Course Project Warm-up #1

Overview   For this warm-up, you will do exploratory analysis on two variables and their relationship. You will submit a carefully written and neatly presented report. The main goals are to practice the ideas we have seen in the course so far and to become proficient with relevant computing technology such as Minitab.

Your analysis will be motivated by the question "What is the relationship, if any, between Body Mass Index (BMI) and shoe size?" You will use data from the Fall 2007 Math 160 Survey to explore this question. You will limit attention to male individuals in the data set. (If you are curious, you can easily do similar analysis for female individuals in the data set.)

Your analysis should include exploration of the distribution from the data set for each of the two variables and exploration of a relationship between the two variables that is revealed by the data set. You should strive to make concrete conclusions, although these are likely to be modest given that you will only be doing exploratory analysis.

Specific requirements   You should submit a carefully written and neatly presented report that gives your analysis and conclusions. Here are some specific requirements and hints:

- Submit a printed copy generated using a word processor such as Word.

- The due date is Friday, October 5 by 3 pm.

- Graphs should be inserted into your document electronically (see note below) rather than taped or glued on.

- Each figure should be numbered and should include a caption. Look at the text for examples of this.

- In your writing, reference a figure with something like "From Figure 1, we see that the distribution is. . ."

- Use 1.5 or double spacing (so I have room to write comments if needed.)

- Pay attention to proper grammar, spelling, and punctuation.

- Assume your readers have had an introductory statistics course but are not familiar with this survey data set.

- You can work cooperatively with others in doing the analysis. You must work independently on your writing. That is, you can work with other people to generate graphs and numbers that might be relevant and you can talk about what these reveal. You should then go off and write on your own. Once you start writing, don't talk with classmates. You can come talk with me or work with writing tutors in the Center for Writing and Learning.

Evaluation   In evaluating your work, I will pay attention to content, writing, and presentation. This and a few other warm-up exercises will comprise 5% of the total value for your course project.

Possible organization   Here's a bare outline showing one way to organize your report:

1. Introduction
2. Description of the survey data set
3. Exploratory analysis of BMI distribution
4. Exploratory analysis of shoe size distribution
5. Exploratory analysis of relationships
6. Conclusions

I can envision a reasonable report with one or two paragraphs for each of these items.

Getting graphs from Minitab to Word   It's likely you will use Minitab to generate graphs and Word for your word processing. If you have a graph in Minitab, you can click in the graph window and then copy (using the key combination **Ctrl+C** or the menu item **Edit: Copy Graph**. Go to your Word document and put the cursor at the place you want the graph inserted. You can try pasting directly (Ctrl+V or **Edit: Paste**) but this might not work. If not, use the menu item **Edit: Paste Special. . . .** In the dialog box, you will see several graphics formats. Select **Bitmap** and then hit **OK**.

First steps   Here are some steps that you can follow to get started:

- Get a copy of the Fall 2007 Math 160 Survey data from **Alexandria\stats\Jackson**.
- Extract the data for height, weight, and shoe size for males. (In Minitab, you might find **Data: Unstack Columns...** useful for this.)
- Find the formula to calculate Body Mass Index (BMI) using height (in inches) and weight (in pounds).
- Calculate the BMI distribution for the male individuals in the survey data set. (In Minitab, you can use **Calc: Calculator. . .** for this. In the dialog box, you will enter a column or variable name to store the results and a formula under **Expression:**.)
- Get graphical and numerical summaries of the BMI distribution.
- Get graphical and numerical summaries of the shoe size distribution.
- Use graphical and numerical tools to explore evidence of a relationship between BMI and shoe size.

Advice   Get started early. If you haven't spent much time with Minitab, it's likely you will run into technical problems. Don't get frustrated by this. Come talk with me or send me e-mail. You'll be able to master use of Minitab with a bit of practice. You'll then be able to focus on the content.