

## SOCI 213/4 B – Statistics II Assignment 2

This assignment is due on February 14, 2013. You may deposit your assignment in my mailbox in the Sociology and Anthropology Department on the 11<sup>th</sup> floor no later than the due date or you may hand it in during the class of February 14. Late assignments will not be accepted.

It is expected that your assignment be word-processed. If this poses a problem, please see me prior to the due date. Include your name and student ID number on every page and number each page.

### Part 1 (worth 3%)

1. If a variable is normally distributed,
  - a. 50% of the observations will be less than the mean, and 50% of the observations will be greater than the mean.
  - b. 49.51% of the observations will be between the mean and +2.58 standard deviations above the mean.
  - c. 49.51% of the observations will be between the mean and -2.58 standard deviations below the mean.
  - d. 95% of the observations will fall within  $\pm 1.96$  standard deviation from the mean.
  - e. all of the above are true for a normally distributed variable.
2. A positive z-score indicates that,
  - a. the original raw score on a variable is below its mean.
  - b. the original raw score on a variable is above its mean.
  - c. the original raw score on a variable is equal to its mean.
  - d. an error was made in the calculation of z-scores.
3. The closer a raw score is to its mean,
  - a. the smaller its z-score value.
  - b. the further its z-score will be from 0.
  - c. the greater the standard deviation.

### Part 2 (worth 6%)

A sample of Canadian families revealed that they have on average 3.2 children, with a standard deviation of 1.5.

1. What percent of the sample have had more than three children? Show your calculations and provide a **brief** interpretation.
2. What is the probability that a randomly selected person from the sample will have between 1.7 and 3 children? Show your calculations and provide a **brief** interpretation.

### Part 3 (worth 3.5%)

Use the SPSS file (**assignment2-213.sav**) which can be found on the course Moodle site and located the variable called **map\_q170**, which refers to the following question:

**Approximately, how many kilometres is it from your residence to your spouse/partner's place of work?**

1. Using SPSS, generate statistics for the **variable map\_q170** using the **Analyze -> Descriptive Statistics** command. Specifically, obtain the **mean** and the **standard error of the mean** (S.E. mean).
2. Fill in the table below for the entire sample (100%), which you will assume is the population.
3. Draw a random sample of 5% of the population (refer to pages 31 to 34 in Computer lab session 2)
4. Repeat step 1 and fill in the table for the 5% sample.
5. Draw a random sample of 20% of the population (refer to pages 31 to 34 in Computer lab session 2)
6. Repeat step 1 and fill in the table for the 20% sample.
7. Draw a random sample of 50% of the population (refer to pages 31 to 34 in Computer lab session 2)
8. Repeat step 1 and fill in the table for the 50% sample.
9. Draw a random sample of 75% of the population (refer to pages 31 to 34 in Computer lab session 2)
10. Repeat step 1 and fill in the table for the 75% sample.

<b>Sample %</b>	<b>Sample Size</b>	<b>Sample Mean</b>	<b>Standard Error of the Mean</b>
<b>100%</b>			
<b>5%</b>			
<b>20%</b>			
<b>50%</b>			
<b>75%</b>			

Summarize these results by providing a **brief** description about what happens to the sample mean and standard error relative to the population (entire sample/100%) mean and standard error, as the sample size increases/decreases.