

# Can College Dining Halls Meet Students' Nutritional Needs Compared to Student Housing Cooking?

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## INTRODUCTION

Fruits and vegetables are necessary in daily diet due to their high concentration of dietary fibers, such as minerals, vitamins, electrolytes, and phytochemicals. Furthermore, a multitude of reviews have linked low intake of fruits and vegetables with a reduction in chronic disease. Chronic diseases include cardiovascular diseases, blood pressure, hypercholesterolemia, osteoporosis, cancers, pulmonary diseases, and respiratory problems. Additionally, consumption of these types of food has been linked to weight management. Evidence has demonstrated that higher energy food consumption, such as foods high in fat and sugars, led to obesity more often than low energy foods, such as fruits and vegetables. Fruits and non starchy vegetables are low in energy due to their high water content. Therefore, they can be eaten in higher quantities and positively influences satiety.

According to the World Health Organization, 1.7 million or 2.8% of deaths across the world are linked to low fruit and vegetable consumption. The World Health Organization recommends five servings of vegetables and fruits per day for those eighteen years and older. However, many adults fall below the recommended amount. Experimenters at the University of Dayton aimed to determine students were consuming fruits and vegetables in their daily diets. This experiment investigated the link between healthy eating and meal plan access with the students at the University of Dayton. The researchers hypothesized that students on the meal plan would consume less fruits and vegetables than those not on the meal plan in a two day period.

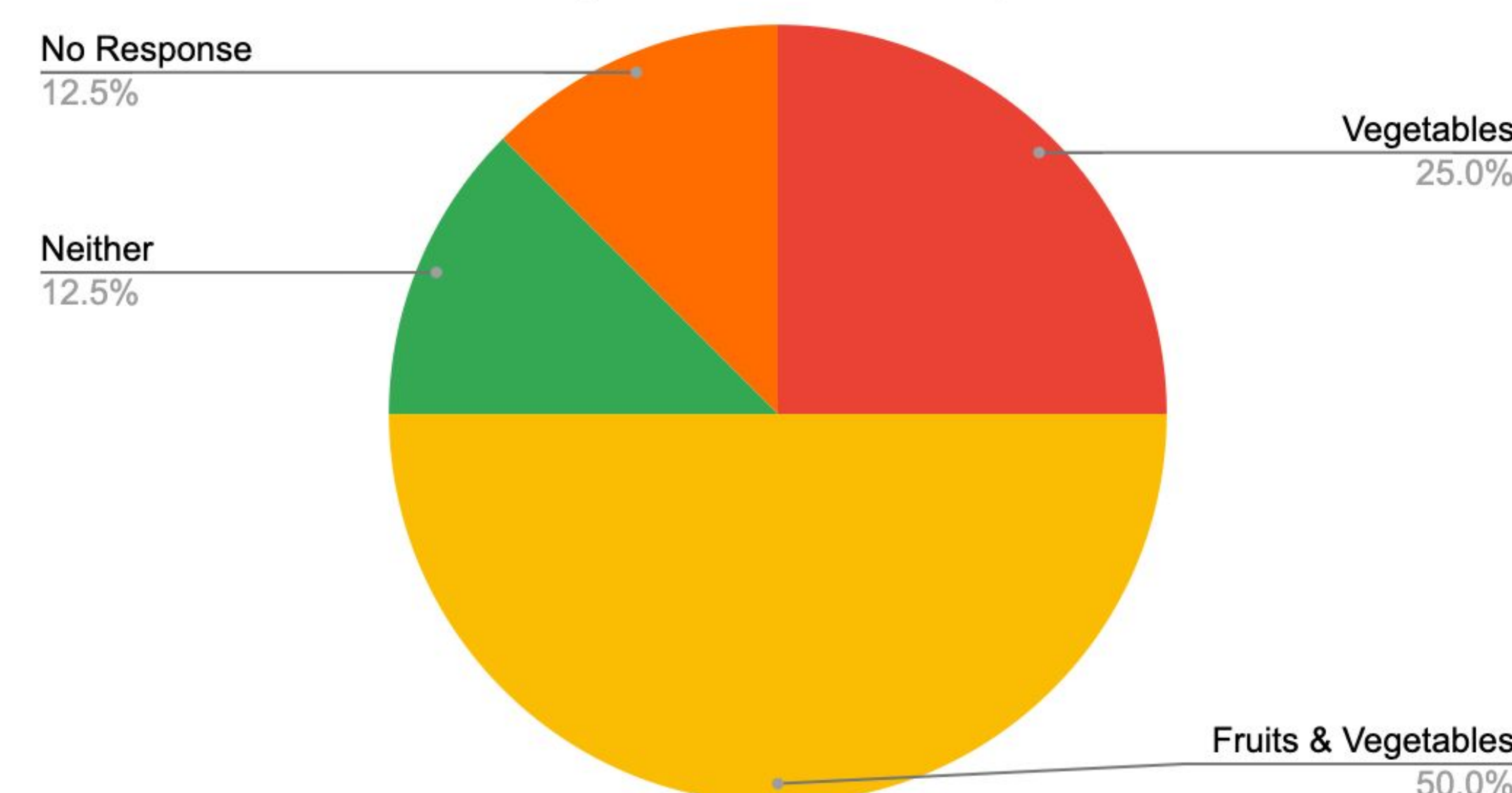
## METHODS

In order to study if University of Dayton Students were acquiring proper nutritional intake, a google form survey was shared via email or text message. Undergrad students were asked to specifically list food they ate in a two day period, along with age, height, weight, major, level of activity, if they were on a university meal plan, and how their food was obtained (home-cooked, dining, hall, eating out, etc). Participants in this study were undergrad students at the University of Dayton. Students involved lived in university-owned housing. This included dorms, apartments, and houses. Data collection was conducted starting March 26, 2023 and concluding on April 5, 2023. The study excluded students who have not lived on campus for at least one semester. Students' intake was analyzed to examine the effect of having a meal plan on their daily nutrition. The independent variable was if students were on a meal plan and the dependent variable consisted of the amount meals with fruits and/or vegetables consumed. The results analyzed the relationship between access to a meal plan and meeting nutritional requirements.

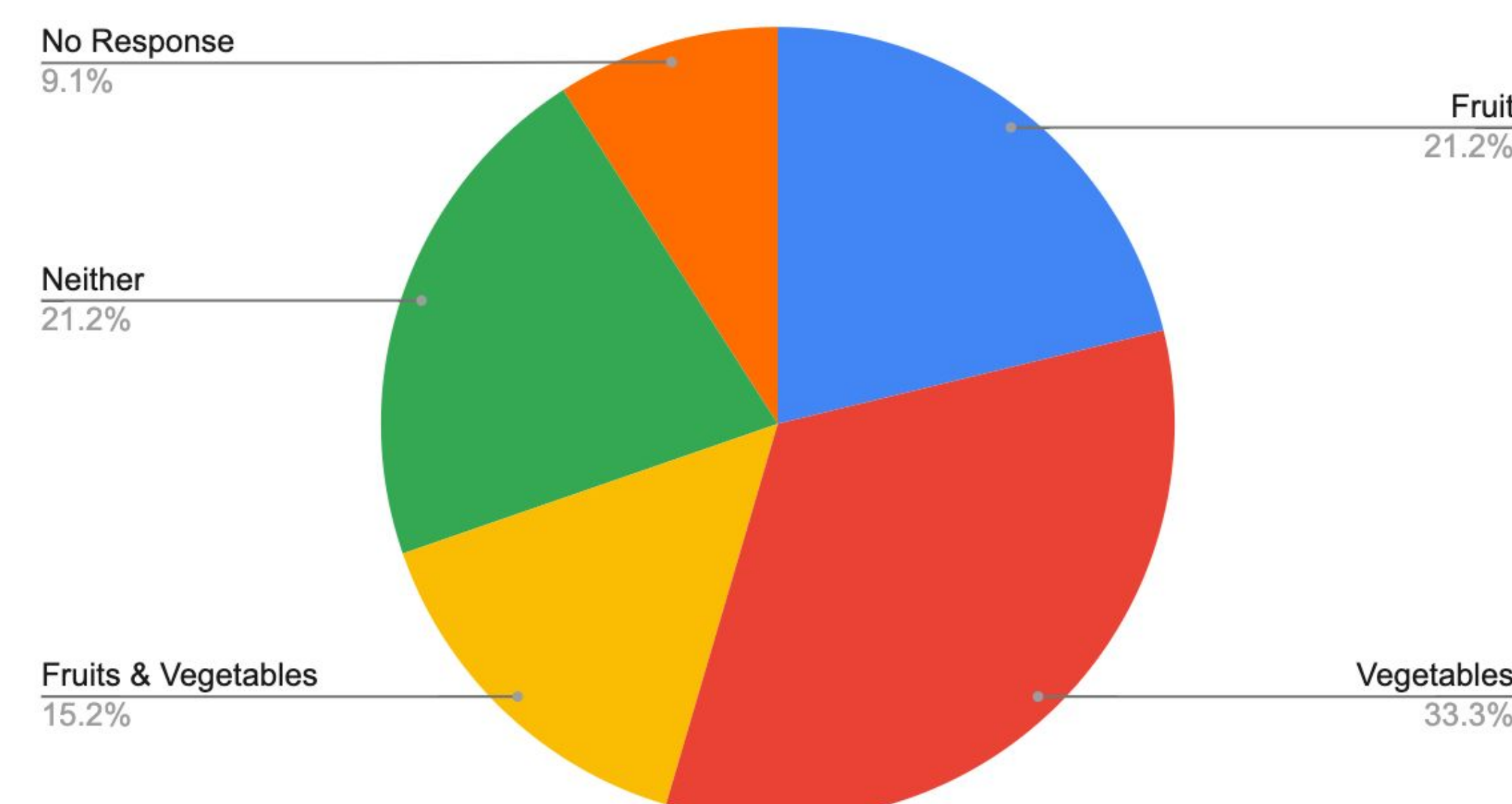
## RESULTS

In the survey sent out, each participant was asked to fill out their height and weight. From this BMI was calculated and utilized in several ways. Additionally, students were asked about meals that they ate over a course of two day. From this, the number of meals with fruits and/or vegetables were totaled and sorted depending on the students' meal plan status. Two different t-tests were performed in order to look at and compare different variables from the survey that was sent out. The first t-test looked at BMI differences between males and females that were involved in the survey. The *p*-value for this t-test was found to be 0.003, which is statistically significant. This means that BMI is related to the sex of the student that completed the survey. The second t-test that was performed looked at the number of fruits and/or vegetables that a student participant ate throughout the two days of meal tracking. The T-test resulted in a *p*-value of 0.003, which is statistically significant, proving that the number of fruits and/or vegetables in a student's diet relates to their meal plan status.

### Student Fruit and Vegetable Consumption on Meal Plan



### Student Fruit and Vegetable Consumption Without Meal Plan



**Table 3** Comparison of BMI and Number of Meals that Involved Fruits and Vegetables Based on Student Meal Plan Status

	Total	Meal Plan Status	
		Yes	No
Number of Participants	43	14	29
Mean BMI (kg/m <sup>2</sup> )	23.64 ± 3.27	22.99 ± 2.71	23.95 ± 3.51
Mean # of Meals with fruits and/or vegetables	2.07 ± 1.71	3.14 ± 2.25	1.55 ± 1.09

## CONCLUSIONS

Fruits and Vegetables are important to incorporate in your diet because they provide many vitamins and minerals. Typically, college students do not eat enough fruits and vegetables, so this study tried to determine if the meal plan provided by the University of Dayton affected whether students ingested fruits or vegetables. Based on our data, more students ate at least one serving of fruits or vegetables when they were on the meal plan. Of the students who were not on the meal plan, 21.2% failed to consume fruits or vegetables in the past two days but only 12.5% of the students on the meal plan failed to consume fruits or vegetables in the past two days. Vegetables were also consumed much more by students who were on the meal plan (75%) compared to students who were not on the meal plan (48.5%). Our data did not show a significant difference in the mean BMI between the students who were on the meal plan and the students who weren't. There were many flaws with this study so the results should not be taken into consideration when looking at the effect of the University's meal plan on students' nutritional status. The survey asked students what they had ate in the past two days in the hopes that students would respond by listing all the foods they have ate but many students had vague responses such as "breakfast" or "ballpark food," which made it impossible for us to determine exactly what they ate. Another problem with the survey was that it did not ask for the specific amount of each food consumed so it was difficult to determine if students met the recommended serving size for specific fruits and vegetables. Our data showed that a higher percentage of University of Dayton students failed to consume a serving of fruits or vegetables when they weren't on the meal plan. However, many improvements must be made to this study in order for the University of Dayton to take into consideration the results when looking at whether the University's meal plan affects the nutritional status of their students.

## REFERENCES

Pem, D., & Jeewon, R. (2015, October). *Fruit and vegetable intake: Benefits and progress of Nutrition Education interventions- narrative review article*. Iranian journal of public health. Retrieved April 12, 2023, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4644575/>

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