

Mandm project assignment



**ASSIGN
BUSTER**

They are one of the most popular candies in America, being included in many different outlets including MASCARA, hot air balloons, video games, you name it. In this report I plan to go over each individual part of the M&M report that was conducted throughout the course of the class. While doing that I will try to explain it to the best of my ability in the simplest terms possible so even someone who doesn't have a lick of statistical knowledge will be able to understand what took place and be able to grasp the results.

Part 1 In the first part of the M report, we had a very simple task.

The task was to go to a convenience store and buy three bags of M, and count how many different pieces of candy were in each of the three bags. Out of the entire student's in the class I would say every single student's count of each individual color was different. But for the class's sake all of the colors were added up, as was the grand total of all the candies combined in the three bags. The grand total was: Blue 934, Orange 1025, Green 928, Yellow 639, Red 556, Brown 616 and the total being 3684. It is interesting because watching the video they said that certain colored candies have a higher percentage than others.

One of those colors being Red, and Red is the lowest. Part 2 In part 2 we were tasked to find the sample proportions as well as the sample mean. After we finished calculating those two, a histogram was created. After that, another sheet on the spreadsheet was used to calculate a descriptive statistics. Finally a summary of a list of things was needed to be gathered for the final portion. There is a pretty simple to calculate the info that is generated in the descriptive statistics. There is a handy tool called StatCrunch

that If you plug In a few numbers It will spit back the answers that you are searching for without all the fuss.

Part 3 In part 3 our goal was to construct confidence intervals for the proportion of each color as well as the mean number of candies per bag. A 95% confidence level gives an indication of how accurate your calculated value is, which is more accurate than simply the mean or the median. A 95% confidence level means that 95 out of 100 times your value will fall in between your confidence interval; so 95 out of 100 times 1 will be in your confidence interval. In general, the larger your confidence level (percentage) the smaller your interval will be and therefore the more accurate your results will be. Part 4

For Part 4 we were tasked to find the null, alternative hypothesis, the critical value, test statistic, whether or not to reject the hypothesis, and the conclusion of each individual color. As well as a test claim to determine if the bag would have more than 54 pieces of candies. The null hypothesis basically states that there is no statistical difference between the groups you're comparing. The alternative states that there is a difference. You accept the null when your statistical analysis value is below the critical value, which depends on the p value. For this section we had to calculate for each individual color.

After that, we had to test that the bag had more than 54 different pieces of candies. Part 5 Finally, for part 5 we had to do a similar test as part 4 except this time it wasn't for all of the colors. It was only for red and brown combined. So we do the same formulas that were used in part 4, and we

were able to achieve the answers we were looking for. We found that for red and brown the critical value at .05 alpha, was 1.960 the test statistic -1.773 and we failed to reject it. Quality Assurance I would say that from watching the video, there seems to be two reasons that could affect the process of the colors.

One of the reasons that I think the colors could potentially be off target is because it is possible that the ink gets low in the tanks that spray the gloss onto the pieces of candy. Another reason that they could be discovered is when they are all mixed together; they may or may not be dry. If they aren't dry, then there is a chance that some of the pieces could rub together, and some of the color could rub off on the candy. The package distribution is another thing that would affect the percentages of the candies.

Although in the video it talks about how certain colors have a higher or lower or share a mixed percentage, there is a chance that even knowing that, the machine could make errors, and divvy out some of the pieces incorrectly. Conclusion Overall the project was something that was interesting to work on. It offered some new insight on the M&Ms candy itself. Prior to doing the assignments I had no clue that they were broken down into specific percentages, nor do I know that they had people that studied the colors of the candy! Also when you bring statistics into the mix, it also adds another layer of fun so to speak.