

ASSIGNMENT1

Population Issues, Demographic Concepts, Age-Sex Structure
Due by February 10, 2025 (Monday) at 11:59pm
Percent of final grade: 20%

Instructor information

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Submission

This assignment should be submitted through Turnitin within Canvas. Turnitin is an online database system designed to help instructors **detect plagiarism**, track citations, facilitate peer reviews, and provide paperless grading markup in written assignments. Students should develop this assignment **individually**.

Answers to substantive questions should be written in Microsoft Word. The Word document should be on US Letter paper size, one-inch margins, Arial font, size 11, 1.5 line spacing. Answers to methods questions should be solved in Microsoft Excel, but the final results and interpretations should be exported and properly formatted in the Word document. Students should include detailed formulas utilized to answer the questions in Word and Excel. Students should submit both the Word file and the Excel file on Canvas.

Look at examples of how to properly format tables and figures in Word at http://www.ernestoamaral.com/docs/soci633-25spring/Examples_tab_fig.pdf.

See examples of how to place tables and figures in your document, as well as of how to cite them throughout the document on this link (<http://www.ernestoamaral.com/papers.html>).

Purpose

The purpose of this assignment is to test the knowledge about topics on population issues, demographic concepts, and age-sex structure as discussed in the classroom and course material. These topics are the foundation to understand a series of demographic methods discussed throughout this course.

Students should use scientific theoretical framework and data to support their analysis on population issues. They should not rely on preconceptions and perceptions we might have about specific demographic subjects.

Main references

Poston, Dudley L.; Bouvier, Leon F. 2017. **Population and Society: An Introduction to Demography**. New York: Cambridge University Press. 2nd edition.

Rosling, Hans. 2013. **Don't Panic: Hans Rosling Showing The Facts About Population**. Stockholm: Gapminder. (<https://vimeo.com/79878808>)

Wachter, Kenneth W. 2014. **Essential Demographic Methods**. Cambridge: Harvard University Press

Population issues (6 points): 1,000 ± 100 words

Questions 1.1, 1.2, 1.3, and 1.4 are worth 1.5 points each.

1. A consistent discussion in demographic literature is related to how rapid population growth could potentially impact natural resources, climate change, and poverty in developing countries. Some researchers emphasize the need for more improvements in agricultural production and increased concern with the environmental limitations facing a growing population. They argue that there are too many people on Earth and we would all be better off if there were fewer people on the planet. Other researchers indicate that we've overcome these challenges through a reduction in poverty, educational improvements, and the provision of food to large populations.

1.1. Based on course material, are there too many people in the world nowadays? Why? Discuss these different concerns related to population growth, transition, and evolution for current societies.

1.2. Why population composition (e.g., by age, sex, race/ethnicity, marital status, and socioeconomic status) and population changes over time are important topics for demographers?

1.3. Why spatial distribution is an essential topic to understand human populations? What are some of the consequences of population distribution?

1.4. Analyze the possible implications of global population growth on natural resources and climate change. Discuss the significance of demographic factors (e.g., age, sex, socioeconomic status) in understanding population dynamics.

In addition to the course material covered in the class, I suggest you watch the video by Hans Rosling (link above and on the course website) about analyzing demographic trends with scientific data, as well as check the material of my Population and Society (SOCI 312) course (<https://www.ernestoamaral.com/soci312-24fall.html>).

Demographic concepts (4 points)

Questions 2.1 and 2.2 are worth 2 points each.

2.1. Define the following concepts in demography: balancing equation, population growth rate, exponential growth, closed populations, and doubling times.

2.2. Define and differentiate the following concepts: period person-years lived, cohort person-years lived, rates, probabilities, and ratios.

Age-sex structure (10 points): 1,000 ± 100 words

Question 3 is worth 10 points.

3. Select two U.S. states and collect data to create bar graphs with age-sex structure for 2000, 2015, and 2023 (see example in Figure 1). Estimate child dependency ratio, old-age dependency ratio, and total dependency ratio for each state in each year.

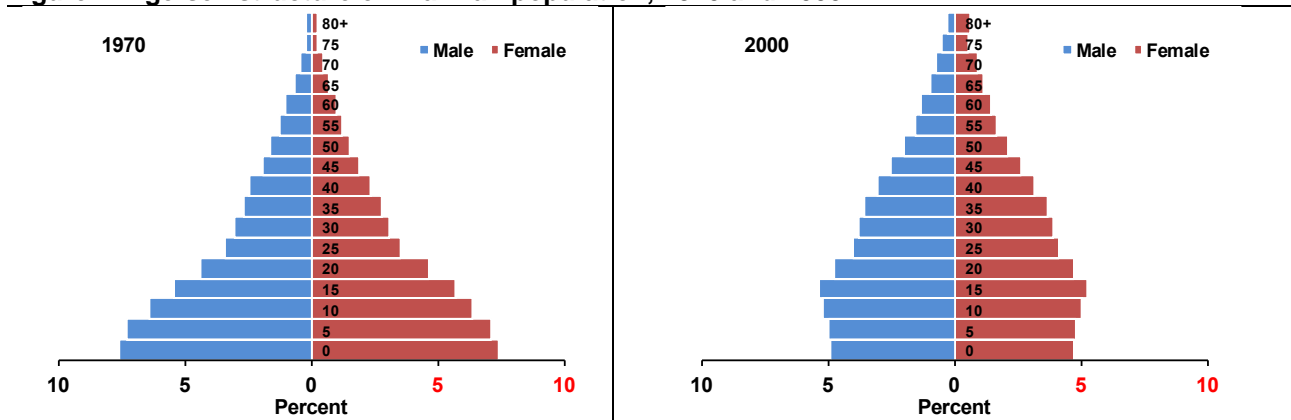
Include graphs with age-sex structure and table with dependency ratios in your report and analyze them. Feel free to add and analyze other demographic indicators (e.g., population growth rate).

Use data from the American Community Survey (ACS) one-year estimates, available in the U.S. Census Bureau data website (<https://data.census.gov/>):

- a. Click on the “Explore Tables” link.
- b. Select the two states on the left menu. Close the window in which you selected the states.
- c. Select the “Age and Sex” table.
- d. Select one year. You will have to download one year at a time.
- e. Unselect the “Margin of Error” option on the top right menu before downloading the data.
- f. Download the data in Excel format under the “More Tools” option on the top right menu.

The answer to this question should be seen as a document that tells a coherent story about a subject. You should aim to have an answer that contains the following sections: (1) introduction; (2) background (you can cite previous studies); (3) data and methods; (4) results; (5) final considerations; and (6) references.

Figure 1. Age-sex structure of Brazilian population, 1970 and 2000



Source: 1970 and 2000 Brazilian Demographic Censuses.