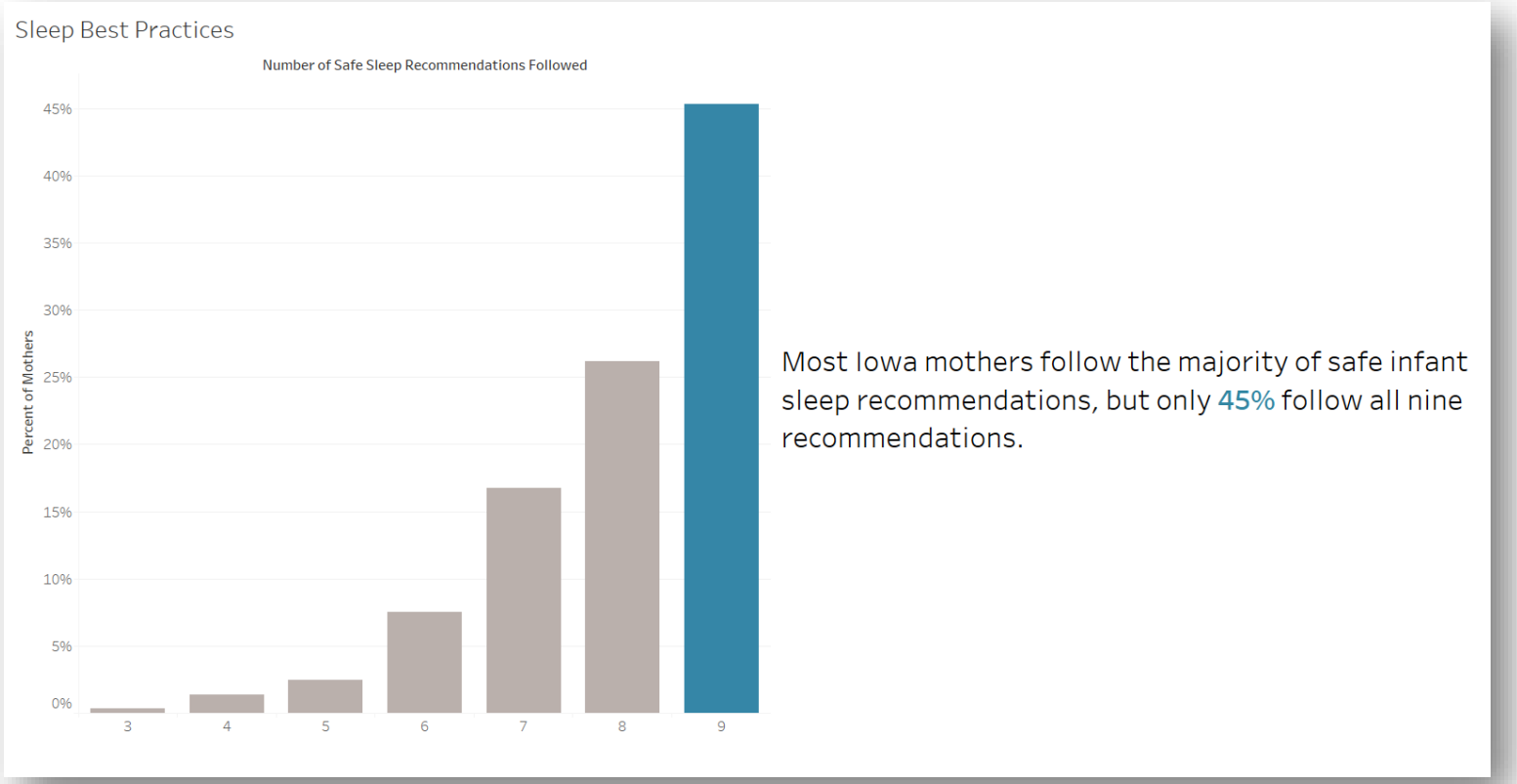
- **Bite:** A headline with a message
- **Snack:** A concise summary that provides enough information for a content overview
- **Meal:** The full array of information you want to provide

Bite: Safe Sleep

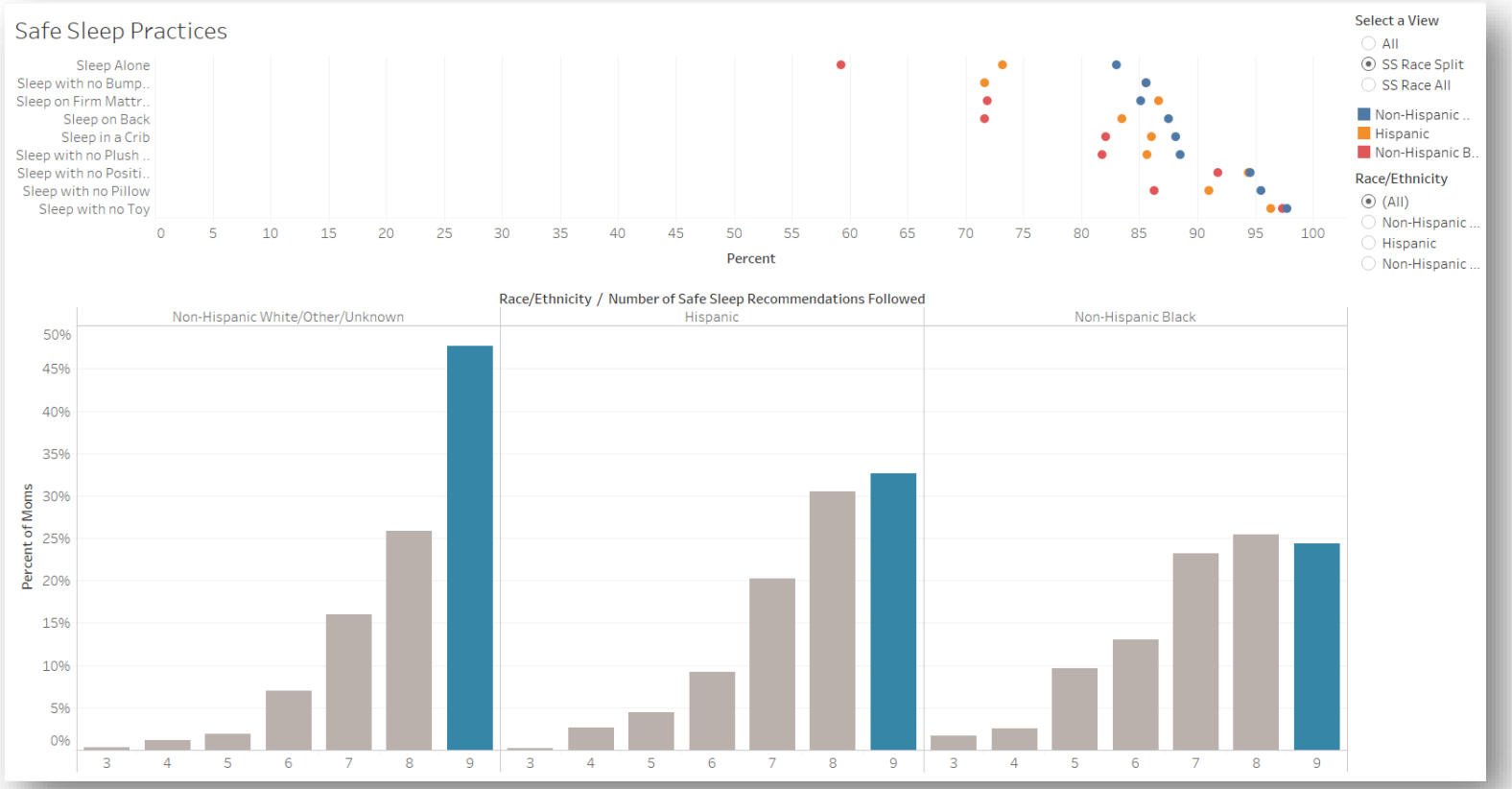
86% of Iowa mothers put their infants to sleep exclusively on their backs, as recommended.

Source: Iowa Department of Public Health, Pregnancy Risk Assessment Monitoring System, 2014

Snack: Safe Sleep



Meal: Safe Sleep



Any Questions?

Small Group Activity
20 minutes

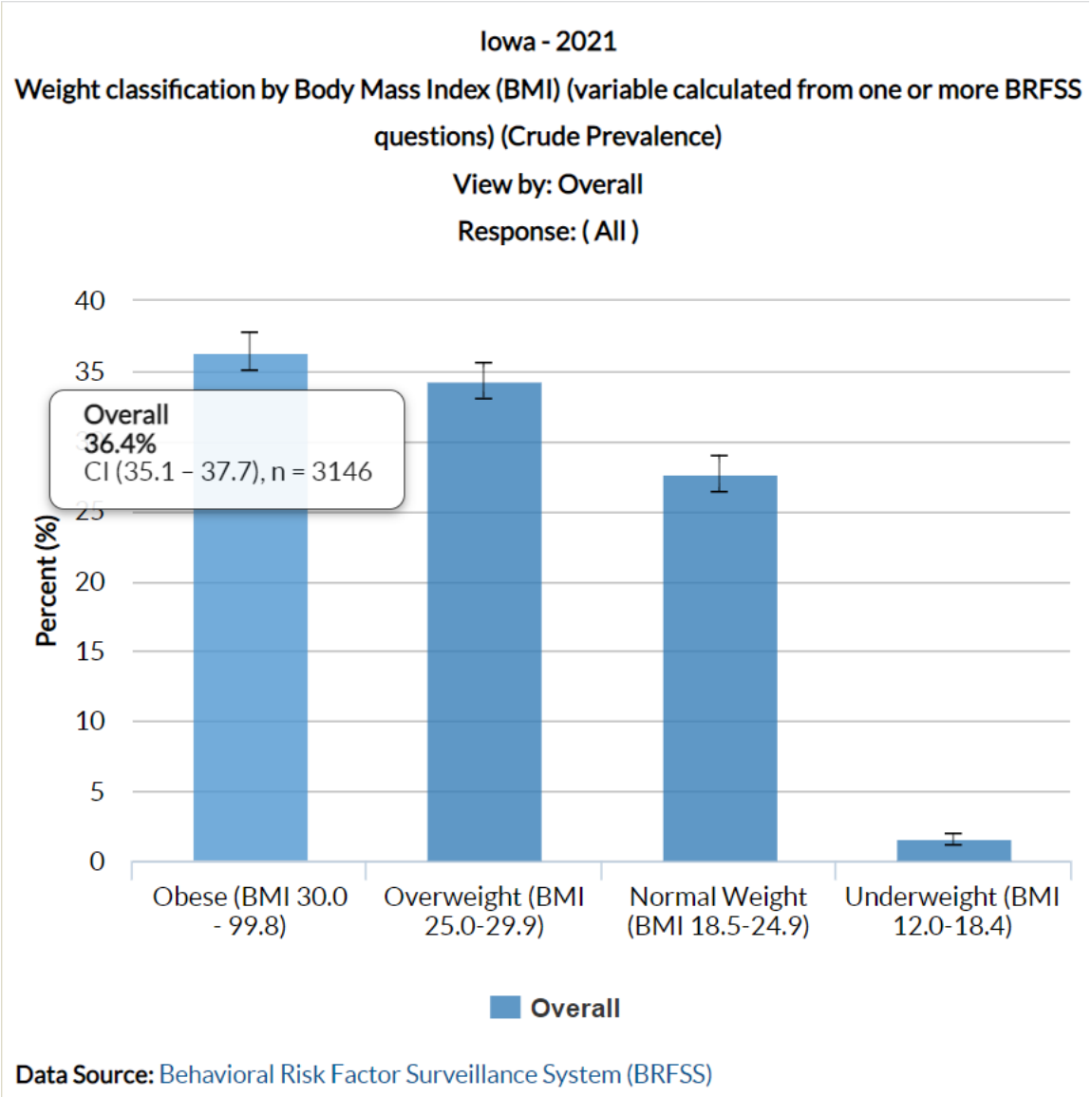
We want to make sure that people are eating at least one vegetable per day!

Instructions:

- Introduce yourselves!
- Your target audience: Employers in your Community
- What data points would be of interest to your target audience? Is there any additional information you would want to have?
- Develop your “bite”! (Bite: A headline with a message)
- Choose one person to share out in large group

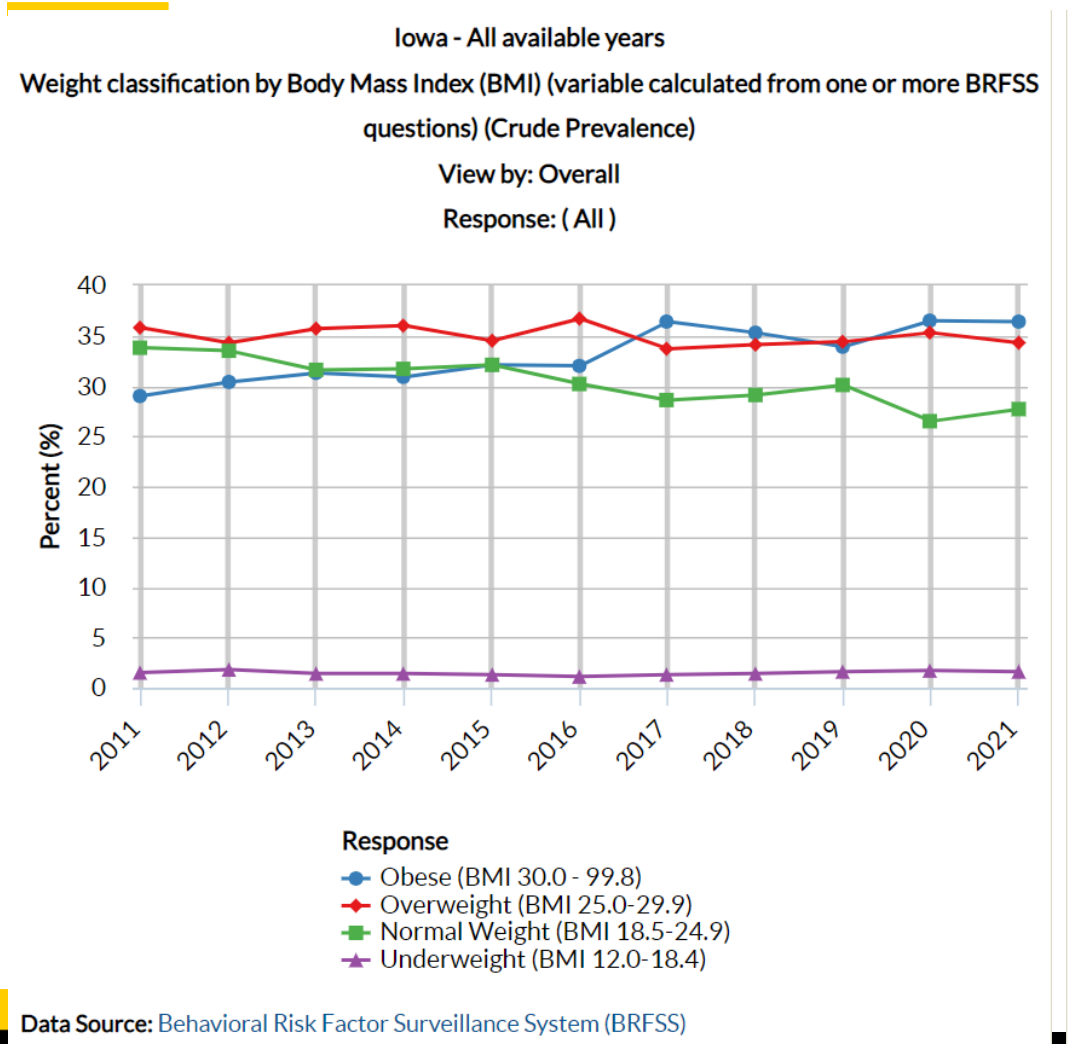
At the time of interview, report your height and weight:

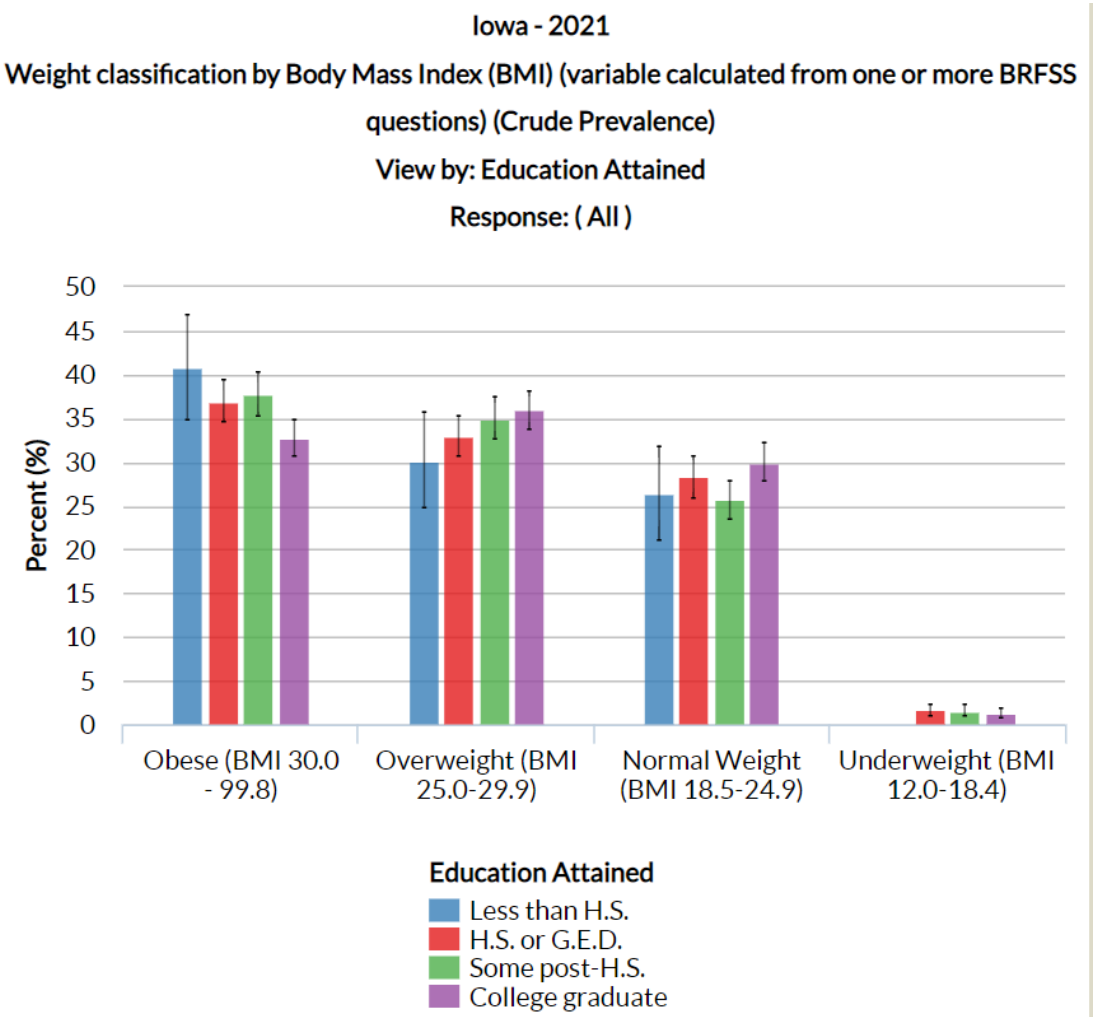
Prevalence of Obesity, Iowa 2021



What patterns do we see with Adult Obesity in IA?

What groups have higher/lower rates? What is the pattern over time?





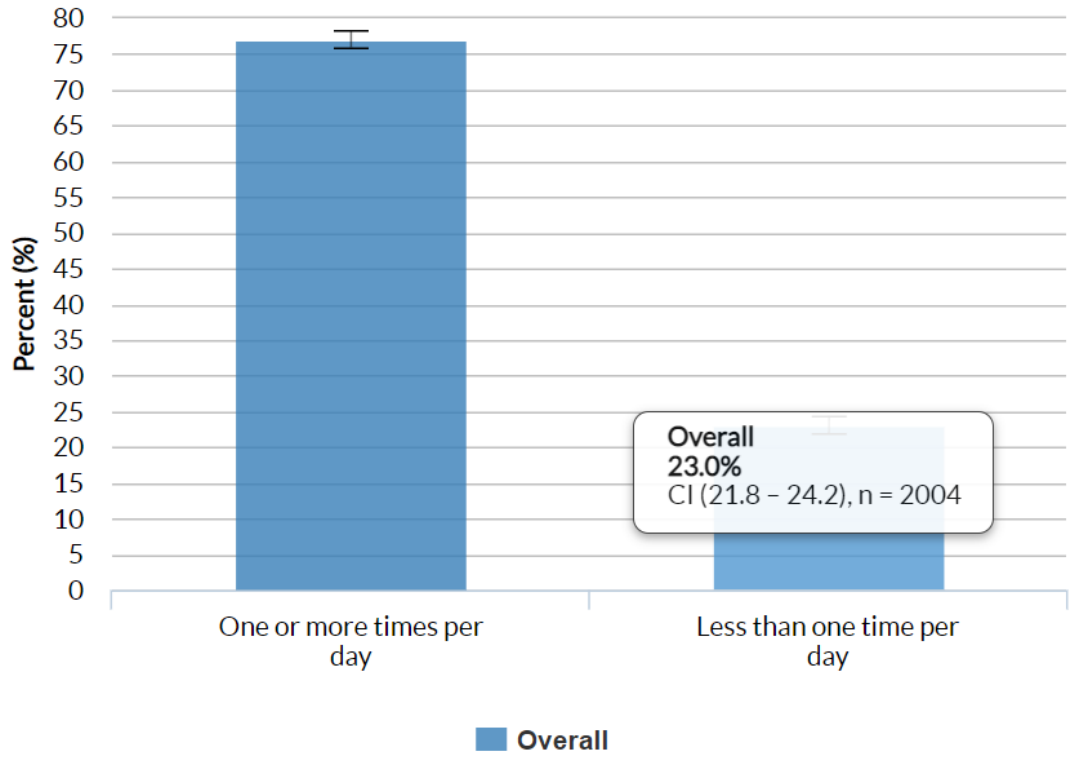
Data Source: Behavioral Risk Factor Surveillance System (BRFSS)

Iowa - 2021

Consumed vegetables less than one time per day (variable calculated from one or more BRFSS questions) (Crude Prevalence)

View by: Overall

Response: (All)



Data Source: Behavioral Risk Factor Surveillance System (BRFSS)

Iowa - All available years

Consumed vegetables less than one time per day (variable calculated from one or more BRFSS questions) (Crude Prevalence)

View by: Overall

Response: (All)

	One or more times per day	Less than one time per day
2021		
Percent (%)	**77.0**	**23.0**
95% CI	75.8 - 78.2	21.8 - 24.2
n	6546	2004
2019		
Percent (%)	**77.3**	**22.7**
95% CI	76.2 - 78.3	21.7 - 23.8
n	6805	1940
2017		
Percent (%)	**80.7**	**19.3**
95% CI	79.6 - 81.8	18.2 - 20.4
n	5682	1290

Data Source: Behavioral Risk Factor Surveillance System (BRFSS)


Debrief

Last thoughts about Data in Public Health

- There is no perfect dataset.
- Use the data to learn about your community/issue (be curious, ask questions)
- You may have to collect some data
- Focus on public health practice—don't let the perfect be the enemy of the good (Voltaire)
- The community should be at the table at all phases of the data life cycle--collection, analysis, interpretation and communication.
- Incorporate equity in your data life cycle (Check out our Disaggregate It training)

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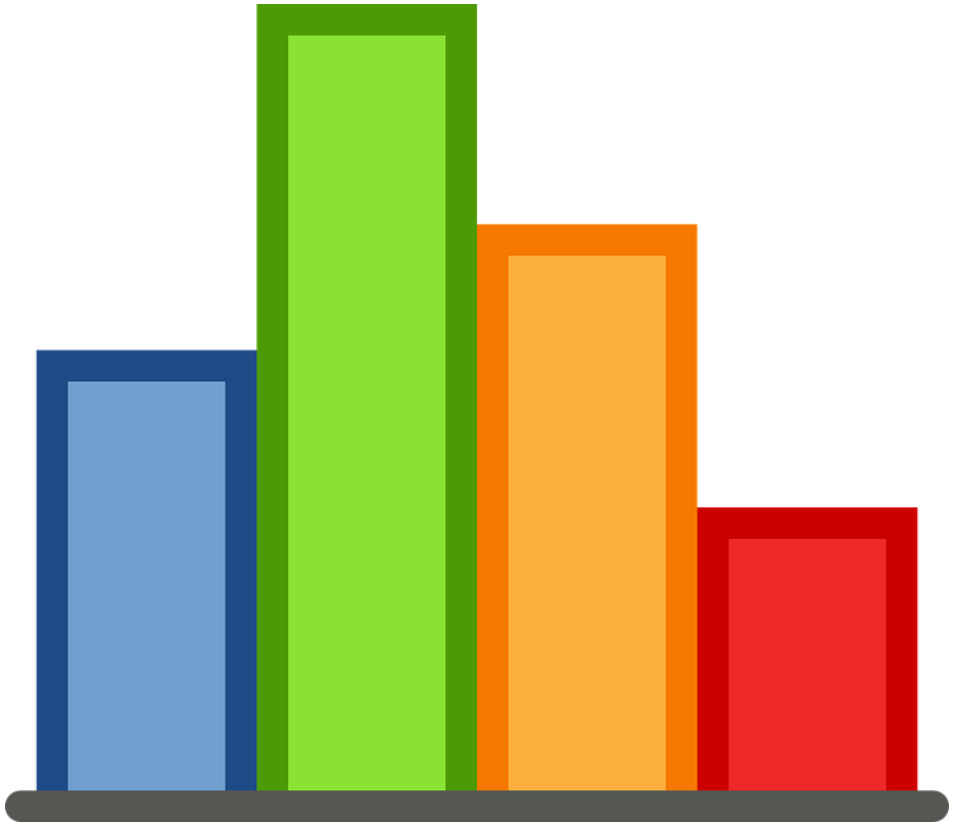

Data Training Opportunities

- Data Basics
- Tackling Data
- Visualize This
- Disaggregate It

Check out our website to see upcoming training dates!

Resources

- NCI: Making Data Talk: A Workbook
  https://www.cancer.gov/publications/health-communication/making-data-talk.pdf
- Using Graphics to Report Evaluation Results
  http://learningstore.uwex.edu/assets/pdfs/G3658-13.PDF
- Yocco and Pulli, Social Math: A method to make complex data meaningful, 2016
- Public Health Reaching Across Sectors (PHRASES) toolkits https://www.phrases.org/
- WHO Risk Communication training
  https://www.who.int/risk-communication/training/Module-D1.pdf?ua=1

Thank you!

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