Tutorial 10

Week of March 25, 2019

Question 9.3.40, Page 389

Lactation promotes a temporary loss of bone mass to provide adequate amounts of calcium for milk production. A paper gives the following data on total body bone mineral content (TBBMC) (g) for a sample both during lactation (L) and in the post-weaning period (P).

Subject	1	2	3	4	5	6	7	8	9	10
L	1928	2549	2825	1924	1628	2175	2114	2621	1843	2541
P	2126	2885	2895	1942	1750	2184	2164	2626	2006	2627
$d = \text{P} - \text{L}$	198	336	70	18	122	9	50	5	163	86

(a) Does the data suggest that true average total body bone mineral content during post-weaning exceeds that during lactation by more than 25 g? State and test the appropriate hypotheses using a significance level of 0.05. [Note: The appropriate normal probability plot shows some curvature but not enough to cast substantial doubt on a normality assumption.]

(b) Calculate an lower confidence bound using a 95% confidence level for the true average difference between TBBMC during post-weaning and during lactation. What is your conclusion?

(c) Does the (incorrect) use of the two-sample t test to test the hypotheses suggested in (a) lead to the same conclusion that you obtained there? Explain.

Question 9.4.54, Page 398

Teen Court is a juvenile diversion program designed to circumvent the formal processing of first-time juvenile offenders within the juvenile justice system. An article reported on a study in which offenders were randomly assigned either to Teen Court or to the traditional Department of Juvenile Services method of processing. Of the 56 TC individuals, 18 subsequently recidivated during the 18-month follow-up period, whereas 12 of the 51 DJS individuals did so. Does the data suggest that the true proportion of TC individuals who recidivate during the specified follow-up period differs from the proportion of DJS individuals who do so? State and test the relevant hypotheses using a significance level of 0.10.

Do Test 2 Winter 2018 Multiple Choice questions 6, 7, 8.