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|  | |  |  |  | | --- | --- | --- | |  |  |  | |  | **Results for people who listen to music while doing homework.** |  | |  |  | | | | | | | | | |
|  | |  |  |  | | --- | --- | --- | |  |  |  | |  | To see if my results were significant, I planned to run an **An**alysis **o**f **Va**riances (ANOVA) test. For this test to be accurate, the spread between the data (the variances) needs to be equal. I ran a test for equal variances and found that, due to some extreme data points in test #1, the variances are not equal and an ANOVA test would not be accurate. A nonparametric test, which does not compare variances, would be a more useful test. I selected the Kruskal-Wallace Test.  Below are the mini-tab printouts of the ANOVA test and the Kruskal-Wallace test, run on the data for people who listen to music while doing homework. The P- value determines significance: the probability that if this test were repeated many more times, the data would show different results. The lower the p-value, the more evidence there is to reject the hypothesis (meaning, the more accurate the results). A hypothesis is not always what you think is going to happen, but what you assume to happen if the two events are really independent of each other. Rejecting a hypothesis means that the events are not independent, and your hypothesis is not true.  When testing for equal variances, my hypothesis was that the variances would be equal. Because the p-statistics were 0.005 for the Bartlett's Test and approximately zero for the Levene's Test, there is enough evidence to to say that the variances are not equal; therefore, a different test (the Kruskal-Wallace test) was used to determine the significance of the data.  My hypothesis for the Kruskal-Wallace test was that the subjects would perform the same on each test, regardless of what type of music they were or were not listening to. Because the p-statistic was zero, there is enough evidence to reject this hypothesis. This means that the subjects did not perform equally with each type of music. On the linked page are two graphs that show the extreme data points and compare the data. The extreme values are the asterisks on the first graph. |  | |  |  | | | | | | | | | |
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