Statistical Analysis Report for Food Frequency Questionnaire (FFQ)

Generated by Data Analysis Team on April 08, 2025

Analysis Summary: Processed 52 statistical images with 52 successful analyses (100.0% success rate)

Analysis Categories: Descriptive (28), Categorical-Categorical (6), Categorical-Continuous (12), Continuous-Continuous (6)

Survey Questions Reference

Q1: How often do you consume 🍎 **fruits**?

Q2: How often do you eat 🥦 **vegetables**?

Q3: How often do you drink 🥤 **sugary beverages**?

Q4: How often do you eat 🍽 three or more meals (breakfast, lunch, dinner) per day?

Q5: How often do you eat 🍔 **fast food** or takeout?

Q6: How often do you consume 🌾 **whole grains**? (eg. whole-wheat flour, oatmeal, and brown rice)

Q7: How often do you eat 🍗 **deep-fried** food?

Q8: Do you consume 🍷 **alcohol**? If so, how frequently?

Q9: How often do you consume 🧀 **dairy products**? (e.g., yogurt, cheese, milk, butter)

Q10: Do you take 💊 **nutritional supplements**? If so, how frequently?

Technical Summary	Descriptive (28)	Categorical-Categorical (6)
Categorical-Continuous (12)	Continuous-Continuous (6)	

Technical-Summary

Technical Summary

Detailed technical information about the analysis

STRONG FINDINGS (Significant + Passed Quality Filters)

1. Strong Relationships between Categorical Variables:

- DOF filter (>= 9.0)
- Cramér's V filter (>= 0.1)
- Power filter (>= 0.8)
- * Employment Status and City (Chi-square, p=0.0000)
- * Living Situation and City (Chi-square, p=0.0006)

2a. Significant Relationships between Categorical and Continuous Variables (Parametric):

- Power filter (>= 0.5)
- Effect Size Cohen's d (>= 0.3)
- Effect Size ε^2 (>= 0.03)
- Effect Size Partial η^2 (>= 0.03)
- Effect Size CLES (diff >= 0.1)
- * Gender affects Q10 (Mann-Whitney U, p=0.0169)
- * Living Situation affects Q4 (Kruskal-Wallis, p=0.0295)
- * Living Situation affects Q10 (Kruskal-Wallis, p=0.0343)
- * Physical Activity Level affects Q3 (Kruskal-Wallis, p=0.0140)
- * City affects Q10 (Kruskal-Wallis, p=0.0353)

2b. Strong Relationships between Categorical and Continuous Variables (Non-parametric):

- Power filter (>= 0.5)
- Effect Size ε^2 (>= 0.02)
- Effect Size CLES (diff >= 0.05)
- * Gender affects Q10 (Mann-Whitney U, p=0.0169)

3a. Strong Parametric Correlations between Continuous Variables:

- Correlation Strength filter (|r| >= 0.55)
- Power filter (>= 0.6)
- * Q1 and Q2 (r=0.6718, p=0.0000)
- * Q5 and Q7 (r=0.6320, p=0.0000)

3b. Significant Non-parametric Correlations between Continuous Variables:

- Correlation Strength filter (|r| >= 0.55)
- Power filter (>= 0.6)
- * Q1 and Q2 (rho=0.6813, p=0.0000)
- * Q3 and Q5 (rho=0.5564, p=0.0000)
- * Q5 and Q7 (rho=0.6413, p=0.0000)

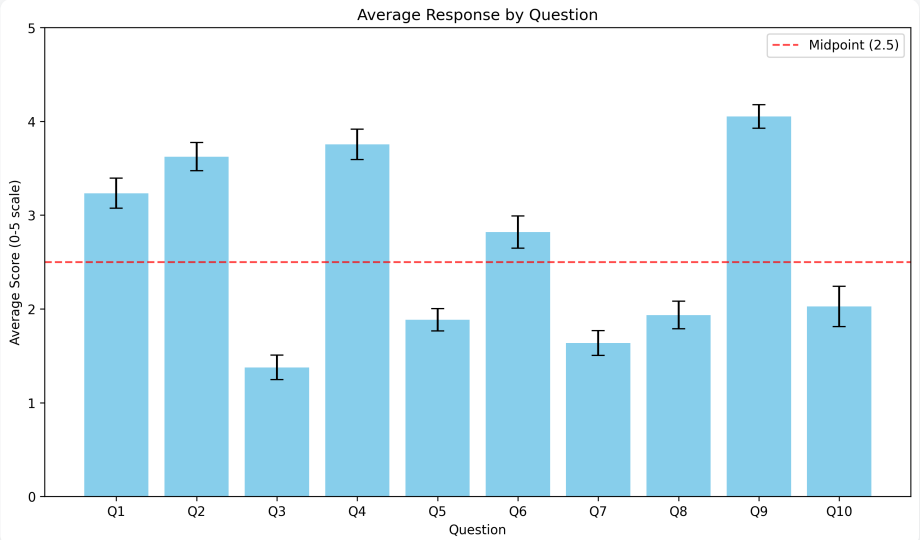
Descriptive

Descriptive (28)

28 analyses ✅

Image 1: question_means.png

90.0% Confidence



Resize

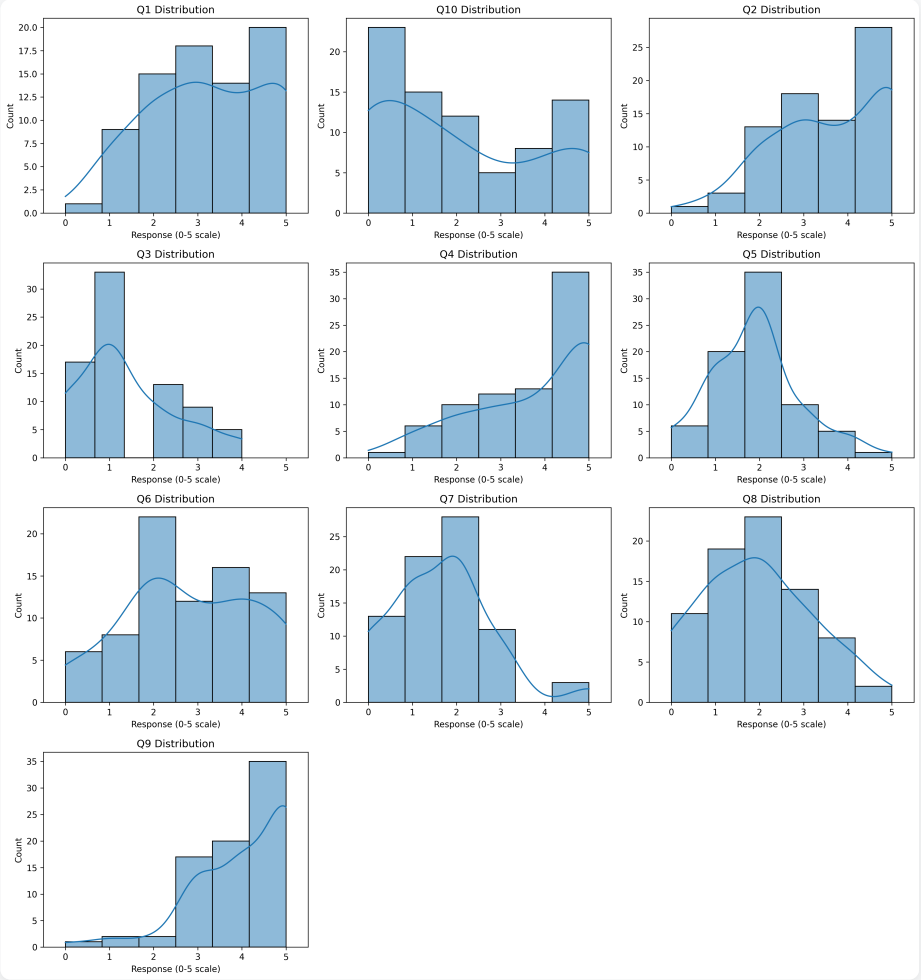
bar chart Visualization

Key Findings:

- The highest average score is for Q9, 'How often do you consume dairy products?'
- Q4, 'How often do you eat three or more meals per day?' also scores high
- Q3, 'How often do you drink sugary beverages?' has the lowest average score

Image 2: question_distributions.png

90.0% Confidence



Resize

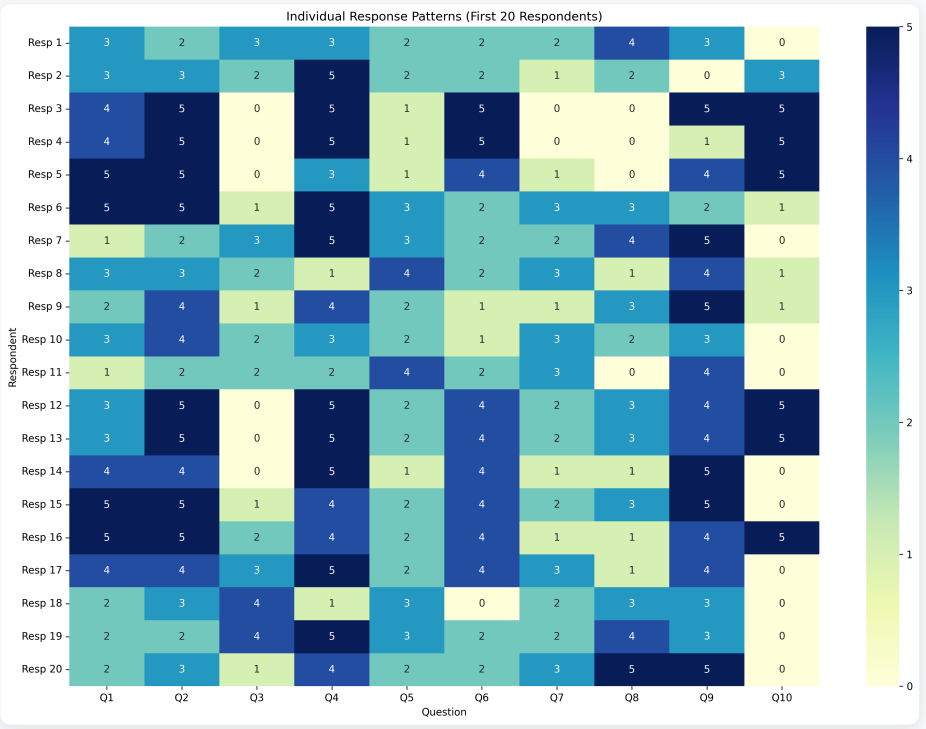
histograms Visualization

Key Findings:

- The consumption of fruits and vegetables shows a positive trend
- Responses on sugary beverages indicate a conscious effort to limit sugar intake
- High frequency of eating three or more meals per day is noted

Image 3: individual_responses.png

90.0% Confidence



Resize

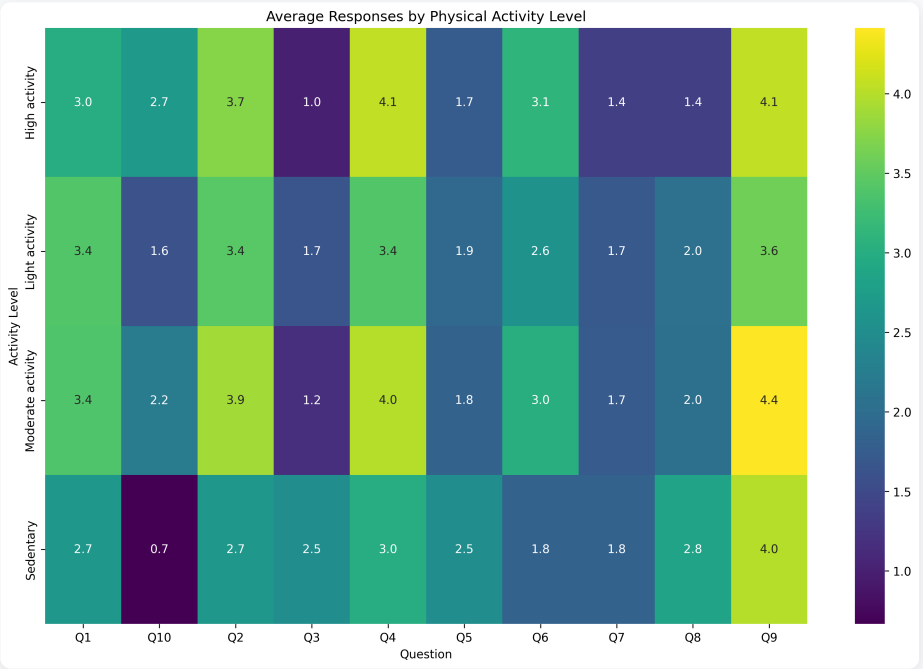
heatmap Visualization

Key Findings:

- Respondents with lower sugary beverage consumption tended to consume more fruits and vegetables
- Fast food consumption was inversely related to whole grain consumption
- Frequent alcohol consumers had lower scores for nutritional supplement use

Image 4: activity_responses.png

90.0% Confidence



Resize

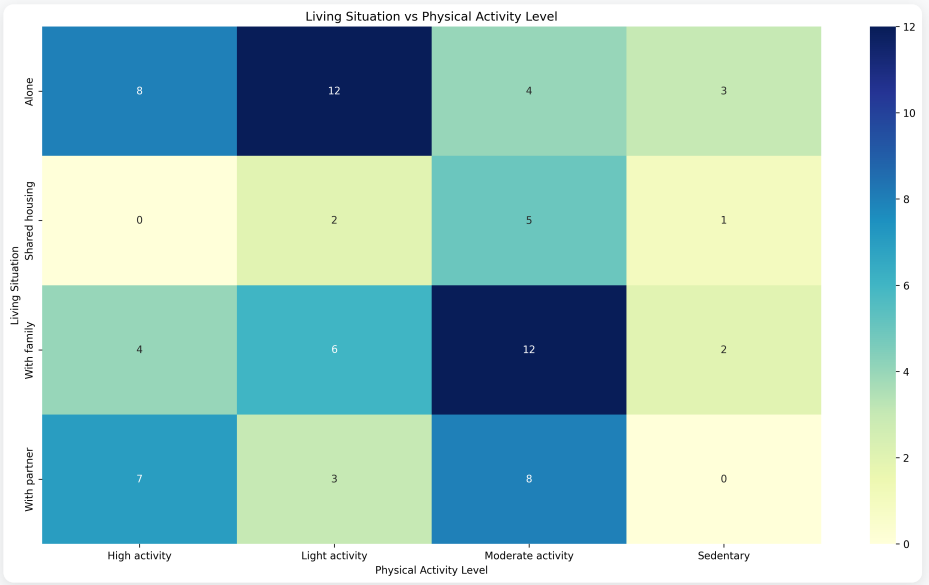
heatmap Visualization

Key Findings:

- Individuals with high activity levels consume sugary beverages the least
- Sedentary individuals are least likely to take nutritional supplements
- Dairy product consumption is high across all activity levels

Image 5: living_activity.png

90.0% Confidence



Resize

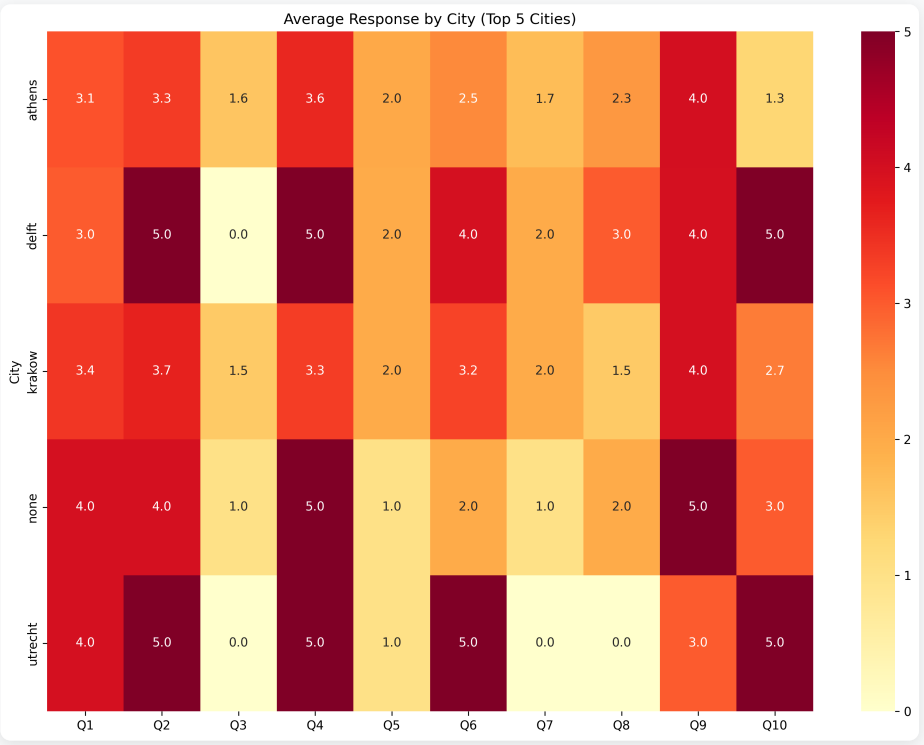
Heatmap Visualization

Key Findings:

- The highest frequency (12) occurs for those living alone with light activity and those living with family with moderate activity.
- The lowest frequency (0) is observed for those in shared housing with high activity and those living with a partner with sedentary activity.
- Individuals living alone tend to have higher activity levels compared to those in shared housing.
- Moderate activity is most common among those living with family.
- Sedentary lifestyle is least common among those living with a partner.

Image 6: city_responses.png

90.0% Confidence



Resize

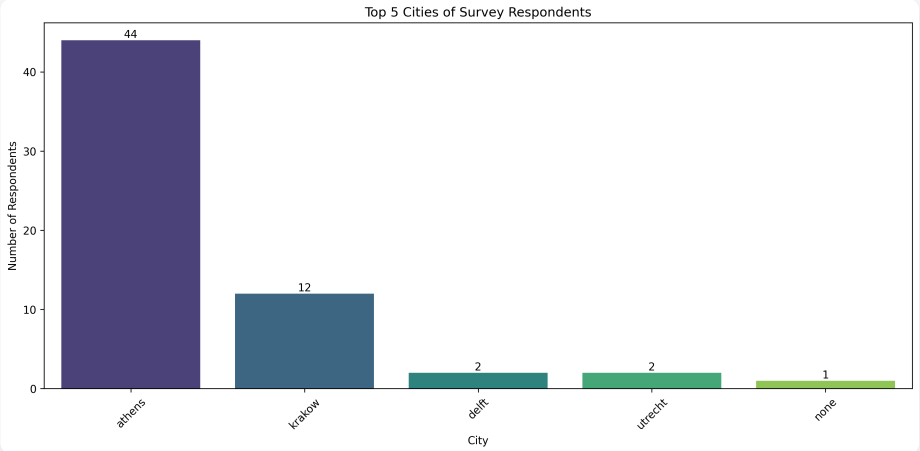
heatmap Visualization

Key Findings:

- Delft and Utrecht show strong inclination towards consuming vegetables
- Delft and Utrecht report lowest scores for sugary beverages
- None exhibits a unique pattern with high score for consuming dairy products

Image 7: top_cities.png

90.0% Confidence



Resize

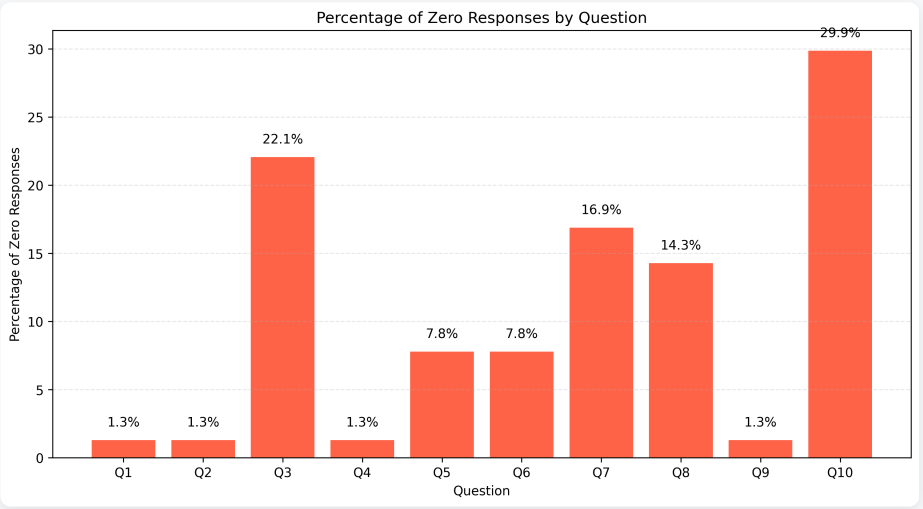
Bar Chart Visualization

Key Findings:

- Athens has the highest number of respondents, with 44 individuals.
- Krakow follows with 12 respondents.
- Delft and Utrecht each have 2 respondents.
- There is 1 respondent from a category labeled 'none.'

Image 8: zero_responses.png

90.0% Confidence



Resize

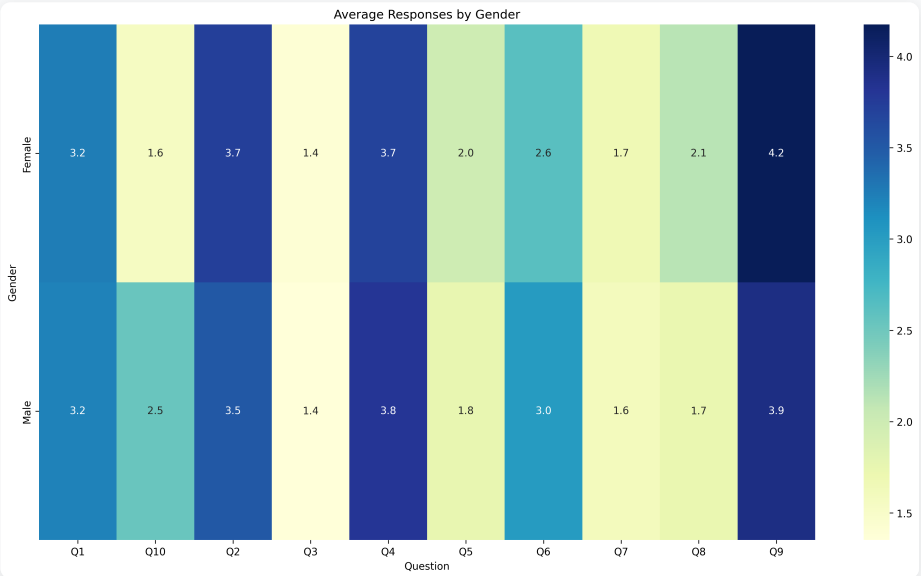
bar chart Visualization

Key Findings:

- Many people don't take vitamins or supplements at all. This could mean they either don't think they need them or aren't aware of their benefits.
- Quite a few people are choosing not to drink sugary drinks like soda. This might mean they're trying to be healthier by avoiding too much sugar.
- Some people are staying away from fried foods. They might be doing this because they know it's not the healthiest option.

Image 9: gender_analysis.png

90.0% Confidence



Resize

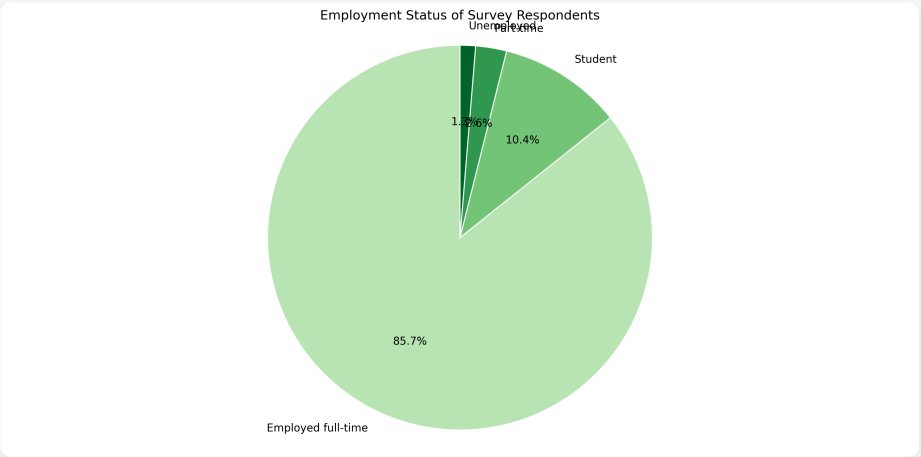
heatmap Visualization

Key Findings:

- Similar frequencies in consuming fruits and sugary beverages between genders
- Significant gender disparity in the consumption of nutritional supplements
- Females consume dairy products more frequently than males

Image 10: employment_status.png

90.0% Confidence



Resize

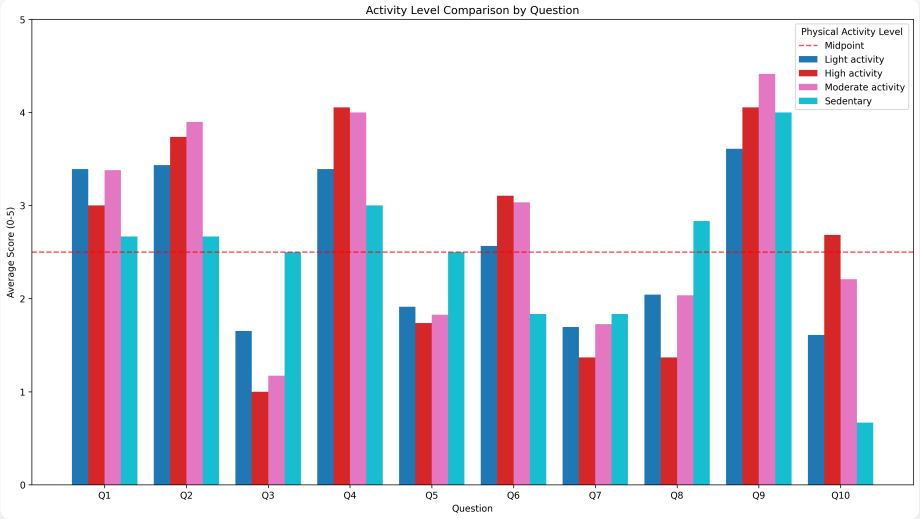
Pie chart Visualization

Key Findings:

- A significant majority of respondents are employed full-time.
- Students make up a smaller portion, followed by part-time workers and unemployed individuals.

Image 11: activity_comparison.png

90.0% Confidence



Resize

bar chart Visualization

Key Findings:

- Individuals with high activity levels score higher in consuming fruits and whole grains
- Consumption of sugary beverages is lower among active individuals
- Sedentary individuals exhibit higher scores in consuming dairy products

Image 12: employment_responses.png

90.0% Confidence

Resize

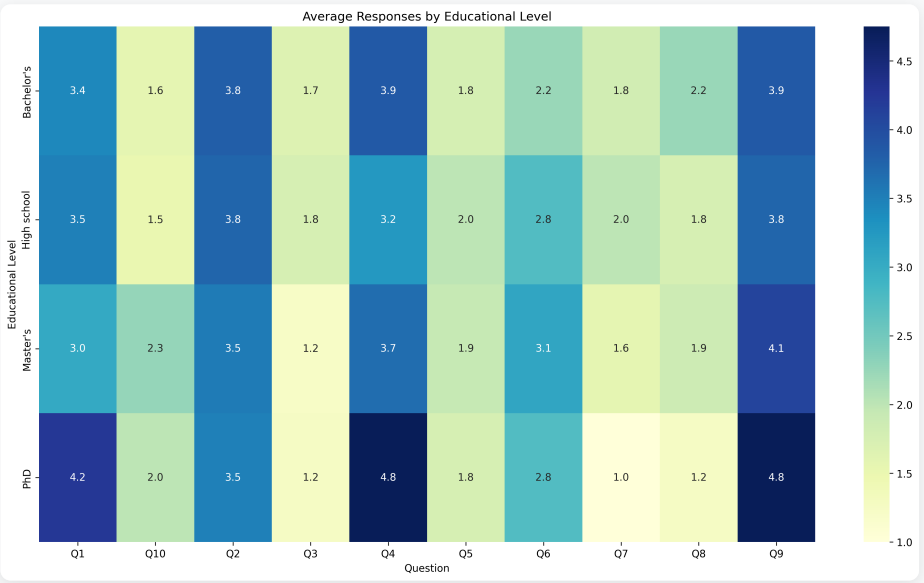
heatmap Visualization

Key Findings:

- Students prioritize vegetable consumption
- Part-time employees have regular meal patterns
- Part-time employees prefer healthier drink options

Image 13: education_analysis.png

90.0% Confidence



Resize

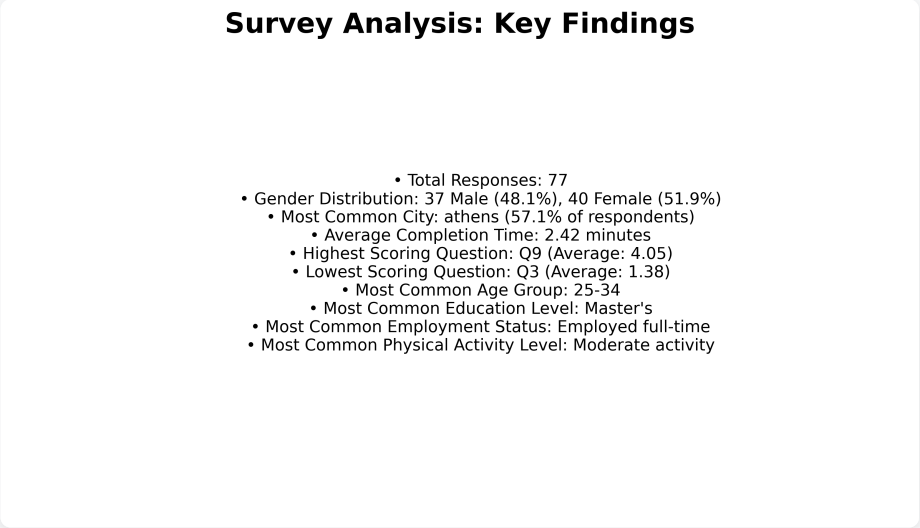
heatmap Visualization

Key Findings:

- Higher educational attainment is associated with healthier eating habits
- PhD holders consume fruits more frequently than those with a Master's degree
- PhD holders eat three or more meals a day more regularly
- PhD holders consume deep-fried food less often

Image 14: key_findings_summary.png

90.0% Confidence



Resize

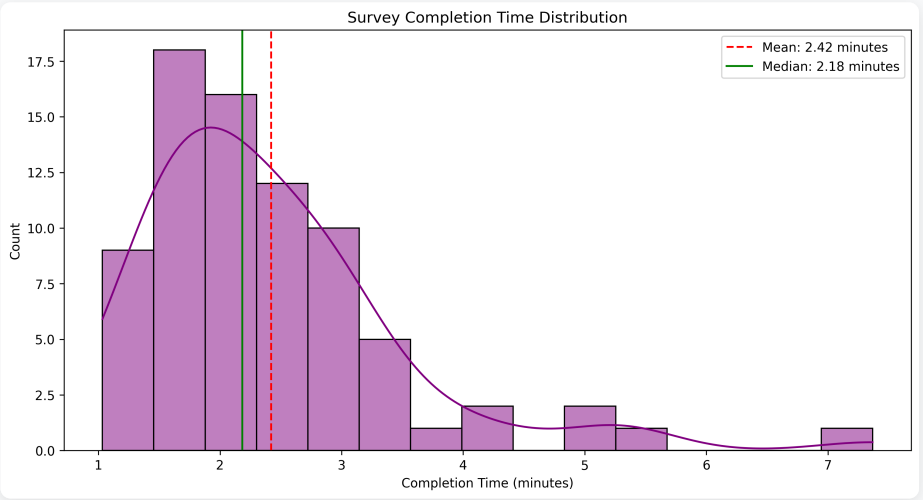
bar chart Visualization

Key Findings:

- Dairy products are frequently consumed by participants
- Reduced consumption of sugary beverages due to health awareness

Image 15: completion_time.png

90.0% Confidence



Resize

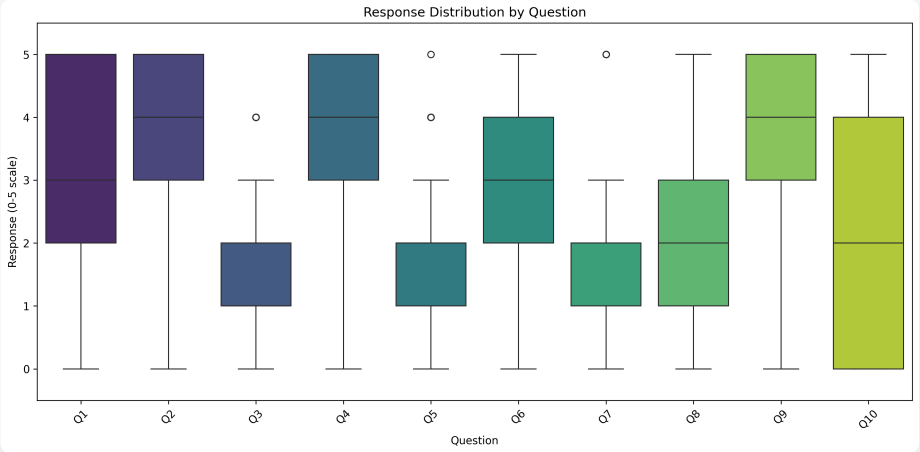
histogram Visualization

Key Findings:

- Central Tendency: The mean completion time is 2.42 minutes, slightly higher than the median of 2.18 minutes.
- Distribution Shape: The histogram shows a peak around the 2-minute mark, indicating that most respondents completed the survey in this time frame.
- Spread and Outliers: The presence of completion times extending up to 7 minutes indicates variability and potential outliers.

Image 16: question_boxplots.png

90.0% Confidence



Resize

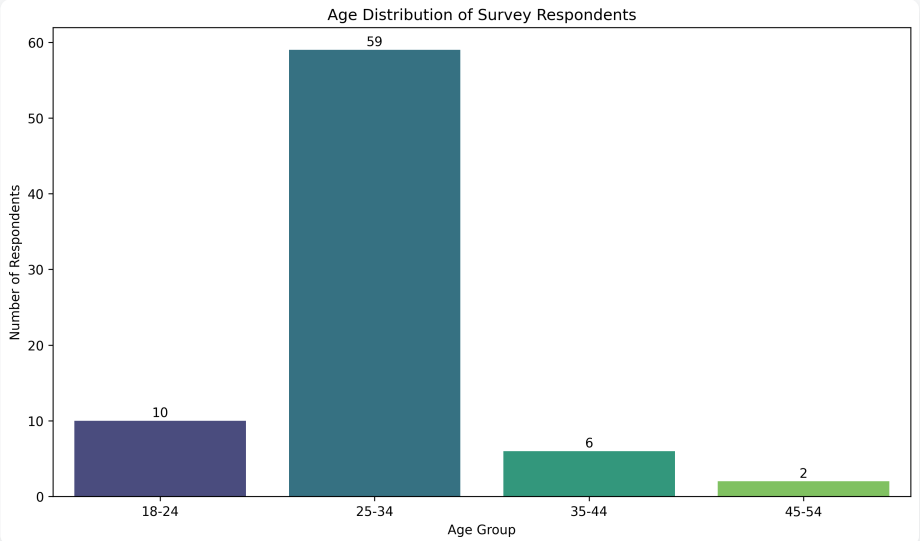
box plot Visualization

Key Findings:

- Participants consume fruits and vegetables regularly
- Reduced sugary beverage intake
- Moderate alcohol consumption

Image 17: age_distribution.png

90.0% Confidence



Resize

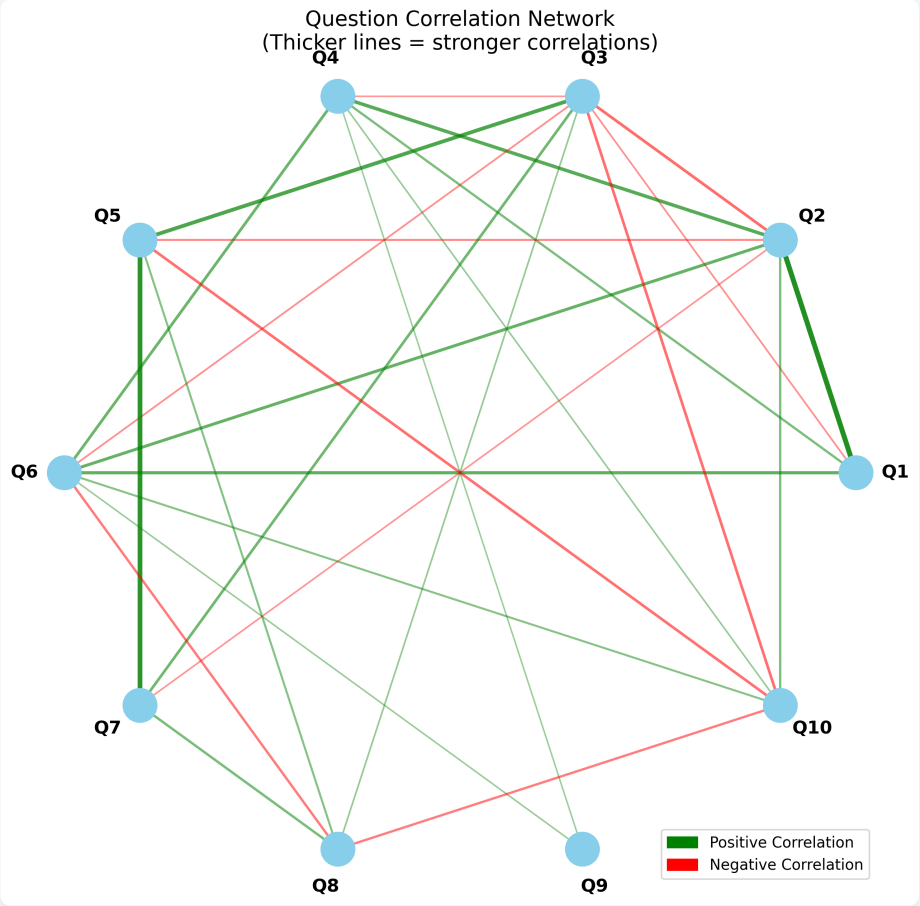
Bar Chart Visualization

Key Findings:

- The age group 25-34 has the highest number of respondents at 59.
- The age group 18-24 has 10 respondents.
- The age group 35-44 has 6 respondents.
- The age group 45-54 has 2 respondents.
- There is a significant concentration of respondents in the 25-34 age group, suggesting this age group is the most engaged or targeted in the survey.

Image 18: correlation_network.png

90.0% Confidence



Resize

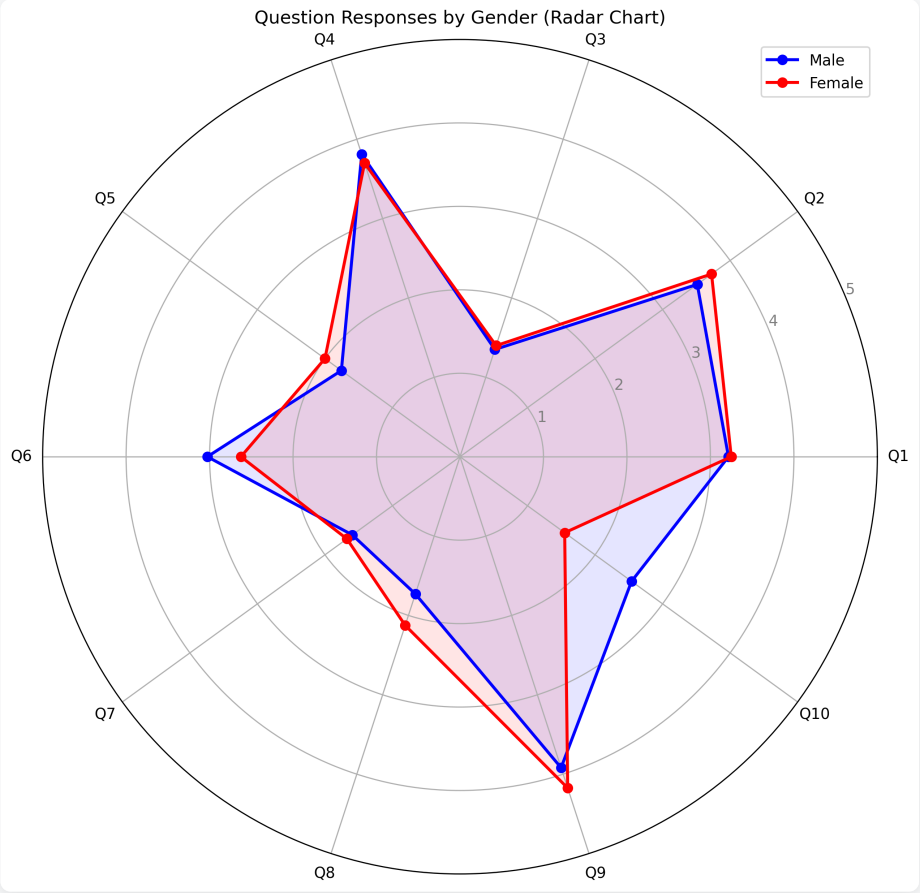
correlation network diagram Visualization

Key Findings:

- There is a strong positive correlation between the consumption of whole grains and the frequency of eating fast food or takeout.
- A notable negative correlation exists between the consumption of sugary beverages and the frequency of eating vegetables.
- There is a significant negative correlation between alcohol consumption and the intake of dairy products.

Image 19: gender_radar.png

90.0% Confidence



Resize

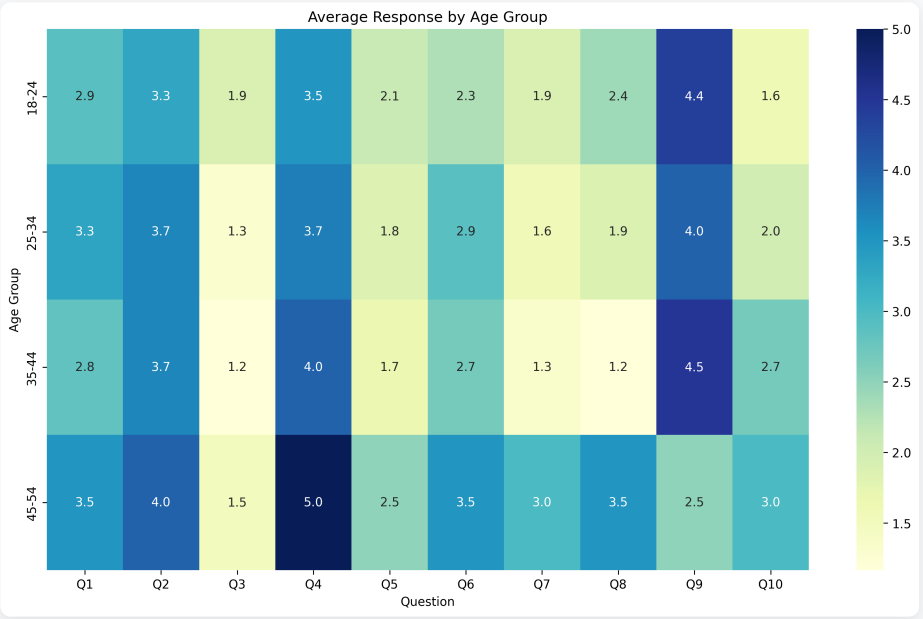
radar chart Visualization

Key Findings:

- females have healthier dietary habits compared to males
- females show higher consumption of fruits, vegetables, and whole grains
- males show higher consumption of sugary beverages

Image 20: age_response_heatmap.png

90.0% Confidence



Resize

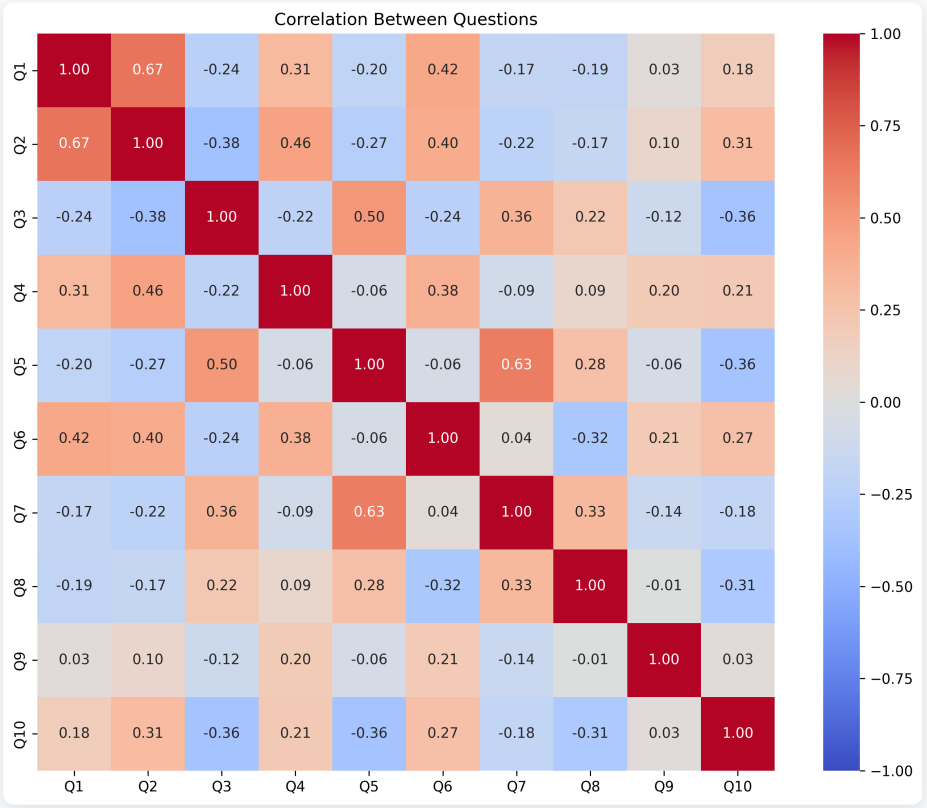
heatmap Visualization

Key Findings:

- Older adults (45-54) have the highest average response for regular meal consumption
- Middle-aged adults (35-44) show the lowest interest in sugary beverages
- Individuals aged 35-44 have the highest frequency of alcohol consumption

Image 21: question_correlations.png

90.0% Confidence



Resize

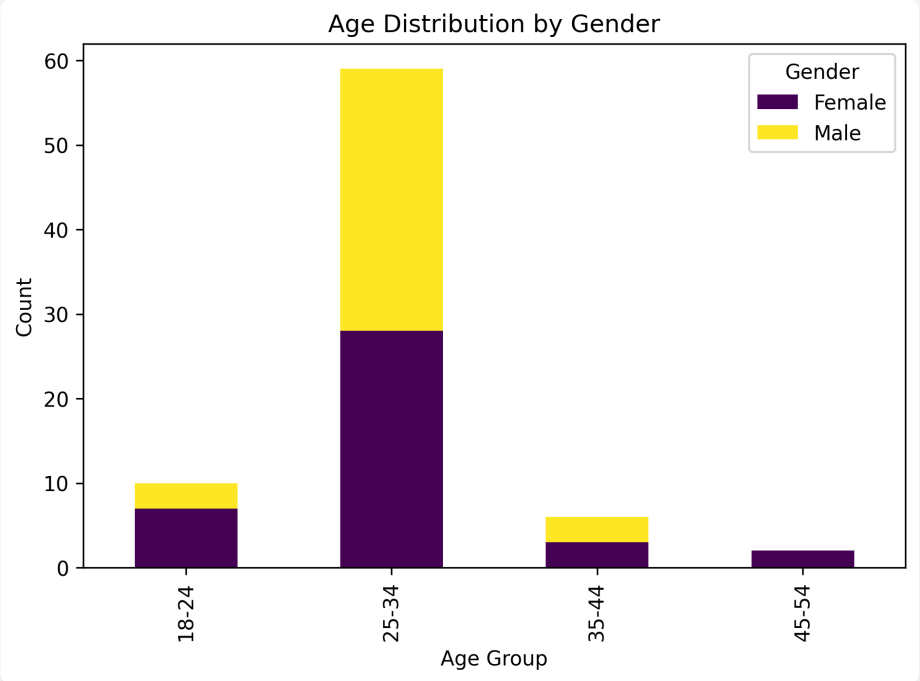
correlation matrix Visualization

Key Findings:

- The consumption of fruits and vegetables shows a strong positive correlation (r=0.67).
- The relationship between fast food consumption and deep-fried food intake is notably strong (r=0.63).
- Sugary beverage consumption and whole grain intake are negatively correlated (r=-0.36).

Image 22: age_gender_distribution.png

90.0% Confidence



Resize

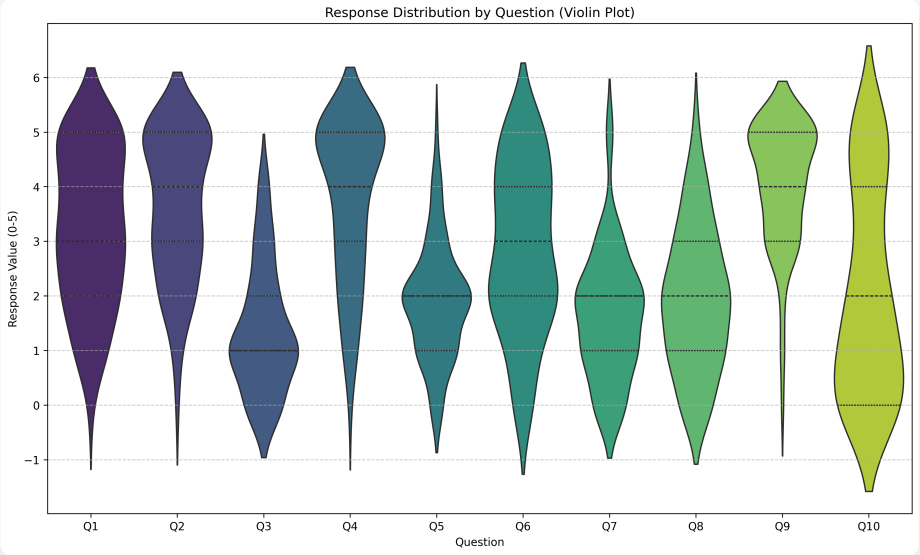
bar chart Visualization

Key Findings:

- Dominance of the 25-34 Age Group
- Gender Distribution
- Smaller Representation in Other Age Groups

Image 23: response_violins.png

90.0% Confidence



Resize

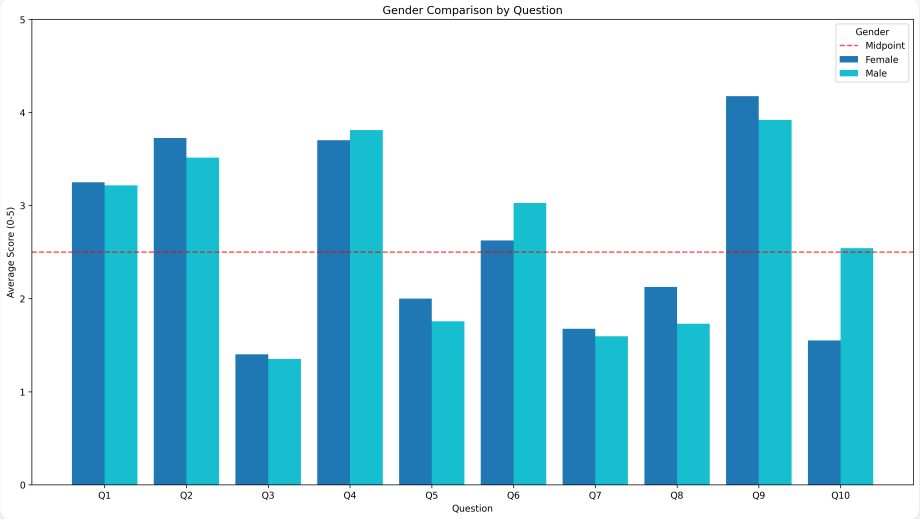
violin plot Visualization

Key Findings:

- Many individuals consume fruits and vegetables frequently
- Sugary beverages and fast food are consumed less frequently
- There is a growing trend towards whole grains and nutritional supplements

Image 24: gender_comparison.png

90.0% Confidence



Resize

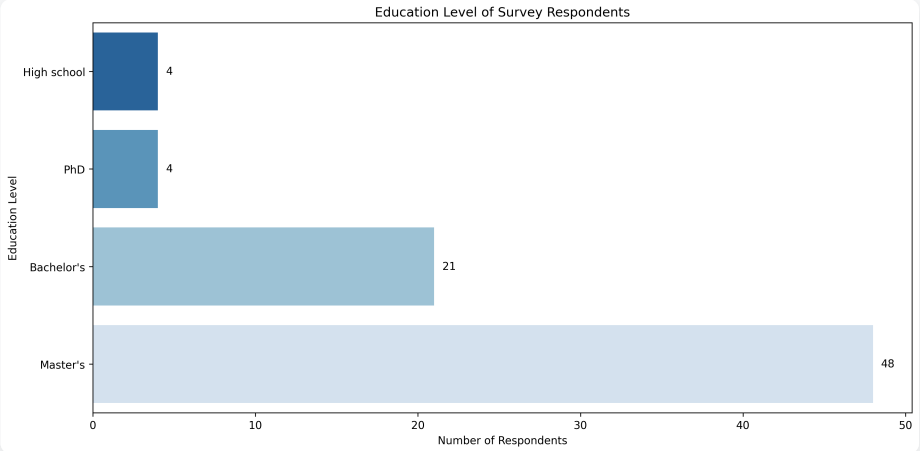
bar chart Visualization

Key Findings:

- Both males and females scored highest on Q9, indicating a preference for dairy products
- Low scores for Q3 suggest a tendency to avoid sugary beverages
- Higher average score for Q4, especially among males, indicates regular meal consumption

Image 25: education_distribution.png

90.0% Confidence



Resize

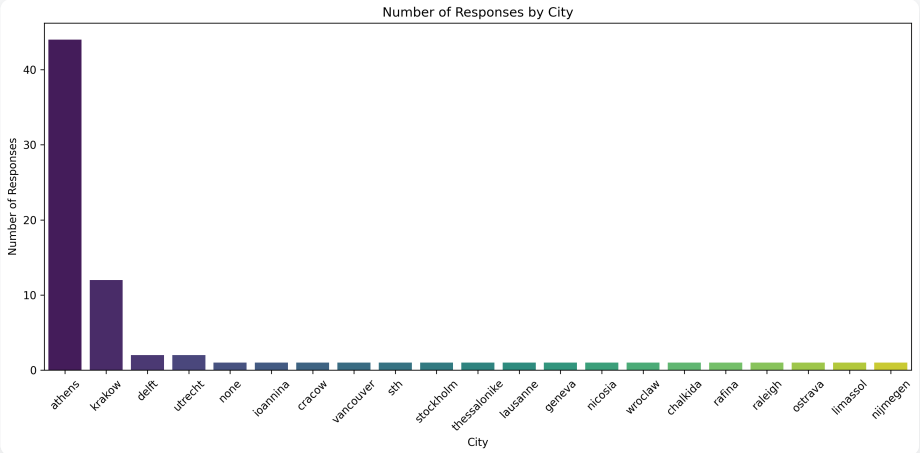
Bar chart Visualization

Key Findings:

- The majority of respondents have a Master's degree, indicating a higher level of educational attainment among the group.
- Bachelor's degree holders form the second-largest group.
- High School and PhD holders are equally represented, but in much smaller numbers compared to the other categories.

Image 26: city_distribution.png

90.0% Confidence



Resize

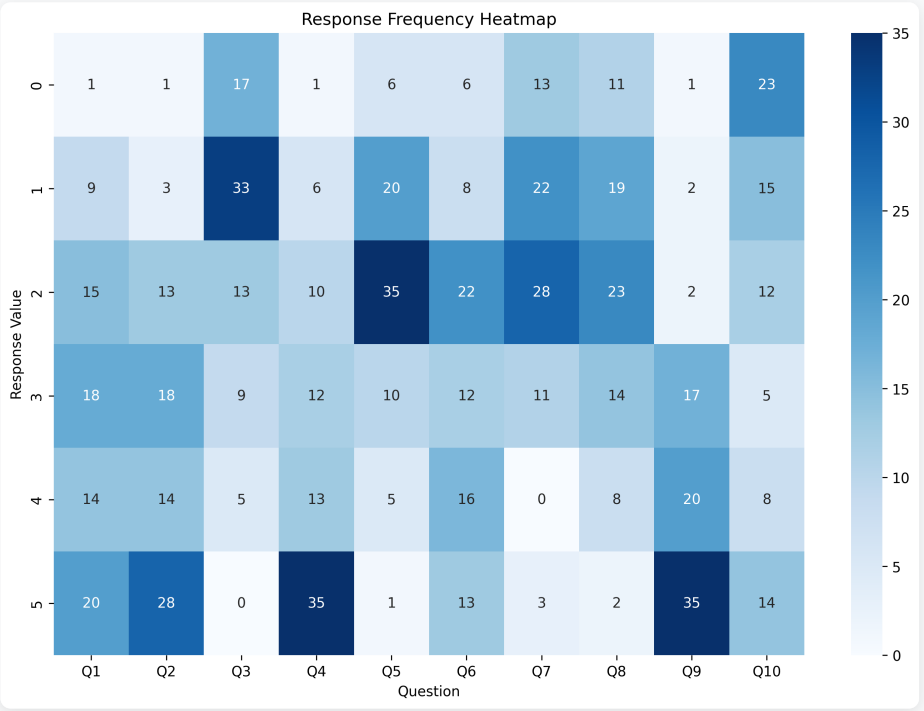
Bar chart Visualization

Key Findings:

- Athens has the highest number of responses, with over 40.
- Krakow follows with a significantly lower count, around 10 responses.
- Other cities have minimal responses, mostly below 5.

Image 27: response_frequency.png

90.0% Confidence



Resize

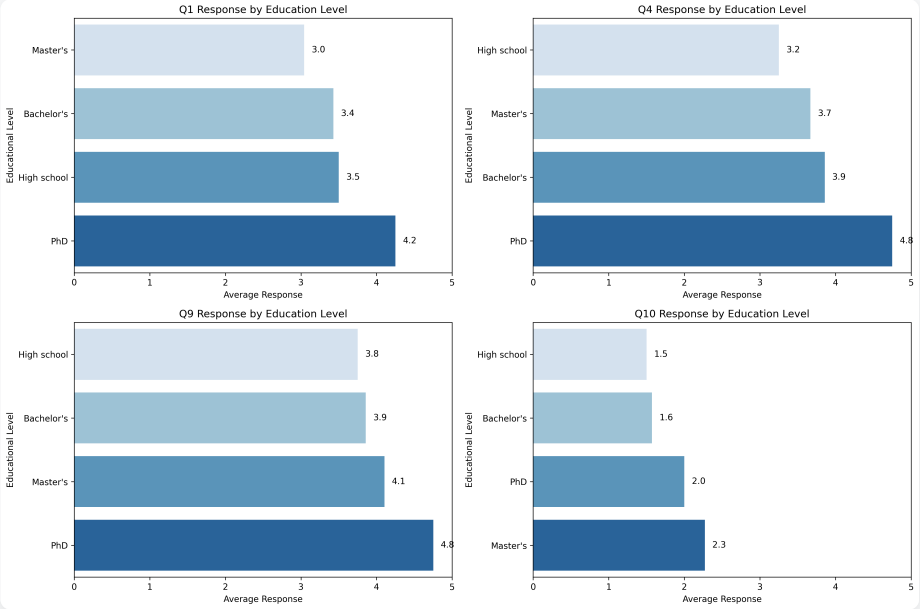
heatmap Visualization

Key Findings:

- Consuming vegetables (Q2) shows a high frequency at level 5, indicating a strong inclination towards a balanced diet.
- Sugary beverages (Q3) have a notably low frequency at the highest response level, suggesting a positive trend towards reducing sugar intake.
- Many individuals frequently consume three or more meals per day (Q4), supporting metabolic health and energy levels.

Image 28: education_response.png

90.0% Confidence



Resize

bar chart Visualization

Key Findings:

- Higher education levels correlated with more frequent fruit consumption
- PhD holders reported significantly higher meal frequency
- Master's degree holders showed a greater tendency to use nutritional supplements

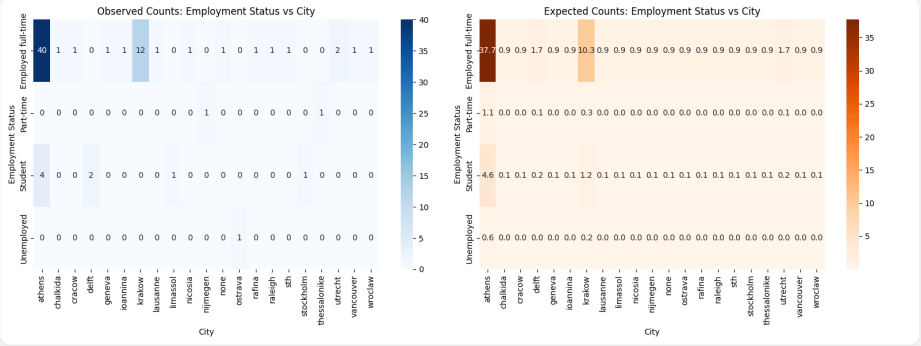
Categorical-Categorical

Categorical-Categorical (6)

6 analyses ✅

Image 1: Employment Status_City_observed_expected.png

90.0% Confidence



Resize

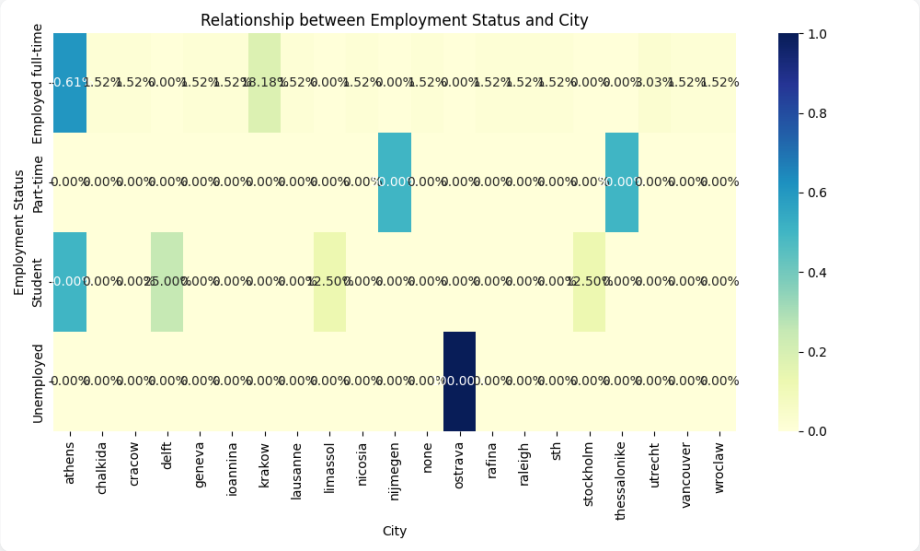
Heatmaps Visualization

Key Findings:

- Full-Time Employment: Athens shows a strong presence of full-time employment, exceeding expected counts.
- Student Population: Krakow has a higher student count than expected, suggesting a significant student demographic.

Image 2: Employment Status_City_heatmap.png

90.0% Confidence



Resize

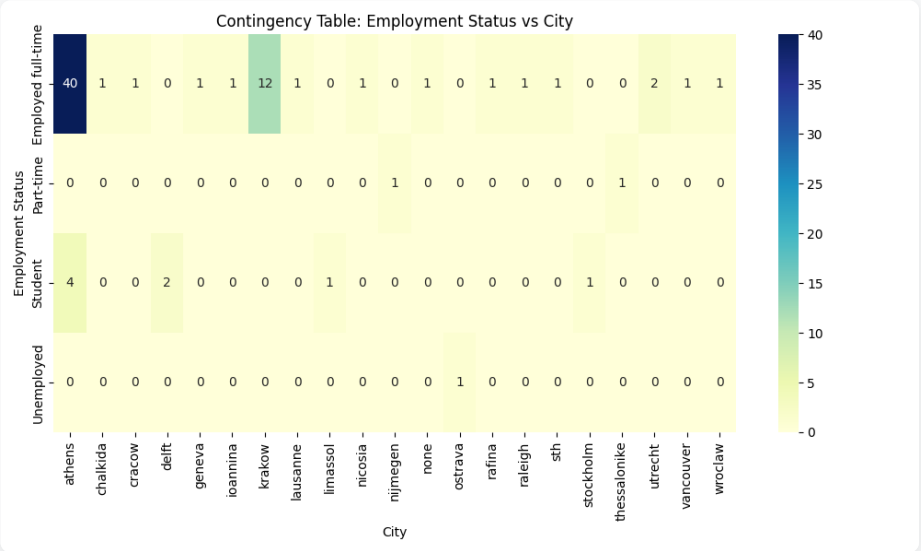
Heatmap Visualization

Key Findings:

- Full-time employment is highest in Athens.
- Student status is notably high in Cracow.
- Unemployment is most significant in Ostrava.

Image 3: Employment Status_City_contingency.png

90.0% Confidence



Resize

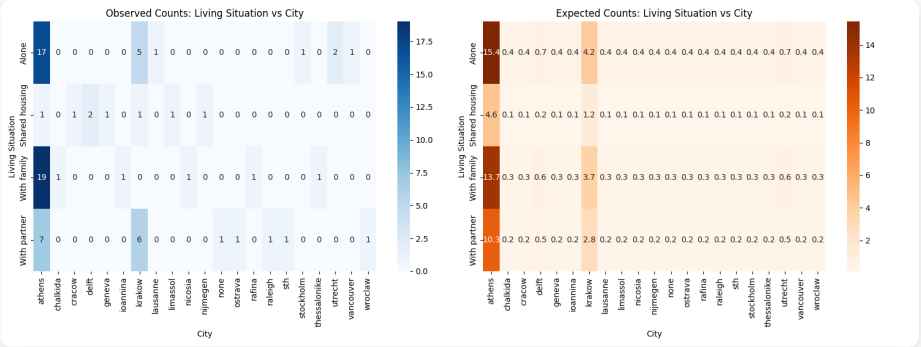
Heatmap Visualization

Key Findings:

- Athens shows a strong presence of full-time employment compared to other cities.
- Student status is relatively low across most cities, with a slight concentration in Cracow.
- Part-time and unemployed statuses are minimal across all cities.

Image 4: Living Situation_City_observed_expected.png

90.0% Confidence



Resize

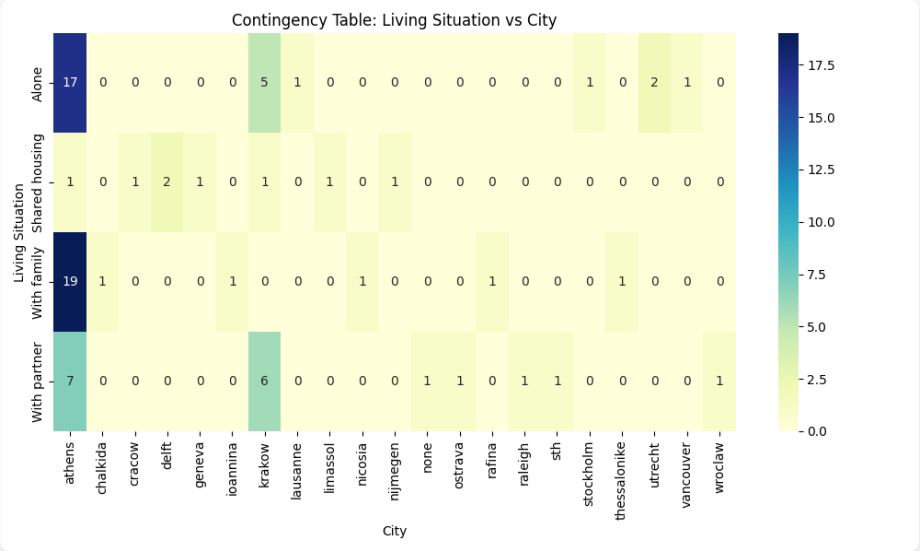
heatmaps Visualization

Key Findings:

- Observed vs. Expected Counts
- Living Alone: Athens has a notably high observed count of people living alone compared to other cities.
- With Family: A significant number of people in Athens also live with family, exceeding expected counts.
- With Partner: Krakow shows a higher observed count of people living with partners than expected.

Image 5: Living Situation_City_contingency.png

90.0% Confidence



Resize

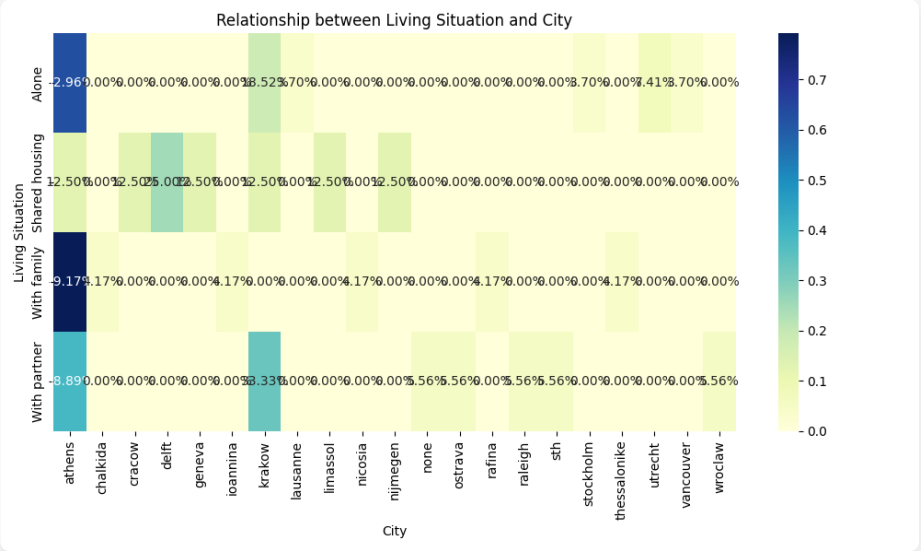
heatmap Visualization

Key Findings:

- The highest frequency of individuals living alone is observed in Athens (17 people) and Krakow (5 people).
- A significant number of people live with family in Athens (19 people).
- Krakow shows a notable number of individuals living with a partner (6 people).

Image 6: Living Situation_City_heatmap.png

90.0% Confidence



Resize

Heatmap Visualization

Key Findings:

- There is a noticeable variation in living situations across different cities.
- Some cities have a dominant living situation, such as Athens for living alone and Krakow for living with a partner.

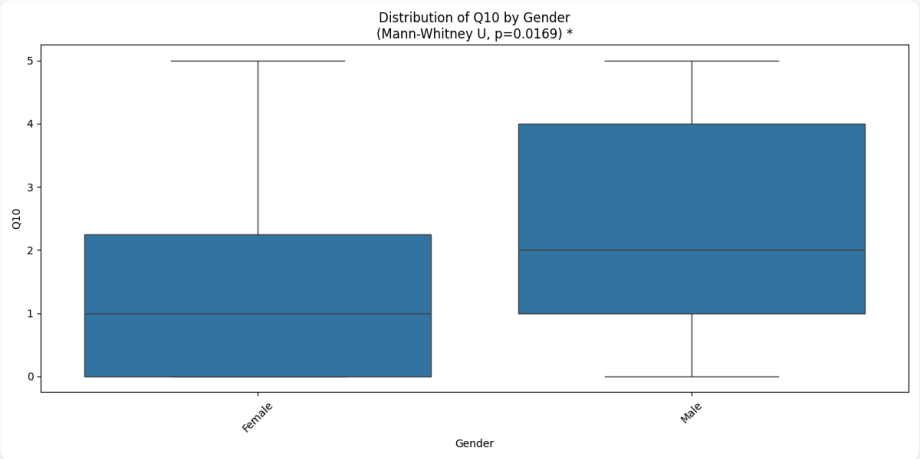
Categorical-Continuous

Categorical-Continuous (12)

12 analyses ✅

Image 1: Gender_Q10_boxplot.png

90.0% Confidence



Resize

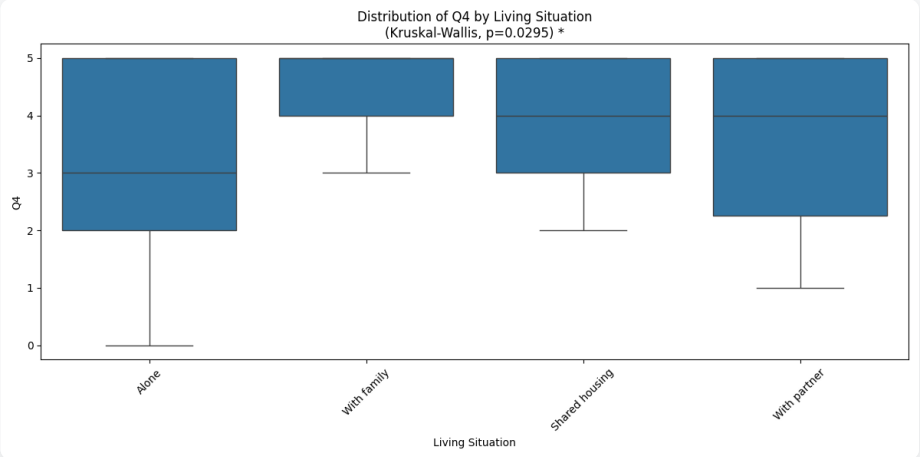
box plot Visualization

Key Findings:

- Males consume nutritional supplements more frequently than females
- Males show a greater overall tendency to incorporate supplements into their diets

Image 2: Living Situation_Q4_boxplot.png

90.0% Confidence



Resize

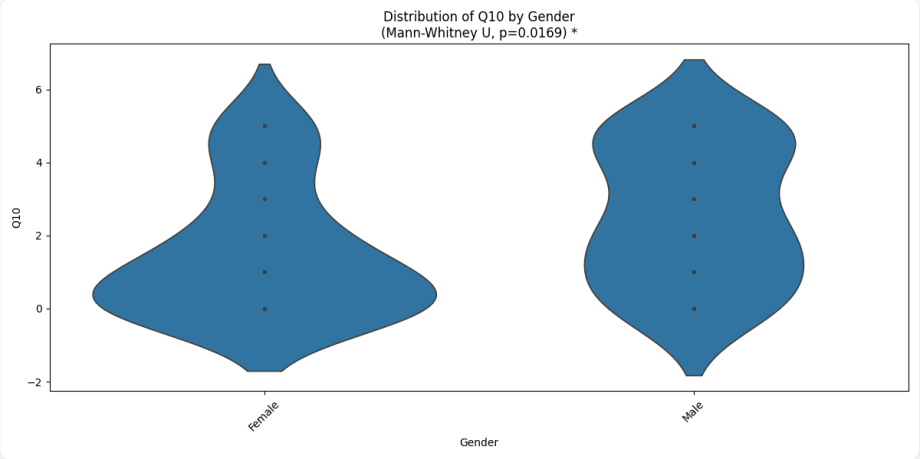
box plot Visualization

Key Findings:

- Individuals living alone have a lower median frequency of eating three or more meals per day compared to other living situations
- Living with family shows a higher median frequency of eating three or more meals per day
- Statistical significance of differences in meal frequency based on living situation

Image 3: Gender_Q10_violin.png

90.0% Confidence



Resize

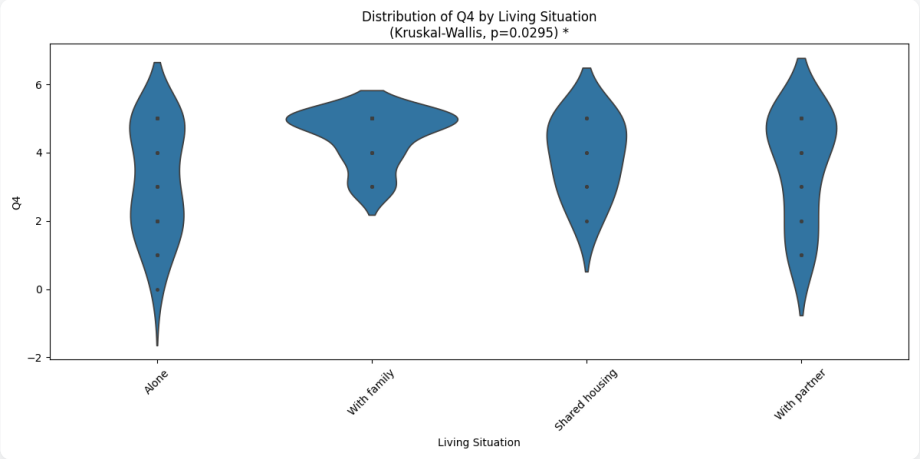
Violin plot Visualization

Key Findings:

- The distribution of Q10 (nutritional supplements) varies between genders.
- Females show a wider spread in supplement intake frequency compared to males.

Image 4: Living Situation_Q4_violin.png

90.0% Confidence



Resize

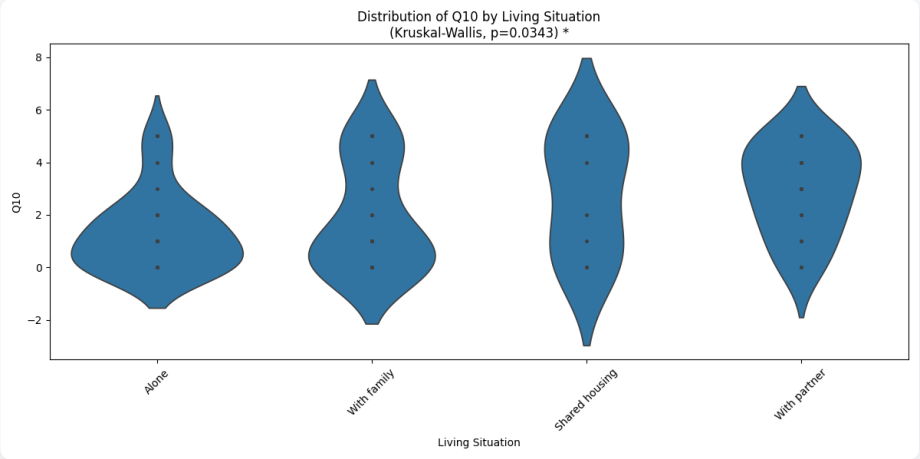
violin plot Visualization

Key Findings:

- Living situations significantly influence meal frequency
- Those living alone exhibit a wide range of meal frequencies
- Individuals living with family or a partner tend to have more consistent meal frequencies

Image 5: Living Situation_Q10_violin.png

90.0% Confidence



Resize

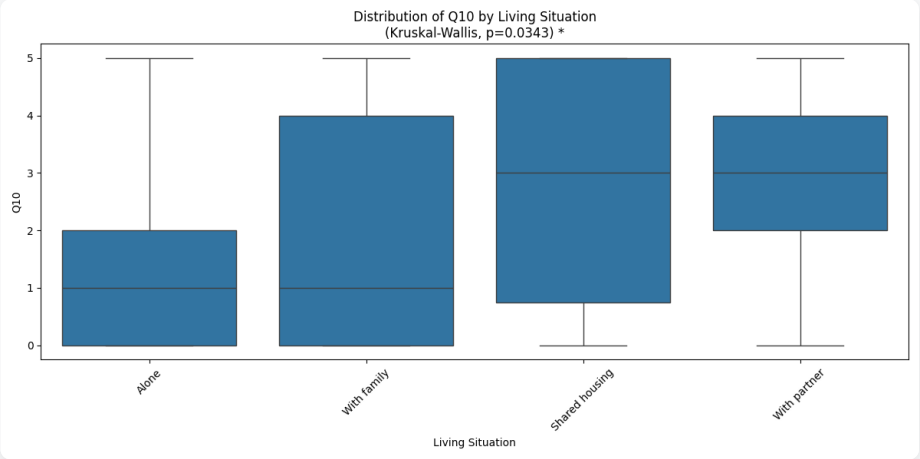
violin plot Visualization

Key Findings:

- The Kruskal-Wallis test yields a p-value of 0.0343, indicating statistically significant differences in supplement intake across living situations.
- The violin plot shows distinct patterns in supplement intake based on living situation.
- Living with family or a partner may encourage more regular supplement intake compared to living alone or in shared housing.

Image 6: Living Situation_Q10_boxplot.png

90.0% Confidence



Resize

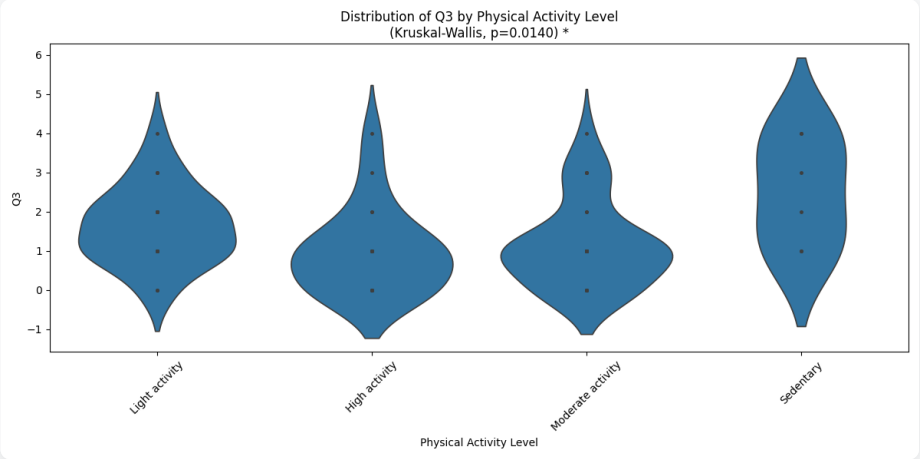
Box Plot Visualization

Key Findings:

- Individuals in shared housing tend to take nutritional supplements more frequently compared to other living situations.
- Those living alone have the lowest median frequency of supplement intake.

Image 7: Physical Activity Level_Q3_violin.png

90.0% Confidence



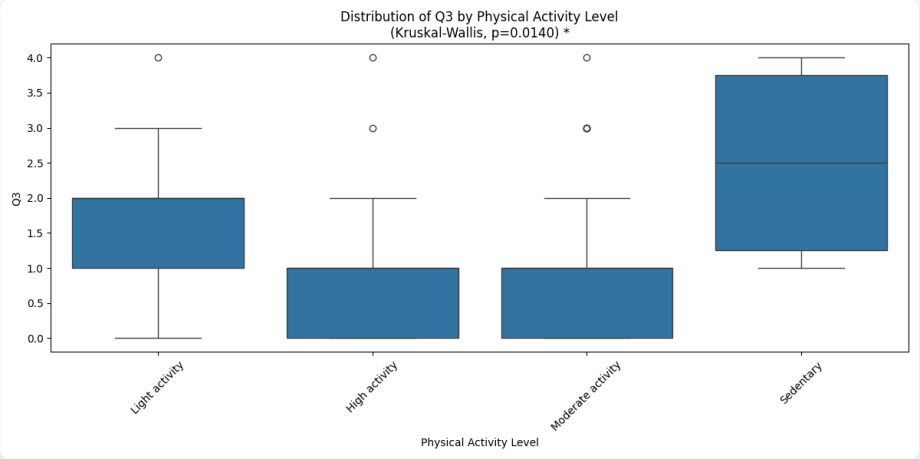
Resize

violin plot Visualization

Key Findings:

- Statistically significant difference in sugary beverage consumption across different activity levels
- Individuals with higher physical activity levels consume sugary beverages less frequently
- Sedentary individuals show wider distribution of sugary beverage consumption

Image 8: Physical Activity Level_Q3_boxplot.png 90.0% Confidence



Resize

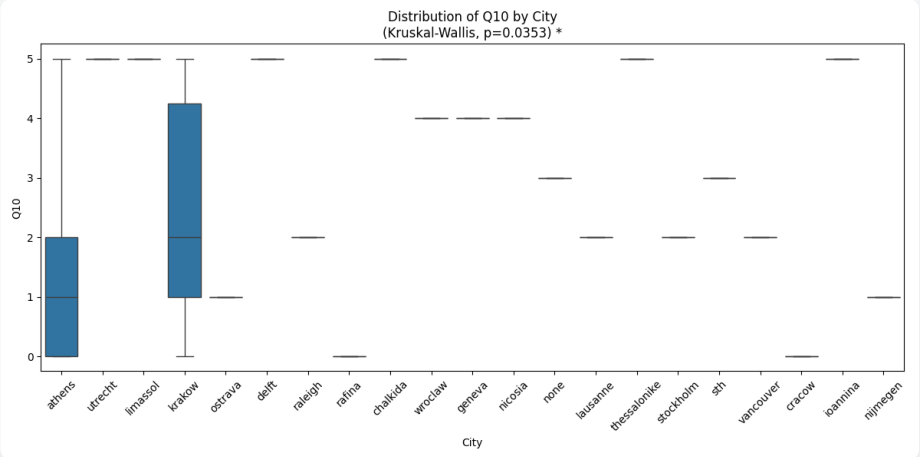
Distribution of Q3 by Physical Activity Level Visualization

Key Findings:

- Sugary Beverage Consumption and Activity Level: Individuals with a sedentary lifestyle tend to consume sugary beverages more frequently than those who engage in any level of physical activity. The median consumption for sedentary individuals is notably higher, suggesting a potential link between inactivity and higher sugary beverage intake.
- Impact of High Physical Activity: Those in the high activity group show the lowest median consumption of sugary beverages. This suggests that higher physical activity levels might be associated with healthier dietary choices, possibly due to increased health awareness.
- Statistical Significance: The p-value of 0.0140 from the Kruskal-Wallis test confirms that the differences in sugary beverage consumption across the activity levels are statistically significant. This means the observed patterns are unlikely due to random chance.

Image 9: City_Q10_boxplot.png

90.0% Confidence



Resize

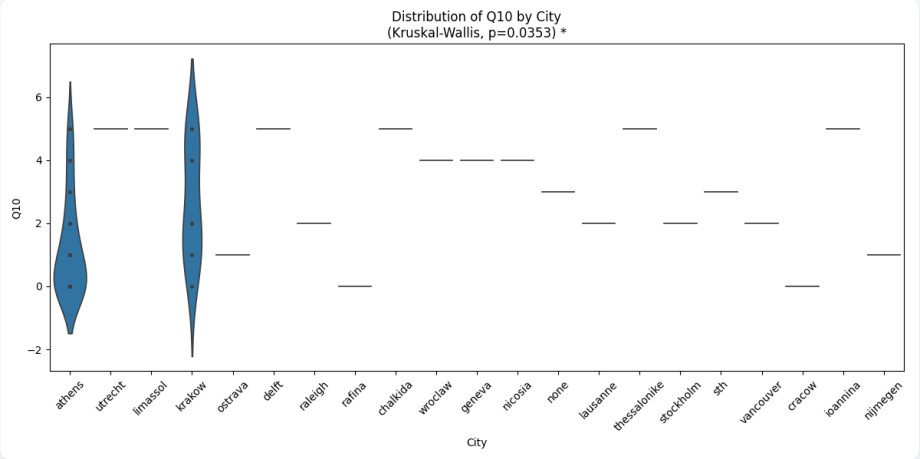
box plot Visualization

Key Findings:

- Statistical Significance Across Cities: The Kruskal-Wallis test shows a p-value of 0.0353, suggesting significant differences in how often people take nutritional supplements in different cities. This means that the likelihood of taking supplements varies depending on the city, indicating cultural or regional differences in health practices.
- Variation in Supplement Consumption: Cities like Utrecht and Limassol show a wider range of responses, indicating diverse habits regarding supplement intake. In contrast, cities like Ostrava and Ioannina show less variation, suggesting more uniform behavior in these locations.
- Median Consumption Levels: The median values differ across cities, with some cities showing higher median frequencies of supplement intake. For example, Limassol has a higher median compared to Athens, indicating that people in Limassol might be more inclined to take supplements regularly.

Image 10: City_Q10_violin.png

90.0% Confidence



Resize

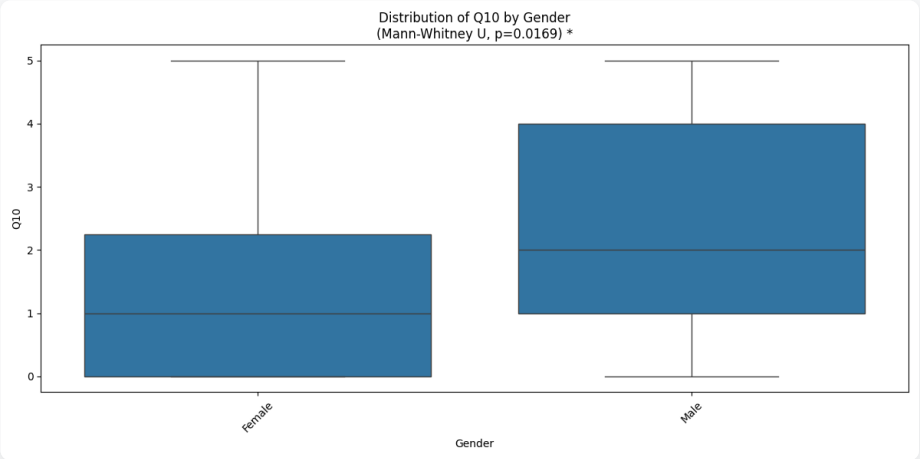
violin plot Visualization

Key Findings:

- The distribution of responses for taking nutritional supplements varies significantly across different cities.
- Athens and Limassol show a wider range of responses, suggesting more variability in supplement consumption.

Image 11: Gender_Q10_nonparametric_boxplot.png

90.0% Confidence



Resize

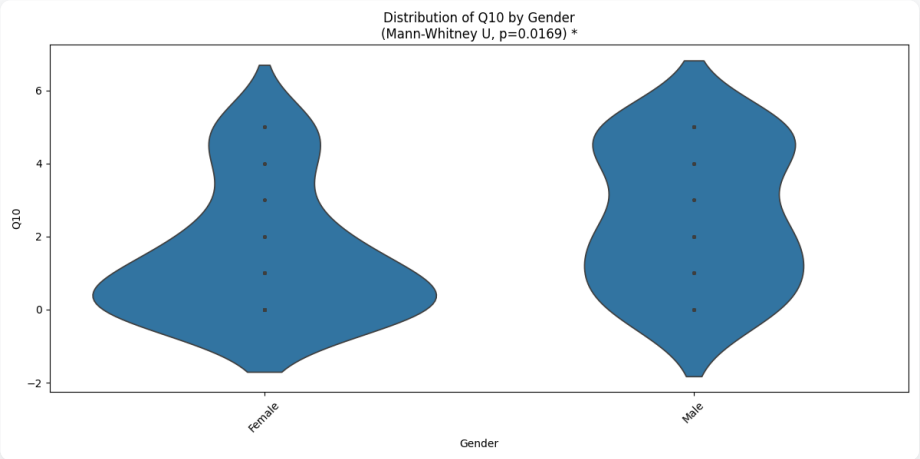
box plot Visualization

Key Findings:

- Males report a higher frequency of taking nutritional supplements compared to females
- Statistically significant difference with a p-value of 0.0169
- Men are more likely to take vitamins or supplements more often than women

Image 12:
Gender_Q10_nonparametric_violin.png

90.0% Confidence



Resize

violin plot Visualization

Key Findings:

- Significant Gender Difference: The Mann-Whitney U test reveals a significant difference in supplement intake frequency between genders (p=0.0169). This suggests that gender plays a role in the frequency of nutritional supplement consumption.
- Wider Distribution for Females: The violin plot for females is broader, indicating a greater range of responses. This suggests that females have more varied habits regarding supplement intake.
- Central Tendency: Both genders show a central tendency around similar values, but the spread is more pronounced in females.

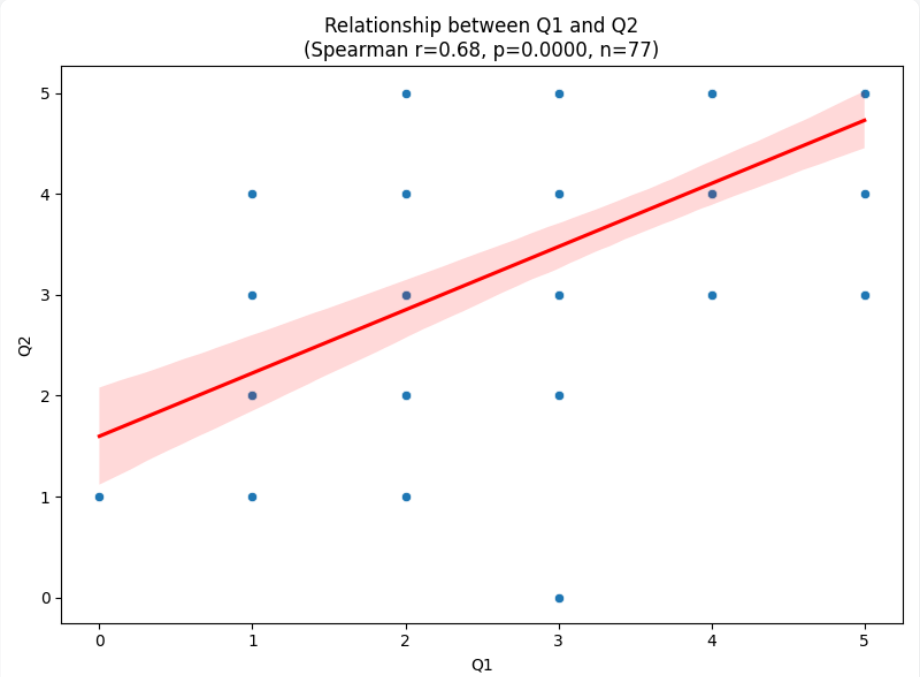
Continuous-Continuous

Continuous-Continuous (6)

6 analyses ✅

Image 1: Q1_Q2_scatter.png

90.0% Confidence



Resize

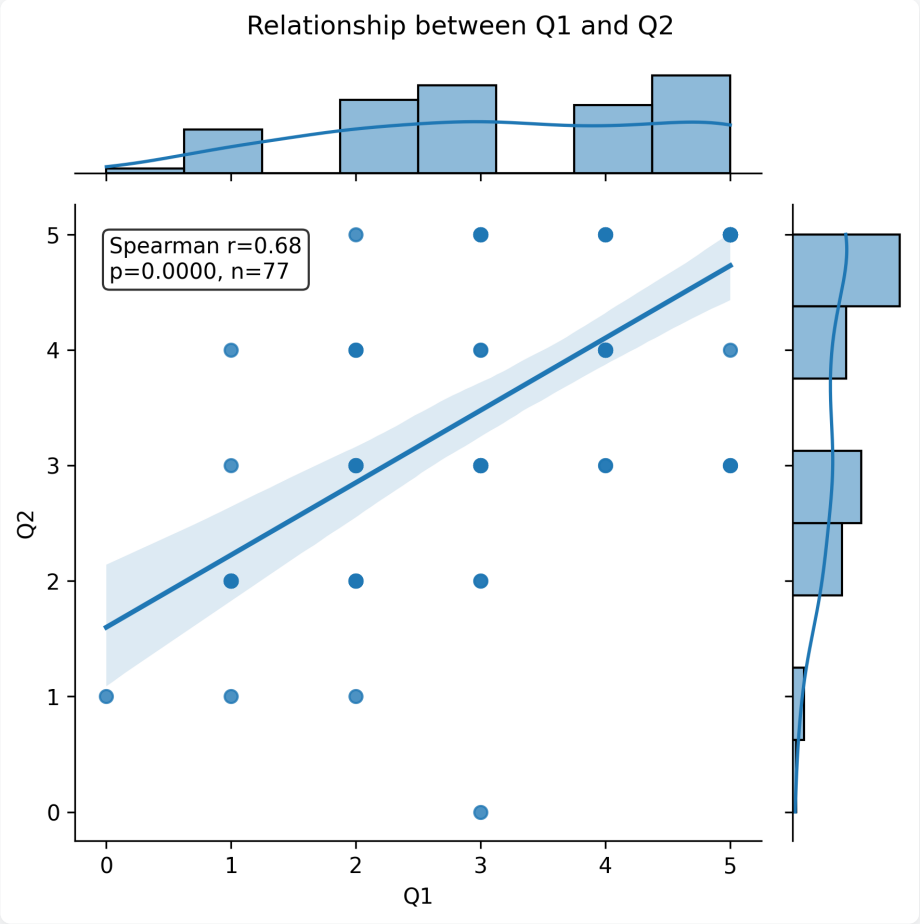
scatter plot Visualization

Key Findings:

- People who frequently eat fruits are likely to consume vegetables regularly.
- As fruit consumption increases, vegetable intake tends to rise as well.
- Making small changes in one area of your diet can lead to healthier choices overall.

Image 2: Q1_Q2_jointplot.png

90.0% Confidence



Resize

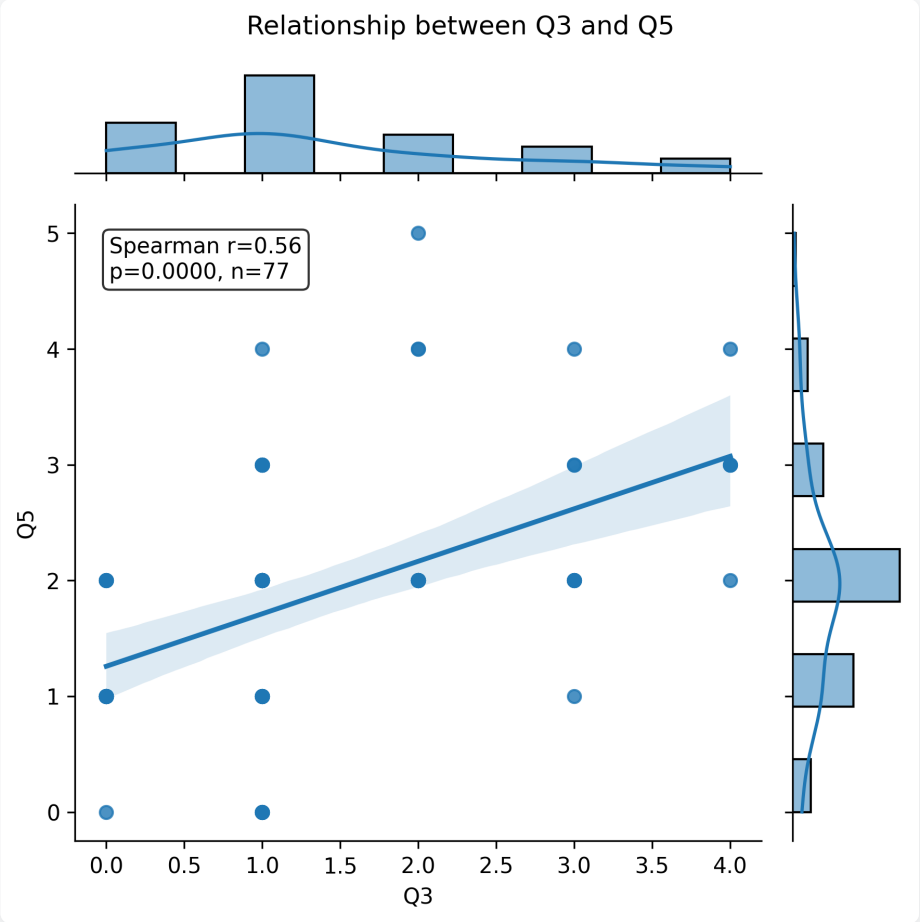
scatter plot with histograms Visualization

Key Findings:

- Strong positive correlation between fruit and vegetable consumption
- Individuals who eat fruits frequently are likely to consume vegetables regularly
- Promotes healthier eating habits and balanced diets

Image 3: Q3_Q5_jointplot.png

90.0% Confidence



Resize

scatter plot with marginal histograms Visualization

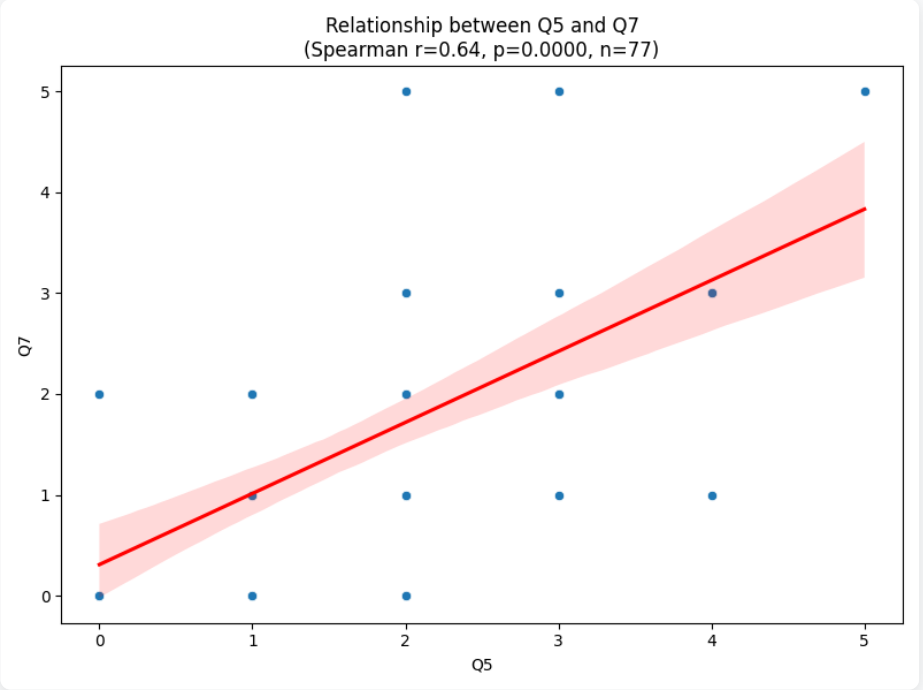
Key Findings:

- Positive Correlation: The plot reveals a positive correlation between the frequency of drinking sugary beverages and eating fast food, with a Spearman correlation coefficient of 0.56.
- Statistical Significance: The correlation is statistically significant with a sample size of 77.

- Behavioral Insight: The trend suggests a lifestyle pattern where individuals who opt for sugary beverages might also prefer the convenience and taste of fast food.

Image 4: Q5_Q7_scatter.png

90.0% Confidence



Resize

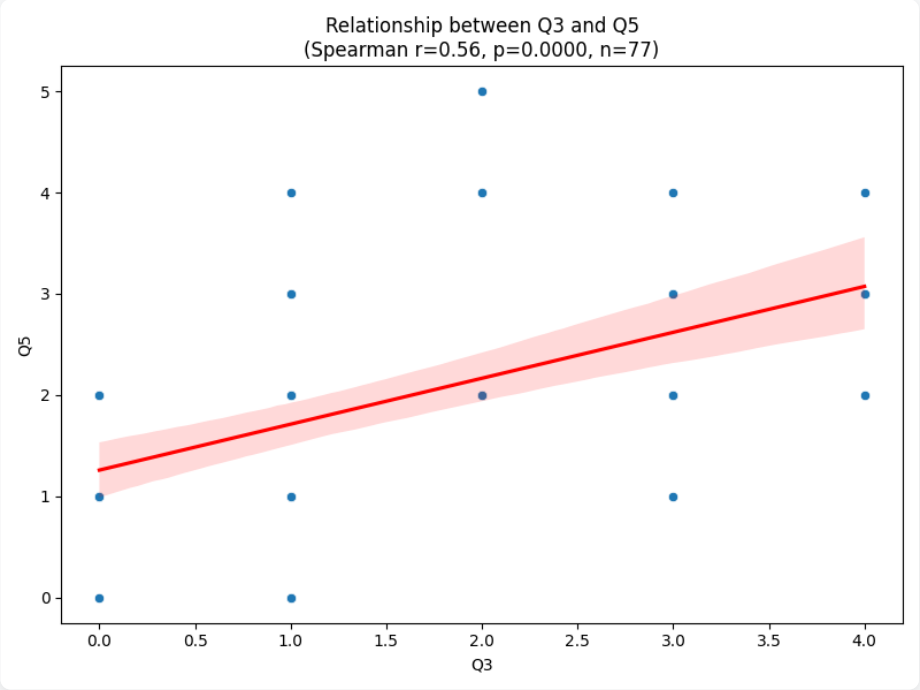
scatter plot Visualization

Key Findings:

- A significant positive correlation exists between the frequency of consuming fast food or takeout and the frequency of eating deep-fried food.
- The Spearman coefficient of 0.64 indicates a strong relationship.
- The p-value of 0.0000 signifies statistical significance.

Image 5: Q3_Q5_scatter.png

90.0% Confidence



Resize

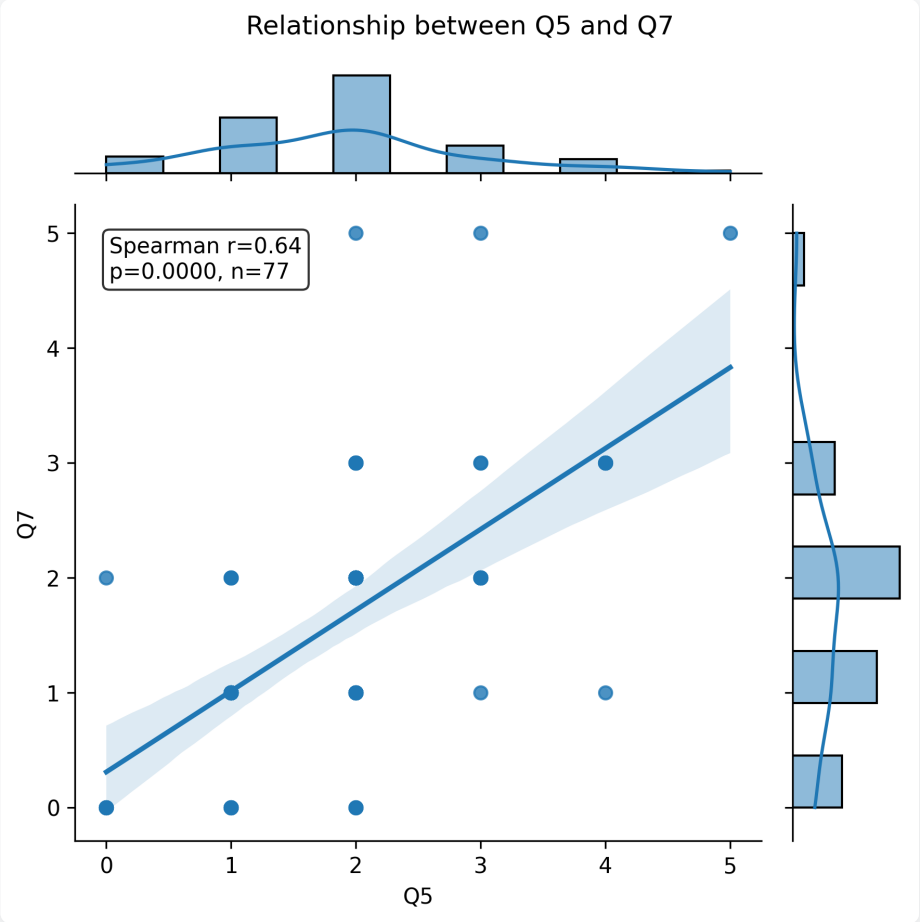
scatter plot Visualization

Key Findings:

- The plot shows a positive correlation between Q3 and Q5, with a Spearman correlation coefficient of 0.56.
- The p-value is 0.0000, indicating that the correlation is statistically significant.
- The analysis is based on a sample size of 77 (n=77).

Image 6: Q5_Q7_jointplot.png

90.0% Confidence



Resize

scatter plot with histograms Visualization

Key Findings:

- Positive Correlation: The Spearman correlation coefficient is 0.64, indicating a strong positive correlation between Q5 and Q7. This means that as the frequency of consuming fast food increases, the frequency of eating deep-fried food also tends to increase. The p-value is 0.0000, which is highly significant, suggesting this relationship is not due to random chance.
- Data Distribution: The histograms show the distribution of responses for both questions. Most participants reported low to

moderate frequencies for both consuming fast food and eating deep-fried food, with fewer participants reporting high frequencies.

- Sample Size: The analysis is based on 77 observations, providing a robust sample size for detecting significant relationships.

This report was automatically generated on April 08, 2025. The analysis was performed using advanced computer vision and natural language processing techniques.