



# **The Impact of Daily Caloric Intake on Body Mass Index**



Report and Analysis

PREPARED BY:

**Rhyence L. Andal**

**Shanen Cole M. Furio**

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This dataset explores whether there is a connection between how much a person eats (daily caloric intake) and their body mass index (BMI), which is a measure of body weight in relation to height. A Pearson correlation analysis was used to test the strength and direction of the relationship between these two continuous variables.

The analysis clearly supports that people who consume more calories are more likely to have higher BMI values. While the average BMI falls within the normal range, the upper end indicates risks for overweight or obesity. This is important for public health because it connects diet to body weight in a measurable way.

### **Hypothesis:**

#### **Null Hypothesis ( $H_0$ ):**

There is no significant relationship between daily caloric intake and BMI.

#### **Alternative Hypothesis ( $H_1$ ):**

There is a significant relationship between daily caloric intake and BMI.

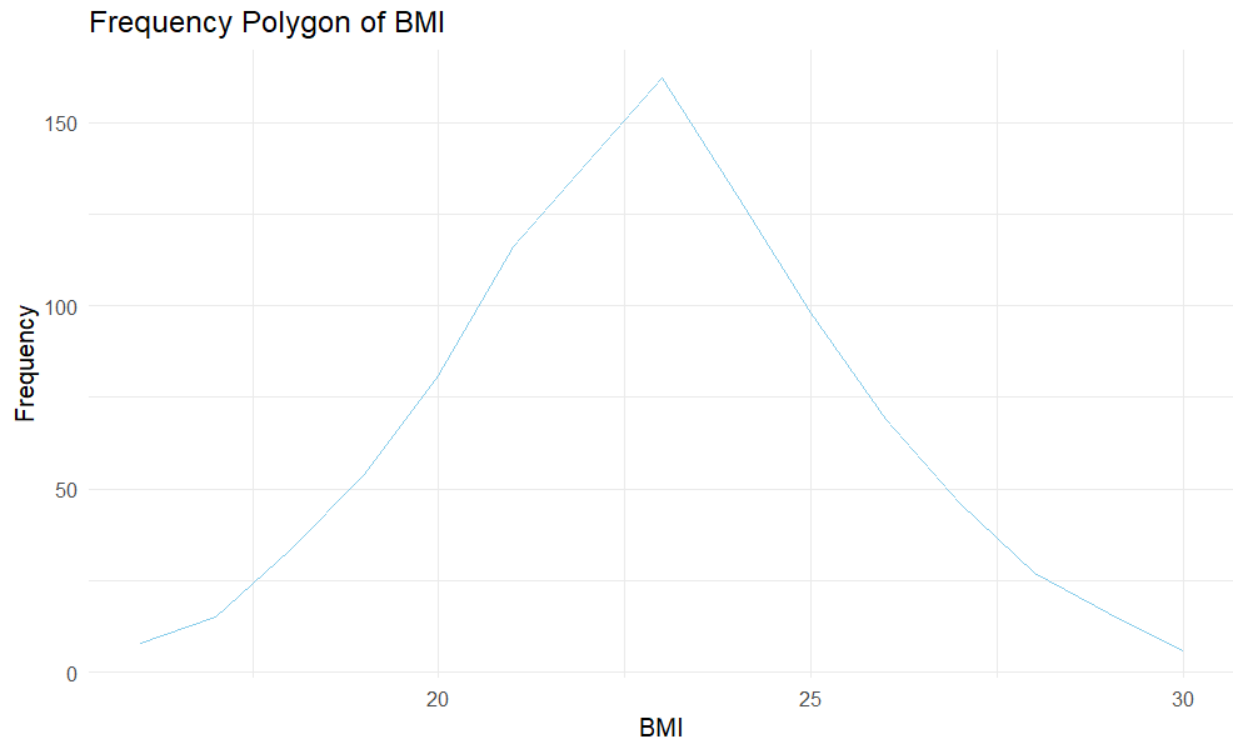
In the dataset Nutritional Dietary data Group 010 we have found that:

- Participants' daily caloric intake ranges widely from 378 to 4,614 kcal with an average of 2,475 kcal.
- BMI values range from 15.7 to 30.3 with a mean of 22.91 which suggests that most individuals fall within the normal weight range.

Statistic	Daily Caloric Intake (kcal)	BMI
Minimum	378	15.70
1st Quartile	1,947	21.10
Median	2,480	22.90
Mean	2,475	22.91
3rd Quartile	3,056	24.70
Maximum	4,614	30.30

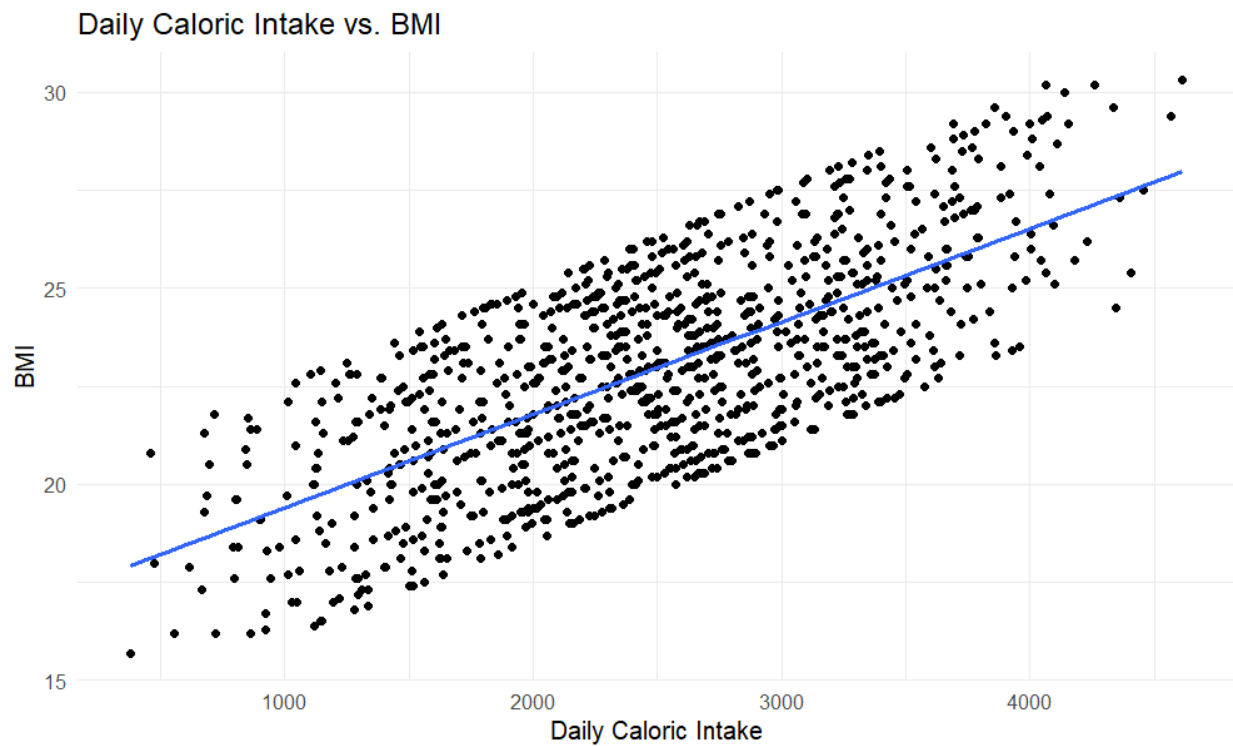
### **Frequency Plot of BMI**

- The central peak around a BMI of 23 suggests that this is the most common BMI value among the individuals.
- The symmetrical and bell-shaped curve indicates a normal distribution of BMI values.



### Pearson Correlation Plot

- The positive slope of the regression line supports the hypothesis that higher caloric intake is associated with higher BMI.



- There is a strong positive correlation ( $r = 0.6966$ ) between daily caloric intake and BMI meaning that as caloric intake increases the BMI also increases.
- The p-value is extremely small ( $< 2.2e-16$ ) indicating this relationship is significant.

Statistic	Value
Correlation coefficient (r)	0.6966
t-value	30.676
Degrees of freedom (df)	998
p-value	$< 2.2e-16$

We therefore reject the null hypothesis and conclude that there is a significant relationship between caloric intake and BMI. As a recommendation, promoting balanced diets and portion control should be a top priority in health campaigns. Schools, hospitals, and communities should offer nutritional guidance to help individuals manage their BMI and reduce the risk of weight-related diseases.