I wanted to make this project as realistic as possible for myself, which means pulling all of the nutrition and cost information for multiple ingredients for two of the options I am using. I created a table with the price, number of servings per item, and number of servings per ingredient to get the cost per meal. For my two meals, "Slamon Salad" and "Curry," I then combined the cost per meal per item to get the total price for the whole meal.
Initially, I used the nutrition label on each physical package and looked up the nutrition data for produce items. However, regarding the 5th part of this problem, only some of the nutrition labels had any additional data fields I wanted to investigate other than Cholesterol. I tried my best to source more in-depth nutrition data from online sources that were as close to, if different from, the exact match for the item I purchased.

I then followed the same principle for determining the nutritional content of each item. However, the serving sizes for some ingredients are easier to deal with than others. For example, I use one tablespoon of coconut oil for the chicken in the Curry. However, the nutrition data I got for vegetables and meat were weight-based. To accommodate this, I calculated the nutritional content for the entirety of that item purchased and modified the serving size to account for this. This is why you will see the raw nutrition data below range from single-serving data to much larger amounts (chicken being the best example). This was an intermediary step. I wanted to cleanly convert the nutrition data to the amount contained in a single meal. This is all sorted by further breaking down the number of servings.
That results in the following breakdowns of nutrition per ingredient:

The final step was converting the total number of servings needed per meal and dividing that by the number of Meals created. The amount of ingredients for the Curry usually makes around six servings. This finally gets us to the total cost per meal with the nutritional content per meal, which we will use for this optimization problem.

The problem is finding the most cost-effective combination of food items that enable me to hit seven dietary requirements. 6 of those requirements are minimum thresholds with no upper bounds, meaning it's okay to exceed the values for Calories, Protein, Vitamin D, Calcium, Iron and Potassium. The only maximum threshold is for Sodium, which implies the opposite; having less Sodium than the threshold is okay, but I cannot have more.
By looking at the combined value of each nutrient across all five food items, we can find the cheapest way to meet the required thresholds.

This first run results in a very unrealistic diet of more than 26 eggs and 18 slices of bread per day, 0 curry, 0 salmon salad, and 4.1 servings of avocado, which happens to work out to one entire Hass avocado. This makes sense as those three items have the least Sodium and are relatively the cheapest options. With Sodium being the only upper threshold, we are considering any high Sodium items like the Salad or Curry would be limited. That being said, I like putting salt on my eggs, so I should incorporate that additional Sodium into the amount associated with consuming one egg.

From this first scenario, the daily cost for me to hit these nutritional guidelines with my listed ingredients is $9.10 or about $273 a month, an amount less than my current monthly grocery budget.

Furthermore, when looking at the daily total for each nutrient, we can see that we hit the Maximum for Sodium and the minimum for Calcium and Potassium. I also overshot the caloric target by 2213.38 kcal, which would lead to long-term weight gain if maintained long-term. If I were to alter my diet based on this information, I would look for foods higher in Calcium and Potassium rather than changing the amount of these existing items.

For the next portion, I added Cholesterol, Vitamin C, Vitamin A, Vitamin K, and Folate. I selected Cholesterol as it is, like Sodium, one of the few maximum threshold constraints recommended by the FDA. Since eggs contain a large amount of Cholesterol, including this value as a constraint should ensure my diet is no longer so heavily reliant on eggs.
The methods for determining each new nutrient's content per meal were the same. The only difference was including them as additional constraints in the Python code.

By adding constraints for Cholesterol, Vitamin C, Vitamin A, Vitamin K, and Folate, the most cost-effective diet has changed drastically in composition and price.
The cost per day has gone from $9.10 to $65.71. That is a per-month change from $273.00 to $1971.30, which is well outside of my monthly grocery budget.
For composition, I would now eat 109.7 servings of avocado (roughly 27.5 whole avocados), 0.95 of an egg, 3.07 servings of Salmon Salad, and 7.5 slices of toast.

I would also consume over 10,000 kcal daily, which is unhealthy long-term. Based on the daily totals, I am still hitting the maximum for Sodium and now hitting the maximum for Cholesterol. I am still only hitting the minimum for Calcium, though now Potassium is above the minimum, and I am not hitting the minimum requirement for Vitamin D. If I were to work on changing my diet to hit these targets, I would look for foods higher in Calcium and Vitamin D.

The addition of more constraints makes this problem more realistic. However, the lack of input options, i.e. foods I can eat, severely limits the practicality of implementing this problem in my day-to-day life. If constraints were shifted and focused on energy balance and macro-nutrients, this would be a handy tool for ensuring optimal training for endurance performance. Ensuring you are adequately fueled but maintaining a low weight is critical to peak performance.