



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

## **Examining College Students' Daily Consumption of Fresh Fruits and Vegetables**

Patricia E. McLean-Meynsse<sup>ⓐ</sup>, Edith G. Harris<sup>ᵇ</sup>, Shervia S. Taylor<sup>ᶜ</sup>, and Janet V. Gager<sup>ᵈ</sup>

<sup>ᵃ</sup>*Professor, Agricultural Economics, College of Agricultural, Family and Consumer Sciences, Southern University, Baton Rouge, Louisiana 70813, USA. E-mail: patricia\_meynsse@subr.edu*

<sup>ᵇ</sup>*Professor, Human Nutrition and Food, College of Agricultural, Family and Consumer Sciences, Southern University, Baton Rouge, Louisiana 70813, USA. E-mail: edith\_harris@subr.edu*

<sup>ᶜ</sup>*Assistant Professor, Biological Sciences, College of Sciences, Southern University, Baton Rouge, Louisiana, 70813, USA. Email: shervia\_taylor@subr.edu*

<sup>ᵈ</sup>*Research Scientist, Human Nutrition and Food, Southern University Agricultural Research and Extension Center, Baton Rouge, Louisiana 70813, USA. E-mail: janet\_gager@suagcenter.com*

---

---

### **Abstract**

Results from a random sample of 305 college students suggest that consumption of fresh fruits and vegetables is independent of gender, academic ranks, and places of residence, but depends on perceptions of health status. Despite the statistically significant associations between perceptions of health and consumption of fruits and vegetables, 82 percent of the respondents who perceived their health status as poor or fair ate no fresh fruits or vegetables.

**Keywords:** consumption of fresh fruits and vegetables, health status, college students

---

<sup>ⓐ</sup>Corresponding author

## Introduction

Researchers have been suggesting for more than a decade that the United States is facing a serious healthcare crisis because of the sheer numbers of overweight and obese individuals, and the escalating costs for treating diet-related diseases. Agatston (2011) argues that unless we reverse our sedentary lifestyles and obesity epidemic, the U.S. healthcare system will go bankrupt. He also suggests that the current population of adults aged 30-45 may not live as long as their parents because of the incidences of diet-related diseases in this age group compared to the previous generations. The Robert Wood Johnson Foundation and Trust for America's Health September 2012 Report: *F as in Fat: How Obesity Threatens America's Future* (2012) also suggests that if the obesity trajectory continues, more than half of Americans will be obese by 2030, and the costs for treating new cases of diabetes, coronary heart disease, and stroke could exceed \$66 billion per year. Rising obesity rates may also become a national security issue because the military now reports that 25 percent of 17-to-24-year olds are too overweight for military service. Further, the Department of Defense spends about \$1 billion per year for weight-related health problems (Christeson et al. 2012).

Poor diets, obesity, and sedentary lifestyles have been associated with debilitating diseases such as heart disease, cancer, Type 2 diabetes, hypertension, and stroke, among others. Consumption of fresh fruits and vegetables is frequently recommended as a viable way to attain healthier diets and to reduce diseases. Fruits and vegetables are low in fat and calories and are excellent sources of vitamins and minerals. Therefore, the dietary guidelines recommend eating a wide variety and colors of fruits and vegetables daily to provide the body with valuable nutrients such as fiber, folate, potassium, and vitamins A and C (<http://www.cdc.gov>). Despite these recommendations, only 23.1 percent of the U.S. population consumes the recommended five or more servings of fruits and vegetables per day.

Kiviniemi and colleagues (2011) observed lower consumption of fruits and vegetables among racial/ethnic groups when psychology distress was present. Richard, Kattelman, and Ren (2006) studied ways to motivate greater consumption of fruits and vegetables among 18-24 year olds and advanced the view that although conventional wisdom may suggest that this cohort is in good health, efforts should be made to help students to develop better eating habits because the eating patterns developed in college have life-long effects on health and well-being. Thus, teaching healthy eating habits to students should be of paramount importance. Knowledge of the daily recommendations for fruits and vegetables can also lead to increased consumption (Wolf et al. 2008). If fruits and vegetables are readily available in the home at an early age, consumption is more likely to become a life-long habit (Young, Fors, and Hayes 2004).

There is now convincing research suggesting that diets rich in fruits and vegetables can reverse, treat, or prevent diseases, and can add almost a decade to one's life. Further, vegans and vegetarians are shown to have lower incidences of heart disease, cancer, cholesterol, stroke, emphysema, dementia, Type 2 diabetes, kidney failure, and respiratory infections than the general population (Freston 2012). The challenge then is to get more Americans to move away from animal-focused diets and adopt plant-based diets. We concur with other researchers that universities are excellent settings to study eating habits and help young adults to make healthier food choices. In Louisiana, overweight and obesity rates have been increasing among 18-24-year olds. Given that

a large percentage of this cohort is enrolled in colleges, our study assesses the frequency of consuming fresh fruits and vegetables by a selected group of college students. The results will provide another opportunity to help students develop better eating habits.

## Objectives

The study's overall objective is to examine fresh fruit and vegetable consumption among undergraduate students. The specific objectives are (a) to assess daily consumption of fresh fruits and vegetables; (b) to ascertain whether consumption varies across gender, academic classifications, and residency; and (c) to explore the links between consumption patterns and participants' perceptions of their overall health status.

## Methods and Procedures

### *Data*

The study's data were compiled from a sample of 305 university students during fall 2011 and spring 2012. The survey was designed to capture students' knowledge of the information on Nutrition Facts panels, knowledge about vitamins, frequency of reading labels, frequency of consuming fresh fruits and vegetables, perceptions of health and weight, levels of physical activity, and selected demographics characteristics (age, academic classifications, majors, hometown, residency, marital status, household income, race, and gender). The data were analyzed using the chi-square test for independence for two categorical variables. The null ( $H_0$ ) and alternative ( $H_1$ ) hypotheses were as follows.

1.  $H_0$ : Daily consumption is independent of the selected response categories
2.  $H_1$ : Daily consumption depends on the selected response categories

## Empirical Results and Discussion

### *Descriptive Statistics*

The average age of the sampled students was 23-years-old. Freshmen comprised 21 percent of the respondents; sophomores, 34 percent; juniors, 28 percent; and seniors, 17 percent. 63 percent lived off campus; 57 percent would like to pursue a career in nursing; 71 percent were women, while 87 percent had never been married. About 67 percent of the respondents perceived themselves to be in good or very good health. The results in Table 1 show that 50 percent of the students consumed no fruits and 52 percent consumed no vegetables daily, and that about 8 percent of the respondents consumed fresh fruits and vegetables at least three times per day.

**Table 1.** Daily Consumption Levels for Fresh Fruits and Vegetables (Percentages)

Eating Frequency	Fresh Fruits	Fresh Vegetables
0	50	52
1	29	27
2	13	13
≥3	8	9

*Chi-Square Tests for Independence*

Table 2 shows the cross tabulations between frequencies of consuming fruits and vegetables. From the results, 82 percent of the respondents did not consume any fresh fruits or vegetables daily. These results are statistically significant at the 1 percent level of probability. The results in Table 3 capture associations among consumption of fresh fruits, demographic characteristics, students' residence, and perceptions of overall health status. From the results, daily consumption of fresh vegetables is independent of gender, academic classifications, and residence, but depends on students' perceptions of their health. Thus, whether male or female, whether being freshmen, sophomores, juniors, or seniors, or whether students lived on or off campus, they ate fresh fruits infrequently. A closer examination of the results from Table 3 reveals that 65 percent of the respondents who perceive their health as fair or poor do not consume any fresh fruits on a daily basis. Further, 46 and 42 percent of those who felt they were in very good or excellent health, respectively also reported no daily consumption of fresh fruits.

**Table 2.** Cross-Tabulations for Daily Consumption of Fresh Fruits and Vegetables (Percentages)

Fruits	Vegetables				$\chi^2$	P-Value
	0	1	2	≥3		
0	82	11	49	21		
1	23	49	21	7		
2	18	42	25	15		
≥3	17	25	17	41	148.303***	0.000

\*\*\*Implies statistical significance at the 1-percent level of probability.

With respect to daily consumption of fresh vegetables (Table 4), consumption is also not associated with gender, academic classifications, or whether students lived on or off campus, but depends on perceptions of health status. Despite the statistically significant result, 42 percent of these students report no daily consumption of fresh vegetables. This finding echoes the warning issued by Richards and colleagues (2006) that although many students are in good health when they enroll in college, some still have undesirable eating habits. Therefore, universities should take steps to help all students to develop better eating habits so as to reduce the risks of them developing diet-related illnesses and diseases in the future.

**Table 3.** Cross-Tabulations between Fruit Consumption and Selected Characteristics (Percentages)

	Daily Consumption				$\chi^2$	P-Value
	0	1	2	$\geq 3$		
<b>Total</b>	<b>50</b>	<b>29</b>	<b>13</b>	<b>18</b>		
<b>Male</b>	47	29	16	8	1.073	0.784
<b>Female</b>	52	29	12	7		
<b>Freshman</b>	58	22	9	11		
<b>Sophomore</b>	46	34	14	6		
<b>Junior</b>	53	26	15	6		
<b>Senior</b>	44	33	14	9		
<b>On Campus</b>	51	31	10	8	1.164	0.762
<b>Off Campus</b>	50	28	15	7		
	65	23	8	4		
<b>Fair/Poor</b>					13.364**	0.012
<b>Very</b>	45	32	15	8		
<b>Good/Good</b>						
<b>Excellent</b>	33	25	17	25		

\*\* Implies statistical significance at the 5-percent level of probability.

**Table 4.** Cross -Tabulations between Vegetable Consumption and Selected Characteristics (Percentages)

	Daily Consumption				$\chi^2$	P-Value
	0	1	2	$\geq 3$		
<b>Total</b>	<b>51</b>	<b>27</b>	<b>13</b>	<b>9</b>		
<b>Male</b>	52	23	17	8	2.678	0.444
<b>Female</b>	51	29	11	9		
<b>Freshman</b>	62	21	11	6	11.635	0.236
<b>Sophomore</b>	46	24	18	12		
<b>Junior</b>	54	27	11	8		
<b>Senior</b>	46	38	8	8		
<b>On Campus</b>	49	27	16	8	1.674	0.643
<b>Off Campus</b>	53	27	11	9		
<b>Fair/Poor</b>	65	22	5	8	14.528**	0.024
<b>Very</b>	46	28	16	10		
<b>Good/Good</b>						
<b>Excellent</b>	42	33	25	0		

\*\*Implies statistical significance at the 5-percent level of probability.

## Summary and Conclusions

The study's overall objective was to examine fresh fruit and vegetable consumption among undergraduate students. The specific objectives were (a) to assess the daily consumption of fresh fruits and vegetables; (b) to ascertain whether consumption varied across gender, academic classifications, and residency; and (c) to explore the links between consumption patterns and participants' perceptions of their overall health status.

Based on the results, the sampled respondents consumed very small percentages of fresh fruits and vegetables daily. In fact, 82 percent of the respondents reported that they did not eat fresh fruits or vegetables on a daily basis. Twenty-one percent indicated that they ate fresh fruits two or more times per day compared to 25 and 33 percent, respectively at the state and national levels. Regarding daily consumption of vegetables, only 9 percent consumed vegetables at least three times per day. At the state and national levels, 21 and 26 percent of consumers, respectively, report that they eat vegetables three or more times per day. The results also suggested that only a small percentage (4 percent) of the students who described themselves as being in poor or fair health consumed fruits three or more times daily; eight percent who described their health in a similar manner consumed vegetables at least three times per day.

The United States spends a tremendous amount of its resources treating diet and health related illnesses. These expenditures are predicted to continue to rise astronomically in the future unless we change our eating habits and lifestyles. Children and young adults are the country's future; therefore, they must be encouraged to eat better by expanding their consumption of fresh fruits and vegetables. Freston (2012) suggests that in the past, conflicts of interest on the U.S. dietary guidelines committee may have prevented the government from recommending a plant-based diet for Americans. However, as the healthcare crisis deepens, obesity epidemic widens, and children's health declines, each of us may be forced to adopt some of the ideas advanced by *Food Day* regarding healthy, affordable, and sustainable foods. In other words, plant-based diet may become the norm rather than the exception.

## Acknowledgements

Financial support for this project was provided by the United States Department of Agriculture's National Institute for Food and Agriculture, and by Southern University Agricultural Research and Extension Center.

## References

- Agatston, A. 2011. "How America Got So Fat and So Sick." *Prevention* 63 (10):100-106.
- Christeson W, T. A. Dawson, S. Messner-Zidell, M. Kiernan, J. Cusick, and R. Day. 2012. *Still Too Fat to Fight*. <http://www.rwjf.org/en/research-publications/find-rwjf-research/2012/09/still-too-fat-to-fight.html> [Accessed October 31, 2012.]
- Food Day website. [http://www.foodday.org/focus\\_areas](http://www.foodday.org/focus_areas)[Accessed October 31, 2012.]
- Freston, K. "Why Do Vegetarians Live Longer?" <http://www.huffingtonpost.com/kathy-freston>. [Accessed October 27, 2012.]
- CDC website. "Eat Your Fruits and Vegetables." <http://www.cdc.gov/nutrition/everyone/fruitsvegetables/index.html>. [Accessed October 30, 2012.]
- Kiviniemi, M.T., H. Orom, and G. A. Giovino. 2011. "Race/Ethnicity, Psychological Distress, and Fruit/Vegetable Consumption. The Nature of the Distress-Behavior Relation Differs by Race/Ethnicity." *Appetite* 56(3):737-740.
- Richards, A., K. K. Kattelman, and C. Ren. 2006. "Motivating 18- to 24-Year-Olds to Increase Their Fruit and Vegetable Consumption." *Journal of the American Dietetic Association* 106:1405-1411.
- Robert Wood Johnson Foundation. 2012. *F as in Fat: How Obesity Threatens America's Future*. <http://www.rwjf.org/content/dam/farm/reports/reports/2012/rwjf401318>. [Accessed October 31, 2012.]
- Wolf, R. L., S. J. Lepore, J. L. Vandergrift, L. Wetmore-Arkader, E. McGinty, G. Pietrzak, and A. L. Yaroch. 2008. "Knowledge, Barriers, and Stage of Change as Correlates of Fruit and Vegetable Consumption among Urban and Mostly Immigrant Black Men." *Journal of the American Dietetic Association* 108:1315-1322.
- Young E. M., Stuart, W. Fors, and D. M. Hayes. 2004. "Associations between Perceived Parent Behaviors and Middle School Student Fruit and Vegetable Consumption." *Journal of Nutrition Education and Behavior* 36 (1):2-12.