

Association Between CalFresh Participation and College Students' Fruit and Vegetable Consumption

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Introduction

- California CalFresh Basic Needs services (known federally as the Supplemental Nutrition Assistance Program or SNAP) provide Electronic Benefit Transfer (EBT) money to low-income individuals that can only be spent on food.
- Student eligibility criteria include household income, age, and citizenship among other factors
- Someone is deemed low-income if their gross income is less than 200% of the federal poverty level. For example, a household size of 1 would need to make less than \$2,148 a month to qualify as low-income (CDSS, 2022).
- Only an estimated 18% of likely eligible college students participate in CalFresh (Chavarin-Rivas et al., 2021).
- 72.1% of U.S. college students are consuming 2 servings or less of vegetables and 82.1% are consuming 2 servings or less of fruit per day (ACHA NCHA, 2021).
- One serving is about half of a cup, a medium sized fruit or vegetable, or 1 full cup of salad greens.
- The 2020–2025 Dietary Guidelines for Americans recommend eating 1.5–2 cups/cup equivalents of fruits and 2–3 cups/cup equivalents of vegetables daily.
- Most students are not eating enough F/V.
- More fruit and vegetable consumption is associated with a decreased risk of developing certain physical health conditions such as certain cancers, diabetes and heart disease (Angelino et al., 2019).
- Current research demonstrates that income is a predictor of health and food choices where higher income leads to more F/V consumed (Braveman et al., 2010 & French et al., 2019).
- Race and gender play a role in eating more F/V where on average, females consume more F/V than males and white Americans consume more F/V than non-white Americans (Lee et al., 2019).
- Food insecurity can cause students to eat less F/V consumption where 1 in 3 college students face food insecurity (Chavarin-Rivas et al., 2021).
- CalFresh has been associated with decreasing food insecurity (Nazmi et al., 2022) but has not been well researched on the impact on F/V consumption.
- This research explores the impact of CalFresh participation and demographic characteristics on college student's fruit and vegetable consumption

Variables of Interest

- CalFresh participation (Current participant Vs. Likely eligible non-participant)
- Age (in tens): To better interpret the odds ratio, age was divided by 10, so someone who is originally age 20 would be counted as an age of 2
- Gender (Male Vs. Female)
- Race (White Vs. Non-white)
- Food Insecurity Status (Yes Vs. No):
 - Yes: In the last 30 days, the food students had didn't last or ran out.
 - No: In the last 30 days, students didn't run out of food
- Servings of fruits and vegetables consumed per day on average (None, 1-2, 3-4, 5 or more)

Methods

- Self reported survey data was collected in California in 2022 from 9 different college campuses, 4 Community Colleges and 5 CSU, by the Center for Healthy Communities (CHC)
- Target population: Students in EOP/EOPS (Educational Opportunity Program/Educational Opportunity Program and Services)
- EOP/EOPS students are low income and/or first-generation students which make them more likely to use or have used basic needs services such as CalFresh
- Surveys were distributed through email to EOP/EOPS students and offered a \$25 gift card as an incentive
- 1163 total responses
- Some students did not answer all questions so different variables will have different n counts

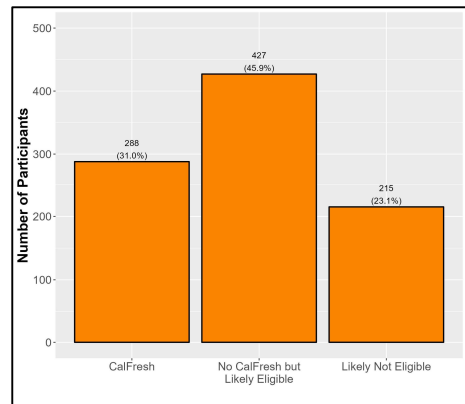
Table 1: Participant Characteristics

Characteristic	% or median	n
Male	20%	226
Female	80%	903
White	27%	429
Non-White	63%	734
Median Age	22 years	1152
Freshmen	22%	247
Sophomores	22%	241
Juniors	28%	309
Seniors	28%	314
CCC Students (n=4 campuses)	29%	334
CSU Students (n=5 campuses)	71%	820
Food Insecure	61%	572
Food Secure	39%	369
0 F/V servings	12%	127
1-2 F/V servings	72%	730
3-4 F/V servings	14%	138
5 or more F/V servings	2%	17

- F/V levels were dichotomized for analysis due to low sample sizes in some categories
- Students who were likely not eligible for CalFresh were excluded from analysis
- Logistic regression was used to determine the odds of eating 3 or more F/V daily compared to eating 3 or less for CalFresh participants compared to likely eligible non-participants
- The final model was determined based on previous literature indicating possible factors associated with F/V consumption

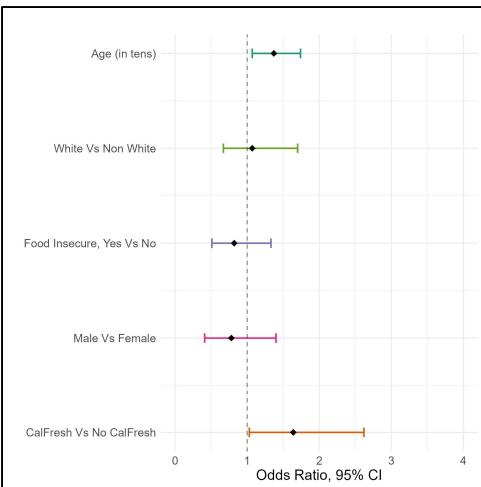
Results

Figure 1: CalFresh Users and Eligibility



- CalFresh eligibility was determined by age, income, household size, and citizenship where 46% of the participants are not using CalFresh and are likely eligible

Figure 2: Multiple Logistic Regression



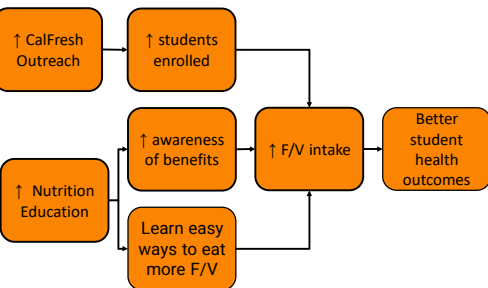
- After controlling for age, race, food insecurity, and gender, the odds of eating 3 or more F/V compared to 2 or less are 1.64 times higher in the CalFresh group compared to the likely eligible no CalFresh group (95% CI: 1.03 to 2.62, $p = 0.036$)
- After controlling for CalFresh, race, food insecurity, and gender, for every 10-year age increase, the odds of eating 3 or more F/V are 1.37 times compared to 2 or less (95% CI: 1.07 to 1.74, $p = 0.012$)

Discussion

- This study supports previous research where higher age has been associated with more F/V consumption (Lee et al., 2019)
- Age may impact F/V consumption due to a higher nutrition knowledge (Parmenter et al., 2000)
- As opposed to previous research, There were no significant associations of eating more F/V between food insecurity groups, race and between gender (Lee et al., 2019; Shi & Davies, 2021)
- CalFresh was associated with more F/V consumption which may suggest that income and cost of food are among the most important factors of eating more F/V
- It is important to note that the model was not a good fit as there was too much overlap between the predicted probabilities of eating 3 or more F/V and eating 2 or less F/V indicating that further research is needed to understand the factors associated with F/V consumption

Implications

- This study may suggest that more nutrition education is required to help educate students about benefits of F/V and ways to add more F/V into people's diet
- The results of this study support the need for more CalFresh outreach where this can help enroll more students in CalFresh and increase their F/V consumption



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