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HW05 MatPlotLib Reflection

UMN Data Science Bootcamp

10/24/2020

Pymacueticals Data Analysis Conclusions

Using the data provided and completing the necessary charts and data frames, there are multiple hypothesizes and conclusions we can come to. While the data is missing its control, we can still use the placebo to have a better understanding of the effectiveness of the tested drugs.

First, through our summary statistics we can get the first glimpse of which drugs possible perform best at reducing tumor size in mice. Of all the mean tumor sizes per each drug, both Capomulin and Ramicane had significantly lower average tumor sizes throughout the testing window. While this is not anywhere near conclusive evidence, there are some other telling factors that help show these two drugs' effectiveness. Compared to the placebo, both drugs had nearly 15 cubic millimeters less than the placebo, showing a fair bit of effectiveness at reducing tumor size against natural regression or placebo-based reduction. Additionally, our two drugs were compared with two other drugs with only the tumor size at the mouse's final tumor size. Capomulin and Ramicane at the final stages of the test show a major shift toward lower tumor sizes, demonstrating the drugs possible effectiveness.

Looking at the correlation between mouse weight and average tumor size, we can notice potential major externalities which may need to be addressed in future testing. With a .95 correlation coefficient there is a heavy correlation between the weight of a mouse and how large its tumor will be. This could create differences between tested data as all tumor data is not relative to the weight of the mouse, but only calculated in size of the tumor itself. Larger mice or smaller mice could skew data in both this test and future tests. Tumor size should be taken in relative proportion to mouse size, or all mice tested must weigh the same to ensure equal and clean data for comparison.

Finally, we have our single mouse with a timetable demonstration of tumor size over the time of testing. Using line graphs, we can see a visual representation of the tumor sizes over the timeframe. With our individual mouse of S-185, we see the decline from nearly 45 cubic millimeters to under 25 cubic millimeters. With additional coding we could see all mice and their decline to find the overall trendlines of each mouse. However, this visual representation of the mouse on Capomulin, we see the drug's effects on tumor sizes in mice, something very interesting to continue testing with.