

Spring 2018
California State University, Los Angeles
College of Business and Economics

Econ 3060 - Class Project

- **Part 1 – Descriptive Statistics – 10% of the final grade**

You will use data.worldbank.org to access data for the purpose of exploring descriptive statistics and graphs with Microsoft excel. The entire assignment is to be done in multiple worksheets in only ONE Excel workbook file and emailed as an attachment to your instructor by the due date. All calculations and tables must be performed using Excel. **Remember to save your file every step of the way.** For both tasks, use the random year assigned by your instructor.

Task 1: GDP Data

Section 1. Download the GDP Per Capita Data

- 1) Go to the website <https://data.worldbank.org/>
- 2) In the search bar, type GDP per capita
- 3) Locate and click on the GDP per capita (constant 2010 US\$)
- 4) Save the downloaded file as FirstnameLastname_Econ3060_Section# to your computer

Section 2. Cleaning up the GDP Spreadsheet

Remember, you are going to only consider the data *for the year you are assigned*.

- 1) Rename the “Data” tab “GDP Per Capita”.
- 2) Delete all columns for years other than the one you were assigned.
- 3) Sort the data in ascending order (be sure to “expand the selection” to include the country names).

Section 3. GDP Statistics

Using Excel’s built-in formulas and cell references: find and label the following in a clear manner on the same tab as the data set: Note: You MUST use Excel to find these values.

- 1) Mean (=average)
- 2) Median (=median)
- 3) Count (i.e. the number of countries reporting data in your year) (=count)
- 4) Variance (consider the data a population) (=var.p)
- 5) Standard Variation (consider the data a population) (=stdev.p)
- 6) Minimum – What country has the **minimum** value? (=min)
- 7) Maximum – What country has this the **maximum** value? (=max)
- 8) Range – (=max-min)
- 9) Class Width – for a frequency distribution with 20 classes (Hint: Remember to round up to a convenient number) (=Range/#classes).

Section 4. GDP Distributions - Construct the following in the GDP tab

Construct a distribution of the data with Excel including each of the following in the own column. Be sure the table is clear, properly-labeled, and organized. Remember distribution

creation was covered in Chapter 2. Note: Use excel formulas and functions to find all values of the table.

- 1) Class Limits/Boundaries using the class width found in Part 3 and start the first class' lower class limit at 0 (Note: If you need more classes to accommodate the maximum value, that is fine)
- 2) Class Midpoints
- 3) Class Frequencies
- 4) Class Relative Frequencies (Use Excel to find, with cell references)

Section 5. GDP Graph – Construct the following in the GDP tab

Construct each of the following graphs with Excel using the distribution made in Section 4 above. Make sure that they are properly labeled and organized in such a way that the stacked on top of one another. Remember graph creation was covered in Chapter 2.

- 1) Frequency Histogram
- 2) Relative Frequency Histogram
- 3) Frequency Polygon
- 4) Relative Frequency Polygon

Section 6. GDP Analysis – Answer the following in the GDP tab

Answer the following with complete and clearly numbered entries.

- 1) Describe the variable “Country” by type (Qualitative, Quantitative Discrete, Quantitative Continuous) and level of measurement (Nominal, Ordinal, Interval, Ratio)
- 2) Describe the variable “GDP/Capita” by type (Qualitative, Quantitative Discrete, Quantitative Continuous) and level of measurement (Nominal, Ordinal, Interval, Ratio)
- 3) Calculate and explain the skewness in the data judging from the mean and median.
- 4) Suppose that you need to discuss the “average” and “spread” of GDP for your assigned year to the news media. What are the most appropriate measures to use for each? Explain.
- 5) What is the z-score for the U.S. GDP/Capita in your assigned year (calculate with Excel)
- 6) Was the U.S. above or below the mean? Explain using the z-score.
- 7) Was the U.S. unusually high or low compared to the World GDP/Capita? If yes, how much?
- 8) Categorize the data into quartiles (Hint: find the minimum, first quartile, median (second quartile), third quartile, and the maximum)

Part 2 – Correlation Analysis – 10% of the final grade

Section 1: Download the Mortality and Life Expectancy Data

- 1) Go to data.worldbank.org and type “**Infant Mortality**” in the search bar
- 2) Locate and click and download “**Mortality rate**” (rate per 1,000 births)”.
- 3) Now, locate Life expectancy, then click and download “**Life expectancy (years)**”.

Note: You should have 2 excel spreadsheets downloaded...And we will merge them into the **FirstnameLastname_Econ3060_Section#** workbook as Part 2.

Section 2: Cleaning up the Mortality Spreadsheet

- 1) Copy Data worksheets from downloaded files (both infant mortality and life expectancy).
- 2) Only consider the date for the year you were assigned (same year as with GDP) and delete all columns for years other than the one you were assigned in BOTH the Infant Mortality and Life Expectancy spreadsheets.
- 3) Rename the columns with appropriate labels. Be sure to indicate which year you are using.
- 4) Delete all the regions and states that are included in the dataset and leave only individual countries.
- 5) Delete any row where the country is missing either of the variables.

Section 3: Mortality Scatterplot = Construct the following in the Mortality tab

- 1) Using Infant Mortality as the explanatory variable, construct a scatter diagram of the data using Excel in the Mortality tab.
- 2) Make sure to appropriately label the graph and its axes
- 3) Include the equation of the regression line and the R^2 value on the graph
- 4) Interpret the slope and intercept in the regression equation

Section 4: Mortality Analysis

- 1) Compute the value of the correlation coefficient with Excel
- 2) State the strength and sign (+,-) of the correlation
- 3) Explain what this relationship reveals about this countries
- 4) Add linear trend line on the graph
- 5) What was the U.S.’s infant mortality in your assigned year?
- 6) What was the U.S.’s life expectancy in your assigned year?

Lastly, Save your **excel** file and then email it to your instructor as an attachment along with a **word** document (save it as your “FirstnameLastname_Econ3060”) containing the appropriate answers for the questions in each part and section. The due date for the project submission is May 12th, 2018 before 8:00am.

Part 3 - Infographic Assignment – 10% of the final grade

Your task is to conduct a demographic and economic research on an assigned county in California (U.S. Census Bureau, American Fact Finder) and figure out how to tell a story about it using images and words. Use our study of what makes a good infographic to determine how best to visually tell a story with the data and information you have found. Your infographic should look as visually appealing as your technical and artistic skills allow, but more important will be how you handle the information you find in your research and the story you tell with words and images.

Your primary question to answer is; how can you visualize the data in a way that tells the story more quickly and clearly than an essay would? To answer this question, you will need to distill your research down to the most important points, without losing the context necessary to tell your story.

You will also need to be organized and keep meticulous track of your sources. You should maintain a list of links to all the information you find in your research and all information you include in your infographic should be documented. The documentation should be worked into the design of your graphic (it may be small and at the bottom of the graphic, but it needs to be there).

Your completed infographic should:

- Tell the basic story of your assigned county
- Include the quantitative and/or qualitative data to support your topic
- Be creative and interesting

General Rules:

1. You may work with a partner or individually.
2. Be ready to present 4-5 minutes during our May 9th class meeting in front of the class.
3. Save the infographic on a portable drive and email it to me before the class.

Good luck and have fun!

Some tools for creating infographics

Piktochart (6 free themes that are editable)

Infogram (online infographics maker, most useful if you have numerical data)

Advice for Creating Infographics:

10 Tips for Designing Infographics

<https://digitalnewsgathering.wordpress.com/2010/04/24/10-tips-for-designing-infographics/>

How to Strike the Elusive Balance Between Data and Visualization