

Some advice and direction for Project #2

1. Return to the US News dataset on Tier I National Universities.
2. Perform a t test the difference in mean PeerRating, HSGCRating, GradRate and AlumSalary between public and private schools using a .05 level of significance.

I recommend you copy the values for the groups into two columns on a separate worksheet.

You can use the T.TEST function in Excel (see Quickguide 32 in the Salkind book). With this function, you identify the two arrays, specify the #tails, and the type (use type=2 for the independent sample t with equal variances assumed. This function yields the p-value under the null hypothesis.

Or you can use the two-sample t-test with equal variances in the data toolkit. The provides all the associated statistics. With this, set the hypothesized difference to 0.

Group	Group
1	2
3	7
4	8
6	9
5	12
3	10
4	

T.TEST function yields a p-value = 0.000455

The toolkit yields this:

t-Test: Two-Sample Assuming Equal Variances

	<i>Group</i>	
	<i>Group 1</i>	<i>2</i>
Mean	4.166667	9.2
Variance	1.366667	3.7
Observations	6	5
Pooled Variance	2.403704	
Hypothesized Mean Difference	0	
df	9	
t Stat	-5.36142	
P(T<=t) one-tail	0.000228	
t Critical one-tail	1.833113	
P(T<=t) two-tail	0.000455	
t Critical two-tail	2.262157	

Finally, with SPSS, chose:

ANALYZE/MEANS/COMPARE MEANS/INDEPENDENT SAMPLE T TEST

Then select the dependent variable and the group variable.

3. Perform an ANOVA test of the differences in mean PeerRating and HSGCRating by levels of Selectivity using a .05 level of significance. (NOTE: I DID NOT ASK FOR TUKEY'S HSD, but is the F ratio is significant, you should do it for a point of extra credit.)

Here to I recommend making columns for the groups on a separate worksheet.

You can do all the calculations by applying the formulas in the textbook. Even better use the ANOVA single factor procedure in the toolkit. Here is an example:

Group	Group	Group
1	2	3
3	7	1
4	8	1
6	9	2
5	12	1
3	10	1
4		3
		2

Note: You should choose a rectangular range of cells that included all groups.

This is the result:

Anova: Single Factor

SUMMARY

Groups	Count	Sum	Average	Variance
Group 1	6	25	4.166667	1.366667
Group 2	5	46	9.2	3.7
Group 3	7	11	1.571429	0.619048

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	171.09683	2	85.54841	50.62512	2.14E-07	3.68232
Within Groups	25.347619	15	1.689841			

Finally, with SPSS, chose:

ANALYZE/MEANS/COMPARE MEANS/ONE WAY ANOVA, then select the dependent variable and the group variable.

4. *For the crosstabulation of Selectivity by Type and Region by Type, test the differences between types using chi-square with a .05 level of significance. What impact, if any, do the small expected frequencies have?*

You should start with the crosstabs from Project 1. Then calculate the expected frequencies using the formula in the textbook. You then can calculate chi-square using the formula in the text.

Finally, use the CHISQ.TEST function in Excel, identifying the range of observed frequencies and expected frequencies. This function yields the p-value only.

fo	Yes	No
A	10	10
B	12	8
C	5	15
	27	33

fe	Yes	No
A	9.0	11.0
B	9.0	11.0
C	9.0	11.0

p-value 0.072348

With SPSS choose, the crosstabs procedure under the decriptives group. After selecting the two variables, request chi-square under the statistics putton.statistics

5. *Write a report (in MS Word) describing and interpreting the results of your analyses, inserting the any charts and tables where they belong. Upload your report to Canvas by clicking on the title of this assignment above. (NOTE: Include the opening discussion of the data source)*