

FAST FOOD IMPACTS ON HEALTH AND ITS QUALITY CONTROL

Project report submitted to University of Calicut in partial
fulfilment for the award of M.Sc. Statistics

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CERTIFICATE

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1. Abstract

In recent decades, fast food has become an integral part of modern lifestyles, particularly among youth, due to its affordability, convenience, and accessibility. However, the nutritional shortcomings and potential health risks associated with frequent fast food consumption have raised significant public health concerns.

This study explores the patterns, preferences, and health impacts of fast food consumption across different demographic groups, focusing on both college students and older adults in Malappuram and Calicut.

Primary data was collected through a structured questionnaire covering consumption frequency, preferences, spending behavior, and health awareness. A convenience sampling method was used, and responses were obtained from 458 participants. The collected data was analyzed using SPSS, R, Microsoft Excel, and Power BI to derive meaningful insights.

The objectives of the study include comparing trends across demographics, identifying reasons behind consumption, preferred food types and timings, average expenditure, awareness of health risks, satisfaction levels, and the relationship between BMI and fast food intake. Special emphasis was also given to calorie monitoring

behaviors and consumer satisfaction with food quality and safety.

The findings underscore the growing reliance on fast food, highlight varying awareness levels of health impacts, and emphasize the need for stringent quality control and informed dietary choices. This study contributes valuable insights for policymakers, health professionals, and food industry stakeholders to foster healthier consumption habits and accountability in the fast food sector.

2. INTRODUCTION

Fast food is the term given to food that can be prepared and served very quickly. Any meal with low preparation time can be considered as fast food. The concept of fast food emerged in the 1920s, and its rapid spread was first witnessed in the 1950s. The idea of ready-cooked food for sale is connected with urban development. In ancient Rome, street stands sold bread and wine. Noodle shops have been a staple in East Asian cities. In the French-speaking nations of West Africa, a variety of ready-to-eat grilled meat sticks were widely sold. Popular Indian fast food dishes include Vada Pav, Panipuri, and Dahi Vada.

2.0.1 The Start of Fast Food Culture in India

For a nation that has traditionally valued home-cooked and fresh food, the trend of fast food is radically changing eating habits. This shift reflects globalization and the emergence of a new market not previously witnessed in India. Due to rising disposable income, changing consumer behavior, and favorable demographics, India is experiencing tremendous growth in the fast food and restaurant industries. Additional reasons for this trend include exposure to western cuisine, an increasing number of nuclear families,

and the rise in the number of employed women. These factors have significantly impacted eating-out trends and the expansion of the fast food industry in the country. As a result of this trend, international food chains like Pizza Hut, Domino's, McDonald's, and KFC are investing heavily to capture a share of this lucrative market. Recognizing this increasing trend in fast food consumption, we, the students of M.Sc.Statistics at the University of Calicut, decided to conduct a survey to analyze the eating habits of students and the elderly.

2.0.2 Studies on Fast Food in India

A report by RESEARCH ON INDIA found that traditionally, Indian consumers have been eating at roadside stalls, dhabas, and local vendors, which still dominate the unorganized sector where fast food has long been consumed. However, with economic growth and western influence, the non-home food market has evolved significantly. A report by PR Newswire on "Fast Food Market in India 2015-2020" provides an in-depth analysis of the factors contributing to the fast food market's growth in India. The report examines the variety of food offerings in terms of cuisine, restaurant types, and food categories.

2.0.3 Food Habits of Indian Youth

31% of Indians are vegetarians for religious and cultural reasons while the of the population eat fish and meat. Dining out is popular among Indian consumers, particularly in urban areas, facilitated by busier lifestyles and higher levels of disposable income. Indeed, value sales at full service restaurants have increased in recent years. Since 2009, demand for home delivery takeaway meals has been increasing steadily.

In recent decades, the global food environment has undergone profound transformations that reflect not only changes in consumer behavior but also deeper shifts in cultural, economic, and technological landscapes. Among the most striking and impactful developments is the exponential rise of fast food culture. Characterized by its speed, affordability, convenience, and sensory appeal, fast food has become a defining element of contemporary life. While originally rooted in western economies, the fast food phenomenon has rapidly globalized, adapting itself to diverse markets and influencing food habits across continents. Nowhere is this transition more evident than in developing economies like India, where urbanization, changing work patterns, and demographic shifts have fueled the widespread acceptance and normalization of fast food consumption.

Fast food establishments have multiplied in both urban and semi-urban settings, offering consumers a quick escape from the rigors of daily cooking and time-consuming food preparation. These outlets range from global giants such as McDonald's, KFC, and Domino's to homegrown brands and local vendors offering items such as fried snacks, sandwiches, and sugar-laden beverages. This cultural shift, while reflective of changing lifestyles, has simultaneously introduced a new layer of complexity to public health. Traditional diets rich in fiber, legumes, vegetables, and minimally processed foods are increasingly being replaced or supplemented by calorie-dense, nutritionally unbalanced fast food meals.

The rise in fast food consumption is more than a matter of individual choice or lifestyle preference—it is symptomatic of broader systemic changes in society. Economic liberalization, the expansion of multinational corporations, and aggressive marketing strategies have played pivotal roles in making fast food ubiquitous. These strategies, often targeting young people through social media, discounts, and strategic location placements, have effectively created a sense of desirability around fast food. This de-

sirability is not merely rooted in taste, but in the social associations of modernity, speed, and affluence that fast food is thought to represent.

However, the consumption of fast food is not without consequence. Fast food items are often rich in unhealthy fats, sodium, added sugars, and preservatives, while being low in essential nutrients such as vitamins, minerals, and fiber. The regular consumption of such foods has been consistently linked to negative health outcomes. Numerous studies across the world have found a strong correlation between fast food intake and rising cases of obesity, type 2 diabetes, hypertension, cardiovascular disease, gastrointestinal issues, and certain types of cancer. These health concerns are not only individual burdens but are rapidly becoming societal and economic challenges as healthcare systems are strained by the rising prevalence of non-communicable diseases (NCDs).

In India, the issue is particularly critical. Despite cultural traditions that emphasize balanced home-cooked meals, the country is experiencing a dramatic shift in dietary patterns, particularly among youth and urban dwellers. The growing preference for fast food is being fueled by increasing disposable incomes, dual-income households, nuclear family structures, and the reduction of time available for traditional meal preparation. Students, professionals, and even children are increasingly exposed to an environment where fast food is not only available but is often more economically viable and socially celebrated than healthier alternatives.

One of the less acknowledged but highly consequential aspects of this dietary transformation is its influence on long-term food habits. Adolescents and young adults, in particular, are developing lifelong preferences centered around taste, speed, and branding, rather than nutrition or food safety. The implications of such trends extend far beyond immediate health outcomes. They influence future patterns of food purchasing, health literacy, and even mental well-being. Studies have suggested that poor dietary choices, often beginning in adolescence, continue well into adulthood and are notoriously difficult to reverse.

Furthermore, it is important to recognize that the health consequences of fast food consumption do not occur in isolation. They intersect with multiple other risk factors including sedentary lifestyles, mental stress, lack of physical activity, and limited awareness about nutrition. In particular, the concept of 'hidden hunger'—the deficiency of essential micro nutrients despite sufficient caloric intake—is increasingly relevant in the context of fast food diets. Such diets may satisfy hunger but fail to provide the necessary components for healthy bodily function, growth, and disease prevention.

Another key concern is the issue of food safety and quality control within the fast food industry. With the increasing volume and speed of food production, the risk of compromised hygiene and safety standards becomes significant. Several reported cases of foodborne illnesses, contamination, and substandard food handling practices have brought this issue into public discourse. In many fast food outlets, especially smaller and less-regulated ones, basic hygiene protocols are not adhered to, resulting in a heightened risk of infection and gastrointestinal disorders. These issues not only jeopardize the health of consumers but also erode trust in the food service industry.

In response to such concerns, quality control mechanisms have been established by regulatory bodies and food safety authorities. In India, organizations such as the Food Safety and Standards Authority of India (FSSAI) have laid down specific guidelines related to hygiene, food additives, permissible limits of chemical residues, and nutritional labeling. However, the extent to which these standards are enforced varies greatly across regions and outlets. While multinational chains may adhere more closely to international standards due to brand reputation and global oversight, local fast food vendors may lack the infrastructure, training, or incentive to comply with these regulations.

Beyond formal regulation, consumer behavior and awareness play a pivotal role in maintaining food quality. Educated and health-conscious

consumers are more likely to demand transparency, cleanliness, and healthier options, thereby exerting pressure on food businesses to maintain standards. However, in the absence of widespread nutritional education and limited awareness about foodborne risks, many consumers continue to frequent establishments that do not meet basic safety standards.

Satisfaction with fast food extends beyond taste and price—it includes perceptions of hygiene, speed of service, ambiance, and consistency. Many consumers, especially young ones, rate their satisfaction based on how quickly the food is served, how well it tastes, and how affordably they can purchase it. Unfortunately, these priorities often overshadow more critical factors such as nutritional value and food safety. Understanding the components of consumer satisfaction is therefore essential in designing public health messages and policy interventions that align with what consumers value while nudging them towards healthier behaviors.

An equally important aspect of this research is the assessment of awareness levels among consumers about the health risks associated with fast food consumption. Despite growing media coverage and scientific consensus, the actual level of understanding among the general population remains uneven. While some consumers are aware of the harmful effects of excessive fast food intake, this knowledge does not always translate into behavior change. This disconnect highlights the complexity of food choices, which are influenced not only by knowledge but also by habits, peer influence, time constraints, emotional needs, and socioeconomic status.

The role of calorie tracking and nutritional labeling has gained prominence in recent years, particularly with the rise of health apps and digital fitness platforms. However, the extent to which people, especially in semi-urban and rural settings, actually engage in such practices remains limited. Many consumers are either unaware of how to interpret nutritional information or do not consider it relevant to their immediate food choices. As a result, even when calorie and ingredient data is made available, it does

not always lead to more informed decisions.

One area that warrants particular attention is the relationship between fast food consumption and Body Mass Index (BMI). BMI is widely used as an indicator of body fat and an important marker of health status. Several studies have established a direct link between high fast food intake and elevated BMI levels, particularly among youth. Excessive intake of processed carbohydrates, fried foods, and sugary beverages can lead to calorie surplus and subsequent weight gain. Obesity, in turn, is a risk factor for a wide range of health problems, including insulin resistance, respiratory issues, sleep disorders, and psychological distress.

In India, where cultural stigma around body image and weight still persists, BMI is not routinely monitored by individuals unless there is a visible health issue. This makes preventive strategies difficult to implement. Therefore, establishing the connection between fast food habits and BMI is vital for raising awareness and encouraging early lifestyle interventions.

Another critical dimension of this study is food expenditure. Understanding how much people are willing to spend on fast food helps in profiling consumption behavior and determining whether price plays a significant role in dietary choices. It also offers insights into economic priorities, especially among students who may be operating on limited budgets. The affordability of fast food often makes it a more attractive option than healthier meals, which may be perceived as more expensive or less filling. This economic dimension of food choice must be considered when crafting nutritional policies and designing interventions that promote health without penalizing affordability.

Finally, the social aspect of fast food consumption must not be overlooked. For many individuals, particularly youth, eating fast food is not just about satiating hunger—it is a social activity, a form of recreation, or even a cultural statement. Birthday parties, group outings, casual dates, and college breaks are often associated with visits to fast food joints. This

social dimension adds another layer of complexity to the problem, as it means that fast food consumption is reinforced by peer behavior and social rituals.

In conclusion, the rise of fast food consumption presents a multifaceted challenge that intersects with health, economy, culture, and regulation. It is not sufficient to merely highlight the health risks; effective solutions must address the deeper motivations, constraints, and values that shape food choices. This project aims to contribute to this understanding by offering a detailed exploration of fast food consumption patterns, health impacts, quality perceptions, and consumer awareness in the Indian context. By focusing on populations from Malappuram and Calicut, and combining both youth and older adult perspectives, the study offers a rich and nuanced view of this growing phenomenon. The insights derived from this research can inform not only public health strategies but also consumer education, regulatory frameworks, and future academic inquiries.

2.1 Objectives

- To compare the trends of fast food consumption across different demographic variables.
- To find out the reasons for the consumption of Fast Food among different categories.
- To find out which is the most preferred time and most preferred Fast Food among people.
- To find out an average amount of money that people spend on Fast Food.
- To assess the awareness and impact of health risks associated with fast food consumption.
- To evaluate satisfaction levels of people.
- To explore the relationship between BMI and fast food consumption.
- Examine how external influences like social media affect fast food choices.
- Understand how often people monitor their calorie/nutritional intake and its relationship with other factors.
- Foodborne illness and health impacts.
- Consumer satisfaction with fast food quality.

2.2 Review of Literature

2.2.1 Introduction to Fast Food Culture

The emergence of fast food as a dominant dietary pattern is closely linked to the changing pace of urban life, modernization, and globalization. According to Schlosser (2001), the fast food industry has reshaped the global food landscape by promoting convenience, affordability, and standardized flavors. Fast food chains such as McDonald's, KFC, and Domino's have not only become popular in Western countries but have also expanded rapidly in developing nations, including India, due to urbanization, changing consumer preferences, and increased disposable income (Goyal and Singh, 2007).

In India, the fast food market has experienced exponential growth over the past two decades. Factors such as urban migration, dual-income households, western cultural influence, and the appeal of quick service have significantly contributed to the increased patronage of fast food outlets among youth and working professionals (Narang and Sharma, 2011).

2.2.2 Consumption Patterns and Demographic Factors

A significant number of studies have investigated the demographic determinants of fast food consumption. Research by Bowman et al. (2004) indicated that adolescents and young adults are the most frequent consumers of fast food, with college students forming a

large consumer base due to their busy lifestyles and limited cooking skills. Gender, education level, income, and geographical location have also been found to influence fast food preferences (Jekanowski et al., 2001).

In a study conducted in urban India, Mishra et al. (2016) found that college students aged 18–25 showed a higher frequency of fast food consumption compared to older adults. Preferences also varied by gender, with males often consuming larger quantities and females showing more concern for nutritional content. Urban areas like Calicut and Malappuram show rising fast food trends due to increased access to global brands and higher levels of exposure to marketing.

2.2.3 Reasons Behind Fast Food Preference

Convenience, taste, affordability, and peer influence have been consistently identified as major motivators behind fast food consumption. A cross-sectional study by Dave et al. (2009) revealed that time constraints and accessibility were strong predictors of frequent fast food intake, particularly among students and working professionals.

Additionally, marketing strategies that target youth through digital platforms, celebrities, and promotional offers greatly shape consumer behavior. Advertisements play a pivotal role in promoting fast food as fashionable, modern, and socially desirable (Story et al., 2002). Emotional eating and stress-related food choices also contribute to higher fast food consumption among adolescents

(Wardle et al., 2000).

2.2.4 Nutritional Profile and Health Risks

Fast food typically contains high levels of calories, saturated fats, trans fats, sodium, and added sugars, while being low in essential nutrients such as fiber, vitamins, and minerals. Several studies have documented the adverse health impacts of regular fast food intake. A landmark longitudinal study by Pereira et al. (2005) found that individuals who consumed fast food more than twice per week experienced significantly more weight gain and insulin resistance than those who ate it less frequently.

High consumption of fast food has been positively associated with obesity, Type 2 diabetes, hypertension, cardiovascular diseases, and gastrointestinal disorders (Paeratakul et al., 2003). In India, where the burden of non-communicable diseases is already high, this dietary shift poses a serious public health challenge (Misra et al., 2011).

2.2.5 BMI and Fast Food

Research indicates a strong correlation between BMI and fast food consumption patterns. According to Rosenheck (2008), frequent fast food intake contributes to increased body weight, primarily due to the caloric density and low satiety value of such foods. A study by Larson et al. (2011) showed that adolescents who regularly consumed fast food had higher BMI scores compared to those who consumed it occasionally.

Furthermore, data from Indian populations reveal that rising fast food intake correlates with early onset obesity and metabolic syndromes among urban youth (Kapil et al., 2010). BMI trends are thus a critical metric in assessing the impact of dietary habits influenced by fast food culture.

2.2.6 Consumer Satisfaction and Quality Control

Consumer satisfaction in the fast food industry is influenced by several factors, including service quality, taste, hygiene, affordability, and ambiance. Kotler and Keller (2012) emphasize that consistent quality assurance plays a major role in retaining customers and shaping brand loyalty. Quality control in fast food involves standardized preparation methods, food safety compliance, cleanliness, and timely service.

The Food Safety and Standards Authority of India (FSSAI) mandates guidelines for hygiene, labeling, and ingredient safety in the food service sector. However, studies such as those by Bhat and Rao (2015) have identified gaps in the implementation of quality control measures, especially among local fast food vendors. Incidences of foodborne illnesses, improper handling of ingredients, and lack of nutritional transparency continue to be prevalent issues.

2.2.7 Awareness of Health Risks and Nutritional Monitoring

Public awareness of the health risks associated with fast food remains low despite the availability of information. Research by Bhaskar et al. (2013) found that while many consumers were aware that fast food is unhealthy, their consumption habits remained unchanged due to addictive taste and habitual patterns.

Nutritional monitoring, such as reading labels, tracking calorie intake, or using fitness apps, is not common practice, especially among younger populations. Tools like MyFitnessPal and HealthifyMe have grown in popularity but have limited impact without proper health education. A study by Sharma and Jain (2019) revealed that only a small fraction of Indian youth actively monitor their nutrition, and even fewer translate this awareness into actionable dietary changes.

2.2.8 Economic Aspects and Spending Patterns

Spending patterns on fast food are influenced by economic status, urbanization, and lifestyle habits. College students and working adults are often willing to spend a higher share of their disposable income on fast food due to its perceived convenience and enjoyment. According to the Indian Brand Equity Foundation (IBEF), the average monthly expenditure on fast food has increased by over 30 percentage in urban Indian households over the past decade.

Rising consumer demand has led to fierce market competition, price wars, and new product launches, which further incen-

tivize consumption. However, this trend also raises concerns about household nutrition budgets and long-term affordability of healthy alternatives.

2.2.9 Foodborne Illnesses and Sanitary Standards

Improper food handling, cross-contamination, and unhygienic conditions in fast food outlets can lead to foodborne illnesses. According to WHO (2020), millions of people fall ill each year due to contaminated food, with fast food joints being significant contributors due to high turnover and inadequate safety training.

Research in Indian cities has shown that street vendors and unregulated outlets often fail to meet basic cleanliness standards (Saha et al., 2014). Although international chains tend to have stricter protocols, lapses still occur due to overburdened staff, cost-cutting measures, or lack of inspections.

2.2.10 Policy Implications and Industry Responsibility

There is a growing demand for regulatory interventions to improve the nutritional value and safety of fast food. Countries like the UK and the USA have introduced calorie labeling, restrictions on trans fats, and taxes on sugary beverages. India has also taken steps through FSSAI to mandate nutritional labeling and promote healthy eating campaigns.

Corporate Social Responsibility (CSR) initiatives by fast food companies, such as providing healthier menu options or disclosing ingredients, are important but often serve more as marketing tools

than meaningful change. Real progress requires collaboration between public health bodies, consumer advocacy groups, and the food industry.

2.3 Data Description

2.3.1 Primary Survey and Data Collection

For the proposed study, a detailed primary survey was conducted on the topic: **Fast Food Impacts on Health and Its Quality Control**. The data was collected through structured questionnaires.

Key Details of the Survey

- The objective of the survey was to assess fast food consumption frequency, preferences, and associated health-related factors.
- Data collection was done using questionnaires developed specifically for two distinct age groups: younger adults and older adults.
- A total of **458 individuals** from **Malappuram** and **Calicut** districts participated in the study.
- The survey included two groups of respondents:
 - **Younger Adults:** 408 respondents
 - * Students: 248
 - * Working people: 137
 - * Unemployed individuals: 23
 - **Older Adults:** 50 respondents
- Two separate questionnaires were designed:
 - **Younger Adults:** 30 distinct questions
 - **Older Adults:** 28 distinct questions

– Survey form links:

* google form for younger adults

[https://docs.google.com/forms/d/e/
1FAIpQLSciHBYEFX7cXErA9Qo2QJ](https://docs.google.com/forms/d/e/1FAIpQLSciHBYEFX7cXErA9Qo2QJ)

* google form for older adults

[https://docs.google.com/forms/d/e/
1FAIpQLSdlkrz9HZWKhKYsYnqVBsMRh20V6MRJ8rASQcIRFhA/
viewform](https://docs.google.com/forms/d/e/1FAIpQLSdlkrz9HZWKhKYsYnqVBsMRh20V6MRJ8rASQcIRFhA/viewform)

3. Methodology and Software Tools

3.1 Statistical Analysis Methods

The following statistical techniques were employed to analyze the data in this study:

1. **Descriptive Statistics:** Summarizes and describes the main features of the dataset using measures such as mean, median, mode, standard deviation, and range to provide a basic understanding of the data.
2. **Inferential Statistics:** Enables generalization from sample data to a larger population through techniques such as hypothesis testing, confidence intervals, and regression analysis.
3. **Crosstabs (Cross-tabulation):** Analyzes relationships between two or more categorical variables by presenting frequency distributions in matrix form, revealing patterns and associations.
4. **Correlation Analysis (Pearson Correlation):** Measures the strength and direction of a linear relationship between two continuous variables using the Pearson correlation coefficient, which ranges from -1 to +1.
5. **Median Test:** A non-parametric test used to determine whether two or more independent samples are drawn from populations with the same median.

6. **Multiple Response Frequency Analysis:** Used for survey questions where respondents can select multiple answers. It calculates the frequency and percentage of each response option.

7. Principal Component Analysis (PCA) and Factor Analysis:

- **PCA:** Reduces dimensionality by transforming variables into a smaller set of uncorrelated components while retaining most of the original variability.
- **Factor Analysis:** Identifies underlying latent variables (factors) that explain the pattern of correlations within observed variables.

8. **Multinomial Regression Model:** Suitable for categorical dependent variables with more than two outcomes, modeling the probability of each category as a function of independent variables.

9. **Ranking Analysis:** Involves evaluating ordinal data where elements are ranked based on preference or performance, often using mean ranks or weighted scores.

10. **Kruskal-Wallis Test:** A non-parametric alternative to one-way ANOVA for comparing medians across three or more independent groups.

11. **T-Test:** Compares the means of two groups to assess whether the difference between them is statistically significant. Includes independent and paired sample t-tests.

12. **Logistic Regression:** Predicts the probability of a binary outcome based on one or more predictor variables and is used for classification and estimating odds ratios.

13. **Welch ANOVA:** A robust version of the ANOVA test that is used when group variances are unequal, for comparing means across three or more groups.

14. **Multiple Correspondence Analysis (MCA):** An extension of correspondence analysis for more than two categorical variables, MCA reduces dimensionality and visualizes relationships among variable categories.
15. **Mann-Whitney U Test:** A non-parametric test used to compare differences between two independent groups on a continuous or ordinal variable when t-test assumptions are not met.

3.2 Software Tools

The following software tools were employed during the course of this project for data analysis, visualization, and interpretation:

1. **R Programming:** R is a robust open-source programming language widely used for statistical computing and data analysis. It provides extensive libraries and packages that support a variety of analytical techniques including descriptive statistics, inferential analysis, data visualization, and machine learning. Its flexibility and reproducibility make it ideal for advanced statistical modeling.
2. **Microsoft Excel:** Excel is a widely accessible spreadsheet software that was utilized for initial data entry, cleaning, and exploratory analysis. Its built-in functions, pivot tables, and charting tools made it useful for computing summary statistics and generating preliminary visualizations.
3. **Power BI:** Power BI is a Microsoft data visualization tool used to create interactive dashboards and reports. In this project, Power BI was leveraged to present data insights through compelling visual narratives, making it easier to identify patterns, trends, and outliers in large datasets.
4. **SPSS (Statistical Package for the Social Sciences):** SPSS is a user-friendly statistical software suite that enables complex data analysis with minimal programming. It was used for performing advanced statistical tests such as regression, correlation, and factor analysis, offering a reliable platform for handling structured survey data.

4. CHAPTER1:

Fast Food Consumption Patterns Across Demographics

4.1 To Compare the Trends of Fast Food Consumption Across Different Demographic Variables

We have done cross-tabulation with standardized residuals to identify which specific demographic groups deviate from expected patterns and Median test to determine whether there is a significant difference in fast food consumption between two gender groups.

4.1.1 Household income range (monthly) vs Fast Food Consumption

| Case Processing Summary | | | | | | |
|---|-------|---------|---------|---------|-------|---------|
| | Cases | | | | | |
| | Valid | | Missing | | Total | |
| | N | Percent | N | Percent | N | Percent |
| household income range (monthly) * consumption of fast food | 408 | 100.0% | 0 | 0.0% | 408 | 100.0% |

household income range (monthly) * consumption of fast food
Crosstabulation

Count

| | consumption of fast food | | | | |
|----------------------------------|--------------------------|---------|--------|----------------|-----|
| | Daily | Monthly | Rarely | Weekly 2 times | |
| household income range (monthly) | 15,000-80,000 | 14 | 58 | 47 | 79 |
| | Above 80,000 | 5 | 10 | 5 | 21 |
| | Below 15,000 | 10 | 41 | 43 | 28 |
| Total | | 29 | 109 | 95 | 128 |

household income range (monthly) * consumption of fast food
Crosstabulation

Count

| | consumption of ... | Total | |
|----------------------------------|--------------------|----------------|-------|
| | | Weekly 5 times | Total |
| household income range (monthly) | 15,000-80,000 | 27 | 225 |
| | Above 80,000 | 11 | 52 |
| | Below 15,000 | 9 | 131 |
| Total | | 47 | 408 |

Figure 4.1: Household income range (monthly) vs fast food consumption

- The chi-square statistic obtained was **16.74**, with a p-value of **0.032**.
- Since the p-value is less than 0.05, we reject the null hypothesis — indicating a statistically significant association between household income and fast food consumption.

- Middle-income individuals (15,000–80,000) tend to consume fast food more frequently compared to lower- and higher-income groups.

4.1.2 Locality vs Fast Food Consumption

| Case Processing Summary | | | | | | |
|---|-------|---------|---------|---------|-------|---------|
| | Cases | | | | | |
| | Valid | | Missing | | Total | |
| | N | Percent | N | Percent | N | Percent |
| locality(numeric)* consumption of fast food (numeric) | 408 | 100.0% | 0 | 0.0% | 408 | 100.0% |

| locality(numeric) * consumption of fast food(numeric) Crosstabulation | | | | | | |
|--|---|-----------------------------------|----|----|-----|-----|
| Count | | consumption of fast food(numeric) | | | | |
| | | 0 | 1 | 2 | 3 | 4 |
| locality(numeric) | 0 | 14 | 23 | 14 | 36 | 38 |
| | 1 | 6 | 12 | 61 | 40 | 44 |
| | 2 | 9 | 12 | 20 | 33 | 46 |
| Total | | 29 | 47 | 95 | 109 | 128 |
| | | | | | | |
| | | | | | | |

Figure 4.2: Locality vs Fast Food Consumption

- The chi-square statistic obtained was **21.52**, with a p-value of **0.018**.
- The result is statistically significant, showing an association between locality and fast food-related health issues.
- Rural areas reported higher digestive and weight-related issues compared to urban and semi-urban areas.

4.1.3 Gender vs Fast Food Consumption (Chi-Square Test)

| Case Processing Summary | | | | | | |
|--------------------------------------|-------|---------|---------|---------|-------|---------|
| | Cases | | | | | |
| | Valid | | Missing | | Total | |
| | N | Percent | N | Percent | N | Percent |
| gender * consumption of fast food | 408 | 100.0% | 0 | 0.0% | 408 | 100.0% |

gender
* consumption of fast food
Crosstabulation

Count

| | | consumption of fast food | | | | | Total |
|--------|--------|--------------------------|---------|--------|----------------|----------------|-------|
| | | Daily | Monthly | Rarely | Weekly 2 times | Weekly 5 times | |
| gender | Female | 7 | 53 | 47 | 54 | 17 | 178 |
| | Male | 22 | 56 | 48 | 74 | 30 | 230 |
| | Total | 29 | 109 | 95 | 128 | 47 | 408 |

Figure 4.3: Gender vs Fast Food Consumption (Chi-Square Test)

- The chi-square statistic was **8.08**, with a p-value of **0.0888**.
- Since the p-value is greater than 0.05, we fail to reject the null hypothesis.
- Males tend to consume fast food more frequently, but the difference is not statistically significant.

4.1.4 Fast Food Consumption Between Two Gender Groups (Median Test)

Median Test

Frequencies

| | | gender(numeric) | |
|--------------------------|-----------|-----------------|-----|
| | | 0 | 1 |
| consumption of fast food | > Median | 54 | 74 |
| | <= Median | 124 | 156 |

Test Statistics^a

| | | consumption of fast food |
|---------------------------------|-------------|-----------------------------|
| N | | 408 |
| Median | | 3.00 |
| Chi-Square | | .157 |
| df | | 1 |
| Asymp. Sig. | | .692 |
| Yates' Continuity Correction | Chi-Square | .084 |
| | df | 1 |
| | Asymp. Sig. | .773 |

a. Grouping Variable: gender(numeric)

Figure 4.4: Fast Food Consumption Between Two Gender Groups

- The p-value was **0.692**, which is greater than 0.05.
- There is no statistically significant difference in fast food consumption between the two gender groups.
- Gender does not play a significant role in determining fast food consumption in this dataset.

4.2 Comparing Fast Food Consumption Trends Across Demographics(Old Age)

Cross-tabulations and Chi-square tests were used to assess the relationship between demographic factors (like gender, age, occupation, and location) and meal consumption time. ANOVA tested for differences in weekly spending across age groups. Descriptive statistics with visualizations provided insights into spending patterns and distribution across groups.

4.2.1 Comparison of Weekly Spending by Gender

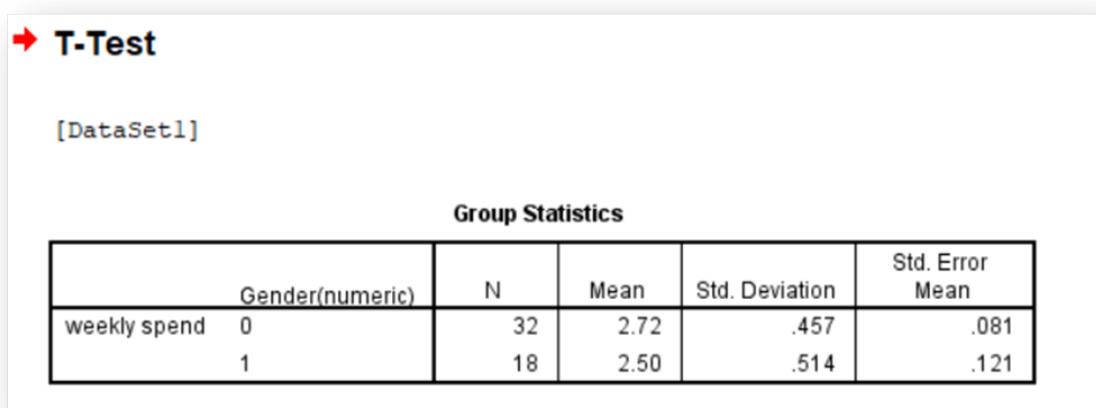


Figure 4.5: Group Statistics table showing weekly fast food spending by gender

Group Statistics

Gender 0 (Female): $N = 32$, Mean = 2.72, SD = 0.457

Gender 1 (Male): $N = 18$, Mean = 2.50, SD = 0.514

| Independent Samples Test | | | | | | | | | |
|--------------------------|-----------------------------|---|------|------------------------------|--------|-----------------|-----------------|-----------------------|---|
| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | |
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference |
| weekly spend | Equal variances assumed | 4.090 | .049 | 1.553 | 48 | .127 | .219 | .141 | -.064 .502 |
| | Equal variances not assumed | | | 1.501 | 31.972 | .143 | .219 | .146 | -.078 .516 |

Figure 4.6: Independent samples t-test results comparing weekly spending between genders

Levene's Test for Equality of Variances

Levene's $F = 4.090$, $p = 0.049$

Since $p < 0.05$, we reject the null hypothesis of equal variances. Therefore, the assumption of equal variances is violated, and we refer to the “*Equal variances not assumed*” row in the independent samples t-test.

Independent Samples t-Test

Two-tailed significance value: $p = 0.143$ (greater than 0.05), indicating that the difference is not statistically significant.

95% Confidence Interval for the difference: $[-0.078, 0.516]$ (includes zero)

Conclusion

Although females appear to spend slightly more on fast food per week than males, the difference is not statistically significant ($p = 0.143$). The confidence interval includes zero, confirming that any observed difference may be due to random variation rather than a real difference between the groups.

4.2.2 Analysis of Weekly Spending Across Age Groups

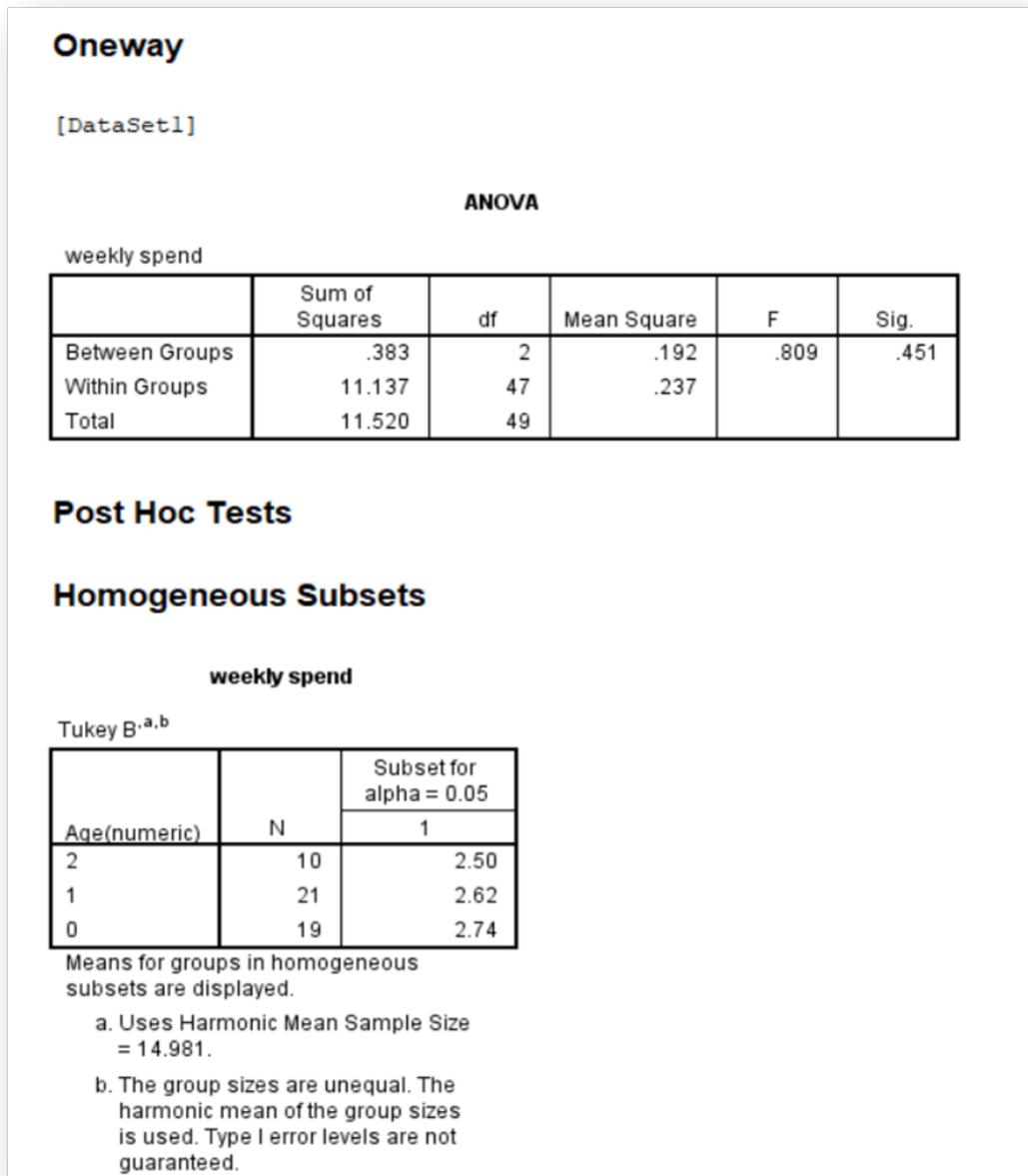


Figure 4.7: ANOVA results showing weekly fast food spending across age groups

ANOVA Summary:

No significant difference in weekly spending across age groups was observed ($F = 0.809$, $p = 0.451$).

Post Hoc (Tukey's Test) Results:

- 40–50 years (Code 0): Mean = 2.74
- 50–60 years (Code 1): Mean = 2.62
- 60+ years (Code 2): Mean = 2.50

Conclusion: No significant subgroup differences detected. All means fall within the same homogeneous subset.

4.2.3 Cross-tabulation: Gender vs. Consumption Time

| Case Processing Summary | | | | | | |
|---------------------------|-------|---------|---------|---------|-------|---------|
| | Cases | | | | | |
| | Valid | | Missing | | Total | |
| | N | Percent | N | Percent | N | Percent |
| Gender * consumption time | 50 | 100.0% | 0 | 0.0% | 50 | 100.0% |

| Gender * consumption time Crosstabulation | | | | | | | | | | |
|---|--------|------------------|--|--------|---------|--------------------|-------|---------------|------------------------------|-------|
| Count | | consumption time | | | | | | | | Total |
| | | Breakfast | Breakfast, Lunch, Evening, Dinner | Dinner | Evening | Evening, Dinner | Lunch | Lunch, Dinner | Lunch, Evening, Dinner | |
| Gender | Female | 8 | 1 | 8 | 7 | 4 | 3 | 1 | 0 | 32 |
| | Male | 3 | 1 | 8 | 3 | 2 | 0 | 0 | 1 | 18 |
| Total | | 11 | 2 | 16 | 10 | 6 | 3 | 1 | 1 | 50 |

| Chi-Square Tests | | | |
|--------------------|--------------------|----|--------------------------|
| | Value | df | Asymp. Sig. (2-sided) |
| Pearson Chi-Square | 6.097 ^a | 7 | .528 |
| Likelihood Ratio | 7.642 | 7 | .365 |
| N of Valid Cases | 50 | | |

Figure 4.8: Cross-tabulation of gender and meal consumption time

1. Case Processing Summary:

Total valid cases: 50 (100%), no missing values.

2. Cross-tab Summary:

- **Females (N = 32):** Most common times were Breakfast (8) and Evening (7).
- **Males (N = 18):** Dinner (8) and Evening, Dinner (3) were most frequent.

3. Chi-Square Test Results:

- Pearson Chi-Square = 6.097, df = 7, p = 0.528
- Likelihood Ratio = 7.642, df = 7, p = 0.365

Interpretation: No statistically significant association between gender and meal consumption time.

4.2.4 Cross-tabulation: Age vs. Consumption Time

| Case Processing Summary | | | | | | |
|-------------------------|-------|---------|---------|---------|-------|---------|
| | Cases | | | | | |
| | Valid | | Missing | | Total | |
| | N | Percent | N | Percent | N | Percent |
| Age * consumption time | 50 | 100.0% | 0 | 0.0% | 50 | 100.0% |

| Age * consumption time Crosstabulation | | | | | | | | | | |
|--|------------------|--|--------|---------|--------------------|-------|--------------|------------------------------|---|----|
| Count | consumption time | | | | | | | | | |
| | Breakfast | Breakfast, Lunch, Evening, Dinner | Dinner | Evening | Evening, Dinner | Lunch | Lunch,Dinner | Lunch, Evening, Dinner | | |
| Age | 40-50 | 3 | 1 | 6 | 3 | 3 | 2 | 1 | 0 | 19 |
| | 50-60 | 5 | 0 | 8 | 3 | 3 | 1 | 0 | 1 | 21 |
| | 60 above | 3 | 1 | 2 | 4 | 0 | 0 | 0 | 0 | 10 |
| Total | | 11 | 2 | 16 | 10 | 6 | 3 | 1 | 1 | 50 |

| Chi-Square Tests | | | |
|--------------------|---------------------|----|--------------------------|
| | Value | df | Asymp. Sig. (2-sided) |
| Pearson Chi-Square | 11.511 ^a | 14 | .646 |
| Likelihood Ratio | 14.050 | 14 | .446 |
| N of Valid Cases | 50 | | |

Figure 4.9: Cross-tabulation of age group and meal consumption time

1. Case Processing Summary: 50 valid cases.

2. Cross-tab Summary:

- **Age 40–50 (N = 19):** Dinner (6), Evening, Dinner (3)
- **Age 50–60 (N = 21):** Dinner (8), Evening, Dinner (3)
- **Age 60+ (N = 10):** Evening (4), Dinner (2)

3. Chi-Square Test Results:

- Pearson Chi-Square = 11.511, df = 14, p = 0.646
- Likelihood Ratio = 14.050, df = 14, p = 0.446

Interpretation: No significant association between age and meal consumption time.

4.2.5 Cross-tabulation: Occupation vs. Consumption Time

| Case Processing Summary | | | | | | | | |
|-------------------------------|-------|---------|---------|---------|-------|---------|--|--|
| | Cases | | | | | | | |
| | Valid | | Missing | | Total | | | |
| | N | Percent | N | Percent | N | Percent | | |
| Occupation * consumption time | 50 | 100.0% | 0 | 0.0% | 50 | 100.0% | | |

| Occupation * consumption time Crosstabulation | | | | | | | | |
|---|---------|-----------------------------------|----|--------|----|-----------------|---|-------|
| | | Count | | | | | | |
| | | Breakfast, Lunch, Evening, Dinner | | Dinner | | Evening, Dinner | | Total |
| Occupation | Retired | 3 | 0 | 1 | 3 | 0 | 0 | 0 |
| Unemployed | 4 | 1 | 10 | 4 | 3 | 1 | 0 | 24 |
| Working | 4 | 1 | 5 | 3 | 3 | 2 | 0 | 19 |
| Total | | 11 | 2 | 16 | 10 | 6 | 3 | 50 |

| Chi-Square Tests | | | |
|--------------------|---------------------|----|-----------------------|
| | Value | df | Asymp. Sig. (2-sided) |
| Pearson Chi-Square | 10.760 ^a | 14 | .705 |
| Likelihood Ratio | 12.279 | 14 | .584 |
| N of Valid Cases | 50 | | |

Figure 4.10: Cross-tabulation of occupation and meal consumption time

1. Case Processing Summary: 50 valid cases (100%), 0 missing.

2. Cross-tab Summary:

- **Retired (N = 7):** Evening (3), Breakfast (3)
- **Unemployed (N = 24):** Dinner (10), Evening (4)
- **Working (N = 19):** Dinner (5), Evening, Dinner (3)

3. Chi-Square Test Results:

- Pearson Chi-Square = 10.760, df = 14, p = 0.705
- Likelihood Ratio = 12.279, df = 14, p = 0.584

Interpretation: Occupation does not significantly influence meal consumption time.

4.2.6 Cross-tabulation: Location vs. Consumption Time

| Case Processing Summary | | | | | | |
|-----------------------------|-------|---------|---------|---------|-------|---------|
| | Cases | | | | | |
| | Valid | | Missing | | Total | |
| | N | Percent | N | Percent | N | Percent |
| location * consumption time | 50 | 100.0% | 0 | 0.0% | 50 | 100.0% |

| location * consumption time Crosstabulation | | | | | | | | | |
|---|------------|-----------------------------------|--------|---------|-----------------|-------|---------------|------------------------|-------|
| Count | Breakfast | consumption time | | | | | | | Total |
| | | Breakfast, Lunch, Evening, Dinner | Dinner | Evening | Evening, Dinner | Lunch | Lunch, Dinner | Lunch, Evening, Dinner | |
| location | Calicut | 8 | 1 | 7 | 5 | 3 | 3 | 0 | 28 |
| | Malappuram | 3 | 1 | 9 | 5 | 3 | 0 | 1 | 22 |
| Total | | 11 | 2 | 16 | 10 | 6 | 3 | 1 | 50 |

| Chi-Square Tests | | | |
|--------------------|--------------------|----|-----------------------|
| | Value | df | Asymp. Sig. (2-sided) |
| Pearson Chi-Square | 6.902 ^a | 7 | .439 |
| Likelihood Ratio | 8.819 | 7 | .266 |
| N of Valid Cases | 50 | | |

Figure 4.11: Cross-tabulation of location and meal consumption time

1. Case Processing Summary: 50 valid cases.

2. Cross-tab Summary:

- **Calicut (N = 28):** Breakfast (8), Dinner (7), Evening (5)
- **Malappuram (N = 22):** Dinner (9), Evening (5)

3. Chi-Square Test Results:

- Pearson Chi-Square = 6.902, df = 7, p = 0.439
- Likelihood Ratio = 8.819, df = 7, p = 0.266

Interpretation: No significant difference in meal consumption time between Calicut and Malappuram.

5. CHAPTER2:

Motivations, Preferences, and Spending Behaviors

5.1 To Find Out the Reasons for the Consumption of Fast Food Among Different Categories

We have done Multiple Response Frequency Analysis (for motivating factors) and Multinomial Logistic Regression (with motivational factors as dependent variables and demographics as predictors) to identify significant demographic influences on consumer motivations.

5.1.1 Multiple Response Frequency Analysis

Multiple Response Set

[DataSet1]

Multiple Response Sets

| Name | Label | Coded As | Counted Value | Data Type | Elementary Variables |
|--------------|------------|-------------|---------------|-----------|---|
| \$motivation | motivation | Dichotomies | 1 | Numeric | Taste Social Media Influence Brand value Cost Easily Available Habit Special Offer other |

Figure 5.1: Motivational factors influencing fast food consumption

- This analysis examines motivational factors influencing consumer choices using a multiple response dataset with 408 valid respondents (100% response rate).
- The study focuses on understanding what motivates consumers to make purchasing decisions.

5.1.2 Motivational Factors by Gender

| | | gender(numeric) | | Total | |
|-------------------------|-------------------------|-----------------|-------|-------|--------|
| | Motivation ^a | 0 | 1 | | |
| Motivation ^a | Taste | Count | 137 | 190 | 327 |
| | | % of Total | 33.6% | 46.6% | 80.1% |
| | Social Media Influence | Count | 38 | 40 | 78 |
| | | % of Total | 9.3% | 9.8% | 19.1% |
| | Brand value | Count | 15 | 16 | 31 |
| | | % of Total | 3.7% | 3.9% | 7.6% |
| | Cost | Count | 11 | 13 | 24 |
| | | % of Total | 2.7% | 3.2% | 5.9% |
| | Easily Available | Count | 38 | 71 | 109 |
| | | % of Total | 9.3% | 17.4% | 26.7% |
| | Habit | Count | 23 | 48 | 71 |
| | | % of Total | 5.6% | 11.8% | 17.4% |
| | Special Offer | Count | 31 | 35 | 66 |
| | | % of Total | 7.6% | 8.6% | 16.2% |
| | other | Count | 20 | 19 | 39 |
| | | % of Total | 4.9% | 4.7% | 9.6% |
| | Total | Count | 178 | 230 | 408 |
| | | % of Total | 43.6% | 56.4% | 100.0% |

Percentages and totals are based on respondents.

a. Dichotomy group tabulated at value 1.

Figure 5.2: Motivational factors by gender

The data coded gender as 0 and 1, with: 0 = ‘Female’, 1 = ‘Male’

- Female: 43.6% of respondents
- Male: 56.4% of respondents

Key gender-based observations:

- Taste is important across genders but more prevalent in males (46.6% vs 33.6%).

- Easily Available shows a notable difference between genders (17.4% for males vs 9.3% for females).
- Habit is mentioned more by males (11.8% vs 5.6%).
- Social Media Influence is relatively consistent between genders (9.8% vs 9.3%).
- Special Offer and Other factors show minimal gender differences.

5.1.3 Motivational Factors by Occupation

| \$motivation*occupationnumeric Crosstabulation | | | | | |
|--|------------|---------------------|-------|-------|--------|
| motivation ^a | | occupation(numeric) | | | Total |
| | | 0 | 1 | 2 | |
| Taste | Count | 204 | 105 | 18 | 327 |
| | % of Total | 50.0% | 25.7% | 4.4% | 80.1% |
| Social Media Influence | Count | 45 | 30 | 3 | 78 |
| | % of Total | 11.0% | 7.4% | 0.7% | 19.1% |
| Brand value | Count | 16 | 14 | 1 | 31 |
| | % of Total | 3.9% | 3.4% | 0.2% | 7.6% |
| Cost | Count | 17 | 7 | 0 | 24 |
| | % of Total | 4.2% | 1.7% | 0.0% | 5.9% |
| Easily Available | Count | 59 | 47 | 3 | 109 |
| | % of Total | 14.5% | 11.5% | 0.7% | 26.7% |
| Habit | Count | 51 | 16 | 4 | 71 |
| | % of Total | 12.5% | 3.9% | 1.0% | 17.4% |
| Special Offer | Count | 38 | 24 | 4 | 66 |
| | % of Total | 9.3% | 5.9% | 1.0% | 16.2% |
| other2 | Count | 16 | 22 | 1 | 39 |
| | % of Total | 3.9% | 5.4% | 0.2% | 9.6% |
| Total | | 248 | 137 | 23 | 408 |
| | | % of Total | | 60.8% | 33.6% |
| | | | | 5.6% | 100.0% |

Figure 5.3: Motivational factors by occupation

Occupation was categorized into 3 groups (0–2): 0 = ‘Student’, 1 = ‘Working’, 2 = ‘Unemployed’

- Students: 60.8% of respondents (majority)

- Working: 33.6% of respondents
- Unemployed: 5.6% of respondents

Key occupation-based observations:

- Taste is important across all occupations but most prevalent in students (50.0%).
- Habit shows notable variation between students (12.5%) and working individuals (3.9%).
- Easily Available is relatively important across students (14.5%) and working (11.5%).
- Unemployed have limited representation in the sample, making their specific trends less reliable.

5.1.4 Motivational Factors by Age

| | | age(numeric) | | | Total | |
|-------------------------|------------------------|--------------|-------|-------|-------|--------|
| | | 0 | 1 | 2 | | |
| motivation ^a | Taste | Count | 131 | 175 | 21 | 327 |
| | | % of Total | 32.1% | 42.9% | 5.1% | 80.1% |
| | Social Media Influence | Count | 23 | 50 | 5 | 78 |
| | | % of Total | 5.6% | 12.3% | 1.2% | 19.1% |
| | Brand value | Count | 9 | 18 | 4 | 31 |
| | | % of Total | 2.2% | 4.4% | 1.0% | 7.6% |
| | Cost | Count | 14 | 9 | 1 | 24 |
| | | % of Total | 3.4% | 2.2% | 0.2% | 5.9% |
| | Easily Available | Count | 38 | 62 | 9 | 109 |
| | | % of Total | 9.3% | 15.2% | 2.2% | 26.7% |
| | Habit | Count | 35 | 32 | 4 | 71 |
| | | % of Total | 8.6% | 7.8% | 1.0% | 17.4% |
| | Special Offer | Count | 23 | 38 | 5 | 66 |
| | | % of Total | 5.6% | 9.3% | 1.2% | 16.2% |
| | other2 | Count | 6 | 24 | 9 | 39 |
| | | % of Total | 1.5% | 5.9% | 2.2% | 9.6% |
| Total | | Count | 159 | 212 | 37 | 408 |
| | | % of Total | 39.0% | 52.0% | 9.1% | 100.0% |

Figure 5.4: Motivational factors by age group

Age was categorized into 3 groups (0–2): 0 = 10–20, 1 = 21–30, 2 = 31–40

- Age 10–20: 39.0% of respondents
- Age 21–30: 52.0% of respondents (majority)
- Age 31–40: 9.1% of respondents

Key age-based observations:

- Taste is most important for the 21–30 age group (42.9%).
- Social Media Influence is highest in the 21–30 age group (12.3%).
- Easily Available is also highest in the 21–30 age group (15.2%).
- Habit is more important for the 10–20 age group (8.6%) than for 21–30 (7.8%).

5.1.5 Multinomial Logistic Regression

To understand the relationship between demographic variables (gender, age, income, district, and locality) and the reasons for choosing fast food, a Multinomial Logistic Regression model was used.

Model Fit Statistics:

- Residual Deviance = 2482.395
- AIC = 2608.395 (Lower AIC indicates a better model fit)

Key Findings:

- **Gender:** Males are more likely to choose *Habit* ($OR = 1.95$) and *Taste* ($OR = 1.38$).
- **Age:**
 - 21–30 years: Less likely to choose *Cost* (-1.07) and *Habit* (-0.74).

- 31–40 years: More likely to choose *Other* reasons (1.22).
- **Income:** Higher-income individuals (>80,000 INR) are less likely to select cost-related reasons (-0.54).
- **District:** Respondents from Malappuram are less likely to choose *Cost* (-0.14) and *Easily Available* (-0.36).
- **Locality:**
 - Urban consumers are less likely to choose *Cost* (-1.41) and *Taste* (-1.68).
 - Semi-urban consumers also show a similar trend, especially for *Cost* (-1.96).

Statistical Significance (p-values):

- *Taste* ($p = 5.79e-08$) and *Easily Available* ($p = 0.001$) are highly significant.
- Urban locality shows significant differences in preferences ($p < 0.05$).

Key Insights:

- *Taste* is the dominant motivating factor for choosing fast food.
- Higher-income individuals are less influenced by cost.
- Urban and semi-urban consumers are less driven by cost and habit.
- Males are more likely to be influenced by *Habit* compared to females.
- Young adults (21–30 years) are less concerned with cost.

5.2 Reasons for Fast Food Consumption Among Different Categories(Old Age)

Here factor analysis is used to identify underlying patterns in motivations for consumption, Multiple Correspondence Analysis (MCA) - To visualize associations between categorical variables like Motivations for consumption and demographic variables and Consumption time preferences and demographic characteristics, and Chi-square tests - To determine if specific reasons for consumption (taste, socializing, convenience) are significantly associated with demographic variables.

5.2.1 Factor Analysis:

Factor Analysis was conducted to identify the underlying motivational factors driving fast food consumption among different categories.

KMO Measure:

```
Kaiser-Meyer-Olkin factor adequacy
Call: KMO(r = motivation_factors)
Overall MSA =  0.33
MSA for each item =
>          Taste Social.media.influence      Brand.value
  0.27           0.35                  0.26
Easily.available           Habit      Socializing
  0.55           0.40                  0.32
Special.offer            Nothing
```

The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was 0.33, indicating that the dataset may not be highly suitable for factor analysis.

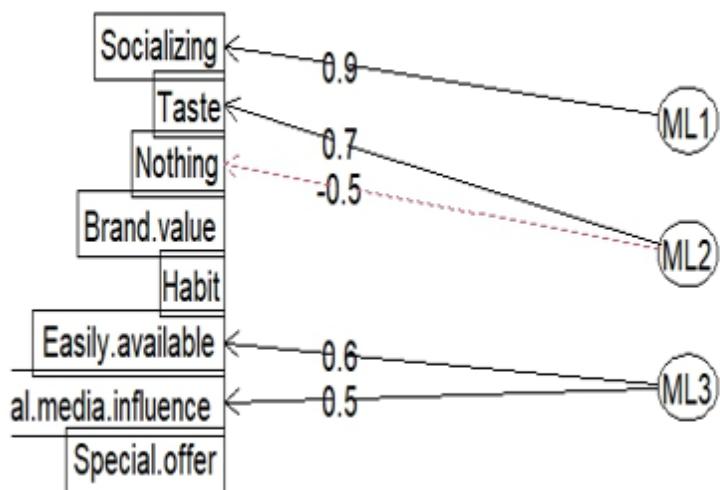
Bartlett's test:

```
Bartlett test of homogeneity of variances  
data: motivation_factors  
Bartlett's K-squared = 161.45, df = 7, p-value < 2.2e-16
```

Bartlett's test was significant ($p < 0.001$), suggesting that the variables are correlated enough for factor extraction.

Maximum Likelihood Estimation (ML) with Varimax Rotation

Factor Analysis



Using Maximum Likelihood Estimation (ML) with Varimax Rotation, three key factors were identified:

Social and Emotional Influence (Factor 1 - ML1)

- High positive loading on:
 - Socializing (0.950) → Social interactions are a strong motivation for consuming fast food.

- Taste (-0.624) → Interestingly, taste has a negative loading, suggesting that those motivated by socializing may not prioritize taste.

Interpretation: Individuals who consume fast food for social reasons (gatherings, events, peer influence) are strongly represented in this factor.

Brand and Habitual Preference (Factor 2 - ML2)

- Positive loading on:
 - Brand value (0.7): Strong positive influence
 - Habit (0.6): Moderate influence
- Negative loading on:
 - Nothing (-0.522) → Suggests that individuals motivated by taste and habit do not consume fast food for no specific reason.

Interpretation:

- This factor indicates that brand perception and established habits play a significant role in consumption decisions.
- The negative loading for Nothing suggests that purposeful choice is important.

Convenience and Promotions (Factor 3 - ML3)

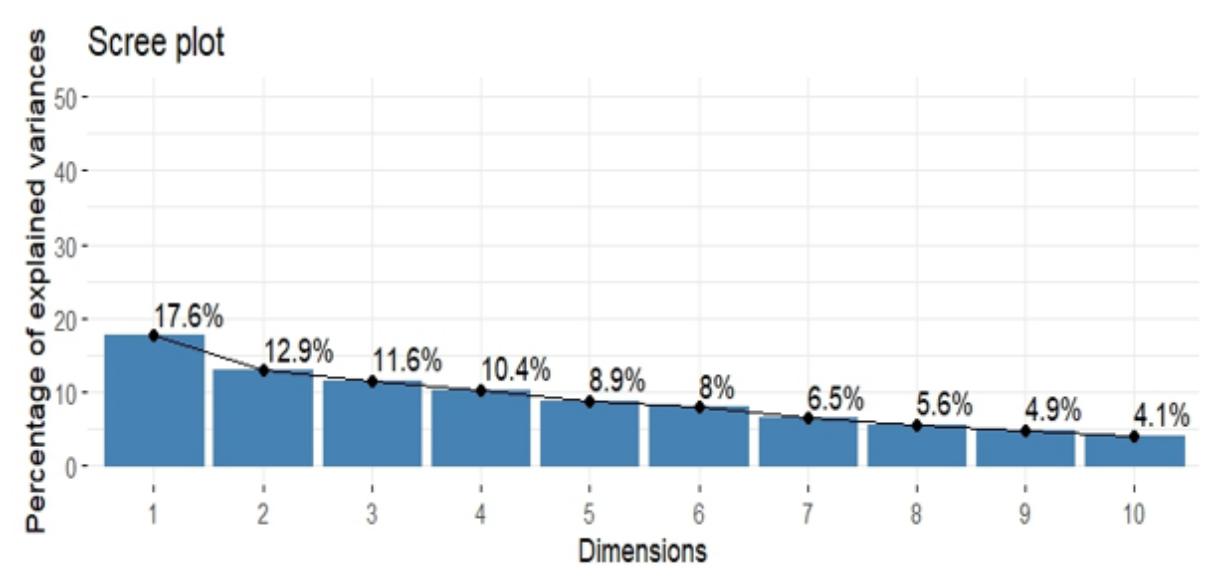
- High positive loading on:
 - Easily Available (0.610) → Accessibility is a significant motivator.
 - Social Media Influence (0.499) → Social media plays a role in decision-making.

Interpretation: This factor represents convenience-driven consumers who prefer fast food because it is readily available and influenced by social media promotions.

Conclusion: Social interactions, taste habit, and convenience are the three primary motivations for fast food consumption in old age category.

5.2.2 Multiple Correspondence Analysis (MCA):

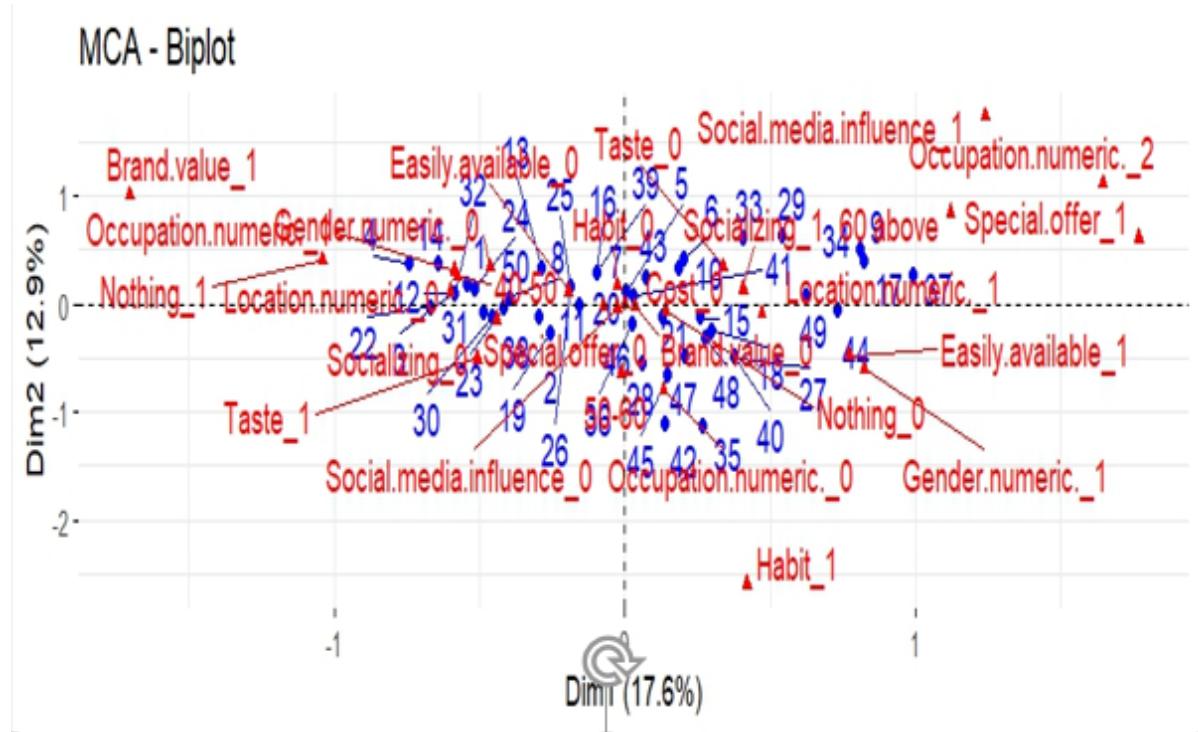
This MCA results provide insights into the associations between categorical variables, particularly motivation factors and demographic characteristics of respondents.



Scree Plot Interpretation :

- The scree plot indicates the percentage of variance explained by each dimension.
- Dim1 (17.6%) and Dim2 (12.9%) together account for 30.5% of the variance in the dataset.
- This suggests that while the first two dimensions capture a significant portion of the variability, additional dimensions may also be relevant.

Biplot Interpretation (MCA Biplot)

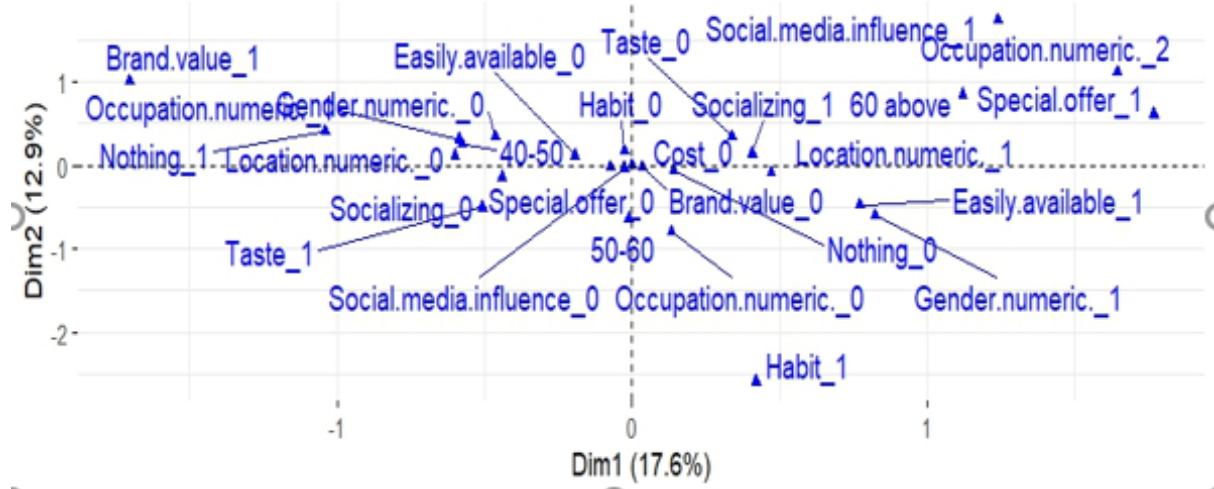


The biplot shows the relationship between different motivation factors and demographic variables.

- "Brand value" and "Occupationnumeric2" appear to be related.
- "Taste" and "Habit" are located close to each other, suggesting they may be linked.
- "Nothing" (indicating no particular motivation) appears near "Locationnumeric0" meaning respondents in this demographic category may not have strong motivational factors.

Variable Categories Plot (Associations)

Variable categories - MCA



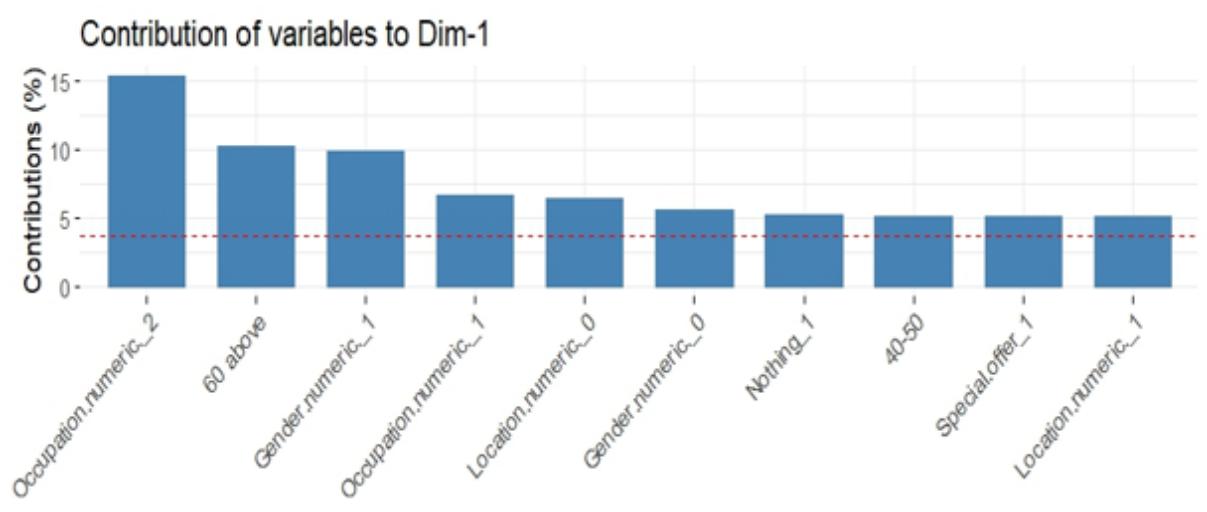
This plot focuses on how categorical variable levels contribute to the MCA dimensions.

Key observations:

- "Special.offer1" is strongly associated with certain demographic groups.
- "Easily.available1" (importance of availability) is associated with some specific occupation groups.
- "Social.media.influence1" is closer to a different set of demographic variables, indicating it is relevant only to certain individuals.

Contribution of Variables to Dimensions

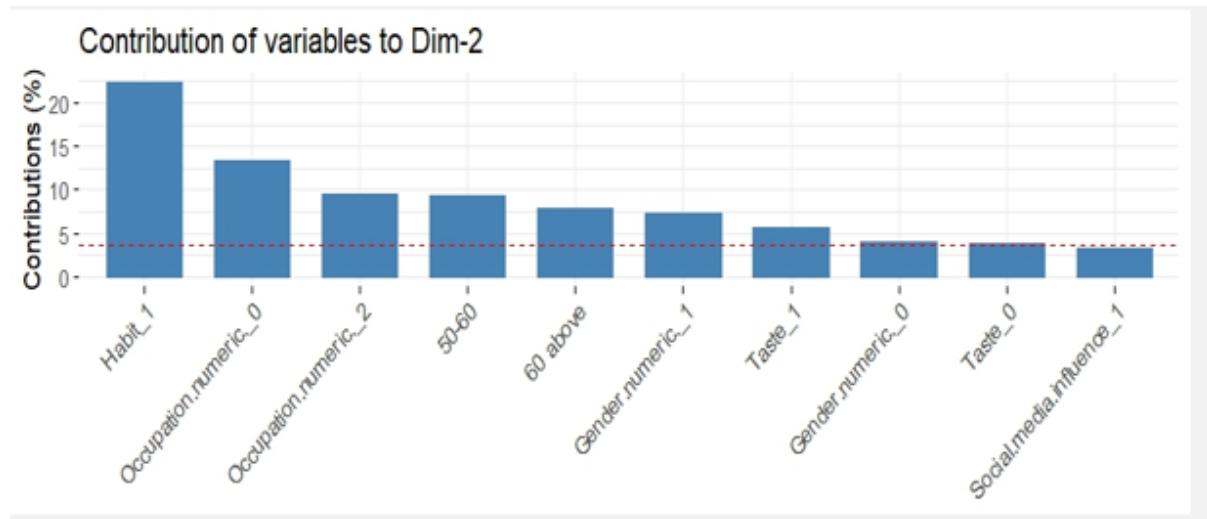
The bar plots show how much each variable contributes to Dim1 and Dim2.



Dim1 (17.6%):

Top contributors: Occupation (numeric), Age (60 above), Gender (numeric).

Interpretation: Occupational status and age play a key role in differentiating motivation factors.

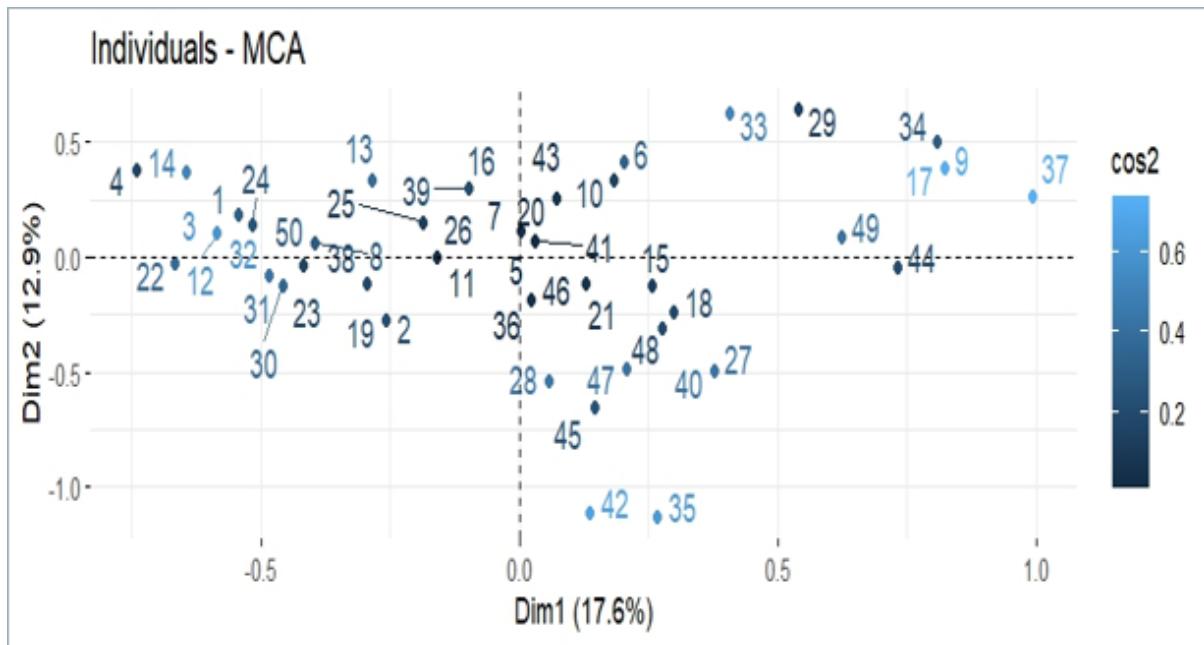


Dim2(12.9%):

Top contributors: Habit, Occupation (numeric), Social media influence.

Interpretation: Personal habits and the influence of social media distinguish different groups.

Individual Plot (Respondent Positioning)



- The individuals' MCA plot shows how different respondents are positioned based on their responses.
- Darker points indicate individuals who are well represented by the dimensions.
- Individuals closer to a particular category are more strongly associated with it.

Key Takeaways:

- Occupation, age, and gender significantly influence motivation factors.
- Taste, brand value, and habit appear to be key motivators for older individuals.
- Younger respondents or certain occupations are more likely to be influenced by special offers or social media.
- Easily Available of fast food plays a crucial role for certain demographics.

5.2.3 Chi-Square Test:

This test analyzes the relationship between age and reasons for consuming fast food using chi-square tests.

Factors considered: The study examines various reasons for consuming fast food, such as taste, social media influence, brand value, cost, availability, habit, socializing, special offers, and having no specific reason.

Chi-square test results:

- Taste: No significant relationship between age and preference for taste ($p = .331$).
- Social Media Influence: No significant relationship ($p = .435$).
- Brand Value: No significant relationship ($p = .435$).
- Cost: No chi-square statistics were computed as cost was a constant.
- Availability: No significant relationship ($p = .362$).
- Habit: No significant relationship ($p = .572$).

- Socializing: No significant relationship ($p = .360$).
- Special Offers: A significant relationship was found ($p = .016$), meaning age might influence the likelihood of choosing fast food due to special offers.
- No Specific Reason: No significant relationship ($p = .811$).

Interpretation:

- Most reasons for fast food consumption (e.g., taste, branding, and habit) do not significantly vary by age.
- However, special offers appear to be a more significant motivator for certain age groups.

5.3 To Find Out Which is the Most Preferred Fast Food Among People

We have done Multiple response frequency analysis for food preferences and Ranking analysis to determine overall popularity.

5.3.1 Multiple response frequency analysis

Multiple Response Set

[DataSet1]

Multiple Response Sets

| Name | Label | Coded As | Counted Value | Data Type | Elementary Variables |
|-----------------|---------------|-------------|---------------|-----------|--|
| \$fastfoodtypes | fastfoodtypes | Dichotomies | 1 | Numeric | Burgers Pizza Fried Chicken Sandwiches Mandi Shawarma Alfaham Roti Other |

This analysis examines consumer preferences for different types of fast food items using a multiple response dataset.

Case Summary

| | Cases | | | | | |
|------------------------------|-------|---------|---------|---------|-------|---------|
| | Valid | | Missing | | Total | |
| | N | Percent | N | Percent | N | Percent |
| \$fastfoodtypes ^a | 408 | 100.0% | 0 | 0.0% | 408 | 100.0% |

a. Dichotomy group tabulated at value 1.

\$fastfoodtypes Frequencies

| | | Responses | | Percent of Cases |
|----------------------------|---------------|-----------|---------|------------------|
| | | N | Percent | |
| fastfoodtypes ^a | Burgers | 112 | 7.4% | 27.5% |
| | Pizza | 68 | 4.5% | 16.7% |
| | Fried Chicken | 179 | 11.8% | 43.9% |
| | Sandwiches | 117 | 7.7% | 28.7% |
| | Mandi | 281 | 18.5% | 68.9% |
| | Shawarma | 197 | 13.0% | 48.3% |
| | Alfaham | 296 | 19.5% | 72.5% |
| | Roti | 192 | 12.7% | 47.1% |
| | Other | 73 | 4.8% | 17.9% |
| | Total | 1515 | 100.0% | 371.3% |

a. Dichotomy group tabulated at value 1.

Key Insights:

- Alfaham Dominates: 72.5 % choose alfaham when getting fast food, making it the clear favourite.
- Middle Eastern Food Influence: Traditional items like Mandi (68.9 %) and Shawarma (48.3%) are extremely popular, even more than Western options.
- People Like Variety: The average person selected nearly 4

different types of fast food they enjoy, showing people aren't loyal to just one type.

- western Fast Food Takes a Back Seat: Despite their global popularity, burgers (27.5%) and pizza (16.7 %) are much less popular than other options in this survey.
- Regional Tastes Matter: The strong preference for Mandi, Shawarma, and Roti suggests this survey likely took place in a region with Middle Eastern or South Asian influences.

Summary:

- This survey shows that when it comes to fast food preferences, Alfaham and Middle Eastern/Indian options are far more popular than traditional Western fast food like burgers and pizza.
- Most people enjoy multiple types of fast food rather than sticking to just one category.

5.3.2 Fast food types by Gender

\$fastfoodtypes'gendernumeric Crosstabulation

| | | gender(numeric) | | Total |
|----------------------------|---------------|-----------------|-------|-------|
| | | 0 | 1 | |
| fastfoodtypes ^a | Burgers | Count | 47 | 65 |
| | | % of Total | 11.5% | 15.9% |
| | Pizza | Count | 25 | 43 |
| | | % of Total | 6.1% | 10.5% |
| | Fried Chicken | Count | 72 | 107 |
| | | % of Total | 17.6% | 26.2% |
| | Sandwiches | Count | 52 | 65 |
| | | % of Total | 12.7% | 15.9% |
| | Mandi | Count | 112 | 169 |
| | | % of Total | 27.5% | 41.4% |
| | Shawarma | Count | 85 | 112 |
| | | % of Total | 20.8% | 27.5% |
| | Alfaham | Count | 129 | 167 |
| | | % of Total | 31.6% | 40.9% |
| | Roti | Count | 83 | 109 |
| | | % of Total | 20.3% | 26.7% |
| | Other | Count | 25 | 48 |
| | | % of Total | 6.1% | 11.8% |
| | Total | Count | 178 | 230 |
| | | % of Total | 43.6% | 56.4% |
| 100.0% | | | | |

Percentages and totals are based on respondents.

a. Dichotomy group tabulated at value 1.

The sample was divided into two gender categories: Where 0 denotes “Female” and 1 denotes “Male”.

- Female: 43.6% of respondents
- Male: 56.4% of respondents

Key gender-based findings:

- Male consistently showed higher preferences across all fast food types

Largest gender differences were observed in:

- Mandi (41.4% for Male vs. 27.5% for Female)
- Alfaham (40.9% for Male vs. 31.6% for Female)

Smallest gender differences were in:

- Sandwiches (15.9% for Male vs. 12.7% for Female)
- Burgers (15.9% for Male vs. 11.5% for Female)

5.3.3 Fast food types by Age

\$fastfoodtypes * agenumeric Crosstabulation

| | | age(numeric) | | | Total | |
|----------------------------|---------------|--------------|-------|-------|-------|--------|
| | | 0 | 1 | 2 | | |
| fastfoodtypes ^a | Burgers | Count | 50 | 54 | 8 | 112 |
| | | % of Total | 12.3% | 13.2% | 2.0% | 27.5% |
| | Pizza | Count | 37 | 28 | 3 | 68 |
| | | % of Total | 9.1% | 6.9% | 0.7% | 16.7% |
| | Fried Chicken | Count | 73 | 91 | 15 | 179 |
| | | % of Total | 17.9% | 22.3% | 3.7% | 43.9% |
| | Sandwiches | Count | 59 | 51 | 7 | 117 |
| | | % of Total | 14.5% | 12.5% | 1.7% | 28.7% |
| | Mandi | Count | 108 | 153 | 20 | 281 |
| | | % of Total | 26.5% | 37.5% | 4.9% | 68.9% |
| | Shawarma | Count | 79 | 102 | 16 | 197 |
| | | % of Total | 19.4% | 25.0% | 3.9% | 48.3% |
| | Alfaham | Count | 106 | 162 | 28 | 296 |
| | | % of Total | 26.0% | 39.7% | 6.9% | 72.5% |
| | Roti | Count | 74 | 95 | 23 | 192 |
| | | % of Total | 18.1% | 23.3% | 5.6% | 47.1% |
| | Other | Count | 35 | 34 | 4 | 73 |
| | | % of Total | 8.6% | 8.3% | 1.0% | 17.9% |
| | Total | Count | 159 | 212 | 37 | 408 |
| | | % of Total | 39.0% | 52.0% | 9.1% | 100.0% |

Percentages and totals are based on respondents.

a. Dichotomy group tabulated at value 1.

The sample was divided into four age groups: Age group 0 represents 10-20, 1 represents 21-30, 2 represents 31-40

- 10-20 Age group : 39.0% of respondents
- 21-30 Age group : 52.0% of respondents (largest group)

- 31-40 Age group : 9.1% of respondents

Key Age-Based Findings:

The 21-30 age group showed the highest preference for:

- Alfaham (39.7%)
- Mandi (37.5%)
- Shawarma (25.0%)

The 10-20 age group preferred:

- Pizza (9.1% vs. 6.9% for Age group 1)
- Sandwiches (14.5% vs. 12.5% for Age group 1)

The 31-40 age group showed relatively higher preference for Roti and Alfaham compared to other fast food types.

5.3.4 Fast food types by Occupation

\$fastfoodtypes'occupationnumeric Crosstabulation

| | | occupation(numeric) | | | Total | |
|----------------------------|---------------|---------------------|-------|-------|-------|--------|
| | | 0 | 1 | 2 | | |
| fastfoodtypes ^a | Burgers | Count | 71 | 37 | 4 | 112 |
| | | % of Total | 17.4% | 9.1% | 1.0% | 27.5% |
| | Pizza | Count | 45 | 20 | 3 | 68 |
| | | % of Total | 11.0% | 4.9% | 0.7% | 16.7% |
| | Fried Chicken | Count | 112 | 53 | 14 | 179 |
| | | % of Total | 27.5% | 13.0% | 3.4% | 43.9% |
| | Sandwiches | Count | 82 | 27 | 8 | 117 |
| | | % of Total | 20.1% | 6.6% | 2.0% | 28.7% |
| | Mandi | Count | 171 | 90 | 20 | 281 |
| | | % of Total | 41.9% | 22.1% | 4.9% | 68.9% |
| | Shawarma | Count | 116 | 66 | 15 | 197 |
| | | % of Total | 28.4% | 16.2% | 3.7% | 48.3% |
| | Alfaham | Count | 176 | 100 | 20 | 296 |
| | | % of Total | 43.1% | 24.5% | 4.9% | 72.5% |
| | Roti | Count | 114 | 64 | 14 | 192 |
| | | % of Total | 27.9% | 15.7% | 3.4% | 47.1% |
| | Other | Count | 52 | 20 | 1 | 73 |
| | | % of Total | 12.7% | 4.9% | 0.2% | 17.9% |
| | Total | Count | 248 | 137 | 23 | 408 |
| | | % of Total | 60.8% | 33.6% | 5.6% | 100.0% |

Percentages and totals are based on respondents.

a. Dichotomy group tabulated at value 1.

The sample was divided into four occupation categories: 0=“students” ,1=“working” ,2=“unemployed” ,

- Students: 60.8% of respondents (majority)
- Working: 33.6% of respondents
- Unemployed: 5.6% of respondents

Key Occupation-based findings:

- Students showed the highest preference across all fast food types. Most popular items for Occupation 0 were: Alfaham (43.1%), Mandi (41.9%), Shawarma (28.4%), Roti (27.9%).
- Working people showed similar preference patterns but at lower percentages.
- Unemployed people had too few respondents for reliable conclusions

5.3.5 Fast food types by District

\$fastfoodtypes*districtnumeric Crosstabulation

| | | district(numeric) | | Total |
|----------------------------|---------------|-------------------|-------|--------|
| | | 0 | 1 | |
| fastfoodtypes ^a | Burgers | Count | 56 | 56 |
| | | % of Total | 13.7% | 13.7% |
| | Pizza | Count | 36 | 32 |
| | | % of Total | 8.8% | 7.8% |
| | Fried Chicken | Count | 97 | 82 |
| | | % of Total | 23.8% | 20.1% |
| | Sandwiches | Count | 64 | 53 |
| | | % of Total | 15.7% | 13.0% |
| | Mandi | Count | 139 | 142 |
| | | % of Total | 34.1% | 34.8% |
| | Shawarma | Count | 109 | 88 |
| | | % of Total | 26.7% | 21.6% |
| | Alfaham | Count | 156 | 140 |
| | | % of Total | 38.2% | 34.3% |
| | Roti | Count | 98 | 94 |
| | | % of Total | 24.0% | 23.0% |
| | Other | Count | 35 | 38 |
| | | % of Total | 8.6% | 9.3% |
| Total | | Count | 204 | 204 |
| | | % of Total | 50.0% | 50.0% |
| | | | | 100.0% |

Percentages and totals are based on respondents.

a. Dichotomy group tabulated at value 1.

The sample was divided into two district categories: 0= “Malappuram” 1= “Calicut”

- District 0: 50.0 % of respondents
- District 1: 50.0% of respondents

Key district-based findings:

- Nearly equal representation between districts
- Malappuram showed higher preferences for:
Alfaham (38.2% vs. 34.3% for Calicut), Shawarma (26.7% vs. 21.6% for Calicut), Fried Chicken (23.8% vs. 20.1% for Calicut).
- Calicut showed higher preference for Mandi (34.8% vs. 34.1% for Malappuram)
- Burgers showed equal preference across districts (13.7% each)

5.3.6 Fast food types by Locality

\$fastfoodtypes 'localitynumeric Crosstabulation

| | | locality(numeric) | | | Total | |
|----------------------------|---------------|-------------------|-------|-------|-------|--------|
| | | 0 | 1 | 2 | | |
| fastfoodtypes ^a | Burgers | Count | 31 | 55 | 26 | 112 |
| | | % of Total | 7.6% | 13.5% | 6.4% | 27.5% |
| | Pizza | Count | 23 | 28 | 17 | 68 |
| | | % of Total | 5.6% | 6.9% | 4.2% | 16.7% |
| | Fried Chicken | Count | 48 | 71 | 60 | 179 |
| | | % of Total | 11.8% | 17.4% | 14.7% | 43.9% |
| | Sandwiches | Count | 29 | 52 | 36 | 117 |
| | | % of Total | 7.1% | 12.7% | 8.8% | 28.7% |
| | Mandi | Count | 86 | 107 | 88 | 281 |
| | | % of Total | 21.1% | 26.2% | 21.6% | 68.9% |
| | Shawarma | Count | 62 | 78 | 57 | 197 |
| | | % of Total | 15.2% | 19.1% | 14.0% | 48.3% |
| | Alfaham | Count | 86 | 118 | 92 | 296 |
| | | % of Total | 21.1% | 28.9% | 22.5% | 72.5% |
| | Roti | Count | 50 | 80 | 62 | 192 |
| | | % of Total | 12.3% | 19.6% | 15.2% | 47.1% |
| | Other | Count | 18 | 33 | 22 | 73 |
| | | % of Total | 4.4% | 8.1% | 5.4% | 17.9% |
| | Total | Count | 125 | 163 | 120 | 408 |
| | | % of Total | 30.6% | 40.0% | 29.4% | 100.0% |

Percentages and totals are based on respondents.

a. Dichotomy group tabulated at value 1.

The sample was divided into three locality types: 0=“Urban” 1=“Rural” 2=“Semi-Urban

- * Urban: 30.6% of respondents
- * Rural: 40.0% of respondents (largest group)
- * Semi-Urban: 29.4% of respondents.

Key Occupation-based findings:

- * Rural showed the highest preference across all fast food types.

Most significant locality differences were in:

1. Alfaham (28.9% for Rural vs. 21.1% for Urban and 22.5% for Semi-Urban)
 2. Fried Chicken (17.4% for Rural vs. 11.8% for Urban and 14.7% for Semi-Urban)
- * Semi-Urban showed relatively higher preference for Fried Chicken compared to Urban.

5.3.7 Ranking analysis (to determine overall popularity)

| Food Type | Frequency | Percentage(%) | Rank |
|----------------------|------------------|----------------------|-------------|
| Alfaham | 296 | 19.5 | 1 |
| Mandi | 281 | 18.5 | 2 |
| Shawarma | 197 | 13.0 | 3 |
| Roti | 192 | 12.7 | 4 |
| Fried Chicken | 179 | 11.8 | 5 |
| Sandwiches | 117 | 7.7 | 6 |
| Burgers | 112 | 7.4 | 7 |
| Other | 73 | 4.8 | 8 |
| pizza | 68 | 4.5 | 9 |

Key Observations:

- * Alfaham (296 responses, 19.5%) holds the top position, indicating it's the most preferred fast food choice and Pizza (68 responses, 4.5%) holds the lowest ranked among all fast food types.

- * Cultural Preferences: Middle Eastern/South Asian food items (Mandi, Shawarma, Roti) collectively dominate the preferences, representing 44.2% of all responses.
- * Chicken Popularity: Chicken-based items (Alfaham, Fried Chicken) collectively represent 31% of preferences, showing strong preference.
- * Western vs. Regional Foods: Traditional western fast foods (Pizza, Burgers, Sandwiches) collectively represent only 19.6% of preferences, significantly less than regional specialties.

5.4 To find out which is the most preferred time for the consumption of Fast Food among People

We have done Frequency analysis of consumption times and Cross-tabulation of time preferences with demographic variables.

5.4.1 Frequency analysis

Detailed Frequency Analysis by Meal Time

Breakfast

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-----------|---------|---------------|--------------------|
| Valid 0 | 394 | 96.6 | 96.6 | 96.6 |
| 1 | 14 | 3.4 | 3.4 | 100.0 |
| Total | 408 | 100.0 | 100.0 | |

Lunch

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-----------|---------|---------------|--------------------|
| Valid 0 | 328 | 80.4 | 80.4 | 80.4 |
| 1 | 80 | 19.6 | 19.6 | 100.0 |
| Total | 408 | 100.0 | 100.0 | |

Evening

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-----------|---------|---------------|--------------------|
| Valid 0 | 228 | 55.9 | 55.9 | 55.9 |
| 1 | 180 | 44.1 | 44.1 | 100.0 |
| Total | 408 | 100.0 | 100.0 | |

Dinner

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-----------|---------|---------------|--------------------|
| Valid 0 | 130 | 31.9 | 31.9 | 31.9 |
| 1 | 278 | 68.1 | 68.1 | 100.0 |
| Total | 408 | 100.0 | 100.0 | |

Key Observations:

- * Breakfast: Only 14 respondents (3.4%) consume fast food during breakfast, 394 respondents (96.6%) do not consume fast food during breakfast. Clearly the least preferred time for fast food consumption is morning.
- * Lunch: 80 respondents (19.6%) consume fast food during lunch, 328 respondents (80.4%) do not consume fast food during lunch. Lunch time represents a modest portion of fast food consumption.
- * Evening: 180 respondents (44.1%) consume fast food during evening, 228 respondents (55.9%) do not consume fast food during evening. It shows significant popularity, particularly as a snack or pre-dinner option.
- * Dinner: 278 respondents (68.1%) consume fast food during dinner, 130 respondents (31.9%) do not consume

fast food during dinner. Clearly the most preferred fast food consumption time is dinner.

Key Insights:

- * **Strong Dinner Preference:** Over two-thirds of respondents consume fast food during dinner, making it the dominant meal time for fast food consumption.
- * **Evening as Secondary Choice:** Nearly half of the respondents consume fast food during evening hours, suggesting significant demand for fast food as a snack or early dinner option.
- * **Limited Breakfast Market:** The extremely low preference for fast food during breakfast (3.4%) indicates a minimal market for breakfast-focused fast food options in this population.

5.4.2 Different times by Age

\$differenttimes*agenumeric Crosstabulation

| differenttime ^a | Breakfast | age(numeric) | | | Total | |
|----------------------------|-----------|--------------|-------|-------|-------|--------|
| | | 0 | 1 | 2 | | |
| differenttime ^a | Breakfast | Count | 5 | 8 | 1 | 14 |
| | | % of Total | 1.2% | 2.0% | 0.2% | 3.4% |
| | Lunch | Count | 23 | 54 | 3 | 80 |
| | | % of Total | 5.6% | 13.2% | 0.7% | 19.6% |
| | Evening | Count | 58 | 105 | 17 | 180 |
| | | % of Total | 14.2% | 25.7% | 4.2% | 44.1% |
| | Dinner | Count | 112 | 144 | 22 | 278 |
| | | % of Total | 27.5% | 35.3% | 5.4% | 68.1% |
| Total | | Count | 159 | 212 | 37 | 408 |
| | | % of Total | 39.0% | 52.0% | 9.1% | 100.0% |

0 represents 10-20, 1 represents 21-30, 2 represents 31-40

- * 10-20 Age group : 159 respondents (39.0%)
- * 21-30 Age group : 212 respondents (52.0%) - largest group
- * 31-40 Age group : 37 respondents (9.1%)

Age-based patterns:

- * 21-30 Age group (likely young adults) shows the highest preference for evening and dinner time.
- * 10-20 Age group shows the highest relative preference for dinner .
- * 31-40 Age group shows a preference for dinner, though the sample size is small.

5.5 To Find Out an Average Amount of Money that People Spend on Fast Food

The descriptive statistics, frequency of money spend per meal, and money spend weekly are discussed in this section.

5.5.1 Meal spend patterns

| meal spend | | | | | |
|-----------------------|-----------|---------|---------------|--------------------|--|
| | Frequency | Percent | Valid Percent | Cumulative Percent | |
| Valid Between 100-500 | 289 | 70.8 | 70.8 | 70.8 | |
| Less than 100 | 43 | 10.5 | 10.5 | 81.4 | |
| More than 500 | 76 | 18.6 | 18.6 | 100.0 | |
| Total | 408 | 100.0 | 100.0 | | |

Key Findings:

- * Most people (around 71%) spend between 100-500 per fast food meal, indicating that this is the typical price range for fast food consumption.
- * A smaller segment (18.63%) spends more than 500, possibly due to ordering premium or larger meals.
- * Only about 10.54% spend less than 100, which suggests that affordable fast food options are less common or less preferred.

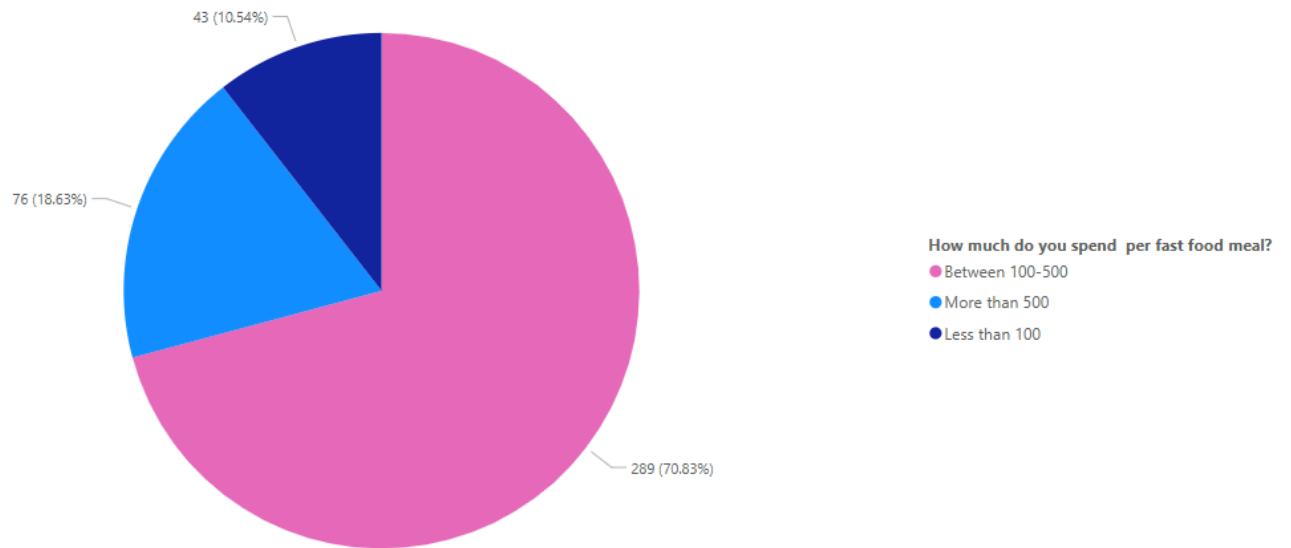


Figure 5.5: pie chart of meal spend

5.5.2 Weekly spend patterns:

| week spend | | | | |
|------------------|-----------|---------|---------------|--------------------|
| | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | 9 | 2.2 | 2.2 | 2.2 |
| Between 100-500 | 180 | 44.1 | 44.1 | 46.3 |
| Between 500-1000 | 80 | 19.6 | 19.6 | 65.9 |
| Less than 100 | 103 | 25.2 | 25.2 | 91.2 |
| More than 1000 | 36 | 8.8 | 8.8 | 100.0 |
| Total | 408 | 100.0 | 100.0 | |

Key Findings:

- * The most common range for weekly spending is **100 to 500 (43.4%)**, which aligns with the findings on meal spend, indicating consistent spending habits within this moderate range.
- * A significant portion (14.2%) spends less than 100 weekly, potentially reflecting individuals with limited budgets or minimal spending needs.
- * Only **8.7%** spend more than 1000, marking this as the least common category, likely representing higher income earners or those with greater disposable income.

5.5.3 Kruskal-Wallis test (to compare spending across income groups)

Kruskal-Wallis Test

Ranks

| | income numeric | N | Mean Rank |
|------------|----------------|-----|-----------|
| meal spend | 1 | 52 | 196.25 |
| | 2 | 131 | 179.29 |
| | 3 | 225 | 221.08 |
| | Total | 408 | |

Test Statistics^{a,b}

| | meal spend |
|-------------|------------|
| Chi-Square | 16.781 |
| df | 2 |
| Asymp. Sig. | .000 |

a. Kruskal Wallis
Test

b. Grouping Variable:
income numeric

Key Observations:

Group 1 = “Above 80000” Group 2=“Below 15000” Group 3=“15000-80000”

The first table shows Ranks:

- * Income Above 80000 (N=52): Mean rank of 196.25.
- * Income Below 15000(N=131): Mean rank of 179.29
- * Income between 15000-80000 (N=225): Mean rank of 221.08

The second table shows Test Statistics:

- * Chi-Square value: 16.781
- * Degrees of freedom (df): 2
- * Asymptotic Significance (p-value): 0.000 (which means $p < 0.05$)

Conclusion:

- * There is a statistically significant difference in meal spending across the three income groups ($p < 0.05$).
- * Income group between 15000-80000 has the highest mean rank (221.08), suggesting this group spends the most on meals.
- * Income group Below 15000 has the lowest mean rank (179.29), suggesting this group spends the least on meals

5.5.4 Kruskal-Wallis test (to compare spending across localities)

Kruskal-Wallis Test

Ranks

| locality(numeric) | N | Mean Rank |
|-------------------|-----|-----------|
| meal spend 0 | 125 | 195.57 |
| 1 | 163 | 201.81 |
| 2 | 120 | 217.45 |
| Total | 408 | |

Test Statistics^{a,b}

| | meal spend |
|-------------|------------|
| Chi-Square | 3.530 |
| df | 2 |
| Asymp. Sig. | .171 |

a. Kruskal Wallis
Test

b. Grouping Variable:
locality(numeric)

Key Observations:

Locality 0=“Urban” Locality 1=“Rural” Locality 2=“Semi-Urban”

The first table shows Ranks:

- * Locality Urban has 125 observations with a mean rank of 195.57
- * Locality Rural has 163 observations with a mean rank of 201.81

- * Locality Semi-urban has 120 observations with a mean rank of 217.45

The second table shows Test Statistics:

- * Chi-Square value of 3.530
- * 2 degrees of freedom (df)
- * Asymptotic significance (p-value) of 0.171

Conclusion:

Based on these results, we conclude that there is no statistically significant difference in meal spending across the three localities. The p-value of 0.171 is greater than the conventional alpha level of 0.05, meaning we fail to reject the null hypothesis that the meal spending distributions are the same across localities. Despite the mean ranks showing an apparent trend (locality 2 has the highest mean rank at 217.45), this difference is not statistically significant according to the Kruskal-Wallis test.

5.6 Influence of external factors like social media on fast food choices

We have done Chi-square test to check the association between social media influence and fast food consumption frequency.

5.6.1 Chi-Square Test

To analyze the relationship between social media influence (via reels/advertisements) and fast food consumption frequency.

Do you get influenced by social media reels/advertisement about fast food * Consumption of fastfood
Crosstabulation

| | | Consumption of fastfood | | | | | Total |
|---|-----------|-------------------------|---------|--------|----------------|----------------|--------|
| | | Daily | Monthly | Rarely | Weekly 2 times | Weekly 5 times | |
| Do you get influenced by social media reels/advertisement about fast food | No | Count | 9 | 25 | 28 | 16 | 88 |
| | | % of Total | 2.2% | 6.1% | 6.9% | 3.9% | 21.6% |
| | Sometimes | Count | 5 | 21 | 28 | 40 | 105 |
| | | % of Total | 1.2% | 5.1% | 6.9% | 9.8% | 25.7% |
| | Yes | Count | 15 | 63 | 39 | 72 | 215 |
| | | % of Total | 3.7% | 15.4% | 9.6% | 17.6% | 52.7% |
| Total | | Count | 29 | 109 | 95 | 128 | 408 |
| | | % of Total | 7.1% | 26.7% | 23.3% | 31.4% | 100.0% |

Key Findings from Cross-tabulation:

- * Respondents who were not influenced by social media mostly consumed fast food rarely or monthly.
- * Those sometimes influenced showed an increase in weekly and monthly consumption.
- * Respondents who were influenced had the highest percentage of frequent (weekly and daily) consumption.

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|--------------------|---------------------|----|--------------------------|
| Pearson Chi-Square | 17.003 ^a | 8 | .030 |
| Likelihood Ratio | 17.788 | 8 | .023 |
| N of Valid Cases | 408 | | |

Chi-square Test Results:

- Pearson Chi-square Value: 17.003
- Degrees of Freedom (df): 8
- Significance Level (p-value): 0.030
- Since $p < 0.05$, the result is statistically significant, indicating a strong association between social media influence and fast food consumption.

Conclusion:

- * Social media reels and advertisements significantly influence fast food consumption habits.
- * Higher exposure leads to more frequent consumption.

6. CHAPTER 3:

Health Awareness And Impact of Fast Food

6.1 To Assess the Awareness and Impact of Health Risks Associated with Fast Food Consumption

We have done frequency analysis of reported health issues, and chi square test to determine the relationship between fast food consumption and self reported health issues.

6.1.1 Frequency Analysis

Fast Food Consumption and Weight Gain/Loss

Table 6.1: Consumption of Fast Food (Numeric)

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|---|-----------|---------|---------------|--------------------|
| Valid | 0 | 29 | 7.1 | 7.1 | 7.1 |
| | 1 | 47 | 11.5 | 11.5 | 18.6 |
| | 2 | 95 | 23.3 | 23.3 | 41.9 |
| | 3 | 109 | 26.7 | 26.7 | 68.6 |
| | 4 | 128 | 31.4 | 31.4 | 100.0 |
| Total | | 408 | 100.0 | 100.0 | |

Table 6.2: Weight Gain/Loss

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|---|-----------|---------|---------------|--------------------|
| Valid | 0 | 277 | 67.9 | 67.9 | 67.9 |
| | 1 | 131 | 32.1 | 32.1 | 100.0 |
| Total | | 408 | 100.0 | 100.0 | |

Key Findings:

- * Among 408 respondents, 32.1% (131 people) reported experiencing weight gain or loss, whereas 67.9% (277 people) did not notice any weight changes.
- * This suggests that while fast food consumption does not immediately impact weight for the majority, a significant portion of people do experience changes in body weight, possibly due to excess calorie intake and poor nutritional balance.

Fast Food Consumption and Increased Cholesterol Levels

Table 6.3: Consumption of Fast Food (Numeric)

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|---|-----------|---------|---------------|--------------------|
| Valid | 0 | 29 | 7.1 | 7.1 | 7.1 |
| | 1 | 47 | 11.5 | 11.5 | 18.6 |
| | 2 | 95 | 23.3 | 23.3 | 41.9 |
| | 3 | 109 | 26.7 | 26.7 | 68.6 |
| | 4 | 128 | 31.4 | 31.4 | 100.0 |
| Total | | 408 | 100.0 | 100.0 | |

Table 6.4: Increased Cholesterol Levels

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|---|-----------|---------|---------------|--------------------|
| Valid | 0 | 386 | 94.6 | 94.6 | 94.6 |
| | 1 | 22 | 5.4 | 5.4 | 100.0 |
| Total | | 408 | 100.0 | 100.0 | |

Key Findings:

- * Out of 408 respondents, 5.4% (22 people) reported an increase in cholesterol levels, while 94.6% (386 people) did not experience any change.
- * This indicates that while cholesterol increase is not common, those affected might be individuals with pre-existing conditions or those who consume excessive fast food high in unhealthy fats.

Fast Food Consumption and Increased Blood Pressure

Table 6.5: Consumption of Fast Food (Numeric)

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|---|-----------|---------|---------------|--------------------|
| Valid | 0 | 29 | 7.1 | 7.1 | 7.1 |
| | 1 | 47 | 11.5 | 11.5 | 18.6 |
| | 2 | 95 | 23.3 | 23.3 | 41.9 |
| | 3 | 109 | 26.7 | 26.7 | 68.6 |
| | 4 | 128 | 31.4 | 31.4 | 100.0 |
| Total | | 408 | 100.0 | 100.0 | |

Table 6.6: Increased Blood Pressure

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|---|-----------|---------|---------------|--------------------|
| Valid | 0 | 398 | 97.5 | 97.5 | 97.5 |
| | 1 | 10 | 2.5 | 2.5 | 100.0 |
| Total | | 408 | 100.0 | 100.0 | |

Key Findings:

- * 2.5% (10 people) reported an increase in blood pressure, whereas 97.5% (398 people) did not experience any significant rise in their blood pressure levels.
- * The low percentage suggests that occasional fast food consumption may not have an immediate impact on blood pressure, but long-term consumption could be a risk factor.

Fast Food Consumption and Digestive Issues

Table 6.7: Consumption of Fast Food (Numeric)

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|---|-----------|---------|---------------|--------------------|
| Valid | 0 | 29 | 7.1 | 7.1 | 7.1 |
| | 1 | 47 | 11.5 | 11.5 | 18.6 |
| | 2 | 95 | 23.3 | 23.3 | 41.9 |
| | 3 | 109 | 26.7 | 26.7 | 68.6 |
| | 4 | 128 | 31.4 | 31.4 | 100.0 |
| Total | | 408 | 100.0 | 100.0 | |

Table 6.8: Digestive Issues

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|---|-----------|---------|---------------|--------------------|
| Valid | 0 | 312 | 76.5 | 76.5 | 76.5 |
| | 1 | 96 | 23.5 | 23.5 | 100.0 |
| Total | | 408 | 100.0 | 100.0 | |

Key Findings:

- * 23.5% (96 people) reported digestive problems, whereas 76.5% (312 people) did not experience any discomfort.
- * This suggests that nearly one in four people suffer from digestive issues, possibly due to processed ingredients, high fat content, and low fiber in fast food.

Fast Food Consumption and No Health Changes

Table 6.9: Consumption of Fast Food (Numeric)

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|---|-----------|---------|---------------|--------------------|
| Valid | 0 | 29 | 7.1 | 7.1 | 7.1 |
| | 1 | 47 | 11.5 | 11.5 | 18.6 |
| | 2 | 95 | 23.3 | 23.3 | 41.9 |
| | 3 | 109 | 26.7 | 26.7 | 68.6 |
| | 4 | 128 | 31.4 | 31.4 | 100.0 |
| Total | | 408 | 100.0 | 100.0 | |

Table 6.10: No Changes

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|---|-----------|---------|---------------|--------------------|
| Valid | 0 | 200 | 49.0 | 49.0 | 49.0 |
| | 1 | 208 | 51.0 | 51.0 | 100.0 |
| Total | | 408 | 100.0 | 100.0 | |

Key Findings:

- * 51.0% (208 people) reported no noticeable changes in their health, while 49.0% (200 people) experienced some form of effect (such as weight gain, digestive issues, or increased cholesterol).
- * This shows that reactions to fast food consumption vary significantly from person to person, likely depending on metabolism, lifestyle, and frequency of consumption.

Fast Food Consumption and Foodborne Illness

Table 6.11: Consumption of Fast Food (Numeric)

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|---|-----------|---------|---------------|--------------------|
| Valid | 0 | 29 | 7.1 | 7.1 | 7.1 |
| | 1 | 47 | 11.5 | 11.5 | 18.6 |
| | 2 | 95 | 23.3 | 23.3 | 41.9 |
| | 3 | 109 | 26.7 | 26.7 | 68.6 |
| | 4 | 128 | 31.4 | 31.4 | 100.0 |
| Total | | 408 | 100.0 | 100.0 | |

Table 6.12: Foodborne Illness

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-----------|-----------|---------|---------------|--------------------|
| Valid | NO | 266 | 65.2 | 65.2 | 65.2 |
| | Sometimes | 78 | 19.1 | 19.1 | 84.3 |
| | Yes | 64 | 15.7 | 15.7 | 100.0 |
| Total | | 408 | 100.0 | 100.0 | |

Key Findings:

- * 65.2% (266 people) never experienced foodborne illnesses after consuming fast food.
- * 19.1% (78 people) reported occasional illness, while 15.7% (64 people) frequently suffered from foodborne illnesses.
- * This suggests that while food safety standards are generally maintained, around 35% of respondents have experienced illness, which raises concerns about hygiene and food handling in fast food establishments.

6.2 Awareness and Health Impact Assessment(old age)

Here Pearson Correlation used to measure relationships between Health awareness levels and consumption patterns and Chi-square tests used To analyze associations between Health risk awareness and health status, Consumption frequency and specific health issues reported.

6.2.1 Chi-square test:Health risk awareness and health status

Are you aware of any health risks, such as obesity or metabolic disorders, associated with frequent consumption of fast food? * How would you rate your overall health? Crosstabulation

Count

| | Are you aware of any health risks, such as obesity or metabolic disorders, associated with frequent consumption of fast food? | How would you rate your overall health? | | | | Total |
|-------|---|---|-----------|------|------|-------|
| | | Average | Excellent | Good | Poor | |
| | Aware of health risk | 13 | 5 | 22 | 1 | 41 |
| | Need to control | 2 | 0 | 0 | 0 | 2 |
| | Not aware of health risk | 4 | 1 | 2 | 0 | 7 |
| Total | | 19 | 6 | 24 | 1 | 50 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|--------------------|--------------------|----|--------------------------|
| Pearson Chi-Square | 5.401 ^a | 6 | .494 |
| Likelihood Ratio | 6.162 | 6 | .405 |
| N of Valid Cases | 50 | | |

Key Findings:

- * Out of 50 total respondents, 41 (82%) were aware of health risks associated with fast food consumption
- * Most respondents 24(48%) rated their health as "Good"
- * Of the 41 people aware of health risks, the majority 22 rated their health as "Good".
- * Very few respondents (only 7) reported being "Not aware of health risk"
- * Only 2 respondents indicated they "Need to control" health risks

Conclusion:

Since the p-value (0.494) is greater than the conventional significance level of 0.05, we fail to reject the null hypothesis. This means there's no statistically significant association between awareness of fast food health risks and self-rated overall health.

6.2.2 Chi-Square Test: Consumption frequency and specific health issues reported

How often do you consume fastfood? * Have you experienced any of the following health changes over the past year? Crosstabulation

| Count | | Have you experienced any of the following health changes over the past year? | | | | | | | | Total |
|------------------------------------|----------------|--|--------------------------|--|-----------------------|---|---|------------|------------------|-------|
| | | Digestive issues | Increased blood pressure | Increased blood pressure, Digestive issues | Increased cholesterol | Increased cholesterol, Increased blood pressure | Increased cholesterol, Increased blood pressure, Digestive issues | No changes | Weight gain/loss | |
| How often do you consume fastfood? | Daily | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 1 | 5 |
| | Monthly | 2 | 0 | 0 | 0 | 0 | 0 | 4 | 2 | 8 |
| | Rarely | 4 | 4 | 0 | 2 | 2 | 1 | 18 | 1 | 32 |
| | Weekly 2 times | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 5 |
| Total | | 7 | 4 | 1 | 5 | 2 | 1 | 26 | 4 | 50 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|--------------------|---------------------|----|-----------------------|
| Pearson Chi-Square | 26.294 ^a | 21 | .195 |
| Likelihood Ratio | 22.957 | 21 | .346 |
| N of Valid Cases | 50 | | |

a. 31 cells (96.9%) have expected count less than 5. The minimum expected count is .10.

Key Findings:

- * The table shows the most individuals who consume fast food rarely reported no health changes
- * The chi-square test result reveal no statistically significant association between fast food consumption frequency and health changes:
 - Pearson chi-square p-value:0.195

- Likelihood ratio p-value:0.346
- * Both p-values are greater than the common significance level of 0.05 ,indicating a lack of significance

Conclusion:

The data suggests that there is no clear link between how often individuals consume fast food and the health changes they experience.

6.3 To Explore the Relationship Between Body Mass Index (BMI) and Fast Food Consumption

We have done ONE WAY ANOVA of BMI with respect to levels of fast food consumption.

6.3.1 ONE WAY ANOVA

| Descriptives | | | | | | | | |
|--------------|-----|--------|----------------|------------|----------------------------------|-------------|---------|---------|
| BMI | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
| | | | | | Lower Bound | Upper Bound | | |
| 0 | 29 | 23.390 | 4.3562 | .8089 | 21.733 | 25.047 | 9.2 | 32.9 |
| 1 | 47 | 19.260 | 4.9158 | .7170 | 17.816 | 20.703 | 12.0 | 35.7 |
| 2 | 95 | 20.701 | 5.1979 | .5333 | 19.642 | 21.760 | 11.1 | 39.8 |
| 3 | 109 | 19.807 | 4.6743 | .4477 | 18.920 | 20.695 | 9.3 | 30.9 |
| 4 | 128 | 21.147 | 4.1798 | .3694 | 20.416 | 21.878 | 11.1 | 32.7 |
| Total | 408 | 20.627 | 4.7489 | .2351 | 20.165 | 21.089 | 9.2 | 39.8 |

The analysis compared BMI across 5 different fast food consumption groups (labeled 0-4):

0=“Monthly” 1=“Weekly 5 times” 2=“Rarely” 3=“Monthly”
4=“Weekly 2 times”

- * Group 0: 29 participants, Mean BMI = 23.39, SD = 4.36
- * Group 1: 47 participants, Mean BMI = 19.26, SD = 4.92
- * Group 2: 95 participants, Mean BMI = 20.70, SD = 5.20
- * Group 3: 109 participants, Mean BMI = 19.81, SD = 4.67

Test of Homogeneity of Variances

BMI

| Levene Statistic | df1 | df2 | Sig. |
|------------------|-----|-----|------|
| 1.459 | 4 | 403 | .214 |

- * Group 4: 128 participants, Mean BMI = 21.15, SD = 4.18
- * Overall mean BMI = 20.63, SD = 4.75

- **Significance (p-value) = 0.214**

- **Interpretation:**

The assumption of homogeneity of variances is met (p greater than 0.05), indicating that the variances across groups are not significantly different. This strengthens the validity of the ANOVA results.

ANOVA Results:

ANOVA

BMI

| | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|-----|-------------|-------|------|
| Between Groups | 417.565 | 4 | 104.391 | 4.802 | .001 |
| Within Groups | 8761.083 | 403 | 21.740 | | |
| Total | 9178.648 | 407 | | | |

Significance (p-value) = 0.001

Interpretation:

There is a statistically significant difference in BMI between at least two of the fast food consumption groups.

BMI

Tukey HSD^{a,b}

| consumption of fast food (numeric) | N | Subset for alpha = 0.05 | |
|---------------------------------------|-----|-------------------------|--------|
| | | 1 | 2 |
| 1 | 47 | 19.260 | |
| 3 | 109 | 19.807 | |
| 2 | 95 | 20.701 | |
| 4 | 128 | 21.147 | 21.147 |
| 0 | 29 | | 23.390 |
| Sig. | | .175 | .066 |

Homogeneous Subsets:

The analysis identified two overlapping subsets:

- Subset 1: Groups 1, 3, 2, and 4 (with mean BMIs of 19.26, 19.81, 20.70, and 21.15)
- Subset 2: Groups 4 and 0 (with mean BMIs of 21.15 and 23.39)

Group 4 appears in both subsets, indicating it's not significantly different from either the lower BMI groups or Group 0.

Post-Hoc Tests (Tukey HSD)

| Multiple Comparisons | | | | | | |
|---------------------------------------|---------------------------------------|-----------------------|------------|------|-------------------------|-------------|
| | | | | | 95% Confidence Interval | |
| (I) consumption of fast food(numeric) | (J) consumption of fast food(numeric) | Mean Difference (I-J) | Std. Error | Sig. | Lower Bound | Upper Bound |
| 0 | 1 | 4.1301* | .1.1010 | .002 | 1.113 | 7.147 |
| | 2 | 2.6886 | .9892 | .053 | -.022 | 5.399 |
| | 3 | 3.5823* | .9742 | .002 | .913 | 6.252 |
| | 4 | 2.2428 | .9589 | .135 | -.385 | 4.870 |
| 1 | 0 | -4.1301* | .1.1010 | .002 | -7.147 | -1.113 |
| | 2 | -1.4415 | .8315 | .414 | -3.720 | .837 |
| | 3 | -.5478 | .8136 | .962 | -2.777 | 1.682 |
| | 4 | -1.8873 | .7952 | .125 | -4.066 | .292 |
| 2 | 0 | -2.6886 | .9892 | .053 | -5.399 | .022 |
| | 1 | 1.4415 | .8315 | .414 | -.837 | 3.720 |
| | 3 | .8937 | .6544 | .650 | -.900 | 2.687 |
| | 4 | -.4458 | .6314 | .955 | -2.176 | 1.284 |
| 3 | 0 | -3.5823* | .9742 | .002 | -6.252 | -.913 |
| | 1 | .5478 | .8136 | .962 | -1.682 | 2.777 |
| | 2 | -.8937 | .6544 | .650 | -2.687 | .900 |
| | 4 | -1.3395 | .6077 | .180 | -3.005 | .326 |
| 4 | 0 | -2.2428 | .9589 | .135 | -4.870 | .385 |
| | 1 | 1.8873 | .7952 | .125 | -.292 | 4.066 |
| | 2 | .4458 | .6314 | .955 | -1.284 | 2.176 |
| | 3 | 1.3395 | .6077 | .180 | -.326 | 3.005 |

The post-hoc analysis showed specific differences between groups:

- Significant differences:
 - Group 0 vs. Group 1: Mean difference = 4.13,
 $p = 0.002$
 - Group 0 vs. Group 3: Mean difference = 3.58,
 $p = 0.002$
- Nearly significant difference:
 - Group 0 vs. Group 2: Mean difference = 2.69,
 $p = 0.053$ (just above the significance threshold)
- Non-significant differences ($p > 0.05$) were found between:
 - Group 0 vs. Group 4
 - All other group comparisons

Overall Interpretation:

The results indicate that BMI differs significantly based on fast food consumption patterns. Specifically:

- Group “Daily” shows significantly higher BMI values compared to Groups 1 and 3.
- The mean BMI progresses in this order: Group 1 (19.26) less than Group 3 (19.81) less than Group 2 (20.70) less than Group 4 (21.15) less than Group 0 (23.39).
- Although the specific definitions of the numeric codes aren’t provided in this document, the pattern suggests

that more frequent fast food consumption (Group 0) is associated with higher BMI, while less frequent consumption patterns show lower BMI values.

- All group means fall within the normal weight BMI category (18.5-24.9), though Group 0 is approaching the upper boundary.

This analysis provides statistical evidence for a relationship between fast food consumption frequency and BMI in your sample, with the highest consumption frequency group showing significantly higher BMI values than some of the lower consumption groups.

7. CHAPTER 4:

Evaluating Fast Food Satisfaction

7.1 To Evaluate Satisfaction Levels

The median test was used to examine the relationship between age and satisfaction with fast food consumption habits, as well as between occupation and satisfaction with the quality of fast food. This test compares the medians of different groups to determine if there are significant differences in satisfaction levels based on age or occupation.

7.1.1 To examine the relationship between age and satisfaction with current fast food consumption habits

Median Test

| | | Frequencies | | |
|---|-----------|--------------|-----|----|
| | | age(numeric) | | |
| | | 0 | 1 | 2 |
| How satisfied are you with your current fast food consumption habits? (numeric) | > Median | 55 | 120 | 23 |
| | <= Median | 104 | 92 | 14 |

| Test Statistics ^a | |
|------------------------------|---|
| | How satisfied are you with your current fast food consumption habits? (numeric) |
| N | 408 |
| Median | 3.00 |
| Chi-Square | 20.653 ^b |
| df | 2 |
| Asymp. Sig. | .000 |

a. Grouping Variable:
 age(numeric)
 b. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 18.0.

Figure 7.1: relationships between age and fastfood consumption

- * The p-value (**0.000**) is less than 0.05, indicating a statistically significant relationship between age and satisfaction with fast food consumption habits.
- * This suggests that satisfaction levels vary significantly across different age groups.

7.1.2 To examine the relationship between occupation and satisfaction with the quality of fast food in local outlets

Median Test

| | | Frequencies | | |
|---|-----------|---------------------|----|----|
| | | occupation(numeric) | | |
| | | 0 | 1 | 2 |
| How satisfied are you with the quality of fast food in local outlets? (numeric) | > Median | 99 | 86 | 13 |
| | <= Median | 149 | 51 | 10 |

| Test Statistics ^a | |
|------------------------------|---|
| | How satisfied are you with the quality of fast food in local outlets? (numeric) |
| N | 408 |
| Median | 3.00 |
| Chi-Square | 19.077 ^b |
| df | 2 |
| Asymp. Sig. | .000 |

^a a. Grouping Variable: occupation(numeric)
^b b. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 11.2.

Figure 7.2: relationships between occupation and fastfood quality

- * The p-value (0.000) is less than 0.05, indicating a statistically significant relationship between occupation and satisfaction with fast food quality.
- * This suggests that satisfaction levels vary significantly across different occupational groups.

7.2 Satisfaction Level Evaluation(old age)

This section evaluates satisfaction levels related to fast food outlets. The Mann-Whitney U and Kruskal-Wallis tests were used to compare satisfaction ratings across demographic groups. Additionally, correlation analysis examined relationships between satisfaction with hygiene and quality, and between satisfaction levels and consumption frequency.

7.2.1 Mann-Whitney U Test: Gender Differences in Fast Food Perceptions

| NPar Tests | | | | |
|---|-----------------|---|---|------------------|
| [DataSet1] | | | | |
| Mann-Whitney Test | | | | |
| Ranks | | | | |
| | | | | |
| Gender(numeric) | | N | Mean Rank | Sum of Ranks |
| Are you 3 with the hygiene and cleanliness standards maintained by fast food outlets? (numeric) | 0 1 Total | 32 18 50 | 27.72 21.56 | 887.00 388.00 |
| How 4 are you with the quality of fast food in local outlets? (numeric) | 0 1 Total | 32 18 50 | 24.67 26.97 | 789.50 485.50 |
| Test Statistics ^a | | | | |
| | | | | |
| | | Are you 3 with the hygiene and cleanliness standards maintained by fast food outlets? (numeric) | How 4 are you with the quality of fast food in local outlets? (numeric) | |
| Mann-Whitney U | | 217.000 | 261.500 | |
| Wilcoxon W | | 388.000 | 789.500 | |
| Z | | -1.519 | -.572 | |
| Asymp. Sig. (2-tailed) | | .129 | .567 | |

a. Grouping Variable: Gender(numeric)

Figure 7.3: Perceptions of Hygiene and Cleanliness in Fast Food Outlets by Gender

Hygiene and Cleanliness Standards of Fast Food Outlets:

- * Mann-Whitney $U = 217.000$, $p = 0.129$ (not significant)

Quality of Fast Food in Local Outlets:

- * Mann-Whitney $U = 261.500$, $p = 0.567$ (not significant)

Interpretation: The p-values (0.129 and 0.567) are greater than 0.05, indicating no significant difference between the two gender groups in their perceptions of hygiene/cleanliness and quality of fast food outlets.

7.2.2 Correlation(Non-parametric) Between Perceptions of Hygiene and Quality in Fast Food Outlets

| Nonparametric Correlations | | | | |
|----------------------------|---|---|---|---|
| Correlations | | | | |
| | | | Are you 3 with the hygiene and cleanliness standards maintained by fast food outlets? (numeric) | How 4 are you with the quality of fast food in local outlets? (numeric) |
| Spearman's rho | Are you 3 with the hygiene and cleanliness standards maintained by fast food outlets? (numeric) | Correlation Coefficient Sig. (2-tailed) N | 1.000 .50 | -.444** .50 |
| | How 4 are you with the quality of fast food in local outlets? (numeric) | Correlation Coefficient Sig. (2-tailed) N | -.444** .001 50 | 1.000 .50 |

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 7.4: Perception of Quality of Fast Food in Local Outlets

These are correlation analyses between two variables:

- * Perception of Hygiene and Cleanliness Standards in Fast Food Outlets
- * Perception of the Quality of Fast Food in Local Outlets

Spearman's Rho (Nonparametric):

- * **Correlation coefficient () = -0.444**
- * **p-value = 0.001** (significant at the 0.01 level)

Interpretation: The nonparametric test confirms the moderate negative correlation observed in the spearman's Rho test.

Overall Conclusion: There is a significant negative correlation between perceptions of hygiene/cleanliness and quality of fast food. This suggests that individuals who rate hygiene and cleanliness higher tend to rate the quality of fast food lower.

7.2.3 Correlation Between Hygiene Perception and Fast Food Consumption

| Nonparametric Correlations | | | | |
|----------------------------|---|---|---|--|
| Correlations | | | | |
| | | | Are you 3 with the hygiene and cleanliness standards maintained by fast food outlets? (numeric) | How often do you consume fastfood? (numeric) |
| Spearman's rho | Are you 3 with the hygiene and cleanliness standards maintained by fast food outlets? (numeric) | Correlation Coefficient Sig. (2-tailed) N | 1.000 . . 50 | .262 .066 50 |
| | How often do you consume fastfood? (numeric) | Correlation Coefficient Sig. (2-tailed) N | .262 .066 50 | 1.000 . . 50 |

Figure 7.5: Ranked Perception of Hygiene and Fast Food Consumption Frequency

Spearman's Rank Correlation (Nonparametric):

- * **Correlation coefficient = 0.262**
- * **p-value = 0.066** (not significant at the 0.05 level)

Interpretation: The correlation is weaker and is not statistically significant at the 0.05 level. This suggests that when using rank-based correlation (for non-normally distributed data), the relationship is less clear.

Conclusion: The Spearman's correlation suggests a weak, non-significant relationship, meaning the relationship might not be as strong when considering nonparametric assumptions. If the data violates normality assumptions, Spearman's rho is more reliable, and it suggests the relationship might not be statistically significant.

8. CHAPTER 5:

QUALITY ANALYSIS

8.1 Understand How Often People Monitor their Calorie/Nutritional Intake and its Relationship with other Factors

We have done Descriptive Statistics to calculate the frequency and percentage of respondents regarding their nutritional intake, Chi-square test to analyze the association between nutritional awareness and factors like age group, income level, fast food consumption frequency and Logistic Regression to predict the likelihood of monitoring nutritional intake based on demographics, spending behavior, and frequency of fast food consumption.

8.1.1 Descriptive Statistics for Nutritional Awareness

We have analyzed how often people monitor their nutritional value/calorie intake from fast food meals.

Here's what the data shows:

- 8.82% of respondents "Always" monitor their nutritional intake. This means only a small portion of the population is highly conscious of tracking their food's nutritional value.
- 49.51% "Never" monitor their nutritional intake. Nearly half of the respondents do not check or care about their calorie/nutritional intake at all.
- 41.67% "Sometimes" monitor their nutritional intake. A significant percentage of people occasionally check their nutrition but are not consistent in doing so.

Key Takeaways:

- * The majority (91.18%) are not fully committed to tracking their nutritional intake.
- * Only a small group (8.82%) is actively monitoring their nutrition every time they eat fast food.
- * This could indicate low awareness about the importance of nutrition or a lack of concern about health risks related to fast food consumption.

8.1.2 Chi-square test

Relationship Between Age and Monitoring of Fast Food Nutritional Value

| Case Processing Summary | | | | | | |
|---|-------|---------|---------|---------|-------|---------|
| | Cases | | | | | |
| | Valid | | Missing | | Total | |
| | N | Percent | N | Percent | N | Percent |
| Do you monitor your nutritional value/calorie of fast food meals? * age | 408 | 100.0% | 0 | 0.0% | 408 | 100.0% |

| Do you monitor your nutritional value/calorie of fast food meals? * age Crosstabulation | | | | | | |
|---|-----------|------------|-------|-------|-------|--------|
| | | age | | | Total | |
| | | 10-20 | 21-30 | 31-40 | | |
| Do you monitor your nutritional value/calorie of fast food meals? | Always | Count | 18 | 17 | 1 | 36 |
| | | % of Total | 4.4% | 4.2% | 0.2% | 8.8% |
| | Never | Count | 92 | 89 | 21 | 202 |
| | | % of Total | 22.5% | 21.8% | 5.1% | 49.5% |
| | Sometimes | Count | 49 | 106 | 15 | 170 |
| | | % of Total | 12.0% | 26.0% | 3.7% | 41.7% |
| Total | | Count | 159 | 212 | 37 | 408 |
| | | % of Total | 39.0% | 52.0% | 9.1% | 100.0% |

| Chi-Square Tests | | | |
|--------------------|---------------------|----|--------------------------|
| | Value | df | Asymp. Sig. (2-sided) |
| Pearson Chi-Square | 15.946 ^a | 4 | .003 |
| Likelihood Ratio | 16.685 | 4 | .002 |
| N of Valid Cases | 408 | | |

Summary:

- A chi-square test was conducted to examine the association between age groups and monitoring the nutritional value of fast food meals.
- The results indicate a significant relationship ($p = .003$), suggesting that younger individuals are more likely to track nutritional information compared to older age groups.

Relationship Between Fast Food Consumption and Monitoring Nutritional Value

| Case Processing Summary | | | | | | |
|---|-------|---------|---------|---------|-------|---------|
| | Cases | | | | | |
| | Valid | | Missing | | Total | |
| | N | Percent | N | Percent | N | Percent |
| Do you monitor your nutritional value/calorie of fast food meals? * Consumption of fastfood | 408 | 100.0% | 0 | 0.0% | 408 | 100.0% |

| Do you monitor your nutritional value/calorie of fast food meals? * Consumption of fastfood Crosstabulation | | | | | | |
|---|-------------------------|------------|---------|------------|--------|------------|
| Do you monitor your nutritional value/calorie of fast food meals? | Consumption of fastfood | | | | | |
| | Daily | | Monthly | | Rarely | |
| | Count | % of Total | Count | % of Total | Count | % of Total |
| Always | 6 | 1.5% | 12 | 2.9% | 6 | 2.2% |
| Never | 15 | 3.7% | 55 | 13.5% | 54 | 12.7% |
| Sometimes | 8 | 2.0% | 42 | 10.3% | 35 | 8.6% |
| Total | 29 | 7.1% | 109 | 26.7% | 95 | 23.3% |
| | | | | | | 31.4% |

| Do you monitor your nutritional value/calorie of fast food meals? * Consumption of fastfood Crosstabulation | | | | | | |
|---|-------------------|------------|-------|------------|-------|------------|
| Do you monitor your nutritional value/calorie of fast food meals? | Consumption of .. | | | | | |
| | Weekly 5 times | | | | Total | |
| | Count | % of Total | Count | % of Total | Count | % of Total |
| Always | 3 | 0.7% | 36 | 8.8% | | |
| Never | 26 | 6.4% | 202 | 49.5% | | |
| Sometimes | 18 | 4.4% | 170 | 41.7% | | |
| Total | 47 | 11.5% | 408 | 100.0% | | |

| Chi-Square Tests | | | |
|--------------------|---------------------|----|--------------------------|
| | Value | df | Asymp. Sig. (2-sided) |
| Pearson Chi-Square | 15.917 ^a | 8 | .044 |
| Likelihood Ratio | 14.764 | 8 | .064 |
| N of Valid Cases | 408 | | |

Summary:

- A chi-square test was conducted to examine the association between fast food consumption frequency and monitoring nutritional value.
- The results indicate a statistically significant relationship ($p = .044$), suggesting that individuals who consume fast food less frequently are more likely to monitor its nutritional content compared to those who eat it more frequently.

Relationship Between Locality and Monitoring of Fast Food Nutritional Value

| Case Processing Summary | | | | | | |
|--|-------|---------|---------|---------|-------|---------|
| | Cases | | | | | |
| | Valid | | Missing | | Total | |
| | N | Percent | N | Percent | N | Percent |
| Do you monitor your nutritional value/calorie of fast food meals? * locality | 408 | 100.0% | 0 | 0.0% | 408 | 100.0% |

| Do you monitor your nutritional value/calorie of fast food meals? * locality Crosstabulation | | | | | | |
|--|-----------|------------|----------|------------|-------|--------|
| | | | locality | | | Total |
| | | | Rural | Semi-urban | Urban | |
| Do you monitor your nutritional value/calorie of fast food meals? | Always | Count | 11 | 10 | 15 | 36 |
| | | % of Total | 2.7% | 2.5% | 3.7% | 8.8% |
| | Never | Count | 91 | 56 | 55 | 202 |
| | | % of Total | 22.3% | 13.7% | 13.5% | 49.5% |
| | Sometimes | Count | 61 | 54 | 55 | 170 |
| | | % of Total | 15.0% | 13.2% | 13.5% | 41.7% |
| | Total | | 163 | 120 | 125 | 408 |
| | | | 40.0% | 29.4% | 30.6% | 100.0% |

| Chi-Square Tests | | | |
|--------------------|--------------------|----|-----------------------|
| | Value | df | Asymp. Sig. (2-sided) |
| Pearson Chi-Square | 5.722 ^a | 4 | .221 |
| Likelihood Ratio | 5.643 | 4 | .227 |
| N of Valid Cases | 408 | | |

Summary:

- A chi-square test was conducted to examine the association between locality (rural, semi-urban, urban) and monitoring the nutritional value of fast food meals.
- The results ($p = .221$) indicate no significant relationship, suggesting that locality does not significantly influence whether individuals monitor the nutritional content of their fast food meals.

Relationship Between Occupation and Monitoring of Fast Food Nutritional Value

| | Case Processing Summary | | | | | |
|--|-------------------------|---------|---------|---------|-------|---------|
| | Valid | | Missing | | Total | |
| | N | Percent | N | Percent | N | Percent |
| Do you monitor your nutritional value/calorie of fast food meals? * occupation(numeric) | 408 | 100.0% | 0 | 0.0% | 408 | 100.0% |
| Do you monitor your nutritional value/calorie of fast food meals? * gender | 408 | 100.0% | 0 | 0.0% | 408 | 100.0% |
| Do you monitor your nutritional value/calorie of fast food meals? * household income range (monthly) | 408 | 100.0% | 0 | 0.0% | 408 | 100.0% |
| Do you monitor your nutritional value/calorie of fast food meals? * district | 408 | 100.0% | 0 | 0.0% | 408 | 100.0% |

Do you monitor your nutritional value/calorie of fast food meals? * occupation(numeric)

| Crosstab | | | | | | |
|---|-----------|---------------------|-------|-------|-------|--------|
| | | occupation(numeric) | | | Total | |
| | | 0 | 1 | 2 | | |
| Do you monitor your nutritional value/calorie of fast food meals? | Always | Count | 23 | 13 | 0 | 36 |
| | | % of Total | 5.6% | 3.2% | 0.0% | 8.8% |
| | Never | Count | 132 | 57 | 13 | 202 |
| | | % of Total | 32.4% | 14.0% | 3.2% | 49.5% |
| | Sometimes | Count | 93 | 67 | 10 | 170 |
| | | % of Total | 22.8% | 16.4% | 2.5% | 41.7% |
| Total | | Count | 248 | 137 | 23 | 408 |
| | | % of Total | 60.8% | 33.6% | 5.6% | 100.0% |

| Chi-Square Tests | | | |
|--------------------|--------------------|----|-----------------------|
| | Value | df | Asymp. Sig. (2-sided) |
| Pearson Chi-Square | 7.578 ^a | 4 | .108 |
| Likelihood Ratio | 9.623 | 4 | .047 |
| N of Valid Cases | 408 | | |

Summary:

- A chi-square test was conducted to examine the association between occupation and monitoring the nutritional value of fast food meals.
- The results ($p = .108$) indicate no statistically significant relationship. This suggests that occupation does not significantly influence whether individuals monitor the nutritional content of their fast food meals.

Relationship Between Gender and Monitoring of Fast Food Nutritional Value

| | | | gender | | Total |
|---|-----------|------------|--------|-------|--------|
| | | | Female | Male | |
| Do you monitor your nutritional value/calorie of fast food meals? | Always | Count | 11 | 25 | 36 |
| | | % of Total | 2.7% | 6.1% | 8.8% |
| | Never | Count | 94 | 108 | 202 |
| | | % of Total | 23.0% | 26.5% | 49.5% |
| | Sometimes | Count | 73 | 97 | 170 |
| | | % of Total | 17.9% | 23.8% | 41.7% |
| Total | | Count | 178 | 230 | 408 |
| | | % of Total | 43.6% | 56.4% | 100.0% |

| Chi-Square Tests | | | |
|--------------------|--------------------|----|-----------------------|
| | Value | df | Asymp. Sig. (2-sided) |
| Pearson Chi-Square | 3.228 ^a | 2 | .199 |
| Likelihood Ratio | 3.316 | 2 | .191 |
| N of Valid Cases | 408 | | |

Summary:

- A chi-square test was conducted to determine if there is a significant relationship between gender and monitoring the nutritional value of fast food meals.
- The results ($p = .199$) indicate no statistically significant association. This suggests that gender does not significantly influence whether individuals monitor the nutritional content of their fast food meals.

Relationship Between Household Income and Monitoring of Fast Food Nutritional Value

| | | | Crosstab | | |
|---|--------------------|------------|----------------------------------|--------------|--------------|
| | | | household income range (monthly) | | |
| | | | 15,000-80,000 | Above 80,000 | Below 15,000 |
| Do you monitor your nutritional value/calorie of fast food meals? | Always | Count | 17 | 7 | 12 |
| | | % of Total | 4.2% | 1.7% | 2.9% |
| | Never | Count | 111 | 24 | 67 |
| | | % of Total | 27.2% | 5.9% | 16.4% |
| | Sometimes | Count | 97 | 21 | 52 |
| | | % of Total | 23.8% | 5.1% | 12.7% |
| | Total | Count | 225 | 52 | 131 |
| | | % of Total | 55.1% | 12.7% | 32.1% |
| | | | Crosstab | | |
| | | | Total | | |
| Do you monitor your nutritional value/calorie of fast food meals? | Always | Count | 36 | | |
| | | % of Total | 8.8% | | |
| | Never | Count | 202 | | |
| | | % of Total | 49.5% | | |
| | Sometimes | Count | 170 | | |
| | | % of Total | 41.7% | | |
| Total | | Count | 408 | | |
| | | % of Total | 100.0% | | |
| Chi-Square Tests | | | | | |
| | Value | df | Asymp. Sig. (2-sided) | | |
| Pearson Chi-Square | 2.140 ^a | 4 | .710 | | |
| Likelihood Ratio | 1.987 | 4 | .738 | | |
| N of Valid Cases | 408 | | | | |

Summary:

- A chi-square test was conducted to examine the relationship between household income and monitoring the nutritional value of fast food meals.
- The results ($p = .710$) indicate no statistically significant association. This suggests that household income does not significantly influence whether individuals monitor the nutritional content of their fast food meals.

Relationship Between District and Monitoring of Fast Food Nutritional Value

| | | | district | | Total |
|---|-----------|------------|----------|------------|--------|
| | | | Calicut | Malappuram | |
| Do you monitor your nutritional value/calorie of fast food meals? | Always | Count | 21 | 15 | 36 |
| | | % of Total | 5.1% | 3.7% | 8.8% |
| | Never | Count | 89 | 113 | 202 |
| | | % of Total | 21.8% | 27.7% | 49.5% |
| | Sometimes | Count | 94 | 76 | 170 |
| | | % of Total | 23.0% | 18.6% | 41.7% |
| | Total | Count | 204 | 204 | 408 |
| | | % of Total | 50.0% | 50.0% | 100.0% |
| | | | | | |

| Chi-Square Tests | | | |
|--------------------|--------------------|----|-----------------------|
| | Value | df | Asymp. Sig. (2-sided) |
| Pearson Chi-Square | 5.757 ^a | 2 | .056 |
| Likelihood Ratio | 5.772 | 2 | .056 |
| N of Valid Cases | 408 | | |

Summary:

- A chi-square test was conducted to examine the association between district (Calicut vs. Malappuram) and monitoring the nutritional value of fast food meals.
- The results ($p = .056$) suggest a marginally non-significant association. This indicates that while there might be some differences in monitoring habits between the two districts, the relationship does not reach statistical significance at the conventional 0.05 level.

8.2 Foodborne Illnesses & Health Impacts

A Chi-Square Test was conducted to examine the relationship between fast food consumption frequency and reported foodborne illnesses.

8.2.1 Fast Food Consumption and Foodborne Illness

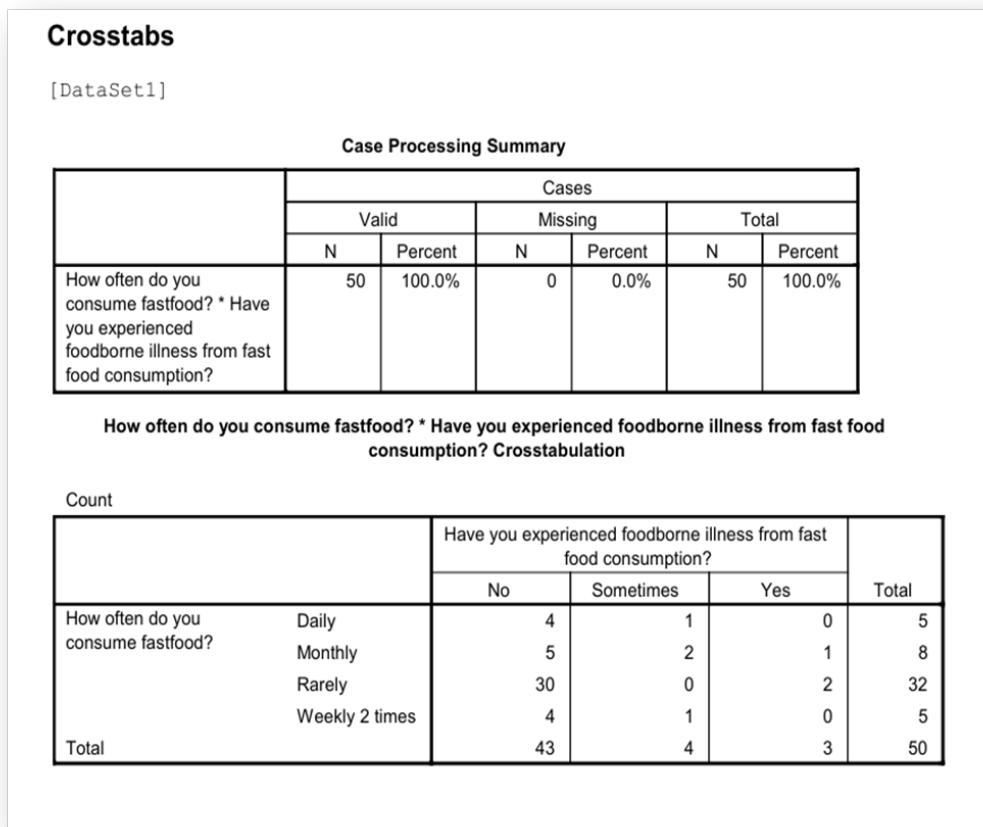


Figure 8.1: Cross-tabulation of Fast Food Consumption Frequency by Health Issue Experience

Crosstabulation Overview:

- * The table examines the relationship between fast food consumption frequency and whether individuals have experienced foodborne illness from fast food.
- * The majority (30 out of 50) of respondents rarely consume fast food, and most of them reported no foodborne illness.
- * A small number of respondents reported experiencing foodborne illness (either “Yes” or “Sometimes”), with the highest count (3 out of 50) found among those who consume fast food monthly or rarely.

| Chi-Square Tests | | | |
|--------------------|--------------------|----|--------------------------|
| | Value | df | Asymp. Sig. (2-sided) |
| Pearson Chi-Square | 9.196 ^a | 6 | .163 |
| Likelihood Ratio | 10.682 | 6 | .099 |
| N of Valid Cases | 50 | | |

Figure 8.2: Chi-Square Test Results for Association Between Fast Food Consumption and Health Issues

Chi-Square Test Results:

- * Pearson Chi-Square significance (p-value) = **0.163**
- * Since $p > 0.05$, the result is not statistically significant. There is no strong evidence of a relationship between fast food consumption frequency and reported foodborne illness.

Conclusion:

- * The analysis suggests that there is no statistically significant association between how often a person consumes fast food and whether they report experiencing foodborne illness.
- * While some individuals who eat fast food frequently report illness, the variation could be due to chance rather than a meaningful pattern.
- * A larger sample size or inclusion of additional variables (such as food safety awareness or specific fast food types) may help explore this relationship further.

8.3 Consumer Satisfaction With Fast Food Quality

Here Descriptive statistics is used to Compute mean, median, and mode of satisfaction ratings and Welch ANOVA to Compare satisfaction levels across different locality and income groups.

8.3.1 Descriptive statistics

Statistics

How satisfied are you with
the quality of fast food in
local outlets?(numeric)

| | | |
|----------------|---------|-------|
| N | Valid | 408 |
| | Missing | 0 |
| Mean | | 3.02 |
| Median | | 3.00 |
| Mode | | 4 |
| Std. Deviation | | 1.159 |

How satisfied are you with the quality of fast food in local outlets?
(numeric)

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------|-----------|---------|---------------|--------------------|
| Valid | 0 | 18 | 4.4 | 4.4 | 4.4 |
| | 1 | 26 | 6.4 | 6.4 | 10.8 |
| | 2 | 83 | 20.3 | 20.3 | 31.1 |
| | 3 | 83 | 20.3 | 20.3 | 51.5 |
| | 4 | 198 | 48.5 | 48.5 | 100.0 |
| | Total | 408 | 100.0 | 100.0 | |

0=“very satisfied” 1=“very unsatisfied” 2=“unsatisfied”

3=“satisfied” 4=“neutral”

Key Findings:

- This interpretation, the results indicate that nearly half of respondents (48.5%) expressed a neutral opinion about fast food quality.
- Equal numbers of respondents (20.3% each) reported being

either satisfied or unsatisfied. Only a small percentage were at the extremes, with 4.4% being very satisfied and 6.4% being very unsatisfied.

- This suggests most people have either neutral or mixed feelings about fast food quality, with the largest group not feeling strongly either way.

8.3.2 WELCH ANOVA

Compare satisfaction levels across different income groups

ANOVA

How satisfied are you with the quality of fast food in local outlets?(numeric)

| | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|-----|-------------|-------|------|
| Between Groups | 15.783 | 2 | 7.892 | 6.019 | .003 |
| Within Groups | 531.018 | 405 | 1.311 | | |
| Total | 546.801 | 407 | | | |

Robust Tests of Equality of Means

How satisfied are you with the quality of fast food in local outlets?(numeric)

| | Statistic ^a | df1 | df2 | Sig. |
|-------|------------------------|-----|---------|------|
| Welch | 5.679 | 2 | 128.273 | .004 |

a. Asymptotically F distributed.

Key Findings:

- Statistical Significance
 - * The p-value (0.003) is less than the standard significance level of 0.05
 - * This indicates statistically significant differences in satisfaction with fast food quality across groups
- Robust Confirmation

The Welch test ($p\text{-value} = 0.004$) further confirms the finding of significant differences between groups

Conclusion:

There is a statistically significant difference in satisfaction with the quality of fast food across the groups. Different demographic or customer segments have notably different perceptions of fast food quality. These variations might be due to factors like age, preferences, expectations, or specific outlet characteristics.

Post Hoc Tests

Post Hoc Tests

Multiple Comparisons

Dependent Variable: How satisfied are you with the quality of fast food in local outlets?(numeric)

Games-Howell

| (I) income numeric | (J) income numeric | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|--------------------|--------------------|-----------------------|------------|------|-------------------------|-------------|
| | | | | | Lower Bound | Upper Bound |
| 1 | 2 | .321* | .131 | .040 | .01 | .63 |
| | 3 | .518* | .188 | .020 | .07 | .97 |
| 2 | 1 | -.321* | .131 | .040 | -.63 | -.01 |
| | 3 | .197 | .208 | .611 | -.30 | .69 |
| 3 | 1 | -.518* | .188 | .020 | -.97 | -.07 |
| | 2 | -.197 | .208 | .611 | -.69 | .30 |

*. The mean difference is significant at the 0.05 level.

Conclusion:

The Games-Howell post-hoc test reveals significant differences in fast food satisfaction between income groups. Specifically:

- Income Group 1 reports significantly higher satisfaction than both Group 2 ($p=0.040$) and Group 3 ($p=0.020$).
- There is no significant difference in satisfaction between Income Groups 2 and 3 ($p=0.611$).
- These findings suggest that respondents in the middle income category are more satisfied with fast food quality in local outlets compared to respondents in higher income categories. This could potentially indicate different expec-

tations or standards for fast food quality across income levels, with higher income groups possibly being more critical of fast food quality.

8.3.3 ANOVA

Compare satisfaction levels across different Locality

Descriptives

How satisfied are you with the quality of fast food in local outlets?(numeric)

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|-------|-----|------|----------------|------------|----------------------------------|-------------|---------|---------|
| | | | | | Lower Bound | Upper Bound | | |
| 0 | 125 | 2.85 | 1.238 | .111 | 2.63 | 3.07 | 0 | 4 |
| 1 | 163 | 3.12 | 1.132 | .089 | 2.95 | 3.30 | 0 | 4 |
| 2 | 120 | 3.07 | 1.098 | .100 | 2.87 | 3.27 | 0 | 4 |
| Total | 408 | 3.02 | 1.159 | .057 | 2.91 | 3.13 | 0 | 4 |

Test of Homogeneity of Variances

How satisfied are you with the quality of fast food in local outlets?(numeric)

| Levene Statistic | df1 | df2 | Sig. |
|------------------|-----|-----|------|
| 2.343 | 2 | 405 | .097 |

ANOVA

How satisfied are you with the quality of fast food in local outlets?(numeric)

| | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|-----|-------------|-------|------|
| Between Groups | 5.677 | 2 | 2.838 | 2.124 | .121 |
| Within Groups | 541.125 | 405 | 1.336 | | |
| Total | 546.801 | 407 | | | |

0=“urban” 1=“rural” 2=“semi-urban”

From the ANOVA results:

- $F(2, 405) = 2.124$, $p = 0.121$
- Since the p-value (0.121) is greater than the conventional significance level of 0.05, we fail to reject the null hypothesis.
- This means there is no statistically significant difference in fast food satisfaction ratings among the three groups. While there appear to be small differences in the mean satisfaction scores (with Group 1 having the highest mean at 3.12), these differences are not statistically significant and could be due to random sampling variation

9. CHAPTER 6:

VISUALIZATIONS

9.1 Choose healthier food options over fast food

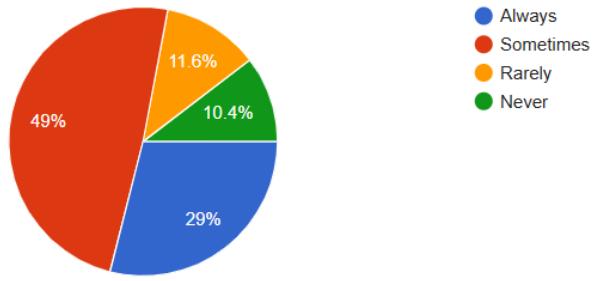
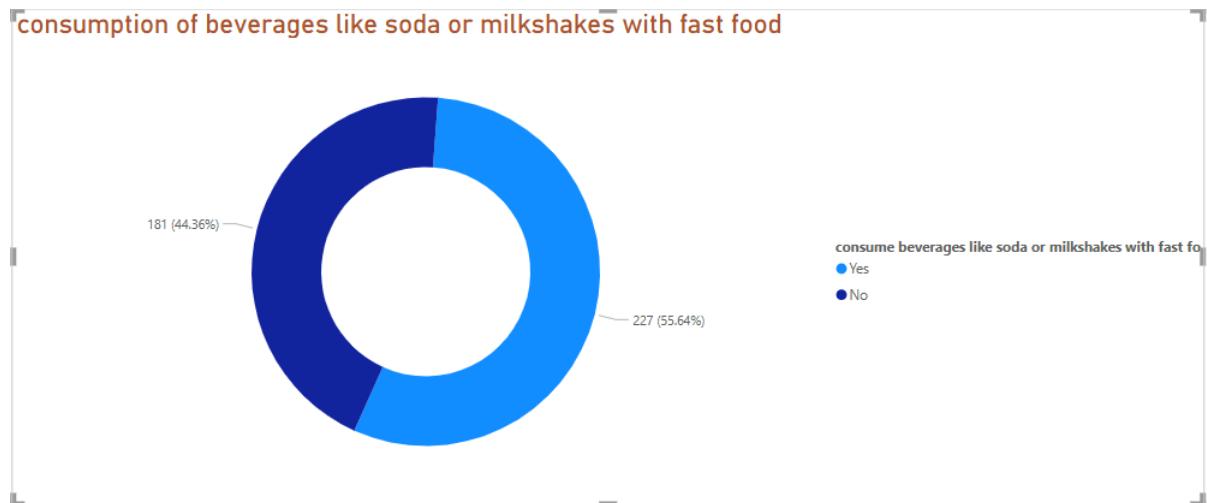


Figure 9.1: Healthy Food Choice Tendencies

Key Findings:

- 78% of respondents (Sometimes+Always) make healthy food choices to some degree.
- Only about 10.4% completely ignore healthier food options.
- There's a mixed approach to nutrition, with most people being occasional or consistent healthy eaters.

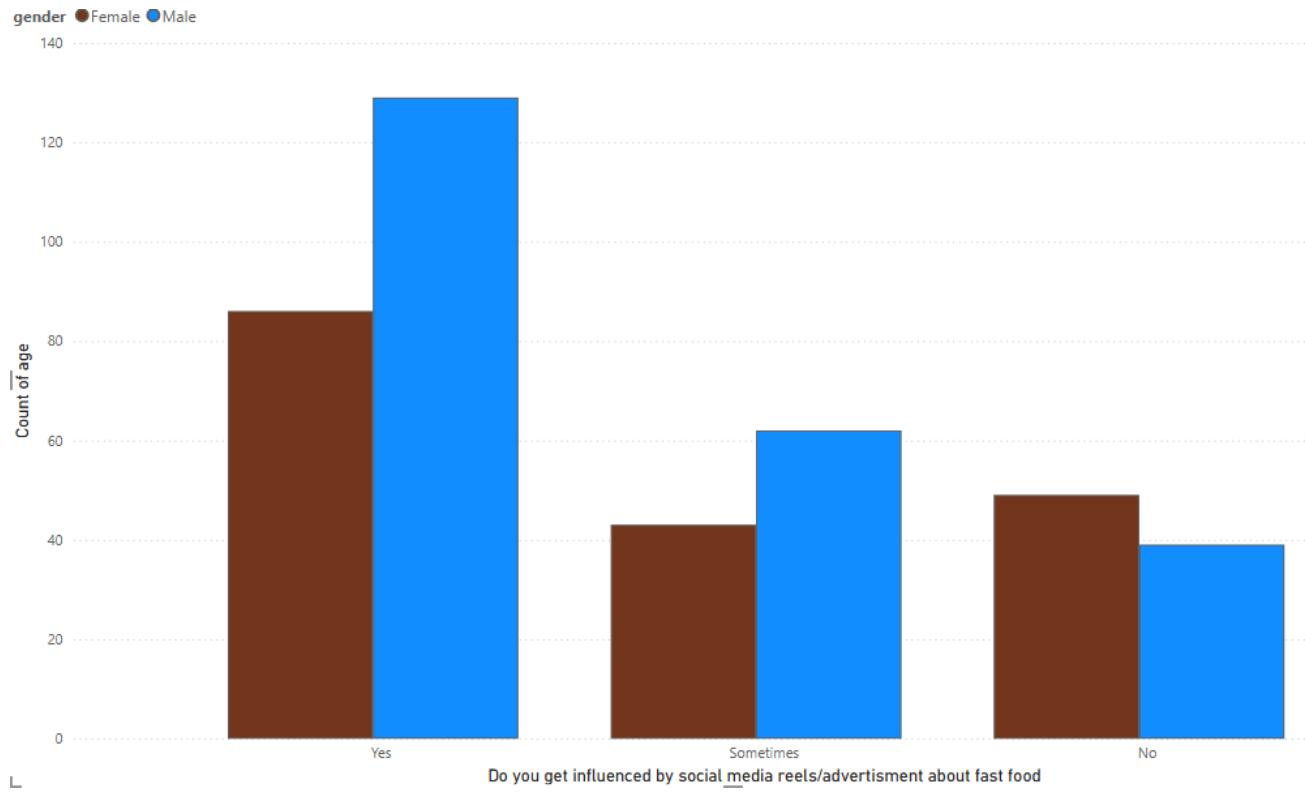
9.2 Consumption of beverages like soda or milkshake with fast food



Key Findings:

- There's a slight preference for consuming sugary beverages with fast food
- The split is relatively close, with just an 11.28% difference between those who do and do not drink soda or milkshakes
- Suggests a fairly balanced attitude towards beverage choices when eating fast food

9.3 Social media influence on fast food consumption

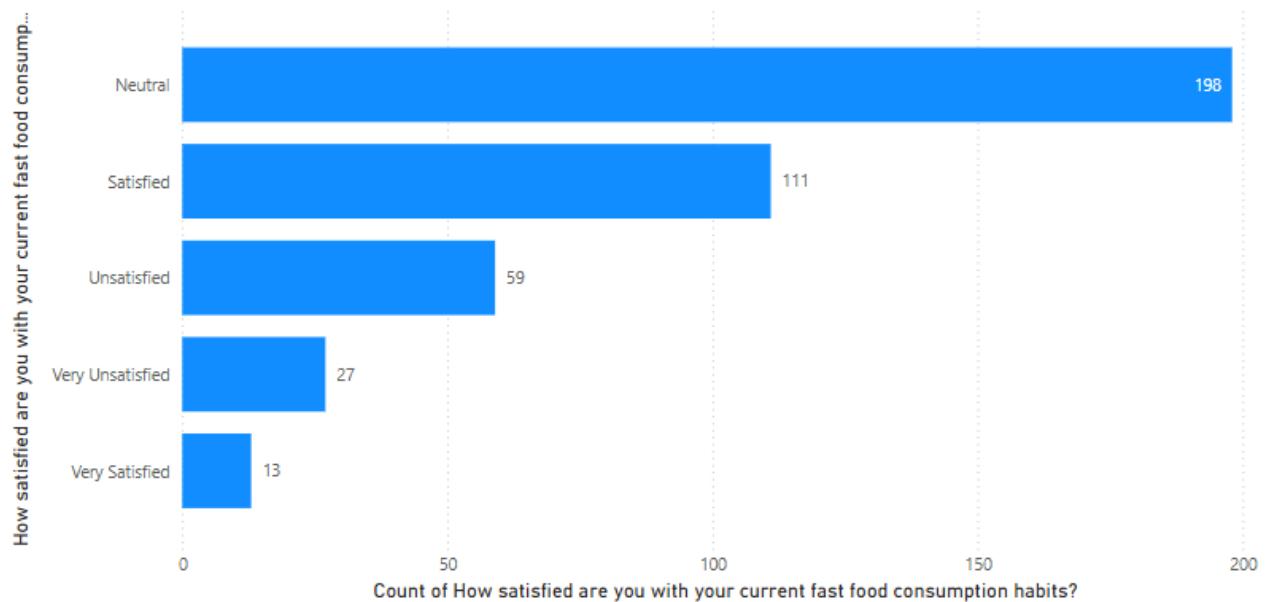


Key Findings:

The majority of respondents, especially males, are influenced by social media advertisements regarding fast food. Fewer people remain unaffected, with females showing a slightly higher resistance compared to males.

9.4 Satisfaction with Fast Food habits:

satisfaction with fast food habits



Key Findings:

- Most respondents (198) are neutral about their fast food consumption
- More people are satisfied (111) than unsatisfied (59)
- Only a small number have extreme views (13 very satisfied, 27 very unsatisfied)

10. Conclusions

1. Fast food consumption varies across demographic variables, with middle-income individuals consuming it more frequently, rural areas experiencing more health-related issues, and males showing a slightly higher but statistically insignificant tendency to consume fast food compared to females.
2. Taste is the primary motivator for fast food consumption across all demographics, with males and students being more influenced by habit, younger adults (21-30) prioritizing taste and social media influence, higher-income individuals focusing less on cost, and urban consumers being less driven by cost and habit.
3. Middle Eastern and Indian fast foods, particularly Al-faham, Mandi, and Shawarma, are the most preferred choices across demographics, while traditional Western fast foods like burgers and pizza rank significantly lower in preference.
4. Dinner is the most preferred time for fast food consumption, followed by the evening, while breakfast has minimal

demand, with young adults (21-30) showing the highest preference for evening and dinner fast food.

5. People generally spend a moderate to high amount on fast food, with most meal expenses falling between 100-500 and weekly spending following a similar pattern. Spending varies significantly by income level but not by locality. Additionally, age, income, occupation, and fast food consumption habits strongly influence spending, while gender and physical activity have minimal impact.
6. While fast food consumption does not immediately impact weight or cholesterol for most people, it can contribute to weight changes, digestive issues, and foodborne illnesses, with long-term risks for blood pressure, though individual reactions vary based on metabolism, lifestyle, and frequency of consumption
7. Satisfaction levels with fast food consumption vary significantly across different age and occupational groups.
8. Higher fast food consumption frequency is statistically associated with higher BMI, though all groups remain within the normal weight range, with the highest consumption group nearing the upper boundary.
9. Social media significantly influences the frequency of fast food consumption, with higher exposure leading to more frequent intake, but it does not have a strong or direct impact on expenditure.

10. Nutritional awareness is generally low, with 91.18% of individuals not consistently tracking their nutritional intake. Younger individuals and those who consume fast food less frequently are more likely to monitor its nutritional value. However, factors such as locality, occupation, gender, household income, and district do not show significant influence on nutritional monitoring habits.
11. There is no statistically significant association between fast food consumption frequency and reported foodborne illnesses, though some individuals who frequently consume fast food do report illness, which may be influenced by other factors.
12. Consumer satisfaction with fast food quality varies across income groups, with middle-income consumers showing higher satisfaction, while there is no statistically significant difference in satisfaction based on locality.

10.1 OLD AGE OUTCOMES

1. Fast food consumption patterns, including weekly spending and meal timing, do not significantly differ based on gender, age, occupation, or location, indicating relatively uniform eating habits across these demographics.
2. Fast food consumption is primarily driven by taste, brand perception, and habit across age groups, with older individuals valuing habit and brand, while younger consumers are more influenced by social media and special offers.
3. There is no significant relationship between fast food consumption frequency and health awareness, self-rated health status, or reported health issues.
4. There is no significant difference in fast food perceptions between genders. A significant negative correlation exists between hygiene perceptions and quality ratings, meaning those who perceive better hygiene tend to rate food quality lower.

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