Lab #4 - Population Age Structure Activity

Introduction and Background Material

Begin your investigation into Human Population by reading Chapter #6 in your text, *Essential Environment*. This chapter provides an excellent overview of the concerns regarding the current rise in the Human Population and connects population growth to environmental concerns. The graph below clearly illustrates how the global human population has grown exponentially, rising from less than 1 billion in 1800 to approximately 7 billion today.
Activity / Methods

Part A: Visit the web sites listed and answer the following questions:

1. Look at the U.S. Census Bureau's World Population Clock at: http://www.census.gov/main/www/popclock.html. This clock gives an up to the second estimate of the world and US population. Respond to the following for both the world and US populations. By how much does the population grow in 1 minute? How many people is that per second? Per week? (You can click on the US POP Clock and world POP clock for more information).

2. Find the US and World populations for the year you were born. List them along with the dates. Compare these numbers to present day population. How much has the US population grown in your lifetime? How much has the World population grown in your lifetime? What is your response to this growth?

3. Using the U.S. Census Bureau's State and County Quick Facts at: http://quickfacts.census.gov/qfd/, find the most recent population estimates for your state and city. What is the population for your city and state? How much has your city and state grown since the year 2000? How does your city population compare to the number of people the world and US population grows by each week respectively?

The next questions will be about Population Pyramids or Histograms, these examples are from your text:

4a. Look at the population histograms in the IDB Summary Demographic Data database at http://www.census.gov/ipc/www/idb/ for the United States. These histograms (also known as
population pyramids) show the population for various age groups for both men and women. Find the 2000 histogram data for the US. Compare the number of children, middle-aged people and elderly people. Roughly, what shape does this histogram have (pyramid, inverted pyramid, square, hour-glass, other?). Based on this histogram, would you say the U.S. was experiencing a rapid growth, slow growth, no growth or negative growth in population? Why?

4b. Now look at the population histogram for 2025. How do the number of children, middle-aged people, and elderly people compare? What shape does this histogram have? By the year 2025 would you say the U.S. population would be experiencing a rapid growth, slow growth, no growth or negative growth in population? Why?

4c. Based on these two histograms, what can you say about our nation's population growth, currently and in the near future?

5. Google “world population density map.” What five countries are the most populated in terms of density? What are the top five most populous countries? How are these two lists the same how are they different?
**Part B:** To complete this next activity you will need to use data from the United States Census Bureau. The data and population age structure diagrams are available at: [http://www.census.gov/ipc/www/idbpyr.html](http://www.census.gov/ipc/www/idbpyr.html)

**Personal Background Information**

Your date of birth __________

Your age __________

Your gender F M

**Data Collection**

1. Go to the Census Bureau website.
2. Select ‘Data Access’
3. Choose United States from the list of countries.
4. Select the year 2000
5. Select “Submit”
6. Select “Population Pyramids”
7. Repeat this for the years 2025 and 2050

You will compare data from the population age structure pyramids for the years 2000, 2025, and 2050.

On the diagram for 2000, find the cohort (group of similar individuals) for your age and gender. How many people are in that cohort?

__________________ million

(For example, if you are a 36-year-old female, there are currently 11.5 million U.S. citizens in your cohort.)

Next, find your cohort for the year 2025. How many people are in your cohort in 2025?  ___________________________ million

Next, find your cohort for the year 2050. How many people are in your cohort in 2050?  ___________________________ million

Put your data in the chart on the next page.

Finally, follow the same procedure for two other countries of your choosing. Collect the data as if you were a citizen in those countries. Put the data in the chart on the next page.
**DATA:**

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<tr>
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<th>United States</th>
<th>Country 1=</th>
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<td># in cohort in millions (2025)</td>
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<td># in cohort in millions (2050)</td>
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Create a bar graph that includes the data for each country and year recorded. See example below. Include all data and the bar graph in your lab write-up. Then answer the questions in the following section.

Example Graph:
Post Lab Analysis / Discussion:

Answer the following questions on a separate piece of paper.

1. Which country had the largest cohort for your age group and gender in 2000?
2. Which country had the largest cohort for your age group and gender in 2025?
3. Which country had the largest cohort for your age group and gender in 2050?
4. Does the same country always have the largest cohort? Why or why not?
5. Which country had the smallest cohort for your age group and gender in 2000?
6. Which country had the smallest cohort for your age group and gender in 2025?
7. Which country had the smallest cohort for your age group and gender in 2050?
8. Does the same country always have the smallest cohort? Why or why not?
9. List and briefly discuss three (3) factors which affect the changes in the size of a cohort over time.
10. What is meant by carrying capacity?
11. Do you think the earth has reached its carrying capacity for humans yet? Explain your reasoning.
12. Why are there so many differing opinions about this?