**The brief for this assignment was as follows.**

“While your data companions rushed off to jobs in finance and government, you remained adamant that science was the way for you. Staying true to your mission, you've joined Pymaceuticals Inc., a burgeoning pharmaceutical company based out of San Diego. Pymaceuticals specializes in anti-cancer pharmaceuticals. In its most recent efforts, it began screening for potential treatments for squamous cell carcinoma (SCC), a commonly occurring form of skin cancer.

As a senior data analyst at the company, you've been given access to the complete data from their most recent animal study. In this study, 249 mice identified with SCC tumor growth were treated through a variety of drug regimens. Over the course of 45 days, tumor development was observed and measured. The purpose of this study was to compare the performance of Pymaceuticals' drug of interest, Capomulin, versus the other treatment regimens. You have been tasked by the executive team to generate all of the tables and figures needed for the technical report of the study. The executive team also has asked for a top-level summary of the study results.”

The full details of the brief can be found at: - <https://monash.bootcampcontent.com/monash-coding-bootcamp/monu-virt-data-11-2021-u-c/-/tree/master/02-Homework/05-Matplotlib/Instructions>

The Files providing the solution to the Python Challenge are the following.

1. "pymaceuticals\_mm" contains the Python / Pandas code for the Matplotlib challenge.
2. "pymaceuticals\_mm” also contains the findings of the observable trends of the data.

***Observations and Insights***

1. Capomulin was effective in reducing tumor volume during the course of the study and is a viable potential drug regimen.

2. The Pearson’s Coefficient of Correlation, the r value, for the correlation between mouse weight and tumour volume is 0.84 [refer – “The Average Tumour Volume mm3” graph]. An r value greater than 0.7 indicates a strong statistical correlation. This means that there is a strong likelihood that a mouse’s weight is contributing to the efficacy of all drug regimens. The heavier the mouse, then the more efficacious the drug regimen.

3. Capomulin had the most timepoint measurements of all the drugs studied.

4. Overall, the Capomulin and Ramicane drug regimens resulted in the smallest final tumour volumes [refer – “The Final Tumour Volume mm3” box plot].

5. The Infubinol drug regimen had one potential outlier well outside the range of the box plot [refer – “The Final Tumour Volume mm3” box plot].

The datasets required for the analysis can be found at the following link. <https://monash.bootcampcontent.com/monash-coding-bootcamp/monu-virt-data-11-2021-u-c/-/tree/master/02-Homework/05-Matplotlib/Instructions/Pymaceuticals/data>

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