

Lab #10: Continuous Variables (1 sample)

- 1) Explain what standard deviation and standard error are. How are they related?
- 2) What is the standard error of the sampling distribution of the mean for the following scores? Does the standard error get smaller or larger as the sample size increases?
 - a. $\sigma = 12$, $N=10$
 - b. $\sigma = 12$, $N=25$
 - c. $\sigma = 12$, $N=75$
- 3) Test 1 in a P300 class revealed a mean of 78.6 and a standard deviation of 8.9 for 24 students. Suppose past results from previous semesters have yielded a mean of 70 and a standard deviation of 9. Is the present P300 class significantly superior?
- 4) Currently, the average NFL running back's career lasts only 4.5 years (due to injuries, diminishing skills, etc.) with a standard deviation of 0.76. The data was pulled from a pool of 300 randomly chosen running backs whose careers started in the 1990's or later. In the 1960's and 1970's, the mean career for running backs was 6.3 years with a 0.76 standard deviation.
 - a. Are today's running backs having shorter careers?
 - b. Suppose the data shows today's running backs are having shorter careers. Can we conclude that today's game is more violent, thus resulting in more injuries?
- 5) Before 1995, the mean homeruns in one season for Major League Baseball players was 30, with a standard deviation of 4. In the last 10 years, the "steroid epidemic" has hit baseball. The following numbers are 10 randomly chosen current MLB player's homerun total average for the last 10 years. Are today's players hitting more homeruns?
22, 49, 36, 20, 50, 41, 30, 29, 44, 37