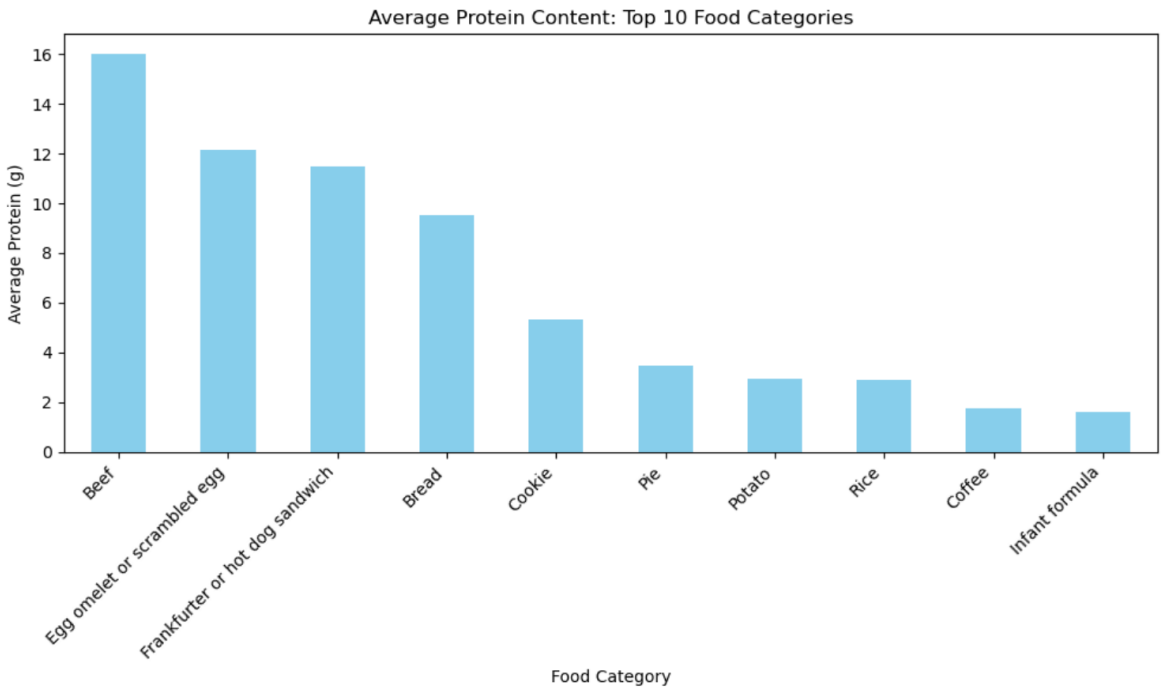
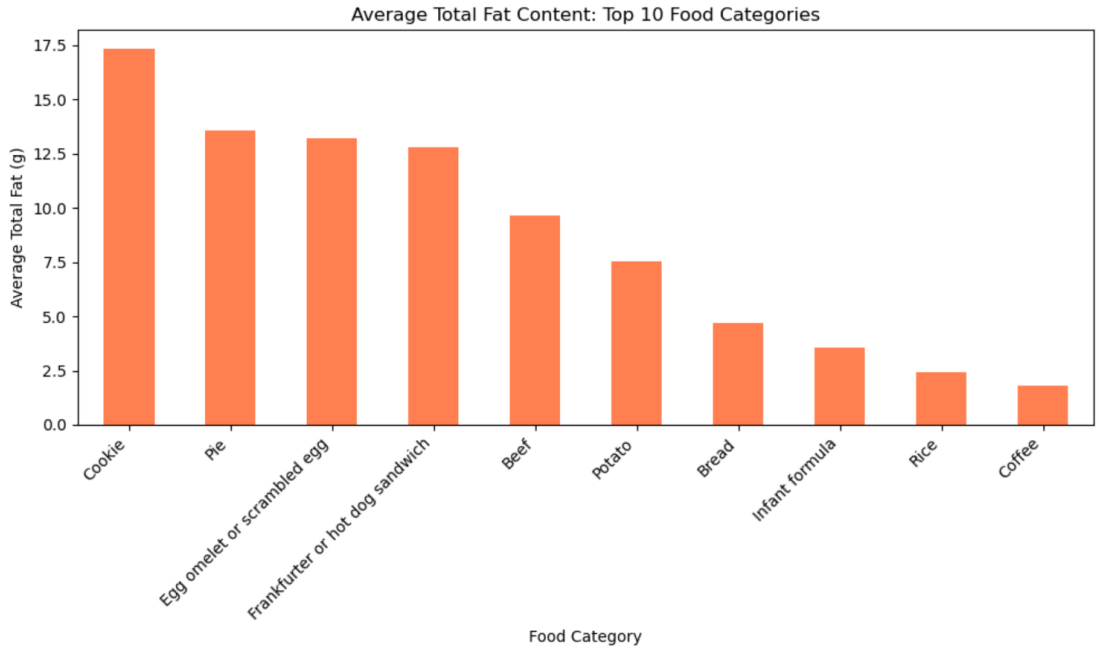
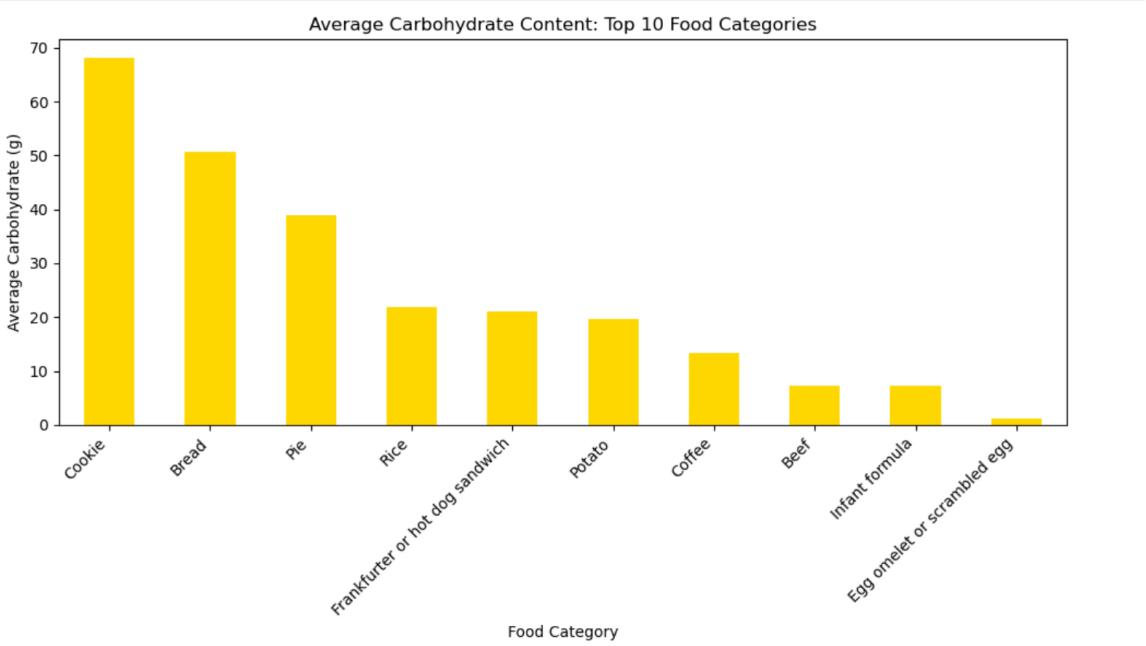


#Interpretation: Average Protein by Food Category

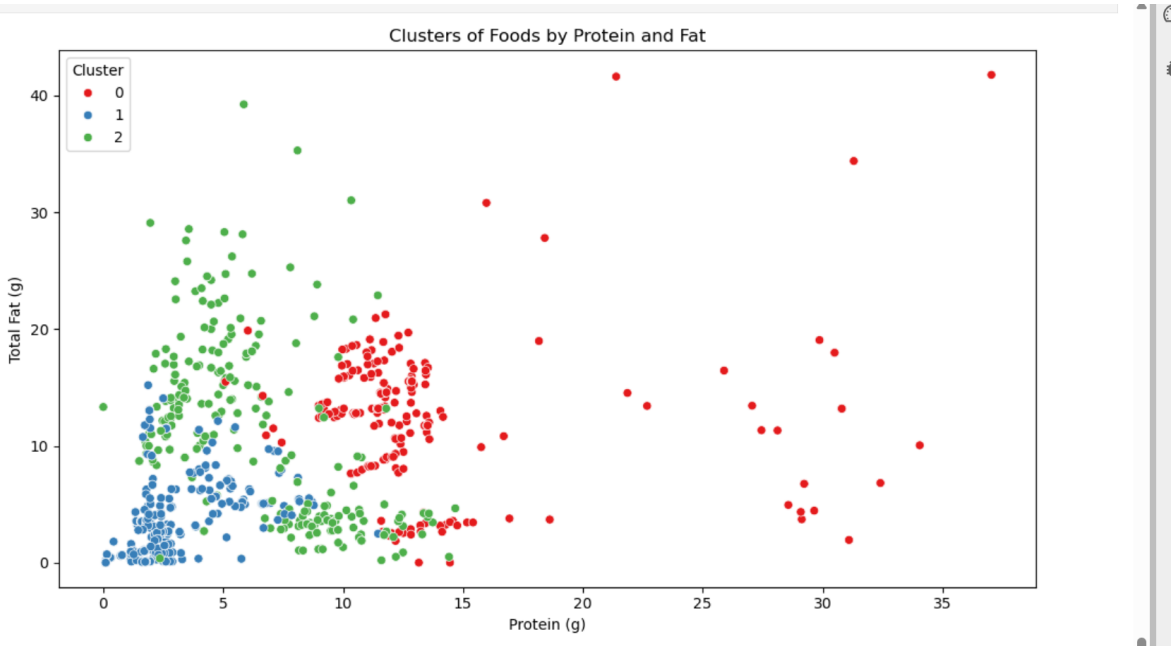
#The bar chart above shows the average protein content for the 10 most frequent food categories in the dataset. It is clear that animal-based protein sources like beef and eggs dominate the top ranks for protein. Processed foods like frankfurters and bread have moderate protein, while baked goods, starchy foods, and beverages have much lower averages. This visualization makes it easy to compare broad nutritional patterns across everyday foods.


Average Total Fat Content: Top 10 Food Categories
Average Total Fat (g)
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
Cookie
Pie
Egg omelet or scrambled egg
Frankfurter or hot dog sandwich
Beef
Potato
Bread
Infant formula
Rice
Coffee
Food Category



#Interpretation: Nutritional Patterns by Food Category

#By repeating this analysis for protein, fat, and carbohydrates, we can see how different food types contribute to the macronutrient content of diets. High-protein foods cluster around animal products, while baked goods and processed foods tend to be higher in carbohydrates and/or fat. Visualizing by category helps identify trends that are useful for dietary planning and recommendation.



#The scatter plot above displays the results of K-means clustering on foods from the most common categories in the dataset, based on their protein and total fat content. Each point is a food, and its color represents the cluster assigned by the algorithm.

#The visualization reveals distinct nutrient profiles one cluster primarily contains foods high in both protein and fat (often animal-based or processed), another groups items with low protein and fat (such as some infant formulas or lighter foods), and the third cluster lies between these extremes. Clustering helps simplify and highlight complex dietary data, making it clear which foods are nutritionally similar. This approach is valuable for recommendations, menu planning, or understanding broad