

Educational Attainment and Unemployment Rates by U.S. County



GeoFRED®
APPLICATION EXERCISE

Lesson Author

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Standards and Benchmarks (see page 7)

Description

Students will search for data on educational attainment and unemployment, mapping them and highlighting the relationship between human capital and employment outcomes.

Students search for data and visualize them in GeoFRED®, the Federal Reserve Bank of St. Louis's online mapping tool. The goals are for students to (1) observe patterns in economic data and note differences across geographical areas, and (2) hypothesize the reasons for those patterns and differences.

The intended outcome of the activity is for students to use mapped data to identify the inverse relationship between educational attainment and unemployment and provide potential explanations for this relationship.

Economic Concepts

Educational attainment

Unemployment rate

Objectives

Students will be able to

- observe patterns in economic data;
- note differences in economic data across geographical areas;
- hypothesize reasons for patterns in data and differences in data across geographical areas;
- identify the inverse relationship between educational attainment and unemployment across U.S. counties; and
- evaluate potential reasons for the observed inverse relationship between educational attainment and unemployment.

Grade Level

High School, College

Compelling Question

How do people benefit from investing in their own education?

Time Required

30-40 minutes

Materials

- Visual 1, one copy for the teacher's reference
 - Handout 1, one copy for each student
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Preparation

- Make sure you are comfortable navigating around GeoFRED®, finding values for data series used in this lesson, and editing a map. A demonstration is located at <https://geofred.stlouisfed.org/tutorials/>.
 - Go to <https://www.stlouisfed.org/education/economic-lowdown-video-series/episode-10-unemployment> to review the definition of unemployment rate.
 - Go to https://www.econlowdown.org/resource-gallery/education_vs_unemployment to learn about the connection between education and unemployment.
 - Go to <https://www.bls.gov/careeroutlook/2016/data-on-display/education-matters.htm> to learn about education and job earnings.
 - Go to <https://fredblog.stlouisfed.org/2014/03/unemployment-rates-by-educational-attainment/> to see the change in unemployment rates by level of educational attainment over time.
 - Follow the instructions in Handout 1 to use GeoFRED® to create the maps. URLs to final versions of the maps are provided.
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Procedure

1. Tell the students they are going to create two maps of the U.S.—one showing the **unemployment rate** and one showing the percentage of the population with a bachelor's degree or higher.
 2. Explain that 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 employment.
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3. Explain that holding a college degree represents a *high level of educational attainment*, which contributes to a person’s human capital. Human capital is the knowledge and skills that people obtain through education, experience, and training. Workers with high human capital are more appealing as potential employees than are workers with low human capital.
4. Explain that you could simply admonish students to “stay in school.” Instead, you want them to look at some data about education and unemployment, draw conclusions about the relationship, and perhaps develop their own cautionary note.
5. Divide the class into small groups of three or four for the remainder of the lesson. Groups with diverse skill sets are preferred. If short on time, randomly assign students to groups. Distribute a copy of *Handout 1: Group Instructions* to each student. Allow time for students to work.
6. Invite students from different groups to share their answers. Discuss the following:
 - On the first map, the lighter orange colors indicate counties with lower proportions of the population with a bachelor’s degree or higher.
 - On the second map, the darker purple colors indicate counties with higher unemployment rates. Don’t overlook Alaska!
 - College graduates have higher human capital than do people with only a high school diploma.
 - In an economy that produces more services than goods, higher human capital allows college graduates to pursue a wider variety of jobs. Highly educated workers have an easier time finding jobs than do workers with limited education.
7. Ask a student from each group to identify and discuss the most important determining factor and then identify and discuss the least important determining factor. As the students discuss their choices, explain the following:
 - “College graduates work longer hours”: There is no evidence of such a relationship in the data presented in the maps.
 - “More abundant employment opportunities are available for college graduates”: College graduates have knowledge and skills. Without those, it is more difficult to find jobs.
 - “More education can lead to earning more income”: Although workers with high human capital are better paid than are workers with low human capital, there is no evidence of such a relationship in the data presented in the maps.
 - “College graduates have higher human capital”: High educational attainment builds up the knowledge and skills of a person. More knowledge and skills make it easier to find employment.

Closure

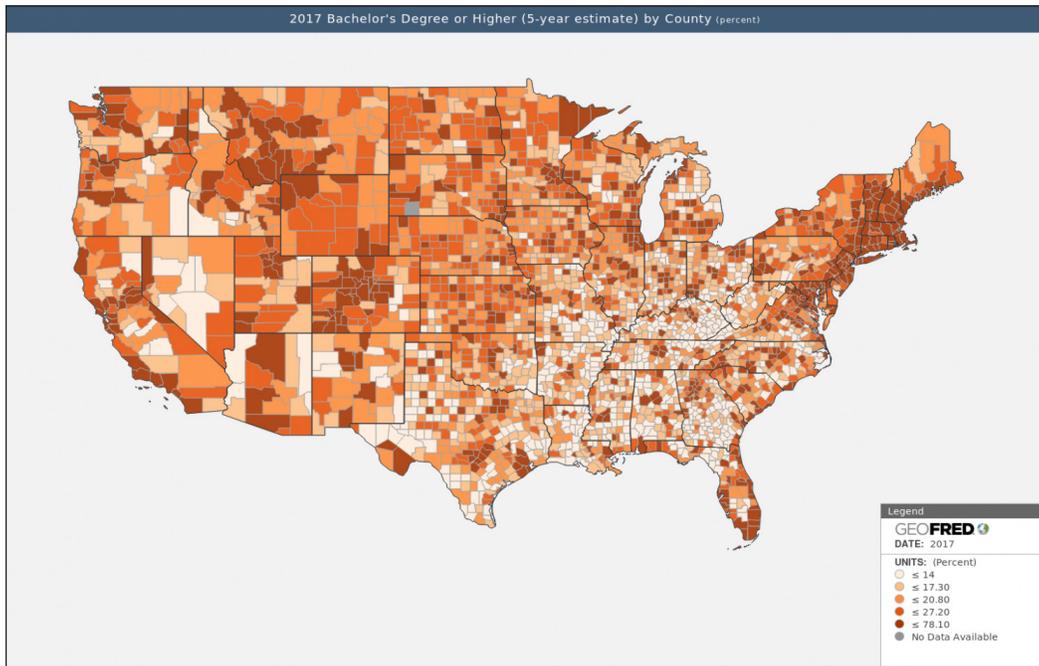
8. Conclude the exercise by asking the following questions:
- What differences or similarities do you see between educational attainment and unemployment across geographical areas in the U.S.? (*The proportion of persons without a college degree and the percentage of the labor force that is unemployed tend to be concentrated in the same areas.*)
 - Why do you think these patterns exist? (*It is more difficult for persons without a college degree to find employment than it is for persons with a college degree.*)
 - What relationship do you see between these two variables? (*Where one is low, the other one is high.*)
 - Is this a direct or an inverse relationship? (*This is an inverse relationship.*)
 - Why does this relationship exist? (*Completing a college education allows people to build knowledge and skills. Those things give workers more opportunities to find employment and therefore make people less likely to be unemployed.*)

Assessment

9. The following essay prompt could be used as a follow-up to the exercise:
- Educational attainment and unemployment are negatively correlated. What economic argument(s) can explain this relationship? Explain your argument(s) carefully.
A sample answer could describe how people with little formal education have a hard time finding jobs because they do not have as much knowledge or skills as college graduates. Fewer jobs are available to them. Examples could be used to illustrate the relationship between education and unemployment.

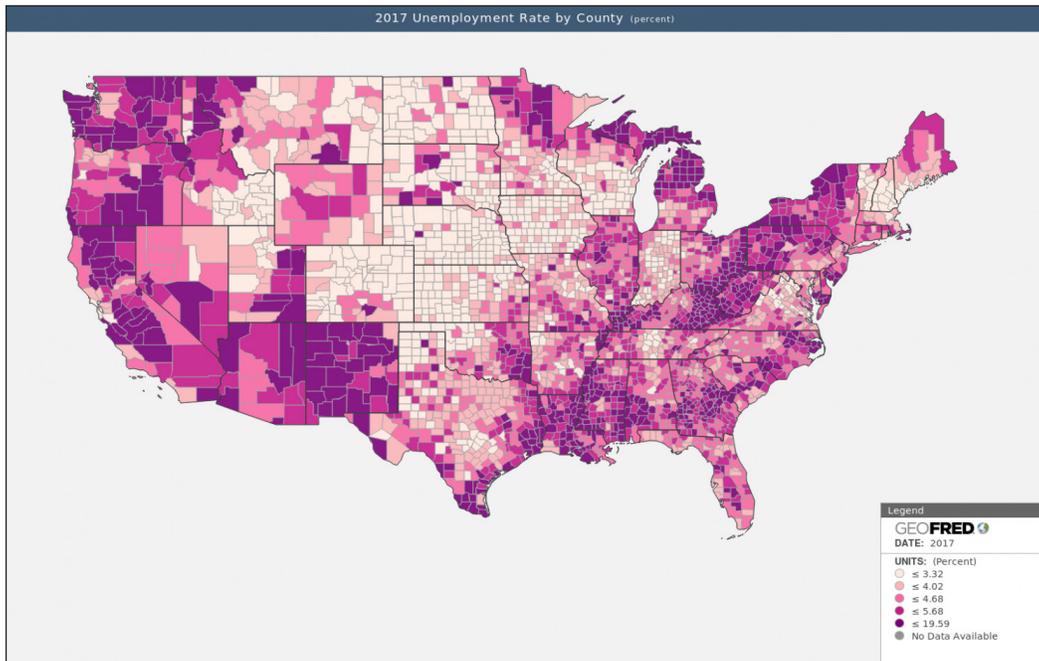
Visual 1: GeoFRED® Maps

Figure 1: 2017 Bachelor's Degree or Higher (5-year estimate) by County



SOURCE: GeoFRED®, Federal Reserve Bank of St. Louis; <http://geof.red/m/heD>.

Figure 2: 2017 Unemployment Rate by County



SOURCE: GeoFRED®, Federal Reserve Bank of St. Louis; <http://geof.red/m/bEM>.

Handout 1: Group Instructions

1. On the GeoFRED® website, <https://geofred.stlouisfed.org/>, create a map by following the instructions below.
 - Click on “Build New Map.”
 - Click on “Tools.”
 - Click on “Choose Data” and select “Region Type: County.”
 - Select “Data: Bachelor’s Degree or Higher (5-year estimate).”
 - Select “Year: 2017.”
 - Click on “Choose Colors” and select “Single Hue: Oranges.”
2. Open a new browser tab, go to the GeoFRED® website, and create a second map by following the instructions below.
 - Click on “Build New Map.”
 - Click on “Tools.”
 - Click on “Choose Data” and select “Region Type: County.”
 - Select “Unemployment Rate.”
 - Select “Frequency: Annual” and “Average.”
 - Select “Year: 2017.”
 - Click on “Choose Colors” and select “Multi Hue: rdpu.”
3. Examine the maps and hypothesize the reasons for the observed relationship between unemployment and educational attainment. Rank the following in order from the factors most likely to influence the observed relationship between unemployment and educational attainment to the factors least likely to influence the observed relationship:
 - A. College graduates work longer hours.
 - B. More abundant employment opportunities are available for college graduates.
 - C. More education can lead to earning more income.
 - D. College graduates have higher human capital.

NOTE: Work in two phases: First, identify and discuss the most important factor; second, identify and discuss the least important factor.

Standards and Benchmarks

Voluntary National Content Standards in Economics

Standard 19: Unemployment and Inflation

- **Benchmarks: Grade 12**

2. Unemployment rates differ for people of different ages, races, and sexes. This reflects differences in work experience, education, training, and skills, as well as discrimination.