

* As the above boxplots show, there is evidence that the variances of the two samples differ. Using a t-test assuming unequal population standard deviations we can test the hypothesis that the mean metabolic expenditures are equal for the trauma and non-trauma patients. The test shows that there is not enough evidence to support the hypothesis that the means are equal and we therefore reject the null hypothesis with a p-value of 0.0018.
* The distribution of the data does appear to be slightly skewed with relatively small sample sizes. Given this slight skewness and the previously mentioned different variances we have reason to question the assumptions of the t-test.
  + The difference in means for the observed data = 9.73
  + The difference in medians for the observed data = 9
  + Assuming the null hypothesis were true, the values can be mixed into one sample and groups reassigned randomly.
  + The difference in means = 0.61
  + The difference in medians = 0.0
  + Repeating this process 5 more times, the original observed difference in means, 9.73 is way outside of the range I found: (-3.9 to 3.69)
  + The observed difference in medians, 9, was also way outside of the range I found: (-1.4 to 2.1)
  + The proportion of random differences above the observed difference for both mean and median were 0%.
* The mean is sensitive to outliers while the median is not. If the last non-trauma value was mistakenly recorded as 231, the t-test would not be able to reject the null hypothesis