

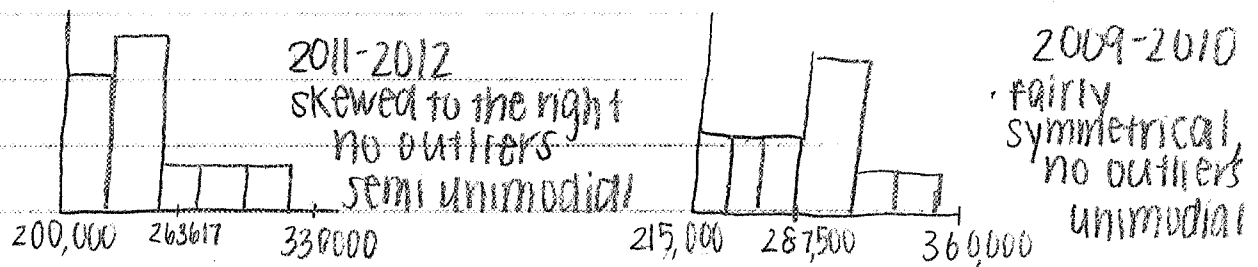
Extra Credit:
ELECTRIC

P. - μ_{11-12} = the avg. electric kWh during the school year 2011-2012
 μ_{09-10} = the avg. electric kWh during the school year 2009-2010

H. - $H_0: \mu_{11-12} - \mu_{09-10} = 0$

$H_a: \mu_{11-12} - \mu_{09-10} < 0$

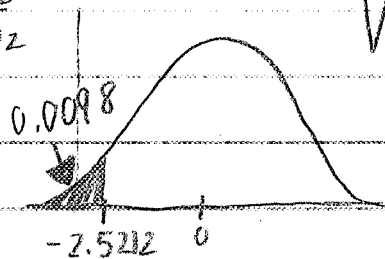
A. - assume SRS, groups are independent



N. - 2 sample t-test

$$T. - t_{df} = \frac{(\bar{y}_1 - \bar{y}_2) - (\mu_1 - \mu_2)}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \quad t_{21,8} = \frac{(240950 - 277225) - 0}{\sqrt{\frac{(33647)^2}{12} + \frac{(36769)^2}{12}}}$$

$t = -2.5212$



O. - $p = 0.0098$

M. - Reject H_0

S. - There is sufficient evidence to suggest that the true mean of electrical kWh in 2011-2012 is less than the true mean of electrical kWh in 2009-2010, at the level of significance of 0.05. The probability of error is 0.0098.

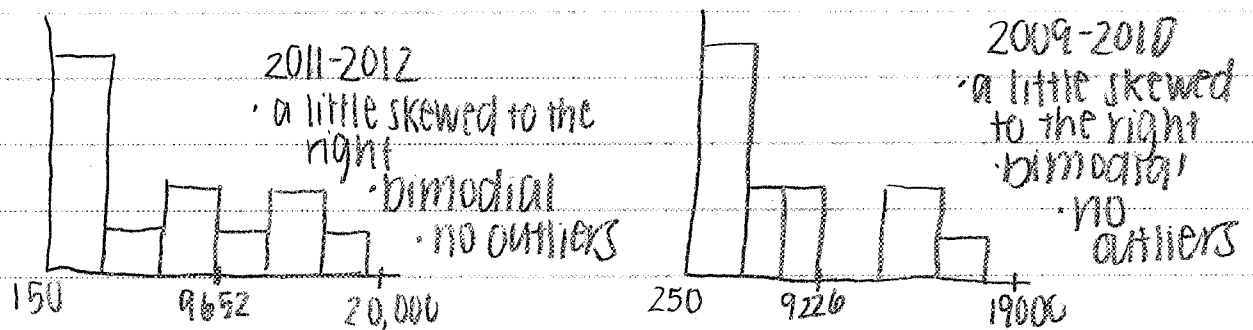
GAS

P. - μ_{11-12} = the avg. gas kWh used during the school year 2011-2012
 μ_{09-10} = the avg. gas kWh used during the school year 2009-2010

H. - $H_0: \mu_{11-12} - \mu_{09-10} = 0$

$H_A: \mu_{11-12} - \mu_{09-10} < 0$

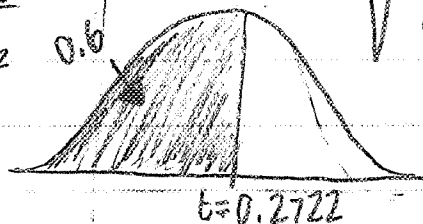
A. - assume independence, groups are independent,



N. - 2 sample t test

$$T. - t_{df} = \frac{(\bar{y}_1 - \bar{y}_2) - (\mu_1 - \mu_2)}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \quad t_{21,9} = \frac{(6976.6 - 6308.3) - 0}{\sqrt{\frac{(6109)^2}{12} + \frac{(5917)^2}{12}}}$$

$t = 0.272$ ✓



$\alpha - p = 0.606$

M. - Fail to Reject H_0

S. - There is not sufficient evidence to suggest that the true mean of 2011-2012 electric kWh is different than the true mean of 2009-2010 electric kWh, at the level of significance of 0.05.

Extra Credit:

During the years from 2009 to 2013, the average number of kilowatts used in the form of electric and gas were collected in Marriotts Ridge High School. The purpose of this test is to determine whether or not the Green School committee has succeeded and reduced the energy consumption in the school. To perform this test you want to select the very first year to show what the averages were at the beginning however since the 2013 school year isn't finished you don't want to select the 2012-2013 data. The next best option would be the 2011-2012 data since it is fairly spread out from the first set of data. After performing this test it was determined that the average amount of electrical KWH used has decreased since the school year 2009-2010. However the test also showed that there was no significant difference in the amount of energy consumption used in the form of gas between the 2009-2010 school year and the 2011-2012 school year. Basically, the Green School committee has succeeded in reducing the amount of electrical energy used while the amount of gas energy used has not changed.

