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BIOMED


*Crowdsourcing Innovations
in Biotechnology*

Chronic Diseases

Developed in partnership with:
Discovery Education and Ignited

In this Lesson Plan:

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This document is separated into two sections, For Teachers [T] and Student Resources [S], which can be printed independently.

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Follow the tips below in the Range field of your Print panel to print single pages or page ranges:

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Cover Image

The image shows a cell that has been divided by mitosis.

BIOMED / CROWDSOURCING INNOVATIONS IN BIOTECHNOLOGY

Chronic Diseases

DRIVING QUESTION

How do chronic diseases differ from infectious diseases?

OVERVIEW

Chronic diseases are usually defined as diseases that last over 12 months, which require long-term medical care. Most of the time, these diseases limit daily activities and require lifestyle changes. Chronic diseases, such as heart disease, diabetes, and cancer, remain the leading causes of disability and mortality in the United States. They are responsible for almost 75 percent of the nearly \$4 trillion in yearly healthcare expenditures. Each year, almost 1.4 million Americans die from heart disease, stroke, or cancer. Many chronic diseases are caused by high-risk human behaviors, such as exposure to tobacco products (direct use and secondhand exposure), excessive alcohol use, poor nutrition, and consistent lack of physical activity.

In this lesson, students will identify and describe various chronic diseases and assess the impact of chronic diseases on human populations. They will then recommend preventive measures to reduce risk factors of chronic diseases.

ACTIVITY DURATION

Three class sessions
(45 minutes each)

ESSENTIAL QUESTIONS

What are some of the most prevalent chronic diseases in society?

How does the advent of wearable technology affect the diagnosis and care of chronic disease?

How can some communicable (or infectious) diseases also be considered chronic?

How have risk behaviors for chronic diseases changed over the years?

What effect has technology had on altering risk behaviors associated with chronic diseases?

OBJECTIVES

Students will be able to:

Identify and describe various chronic diseases.

Assess the impact of chronic diseases on human populations.

Recommend preventive measures to reduce risk factors of chronic diseases.

Describe, produce, and film a video on cell biomarkers from chronic diseases.

BACKGROUND INFORMATION

The majority of most chronic diseases can be prevented, and their effects severely mitigated, by simply reducing or cutting out high-risk behaviors. Consumption of tobacco products has been proven to be a leading cause of preventable death in this country. This one activity leads to disease in over 16 million people. Excessive consumption of alcohol is responsible for the deaths of 10 percent of working-age adults in this country, at a cost of around \$250 billion to the economy in healthcare and lost wages. Poor diet is one of the causes of diabetes, which may lead to heart and kidney disease, as well as blindness. The costs in medical care and lost productivity are upwards of \$330 billion per year. Fortunately, increased education and health warnings have led to decreased numbers of cancers, heart disease, and lung disease among all ages. Just moderate physical activity has been proven to cut down on incidences of diabetes, cancer, obesity, and heart disease, saving almost \$120 billion in annual healthcare costs. There are many other chronic diseases such as arthritis, Alzheimer's disease, epilepsy, and various dental diseases that are not necessarily caused by risky and dangerous human behaviors, but still have a damaging effect on society in terms of mortality and healthcare costs. It is important to note that tobacco, alcohol, and other unhealthy products are heavily advertised and targeted to particular locations and demographics.

**Materials**

**Chronic Disease Poster
Presentation Rubric**

**Preventative Program Proposal
Grading Rubric**

PLACES Database Assignment

Slideshow Project Grading Rubric

**Communicable and
Noncommunicable Diseases
Venn Diagram**

Computers with Internet Access

Grading Rubric for Poster Project

Markers

Notecards

Poster Board

Writing Tools

Design Journal

Pedagogical Framing

Instructional materials are designed to meet national education and industry standards to focus on in-demand skills needed across the full product development life cycle—from molecule to medicine—which will also expose students and educators to the breadth of education and career pathways across biotechnology.

Through this collection, educators are equipped with strategies to engage students from diverse racial, ethnic, and cultural groups, providing them with quality, equitable, and liberating educational experiences that validate and affirm student identity.

Units are designed to be problem-based and focus on workforce skill development to empower students with the knowledge and tools to be the change in reducing health disparities in communities.



SOCIAL-EMOTIONAL LEARNING

Students produce a preventive program for a chronic disease that is of interest to them. This requires the use of empathy for those suffering with the disease, as well as social awareness of the perspective of the target audience. Students must also practice self-management skills, such as delaying gratification to pursue the goal and persevering in the face of any setbacks or frustrations while working on the program.

CULTURALLY AND LINGUISTICALLY RESPONSIVE INSTRUCTION

This lesson sheds light on the disparities of race, class, and the prevalence of chronic diseases in many historically marginalized communities. Teachers will note opportunities for affirming and validating the contributions of culturally and linguistically diverse people in relevant research and other scientific endeavors. Students create a preventive disease proposal that details how the preventive actions for their chosen disease relate to people of various ethnicities and socioeconomic backgrounds.

ADVANCING INCLUSIVE RESEARCH

Students analyze Geographic Information System (GIS) data to make connections to the geographical prevalence of chronic diseases. They will uncover disparities of race, class, and the prevalence of chronic diseases in many communities in this country. They will examine how including more representative patient populations can lead to achieving personalized healthcare.

COMPUTATIONAL THINKING PRACTICES

Collecting and analyzing data are core computational thinking strategies. In this lesson, students employ these strategies to understand and analyze chronic disease prevalence in the United States. Students also use the computational thinking strategy of abstraction to condense their research into a program proposal.

CONNECTION TO THE PRODUCT LIFE CYCLE

This lesson focuses on the **discovery** aspect of the product life cycle as students investigate biomarkers and the geographical prevalence of chronic diseases.

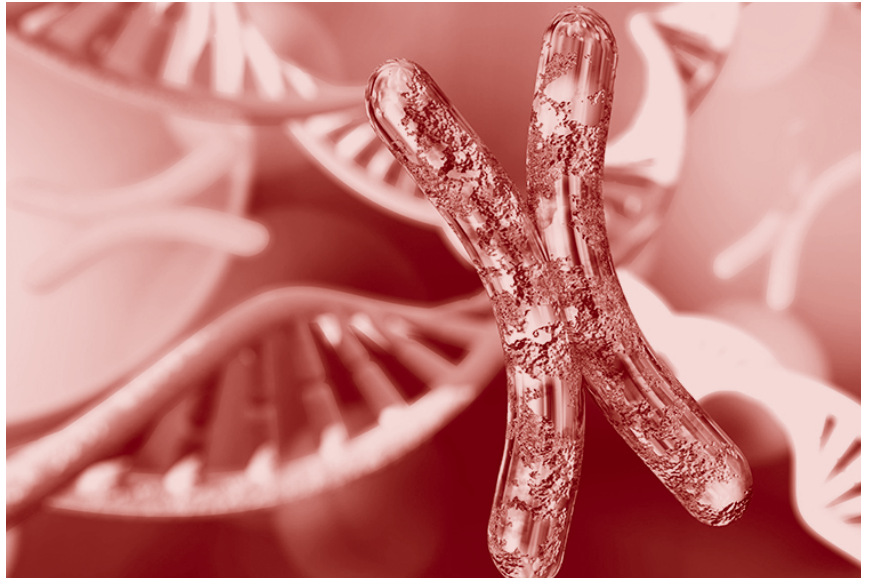
Have you ever wondered...

How can people live for many years with a chronic disease and not know it?

The emergence of digital software programs has helped to classify diseases and their causes. The software allows medical personnel and scientific researchers to track data to help aid in diagnosis and treatment.

How can chronic diseases stem from infectious agents?

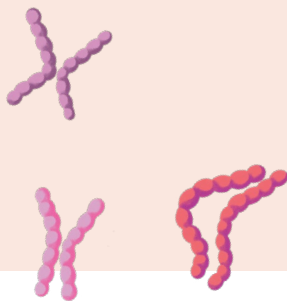
Noncommunicable chronic diseases can arise from infectious agents by causing ongoing tissue pathology or organ decompensation. For instance, *Borrelia burgdorferi* infections can result in chronic Lyme arthritis. Additionally, hepatitis B virus (HBV) infection results in a major portion of chronic liver disease (CLD).



MAKE CONNECTIONS!

How does this connect to the larger unit storyline?

Wearable technology has been developed to collect information via digital markers that act as indicators of the presence and/or severity of many chronic diseases. As a result, wearable technology can be crucial in helping diagnose, manage, and treat these diseases.



How does this connect to careers?

Chronic disease epidemiologists specialize in the study of diseases, infectious or not, that occur chronically in society, such as certain cancers, cardiovascular disease, diabetes, and HIV.

They often work with doctors, such as pathologists and cardiologists, as well as research scientists and public health professionals, to ascertain the root causes of these diseases, and their effects on public health.

How does this connect to our world?

The recent advent of newer and more effective scientific technological advancements has helped people with chronic diseases live longer, healthier lives.



Day 1

LEARNING OUTCOMES

Students will be able to:

Identify and describe what chronic disease is.

Compare chronic diseases to acute and infectious diseases.

Compose a presentation on chronic disease.

Carry out research on a specific chronic disease.

Design a poster as part of a social awareness campaign around a chronic disease.



COMPUTATIONAL THINKING IN ACTION

By researching their assigned disease, students are employing the computational thinking strategy of collecting data.

Procedure

Teacher Note > Inform students that at the end of this lesson, they will write, produce, and record their own film on the subject of chronic diseases. This will be an excellent opportunity to research and question the inequities of the pervasiveness and severity of chronic diseases in both communities of color and underserved, rural communities. This series of activities is a perfect opportunity to collaborate with your school librarian, if your campus has one.

Whole Group (10 minutes)

- 1 Introduce the class to chronic diseases by watching the CDC video [Chronic Disease](#).
- 2 Discuss the prevalence of chronic diseases by using a [Poll Everywhere](#) digital anonymous survey of the class on who may have or know someone with what they think is a chronic disease. The teacher will randomly choose student responses and facilitate a class discussion on them.

Teacher Note > Some students might feel uncomfortable with the discussion of chronic diseases if they know a family member who has one. The anonymous survey will help to make students feel more comfortable sharing.

Small Group (35 minutes)

- 1 In small groups, ask students to choose one of the following chronic diseases (no two groups should have the same disease)—Alzheimer's disease, Arthritis, Asthma, Cancer, Chronic Obstructive Pulmonary Disease (COPD), Cystic Fibrosis, Diabetes, Heart Disease, HIV/AIDS, Parkinson disease, or Stroke.
- 2 Using web sources, have groups conduct research on their specific disease. Make sure their research includes the following information: disease description and details, the pathogen that causes the disease if applicable, risk factors and causes, genetic or hereditary information if applicable, treatment(s), socio-cultural details, physical environment, complications, symptoms, morbidity, mortality, and possible preventive measures.

Teacher Note > This may be the perfect opportunity to arrange a trip to the school library or allow the school librarian to visit the classroom.

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Day 1

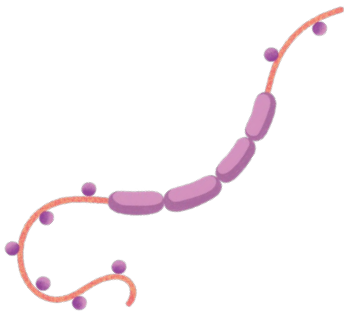
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Procedure

- 3 Ask student groups to design and create a poster that would be part of a social awareness campaign to inform community members about a chronic disease. Examples can be found on the [CDC website](#).

Teacher Note > Consider allowing students to create posters in various languages. Explain to students that much of the research conducted in these areas is being done by people of diverse cultural and language heritage. When students are allowed to validate and affirm their own languages and cultures, they are incentivized to build personal bridges to the learning and share it with their communities.

Optional Exit Ticket: Have students create a 3-2-1 about what they learned (three things learned, two things that are of interest or want to learn more about, one question).



Day 2

Procedure

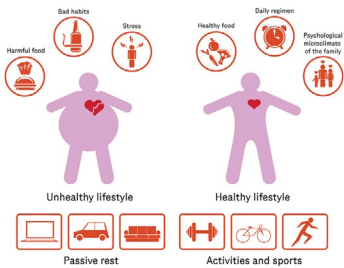
LEARNING OUTCOMES

Students will be able to:

Identify risk factors for chronic diseases.

Calculate risks for developing chronic diseases.

Develop a chronic disease prevention program.



COMPUTATIONAL THINKING IN ACTION

By creating a preventative program proposal, students are applying the computational thinking strategy of abstraction to the data they collected. This allows students to synthesize the information, leaving out specific details in favor of larger themes.

Small Group (25 minutes)

- 1 Using the same groups and diseases from the previous class, have groups trade posters with another group. This time they will create a preventative program proposal (in the form of a one-page document) for that chronic disease. Students should include the following in their proposals:
 - a. Description of the disease
 - b. Information about how the disease can be prevented
 - c. Indication of whether certain preventive measures are more effective than others
 - d. Explanation of why is prevention important
 - e. Mention of various ethnicities and socioeconomic backgrounds in prevention that are specific to the students' communities
 - f. Description of risk factors specific to the students' communities that lead to the prevalence of that chronic disease in that particular community
 - g. Suggestions about how to best reach those who are most affected or impacted
- 2 Ask student groups to upload their preventative program proposals to a shared platform, such as Google slides.

Whole Group (20 minutes)

- 1 Have students briefly present their preventative program proposals to the class. Students will use the strategy *Idea Share* to gather feedback for their peers, when they are not presenting. Students will record their "IDEA" statements in their **Design Journal** and share their thoughts with classmates, after presentations are complete.

I: write about something interesting
 D: write about something different
 E: write about something exciting
 A: write about something advanced

Day 3

LEARNING OUTCOMES

Students will be able to:

Analyze GIS information and connect that to the geographical prevalence of chronic diseases.

COMPUTATIONAL THINKING IN ACTION

Students are using the computational thinking strategy of analyzing data in order to examine health disparities by U.S. region.

CULTURALLY AND LINGUISTICALLY RESPONSIVE INSTRUCTION

Working in pairs to create a resource is generally more manageable for CLD students than having input from three or four other students when there is a lot of information to cover. Having student voice in the choice of locations to research allows CLD students to find locations that are of personal or community interest, thereby increasing personal engagement with the learning.

Procedure

Whole Group (10 minutes)

- 1 As a class, analyze and critique the group proposals from the previous class and vote on the top entries. Those entries will be sent to local community health departments as a community health project.

Teacher Note > More revision time may be needed for some students. Plan accordingly based on the work products received.

Small Group (35 minutes)

- 1 Group students in pairs. Using the CDC's *Places: Local Data for Better Health* site, have groups compare the health data in six different locations in the United States. Each person in the pair will be responsible for researching the health factors for three locations, using the instructions as provided below. Then each pair will work together to compile their information to make a PowerPoint presentation.
- 2 Using their computers, ask students to log on to *PLACES: Local Data for Better Health*.

Access the Interactive Map

Across the United States, from small towns to big cities, explore model-based estimates at all of these levels:

- County
- Place
- Census Tract
- ZIP Code Tabulation Area (ZCTA)

>> View the map

*The map application is not accessible for all users. Please visit the [PLACES Data Portal](#) to view, search, filter, and download data.

**The map application will not display in Internet Explorer. [Open map in new window](#)

Evans, NE

PPS	\$176,000
NIMBLEAD	Evans village
State Income	Nebraska
Total population 2010	891

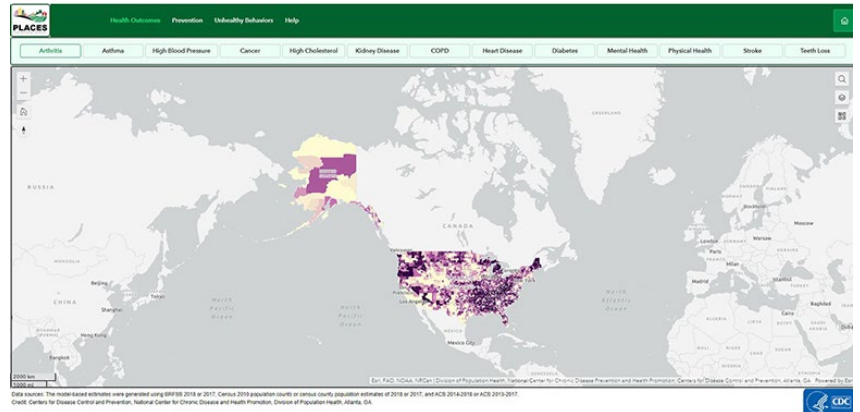
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Day 3

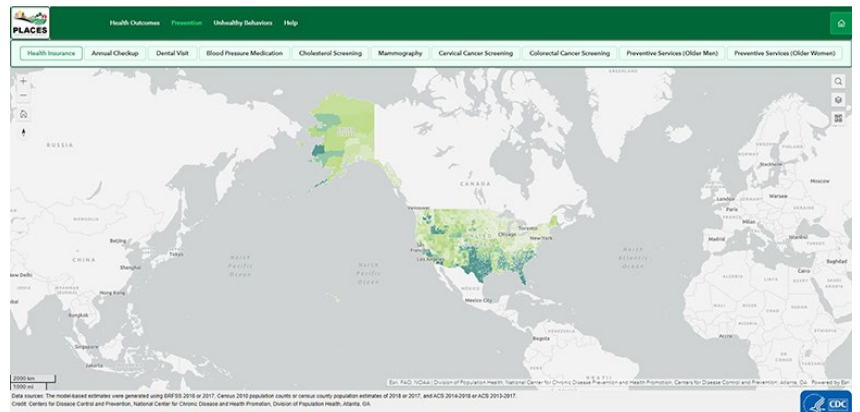
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Procedure

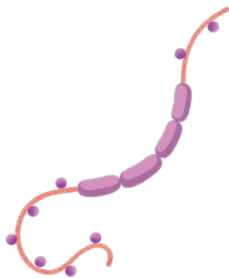
- After pressing the “View the Map” button, have students analyze the maps for: Arthritis, Asthma, High Blood Pressure, Cancer, High Cholesterol, Kidney Disease, COPD, Heart Disease, Diabetes, Mental Health, Physical Health, Stroke, and Teeth Loss.



Have groups view the “Prevention” screen, analyzing maps for: Health Insurance, Annual Checkup, Dental Visit, Blood Pressure Medication, Cholesterol Screening, Mammography, Cervical Cancer Screening, Colorectal Cancer Screening, Preventative Services (Older Men), and Preventative Services (Older Women).



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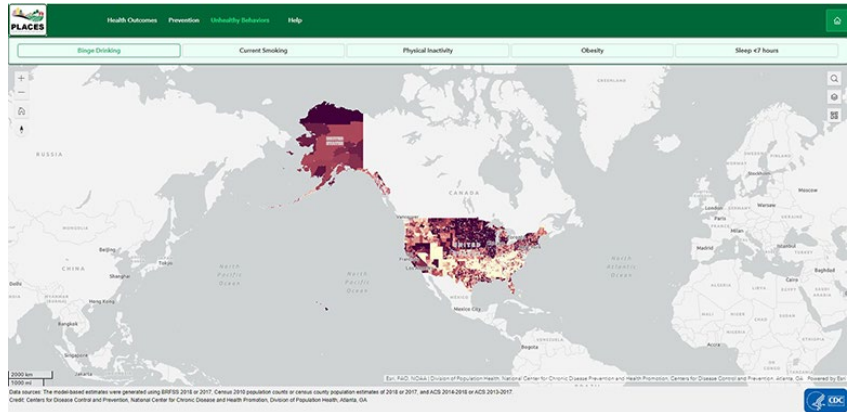


Day 3

Continued

Procedure

- 4 Have groups view the “Unhealthy Behaviors” screen, viewing maps for: Binge Drinking, Current Smoking, Physical Inactivity, Obesity, and Sleeping Less Than Seven Hours per Night.



- 5 Student pairs will use the data available from these maps to make a slideshow presentation comparing six different areas in the United States for chronic disease prevalence, prevention, and risk behaviors.
 - 6 In their slideshows, have students explain the existence of any geographic disparities they saw in the CDC interactive site. They should explain why unhealthy behaviors are not the same across the country. Lastly, they should tie their previous day's research on the role of a chronic disease epidemiologist into how they would use this information to better inform themselves and the communities in which they operate.
 - 7 Student slideshows are submitted to the teacher. Groups will present their research to the class only if time permits and at teacher discretion.
 - 8 Invite students to use their **Design Journal** to capture how content learned in this lesson connects to the overarching problem they are investigating. Students should summarize that biomarker tests are essential for the diagnosis and treatment of a range of chronic diseases.
- Optional: A Venn Diagram comparing *Communicable and Noncommunicable Diseases* is provided as a summary and will be helpful for review and as part of student journals.

Teacher Note > A lab will follow this lesson on measuring blood glucose concentration. Make sure students can take what they learned in this lesson about diabetes, and apply it to the upcoming lab in figuring out how blood glucose concentration can be used to monitor diabetes.

National Standards

Next Generation Science Standards

ETS1.B: Developing Possible Solutions

When evaluating solutions, it is important to take into account a range of constraints, including cost, safety, reliability, and aesthetics, and to consider social, cultural, and environmental impacts.

Both physical models and computers can be used in various ways to aid in the engineering design process. Computers are useful for a variety of purposes, such as running simulations to test different ways of solving a problem or to see which one is most efficient or economical; and in making a persuasive presentation to a client about how a given design will meet his or her needs.

Science and Engineering Practices

Obtaining, Evaluating, and Communicating Information

Critically read scientific literature adapted for classroom use to determine the central ideas or conclusions and/or to obtain scientific and/or technical information to summarize complex evidence, concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

Crosscutting Concepts

Cause and Effect

Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects.

Career and Technical Education (CTE)

A5.1

Use the Internet and World Wide Web to collect and share scientific information.

A5.2

Use a variety of methods, including literature searches in libraries, computer databases, and online for gathering background information, making observations, and collecting and organizing data.

4.1

Use electronic reference materials to gather information and produce products and services.

4.3

Use information and communication technologies to synthesize, summarize, compare, and contrast information from multiple sources.

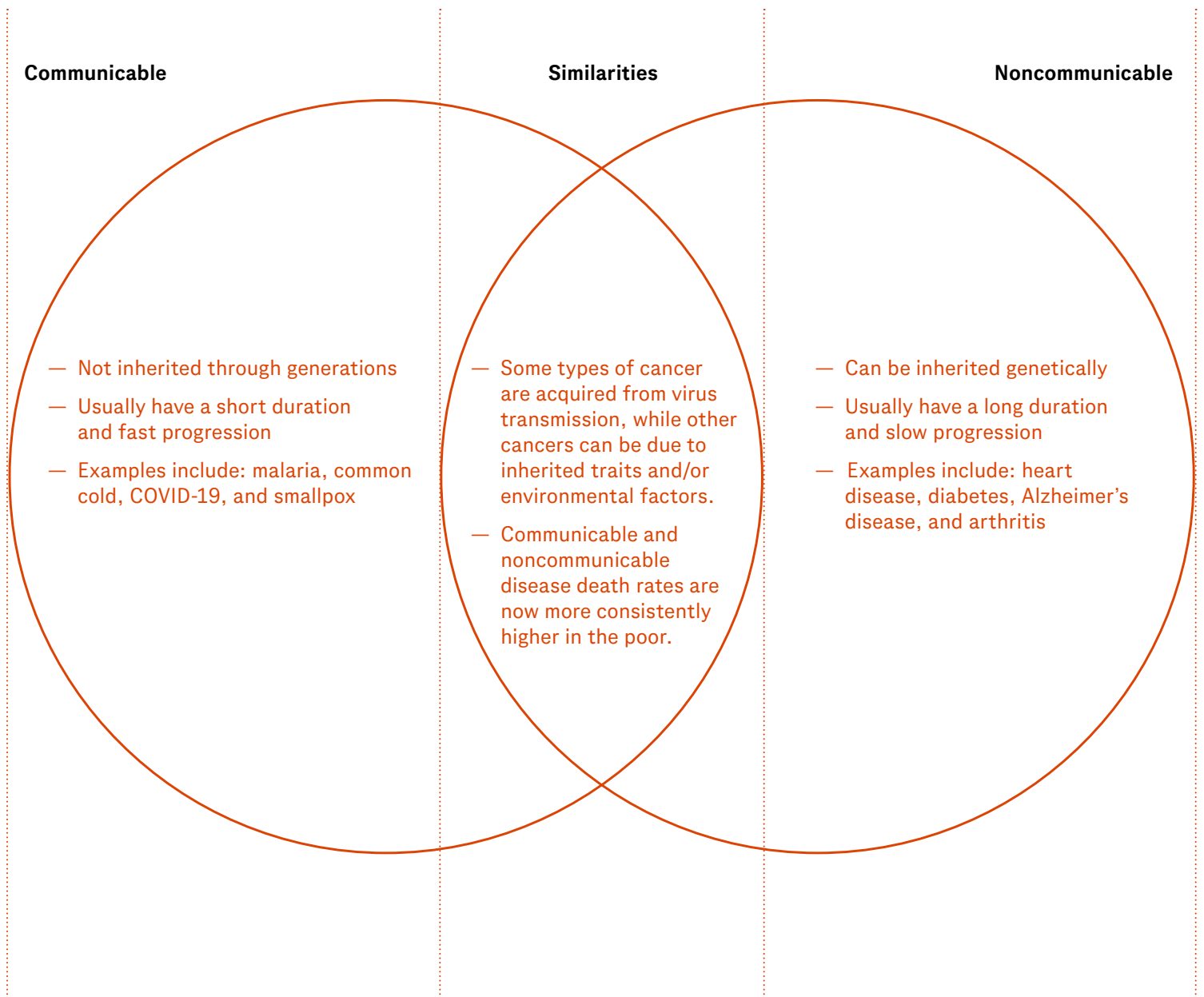
Communicable and Noncommunicable Diseases Venn Diagram

ANSWER KEY

Do not share with students

Directions

Compare and contrast communicable diseases and noncommunicable diseases using the Venn diagram below. Include at least three differences and two similarities between the two.



Calculating Risk Activity**ANSWER KEY****Do not share with students****Directions**

Compute the odds of disease for two groups. Consider the risk of developing ovarian cancer for women related to the age at which they had their first child.

Age at which women gave birth to their first child	Cervical cancer	No Cervical cancer	Total
30 or older	62	1,789	1,851
Younger than 30	86	5,142	5,228
Total	148	6,931	7,079

1. Compute the odds of cervical cancer in women having their first child at 30 or older.

$62/1,851 = 3.3$ percent chance of having cervical cancer from this group.

2. Compute the odds of cervical cancer in women having their first child before the age of 30.

$86/5,228 = 1.6$ percent chance of having cervical cancer from this group.

3. Compute the overall odds ratio. What inferences can you make from this data?

$148/7,079 = 2.0$ percent overall chance of cervical cancer from this total population. The data infer that having children above the age of 30 is inherently riskier than having your first child under the age of 30.

Calculating Risk Activity**ANSWER KEY****Do not share with students****Directions**

Compute the odds of disease for two groups. Consider the incidence of heart disease in a high-poverty, low socioeconomic populated community compared to the incidence of heart disease in a no-poverty, high socioeconomic populated community?

Community Population	Number of community members with heart disease	Number of community members without heart disease	Total
High-poverty, low socioeconomic status	12,983	50,375	63,358
Low-poverty, high socioeconomic status	6,112	31,279	37,391
Total	19,095	81,654	100,749

1. Compute the odds of a resident of a high-poverty, low socioeconomic community being diagnosed with heart disease.

$12,983/63,358 = 20$ percent of the high-poverty, low socioeconomic population in this community has been diagnosed with heart disease.

2. Compute the odds of a resident of a low-poverty, high socioeconomic community being diagnosed with heart disease.

$6,112/37,391 = 16$ percent of the low-poverty, high socioeconomic population in this community has been diagnosed with heart disease.

3. Compute the overall odds ratio. What inferences can you make from this data concerning unequal access to quality healthcare, eating healthy foods, and other high-risk factors that may influence this data?

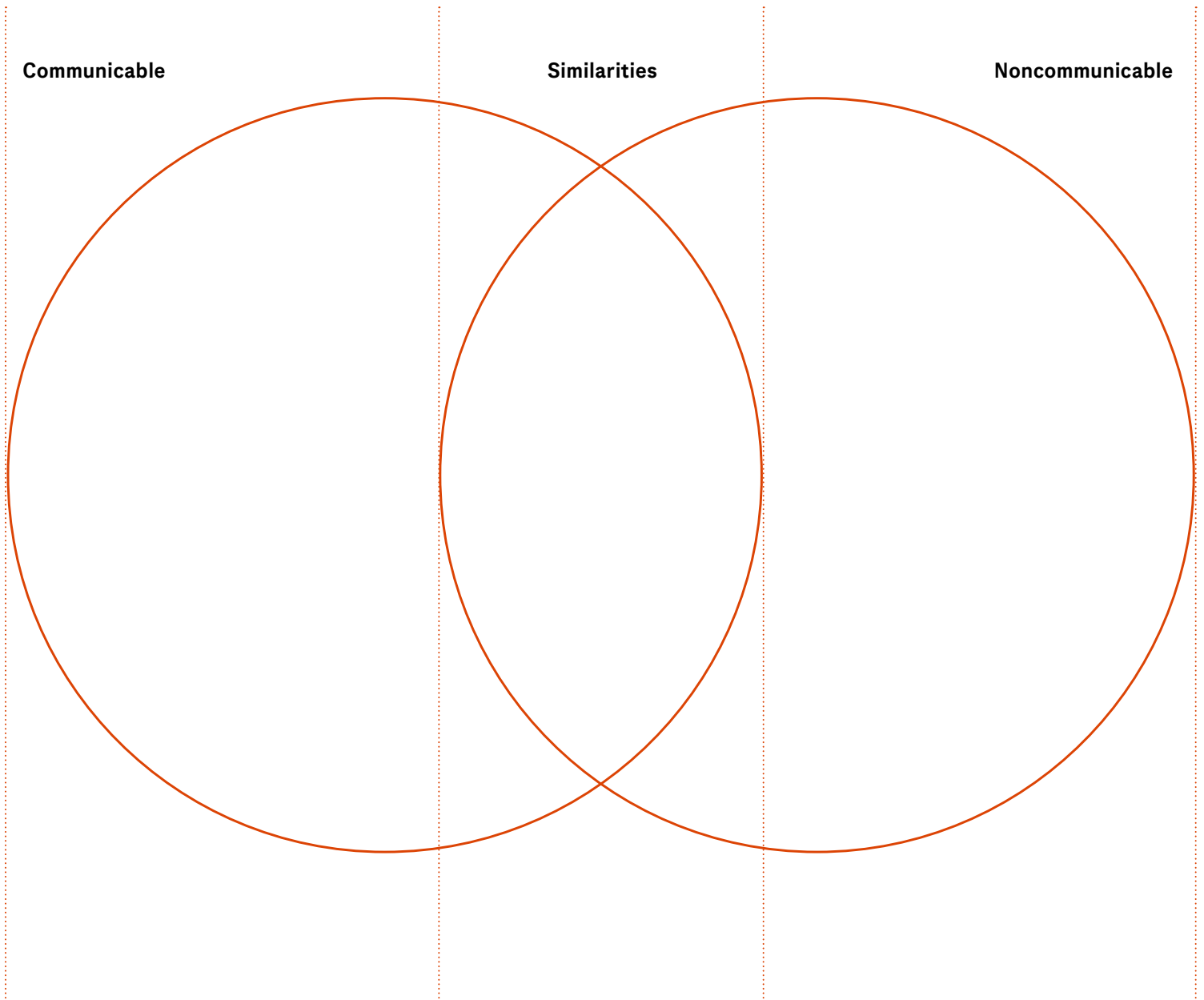
$19,095/100,749 = 19$ percent of the total population in this community has been diagnosed with heart disease. Looking at the percentages in the first and second questions, I can infer that the population that is low-poverty and high socioeconomic in this community may have better access to healthier foods, better healthcare, and may have a greater chance to have a normal exercise regimen.

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Communicable and Noncommunicable Diseases Venn Diagram

Directions

Compare and contrast communicable diseases and noncommunicable diseases using the Venn diagram below. Include at least three differences and two similarities between the two.



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Chronic Disease Poster Presentation Rubric

Group Name _____

Specific Disease _____

Score	4	3	2	1
Required Elements	The poster includes all required elements as well as additional information.	All required elements are included on the poster.	All but one of the required elements are included on the poster.	Several required elements are missing.
Content	Ideas are interesting and thought-provoking. Ideas demonstrate the depth of knowledge.	Ideas are interesting. Some ideas are thought-provoking.	Ideas do not demonstrate a depth of knowledge. Ideas are not particularly interesting or thought-provoking.	Ideas are illogical or unclear.
Graphics	All graphics are related to the topic and make it easier to understand. All borrowed graphics have a source citation.	All graphics are related to the topic and most make it easier to understand. Some borrowed graphics have a source citation.	All graphics relate to the topic. One or two borrowed graphics have a source citation.	Graphics do not relate to the topic OR several borrowed graphics do not have a source citation.
Originality	Content is original and in the students' own words.	Most content is original. All content is in the students' own words.	Some content is original. All content is in the students' own words.	Content is not in the students' own words.
Grammar	There are no grammatical or mechanical mistakes on the poster.	There are one to two grammatical or mechanical mistakes on the poster.	There are three to four grammatical or mechanical mistakes on the poster.	There are more than four grammatical or mechanical mistakes on the poster.
Final Score				

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Calculating Risk Activity

Directions

Compute the odds of disease for two groups. Consider the risk of developing ovarian cancer for women related to the age at which they had their first child.

Age at which women gave birth to their first child	Cervical cancer	No Cervical cancer	Total
30 or older	62	1,789	1,851
Younger than 30	86	5,142	5,228
Total	148	6,931	7,079

1. Compute the odds of cervical cancer in women having their first child at 30 or older.

2. Compute the odds of cervical cancer in women having their first child before the age of 30.

3. Compute the overall odds ratio.
What inferences can you make from this data?

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Calculating Risk Activity

Directions

Compute the odds of disease for two groups. Consider the incidence of heart disease in a high-poverty, low socioeconomic populated community compared to the incidence of heart disease in a no-poverty, high socioeconomic populated community?

Community Population	Number of community members with heart disease	Number of community members without heart disease	Total
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Total	19,095	81,654	100,749

1. Compute the odds of a resident of a high-poverty, low socioeconomic community being diagnosed with heart disease.

2. Compute the odds of a resident of a low-poverty, high socioeconomic community being diagnosed with heart disease.

3. Compute the overall odds ratio. What inferences can you make from this data concerning unequal access to quality healthcare, eating healthy foods, and other high-risk factors that may influence this data?

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Preventative Program Proposal Grading Rubric

Group Name _____

Score	4	3	2	1
Components	Content is accurate and all required information is presented in a logical order.	Content is accurate and presented in a logical order but some required information is missing.	Content is questionable. Information is not presented in a logical order, making it difficult to follow.	Content is inaccurate. Information is not presented in a logical order, making it difficult to follow.
Style	Proposal is informative, concise, and the proper one-page length requirement.	Proposal is fairly informative, fairly concise, and the proper one-page length requirement.	Proposal is somewhat informative, somewhat concise, and slightly shorter or longer than the one-page length requirement.	Proposal is not informative or concise and does not meet the one-page length requirement.
Mechanics	Proposal has no spelling or grammatical errors. Text is in the authors' own words.	Proposal has few spelling or grammatical errors. Text is in the authors' own words.	Proposal has some spelling and grammatical errors. Text is in the authors' own words.	Proposal has many spelling and grammatical errors. Text is copied.
Final Score				

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Slideshow Project Grading Rubric

Group Name _____

Score	4	3	2	1
Content	Content is accurate and all required information is presented in a logical order.	Content is accurate and presented in a logical order but some required information is missing.	Content is questionable and information is not presented in a logical order, making it somewhat difficult to follow.	Content is inaccurate and information is not presented in a logical order, making it difficult to follow.
Slide Creation	Presentation flows logically and reflects the extensive use of tools in a creative way.	Presentation flows well, uses tools correctly, and is interesting.	Presentation flows well and uses few tools to show acceptable understanding.	Presentation is unorganized and tools are not used in a relevant manner.
Slide Transitions	Transitions are smooth and enhance the presentation.	Smooth transitions are used on most slides.	Very few transitions are used and/or they distract from the presentation.	No transitions are used.
Visuals	Images are appropriate and layout is pleasing to the eye.	Images are appropriate but layout is somewhat cluttered.	Images do not complement the content of the presentation.	No images.
Mechanics	Slideshow has no spelling or grammatical errors. Text is in authors' own words.	Slideshow has few spelling and grammatical errors. Text is in authors' own words.	Slideshow includes some spelling and grammatical errors. Most of the text is in authors' own words.	Slideshow contains multiple spelling and grammatical errors. Text is copied.
Presentation Skills	Presentation is well-rehearsed with no pronunciation errors or other mistakes.	Presentation is sufficiently rehearsed with few pronunciation errors or other mistakes.	Presentation is somewhat rehearsed with some pronunciation errors or other mistakes.	Presentation is minimally rehearsed with numerous pronunciation errors or other mistakes.
Final Score				

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PLACES Database Assignment

Directions

Compare the health data in six different locations in the United States.

1. Log on to [PLACES: Local Data for Better Health](#).

Access the Interactive Map

Across the United States, from small towns to big cities, explore model-based estimates at all of these levels:

- County
- Place
- Census Tract
- ZIP Code Tabulation Area (ZCTA)

» View the map

*The map application is not accessible for all users. Please visit the [PLACES Data Portal](#) to view, search, filter, and download data.

**The map application will not display in Internet Explorer.

[Open map in new window](#)

2. Press the “View the Map” button.

- Census Tract
- ZIP Code Tabulation Area (ZCTA)

» View the map

*The map application is not accessible for all users. Please visit the [PLACES Data Portal](#) to view, search, filter, and download data.

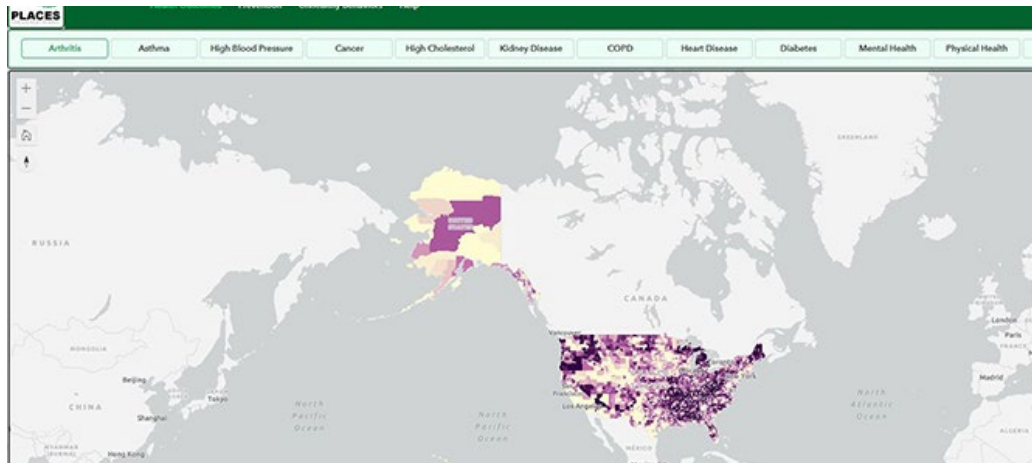
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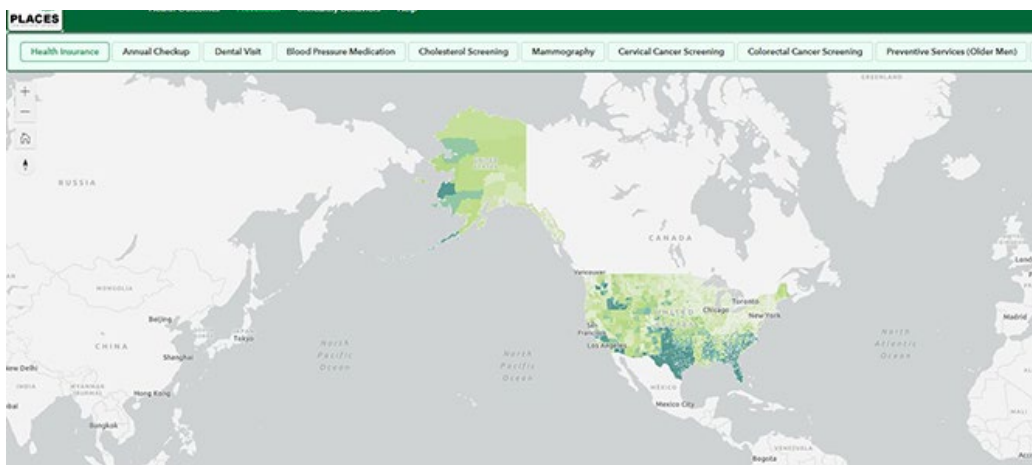
PLACES Database Assignment

Continued

- Click on *Health Outcomes* to analyze the maps for:
Arthritis, Asthma, High Blood Pressure, Cancer,
High Cholesterol, Kidney Disease, COPD, Heart Disease,
Diabetes, Mental Health, Physical Health, Stroke, and
Teeth Loss.



- Click on *Prevention* to analyze the maps for:
Health Insurance, Annual Checkup, Dental Visit, Blood
Pressure Medication, Cholesterol Screening, Mammography,
Cervical Cancer Screening, Colorectal Cancer Screening,
Preventative Services (Older Men), and Preventative
Services (Older Women).



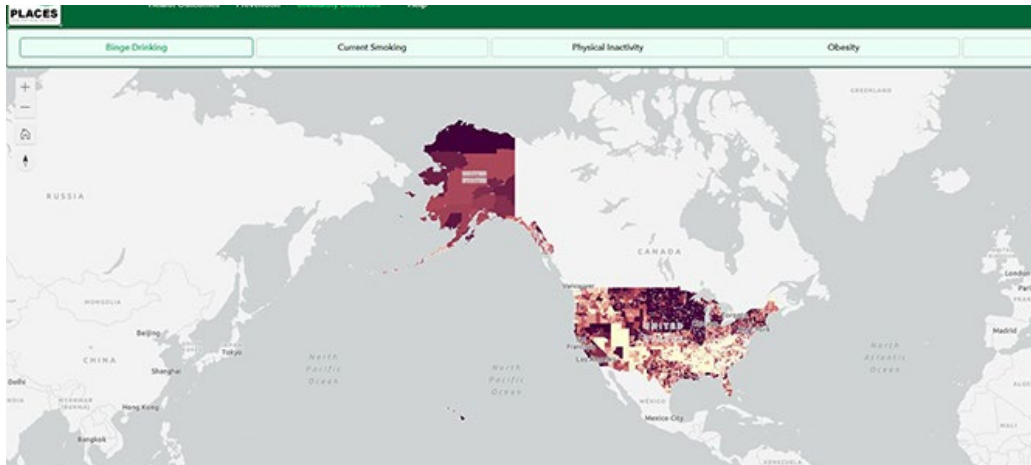
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PLACES Database Assignment

Continued

- Click on *Unhealthy Behaviors* to analyze the maps for: Binge Drinking, Current Smoking, Physical Inactivity, Obesity, and Sleeping Less Than Seven Hours per Night.



- Use the data available from these maps to make a slideshow presentation comparing six different areas in the United States for chronic disease prevalence, prevention, and risk behaviors.
- Each slideshow should explain the existence of any geographic disparities they saw in the CDC interactive site. It should also explain why unhealthy behaviors are not the same across the country. Lastly, each presentation should tie the research conducted on the role of chronic disease epidemiologists into how they would use this information to better inform themselves and the communities in which they operate.

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References

National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). [About Chronic Diseases](#). 2021.

National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). [Health and Economic Costs of Chronic Disease](#). 2021.

National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). [Tobacco Use](#). 2020.

National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). [Why Should People be Active?](#) 2020.