

## **Population Explosion: Be a Demographer**

**Subject:** Geography; World Culture

**Grade(s):** 4-6

### **Overview**

Students become junior demographers as they research and report on the population density of countries and continents around the world, charting their research on a world map and on a bar chart in Microsoft Excel.

### **Objectives**

Students will:

- Understand and define population and population density
- Understand the relationship between population and area
- Compare the population density of the six inhabited continents and draw conclusions

### **National Geography Standards**

**Standard 1:** "How to use maps and other geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective"

**Standard 9:** The characteristics, distribution, and migration of human population on Earth's surface.

### **Materials Needed**

- Outline map of the world (copies for every two students)
- Crayons or colored pencils
- WorldTeasers: World Culture & Geography

### **Getting Started**

Ask the class if anyone knows what the word *demographer* means? Explain that a demographer is someone who studies human populations. A demographer can be thought of as a population expert. Demographers help us understand our world...or even our classroom. To illustrate, ask the class if they agree or disagree with this statement: "Our classroom has a lot of students."

What do they think “a lot” means? What if the class had 60 students? Would that be “a lot”? Why or why not? Tell students that the average classroom size in elementary schools in the United States is 25. Then say: Compared to the national average, does our classroom have a lot of students? Why or why not? Say: By knowing the average population of an elementary school classroom in the U.S., we can better understand the population of our classroom. Explain that in this lesson students will become demographers as they study the populations of the world.

### **Development**

Tell students that demographers study many different aspects or characteristics of a population. One characteristic that they study is called *population density*. Tell students that population density can be thought of as the number of people within a certain area as compared to the size of that area. It is calculated by dividing the total population of an area by the size of that area (usually in square miles or square kilometers). Write the formula for population density on the chalkboard.

$$\text{Population density} = \text{Population} / \text{Land Area}$$

Ask students how they think could calculate the density of their classroom. (Measure the size of the classroom in square feet; then divide the population of the classroom by the area of the classroom.) Next, write the following data on the chalkboard. Have students calculate the population density of the following three countries: United States, Monaco, and Mongolia.

|                      | <b>Population</b> | <b>Land Area<br/>(square miles)</b> | <b>Density</b> |
|----------------------|-------------------|-------------------------------------|----------------|
| <b>United States</b> | 303,320,000       | 3,794,066                           |                |
| <b>Mongolia</b>      | 2,951,786         | 603,909                             |                |
| <b>Monaco</b>        | 32,671            | .76                                 |                |

Which of these countries is the most densely populated? (Monaco, the most densely populated country in the world.) Which is the least densely populated? (Mongolia, the least densely populated country in the world.)

### **Activity**

Divide the class into six groups to research the area and population of each of the six inhabited continents of the world (North America, South America, Europe, Asia, Australia, and Africa). Have each group calculate the population density of their continent. Then, write the results in a chart on the chalkboard. Next, distribute an outline map of the world to each group. Have students use a dark crayon color to color in the continents that have a population density greater than 100 people per square mile; a medium crayon color to indicate continents that have a population density between 50 and 100 per square mile; and a light crayon color to indicate continents with a population density less than 50 people per square mile. When done, ask students what conclusions they can draw from the map about populations of the world.

### **Extension**

Have students create a Microsoft Excel bar chart, comparing the population density of the 10 Most Populous Countries of the World (China, India, United States, Indonesia, Brazil, Pakistan, Bangladesh, Russia, Nigeria, and Japan). Or let students select their own population density data to analyze, such as the Population Density of the Largest City on Each of the Six Continents of the World. (See the six Population Explosion Challenge Cards in the WorldTeasers game box.) You may want to print out the following instructions for creating a bar chart in Excel.

1. Open a Microsoft Excel worksheet (or spreadsheet).
2. In Cell A1, type the word Countries.
3. In Cell A2 through A11, type the names of the 10 countries to compare.
4. In Cell B1, type the word Density.
5. Enter the population density for each country (Cells B2 through B11)
6. Highlight the data.
7. Click Chart on the Insert menu.
8. Under Chart Type, highlight Column. Click a Chart sub-type, then click Next.
9. Click Data Range Tab.
10. Next to Series in: click Columns. Click Next.
11. Fill in Titles, Axes, Gridlines, Legend, Data Labels, and Data Table, as desired.
12. Click Finish.

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WordTeasers  
P.O. Box 1141  
Manhattan Beach, CA 90266  
310-546-9689