# Lesson Plan
## *2022 World Population Data Sheet*

PRB's World Population Data Sheet is an excellent reference and data analysis tool. Teachers are encouraged to have their students use the Data Sheet for a variety of topics and activities. The following series of short activities allows students to access a wealth of data on the world, regions, and individual countries, and develop their data literacy skills and knowledge of geography. Two versions of this lesson plan are available for download: a Word document and a PowerPoint presentation.

These activities may also be used with PRB's International Data Center (https://www.prb.org/international/), which houses all the data from the most recent World Population Data Sheet except net migration. Data can be accessed and displayed as a map or table and downloaded. PRB's *Population Handbook*, 6th edition (2011) is also a valuable resource.

**Grade Level**
6–12.

**Time Required**
One class period for each activity.

**Standards Addressed**
Math and geography.

**Vocabulary/Concepts**
Population size, birth rate, death rate, GNI, infant mortality rate, total fertility rate, life expectancy, age distribution.

**Materials**

- All activities: Using the *2022 World Population Data Sheet* (PDF: 6.1KB)
- Activity 2: County Profile Worksheet (PDF: 23KB)
- Activity 3: Country Outline Map (PDF: 94KB) Country outline maps for classroom use, including those for individual world regions, may be found online in a number of places.

# ACTIVITY 1: PRB'S WORLD POPULATION DATA SHEET AT A GLANCE

## Learning Objectives

- Select a country's population characteristics using the World Population Data Sheet.
- Identify countries that rank highest/lowest in a population indicator.

Find answers to the following questions using the current World Population Data Sheet.

1. What is the **population** of the world?

2. Rank the 10 countries with the **largest populations**, from largest to smallest.

3. **Rates** are often used instead of absolute numbers to tell how frequently a population or demographic event occurs. Rates show how common an event is (often expressed as per 1,000 people). List the type of information on the World Population Data Sheet reported by a rate.

4. The **death rate** is the annual number of deaths per 1,000 population. Which country (or countries) has the highest death rate? Which country (or countries) has the lowest death rate?

5. The **infant mortality rate** measures the number of deaths each year to infants under one year of age per 1,000 live births. Which country (or countries) has the highest infant mortality rate and what is that rate? Which country (or countries) has the lowest and what is that rate?

6. The **total fertility rate (TFR)** is the average number of children women would have if they maintained the current level of childbearing throughout their reproductive years. Which countries (or countries) share the highest TFR and what is it? Which country (or countries) has the lowest TFR? What is it?

7. Which country (or countries) has the youngest population—that is, the highest share of population **under age 15**? Which country (or countries) has the oldest population—the highest share of population **ages 65 and older**?

8. In which country (or countries) are women **expected to live the longest** at birth? Where are men expected to live the longest at birth? Which country (or countries) has the **lowest life expectancy** for women at birth? Where do men have the lowest life expectancy at birth?

9. Which country (or countries) has the **highest share of people living in urban areas** in… Africa? Asia? Europe? Latin America and the Caribbean? Northern America? Oceania?

10. **Gross national income in purchasing power parity per capita (GNI PPP)** converts income into "international" dollars and indicates the amount of goods and services one

could buy in the United States with a given amount of money. Which country (or countries) is the wealthiest in terms of GNI PPP? Which is the second wealthiest?

11. A **population projection** is a computation of future changes in population numbers based on assumptions about future trends in fertility, mortality, and migration. Which categories on the World Population Data Sheet are shown as projections?

12. Rank the 10 countries with the largest **projected populations** for both **mid-2035** and **mid-2050** from largest to the smallest. Which country's (or countries') population is projected to drop out of the top 10 by **mid-2050**? Which will be added to the top 10? Look back to the rankings for the current year. What are the major shifts in this ranking from now to **mid-2050**?

13. Rank the regions according to **population size** from largest to the smallest.

14. What **share of the world's people** lives in… Africa? Asia? Europe? Northern America? Latin America and the Caribbean? Oceania? What are the **projected population shares** for these regions? Draw a bar chart showing the regional distributions of the world's population for **this year**, **mid-2035**, and **mid-2050**.

15. What share of the world's people live in **less-developed countries** (LDCs) in the **current year**? In **more-developed countries** (MDCs)? What share of the world's people is projected to live in LDCs in **mid-2035**? In **mid-2050**? What share is projected to live in MDCs in **mid-2035**? **In mid-2050**?

## ACTIVITY 2: PROFILE A COUNTRY

**Learning Objectives**

- Practice organizing a country's population information into a country profile.
- Hypothesize about the data in the country profile.

*The purpose of this activity is to introduce students to the demographic indicators listed on the Data Sheet by providing them with a tool to organize population information about a country. As students study different countries they can accumulate country profiles in their notebook. Students will need to use the World Population Data Sheet and the Country Profile Worksheet.*

*Note*: The **rate of natural increase** is the rate at which a population is increasing (or decreasing) in a given year because of a surplus (or deficit) of births over deaths, expressed as a percentage of the base population. **To calculate the rate**, subtract death rates from birth rates, and then divide by 10. This rate does not include the effects of immigration or emigration.

1. In the Country Profile Worksheet, complete the profile of the United States. Define the indicators as they are mapped out on the worksheet. After completing the country comparison blocks, discuss.

2. Complete a new Country Profile Worksheet for every country you study. **Before you begin:** Develop a hypothesis about the country's population characteristics and use the mapping activity (Activity 3) to test your hypothesis. Compare each new country's profile with the profile of the United States.

   *As students learn more about the country, they can add other information from the Data Sheet (or other sources) to their profiles.*

*This lesson was adapted from a lesson developed by Jane Moriarty of the Michigan Geographic Alliance.*

## ACTIVITY 3: MAP THE DATA

**Learning Objectives**

- Illustrate countries' selected population characteristics on a map.
- Compare the illustrated population characteristics of selected countries.

*Mapping data is often a good method for analysis. Most of the demographic characteristics on the World Population Data Sheet lend themselves to mapping.*

A map that uses color to represent quantitative data is called a **choropleth map**. Areas are distinguished from one another using different colors or different shades of the same color based on the values they represent. Brighter colors or dark shades of the same color indicate greater values and dimmer colors or lighter shades indicate lesser values.

*Resource*: PRB's International Data Center (https://www.prb.org/international/) is particularly useful for this activity. It includes all the data from the most recent World Population Data Sheet except net migration. Data can be displayed as a map or table and downloaded.

**Create a Choropleth Map: Country Outline Map**

Choose one of the following demographic indicators using the World Population Data Sheet and map the world or regional distribution of that indicator on a world or regional country outline map:

| Infant Mortality Rate | Birth Rate | Death Rate |
|---|---|---|
| Total Fertility Rate | % of Population Ages 65+ | % of Population Under Age 15 |
| GNI per Capita, PPP | Life Expectancy (Males) | Life Expectancy (Females) |

Determine the mapping categories by finding the range of values for that indicator. Identify the number of categories to be used for your map and the interval of each category. For example:

1. After choosing the variable, determine the highest and lowest values for that measure.

2. Subtract these two numbers to calculate the range for the data.

3. Divide the range by the number of mapping categories planned for the map. Four to five categories will be adequate for most measures. The number produced by the division will indicate how many numbers to include in each category interval.

4. Always construct categories so that the numbers in one category do not overlap those in adjacent categories.

5. Arrange a color code or shading pattern for each category. Colors or patterns should increase from light to dark, from lowest to highest category.

6. Determine the proper mapping category for each country and color or shade the country on an outline map. Title the map, place a legend on the page, and indicate the source.

## Interpret the Map

After the map has been drawn, interpret it using the following as a guide:

1. Describe the patterns observed on the map.

2. What accounts for the variation?

3. Discuss the factors that could lead to the range of outcomes within this distribution.

## Draw Another Map

Draw another map to examine the relationships that may exist between two variables or compare results with another student who has mapped a different variable. Possible pairs of variables to compare:

- Infant Mortality Rate—Life Expectancy (Males or Females)
- Infant Mortality Rate—GNI per Capita, PPP
- Death Rate—Percent of Population Under Age 15
- Birth Rate—Percent of Population Ages 65 and Older

## Engage With the Data

1. Does there appear to be a relationship between the two variables mapped? If so, is the relationship positive of negative? For example, are the countries with the highest rates of one variable the same countries with the highest rates of the other variable? If yes, the relationship is positive. If not, the relationship is negative.

2. Discuss whether the factors that contribute to the patterns in one variable affect the patterns in another.

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This activity was adapted from exercises submitted by Eugene J. Kinerney of the University of the District of Columbia and Basheer K. Nijim of the University of Northern Iowa. The lesson plan was updated in 2022 by Nancy Matuszak, PRB.