

Project Description FULL: Abstract

The dataset we were given contains information on various foods and food groups comparing changes in the use of Standard Reference Legacy and Foundation Foods. Standard Reference Legacy is the largest US database of various food groups information while Foundation Foods is a newer method introduced in 2018 to calculate nutrient values for a plethora of foods. It includes many nutrients such as glucose, water, protein, and many more. It shows the average amount of a given nutrient in a given food per 100 grams by the FF and SR Mean per 100g columns. We will be heavily utilizing this in our project.

We wanted to see how nutrient values within the food groups changed over time. We did this by sampling 4 randomly selected processed foods and 4 randomly selected natural grown foods. After the random selection, hummus, onion rings, mustard, and sausage were picked for processed foods. Apples, nectarines, kale, and eggs were the natural foods that were selected. Once we were satisfied with this, in order to compare them we wanted to get the average percent change in nutrients between these various foods.

First, we shrunk the dataset into these eight specific foods using their food codes. If a food did not contain their code it was removed. Next, two data frames were created, one for the processed foods and one for the natural foods. For each food, we took the conditional probability of all the FF mean and SR mean values were taken, subtracted from each other then divided by the FF mean value. Once we got these values we multiplied them by one hundred. These values went into their own columns in the newly created two data frames. Once we had these values, the mean function was called to get the general trends of the nutrients and we were able to see whether they were going up or down.

Processed foods saw an increase in 2.6% while natural foods saw a decrease in 37%. On top of this, according to an NYU study, ultra processed food consumption grew from 53.5% to 57% while whole food consumption decreased from 32.7% to 27.4%. Due to America being a capitalist society, profits are always the main concern in any business decision. Our findings of nutrient percent changes follow suit with both whole and processed foods consumption. If people are consuming less whole foods, why take the time and money to efficiently grow crops to maximize nutrients. This goes the same with the processed foods, try to make it a little healthier but not with any effort that extenuates too much money. With the amount of processed foods consumption has increased, the amount of nutrient increase should be a lot more. People need to focus on maintaining a healthier lifestyle in order to maximize their health.

Before comparing processed versus natural foods we originally tried a different attempt at the info challenge. Our original attempt goes as follows. After searching for the most vital nutrients for human intake, we came to the conclusion that water, protein, and glucose were the three most important. Therefore, we found the change in each nutrient in any given food per 100 grams. We did this by subtracting the mean of FF data by means of SR data. The change in nutrients per food comes from an estimated range of over 30 years of data collection by both Standard Reference Legacy and Foundation Foods. After this was collected, we decided to further examine a multitude of fruits and vegetables.

Utilizing an external data source, showing the amount of fertilizer used per state, we created a heat map to show which states use the most fertilizer to attempt to make a correlation between use of fertilizer and crop nutrient yield. After doing so, we decided to use Tennessee, Maine, and Iowa as reference states. The reason for this is because Tennessee has the highest fertilizer change, Maine has the lowest change, and Iowa had no change. We wanted to use an

extremity both in the upper and lower bounds to best visualize nutrient changes in crops in those states. After getting our reference states we searched which crops were most grown in these states, we found them to be soybeans, potatoes, and corn respectively.

Once we have our three foods, we found the change in nutrient values for water, glucose, and proteins in those foods. We will see how much they changed overall to make a determination on whether fertilizer has a crucial effect on nutrients in the crop. To help better understand this, we will be sampling three random crops as well and see how those changed over time regardless of fertilizer. We realized this approach would not work as there was basically no correlation between fertilizer use and nutrient growth or decrease within the foods.