

**Homework #1**

**Distributed: Wednesday, January 10**

**Due: Monday, January 22, 2:40 pm**

The grade you receive on your homework will be based on the completeness of your answers. Under this system, answers that are incorrect, but complete, can receive full credit. You are responsible for checking your answers against the answers posted on Canvas.

***BE CAREFUL:** Since homework grades are based on completeness (not correctness), a high score on a homework assignment does **not** mean that all your answers are correct.*

To receive full credit, your homework assignment must be NEAT and COMPLETE.

All words must be typed (or printed-by-hand) neatly and legibly.

All graphs and tables must be neat and fully labeled.

Print your name and submission date at the beginning of the assignment.

**Staple** all pages together and put your name on the top of each page.

The first page of the course syllabus explains credit for homework assignments.

**PART I: (20%)**

1. LAY, Chapter 1 end-of-chapter exercise: #1, page 17 **Be sure to look at (and play with) the resources provided on LAY website to find the resources which make completing textbook exercises easier.**

In addition to performing the requested calculations, write a brief paragraph in which you compare the U.S. and Mexico in terms of population size, births, deaths, natural increase, and migration in the 2012-13 period. What did you learn about the contributions of migration to the populations of the two countries?

2. LAY, Chapter 1 end-of-chapter exercise: #2, page 17

In addition to performing the requested calculations, write a brief paragraph in which you compare the U.S. and Mexico in terms of 2012 population rates (birth, death, natural increase, total growth). How do you explain the difference in crude death rates between the U.S. and Mexico? Hint: Remember that these are **crude** rates.

**PART II: (30%)**

3. Look at *World Population Data Sheet 2017* available on the Population Reference Bureau website. You can find the link on Canvas (Modules, DATA). Be sure to use the 2017 Data Sheet. Others years are also posted.
  - a) What is current crude birth rate for world?
  - b) What is current crude death rate for world?
  - c) What is the current rate of total increase for the world population? (Calculate using BR and DR). What is the world population growth rate ( $r$ )? How fast will world double in population at this growth rate? Explain how you calculated the doubling time.
  - d) Find the crude birth rate, crude death rate, and rate of total increase, for Africa, North America, 'Latin America & the Caribbean', Asia, Europe, Oceania, and 1 country (not U.S. or Mexico) you think is particularly interesting. Plot these statistics. You should provide 3 plots (birth rate, death rate, total population growth rate) with rates on the vertical axis and the continents/country on the horizontal axis. You may plot by hand or by computer (e.g., Excel).
  - e) Provide a 1 paragraph discussion of how these statistics differ across continents and how the country you chose compares to other places. How is the country you chose unique or particularly interesting?

### PART III: (24%)

4. LAY, Chapter 3 end-of-chapter exercise: #1, page 85
5. LAY, Chapter 3 end-of-chapter exercise: #2, page 85-86 Graph by hand or by computer.
6. LAY, Chapter 3 end-of-chapter exercise: #3, page 85
7. LAY, Chapter 3 end-of-chapter exercise #4, page 85

#### HOW TO USE THE BUBBLE GRAPH WEBSITE - [GAPMINDER](#):

Question #4 on page 85 instructs you go to the “Exercises” section of the *Demography* textbook website. There you will click on the bubble graph to go to the data source necessary to answer this question. At the top of the page after you have clicked on the bubble chart, you will be offered the option to “Try out the new and improved Bubble Chart at [gapminder.org/tools/](http://gapminder.org/tools/). The hyperlink provided [here](#) (and on Canvas) takes you to that “new and improved site”.

To answer Homework Question 7 (Chapter 3, exercise 4) you will select the specified 5 countries (right side of screen), and graph time patterns of two variables: (1) cumulative CO2 emissions, and (2) CO2 emissions per person. To examine these patterns you must change the variable on the Y axis. Do this by clicking on the Y axis label and search for CO2 emissions by typing “CO2 emissions” in the search box at the upper left of the screen. When you do this, three CO2 variables will come up: choose “Cumulative CO2 emissions” and “CO2 emissions”. The ‘CO2 emissions’ variable is per capita (tons per person). For both Y variables, set the axis to ‘log’ (not ‘linear’).

Click on the X axis label to change the horizontal variable to “Time”. Generate a graph for each of the two Y variables. Once you have the countries chosen and the correct variables on the axes, click on the play button (▶) on the bottom left of the screen to start the bubbles moving through time. You can stop the bubbles at any date to examine patterns in a given year. The CO2 variables you use in your graphs will be in log form, so you are looking at rates of change of CO2 emissions over time.

For this question, you only have to turn in descriptions of time trends you see when you perform the 2 computer exercises about carbon emissions. BUT, please take a look at all the many variables available. Spend time playing with this powerful data source and its excellent infographics. At the bottom of the Gapminder page you will find other resources and other videos with Hans Rosling (the guy in the “200 Years of Demographic and Economic History” video).

Help options are at the top left of the Gapminder screen. Especially useful are the one page *PDF GUIDE* and the 2 minute video under “How to use”.

### PART IV: (26%)

8. According to the Malthusian model of economic-demographic interaction, a technological advance in production (e.g., a new crop rotation) will eventually lead to a new equilibrium characterized by higher wages, higher total population, higher birth rates and lower death rates. True or false? Explain your answer with words and graphs.