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## Lesson Description

In this lesson, students read and interpret choropleth maps, which contain unemployment data. They compare verbal descriptions of the labor market from the Federal Reserve's *Beige Book* with the mapped data. In addition, students compare unemployment data for different years. Students access or observe how to access this data online.

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## Grade Level

Grades 7-10

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## Concepts

Choropleth map  
Federal Reserve System  
Labor force  
Legend/key  
Unemployment  
Unemployment rate

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## Objectives

Students will:

- Define labor force and unemployment.
- Explain how the unemployment rate is computed.
- Compare unemployment data over different time periods.
- Compare unemployment data and *Beige Book* descriptions of the labor market.
- Explain why the Federal Reserve System cares about national unemployment data.

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## Content Standards

### National Standards in Economics

- **Standard 19:** Unemployment imposes costs on individuals and nations. Unexpected inflation imposes costs on many people and benefits some others because it arbitrarily redistributes purchasing power. Inflation can reduce the rate of growth of national living standards because individuals and organizations use resources to protect themselves against the uncertainty of future prices.
  - Benchmark 2, Grade 8: The labor force consists of people age 16 and over who are employed or actively seeking work.

- Benchmark 1, Grade 12: The unemployment rate is the percentage of the labor force that is willing and able to work, does not currently have a job and is actively looking for work.

### National Standards in Geography

- **Standard 1:** How to use maps and other geographic representations, tools and technologies to acquire, process and report information.
- **Standard 11:** The patterns and networks of economic interdependence on earth's surface.
- **Standard 17:** How to apply geography to interpret the past.
- **Standard 18:** To apply geography to interpret the present and plan for the future.

### National Council for the Social Studies Strands

- People, places and environment
- Production, distribution and consumption

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## Time Required

60 minutes

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## Materials

- Two small yellow slips of paper
- Three small blue slips of paper
- 20 small green slips of paper
- Small container in which to place the slips of paper
- Visual 1
- A copy of Handout 1 for each student
- A copy of Handout 1—Answer Key for the teacher
- A copy of Handout 2 for each student
- A copy of Handout 2—Answer Key for the teacher
- A copy of Handout 3 for each student
- A copy of Handout 3—Answer Key for the teacher
- A copy of Handout 4 for each student
- A copy of Handout 4—Answer Key for the teacher
- Internet access

- Calculator for each pair of students

*Before the start of class, place five desks together in one area of the room. Remove two additional desks so that they are not available for anyone to sit in. Leave the remaining 18 desks as they normally would be in the classroom. As students enter the class, have each of them draw a slip of paper from the container. Note: This activity was designed for a class of 25. For smaller classes, reduce the number of green slips of paper. For larger classes, increase the number of slips of paper. For example, if the number of students is 30, increase the number of yellow slips by one, the number of blue slips by two and increase the number of green slips by two. For smaller classes, there should be one or two fewer desks in the center of the classroom than there are students with green slips of paper. For the larger classes, add the same number of desks to the smaller group of desks as the number of yellow and blue slips of paper added. There should be at least one or two fewer desks in the center of the classroom than there are students with green slips of paper.*

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### Procedures

1. As students enter the classroom, have each of them draw a slip of paper from the container. Tell students not to take their seats, but instead to stand along the walls of the classroom.
2. Explain that on the way to school today there were two news reports. One report was about unemployment, and the other was about the Federal Reserve. Ask the students for a definition of unemployment. (*Answers will vary. Some students may say that unemployment is people not working.*) Ask the students if they know what the Federal Reserve is. (*Answers will vary.*)
3. Ask the students with yellow slips of paper to raise their hands. Explain that these students represent those in the community who are younger than 16, and because of that, they are not eligible to work. Ask these students to take seats in the smaller group of desks.
4. Ask the students with the blue slips of paper to raise their hands. Explain that these students represent those who are not looking for work because they are retired, staying home with children or have chosen not to work. Ask these students to take the remaining seats in the smaller group of desks.
5. Ask the students who are still standing what color slip of paper they have. (*green*) Explain that they represent people who are 16 years old or older and who are looking for work. Tell those students to take seats in the center of the room. After a while it should become clear that there are two students who do not have seats. Explain that these two students represent unemployment in the classroom.
6. Display *Visual 1: Classroom Labor Force, Employment and Unemployment* and record the appropriate numbers on each line. Ask the two students without seats why they don't have seats (*teacher didn't provide seats, didn't get to seats quickly enough*) and how they feel (*cheated, upset, embarrassed*) Have students help move the desks back and ask all students to take their seats.

7. Explain that the **unemployment rate** is an important economic indicator that helps people understand how healthy or strong the economy is. If people who want to work are able to find jobs, the economy is healthier than it is when people who want to work cannot find jobs. Every month, the U.S. Bureau of Labor Statistics releases the latest unemployment statistics, including the Civilian Unemployment Rate.
8. Explain that the unemployment rate is the percent of the labor force that does not have a job. Explain that in the U.S. the **labor force** is the number of people 16 years or older who are currently employed or actively seeking employment. Refer to Visual 1 and point out the size of the labor force in the classroom.
9. Explain that in the U.S. the unemployed are those who are part of the labor force who aren't employed. Refer to Visual 1 and point out the number of unemployed (those unable to find seats) in the classroom.
10. Tell students that unemployment is reported as a percent of the labor force. To calculate the unemployment rate, divide the number of people who are unemployed by the number of people in the labor force and multiply the decimal by 100. Demonstrate by completing the problem on Visual 1.
11. Explain that the members of the labor force who were able to find work ("green slip" seats in the classroom) represent the employed. In the U. S. economy, those in the labor force who have jobs, full- or part-time, are employed. Ask the students what percent of the labor force in the classroom is employed. (*100 percent, minus the unemployment rate = percent of labor force employed*)
12. Tell the students that there are labor force, unemployment and employment data available for the United States and for individual states and counties in the United States, and that the students will be using a web site called GeoFRED™ to look at these data.
13. Display the GeoFRED web site located at <http://geofred.stlouisfed.org/> and explain that GeoFRED is a tool provided by the Federal Reserve Bank of St. Louis that allows people to create **choropleth maps** to show data. Click on the green box labeled "Build New Map" in the upper right section of the page. Click on "Tools" in the upper-left corner. From the drop-down boxes, select "State," "Unemployment Rate," "Annual," "Average," and "Percent" for the year 2010. (Note that several of these choices are the default values.) Click on "Edit Legend" and choose Interval Method: Equal Interval. (For a lesson on the difference between Fractile Interval and Equal Interval, go to [http://www.stlouisfed.org/education\\_resources/assets/lesson\\_plans/GeoFREDFractileEqual.pdf](http://www.stlouisfed.org/education_resources/assets/lesson_plans/GeoFREDFractileEqual.pdf)) Discuss the following.
  - A choropleth map is a thematic map based on a specific set of data. In this case, it is unemployment data.
  - Unemployment data are ratio values, so graded colors are used to show least to greatest levels of unemployment (in this case, lighter shades for lower values and darker shades for higher values).

- To produce a choropleth map, people group the observations into a set of classes based on data values then shade each class with an appropriate color of shading pattern.
14. Tell students that the map also includes a **legend**. A legend (also referred to as a **key**), is the reference area on a map. The legend lists and explains the colors, symbols, line patterns, shadings, and annotation used on a map. Often the legend includes the scale and other map information.
  15. Distribute *Handout 1: Unemployment Data for 2010 and the Beige Book*. Explain that the map shows unemployment data by state for 2010. To see Hawaii, click and drag the map upward and to the right; to see Alaska, click and drag the map downward and to the right. Explain the color-coded legend. Tell the students that a higher unemployment rate means that a large percentage of the labor force—people 16 years of age and older who are actively seeking jobs—are not able to find jobs. Discuss the following.
    - What color are states shaded if they have the lowest rates of unemployment? (*white*)
    - Name some states with high rates of unemployment. (*Answers will vary but may include Nevada or Florida.*)

*Note: Data for unemployment comes directly to GeoFRED from the Bureau of Labor Statistics, which treats the data from the District of Columbia as a state.*

16. Tell students that the class will refer to the map to answer the first four questions on Handout 1. As answers are decided, tell students to write the answers on their handouts. Use *Handout 1: Unemployment Data for 2010 and the Beige Book—Answer Key* to check the answers.
17. Go to [www.federalreserve.gov/fomc/beigebook/default.htm](http://www.federalreserve.gov/fomc/beigebook/default.htm) and explain that the *Beige Book* is a summary of economic conditions based on reports and interviews with business leaders and other contracts in the Federal Reserve's 12 districts. Explain that the Federal Reserve, the central bank of the United States, studies regional, national, and international economic conditions in order to make monetary policy decisions (decisions about the U.S. money supply).
18. Call on a student to read aloud the paragraph about the calendar on the web site which explains the *Beige Book*.
19. Click on "View Archive" on the right side of the page. Change the year to 2010. Click on the HTML or PDF file associated with January 13, 2010. This is the *Beige Book* report for this time period. Scroll down to the Employment, Wages, and Prices sections. Read the first two sentences in that section and explain that this statement is intended to give a general picture of employment in the United States. Instruct students to write the first clause, "Labor market conditions remained soft in most Federal Reserve Districts" on Handout 1 under January 13, 2010.

20. Follow the same procedure for the other months identified on Handout 1. Note that different editions of the *Beige Book* have some variation in how the employment section is titled. Give students time to write the sentence describing employment conditions for each month specified on Handout 1. (An answer key is provided in Handout 1—Answer Key.)
21. Direct students to look at the five descriptions of the labor market based on the one sentence for each of the five months that they copied from the *Beige Book*. Ask students if they think the descriptions reflect the GeoFRED data for 2010. (*Answers will vary but students should recognize that the sentences describe a labor market that is improving but is still soft. The unemployment rates are generally high across the states.*)
22. Ask students to raise their hands if they think the GeoFRED map data gives a clearer picture of the unemployment situation than do the *Beige Book* descriptions. Then ask students to raise their hands if they think the *Beige Book* gives a clearer picture of the unemployment situation than does the GeoFRED map. (*Opinions will vary.*)
23. Go back to the GeoFRED web site located at <http://geofred.stlouisfed.org/> and click on the arrow to return to the map. Click on “Tools” and then check the appropriate spaces in the drop-down boxes to read: Region Type-State; Data-Unemployment Rate (Not Seasonally Adjusted); Frequency-Annual and Average; Units-Percent; Year-2000. Click on “Edit Legend” and choose Interval Method: Equal Interval. To reveal the data for each state, zoom in by clicking the + sign on the scale to the right.  
  
View the map for 2000 and explain the legend by referring to the information shown under “Edit Legend.” Note that the values range from 2.3 percent unemployment to 6.2 percent unemployment.
24. Distribute a copy of *Handout 2: Unemployment Data and Beige Book for 2000* to each student. Tell students to refer to the map to answer the first four questions on the handout. Ask student to share their answers. Use *Handout 2: Unemployment Data and Beige Book for 2000—Answer Key* to check answers.
25. Direct student to look on Handout 1 at the five descriptions of the 2010 labor market based on the one sentence for each of the five months that they copied from the *Beige Book*. Ask students if the type of descriptions from the *Beige Book* for 2010 reflect the GeoFRED data for 2000. (*No.*) Why? (*More states have higher rates of unemployment in 2010 than in 2000, so the language should describe stronger labor market conditions for 2000.*)
26. Challenge students to think like authors of the *Beige Book* and follow the instructions on the bottom half of Handout 2. Use Handout 2—Answer Key to check answers.
27. Remind the students that unemployment is an important measure of the health of the economy. Explain that the **Federal Reserve System**, often referred to as “the Fed,” was established in 1913 as the central bank of the United States. The health of the U.S. economy is a primary concern of the Fed. The goals of the Fed include maintaining stable prices and promoting full employment and economic growth.

28. Point out that unemployment varies from state to state as evidenced by the GeoFRED map. The Federal Reserve is interested in the state data; however, the Fed's major concern is the health of the U.S. economy, not the health of a particular state. The *Beige Book* statements illustrate this idea. Regional descriptions in the *Beige Book* contribute to the overall picture of U.S. economic conditions.
29. Point out that whereas the Fed is responsible for creating a healthy economy, Federal, state and local governments develop policies and create programs to address specific unemployment conditions. The federal government has unemployment compensation insurance, and state and local governments often have a variety of services including vocational training, career development centers and other services to assist the unemployed.

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### Closure

30. Review key concepts in the lesson by asking the following questions.
  - What is unemployment? (*a condition in which not all people in the labor force who want a job, have a job*)
  - What is the unemployment rate? (*the percent of the civilian labor force that does not have a job*)
  - How is the unemployment rate calculated? (*Divide the number of unemployed by the number in the labor force and multiply that decimal by 100 to get the percent unemployed.*)
  - Who is classified as in the labor force? (*people 16 years or older who are currently employed or actively seeking employment*) Who is classified as not in the labor force? (*people under 16 years of age and people 16 years or older who are not actively seeking employment*)
  - What is an example of someone who is not in the labor force? (*Answers will vary but may include children under age 16, teenagers and adults who are not looking for work and retired people.*)
  - What kind of map is GeoFRED, and what does the darker shading mean compared with the lighter shading of states? (*GeoFRED is an online choropleth map. The darker-shaded states indicate higher unemployment rates relative to the lighter-shaded states.*)
  - What organization produces the *Beige Book*, and what information does it provide? (*The Beige Book is produced by the Federal Reserve and is a summary of economic conditions based on reports and interviews with business leaders and other contacts in the Federal Reserve's 12 districts.*)
  - What is the Federal Reserve System? (*It is the central bank of the United States.*)
  - Why does the Fed care about unemployment? (*The Fed's goals include maintaining stable prices, full employment and economic growth.*)

## Assessment

1. Have students look at GeoFRED data for another year. Ask them to write two sentences, similar in style to those from the *Beige Book* to describe the unemployment situation in that year. (Optional: Have students look at the *Beige Book* statements for that year which describe unemployment and write down one or two sentences from the *Beige Book*. Then have students compare and contrast their description to that of the *Beige Book* by examining language, content and style of the student description and the *Beige Book* description.) (*Answers will vary.*)
2. Direct students to look at the GeoFRED map for the presidential election years 1996 and 2004. Identify all of the states on the map for each of these years that fall into the two classifications of highest unemployment rates (according to the legend for each map).  
*Year 1996:*  
*New Jersey, Louisiana, Mississippi, New York, California, West Virginia, New Mexico, District of Columbia*  
  
*Year 2004:*  
*Washington, Oregon, California, New Mexico, Texas, Mississippi, Illinois, Michigan, Ohio, South Carolina, New York, Alaska*
3. Distribute a copy of *Handout 3: Calculating Unemployment Rates* to each student. Tell students to work in pairs, read the directions and answer the questions. Review the answers on Handout 3—Answer Key with the students.



## Visual 1: Classroom Labor Force, Employment and Unemployment

	Not in labor force	In labor force
Number of people under 16		
Number of people not seeking work		
Number of unemployed people 16+ but actively looking for work		
Number of people 16+ who are employed	+	
Total labor force	=	

### Calculating the Unemployment Rate

$$\frac{\text{Number of unemployed}}{\text{Labor force}} \times 100 = \text{unemployment rate}$$

## Handout 1: Unemployment Data for 2010 and the *Beige Book*

According to the GeoFRED map for 2010:

1. How many states were in the mid-range of the unemployment rate, i.e.  $\geq 3.87$  to  $< 4.64$  percent?
2. How many states had a greater unemployment rate than the mid-range, i.e.  $\geq 4.15$  percent?
3. How many states had a lower unemployment rate than the mid-range, i.e.  $< 3.86$  percent?
4. How many states had a 3.87 percent or more *unemployment rate*?

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Go to the following *Beige Book* descriptions of the condition of labor in the economy and write the first sentence that is found after the headings as indicated:

**January 13, 2010**  
**Employment, Wages and Prices**

**April 14, 2010**  
**Employment, Wages and Prices**

**July 28, 2010**  
**Labor Markets**

**October 20, 2010**  
**Price and Wages**

**December 1, 2010**  
**Labor and Prices**

## Handout 1: Unemployment Data for 2010 and the *Beige Book*—Answer Key

Note: Choose PDF located to the right of the “Help” link, top right of map, and then print to get both the GeoFRED map and the data for each state. To print the map only, choose the “Print” link located to the right of the “Help” link, top right of map.

According to the GeoFRED map for 2010:

1. How many states were in the mid-range of the unemployment rate, i.e.  $\geq 3.87$  to  $< 4.64$  percent? 14  
(States include: Ohio, Tennessee, Alabama, Arkansas, Arizona, Kentucky, Pennsylvania, Rhode Island, Texas, Illinois, Nevada and New York)
2. How many states had a greater unemployment rate than the mid-range, i.e.  $\geq 4.15$  percent? 10  
(States include: Idaho, Montana, California, Louisiana, New Mexico, Washington, Oregon, West Virginia, District of Columbia and Mississippi )
3. How many states had a lower unemployment rate than the mid-range, i.e.  $< 3.86$  percent? 27  
(States include: Connecticut, Virginia, Colorado, New Hampshire, South Dakota, Vermont, Iowa, Massachusetts, Nebraska, Indiana, North Dakota, Minnesota, Oklahoma, Delaware, Maine, Missouri, Utah, Wisconsin, Georgia, Maryland, South Carolina, Michigan, New Jersey, Florida, Kansas, North Carolina and Wyoming)
4. How many states had a 3.87 percent or more unemployment rate? 24  
(Add answers for number 1 and number 2 above.)

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Go to the following *Beige Book* descriptions of the condition of labor in the economy and write the first sentence that is found after the headings as indicated:

**January 13, 2010**

**Employment, Wages and Prices**

*Labor market conditions remained soft in most Federal Reserve districts.*

**April 14, 2010**

**Employment, Wages and Prices**

*While overall labor markets remained weak, some hiring activity was evident, particularly for temporary staff.*

## Handout 1: Unemployment Data for 2010 and the *Beige Book*—Answer Key

**July 28, 2010**

**Labor Markets, Wages and Prices**

*Labor market conditions improved gradually in several districts.*

**October 20, 2010**

**Prices and Wages**

*Hiring remained limited, with many firms reluctant to add permanent payrolls given economic softness.*

**December 1, 2010**

**Labor and Prices**

*Hiring activity showed some improvement across most Districts, although employers are waiting for clearer signs of expanding business prospects before adding significantly to payroll.*

## Handout 2: Unemployment Data for 2000 and the *Beige Book*

According to the GeoFRED map for 2000:

1. How many states were in the mid-range of the unemployment rate, i.e.  $\geq 3.87$  to  $< 4.64$  percent?
2. How many states had a greater unemployment rate than the mid-range, i.e.  $\geq 4.64$  percent?
3. How many states had a lower unemployment rate than the mid-range, i.e.  $< 3.86$  percent?

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Pretend that you are a contributing writer to the 2000 *Beige Book*. Based on the data above, and comparing that with data in Handout 1 (for year 2010), which of the following statements might you write about the employment conditions in 2000?

*Hint: There might be more than one correct response.*

- A. Labor markets were strong.
- B. Labor markets posted widespread gains.
- C. Labor markets remained generally slack.
- D. Labor markets remain soft according to most District reports.

## Handout 2: Unemployment Data for 2000 and the *Beige Book*—Answer Key

According to the GeoFRED map for 2000:

1. How many states were in the mid-range of the unemployment rate, i.e.  $\geq 3.87$  to  $< 4.64$  percent? 14  
(States include: North Carolina, Virginia, Idaho, South Carolina, Maryland, Oklahoma, Montana, Nevada, Washington, Oregon, Connecticut, Missouri, Ohio, Tennessee, Vermont, New Jersey, Alabama, Louisiana, Pennsylvania, Texas, Arkansas, Arizona, Illinois, New Mexico, New Hampshire and New York.)
2. How many states had a greater unemployment rate than the mid-range, i.e.  $\geq 4.15$  percent? 10  
(States include: Kentucky, Florida, Maine, District of Columbia, California, Rhode Island, Massachusetts, Mississippi, Michigan and West Virginia)
3. How many states had a lower unemployment rate than the mid-range, i.e.  $< 3.86$  percent? 27  
(States include: Nebraska, South Dakota, North Dakota, Kansas, Iowa, Utah, Georgia, Wyoming, Minnesota, Wisconsin, Colorado, Indiana and Delaware)

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Pretend that you are a contributing writer to the 2000 *Beige Book*. Based on the data above, and comparing that with data in Handout 1 (for year 2010), which of the following statements might you write about the employment conditions in 2000?  
*Hint: There might be more than one correct response.*

- A. Labor markets were strong.
- B. Labor markets posted widespread gains.
- C. Labor markets remained generally slack.
- D. Labor markets remain soft according to most District reports.

*Answer: Response A is appropriate because it describes a strong labor market.*

### Handout 3: Calculating Unemployment Rates

The country of Altimina has a population of 150,000. According to the latest data, there are 20,000 people under the age of 16, and 30,000 people who are over the age of 16, but not looking for work. Currently, there are 5,000 people who are 16 or older and actively looking for work. The president of Altimina has asked you what the size of the labor force is, what the number of unemployed is and what the unemployment rate for Altimina is. Please show your work.

The labor force in Altimina is: \_\_\_\_\_

The number of unemployed is: \_\_\_\_\_

The unemployment rate is: \_\_\_\_\_

*Note: There are several ways in which students can show their work. The table above represents one way.*

### Handout 3: Calculating Unemployment Rates–Answer Key

The country of Altimina has a population of 150,000. According to the latest data, there are 20,000 people under the age of 16, and 30,000 people who are over the age of 16, but not looking for work. Currently, there are 5,000 people who are 16 or older and actively looking for work. The president of Altimina has asked you what the size of the labor force is, what the number of unemployed is and what the unemployment rate for Altimina is. Please show your work.

The labor force in Altimina is: 100,000

The number of unemployed is: 5,000

The unemployment rate is: 5%

	Not in labor force	In labor force
Number of people under 16	20,000	
Number of people not seeking work	30,000	
Number of unemployed people 16+ but actively looking for work		5,000
Number of people 16+ who are employed	+	95,000
Total labor force	=	100,000

$$\frac{\text{Number of unemployed}}{\text{Labor force}} \times 100 = \text{unemployment rate}$$

$$\frac{5,000}{100,000} \times 100 = 5\%$$

*Note: There are several ways in which students can show their work. The table above represents one way.*