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Food choices and preferences of college students

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ABSTRACT

Food is one of the most important sustaining factors for humans. There are various studies that have shown that a balanced diet in students, helps improve their focus, keeps them energised and helps them perform better in school. This report tries to analyse the food choices and preferences of college going students and how various factors such as their GPA, childhood favourite foods, employment statuses of parents etc., affect these preferences. A group of Mercyhurst University students(n=126) participated in the survey about their nutrition choices and food preferences and this data was collected from Kaggle. R and Python programming languages were used to carry out exploratory data analysis. R was specifically used to fit a logistic regression model to check the dependence of whether or not a student will participate actively in sports activities, given their gender and whether or not they consumed vitamins.

INTRODUCTION

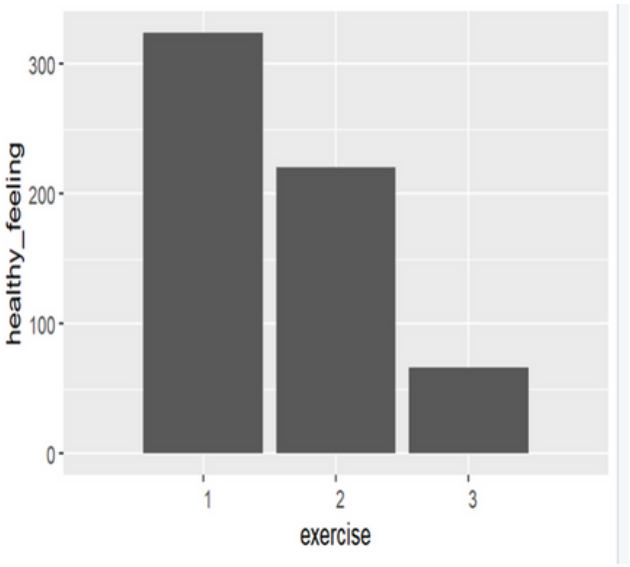
Various studies and researches over the years have highlighted the importance of consuming a proper balanced diet and the positive effect it can have on the overall physical and mental health of an individual. At the same time, the adverse effects of unhealthy diets and eating habits have also been largely studied. Poor food choices can lead to detrimental health complications such as obesity, tooth decay, high blood pressure, high cholesterol etc. Lack of nutrition can lead to diseases such as Protein Energy Malnutrition, Scurvy, Rickets, Beriberi, Vitamin K Deficiency, Pellagra, Xerophthalmia, and Iron Deficiency. According to a report by NCHS (National Center for Health Statistics), young adults in the United States aged 18-29 years face a number of health challenges, including increase in obesity; it also reported that the obesity rates had tripled among young adults in the past three decades, rising from 8 percent in 1971-1974 to 24 percent in 2005-2006. In the United States, more profits are made by people who sell snack foods than people who offer healthier options. Obesity, iron deficiency anaemia and malnutrition are some of the most common nutritional problems faced by the United States, today.

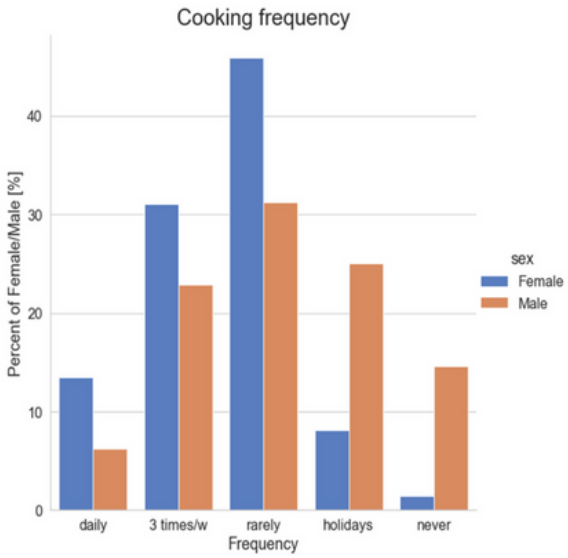
This analysis aims to understand the food consumption patterns in college going students and identify how these patterns are influenced by various relevant factors such as the type of food they consumed growing up, their employment status, their income, their awareness about calories presents in various foods etc. By undertaking this study, one attempts to provide significant insights about these patterns and pave way for measures that can be taken to promote healthier alternatives among young adults.

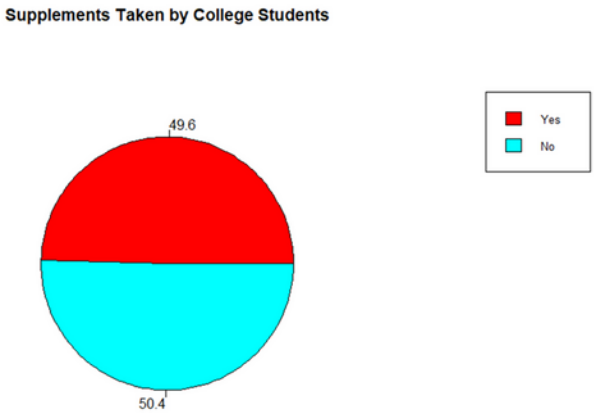
For a young adult to make informed dietary choices, they should be aware of the nutritional value of the food that they're consuming and the affect it'll have on their health in the long run. Healthier alternatives to processed foods should be made more accessible and affordable. These young adults should make educated choices about any dietary supplements that they might be consuming and know about the hazardous effects it might have on one's health. Foods extremely high in unhealthy fats and processed foods not be promoted as comfort foods.

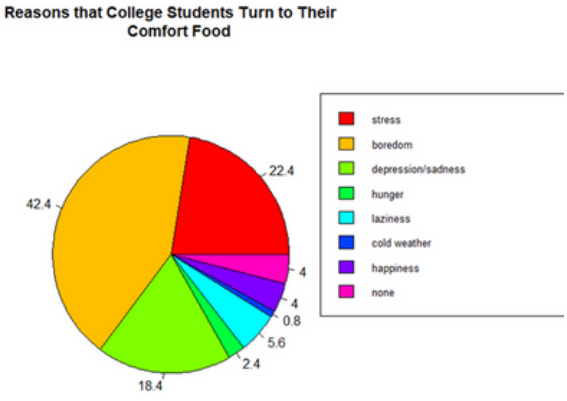
This study takes a relatively small number of samples and due to this there might be some polarisation observed in the end results.

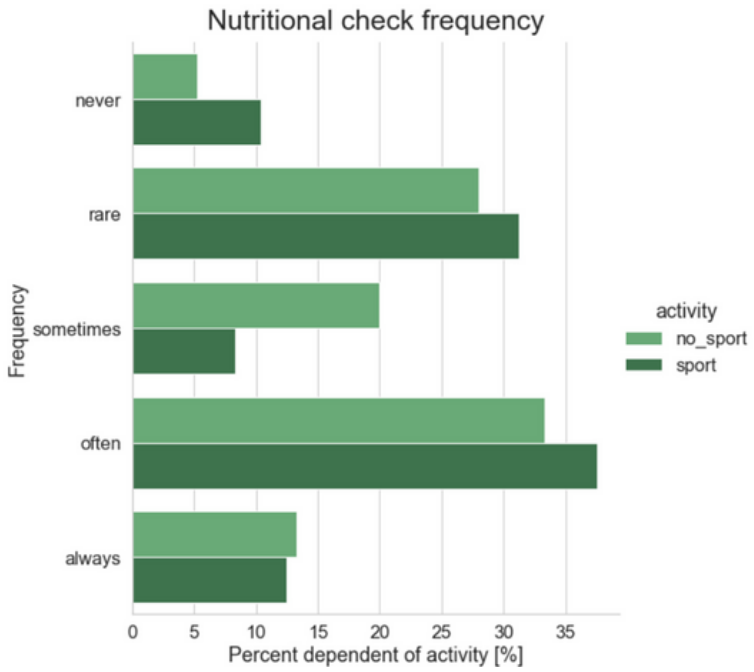
EXPLORATORY DATA ANALYSIS

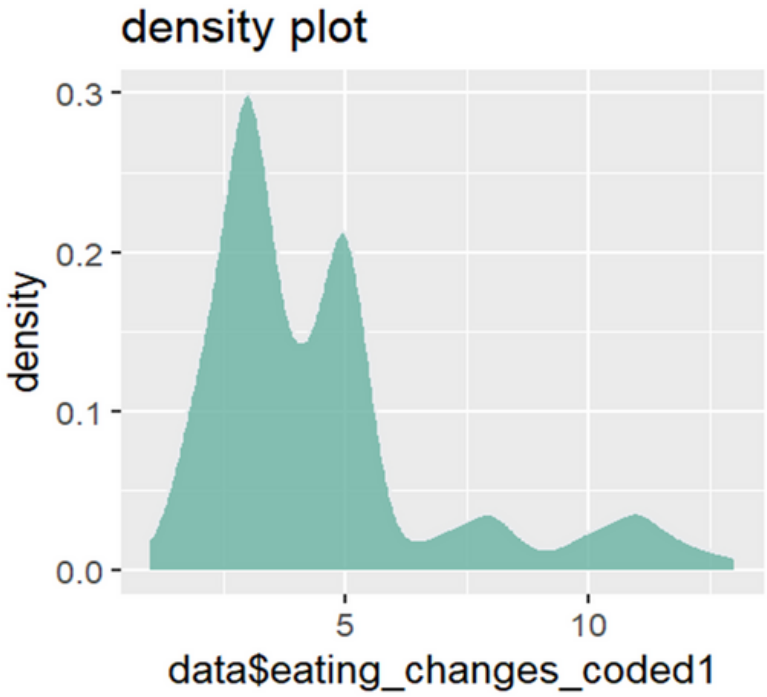




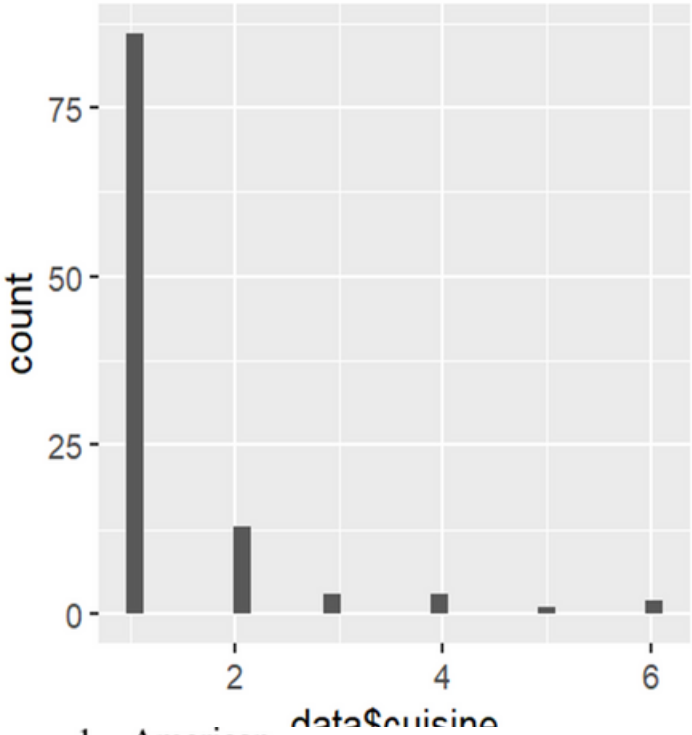




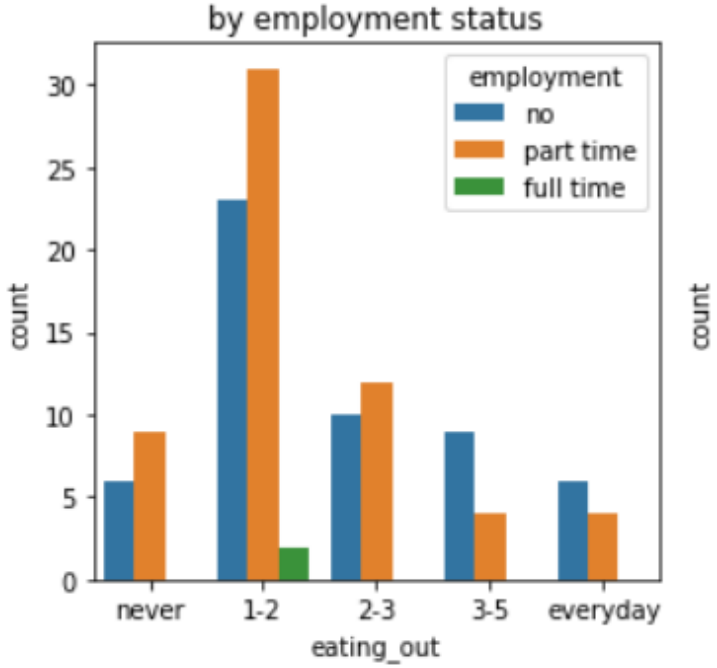




1 – eat faster
2 – bigger quantity
3 – worse quality
4 – same food
5 – healthier
6 – unclear
7 – drink coffee
8 – less food
9 – more sweets
10 – timing
11 – more carbs or snacking
12 – drink more water
13 – more variety



1 – American
2 – Mexican.Spanish
3 – Korean/Asian
4 – Indian
5 – American inspired international dishes
6 – other



Correlation between GPA and calories_day

```
> cor(df$GPA, df$calories_day)
[1] 0.02607253
> cor.test(df$GPA, df$calories_day)

        Pearson's product-moment correlation

data:  df$GPA and df$calories_day
t = 0.28926, df = 123, p-value = 0.7729
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.1502228  0.2007609
sample estimates:
       cor
0.02607253
```

Inference from above Correlation

The value of 0.02 shows a positive but weak linear relationship between the two variables GPA and calories_day.

Since the p-value of 0.7729 is greater than 0.05, we fail to reject the null hypothesis that the relationship between GPA and calories_day is significant.

Hence we can say students with a higher GPA are more aware of the calories they should consume
per day.

Correlation between GPA and calories_chicken

```
> cor.test(df$GPA, df$calories_chicken)

        Pearson's product-moment correlation

data:  df$GPA and df$calories_chicken
t = 1.5738, df = 123, p-value = 0.1181
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.03599683  0.30849496
sample estimates:
      cor
0.1404988
```

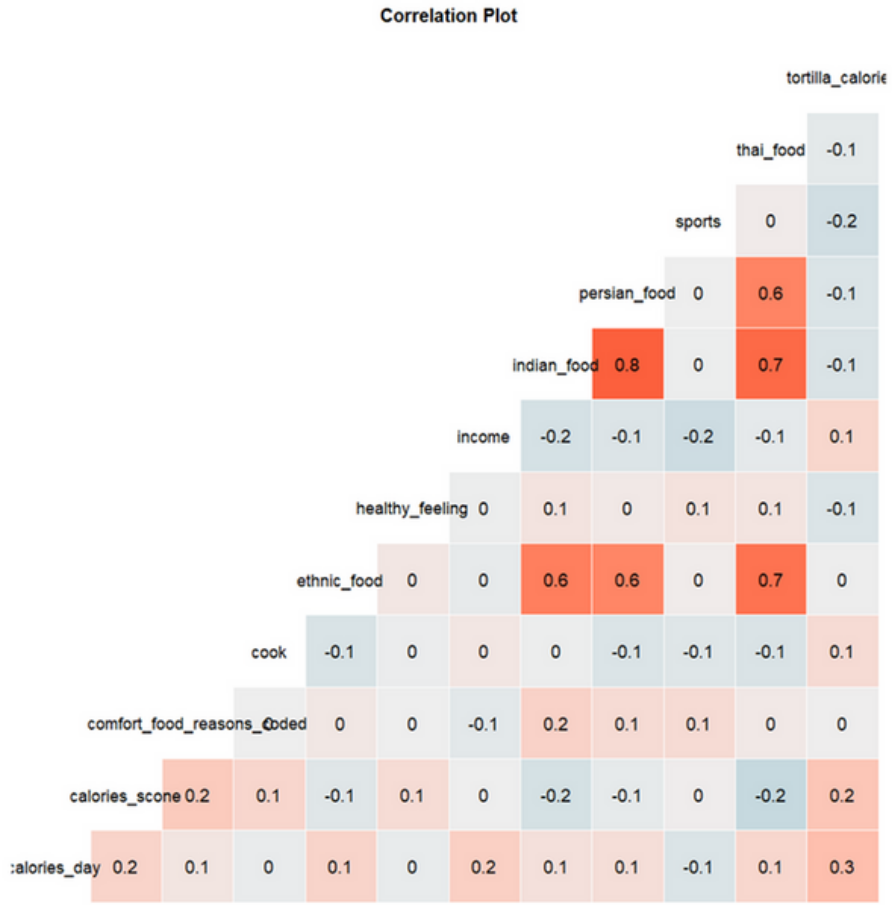
Inference from above Correlation

The value of 0.1404988shows a positive linear relationship between the two variables GPA and calories_chicken.

Since the p-value of 0.1181 is greater than 0.05, we fail to reject the null hypothesis that the relationship between GPA and calories_chicken is significant.

Students with a higher GPA guess more accurately about the calories present in various foods(for eg chicken).

Correlation Plot



Inference from Correlation Plot

From the correlation plot we can say that Indian food and Persian food are highly correlated as compared to other foods i.e Students who prefer Indian food also prefer Persian food.

LOGISTIC REGRESSION

```
Call:
glm(formula = df$sports ~ df$Gender + df$vitamins, family = "binomial",
    data = test)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-1.2298  -1.0067  -0.6912   1.1259   1.7601

Coefficients:
            Estimate Std. Error z value Pr(>|z|)
(Intercept)   1.5547     0.8331   1.866   0.0620 .
df$Gender    -0.8943     0.4016  -2.227   0.0259 *
df$vitamins  -0.5381     0.3797  -1.417   0.1565
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 166.50  on 124  degrees of freedom
Residual deviance: 159.55  on 122  degrees of freedom
AIC: 165.55

Number of Fisher Scoring iterations: 4
```

Inference from logistic Regression

The intercept value for playing or not playing sports for some girl or boy who might take vitamins are not is -1.5547.

Since p value is less than 0.5 we reject the null hypothies i.e there is no difference between gender(boys and girls) and there vitamins intake effecting on whether they play sports or not.

RESULTS

- ## Vitamins and Dietary Supplements Consumed

Roughly, more than half of Americans take some sort of supplements according to data from Centers for Disease Control and Prevention. Exploratory data analysis carried out on the data showed more or less the same results. A lot of polarisation was not observed. When asked if they take any vitamins or dietary supplements, 49.6 % of the students said that they did and 50.4% of the students said that they didn't.

- ## Comfort foods and the reasons students consume them

Wikipedia describes comfort food as "food that provides a nostalgic or sentimental value to someone and may be characterised by its high caloric nature, high carbohydrate level, or simple preparation". When students in this survey were asked what reasons led them to consume their comfort food, various factors, such as, stress, hunger, weather etc. were cited. When this data was plotted on a pie chart, boredom, stress and depression/sadness proved to be the foremost reasons for consumption of comfort food by students, with a percentage of 42.4, 22.4 and 18.4 of students respectively, citing these reasons. Followed by this were laziness, with a percentage of 5.6 citing it, happiness, with a percentage of 4, hunger at 2.4, cold weather at 0.8. 4 % of the students said that they didn't identify with any of those reasons.

- Students who exercise everyday have more healthy feeling than who exercise twice or three times per week and once in a week.

- Females cook more frequently than males. 'Holidays' and 'never' categories are rather opposite to cooking in the academic year where males have fully dominance over females.

- Roughly more than half of adults in United States take multivitamins or other dietary supplements.

- Comfort food provides consolation or a feeling of well-being, typically having a high sugar or carbohydrate content.

- Nutritional check frequency is connected with sports activity. Perhaps people who has some sort of sport activity, put more attention on more frequent nutritional check.

- eating habit in students changes the moment students got into college. Many of the students worse quality as their eating changes.

- high proportion of students prefer American cuisines whereas the least preferred cuisine is American inspired international dishes.

- Many students seem to eat out about 1-2 times a week. When divided according to employment status, part-time students tended to eat out less.

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