

Analyzing Data - An Exploration of Health Trends in the United States



Overview of Lesson Plan: Students will use their powers of observation to analyze data from the Center of Disease Control and Prevention (CDC). The data will be in the form of maps and tables.

Grades: 6-8

Subjects: Science, Health and Language Arts

Time Requirement: 90 minutes

Objectives:

- Students will analyze data and make statements about what they see
- Students will separate observation of data from inferences commentary about data
- Students will write and revise a working thesis statement based on a collection of supporting evidence

Materials:

- Small Group task cards: 1 task card per student
- Analyzing Maps and Titles Recording Worksheet: 1 per student

US Maps:

- Map 1A: Heart Disease Rate, 2000-2006, Adults ages 35+, by county
- Map 1B: Heart Disease Rate, 2000-2006, Adults ages 65+, by county
- Map 1990: Percent of Obese (BMI \geq 30) in U.S. Adult
- Map 1995: Percent of Obese (BMI \geq 30) in U.S. Adult
- Map 2000: Percent of Obese (BMI \geq 30) in U.S. Adult
- Map 2005: Percent of Obese (BMI \geq 30) in U.S. Adult
- Map 2010: Percent of Obese (BMI \geq 30) in U.S. Adult
- Map 2A: Stroke Death Rates, 2000-2006, Adults Ages 35+, by county
- Map 2B: Diagnosed Diabetes, 2007 Adults aged > 20 years, by county

Tables:

- Table 1: States with the Highest Rates of Physical Inactivity in Adults
- Table 2: States with the Lowest Rates of Physical Inactivity in Adults

Activities/Procedures:

1. Put students into small groups of four and pass out “Group task cards”. As a class, review each role and expectations before passing out “Analyzing Map and Titles Recording Worksheet”.
2. Students will work together in small groups on “Analyzing Map and Titles Recording Worksheet” but will share and compare observations at different times. (30 minutes)
 - a. Share as a class after students analyze Heart Disease Rate maps
 - b. Share as a class after students analyze Percentage of Obese in U.S. Adults maps
 - c. Share as a class after students analyze Stroke Death Rates and Diagnosed Diabetes
3. The Compiling Evidence table is a graphic organizer students use to organize their observations and thoughts and to gather information for an essay. Students may work together or separately to brainstorm and compile meaningful evidence. When recording observations of data or evidence, they need to record their explanation or commentary relating to observations. This will be used as support for the thesis they develop and incorporated within their body paragraphs. (20 minutes)
4. Group sharing: It is important for students to share their observations and explanations as a continuation of the brain storming process and to provide further discussion for essay ideas and topics. (10 minutes)
5. Writing time: Provide students with quiet writing time to begin organizing and recording their evidence and ideas. This will also help them further develop a particular working thesis. Their working thesis will change as their body of evidence and explanation increases or changes directions. Students should be encouraged to share and read parts of the writing. (30 minutes)

Assessment/Reflection: Students will be evaluated based on written analysis worksheet, graphic organizer and participation in class discussions. They will also be evaluation on their thoughtful development of an essay relating to the data covered in the maps and tables.

Resources:

PowerPoint: Maps and Tables – *Note: This is helpful if making colored copies of the maps for students is not a possibility.*

Web Site: Center for Disease Control and Prevention - <http://www.cdc.gov/>

Web Site: Trust for America’s Health – Preventing Epidemics. Protecting People - <http://healthyamericans.org/reports/obesity2010/Obesity2010Report.pdf>

Standards:**National Science and Education Standards (Grades 5-8)***Science as Inquiry - Content Standard A*

- Develop descriptions, explanations, predictions, and models using evidence.
- Think critically and logically to make the relationships between evidence and explanations.
- Recognize and analyze alternative explanations and predictions.
- Communicate scientific procedures and explanations.

Science in Personal and Social Perspectives - Content Standard F: PERSONAL HEALTH

- Regular exercise is important to the maintenance and improvement of health.
- Food provides energy and nutrients for growth and development.
- Risk analysis considers the type of hazard and estimates the number of people that might be exposed and the number likely to suffer consequences. The results are used to determine the options for reducing or eliminating risks.
- Important personal and social decisions are made based on perceptions of benefits and risks.
- Societal challenges often inspire questions for scientific research, and social priorities often influence research priorities through the availability of funding for research.

History and Nature of Science - *Content Standard G*

- Science As A Human Endeavor: Science is very much a human endeavor, and the work of science relies on basic human qualities, such as reasoning, insight, energy, skill, and creativity—as well as on scientific habits of mind, such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas.
- Nature of Science: In areas where active research is being pursued and in which there is not a great deal of experimental or observational evidence and understanding, it is normal for scientists to differ with one another about the interpretation of the evidence or theory being considered.
- Nature of Science: It is part of scientific inquiry to evaluate the results of scientific investigations, experiments, observations, theoretical models, and the explanations proposed by other scientists. Evaluation includes reviewing the experimental procedures, examining the evidence, identifying faulty reasoning, pointing out statements that go beyond the evidence, and suggesting alternative explanations for the same observations. Although scientists may disagree about explanations of phenomena, about interpretations of data, or about the value of rival theories, they do agree that questioning, response to criticism, and open communication are integral to the process of science. As scientific knowledge evolves, major disagreements are eventually resolved through such interactions between scientists.

National Health Education Standards (NHES) Grades 6-8

1 - Students will comprehend concepts related to health promotion and disease prevention to enhance health.

- 8.1 Analyze the relationship between healthy behaviors and personal health.
- 1.8.6 Explain how appropriate health care can promote personal health.
- 1.8.7 Describe the benefits of and barriers to practicing healthy behaviors.
- 1.8.8 Examine the likelihood of injury or illness if engaging in unhealthy behaviors.
- 1.8.9 Examine the potential seriousness of injury or illness if engaging in unhealthy behaviors.

7 - Demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks.

- 7.8.1 Explain the importance of assuming responsibility for personal health behaviors.
- 7.8.2 Demonstrate healthy practices and behaviors that will maintain or improve the health of self and others.
- 7.8.3 Demonstrate behaviors to avoid or reduce health risks to self and others.

Standards for the English Language Arts

- Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.
- Students conduct research on issues and interests by generating ideas and questions, and by posing problems. They gather, evaluate, and synthesize data from a variety of sources (e.g., print and non-print texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience.
- Students participate as knowledgeable, reflective, creative, and critical members of a variety of literacy communities.
- Students use spoken, written, and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion, and the exchange of information).

<p style="text-align: center;">TASK CARD</p> <p>Facilitator: As you work with your team, make sure everyone in the group understands how to move forward with the work.</p> <p>Don't let anyone feel lost.</p>	<p style="text-align: center;">TASK CARD</p> <p>Team Manager: You will keep an eye out that everyone one your team is being productive. Please watch out for side talk.</p> <p>You need everyone pulling together.</p> <p>.</p>
<p style="text-align: center;">TASK CARD</p> <p>Resource Manager: You are responsible for getting whatever your team needs to complete the task. This may include information from the teacher. You will also guide the clean-up process for your team.</p> <p>You have a lot of responsibilities.</p>	<p style="text-align: center;">TASK CARD</p> <p>Reporter/Recorder: Your role is to make sure all team members are recording the mathematics you complete as a group.</p> <p>You will also be the one to report group progress when called upon</p>

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ANALYZING MAPS AND TABLES

Begin with Map 1: Heart Disease Rate, 2000-2006, **Adults ages 35+**, by county

1. Orient yourself and your group and carefully observe the map
 - a. What part of the country has the highest number of deaths from heart disease?
 - b. What part of the country has the lowest number of deaths from heart disease?
 - c. What's the difference between the number of deaths in Oregon and Mississippi?
2. Record three observations of data in Map 1. What do you notice?
 - a.
 - b.
 - c.
3. Reporter: Be prepared to share your observations with your team and the class

Begin with Map 2: Heart Disease Rate, 2000-2006, **Adults ages 65+**, by county

1. Orient yourself and your group and carefully observe the map
 - a. What part of the country has the highest number of death rate from heart disease?
 - b. What part of the country has the lowest number of death rate from heart disease?
 - c. What's the difference between the number of death rate in Idaho and Louisiana?
2. Record three observations of data in Map 2. What do you notice?
 - a.
 - b.
 - c.
4. Reporter: Be prepared to share your observations with your team and the class

Looking Percent of Obese in US Adults

1. 1990 Map
 - a. How many states had a percentage that was 10% or less?
 - b. How many states had a percentage above 10%?
2. 1995 Map
 - a. How many states had a percentage that was 10% or less?
 - b. How many states had a percentage above 10%?
 - c. How many states had a percentage above 15%?
3. 2000 Map
 - a. How many states had a percentage that was 10% or less?
 - b. How many states had a percentage above 10%?
 - c. How many states had a percentage above 15%?
 - d. How many states had a percentage above 20%?
4. 2005 Map
 - a. How many states had a percentage that was 10% or less?
 - b. How many states had a percentage above 10%?
 - c. How many states had a percentage above 15%?
 - d. How many states had a percentage above 20%?
 - e. How many states had a percentage above 25%?
 - f. How many states had a percentage above 30%?
5. 2010 Map
 - a. How many states had a percentage that was 10% or less?
 - b. How many states had a percentage above 10%?
 - c. How many states had a percentage above 15%?
 - d. How many states had a percentage above 20%?
 - e. How many states had a percentage above 25%?
 - f. How many states had a percentage above 30%?
6. Record three observations of data in Map 2. What do you notice?
 - a.
 - b.
 - c.
7. Reporter: Be prepared to share your observations with your team and the class

Now look at -

Table 1: States with the **Highest** Rates of Physical **Inactivity** in Adults

Table 2: States with the **Lowest** Rates of Physical **Inactivity** in Adults

1. Record three observations about these data

a.

b.

c.

Now look at -

Map 2A: Stroke Death Rates, 2000-2006, Adults Ages 35+, by county

Map 2B: County-level Estimates of Diagnosed Diabetes, 2007 Adults aged > 20 years, by county

2. Describe four population patterns visible in the maps

a.

b.

c.

d.

3. What is easier to see in the maps?

What questions do these maps raise? Write at least two questions.

a.

b.

c.

4. What is easier to see in the tables?

What questions do these tables raise? Write at least two questions.

a.

b.

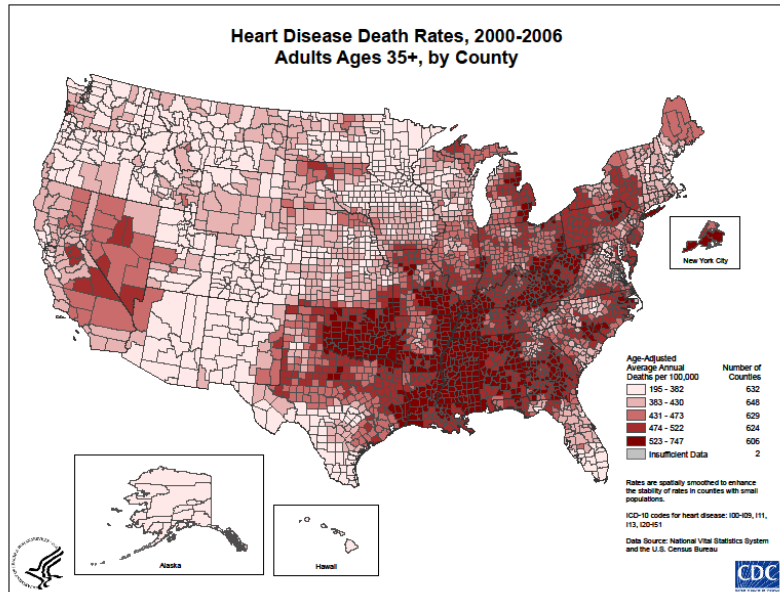
c.

COMPILING EVIDENCE

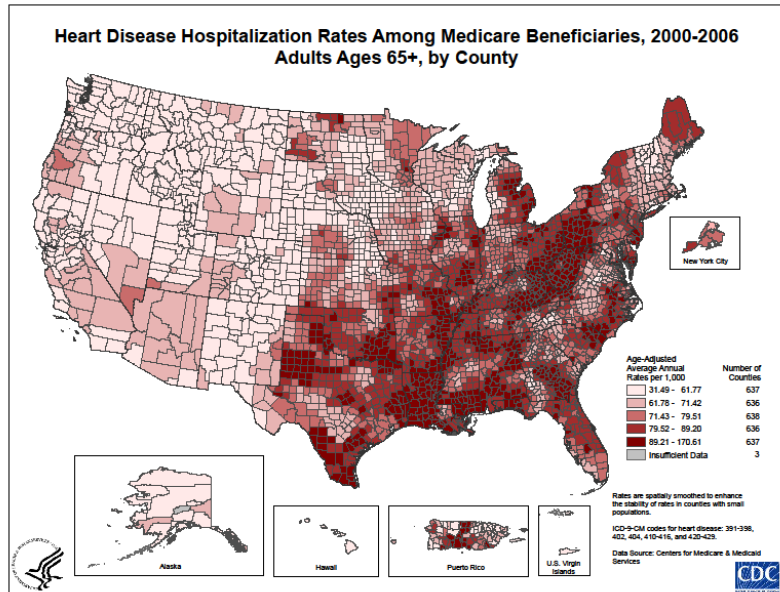
NEXT STEP: Compile your evidence and see whether it points you in the direction of a particular working thesis. Remember that a working thesis is meant to change as your body increases or changes directions

Working Thesis: _____

Observations of data / evidence	Commentary

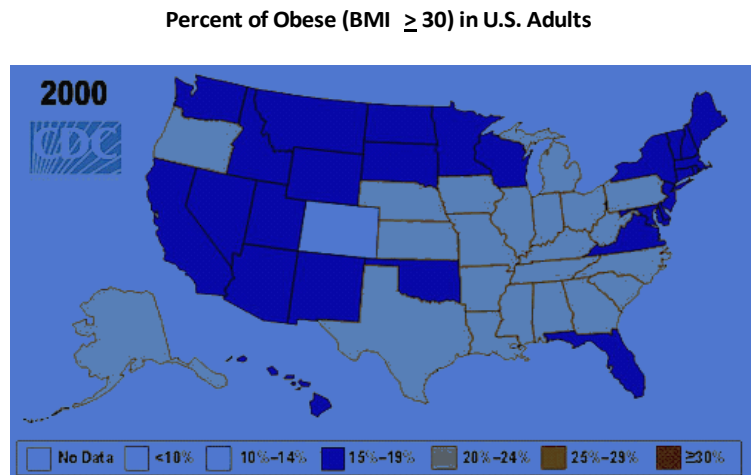
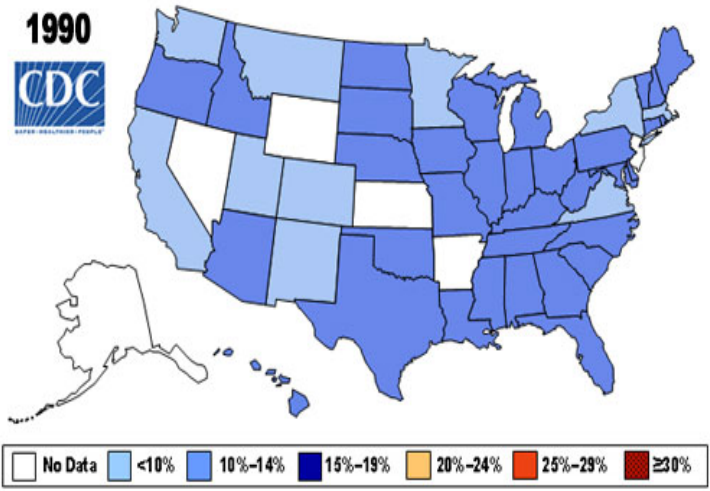


Map 1A

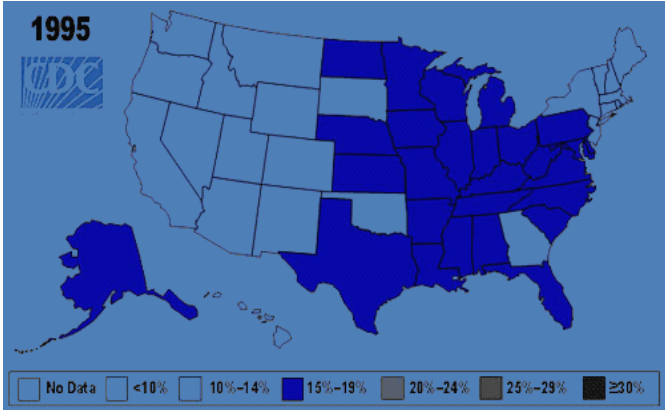


Map 1B

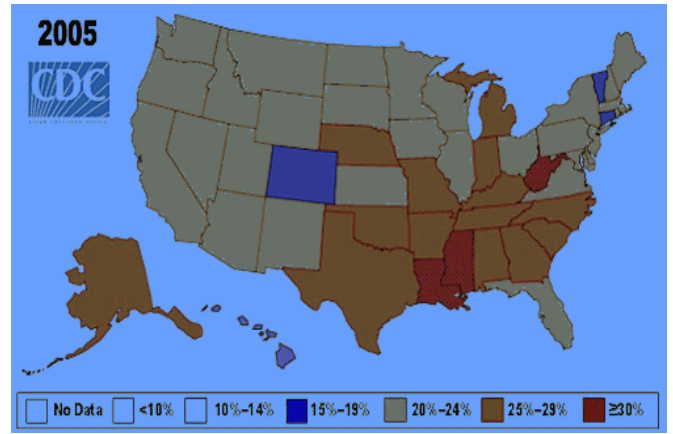
Percent of Obese (BMI ≥ 30) in U.S. Adult



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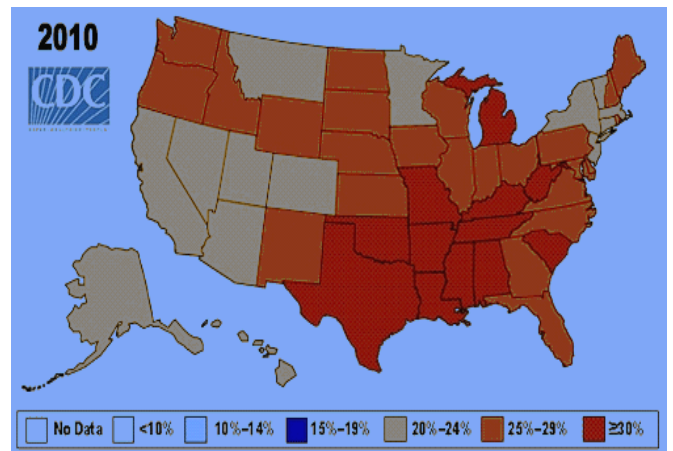
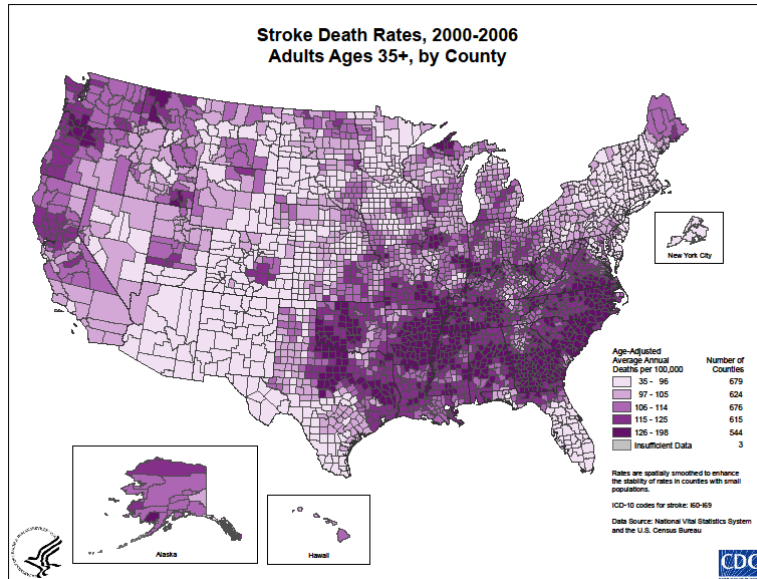


TABLE 1: States with the Highest Rates of Physical Inactivity in Adults

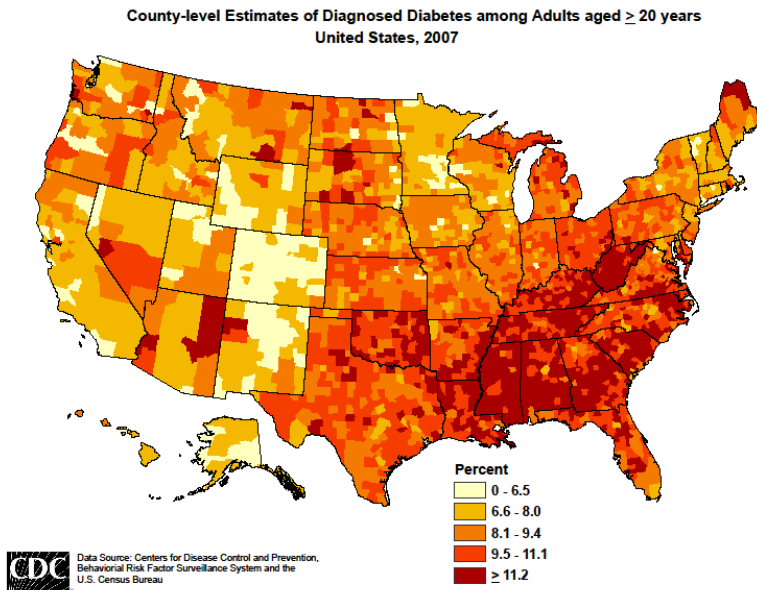
Ranking	State	Percentage of Adult Physical Inactivity Obesity Ranking (Based on 2007-2009 Combined Data, Including Confidence Intervals)	Obesity Ranking
1	Mississippi	32.2% (+/- 0.9)	1
2	Oklahoma	30.8% (+/- 0.8)	6
2	West Virginia	30.8% (+/- 1.0)	4
4	Tennessee	30.5% (+/- 1.2)	2 (tie)
5	Kentucky	30.1% (+/- 1.0)	7
5	Alabama	30.1% (+/- 1.0)	2 (tie)
7	Louisiana	29.5% (+/- 0.9)	5
8	Arkansas	29.3% (+/- 1.0)	8
9	Texas	28.0% (+/- 0.8)	13
10	Missouri	26.6% (+/- 1.0)	12

TABLE 2: States with the Lowest Rates of Physical Inactivity in Adults

Ranking	State	Percentage of Adult Physical Inactivity Obesity Ranking (Based on 2007-2009 Combined Data, Including Confidence Intervals)	Obesity Ranking
51	Minnesota	16.9% (+/- 0.9)	32
49	Colorado	18.0% (+/- 0.6)	51
49	Oregon	18.0% (+/- 0.8)	39
48	Washington	18.8% (+/- 0.7)	28
47	Utah	19.0% (+/- 0.8)	44
46	Hawaii	19.1% (+/- 0.8)	47
45	Vermont	19.3% (+/- 0.7)	46
43	Idaho	20.6% (+/- 0.9)	36
43	New Hampshire	20.6% (+/- 0.8)	35
42	D.C.	20.7% (+/- 1.0)	49



Map 2A



Map 2B