**ActRefChapt6: SDM +Estimating mean, proportion and variance**

**Due Date: 02/15/2022**

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

[Ref **5.17**: Page 142, Biostat, B. Rosner, 8th ed]

1. People in age group 1-14 years are hypertensive if their systolic blood pressure (SBP) is higher than 115 mmHg. Suppose that the SBP () is normally distributed with mean 105 mmHg and standard deviation 5 mmHg for people in age group 1-14 years old. A sample of 16 people from the age group 1-14 years old is considered. Let represent the sample mean of SBP measurements for samples of size 16.
2. What are the mean and standard deviation (SE) of the sampling distribution of ?
3. What is the probability distribution of the mean ?
4. What proportion of 1-to-44-year-old people will have mean SBP between 106 and 115 mmHg?
5. Find 95th percentile of the distribution of .
6. A sample of 25 infants delivered in a hospital for mothers with certain health problem during the pregnancy is considered to estimate the mean and standard deviation of birth weight of all infants in the hospital for mothers with the specified health problem. It appears from the sample that the mean weight is 116 oz with a standard deviation of 21 oz.
7. Report a point estimate of the true mean birthweight of all infants delivered in the hospital for mothers with the specified problem.
8. Find the margin of error for a 90% CI estimate of .
9. Find a 90% CI for the true mean birthweight .
10. If the average birthweight of infants in a neighboring hospital is 132 0z, is there an association between birthweight and mother’s health problem?
11. Find a 90% CI for the variance and .
12. In sample of 90 people surveyed to see if physiotherapy helped them with their pain and mobility due to their recent health issues. It turns out that 63 people reported to have an improvement of their pain and mobility.
13. Find a point estimate of the proportion () of people with an improvement of their pain and mobility in the population of people receiving the physiotherapy.
14. Construct a margin of error of 90% CI estimate of .
15. Find a 90% CI estimate of .
16. Which of the following samples results yields a 90% CI for with a smallest width and why?
    1. , s=4, n=30
    2. , s=5, n=45
    3. , s=3, n=95