

SPSS project: One-Way Analysis of Variance

Name _____

Studies conducted in Australia indicate that there may be a difference between the pain thresholds of blondes and brunettes. Men and women of various ages were divided into four categories according to hair color: light blond, dark blond, light brunette, and dark brunette. The purpose of the experiment was to determine whether hair color is related to the amount of pain evoked by common types of mishaps and assorted types of trauma. Each person in the experiment was given a pain threshold score based on his or her performance in a pain sensitivity test (the higher the score, the higher the person's pain tolerance). Use SPSS to analyze the data and answer the following question with SPSS if necessary. First, create a SPSS data file for the data given in the problem. Type your answers and paste the SPSS outputs in MS-Word document.

Light Blond	Dark Blonde	Light Brunette	Dark Brunette
62	63	42	32
60	57	50	39
71	52	41	51
55	41	37	30
48	43		35

1. What test should be used for testing whether there is statistically significant difference among the average pain thresholds of the four category of individuals?
2. Use the SPSS output to conduct a test to determine whether the mean pain thresholds differ among people possessing the four types of hair color. Draw a conclusion using the level of significance $\alpha = 0.05$.
3. What is the observed significance level, p-value, for the test performed above?
4. What assumptions must be met in order to ensure the validity of the inference made above?
5. Perform the multiple comparisons to find homogeneous subsets and interpret your result. You must attach the homogeneous subsets output from SPSS.
6. Try Tukey, Bonderroni and Scheffe multiple comparisons methods and explain which procedure provide larger confidence interval and which provide smaller confidence interval. (Choose any pair.)