3. Glance at the Data

Now let us look at the data. At first glance, there are significant differences in the group sizes. Specifically, the group sizes vary from 3 to 19. Those large differences in the group sizes are a consequence of the fact that breakdown times are very large for lower voltages and very small for higher voltages. Thus the number of observations for the levels of 26 and 28 kV is much smaller than the number of observations for the levels of 36 and 38 kV. Small group sizes for low voltages were used to save time in collecting the breakdown data.

The data show that breakdown times decrease as voltage level increases. This is what we expected based on the physical mechanism of the phenomenon. Notice that the rate of decrease in breakdown times is very high, it follows approximately an exponential curve.

There appears to be a great deal of variability in each group. There are both large and very small readings in each group relative to the main body of the data. However, the variability in each group changes as the voltage level increases. More precisely, the variability decreases as the voltage level increases; it is very large for low voltages and relatively small for high voltages. Moreover, the variability between the groups decreases as voltage level increases. Indeed, there are very small overlaps among the groups for low voltage levels and large overlaps for the high voltages.

There is some skewness exhibited in all seven groups. The groups are skewed to the right. There are clear outliers in the groups 2 and 4 (28 kV and 32 kV).