

Homework 5: One sample t-test Due Monday March 8.

- 1) The data file to be used in this homework is an Excel file "HW5" on my website.
- 2) **Problem** (this is a real question that my colleagues want an answer to): The garrison command at Fort Hood questions the white-tailed deer harvest policies for the last several decades at the fort; they wonder if the Natural Resource Branch has done an effective job of maintaining a sizeable, yet healthy deer population.
 - a. Your task is to assess this problem statistically under the following premise: healthier deer tend to be heavier in terms of body mass and larger body mass is driven by high quality and quantity nutrition.
 - b. *Research hypothesis*: if deer are significantly heavier today than they have been during the entire recorded harvest history (since 1971) at Fort Hood, then management has been effective
 - c. Calculate a weighted mean for harvest weight data for fawns (0.5 year olds) from 1971 to 2007; this will serve as your population mean, μ_{fawns} (given that over 4000 fawns have been harvested during this period, this is as close to population data as imaginable, so treat this value as μ).
 - d. On the same data sheet you have weights for 110 fawns harvested during the last five years; test your research hypothesis by answering (statistically), are fawns from the last five years significantly larger than μ_{fawns} for Fort Hood?

Criteria:

$$\alpha = 0.05$$

You may use Excel to determine relevant descriptive statistics

Show all of your inferential statistics work (your test) by hand

- 3) **Answer the following questions completely:**
 - a. What are your *statistical hypotheses*?
 - b. How have you assessed probability in this analysis (one or two tailed)?
 - c. Do you accept or reject H_0 ?
 - d. If you reject H_0 , what does that indicate concerning your research hypothesis?
 - e. What do you recommend to the garrison commander?