

P1 Milestone - Identify outliers

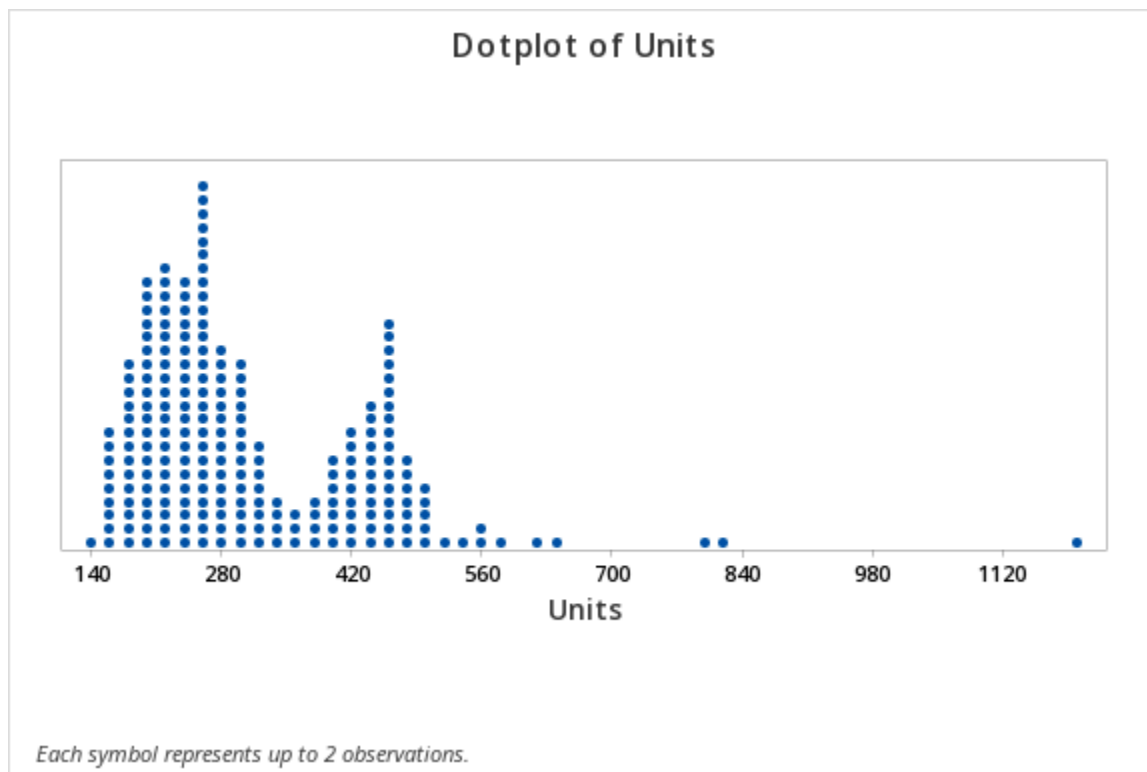


Figure 1: Dot plot of the number of subway units that were sold in Subway downtown stores

The graph shows a dot plot of the number of subway units that were sold for every store and day. It can be seen that there are 5 potential outliers. Although there are another two points that seem to be a little bit further away from the accumulated points, they are not far enough to be considered outliers. The furthest and second furthest outliers were on November 3rd, 2016 which is national sandwich day. There was a buy 1 free 1 promotion on Subway that causes people to buy more sandwiches than on other days. The third furthest outlier is on February 18th, 2016 which is THON day. The fourth furthest is on February 17th, which also THON day. This causes Subway from East College and Pugh Store to make more units of sandwiches. The last outlier is on February 24th 2016, which was St Patrick's Day. Since college students are drinking that day, it would be logical that more students will buy sandwiches to fill their stomachs.

Based on the reasons above, we think that it would be best to get rid of the outliers since they do not represent the average number of units made on a normal daily basis. Since the three special days do not reflect the number of units sold on normal days, we think it is best to get rid of all the units that are sold on these dates in all three stores which leads to 9 outliers in total

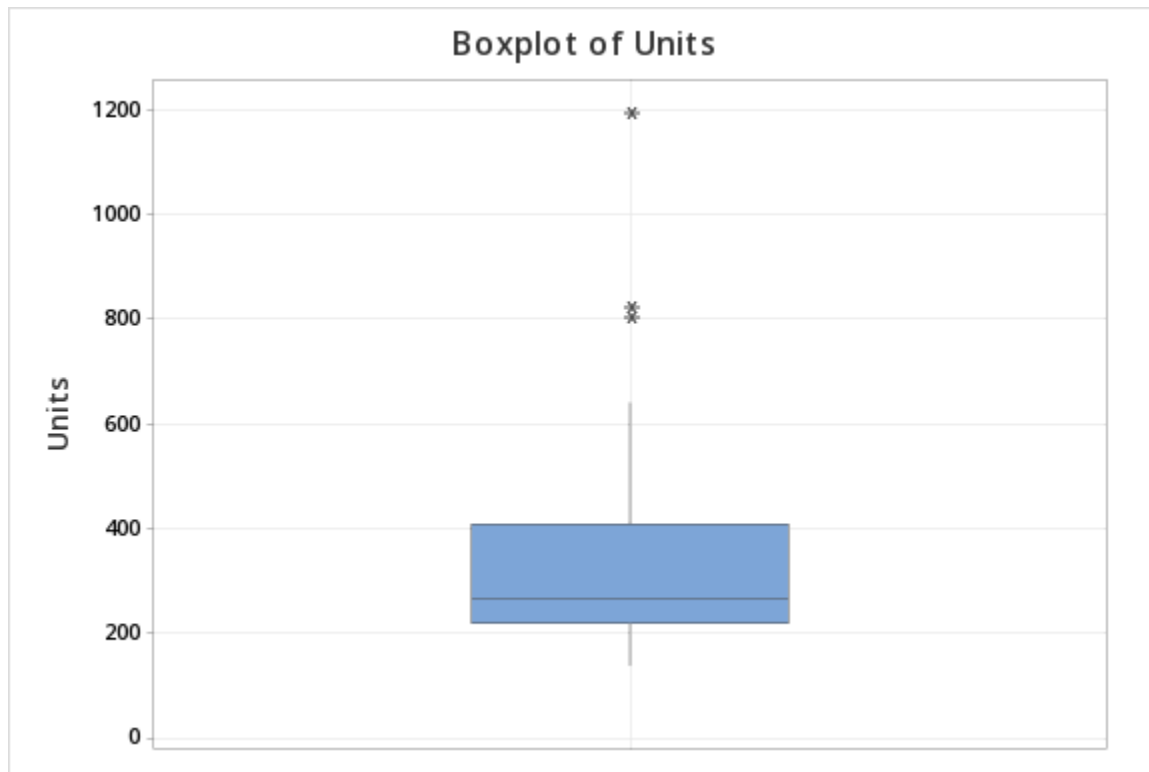


Figure 2: Boxplot of food sold units from all three downtown state college Subways

The graph suggests that the average of units sold is around 250 units. There are three potential outliers that match up with the three days we discussed in the last meeting.

The highest potential outlier is on November 3, 2016, at Burrow street., which was the national sandwich day. Since Subway did offer buy1 get 1 free sandwich on that day, the units sold on that day got higher than usual. The second highest potential outlier is on February 18, 2017, which was the day that has THON event. The reason why units sold got higher was that Subway provided free sandwiches to dancers and family for free. The least potential outlier is also on November 3, 2016, but it is at East College Ave. There exist one more day that we discussed in the last meeting which is February 25, 2017, which was Saint Patrick's Day, so many students went to get sandwiches before they go to bars.

Considering these three outliers, I would suggest excluding these three days (a total of 9 observations, three stores for each location) from the population of interest because these are special occasions that will affect the actual unit sold that we are interested in inappropriately.