Example Assignment Descriptions

"The Bet"

In 1980 two prominent scholars, Julian Simon and Paul Ehrlich, disagreed vehemently over the future of human-environment interaction. Erhlich, whom we will refer to as a "Doomsdayer," thought that there would not be enough food and resources to supply the demands of an increasing population. On the other hand, Simon, whom we will call a "Cornucopian," thought that increases in population would correspond to increases in technology and there would be plenty of natural resources to go around. To settle their argument the two decided to make a bet.

Agreeing that the price of a natural resource is an indication of its scarcity, they bet on the future price of five resources chosen by Paul Ehrlich and two other colleagues at the University of California - Berkeley, John Harte and John Holdren (currently the Director of the White House Office of Science and Technology Policy for President Obama). Ehrlich, et al. "invested" $200 in each of five metals: chrome, copper, nickel, tin and tungsten for a total of $1,000. The terms of the bet were that in 1990 the prices of the five metals would be compared to the 1980 prices, and after adjusting for inflation, Simon would pay Ehrlich if the value of the "investment" was greater than $1,000 and if the value was less than $1,000, Ehrlich would pay Simon the difference.

This assignment will explore the ramifications of "The Bet" using natural resource data. It is worth a total of 13 points.

1) Use the Historical Statistics for Mineral and Material Commodities in the United States website (http://minerals.usgs.gov/ds/2005/140/#data) to determine who won the bet and how much the winner won. (1 pt)

2) If the terms of the bet had been changed from ending in 1990 to 2010, do you believe the outcome would have changed? Why or why not? (2 pts)

3) If you could go back in time to tell Ehrlich which five commodities to choose in order to maximize his winnings, which five resources would you tell him to choose? How much would he have won? (3 pts)

4) What five resources would have maximized the winnings for Julian Simon? How much would he have won? (3 pts)

5) If a similar bet were offered today, would you be willing to take either side? Why or why not? If so, for which commodities? (4 pts)

Does it make economic sense to buy a hybrid car?

This assignment asks you to collect and organize data related to hybrid automobiles to analyze the decision of whether or not it makes sense to buy a hybrid. The final product is a spreadsheet (i.e. a Google document) that answers the question, "Does it make economic sense for a typical consumer to buy a hybrid car?" Your group should come to class on ___ with a yes or no answer to the question and be prepared to justify your answer against those who disagree with you. Please include a detailed list of your data sources and hyperlinks to the data.

To get you started here are a few questions you will likely need to answer on the way to your solution (you will come up with MANY others):
What is the "extra" cost of a hybrid?
What is the relevant time horizon for the analysis?
What is the relevant interest rate to use?
What value will you use for the price of gasoline?

Grading:
This assignment is worth 25 total points.
Thoroughness and accuracy of your calculations. (9 pts)
Are your data sources appropriate and well documented? (6 pts)
Were you able to justify your solutions to the rest of the class? (4 pts)
Did you actively participate in the discussion of other's analysis? (3 pts)
Is your spreadsheet well organized and easy to follow? (3 pts)

Is Economic Growth Bad for the Environment? (25 points possible)

Some economists believe that the answer to the question of whether or not economic growth is good or bad for the environment is "both." These economists, most notably Simon Kuznets, believe that at low levels of economic output individuals are willing to sacrifice environmental quality (i.e. accept higher levels of pollution) for higher economic output, but at higher levels of income individuals generally demand higher levels of environmental quality. This hypothesis, dubbed the "Environmental Kuznets Curve," (EKC) posits an "inverted u-shaped" relationship between income (x-axis) and environmental destruction (y-axis) as initially increases in income result in more environmental destruction but then at higher levels of economic output environmental quality is increasing with income.

The website GapMinder.Org contains historical data for many of the world's countries on both Sulfur Dioxide and Carbon Emissions, as well as income data, dating back several decades. (Please support your answers with graphs taken directly from the website where appropriate. Overall visual organization of your assignment is worth 4 points)

1) Create a graph of per-capita income (x-axis) vs. per-capita sulfur dioxide emissions by country for the most recent year data are available. Do the data seem to support the Environmental Kuznets Curve hypothesis? Why or why not? If so, at what income does it appear that emissions begin to decrease? (1 pt)

2) Use the timeline to examine the relationship between income and sulfur dioxide emissions over time. Which year shows the best evidence of an EKC? What is the income threshold for that year? (2pts)

3) Use the ability to "track" countries (clicking on a country will leave a trail during the data animation) to select and follow countries over time. Which country do you believe best supports the EKC hypothesis? What is the economic "threshold" for that country? (3 pts)

4) Using this simplified data analysis tool we are unable to control for any other variables that might be influencing income or emissions. If you were to conduct a more thorough analysis, what do you believe to be the most important variable to add? Why? (1 pt)

5) Repeat steps 1-4) using Carbon Dioxide Emissions in place of sulfur dioxide emissions. Are there any generalizations you can make as a result of this analysis? (7 pts)

6) Some scholars believe that deforestation might be another environmental indicator that follows the EKC. Can you repeat steps 1-4) with one of the forestry variables available in Gapminder to find evidence consistent with the EKC hypothesis? If so, describe it, if not why not. (7 pts)