

Cadets: _____

Section: _____

The Excel document `PSL1_GDP Data.xlsx` contains information about the Gross Domestic Product (GDP) per capita for a multitude of countries. Economists from around the world study the economic output of each country by measuring the total amount of goods and services produced by that country in each year. This number, the GDP, is divided by the population to arrive a GDP per capita which is a measure of the wealth of citizens of that country. You will analyze this data using the statistical tools we've developed so far to answer an interesting question: is the world getting richer?

Work through the following problems, answering them on this sheet or in your Excel file. You will submit a memorandum formatted in accordance with AR 25-50 *Preparing and Managing Correspondence* to your instructor via Canvas no later than **03 2359 September 2025**. In your memo you should provide a brief background or purpose for the memo and your answer to the question, is the world getting richer? Your answer should be written to a non-technical audience, but should communicate how you conducted your analysis and why you came to the conclusion you did. The memo will be no more than one page long. **Professionally formatted charts will be included as an enclosure to your memo.** This worksheet will also be scanned and included with your memorandum as a second enclosure.

Part 1.

1. What do you think the histogram for the GDP per capita of the nations in the year 2000 would look like? Create a histogram of the GDP per capita for all nations using year 2000 data and state if your prediction matched the shape of the histogram. Make sure your histogram is professionally formatted, with axis labels, title, and legend (as necessary).
2. How did you clean your data prior to creating the histogram for 2000? Write what modifications or deletions you made and why they were reasonable and necessary.
3. What do you think the histogram for the GDP per capita of the nations in the year 2019 would look like? Create a histogram of the GDP per capita for all nations using year 2019 data and state if your prediction matched the shape of the histogram. Just as before, ensure this histogram is formatted professionally.
4. How did you clean your data prior to creating the histogram for 2019? Write what modifications or deletions you made and why they were reasonable and necessary.

5. Calculate the mean and median of the GDP for each year. Then calculate the percent of countries with a GDP per capita above and below the mean and median for 2000 and 2019. Fill out the table below with these answers.

	2000			2019		
	Value	% Countries Below	% Countries Above	Value	% Countries Below	% Countries Above
Mean						
Median						

6. What do you notice about the percent of countries above and below the median? Why does this make sense?

7. Which measure of center is more appropriate to use for GDP per capita? Explain your answer.

Part 2.

8. Scroll back to where you calculated the mean and median for each year. Add a row for the first quartile and third quartile. Use Excel to calculate these values for every year.

In this part of the PSL, you are asked to calculate the first and third quartiles of the data. Quartiles haven't been formally introduced in this course, but they are useful in describing the spread of a dataset.

Try asking a generative AI tool, like ChatGPT:

- What is a quartile and how do I calculate the first and third quartiles in Excel?
- How do quartiles help me understand a dataset?

Then, in your own words, summarize what you learned and why quartiles might be helpful when analyzing wealth or inequality. Cite your AI use in your Acknowledgment of Assistance for submission when you submit your memo.

