

## **DSC 423- GROUP 8 DATA PROPOSAL**

### **Title: "Food Consumption Pattern"**

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1.How does weight depend upon the calorie intake based upon gender?

Ans: Designing individualized nutrition programs requires an understanding of how gender affects weight concerning calorie consumption. Because of things like larger muscle mass and metabolism, males often require more calories. Women may need fewer calories than males do, and consuming too much might result in weight gain.

2.Is there a significant difference in daily calorie intake between different age groups?

Ans: It is essential to consider the variations amongst the age groups to determine the metabolism rate reduced vitamin absorption and changes in body composition to recognize any specific change in calorie intake in a person's daily life.

3. Considering potential variations in the personalized food choices, how does gender affect daily calorie intake?

Ans: Men and women require different amounts of calories due to several factors, including hormonal variations, dietary choices and cultural expectations. The different dietary techniques are developed based on gender and varies the daily calorie intake count.

4. Are there interaction effects between certain independent variables (e.g., dietary preference, exercise frequency, location) on daily caloric intake?

Ans: Calorie intake depends on various factors but independent variables dietary preference, exercise frequency, location influence the calorie intake. Combining all the independent variables and checking their effect on daily calorie intake helps in determining if there is a specific pattern or it determines individual on each independent variable.

5. By analyzing eating disorder habits such as binge-eating or restrictive eating patterns what predictions can be drawn regarding daily calorie intake?

Ans: Key insights into the possible effects of disordered eating behaviors on nutritional health can be gained by examining the link between daily calorie intake and eating disorder behaviors. Comprehending the impact of binge-eating or restricted eating habits on caloric intake helps in determining how the food consumption affects the calorie count in the body enhancing us to take the proper measures to overcome the eating habits if they are exceeded.

6. What can we interpret about all the independent variables having an influence on the daily calorie intake and individuals' food preferences?

Ans: The independent variables age, gender, weight, location, exercise-frequency, dietary preference, eating disorder, location habits play a vital role in deterring a person's metabolism which decides the calorie intake. By analyzing the above variables influence on calorie intake we try to find if there adheres a specific pattern or trends in the calorie intake.

## DATA DESCRIPTION

The dataset "Food Consumption Pattern" has a sample size of 2000 from all the individuals residing in Illinois. It consists of using the response variable (daily calorie intake) and independent variables (age, gender, weight, dietary preference, exercise frequency, eating disorder habits and location.) The purpose of the dataset is to analyze and understand how the response variable varies with respect to each independent variables taken.

## Methodology

Q1) How does weight depend upon the calorie intake based upon gender?

Ans: Variables used: Response variable- daily calorie intake, independent variables- Weight, Gender.

Techniques: In order to analyze this question, we can use **Linear Regression Analysis** and **Interaction Analysis**. Linear Regression Analysis is used to model the relationship between a dependent variable (daily calorie intake) and one or more independent variables (weight and gender). We can determine the coefficients that represent the relationship between weight, daily caloric intake, and gender by fitting a linear regression model. Interaction Analysis helps in determining the combined effect of age, gender on calorie intake.

Q2. Is there a significant difference in daily calorie intake between different age groups?

Ans: Variables used: Response variable- daily calorie intake, independent variable- Age.

Techniques: One of the techniques which we can use to address this question is **ANOVA**-Analysis of Variance. ANOVA is a technique used to determine if there are statistically significant differences in the means of three or more independent groups. It can be applied to compare the mean daily calorie intake across different age groups.

Q3. Considering potential variations in the personalized food choices, how does gender affect daily calorie intake?

Ans: Variables used: Response variable- daily calorie intake, independent variable- Gender

Technique: By conducting **Simple Regression Analysis**, we can examine whether there is a significant relationship between gender and daily calorie intake. The regression coefficient associated with gender would indicate the magnitude and direction of this relationship. For example, a positive coefficient would suggest that, on average, one gender tends to have higher daily calorie intake compared to the other, while a negative coefficient would suggest lower daily calorie intake compared to the other.

Q4. Are there interaction effects between certain independent variables (e.g., dietary preference, exercise frequency, location) on daily caloric intake?

Ans: Variable used: Response variable- daily calorie intake, independent variable- dietary preference, exercise frequency and location

Techniques: **Multiple regression analysis** and **interaction analysis** are suitable techniques to analyze the question of whether there are interaction effects between certain independent variables on daily caloric intake. Multiple Regression Analysis enables us to determine whether each independent variable has a significant effect on daily caloric intake while controlling for the effects of other variables. Interaction

analysis allows us to examine whether there are interaction effects between certain independent variables on daily caloric intake. By including interaction terms in the regression model, we can assess whether the effect of one independent variable on daily caloric intake differs depending on the levels of other independent variables.

Q5. By analyzing eating disorder habits such as binge-eating or restrictive eating patterns what predictions can be drawn regarding daily calorie intake?

Ans: Variables used: Response variable- daily calorie intake, independent variable- eating disorder habits

Techniques: A suitable technique would be **Multiple Regression Analysis** to analyze eating disorder habits on daily calorie intake. By conducting multiple regression analysis, we can assess the unique contribution of eating disorder habits to daily calorie intake while controlling for the effects of other variables. This enables us to determine the extent to which eating disorder habits predict daily calorie intake.

Q6. What can we interpret about all the independent variables having an influence on the daily calorie intake and individuals' food preferences?

Ans: After analyzing effects of all the independent variables on daily calorie intake as mentioned in the above questions, we conclude the interpretation and findings.