**Sociology 3155– Quantitative Research Methods & Analysis**  
**Homework #3**  
**Due Monday, March 5, at the beginning of class**  
**40 POINTS**  
**NOTE: PLEASE TYPE ALL ANSWERS & ATTACH ALL CALCULATIONS & SPSS OUTPUT**

**PART A INFERENTIAL STATISTICS**

**1. Do SPSS Exercise 6.1 on pp. 152-154 of Healey. For those of you using a different edition, I’ve also posted a .pdf file containing this part of the book. Using a word processing program**, create a table like the one Healey presents and fill in the values for it (4 pts).

**Remember, FOR PURPOSES OF THIS EXERCISE, YOU ARE ASSUMING THAT the GSS DATA IS THE POPULATION. Therefore, the mean age for all the cases in the GSS 2010 data set (N=2041) is 47.97, (not 46.88, which Healey has in the text—ours is different because we are using slightly different data) which you should treat as µ (the population mean). FOR SPSS “HOW TO” TIPS, REFER TO pp. 152-153.**

**Using complete sentences**, answer all of the questions he asks:  
2. What happens to standard error as the sample size increases? Why? (2 pts)  
3. How accurate are the estimates (sample means)? Are all sample means within a standard error of 47.97? (2 pts)  
4. How does the accuracy of the estimates change as sample size changes? (1 pt)

PART B ESTIMATION

Please remember to round all calculations (including answers) to **2 decimal places**.

1.Using **complete sentences** and your best pointy headed language, answer the following: In your own words, what is a confidence level? What is its relationship to alpha? (3 pts)  
  
2. **A random sample of 1,000 registered voters in a state was asked if they favored a proposal to restrict the sale of handguns. If 510 approved of the legislation, is it safe, at the 95% level, to conclude that "a majority" of the population approves?**  (3 pts)

* **Be sure to report the point estimate & confidence interval, and answer this question using complete sentences and your best pointy headed language.**

**3.** (3 pts) You have developed a series of questions to measure “burnout” in social workers. A random sample of 100 social workers working in greater metropolitan Shinbone, Kansas, has an average score of 10.3, with a standard deviation of 2.7. What is your estimate of the average burnout score for the population as a whole? Use the 95% confidence level.

4. (3 pts) The World Values Survey is administered periodically to random samples from societies around the globe. Listed is the number of respondents in each nation who said that they were “very happy.” Compute sample proportions and construct confidence interval estimates for both nations at the 95% level.

**Number very happy Sample Size**

**China 338 1493  
Nigeria 695 1471**

5. Professor Puddinpants surveys a random sample 175 UMD students and finds that they have paid an average of $73 in parking tickets (s = 6) in the past year. Calculate a confidence interval at the 99% level and report your findings **in complete sentences using your best pointy headed language (3 points).**

PART C One Sample Hypothesis Testing: Please **round all calculations (including answers) to 2 decimal places**.

**1. Professor Pectoral suspects that CLA (College of Liberal Arts) students are a bit “different” compared to the rest of UMD students. She starts her research by examining whether the ACT scores of CLA students differ from the population of UMD students. From the UMD administration, she discovers that the average ACT score for all UMD students is 28, with a standard deviation of 8. She then draws a random sample of 150 CLA students and finds an average ACT score of 26.**

**a. What is Pectoral’s research hypothesis? (1pt)**

**b. What is Pectoral’s null hypothesis? (1 pt)**

**c. Using an alpha of .05, calculate the z (obtained) (2 pts)**

**d. What can Pectoral conclude? Explain using complete sentences and your best pointy headed language. Make sure to reference (in the sentences) the critical and obtained values, and the decision regarding the null. (3 pts)**

**e. Would Pectoral’s conclusion change if she set the alpha at .01? Explain. (2 pts)**

2**. Nationally, the per capita property tax is $130. Based on the theory of “Crazy Southern Politics,” Professor Plum predicts that that southeastern cities will have lower per capita property taxes than the national as a whole. His random sample of 36 southeastern cities average $123 per capita, with a standard deviation of $22.**

**a. What is Plum’s research hypothesis? (1 pt)**

**b. What Plum’s null hypothesis? (1 pt)**

**c. Using and alpha of .05, what can Plum conclude? Summarize and explain your conclusions using complete sentences and your best pointy headed language. Make sure to reference (in the sentences) the critical and obtained values, and the decision regarding the null. (3 pts)**

**d. Would Plum’s conclusion change if the alpha had been set at .01? Explain (2 pts)**

**Did you TYPE ALL ANSWERS & ATTACH ALL CALCULATIONS & SPSS OUTPUT??**