

PMgt 630, Statistical Analysis

HW # 8

Fall 2008

**Note:** Please turn in electronically (empastats@gmail.com) by 7:30pm on 19 November.

## Complete The Following Problems:

1. Twenty-seven students were randomly selected to participate in a new educational program which uses active learning to teach principles. The students were tested using a standardized test, then the students were tested again after the active learning technique was applied. The data are shown in Table 1.
  - (a) State  $H_O$  : and  $H_A$  :.
  - (b) Check the conditions necessary for inference, including the use of an appropriate histogram.
  - (c) Test the claim that the active learning approach results in different mean scores on standardized tests  $\alpha = 0.05$ .
  - (d) Make an appropriate conclusion about your findings.
  - (e) Compute a 95% Confidence Interval for the mean difference between scores on standardized tests before and after active learning activities.
  - (f) Is there agreement between the conclusion in part 3 and part 4? Please comment.
  
2. A utilities manager is interested in assessing the whether the mean number of homes with solar power is different in two states. He takes a random sample of  $n_1 = n_2 = 22$  counties in two different states and counts the number of homes reporting the use of solar power. The data are shown in Table 2.
  - (a) State  $H_O$  : and  $H_A$  :.
  - (b) Check the conditions necessary for inference, including histograms of both states, and test of equal variances. Assume both samples are derived from a simple random sample.
  - (c) Test the claim of equal mean number of homes with solar power  $\alpha = 0.01$ .
  - (d) Make an appropriate conclusion about your findings.
  - (e) Compute a 95% Confidence Interval for the differences in mean number of homes with solar power between state A and state B.
  - (f) Is there agreement between the conclusion in part 3 and part 4? Please comment.

Table 1: Pretest and Posttest scores for 27 randomly selected students participating in new learning initiative

Student	Pretest	Posttest
1	91.5	103.0
2	103.9	102.6
3	102.6	104.0
4	98.1	103.4
5	95.9	93.5
6	98.9	102.7
7	102.4	104.3
8	103.3	101.5
9	97.4	101.1
10	99.5	98.1
11	101.9	104.6
12	101.4	102.0
13	99.1	108.0
14	93.4	104.5
15	97.4	102.6
16	105.3	101.9
17	106.9	100.9
18	107.8	103.9
19	104.9	106.4
20	96.2	98.3
21	104.0	99.0
22	106.1	103.1
23	100.2	95.4
24	101.2	100.3
25	103.1	101.0
26	104.2	102.7
27	103.7	99.2

Table 2: Number of homes in two states with solar power

County	# Homes (State A)	# Homes (State B)
1	796	754
2	807	749
3	810	744
4	805	753
5	799	737
6	794	755
7	795	752
8	807	762
9	799	756
10	795	753
11	806	759
12	796	740
13	785	750
14	797	749
15	789	743
16	813	747
17	793	749
18	792	751
19	810	758
20	788	740
21	802	747
22	802	750