

Population: Building a Foundation

The Task: Be able to explain the theory of population growth and transition.
Analyze the causes and effects of current world demographics.
Create population pyramids and use them to draw inferences about the population

Standard: **9.3.3.5.2** – Use the demographic transition model to analyze and explain the impact of changing birth and death rates in major world regions.

9.3.3.5.3. – Compare the population characteristics of places at a range of scales using population pyramids, birth and death rates, and other key demographic variables.

How To:

Specific directions for each portion are on the individual worksheets.

1. Complete “Explaining Population Change” as a class.
2. Use ArcGIS Online to complete “The World Population Sheet at a Glance”
3. Complete “Constructing and Interpreting Population Pyramids”

Grading: Project – 30 points

1. Accuracy and Completeness (12 points)
 - a. All components of the assignment are complete with the expected information.
 - b. All Information provided is correct.
2. Effort and Thought (12 points)
 - a. Work demonstrates consideration and thorough understanding of the information.
 - b. Assignment shows effort and creativity (when appropriate)
3. Overall Quality (6 points)
 - a. COPS!!
 - b. Assignment is neat and looks nice.

Part 1: Explaining Population Change – Notes

Open the “Classical Demographic Transition” presentation which is attached to this assignment in Google Classroom.

1. Explain, in your own words, the four stages of classic demographic transition.

2. When Ms. Nelson says to stop the video, draw your version of the four stages of classical demographic transition.

3. Draw Ms. Nelson’s version of the four stages of classical demographic transition.

4. This next part you can choose to do virtually with a partner or on your own.
5. Also attached to this assignment you will find the readings “Wallerstein” and “Rostow”. If you are working with partner divide the articles on Wallerstein’s and Rostow’s theories. Answer the questions about your theory and then explain the theory so your partner also has the answers.
 - Wallerstein
 - a. What are the three categories of countries, according to Wallerstein?

 - b. How do the three categories interact with one another?

 - c. Where in the world are the three categories of countries found?

 - d. Assign each category to one of the stages of demographic transition.

- Rostow

a. In your own words, explain the five stages of economic growth defined by Rostow.

b. Why has Rostow's theory been criticized?

c. How do Rostow's stages compare to the stages of classical demographic transition?

6. With your partner or on your own – discuss and answer the following question. Which of these two theories do you believe best explains economic development? Why? You can either write responses here or record your conversation and send it to Ms. Nelson.

My partner for this activity was:

Go into “Change Style” and under “Choose an attribute” choose “Total Fertility Rate”

Click “Add attribute” and choose “Births per 1,000 Population (CBR)”. Then click “Done”

- In which regions of the world do we find high birth and fertility rates (big, dark circles)? Low rates?
- How do birth and fertility rates relate to the economic level of the country? (Use your draft list, or go back and change “Total Fertility Rate” to “GNI per Capita”) (Big circles = high income, light colors low birth rates)

Go back to “Change Style” and change the top box to “Deaths per 1,000 Population (CDR)” and the second box to “Infant Mortality Rate”

- In which regions do we find high death and infant mortality rates (big dark circles)? Low rates?
- How do death and infant mortality rates relate to the economic level of the country? (See hint in birth/fertility question)
- What do you think might cause these connections between birth and death and a country’s economy?

READ: The **age and sex structure** of a population refers to the number or proportion of males and females who are in each age category. Age-sex structure tells us about a population’s past trends in fertility, mortality, and migration. It also provides information about the population’s potential for future growth. The greater the proportion of people in the younger-adult age groups, the greater the potential for more births and population growth.

Use the popups to find the following statistics for your FGP Team.

Country	% Under 15	% Over 65	Life Expectancy Male	Life Expectancy Female

Use “Change Styles” to choose which statistics will be displayed on the map.

- How does the percent of young people in least developing countries compare to those in the most developed countries? Old people? [Choose “Percent of Pop Under 15” or “Over 65” and put style as “Counts & Amounts (Color)”]
- Why do you think this is so?
- What can we predict about the needs of a country based on their age structure? (The number of young people compared to the number of old people)
- How does the life expectancy in most developed countries compare to least developed countries? (Same as above, but choose “Life Expectancy” for Males or Females)
- Why do you think this is so?

Use “Change Styles” to examine the information on “GNI PPP per Capita”.

Gross national income in **purchasing power parity per capita** (GNI PPP/capita) 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. It can be compared to the “average income of the average person” in a country.

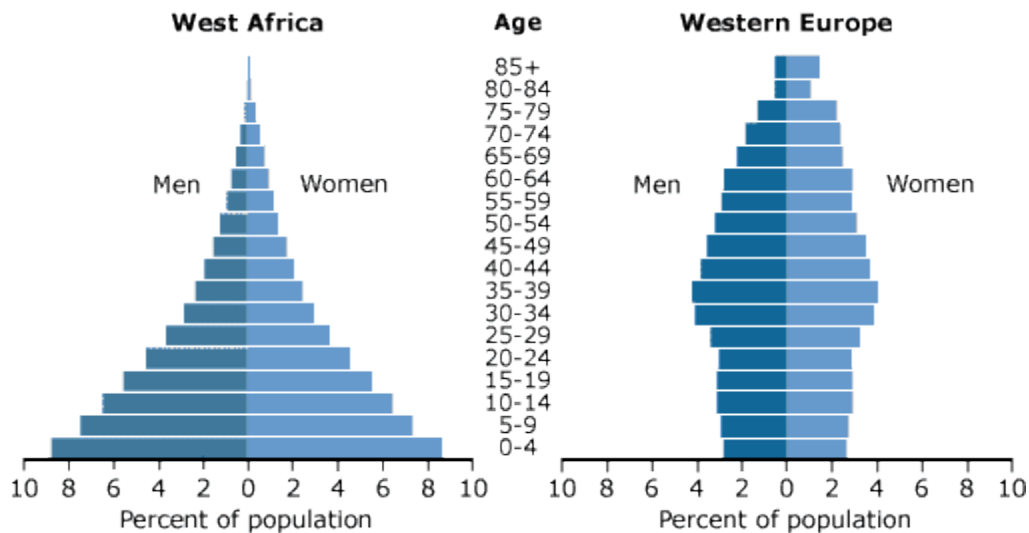
- What is the highest GNI PPP/capita on your FGP team? The lowest?
- Describe the patterns of high and low GNI PPP/capita you notice.
- What could lead to these patterns you noticed?

Part 3: Constructing and Interpreting Population Pyramids

What Is an Age-Sex Graph/Population Pyramid?

An **age-sex graph**, commonly referred to as a **population pyramid** even though the graph for some countries is not actually a pyramid shape, displays a population's age and sex composition. Horizontal bars represent the numbers or proportions of males and females in each age group, or cohort. The sum of all the age-sex cohorts in the population pyramid equals 100 percent of the population. Cohorts may vary from single years to groups of years.

Example Age-Sex Graphs with Five-Year Cohort



The left side of the pyramid represents the male population and the right side, the female population. The bars at the bottom of the pyramid represent the percent of the population that is male, 0-4 years old (left) and the percent of the population that is female, 0-4 years old (right). Each bar above the base represents the next five-year cohort, male and female, in the population. As cohorts age, they inevitably lose members because of death and they may gain or lose members because of migration. After age 45 the loss of population accelerates, causing the narrowing peak of all population pyramids.

Population pyramids reveal a great deal about a population at a glance. Populations of countries can differ markedly as a result of past and current patterns of fertility, mortality, and migration.

1. **QUESTION:** Describe some of the similarities and differences in the shapes of the two pyramids. What inferences can be drawn about social and economic circumstances in each country? What might be some reasons for the differences in the two pyramids?

Construct and Interpret Population Pyramid

In this activity you will analyze data for your FGP team. You will also construct population pyramids and speculate on differences in the quality of life in these countries.

1. From your FGP Team, pick your least developed country and your most developed country. Use the directions below to find the most current age-sex data for each country.
2. Open the U.S. Census Bureau International Data Base, available at:
<https://www.census.gov/data-tools/demo/idb/informationGateway.php>
3. Under "Select Report" choose "Population by Five Year Age Groups"
4. Select the country from the country list. Then "Submit."
5. Use the data to create a population pyramid for each country. [Note: Disregard pyramids that appear on the Census IDB site. These are based on absolute numbers and are not appropriate for use in this activity.]
6. Create your population pyramids for each country. There is Population Pyramid Graph Paper attached to this assignment in Google Classroom. You can print it off and complete that way, you should be able to "annotate" it online with Kami (it should give you that option under "Open With". OR if that's frustrating you can just do it on a piece of paper. You can take pictures of your hard copy graphs and attach them to your assignment.
7. Answer the following questions. To do so, you can:
 - Write the answers here in the document.
 - Upload a recording to Ms. Nelson of yourself talking about the answers (audio or video)
 - Upload a recording to Ms. Nelson of a discussion with at least one other classmate (audio or video)

1. Pick one of the countries that you just used to create a population pyramid. Compare the statistics you found in the Population Data Sheet assignment and the pyramid. How does the pyramid reflect the variables? [for example, how is Birth Rate reflected in the base of the pyramid?]
2. Use the same country you used in 1 – is it highly developed or low developed? Use two specific pieces of data from the table and pyramid to support the decision about level of development.
3. Look at both population pyramids you have created. Compare the pyramids and demographic information between the LDC and MDC. What generalizations can be made concerning demographic indicators and level of development? [for example, if the birth rate is high, then the level of development is...] Form at least three generalizations that are supported by the pyramids and data charts.
4. Think about the kinds of problems that could occur because of the differences in lifestyle and community priorities for different age groups in each location. Identify some investments (stores, entertainment, etc.) that might do well or some social programs (child care, education, medicine, etc.) that might be required in places with these populations.