**HwRefChapt6: SDM +Estimating mean, proportion and variance**

**Due Date: No due date (will not be graded)**

**Ref: Chapter 6@ BioStat 8th ed, B. Rosner**

[Problem ref **5.18**: Page 142, Biostat, B. Rosner, 8th ed]

(5.18) People in age group 15-44 years are hypertensive if their systolic blood pressure (SBP) is higher than 140 mmHg. It is also assumed that the SBP is normally distributed with mean 125 mmHg and standard deviation 10 mmHg for people in age group 15-44 years. Let represent the mean of SBP measurements for samples of size 25, for people from the age group 15-44 years.

1. What are the mean and standard deviation of the sampling distribution of ?
2. What is the probability distribution of the mean ?
3. What proportion of 15-to-44-year-old people will have mean SBP between 127 and 130 mmHg?
4. What is the 90th percentile of the distribution of ?

**(6.25)** A study is conducted to test the hypothesis that people with glaucoma have a higher-than average blood pressure. The study includes a sample of 200 people with glaucoma whose mean SBP is 140 mmHg with a standard deviation of 25 mmHg.

(a) Report a point estimate of the true mean SBP among people with glaucoma.

(b) Find the margin of error for a 95% CI estimate of .

(c) Find a 95% CI for the true mean SBP among people with glaucoma.

(d) If the average SBP for people of comparable age is 130 mmHg, is there an association between glaucoma and blood pressure?

(e) Find a 95% CI for the variance and .

**(6.27)** Suppose a clinical trial is conducted to test the efficacy of a new drug, spectinomycin, for treating gonorrhea in females. Forty-six patients are given a 4-g daily dose of the drug and are seen 1 week later, at which time 6 of the patients still have gonorrhea.

(a) What is the best point estimate of p, the probability of a failure of the drug?

(b) What is the 95% CI for p?

**(6.115)** Which of the following samples results yields a 95% CI for with a smallest width and why?

1. , s=5, n=61
2. , s=4, n=30
3. , s=3, n=20
4. , s=6, n=121