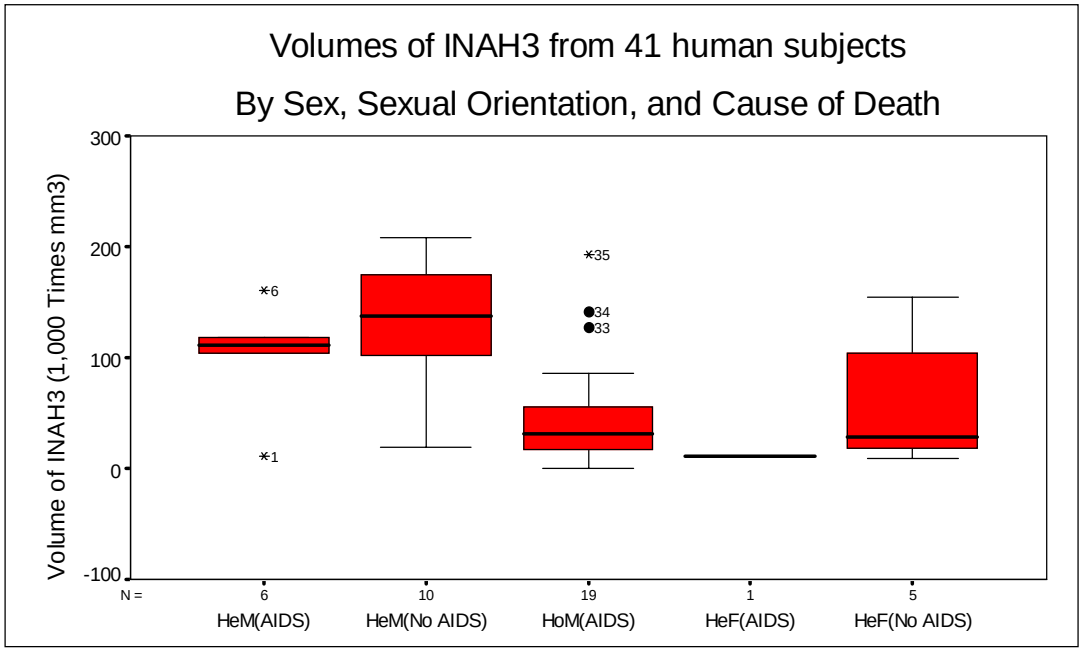
4. Displaying the Volumes of INAH3

Graphical displays of the data allow us to better understand the information contained in the data. In this section we will visualize the data by obtaining the side-by-side boxplots and the scatterplot of the volumes.

4.1 Side-by-Side Boxplots of Volumes of INAH3 on the Original Scale
4.2 Side-by-Side Boxplots of Volumes of INAH3 on a Logarithmic Scale
4.3 Plot of Volumes of INAH3

4.1 SPSS produces the following side-by-side boxplots of the volumes of INAH3 for the five combinations of sex (M-male or F-female), sexual orientation (He-heterosexual, Ho-homosexual), and cause of death (AIDS, No AIDS) on the original scale of measurement.



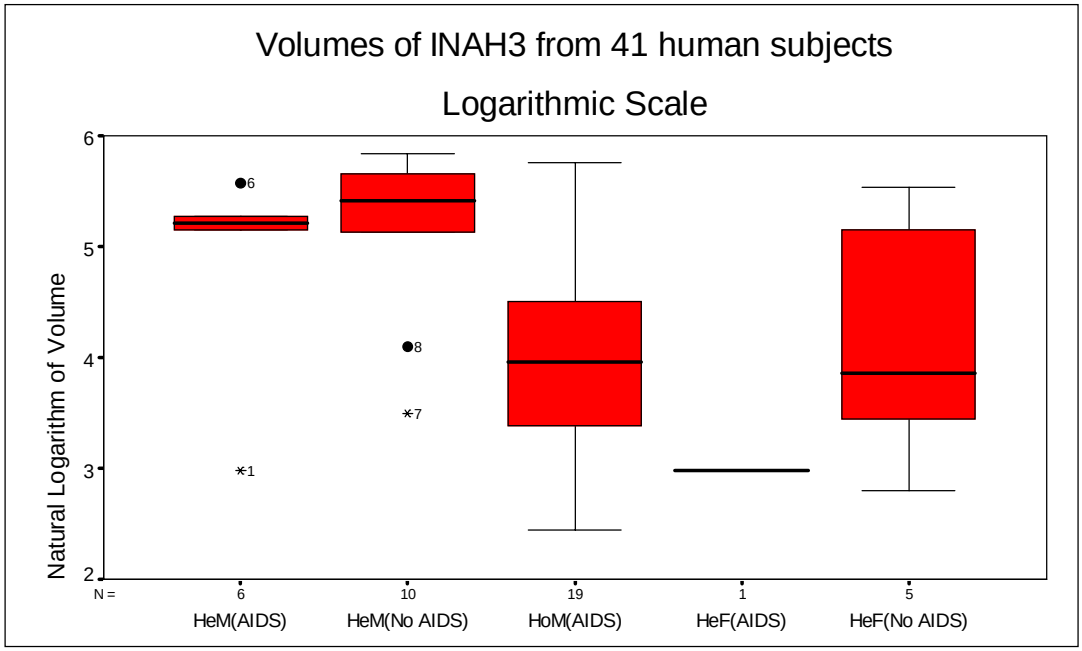
The positions of medians indicate that the median volume of INAH3 was a much smaller for the homosexual males and heterosexual woman than for the heterosexual men. Moreover, the boxplots indicate that volumes are associated with sexual orientation but not with cause of death.

Notice some differences in the variation of the volumes for the five groups. The variability is very small for the heterosexual men who died of AIDS, but it is much larger for the heterosexual men who died of other causes.

As you can see there is some skewness in some of the groups. In particular, the distribution of volumes for heterosexual females who died from other causes than AIDS is highly skewed to the right. Moreover, the distribution of volumes for heterosexual males who died from other causes than AIDS is skewed to the left.

Nevertheless, the skewness is exhibited in the groups consisting of a relatively small number of observations (5 and 10), it is difficult to detect nonnormality in such cases.

4.2 We will try to apply the natural logarithm transformation hoping to remove the skewness in the data. The side-by-side boxplots of the transformed volumes have the following form:



There are still some outliers in the data on the transformed scale. The distribution of volumes of heterosexual females who died of other causes than AIDS is still skewed to the right. The distribution of volumes for heterosexual males who died of other causes than AIDS is also skewed to the right.

It appears that the scale of volume, untransformed, appears best (although not ideal). Taking into account the small number of observations involved in the groups exhibiting skewness, we can conclude that there is no strong evidence of nonnormality in the data.

4.3 Now we will obtain a scatterplot of the volumes for the five groups.