

Module 3, Lesson 1

Early settlement patterns of the United States

Lesson overview

Students will explore the distribution of human settlements in the United States. They will start on the Atlantic Coast and follow the movement of people westward to the Pacific Coast. As they follow the westward migration, students will use GIS to examine patterns in the distribution of settlements and will use different data layers to compare the locations of settlements to rivers, landforms, elevation, rainfall, and vegetation. Students will also examine some of the incentives for people to move west and some of the barriers they encountered.

Estimated time

Approximately 60 minutes

Materials

The student activity can be found at <http://esri.com/geoinquiries>.

Student activity: TS_M3L1_StudentDirections.pdf

Objectives

After completing the lesson, a student is able to do the following:

- Recognize and describe spatial patterns in the distribution of human settlements across the United States
- Identify areas of the United States that have a common spatial pattern
- Give possible reasons to explain settlement patterns
- Compare settlement patterns to other patterns on the land, such as landforms and land cover (vegetation)

GIS Tools and Functions

- Open a map file
- Zoom to desired section of the map
- Identify a feature on a map
- Use the Filter to select data based on certain criteria
- Zoom out to see more of the map (less detail)
- Add a layer to the map
- Pan the map in any direction

Functions

- Turn layers on and off
- Change map style (legend)

- Filter attribute data
- Label features
- Sort attributes

National Geography Standards

Standard	K-4	5-8
11 The patterns and networks of economic interdependence on Earth's surface	The factors that influence the location and spatial distribution of economic activities	How changes in technology, transportation, and communication affect the location of economic activities
12 The process, patterns, and functions of human settlement	The factors that affect where people settle	Human events that led to the development of cities
15 How physical systems affect human systems	The ways in which the physical environment provides opportunities for people	How the characteristics of different physical environments provide opportunities for or place constraints on human activities
17 How to apply geography to interpret the past	That geographic contexts influence people and events over time	How people's differing perceptions of places, peoples, and resources have affected events and conditions in the past

Teaching the lesson

Introducing the lesson

Begin this lesson by reviewing or discussing the following concepts.

- The distribution of features over space forms spatial patterns
- The three types of spatial patterns: regular (evenly spaced), clustered (clumped close together), and random (irregularly space or scattered)
- The progression of European settlement in America from east to west
- How natural features (landforms, rivers) influenced settlement patterns
- The importance of economic opportunities in advancing settlement and westward migration
- The first European settlements in America, such as Jamestown, Plymouth, and Boston
- The role of waterways such as the Chesapeake Bay, **Hudson River, and Ohio River** in settlement and trade

- The Appalachian Mountains as a barrier to settlement
- The Mississippi River system

Student activity

We recommend that you complete this lesson yourself before completing it with students. This will allow you to modify the activity to accommodate the specific needs of your students.

Teacher Notes

- For younger grades, you can conduct the GIS activity as a teacher-led activity in which students follow along. You can lead students through the GIS steps and ask them the associated questions as a class.
- Ideally, each student will have access to a computer, but students can complete the lesson in small groups.
- Throughout the GIS activity, students are presented with questions. The GIS activity sheets are designed so that students can mark their answers directly on these sheets. Alternatively, you can create a separate answer sheet.
- We recommend that students save their work as they progress through the GIS activity. Students can use either the Save command (to save their changes to the original map) or the Save As command (to save their changes to a new map). Please explain to students where and how they should save their work.

The following are things to look for while students are working on this lesson:

- As students work through the steps, are they thinking about the underlying geographic concepts (e.g., Are features distributed evenly or unevenly over space? Do the features form patterns on the map? What factors might explain the patterns?)
- Are students answering the questions in the GIS activity as they work through the steps?
- Are students aware of changes in scale as they zoom in and out on the map?

Concluding the lesson

- Engage students in a discussion about the observations and discoveries they made during their exploration of the U.S. map.
- Ask students about their impressions of different regions of the United States.
- Ask students to compare their experience working with a GIS map to their experience working with paper maps.
- Has this activity raised any questions that students would like to explore further?
- How can GIS help students to learn about U.S. history?
- Has this activity changed students' ideas about maps?

Extending the lesson

- Have students research landforms of America—mountains, deserts, plains, etc.
- Using layers from the GIS map, ask students to describe the relationship between rainfall and elevation. Have them give at least one reason for the relationship.

- Using layers from the GIS map, ask students to describe the relationship between rainfall and vegetation. Have them give at least one reason for the relationship.
- Using layers and information from the GIS map, ask students how much rainfall the grasslands receive. Mention that the grasslands later became the major crop-producing area of the United States. Ask students how so much wheat, corn and other grains can be grown on land that doesn't receive much rainfall?
- Have students research the Native Americans that lived in America before the Europeans came.
- What types of governments did they have? What types of rules? What languages did they speak?
- How were their societies organized? Did they have sporting events or competitions?

References

- <http://countrystudies.us/united-states/geography-7.htm>
- http://encarta.msn.com/encyclopedia_761589809/Westward_Movement_American.html
- <http://www.nativeamericans.com/index.htm>

Student activity answer key


Answers appear in blue.

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Task 1: Open the map

Task 2: Enlarge the ArcGIS Online window


 **Q1: Look at the sizes of the states. What pattern do you see when you move from east to west? (Circle all the correct answers.)**

1. *Eastern states are smaller.*
2. *Eastern states are larger.*
3. *Western states are smaller.*
4. *Western states are larger.*

Task 3: Settlements started along the East Coast

 **Q2: Which half of the country has more cities?**

- a. *Eastern half*
- b. *Western half*



 **Q3: Zoom in to look at the states along the East Coast. List three of the states that have clusters of cities along their eastern shore. (Hint: Click the state to open the Identify window.)**

Massachusetts, Connecticut, New York, New Jersey, Maryland, Florida. Answers will vary.


Task 4: When European settlers moved west from the coast, they often followed waterways.

 **Q4: Are there cities along the coast of Chesapeake Bay? (Circle the correct answer.)**


- a. *Yes*
- b. *No*

-  **Q5: Most of these cities are in what state? (Hint: Click on state.)** [Maryland](#)
-  **Q6: Are cities found along the Hudson River where it empties into the ocean? (Circle the correct answer.)**

- a. Yes
- b. No

-  **Q7: Most of these cities are in what state? (Hint: Click on states for state names.)** [New Jersey](#)

Task 5: By about 1750, European settlements had moved west as far as the Appalachian Mountains

-  **Q8: Look at the map and the Elevation legend. Which color do you think represents the Appalachian Mountains? (Circle the correct answer.)**

- a. Dark green
- b. Light green
- c. [Light brown](#)
- d. Dark brown
- e. Pink

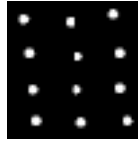
-  **Q9: How do mountains affect where cities are located?**

- a. Less than 100
- b. 100 – 400
- c. 400 – 800
- d. [800 – 2000](#)

Task 6: When Europeans finally moved west of the Appalachian Mountains in about 1770, they quickly settled along waterways, such as the Ohio River

- 🌐 10: Which of these patterns most closely matches the pattern of cities along the Ohio River? (Circle the correct answer.)

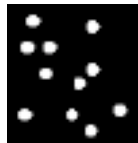
a. Regular



b. Clustered



c. Random



Task 7: Settlement continued to move west as far as Kansas and Nebraska

- 🌐 Q13: Look at the legend for the Average Annual Rainfall layer in the table of contents. Which color best represents the amount of rainfall in the states of Oklahoma, Kansas, and Nebraska? (Circle the correct answer.)

- a. Red
- b. Orange
- c. Green
- d. Blue

- 🌐 Q14: How much average annual rainfall does this color represent? (Circle the correct answer.)

- a. Less than 22.5 inches
- b. 22.5 – 40 inches
- c. 40 – 60 inches

- 🌐 Q15: Look at the rainfall layer and compare it with the cities layer. Can you explain how rainfall affects where cities form? *There are fewer cities in areas that have low rainfall (red areas and orange areas that are close to red areas).*


Task 8: By the 1840s, settlement had moved west of the Mississippi River onto grasslands in the center (interior) of the country

 **Q16:** *ok at the Vegetation legend. What color represents grasslands? (Circle the correct answer.)*

- a. Green
- b. Pink
- c. Blue
- d. Orange

Task 9: The Mississippi River and the rivers that flowed into it (tributaries) offered easy routes to the central (interior) grasslands

 **Q17:** *Look at the information at the bottom left corner of the ArcMap window. How many rivers make up the Mississippi River system? 13*

 **Q18:** *Look at the grasslands area on your map. As you move west across the grasslands, the pattern of cities changes. Describe these changes in your own words. What happens to the city placement patterns, are they similar to those along the Ohio River? Answers may include the following:*

As you move from east to west across the grasslands, you may notice the following:

The number of cities decreases.

Many of the cities are located along rivers of the Mississippi system.

The pattern of cities is random or clustered.

Task 11: Settlement was scattered from the Rocky Mountains westward

 **Q19:** *Look at the map and look at the Vegetation legend. List three western states that are mostly covered with deserts: Answers may include the following:*

Nevada


Utah

Arizona

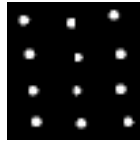
New Mexico

Wyoming

Idaho

 **Q20: Which pattern most closely matches the pattern of cities in these states? (Circle the correct answer.)**

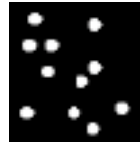
a. Regular



b. Clustered



c. Random




 **Q21: Look at the map, and look at the Average Annual Rainfall legend. How much rain falls each year in most of the western states? (Circle the correct answer.)**

a. Less than 22.5 inches

b. 22.5–40 inches


c. 40–60 inches

 **Q22: Click on the Elevation layer name to view its legend. What is the elevation of most of the western states? (Circle the correct answer.)**

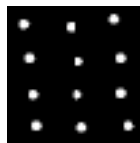
a. 400-800 meters

b. 800-2,000 meters

c. 2,000 meters and greater

 **Q23: Look at the elevation layer and the landforms layer on the map. You see mountains in high elevation areas. Which pattern most closely matches the pattern of cities in these areas?**

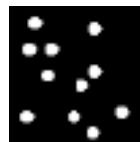
a. Regular




b. Clustered



c. Random



Answer: c is the preferred answer; b is also acceptable

 **Q24:** Notice how the number and pattern of cities change as you move west across the United States. Describe these changes in your own words. Look back at Q23 and see if you can match any of the patterns. *Answers may include the following:*
As you move from east to west across the United States, you may notice the following:

- *The number of cities decreases.*
- *Cities are not as close together.*
- *The pattern of cities moves from clustered, to regular to more random.*

 **Q25:** List two reasons why settlement patterns are different in the West than in the East. *Answers may include the following:*

- *Much of the West has high elevation and mountains.*
- *Much of the West has little rainfall.*
- *Much of the West is covered with deserts.*
- *There are fewer rivers in the West.*