Quantitative Analysis – Restaurant Food Consumption

Terry Dopson

LaFetra College of Education, University of La Verne

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Dr. Valerie Beltran

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Introduction

When a person hears the term “Fast Food”, traditionally the first things that come to mind are drive throughs or convenience stores. In 2021, a person can get a full dinner from a family-owned restaurant delivered to their door. Delivery services such as DoorDash and UberEats have transformed the landscape of fast food (Ovide, 2021). Fast food is no longer limited to the drive through. This phenomenon was compounded by the effects of the COVID-19 pandemic; traditional sit-down restaurants had to adapt by offering their food for pick up to stay open during the quarantine. In 2009, Dave et al. projected that 53% of food spending would be spent on foods away from home by 2010. These statistics and current events show that purchasing food from a restaurant has shifted from an occasional indulgence to a routine meal option for families and individuals in the United States.

Literature Review

Research studies have been conducted to analyze patterns in fast food consumption. Oexle et al. (2015) investigated the relationship between neighborhood fast food availability and fast-food consumption. The study was conducted in central South Carolina using a telephone survey. A random sample of 2,477 phone numbers were generated with 968 participants responding to the telephone survey. Out of 968 respondents, 337 did not meet the criteria which included being at least 18 years old, being the primary food shopper for the household, and being able to speak English. Participants were asked to think of their neighborhood as an area within a 20-minute walk or one mile from their home. The researchers found that the study sample was predominantly female, and the average age was 57.6 years old. Two thirds of the respondents reported no weekly fast-food consumption. The researchers concluded that neighborhood fast food availability may not directly influence fast food consumption.

A different study by Richardson et al. (2011) also examined fast food consumption in relationship to neighborhoods but the researchers used a larger sample that focused on 13,150 young adults that were 18 to 28 years old. Respondents were identified by their participation in Wave III of the National Longitudinal Study of Adolescent Health. Respondents were asked, "On how many of the past seven days did you eat food from a fast-food place *[sic]* McDonalds, Kentucky Fried Chicken, Pizza Hut, Taco Bell, or a local fast-food restaurant?" (Richardson et al., 2011, p. 2). The researchers found a similar pattern to Oexle et al. (2015) because neighborhood fast food availability was not related to fast food consumption. The authors discussed that young adults' fast-food consumption may be influenced by other settings such as school or work locations.

If two studies show that fast food in proximity to a person's neighborhood is not a primary motivator for fast food consumption, then what other factors could influence fast food trends? Dave et al. (2009) explored the relationship between adults' attitudes towards fast food and adults' frequency of fast-food consumption. This study used a random sample of 1,033 residents in Minnesota. The participants responded to a 10-minute telephone survey. The survey included demographic information, frequency of fast-food intake, and 13 attitude questions using a 5-point Likert scale. The data were analyzed using the SPSS software. The researchers found that participants that were higher in age reported less fast-food consumption. Male participants were more likely to eat at fast food restaurants than female participants. Finally, the researchers' found a strong correlation between the perceived convenience of fast food and dislike towards cooking.

Jeffrey et al. (2006) used the same data set of 1,033 residents in Minnesota, but their research question examined whether living or working near a fast-food restaurant is associated

with body weight. Similar to Dave et al. (2009), a telephone survey was administered to the 1,033 recipients to record body height, body weight, frequency of eating at fast food restaurants, work addresses, and home addresses. Along with the survey, Global Index System (GIS) software was used to assess fast food locations in proximity to the provided addresses. The researchers duplicated the same finding from Oexle et al. (2015) and Richardson et al. (2011). Jeffrey et al. (2006) found that proximity of fast-food locations did not influence fast food consumption. However, the researchers did conclude that working outside the home and having children were associated with higher frequencies of fast-food consumption.

A study that was produced by Longacre et al. (2012) specifically focused on families with parents and adolescents. A telephone survey was administered to 1547 adolescent-parent dyads in New Hampshire and Vermont. The respondents self-reported their fast-food intake for the last week. Simultaneously, the researchers audited the presence of fast-food restaurants in the neighborhoods of the respondents. The researchers discovered that 52.1% of adolescents and 34.7% of parents consumed fast food at least once per week. If the family lived in a town with five or more fast food restaurants, they were 30% more likely to eat fast food compared to towns with no fast-food restaurants. The researchers also factored in motor vehicle access, and they found that families with low motor vehicle access were 69% more likely to consume fast food if they lived in a town with five or more fast food locations. This study supports that having children in the household increases fast food consumption as concluded by Jeffrey et al. (2006).

Synthesis of the Literature

The literature review provides an overview of some of the populations who are more likely to consume fast food such as families with children, working adults, and people who dislike cooking (Dave et al., 2009; Jeffrey et al., 2006; Longacre et al., 2012). The literature also

shows that older adults are less likely to consume fast food compared to young adults and middle-aged adults (Dave et al., 2009). The theme that emerged the most was that fast food in proximity to a person's neighborhood does not correlate to increased fast food consumption (Jeffrey et al., 2006; Oexle et al., 2015; Richardson et al., 2011). Even though fast-food consumption is on the rise in the United States, the location of fast food to a person's home may not be one of the primary factors for the increase in fast food intake.

Methods

The purpose of this study was to analyze the relationship between restaurant food consumption and attitudes towards convenience when preparing meals. This study was conducted using an online survey with three questions. The first question asked for the participant's age. The second question asked, "How many times in the last 7 days did you consume food or drink from a restaurant? This includes fast food and sit-down restaurants." The rationale for including fast food restaurants and sit-down restaurants was supported by a statement from Jeffrey et al. (2006): "At present, there is no agreed upon definition of "fast food" for research purposes, and other investigators interested in this question have often used all restaurants in analyses rather than "fast food" due to this uncertainty [26]" (p. 2). Considering the context of COVID-19, it made sense to use both fast food and sit-down restaurants since most food establishments were allowing customers to pick up their food or have it delivered to their home. The third question asked, "How much do you agree or disagree with the following statement? Convenience is important to me when I am preparing meals." The participant was able to select from five options which included *strongly disagree* (1), *disagree* (2), *neither agree or disagree* (3), *agree* (4), and *strongly agree* (5).

The survey was constructed using a website called Qualtrics. The survey link was shared on a Facebook account with 742 contacts and the survey link was shared on an Instagram account with 724 contacts. 95 participants responded to the survey, with ages ranging between 18 and 65 years old. The survey results were transferred from Qualtrics to Microsoft Excel. The mean and standard deviation were calculated for each question. The Pearson Product Moment Correlation*(r)* was applied to examine the relationships between age, rate of restaurant food consumption, and attitudes towards food convenience. Finally, a t-test was performed to examine trends between the younger and older respondents. The mean age was 31 years old so all participants between 18 and 31 years old were categorized in the younger group and participants between 32 and 65 were categorized in the older group.

Data Results and Analysis

Data Table

Table 1

Statistical analysis of the survey responses

	Variable 1	Variable 2	Variable 3
Statistic	Age	Number of times restaurant food was consumed in the last 7 days	Importance of convenience when preparing meals
Mean	31.25	4.06	4.24
Standard Deviation	10.28	2.66	0.84
Correlation (V1 and V2)	0.092448		

Correlation (V2 and V3)	-0.19508	
Correlation (V1 and V3)		-0.19644
t-test	p = 0.3551545	p = 0.6471274

Mean and Standard Deviation

The mean age of the 95 respondents was 31.25 which can be rounded to 31 years of age. The standard deviation was 10.28 which can be rounded to 10. This means that 81% of participants fell within 1 standard deviation which would be 21 to 41 years of age. The younger participants were within 2 standard deviations since the lowest age of the respondents was 18 years old, or within 13 years of the mean age of 31. However, the older participants were within 4 standard deviations since the oldest participant was 65 years old, which would be 34 years older than the mean age of 31. The age of the respondents skews towards the lower age because 62 out of 95 respondents fell in the younger age group of 18 through 31.

For the number of times that restaurant meals were consumed within the last 7 days, the mean was 4.06 which can be rounded to an average of four meals per participant. Sixty-three respondents reported eating zero to four meals from a restaurant in the last 7 days. Six respondents reported eating 10 to 14 meals from a restaurant in the last 7 days. The standard deviation was 2.66 which can be rounded to 3. Eighty five percent of respondents were within 1 standard deviation. Fifteen percent of respondents were within 2 to 4 standard deviations. These statistics show that two thirds of respondents ate most of their meals at home in the past seven days.

The third question which contained the statement, “Convenience is important to me when preparing meals,” was measured using a Likert scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*. The mean of the responses was 4.24 which can be rounded to 4. This means that the average number of participants agree that convenience is important when preparing meals. Eighty four percent of respondents selected *agree* or *strongly agree.* The remaining 16% of respondents selected *neither agree or disagree, disagree,* or *strongly disagree.* The standard deviation for this variable was 0.84 which can be rounded to 1.

Correlations

The Pearson Product Moment Correlation *(r)* was applied to each variable using the Pearson formula in Microsoft Excel. The formula was first applied to measure the relationship between age and number of restaurant meals consumed in the last 7 days. The result was r= 0.092 which can be rounded to r= 0.1. This number indicated that there was no correlation between age and number of restaurant meals consumed.

The second relationship that was examined was the number of restaurant meals consumed in the last 7 days and the importance of convenience when preparing meals. The result was r= -0.195 which can be rounded to r= -0.2. Again, this number showed there was no correlation between number of restaurant meals consumed and the importance of convenience when preparing meals.

Finally, age and importance of convenience when preparing meals was measured. The result was r= -0.196 which can be rounded to r= -0.2. Similar to the other two relationships, there was no correlation between age and the importance of convenience when preparing meals.

T-test

The t-test function in Excel was applied to the data to analyze if there were any statistically significant differences between the younger respondents and the older respondents. The young respondents ranged between 18 to 31 years of age and the older respondents ranged between 32 and 65 years of age.

The second variable, which measured the number of restaurant meals consumed in the last 7 days, showed a p-value of 0.3551545. This means that there was less than 36% chance of error, which exceeds the acceptable p-value of 0.05. There was no statistically significant difference between the younger population and the older population for the number of restaurant meals consumed in the last 7 days.

The third variable, which measured the importance of convenience when preparing meals, generated a higher p-value of 0.6471274. This means there was less than 65% chance of error, which is too high. Much like the second variable, there was no statistically significant difference between the younger population and the older population and their attitudes towards convenience when preparing meals.

Conclusion

Even though 84% of the respondents responded that they agree or strongly agree that convenience is important to them when preparing meals, the results of the survey show that there is no correlation between age and number of restaurant meals consumed. There was also no correlation for the number of restaurant meals consumed and the importance of convenience. The literature showed that there was no correlation between proximity of fast food and fast-food consumption. This survey did not focus on proximity and instead of focused on the general attitudes toward convenience in relationship with restaurant food consumption. However, this

study also showed no correlations which echoes the findings in the literature review. Future research should look at the correlation between restaurant food consumption and attitudes towards cooking. Another idea for future research would be to look at the correlation between restaurant food consumption and entertainment or pleasure. Perhaps restaurant food consumption has increased because people do not like to cook or because people enjoy the social and entertainment aspects of eating food outside of the home.

Limitations and Validity Threats

There are several limitations and validity threats that need to be disclosed. The respondents were selected using the researcher's contact lists from their social media accounts. This means that the sample was obtained through convenience. This threatens the validity of the study because the survey results may not be representative of the larger population. A systematic random sample or a stratified random sample in a specific area would have increased the validity of the study.

History could have also threatened the study. The survey asked participants to provide the number of times they consumed food or drink from a restaurant in the last 7 days. It is possible that the respondents may have been outside of their normal routines for the week. For example, a respondent could have been sick at home and only consuming food from home. Another respondent could have been on vacation and therefore eating out for all their meals.

This leads into instrumentation threats. The self- reported results may not match the respondents' normal eating habits. If the question was worded to ask, "How many times each week do you consume food or drink from a restaurant?" then respondents may have answered differently. Even though the decision to include both fast food and sit-down restaurant food was supported by information from the literature review and the current context of COVID-19, this

may have skewed the results. In practice, it would have been easier to analyze fast food consumption by itself or sit-down restaurant food consumption by itself. The decision to include both categories may have significantly limited the study. Finally, the survey was not piloted or field tested.

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