Tesco Grocery Dataset Analysis

1 Insight Overview

The Tesco grocery dataset is designed to give extensive detail on the weights of food and the volume of drinks served in 17 categories, along with a summary of the nutrients, for aggregated food records so users can do their energy budgeting. It also includes geo-demographic data across varied geographical granularities. It is, therefore, a rich storehouse from which valuable insights can be derived. I examined annual correlations of product categories with the influence of average age on food consumption patterns. In addition, I used an income dataset from the Office for National Statistics, which is open data provided through LONDON DATASTORE, to prove further the point on how grocery trends related to income.

2 Insights with Conclusions

2.1 Periodic Purchase Trend

In my first insight analysis, I attempted to correlate more of the distribution of the purchase categories. Starting with a heat map that would outline the seasonal trends, I cut the year into quarters to cover all the bases. This, therefore, indicated a consistent preference for fruits and vegetables, and of course, spirits had been the fewest in purchase. Further, I tried to examine these patterns by plotting five categories and line graphing the categories with high variance; this helped to visualize the apparent trend of the variables. First, the correlations between the categories of products had mere direct link. For that, I have analyzed the data monthly, which brings fruit and vegetables to show a negative correlation with sweets. The opposite association was confirmed through the regression analysis of monthly data points: as fruit and vegetable purchases went up, sweet purchasing went down, and vice versa.

2.2 Demographic Purchase Trend

Since we have several demographic factors, I was intrigued to see what effect the average age in a region would have on food consumption, averaging the data for the year with the demographic factor. I started with a choropleth map of the Greater London area, showing a snapshot of average age between boroughs—specifically, pinning out areas with the highest averages and lowest. Second, I computed the Pearson correlation of the food category weights with the regional average age at various geographic resolutions and produced a bar chart to visualize the results. This study depicted that, in the geographical spaces with the older mean demographic, there was predominance for ready meals, fruits and vegetables. At the same time, the places with younger sections of demographics showed predominance for fats and oils, eggs, and grains.

2.3 Income Purchase Trend

I accessed a detailed income survey covering Greater London Boroughs and other UK regions from the Office for National Statistics[Anon, n.d.]. The dataset, broken down by gender, weekly and annual earnings, and percentiles, was comprehensive, but I focused on full-time earnings within the London Boroughs. After extracting relevant data, I visualized a brief overview to understand the income distributions better. This led me to explore the potential impact of income on nutrient intake. I developed a bar graph for the highest five and lowest five average incomes to compare the typical nutrients of food products and rated all the borough areas' income levels. Another analysis was using the Pearson correlation coefficient. These results were striking: alcohol and proteins were more consumed in the higher-income areas, while fats, carbohydrates, sugar, and saturated fats were preferred by those living in lower-income areas. Research from BMC Public Health supports these with respect to a positive relationship between income and nutrient intakes [French et al., 2019]. This demonstrates the fact that only the rich can afford to have a diet that contains better food for health benefits, while the low-income earners can only afford a poor diet that exposes them to risks of chronic diseases.

References

Anon. Earnings by workplace, borough. https://data.london.gov.uk/dataset/earnings-workplace-borough, n.d. Accessed: 10 Apr. 2024.

S. A. French, C. C. Tangney, M. M. Crane, Y. Wang, and B. M. Appelhans. Nutrition quality of food purchases varies by household income: The shopper study. *BMC Public Health*, 19(1), 2019.