

# **Project 1: The Great M&M Count**

**ENGR 315**

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## **Problem Statement**

The Purpose of this project is to count the number of M&Ms in each package and observe several statistical data such as the sample mean, standard deviation, and graphical representation of data.

## **Procedure**

Each class member received a package of M&M Plain and counted the number of chocolates inside the package. Each package contained 6 different colors of chocolates: red, orange, yellow, green, blue, and brown. We counted numbers of each color and number of defectives and wrote them on the data collection sheet, which we were given. The data collection sheet consisted of two same parts; one part, we handed in for the class observation and the other part, we kept for our own record. The data collections of the class were downloaded from the ENGR 315 WWW page. From the data, sample mean and the standard deviation for the total number of M&Ms and selected colors were calculated.

## **The Collected Class Sample**

The sample mean of the total number of M&Ms is 58.69 and the standard deviation is 8.41. The sample mean of the blue M&Ms is 9.40 and the standard deviation is 2.74. The sample mean of the yellow M&Ms is 8.35 and the standard deviation is 2.56. All values are calculated by using Excel. The charts and graphs are shown in the Appendix A.

## **The Single Sample**

The total number of M&Ms and the number of blue and yellow M&Ms from Chong's package are 59, 10, and 10, respectively. The values are all in the standard deviation ranges therefore Chong's M&Ms package is "usual."

## **Summary and Conclusion**

The sample mean of the total number of M&Ms is well represented in the Figure 1 of Appendix A. The Stem-and-Leaf Diagram shows that bin that contains sample mean has one of the longest leaves. The sample mean of Blue and Yellow also matched with their Stem-and-Leaf Diagram.

The sample means for the total number of M&Ms and the Blue M&Ms are well represented in their histogram. However, a histogram of total number of Yellow M&Ms is not clear way to find out approximate sample mean. That histogram is well distributed from left to right. There isn't a highest peak.

Our group sample is "usual", because the sample mean of our sample is very close to the sample mean for entire class, and it's in the region of mean with standard deviation.

In the data collection of the class, one outlier is plotted. It affected the sample mean of total number slightly. If there weren't any outlier, the sample mean and the standard deviation would decrease.

### **Personal Statement**

I learned that there was more of blue in the M&Ms package than I thought. I like the blue ones but I usually don't find many of them and I thought that they only put only few of them in each package because they cost more to make. However throughout this project I found out that there are as many of blue as others. I also learned that it is really necessary to be familiar with Excel if I were in statistic field, because I can't even image doing all the calculation by calculator.

-Chong Lee

I learned more about a histogram and the stem-and-leaf diagram. They show the approximate sample mean and the sample deviation. They are good to use when we need to know brief outlines and approximation. I tried to make a histogram for the total number of M&Ms by each color, because we cannot present the x-axis as a numeric number. From the M&Ms package itself, I learned that brown M&Ms are clearly more than any other color M&Ms. While doing this project with excel, I learned that excel can do many things. It found out that it can calculate the sample mean and the standard deviation along with making graphs and tables.

-David Ham