Understanding Obesity: Analyzing Eating Habits and Lifestyle Impact

DESCRPITIVE ANALYSIS – DA621

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Introduction

1. **Dataset Summary:**
   - **Source:** Synthetic dataset simulating real-world obesity data.
   - **Size:** 2,111 records, 17 variables.
   - **Focus:** Obesity levels and associated lifestyle factors.

2. **Key Variables:**
   - **Demographics:** Gender, Age, Height, Weight.
   - **Lifestyle Factors:**
     a) **Dietary Habits:** Frequency of high-calorie food consumption (FAVC), number of main meals (NCP), water intake (CH2O).
     b) **Physical Activity:** Physical activity frequency (FAF), transportation mode (MTRANS).
     c) **Other Factors:** Smoking habits (SMOKE), monitoring calorie intake (SCC).
   - **Independent Variable:** Obesity levels (NObeyesdad) with categories such as normal weight, overweight, and obesity types I-III.

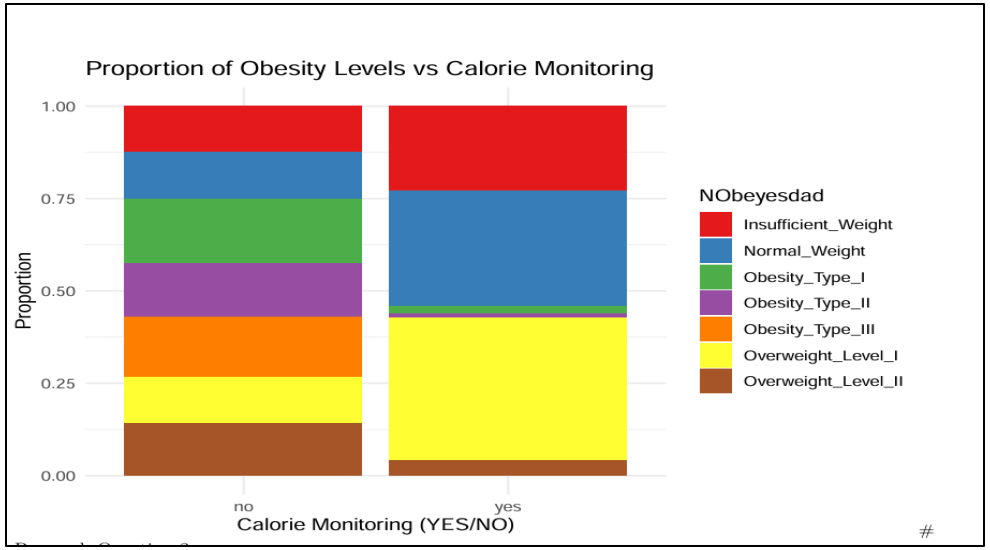
3. **Objective:**
   - Explore relationships between lifestyle habits and obesity levels.
   - Identify factors contributing to obesity risk.

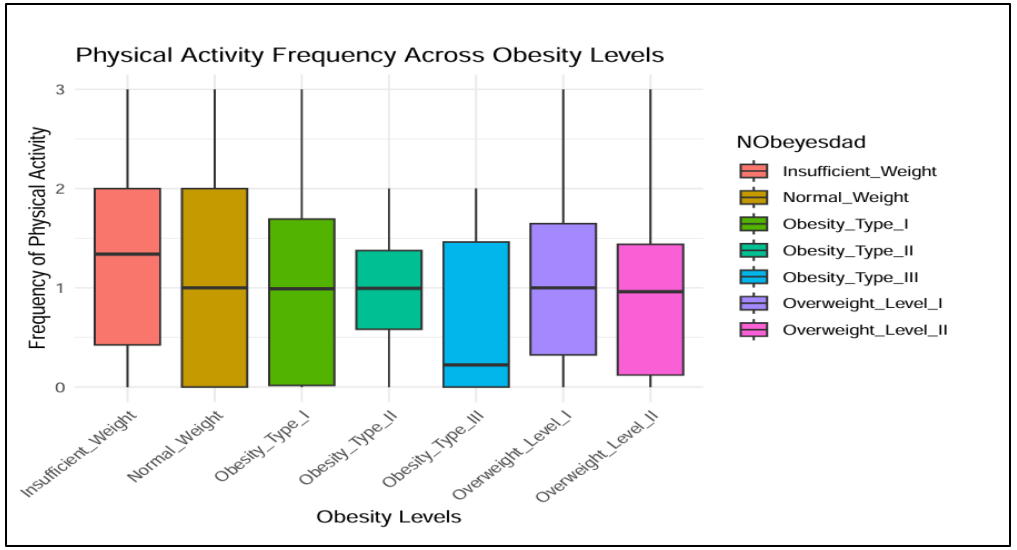
Research and Hypothesis

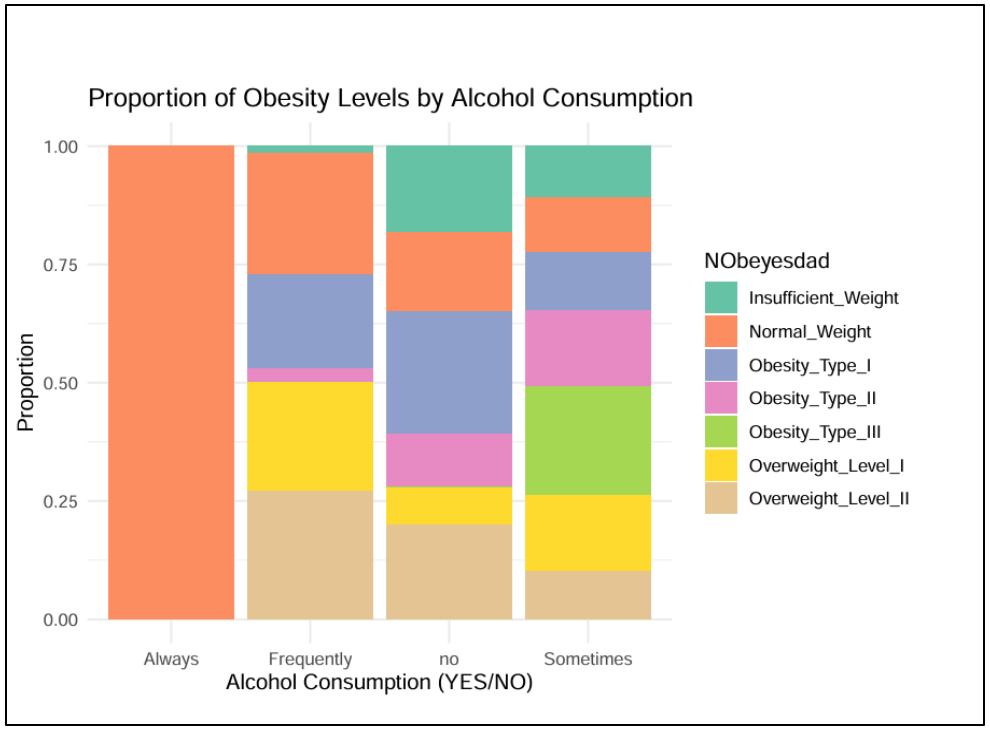
Research questions	Hypothesis
What is the relationship between calorie monitoring and obesity levels?	1. **Null Hypotheses , Ho** = There is no relationship between monitoring caloric intake and obesity levels. 2. **Alternate Hypotheses , H1** = There is a relationship between monitoring caloric intake and obesity levels.
What is the relationship between calorie monitoring and obesity levels?	**Null Hypothesis, Ho** = Frequency of physical activity is independent of obesity levels **Alternative Hypothesis, H1** = Frequency of physical activity is associated with obesity levels.
How does alcohol consumption relate to obesity levels?	**1.Null Hypotheses , Ho** = There is no relationship between alcohol consumption and obesity levels. 2. **Alternate Hypotheses , H1** = Alcohol consumption is associated with obesity levels.
How does age impact obesity levels?	1. **Null Hypotheses , Ho** = Obesity levels are independent of age. 2. **Alternate Hypotheses , H1** = Obesity levels are dependent on age.

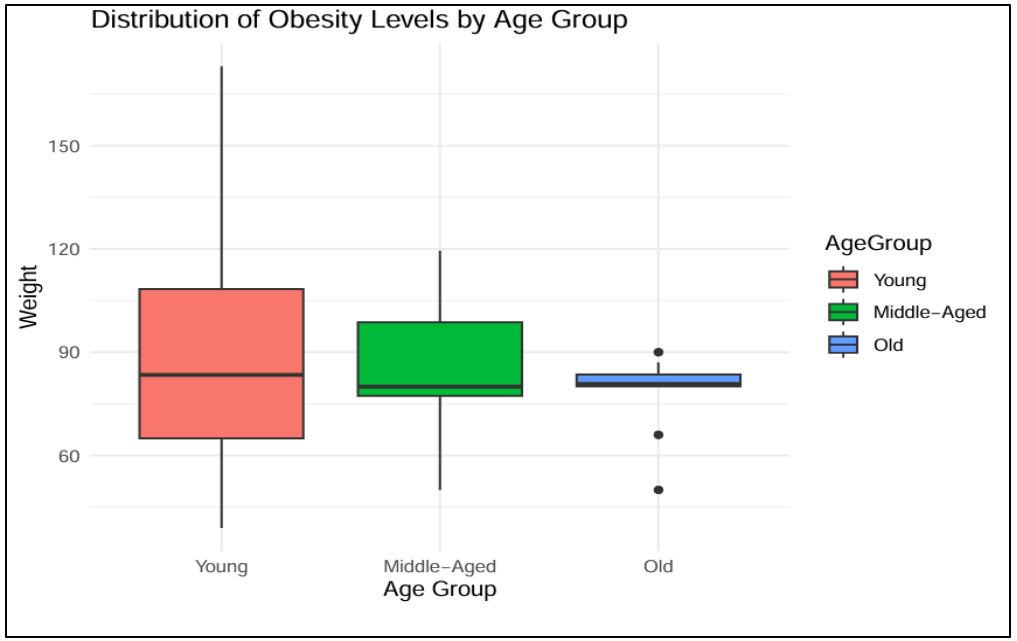
Research Question	Independent Variable	Dependent Variable	Method Used	P Value	Result
1. What is the relationship between calorie monitoring and obesity levels?	Calorie Monitoring (SCC)	Obesity Level (NObeyesdad)	**Chi-Squared Test** of Independence (monitoring caloric intake vs obesity levels)	p-value < 2.2e-16	Calorie monitoring is significantly associated with different obesity levels.
2. What is the relationship between calorie monitoring and obesity levels?	Frequency of Physical Activity-(FAF)	Obesity Level (NObeyesdad)	**ANOVA** for physical activity vs obesity levels	p-value < 2.2e-16	Individuals engaging in more frequent physical activity tend to have lower obesity levels.
3. How does alcohol consumption relate to obesity levels?	Alcohol Consumption (CALC)	Obesity Level (NObeyesdad)	**Chi-Squared Test of Independence** (Alcohol Consumption vs Obesity)	p-value < 2.2e-16	Frequency or type of alcohol consumption is likely associated with varying obesity levels.
4. How does age impact obesity levels?	Age Group (Age)	Obesity Level (NObeyesdad)	**Chi-Squared Test** for Age Group vs Obesity Levels	p-value < 2.2e-16	Age is an important factor influencing obesity, with different age groups exhibiting distinct obesity level patterns.

Graphs


Proportion of Obesity Levels vs Calorie Monitoring
Proportion
1.00
0.75
0.50
0.25
0.00
no
yes
Calorie Monitoring (YES/NO)
NObeyesdad
Insufficient_Weight
Normal_Weight
Obesity_Type_I
Obesity_Type_II
Obesity_Type_III
Overweight_Level_I
Overweight_Level_II


Physical Activity Frequency Across Obesity Levels
Frequency of Physical Activity
3
2
1
0
Insufficient_Weight
Normal_Weight
Obesity_Type_I
Obesity_Type_II
Obesity_Type_III
Overweight_Level_I
Overweight_Level_II
Obesity Levels
NObeyesdad
Insufficient_Weight
Normal_Weight
Obesity_Type_I
Obesity_Type_II
Obesity_Type_III
Overweight_Level_I
Overweight_Level_II


Proportion of Obesity Levels by Alcohol Consumption
Proportion
1.00
0.75
0.50
0.25
0.00
Always
Frequently
no
Sometimes
Alcohol Consumption (YES/NO)
NObeyesdad
Insufficient_Weight
Normal_Weight
Obesity_Type_I
Obesity_Type_II
Obesity_Type_III
Overweight_Level_I
Overweight_Level_II


Distribution of Obesity Levels by Age Group
Weight
150
120
90
60
Young
Middle-Aged
Old
Age Group
AgeGroup
Young
Middle-Aged
Old