College Students' Eating Habits

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Project Objectives

This paper examines the frequency with which students studying at Arizona State University (ASU) tend to purchase ready-to-eat food on a weekly basis around the time of finals and submissions for final reports. The objective of this study was to determine if there is evidence to support the claim that the mean frequency of food purchases made by college students on a weekly basis exceeds 2.

Data

Collection Method

This method utilized the general nature of social media. The means of collecting the data for this study was through distributing a single questionnaire formatted as a Google Form. The questionnaire asked the participants, on a personal average, how often they went to dine out at a restaurant or purchased ready-to-eat meals given a span of a week. In addition to that, respondents were required to provide information on their age, current year of study at ASU, and whether or not they were studying in-state or out-of-state. The additional information was used to examine further the number of purchases made by students within a given age range. The Google form was distributed on various social media platforms–Discord, Instagram, and Snapchat–only involving the demographic of college students enrolled at ASU during the fall term of 2022. The respondents of the study were set to be anonymous.

Results

Chart 1 illustrates the spread of data in terms of, as an entire population, the frequency of meals bought in a week. The tables below further demonstrate the demographic studied in this experiment. Table 1 below illustrates the relationship between age and frequency of purchases made by the population (n=97) examined. The ages reported ranged from 18 to 25 but were split

into intervals for further analysis. Participants with ages that fall within the 16-18 category are more likely to purchase food 4-7 times a week compared to those who are ages 19 and up, while those above the age of 18 are less likely to eat out/purchase ready-to-eat meals more than 3 times in a week. Table 2 further reports the demographic profile of the participants in terms of age. Out of the 97 respondents, 7 (7.22%) were between the ages of 16-18, 84 (86.59%) were between the ages of 19-21, and 6 (6.19%) were above the age of 22. The mean age was 19.9 years (SD=1.22).

Table 1. The Relationship Between Age and Frequency of Purchases Made.

Age	Meal Purchases		
	0-3 times a week (%)	4-7 times a week (%)	8+ times a week (%)
16-18	2 (33.33)	4 (66.66)	0 (0.00)
19-21	54 (64.59)	21 (25.00)	9 (10.71)
22+	6 (85.71)	1 (14.29)	0 (0.00)
Overall of Entire Population	(63.92)	(34.02)	(2.06)

Table 2. The Proportions of Respondents' Ages.

Age	Proportion of Population (%)
16-18	7 (7.22)
19-21	84 (86.59)
22+	6 (6.19)

Chart 1. Distribution of Data

Frequency of Meal Purchases Made In One Week

Number of Times a Meal is Bought in a Week
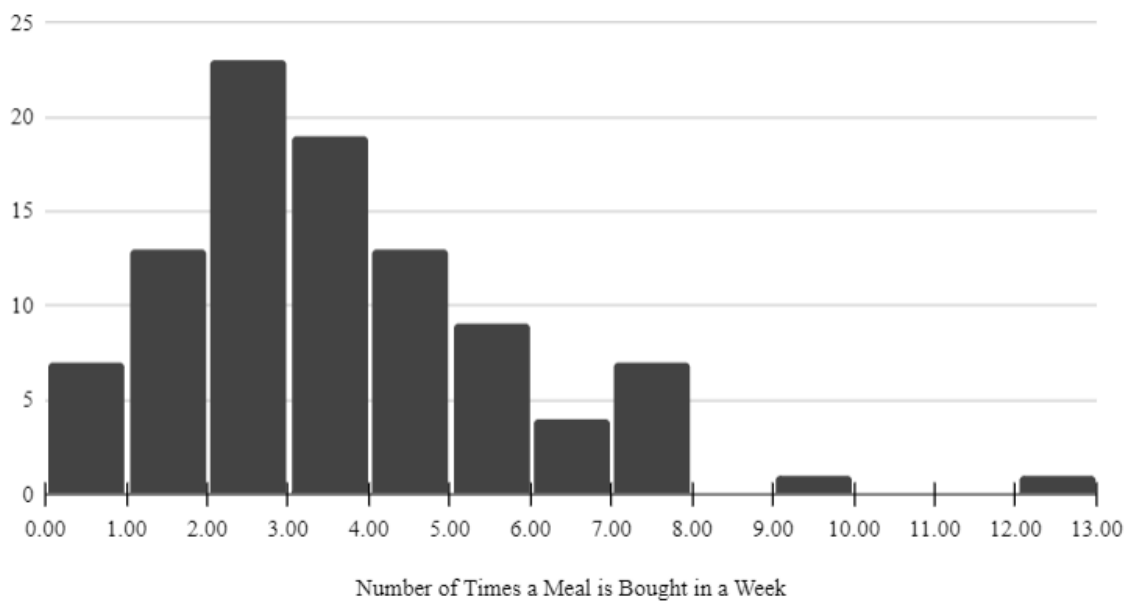
Data Analysis

A one-sided hypothesis test on the mean is utilized to determine whether or not the mean number of times college students purchase their meals in a given week exceeds 2.

Variables. The parameter of interest for this one-sided hypothesis test is mu, μ. The population is n = 97, and the mean tested is, μ_0 = 2. The significance level chosen is α = 0.05. The test statistic used for the test is t_0. The null hypothesis is $H_0 : \mu = 2$, while the alternative hypothesis is $H_1 : \mu > 2$.

Rejection Criteria. In order to determine whether or not we reject the null hypothesis, one or more out of three circumstances need to be met.

1. x-bar > $\mu_0 + [t_{(\alpha,\, n-1)}][\frac{s}{\sqrt{n}}]$

2. $t_0 > t_{(\alpha,\, n-1)}$

3. p-value < α

Computations. In order to properly determine whether it the null hypothesis is to be rejected, the values for each variable need to be computed. For the first test, the sample mean (x-bar) of the data is 3.16. As previously stated, the tested μ_0 is 2, the standard deviation is s = 2.16, and the invT computed using the data comes out to be $t_{(\alpha,\, n-1)}$ = 1.66. Using these values, it is concluded to reject the null hypothesis using the first test as it comes out to be 3.16 > 2.36 . In order to find and compute the second test, the test statistic needs to be computed. Using T-test, it is found that t_0 = 5.30. The null hypothesis is also rejected using this test as the values comes out to be 5.30 > 1.66. Lastly, in order to find the p-value for the last test, tcdf is utilized for a final value of 3.64×10^{-7}. Testing this value against the level of significance (α = 0.05), once again, leads to the reflection of the null hypothesis.

Conclusion

All 3 of the hypothesis tests concluded to reject the null hypothesis. In order words, there is strong evidence to conclude that the mean number of times ASU college students purchase food per week is more than 2.

References

A link to the survey is to be referenced using the link below:

https://forms.gle/EaGtzQK5Vo2AFwka6

For ease of viewing, an overall collection of the data can be found here:

https://docs.google.com/spreadsheets/d/1FtW1wM6Q-84AsyHtnlciL42_O5EKoEEUqJR

9IZfXwPY/edit?usp=sharing