



# Four Corners Hantavirus: Mapping Geography and Health

Students practice reading skills while learning about Hantavirus.

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<b>Grade Level</b>	6-8
<b>Duration</b>	1-2 class periods

## National Geography Standards

### ELEMENT FIVE; ENVIRONMENT AND SOCIETY

15. How physical systems affect human systems.

### ELEMENT SIX: THE USES OF GEOGRAPHY

18. How to apply geography to interpret the present and plan for the future.

## Arizona Geography Strand

### Grade 6

#### Strand 4 Geography Concept 1 The World in Spatial Terms

PO 2 Identify purposes of, and differences among, maps, globes, aerial photographs, charts, and satellite images.

PO 3 Interpret maps, charts, and geographic databases using geographic information  
PO 5 Interpret thematic maps, graphs, charts, and databases depicting various aspects of world regions.

#### Concept 5 Environment and Society

PO 3 Explain how changes in the natural environment (e.g., flooding of the Nile) can increase or diminish its capacity to support human activities.

PO 4 Identify the way humans respond to/ prepare for natural hazards (i.e., lightning, flash floods, dust storms, tornadoes, hurricanes, floods, and earthquakes) in order to remain safe.

#### Concept 6 Geographic Applications

PO 2 Use geographic knowledge and skills (e.g., recognizing patterns, mapping, graphing) when discussing current events).

### Grade 7

#### Strand 4 Geography

## Other Arizona Standards

### Grade 6, 7, and 8

#### Strand 1 American History Concept 1 Research Skills for History

PO 2 Interpret historical data displayed in graphs, tables, and charts.

PO 4 Formulate questions that can be answered by historical study and research.

#### Concept 10: Contemporary United States

PO 1. Describe current events using information from class discussions and various resources (e.g., newspapers, magazines, television, Internet, books, maps).

PO 2. Identify the connection between current and historical events and issues studied at this grade level using information from class discussions and various resources (e.g., newspapers, magazines, television, Internet, books, maps).

PO 3. Describe how key political, social, and economic events of the late 20th century and early 21st century affected, and continue to affect, the United States.

### Grade 6

#### Strand 2 World History

#### Concept 1 Research Skills for History

PO 2 Interpret historical data displayed in graphs, tables, and charts.

PO 4 Formulate questions that can be answered by historical study and research.

#### Concept 3 World in Transition

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### **Concept 1 The World in Spatial Terms**

PO 2 Identify purposes and differences of maps, globes, aerial photographs, charts, and satellite images.

PO 3 Interpret maps, charts, and geographic databases using geographic information

PO 5 Interpret thematic maps, graphs, charts, and databases depicting various aspects of the United States and world regions.

### **Concept 5 Environment and Society**

PO 2 Describe the consequences of natural hazards (e.g., Dust Bowl hurricanes, droughts, earthquakes).

### **Concept 6 Geographic Applications**

PO 3 Use geographic knowledge and skills (e.g., recognizing patterns, mapping, graphing) when discussing current events).

### **Grade 8**

#### **Strand 4 Geography**

### **Concept 1 The World in Spatial Terms**

PO 3 Interpret maps, charts, and geographic databases using geographic information.

### **Concept 5 Environment and Society**

PO 3 Explain how changes in the natural environment can increase or diminish its capacity to support human activities (e.g., global warming, pollution, mining, natural disasters, water table).

PO 6 Explain how societies and governments plan for and respond to natural disasters (e.g., evacuation routes, changing farming techniques, warning systems).

### **Concept 6 Geographic Applications**

PO 3 Use geographic knowledge and skills (e.g., recognizing patterns, mapping, graphing) when discussing current events).

PO 5 Describe the transition from feudalism to nationalism at the end of the Middle Ages

### **ELA Common Core Standards Reading Standards for 6-8 for Literacy in History/Social Studies**

#### **Key Ideas and Details**

**6-8.RH.1** Cite specific textual evidence to support analysis of primary and secondary sources.

#### **Craft and Structure**

**6-8.RH.4** Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.

**6-8.RH.6** Identify aspects of a text that reveal an author's point of view or purpose (e.g., loaded language, inclusion or avoidance of particular facts).

#### **Integration of Knowledge and Ideas**

**6-8.RH.7** Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.

## Overview

Geography helps doctors learn about many diseases. A number of factors influence how

researchers connect geography to a disease, such as areas of historical occurrence, time of year, vector habitat availability, and incidence of human exposure. A current example is Hantavirus. Incidences of the Hantavirus are infrequent, but

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an outbreak took place in 1993. Mapping was a first step in understanding the Hantavirus disease.

### Purpose

In this lesson, students will learn about Hantavirus: how to prevent it and why this disease is prevalent in the Four Corners region of the southwestern United States.

### Materials

- One copy of Hantavirus Student Guide per student
- One copy of Hantavirus Worksheet per student
- Hantavirus Worksheet key

### Objectives

The student will be able to:

- demonstrate the ability to determine the main ideas, critical and supporting details, author's purpose, and identify the effect of a suffix on root words on a reading selection.
- explain how natural systems in the Four Corners region were important in the transmission of Hantavirus to people.
- distinguish advantages and disadvantages of choropleth and dot maps in analyzing a spatial distribution.

### Procedures

1. Introduce students to the concept of a vector (such as a mosquito for malaria, or rodent for Hantavirus).
2. Explain that an outbreak of disease took place in the Four Corners in the spring and summer of 1993.
3. Have the students read the Hantavirus Student Guide.
4. Discuss the Student Guide after they have read it. Reassure students who live in a large metropolitan area like Phoenix or Tucson, that incidences are very low. Also explain that the

author feels that early detection of symptoms is important.

5. Have students fill out the Hantavirus Worksheet.

### Assessment

Students complete the worksheet and compare their answers to the key. Grade the short answers on the basis of content. Eighty percent or higher will be considered mastery.

### Extensions

Have students find articles on the Internet, in newspapers, or in magazines on Hantavirus cases and do further research.

Have the students view a free PowerPoint slide show on Hantavirus located at:

[http://www.cdc.gov/ncidod/diseases/hanta/hps/noframes/hpsslideset/index.htm#slide show](http://www.cdc.gov/ncidod/diseases/hanta/hps/noframes/hpsslideset/index.htm#slide%20show)

Students could explore the geography of medicine in the United States by visiting <http://www.dartmouthatlas.org/> The Dartmouth Atlas project brings together researchers in diverse disciplines - on the accurate description of how medical resources are distributed and used in the United States.

### Sources

<http://www.cdc.gov/health/diseases.htm>  
<http://www.cdc.gov/ncidod/diseases/hanta/hantvirus.htm>  
<http://www.cdc.gov/ncidod/diseases/hanta/hps/noframes/hpsslideset/index.htm>  
<http://geo.arc.nasa.gov/sge/health/sensor/diseases/hanta.html>  
[http://www.amnh.org/exhibitions/epidemic/section\\_02/sectwo\\_pg\\_03.html](http://www.amnh.org/exhibitions/epidemic/section_02/sectwo_pg_03.html)  
<http://www.ihs.gov/medicalprograms/envhealth/hantavir.htm>