

# What prevents young people from eating healthy?

Madison Bankosh      Marielena Benavides      Yang Li      Marlene Nava  
Dmitrius Rodriguez      Eliseo Vega      Ted Liu      Galina Hale\*

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## Abstract

This paper studies differences in the barriers to healthful food choices across different socioeconomic characteristics. The analysis is based on the in-depth video interviews of undergraduate students conducted by their peers at the University of California, Santa Cruz (UCSC). The results show that the most important barriers to healthy eating are economic in nature and that they vary with family income and across demographic groups. Our findings suggest that improving access to and lowering costs of healthy options, such as fresh produce, is more important than educating students on benefits of healthy diets.

JEL codes:

Keywords: healthy diet, food choices, survey

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# 1 Introduction

The importance of diet in individual and public health outcomes cannot be overstated, and the literature is quite unambiguous on the fact that, at least in the U.S., there is a large potential for disease prevention through diet. The studies, such as Council et al. (1989); Willett (1994), go decades back, yet we see little improvement in healthy diet choices (Bush and Williams, 1999). Assuming that most people would prefer to avoid diet-related diseases, why are people not eating more healthy? There are many possible explanations. Individuals perhaps substantially discount adverse future outcomes and therefore do not think eating healthy is important. Maybe they think they eat healthy, but they do not really know what healthy diet is. Maybe they are facing individual, social, and economic barriers that prevent them from shifting to more healthy diets. In this paper we analyze these conjectures for a sample of college students and identify how the prevalence of these barriers varies by demographic characteristics, income, and lifestyle of individuals.

Our analysis is focused on young people, predominantly undergraduate students at the University of California at Santa Cruz (UCSC), which is a community that is quite diverse demographically in terms of race, ethnicity, and economic background.<sup>1</sup> While UCSC students' population is diverse in the dimensions we are interested in, it is quite homogeneous in terms of lifestyle and food options, which reduces the amount of noise in the analysis. More importantly, for many students, college is the first time they make independent individual food choices, which allows to study the importance of socio-cultural factors such as peer and family influence. Finally, eating habits formed in college are likely to affect individuals' health not only during college years, but throughout their lifetime.

Our analysis is based on a set of in-depth video or phone interviews between the team of researchers and the respondents.<sup>2</sup> The researchers followed a list of questions designed based on existing studies of barriers to healthy diets. Our main focus was not to simply study the prevalence of different barriers, but to identify socio-economic differences in barriers respondents are facing. It is useful to group the barriers into three categories: individual (such as preferences, knowledge), socio-cultural (such as family and peer pressure, cultural norms), and economic (such as income, time constraints, lack of access).

Individual barriers to healthy food choices seem obvious, but it is worth pointing out a few studies documenting their importance. Taste as a significant factor in diet is demonstrated in the studies by Mook et al. (2016) and Bryant (2019). Lack of understanding and misconceptions about healthy eating are found in Bryant (2019), Reyes et al. (2013), and Musingo et al. (2009). A very large literature shows the importance of individual characteristics, such as motivation, action orientation, and spontaneity (see, for example, De Ridder et al. (2009)). Moreover, individual factors, such as taste and desire to eat healthy, are more important to individuals with higher income (Kamphuis et al., 2015).

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<sup>1</sup>The only demographic dimension we cannot study is age.

<sup>2</sup>In-depth interviews minimize measurement errors compared to unsupervised surveys.

Cultural traditions and family support (or lack thereof) are found to be important in shaping individuals' food choices in general and may pose barriers to healthy eating (James, 2004; Baruth et al., 2014; Tiedje et al., 2014). The effect of such socio-cultural factors varies according to individuals' cultural backgrounds, which highlights the importance of the diverse set of respondents in our study. The importance of peer effects is found in the studies, such as Clendenen et al. (1994), that document different food choices when eating alone or in the group. Some studies highlight demographic differences across the importance of socio-cultural barriers. For example, men tend to be more averse to plant-based or plant-forward diet because meat is associated with the ideas of masculinity (Schösler et al., 2015). Women tend to face family resistance when trying to switch to healthier food choices (Kjøllestad et al., 2010), while feeling societal pressures to look a certain way (Flax et al., 2020). For young people peer influences pressure the respondents into eating unhealthy food, while family factors can either support or prohibit healthier choices (Beck et al., 2019).

Absent any individual or socio-cultural barriers, healthy diet may not be easily available due to cost, availability, and time constraints. These constraints are particularly acute for low-income families and individuals, because income allows to alleviate both access and time constraints through delivery services and access to establishments offering diverse healthy food options. In fact, a number of studies specifically document that lower income households cite time and cost as most significant barriers to healthy eating (Eikenberry and Smith, 2004; Mook et al., 2016), while Pechey and Monsivais (2016); Penne and Goedemé (2021) associate higher expenditures on food with healthier diets. Access to healthy food options and their cost are also found to be important. For example, Dubowitz et al. (2008) find that income is positively correlated with fruits and vegetables intake, while Pechey and Monsivais (2016) show that people who limit their food spending rely on non-healthy food options to meet their caloric needs.

We approach the question of barriers in three steps: first, we discuss whether respondents in our sample think that eating healthy is important, whether they want to eat more healthy, and how they rate their own diet on a health scale. We generally find that most respondents feel that it is important to eat healthy and the majority (80%) want to eat healthier. Interestingly, students who eat most of their meals in school cafeteria on average rated their diet as less healthy than others. Thus, we can address the question of why students do not eat more healthy.

Our second step is testing the hypothesis that it is the lack of knowledge about what healthy diet is that is a main barrier. Overall, we find that knowledge about what constitutes a healthy diet is not a major barrier to eating healthy. Thus, we move to our third step: self-reported barriers. We find that most important barriers to healthy eating are economic. Not only these are most often reported as barriers, but their prevalence is correlated with economic characteristics of the respondents in the predicted way: higher family income mitigates the importance of economic barriers. Moreover, economic barriers vary across demographic groups, even when we control for family income and financial independence.

The main policy implication of our findings is that educational and informational interventions

alone are unlikely to improve food choices of college students. Students are already quite aware of the importance of healthy diet and show sufficient understanding of what healthy diet means. However, their food choices are limited by individual, social, and economic barriers. Thus, interventions need to focus not on *why* it is important to eat healthy, but on *how* one can switch to healthier diet. Universities and other educational institutions have an ability to enact such interventions because of the high prevalence of school cafeteria dining. These implications are consistent with the recent review of “nudge” policies (Laïou et al., 2021) that finds that interventions that improve convenience of healthy options tend to be more effective than other, and also echo the findings in Abraham et al. (2018) that college students understand the importance of eating healthy but do not live by it.<sup>3</sup>

## 2 Methodology

We constructed our own data set based on person-to-person interviews. Trained interviewers filled in a questionnaire based on their conversations, following the prepared list of questions presented in full in the Appendix. Based on the interviewees’ qualitative answers, we constructed quantitative and categorical variables for the analysis.

### 2.1 Survey design and implementation

Food choices are very personal and any description of individuals’ diets is highly objective. For these reasons, instead of sending out a survey, which would leave both questions and answers subject to interpretation, we opted for person-to-person data collection. Interviewers received training with an expert from Faunalytics (a research organization) and used their best practices guide in collecting relatively unbiased data through in-person conversations (Anderson, 2020). We also received expert feedback on the design of the questionnaire that interviewers filled up immediately following the interviews.

Overall, we interviewed 68 UCSC undergraduate students. All the interviews were conducted during the Winter quarter of 2021 (January — March). The interviews consisted of two main parts: the first part was a discussion of food-related habits (shopping, cooking, eating). The second part was addressing cultural and socio-economic aspects of the interviewee’s current status and childhood situation, as well as basic demographic characteristics. The interviewees were told that they are participating in the study on food choices, but did not know that this project is addressing the specific question of differences in healthy diet barriers, therefore minimizing biases in the results.

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<sup>3</sup>A caveat is that UCSC undergraduate population is likely to be better educated about health and diet than general population (Øvrum, Alfnes, Almli and Rickertsen, 2012). This might explain why our findings are at odds with Musingo et al. (2009), who find knowledge gaps in understanding the importance of healthy diet among Florida A&M University, a historically black college and university (African and African American students are underrepresented in our sample).

Because of lifestyle changes due to COVID-19 related restrictions, any questions referring to habits were asked twice (“nowadays” and “before COVID”), to reflect potential temporary changes. In our analysis, we used “before COVID” answers only, but asking both questions allowed us to make sure our results are not specific to the lockdown situation.

## **2.2 Variable construction**

We mainly use three types of variables from the survey: 1) food choices, including knowledge about healthy food; 2) perceived barriers to healthy diet; 3) economic, cultural, and individual factors that affect diet choices.

### **2.2.1 Importance of healthy diet**

We asked three questions about the importance of healthy diet: whether the respondents felt that they are eating healthy, whether they want to eat healthier (a 0/1 indicator), whether they think it is in general important to eat healthy. We coded the answers on the scale of 1 (low importance) to 5 (high importance) for the analysis.

### **2.2.2 Food choices**

In the interviews, respondents report food items of their meals (breakfast, lunch, and dinner) and snacks. Since knowledge about healthy diet matters for food choices, we compare information about actual food choices with the knowledge about what constitutes a healthy diet. Existing literature has identified economic barrier as potentially important, we also asked them how their eating behavior may change if they were given a \$100 monthly stipend. Since the answers to these questions are quite broad, we use them as qualitative information to assess whether respondents have a good general understanding of what healthy diet is by comparing reported food choices with their self-assessment and by studying their definitions of a healthy diet.

We also asked respondents about their shopping and eating choices: whether they can cook, where they eat most of their meals, and where they primarily shop for food. We create five categories of shopping choices: 1) Large supermarkets; 2) Healthy or ethnic stores; 3) Unhealthy stores; 4) they do not shop for food; 5) A combination. Respondents are classified into the second category if they report choosing to shop at healthy or ethnic grocery stores. We classify respondents as shopping at unhealthy stores if they report convenience stores as their sources of groceries. Some respondents describe that they do not buy grocery or eat at dining halls, thus are categorized as not shopping for food. All other respondents that do not fall into the first four categories are considered to shop at a combination of stores. We create three categories of where the respondents eat most of their meals: 1) school cafeteria; 2) go out to eat; 3) eat at home.

### 2.2.3 Barriers to healthy eating

In the survey, respondents are asked the main barriers to healthy eating in general. The interviewers recorded respondents answers in free-form, which we then categorized using textual recognition technique. Most commonly cited barriers were expense, access to healthy options, peer pressure, lack of motivation, lack of self-control, and lack of time. These barriers represent all three broad groups of barriers to healthy eating discussed in the literature: 1) *individual*: motivation, self-control; 2) *socio-cultural*: peer and family pressure; 3) *economic*: expense, access, and time constraints.

### 2.2.4 Explanatory variables

To study heterogeneity of food choices and perceived barriers to healthy diet, we collected a set of key characteristics about the respondents including financial resources, race and ethnicity, gender, country of birth, religion, where they shop for food. The wide range of variables are needed to fully account for the complex economic, socio-cultural, and behavioral factors affecting diet choices, as predicted in the literature.

We derive a robust measure of family income based on results from two survey questions: current estimate of family income and financial situation when growing up. Since the respondents include people born and raised outside of the United States, we account for the different standards of living by controlling for whether the respondent is an immigrant (or international student). More specifically, for respondents born outside the U.S., the primary criterion for determining their family income level is their financial situation when growing up. We also asked respondents whether they are financially independent, to allow for differential impact of family income. We also fine-tuned our measures using responses to the questions of whether their family own a house and whether they are recipients of the Educational Opportunity Program (EOP).

We constructed the *income* measure as a categorical variable: low, medium, and high. If born in the U.S., a respondent is considered low income if both of the followings hold: 1) financial condition when growing up is lower middle class or poor; 2) family annual income is less than \$50,000. A U.S.-born respondent is considered medium income if 1) financial condition when growing up is middle class; 2) family income annual income is between \$50,000 and \$100,000. In the high income tier, a respondent reports 1) financial condition when growing up as wealthy or upper middle class; 2) family income annual income over \$100,000. All other U.S.-born respondents that do not meet these criteria are considered medium income. For respondents born outside the U.S., the criteria for estimated family income need not hold (in other words, they are classified based on self-reported childhood financial condition). Overall, we classify 15% of respondents as low income, 29% as high, and 56% as medium.

To consider the socio-cultural characteristics of respondents, we use information such as religion, race and ethnicity, gender, type of high school, and whether they are first-generation college stu-

dents. Most of our respondents (72%) identified as female, 2 respondents identified as non-binary, with the rest (25%) identified as male. In terms of race, a quarter of respondents identified as white (Caucasian), 38% as Asian, with the rest predominantly multiracial. 28% identified as Hispanic.

### 3 Survey results

We proceed with our analysis of the barriers in three steps. First, we address the question of whether respondents care about eating healthy. Next, we study whether respondents know what healthy diet is. Finally, we investigate self-reported barriers to eating healthy.

#### 3.1 Importance of healthy diet

We ranked the responses to question (1) “How healthy does the interviewee think their diet is?” on a scale of 1 (not healthy) to 5 (healthy). 45% of the respondents answer 3 or below, suggesting that only small majority of respondents view their diet as healthy. Of these 45%, more than two thirds answered the next question (2) “How important, in general, is to eat more healthy? ” (also on the scale of 1–5) with 4 or 5, indicating that even those who do not see their diet as healthy understand the importance of healthy diet. Most people in the other group also selected 4 or 5 on the second question. Moreover, about 80% of respondents answered “yes” to the question of whether they want to eat healthier. Overall, therefore, we can conclude that respondents understand the importance of a healthy diet.

We next investigate whether this conclusion is uniform across socio-cultural and economic characteristics of the respondents and whether it varies according to shopping and eating habits. To do so, we conduct a linear regression analysis using ordered logit regression where dependent variables are ranked responses to questions (1) and (2). The results are reported in Table 1 with columns (1)-(4) studying the second question and the columns (5)-(8) the first one. Control variables are grouped as follows: demographic characteristics, economic characteristics, eating and shopping habits. In the reported regression we only include explanatory variables that appear to have a statistically significant effect in at least one specification. Other controls we explored do not have explanatory power.

We find that, compared to non-Hispanic white men, fewer non-Hispanic white women and Hispanic men find that eating healthy is important, while more Hispanic Women responded that it is very important to eat healthy. These results (column (1)) remain if we control for economic factors and eating and shopping habits (column (4)). Respondents with larger family income were less likely to answer that eating healthy is important (column (2)), but this result is no longer statistically significant when we control for other characteristics (column (4)). Finally, respondents that reported that they do most of their shopping at large grocery stores were more likely to answer that eating healthy is important.

Interestingly, the differences in self-assessment of how healthy the diet is do not quite line-up with the answers regarding general importance of eating healthy. Compared to non-Hispanic white men, only Asian and Hispanic women rank their diet as more healthy, with all other demographic groups reporting their diet as less healthy (columns (5) and (8)) compared with non-Hispanic white men. Not all coefficients are precisely estimated, but their magnitudes are quite comparable across the groups. The impact of income controls is also quite different. Financially independent respondents are ranking their diets as less healthy than the rest (main effect of “Financially independent” indicator in columns (6) and (8)), but the effect is less pronounced for those with high income (the sum of main effect and the interaction term). Both of these results are robust to including all control variables at once. Finally, respondents that shop at corner stores or eat in the cafeteria robustly report their diet to be less healthy, as one would expect.

This last finding points to a clear policy recommendation that is recurring in our findings and is, in a sense, a low-hanging fruit: for undergraduate students at predominantly residential colleges and universities, healthy food choices in the cafeteria need improvement to make a major impact on the health of student population.

### 3.2 Knowledge about healthy diet

Given that respondents generally find that it is important to eat healthy, we next ask whether they understand what eating healthy means. We asked this question directly — what did respondents think healthy diet means? The common answers were “low fat,” “low carb,” “low meat,” “high protein,” “high in nutrients,” “high in vegetables,” and some people also said “well balanced.” Thus, most respondents showed understanding of healthy diet that is consistent with both conventional wisdom and Food and Drug Administration (FDA) guidelines. We also looked at the combination of the answers to this question with self-assessment discussed above and with responses to questions of what typical meals consist of. Overall, we found no cognitive biases or discrepancies in these answers.

Figure 1 shows the distribution of what food groups were mentioned by people who ranked their diets as not very healthy (2-3) in question (1) versus those who ranked their diets as very healthy.<sup>4</sup> We can see that more respondents who reported to eat carbs rate their diet as not very healthy (although others also reported to eat carbs). Those who think they eat healthy, are more likely to report that they eat fruit and less likely to report they eat frozen food. The one discrepancy we found is that those who think they eat healthy, are less likely to report that they eat vegetables.

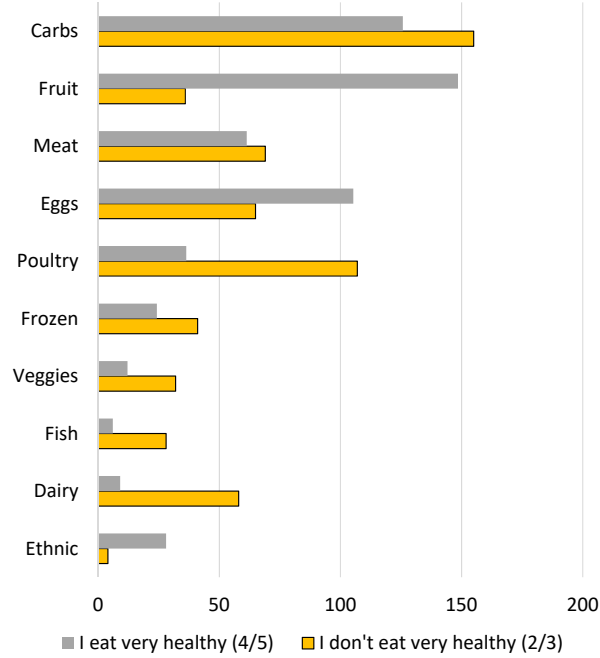
Overall, we find that knowledge about what constitutes a healthy diet is not a major barrier to eating healthy, at least for our group of respondents. We acknowledge here that this result may not generalize to the population overall and not even to other colleges. However, it does point to an important policy implication, in combination with our findings in the previous section: given

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<sup>4</sup>Nobody gave an answer corresponding to rating of 1 - not healthy at all.



Figure 1: Actual diets and self-assessed healthy eating



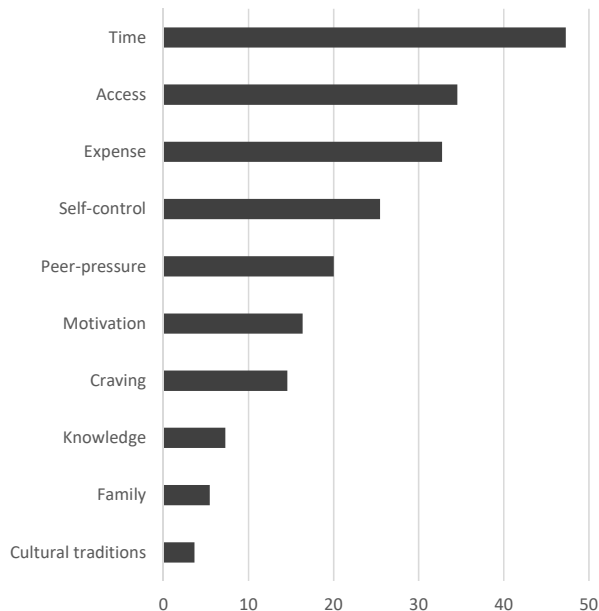
that there is an understanding of what the healthy diet is and of the importance to eat healthy, education about healthy diet alone is not likely to substantially improve diets of populations similar to our respondents.

### 3.3 Self-reported barriers to eating healthy

If people care about eating healthy, know what healthy eating is, and want to eat more healthy, why don't they? We address this question to respondents in two ways. First, we asked them to describe what barriers they are facing. Second, since we expected economic barriers to be important, we asked what foods respondents would add or drop if they were given \$100. We coded their responses into three groups of barriers: economic, socio-cultural, and individual. Figure 2 illustrates the distribution of the number of respondents that mentioned each type of barrier. We can see that economic barriers (time, access, and expense) are cited most frequently, followed by a mixture of socio-cultural (peer pressure, family, cultural traditions) and individual barriers (self-control, motivation, craving). Note that, consistent with the results reported above, knowledge was mentioned very infrequently.

To study heterogeneity of the responses, we again turn to regression analysis. This time, since each respondent could mention more than one barrier, we run a separate probit regression for each type of barrier mentioned, with dependent variable being a 0/1 indicator of whether a given individual mentioned this type of barrier. Since economic barriers were mentioned more frequently, we look at each of them individually, while grouping socio-cultural and individual barriers together.

Figure 2: Perceived barriers to healthy eating



We estimate the regression using probit specification, and, in the interest of space, only report regressions with all control variables included at once — the results are reported in Table 2.

We find that, as shown in column (2), compared to non-Hispanic white men, non-Hispanic white women and Asian men were more likely to cite access to healthy food as a barrier, while Asian women were less likely to do so. Mentions of other barriers did not seem to vary much across demographics. For financially independent students, access was less likely to be a barrier, while time was more likely to be a barrier, as shown by columns (2) and (3). This is not surprising: financially independent students tend to have jobs that take them off-campus, easing their access to food options, but take up their time. As we expected, access and expense were mentioned less frequently by students with higher family income (unless the respondents are financially independent, in which case family income did not matter), but contrary to our expectations, time was mentioned more often by students with higher family income.

The barriers mentioned do not vary systematically by the type of the store respondents reported to use for their grocery shopping. They do, however, vary by eating habits. Respondents that eat most of their meals in cafeteria were less likely to bring up access as a barrier, but were more likely to bring up socio-cultural barriers compared to respondents that eat at home. as shown in column (4). It appears that those who eat in cafeteria find that healthy foods are available, but feel pressure from traditions or peers to not to select them.

Interestingly, we find that individual barriers (motivation and self-control) do not vary by demographic characteristics and are uncorrelated with shopping and eating preferences. The only significant difference we find is for financially independent students, who mention individual barriers less frequently than others. Our conjecture is that this is explained by the fact that financially

independent students cite time as their main barrier.

To summarize, we find that most important barriers to healthy eating are economic. Not only these are most often reported as barriers, but their prevalence is correlated with economic characteristics of the respondents in the predicted way: higher family income mitigates the importance of economic barriers. Moreover, economic barriers vary across demographic groups, even when we control for family income and financial independence. This leads to quite a straightforward policy recommendation: healthy food is currently viewed as more expensive and less accessible, which means offering of healthy options in cafeteria (and other food services) needs to be more prevalent and less expensive to induce population such as UCSC undergraduates to shift to healthier diets.

## 4 Policy implications and conclusion

Putting all the results together, we can formulate policy implications of our findings. Healthy eating in college has been documented in the literature as both an important goal and a challenge. Yet, residential colleges and universities have unique abilities to address the problem from top-down, because most of the student population rely on the food services provided by their schools. Our survey revealed that most students do not need to be educated on why it is important to eat healthy, nor they need education on what healthy diets are. Instead, they would benefit from lowering economic barriers to healthy food options, especially expense and ease of access. The fact that these economic barriers are more important for those who come from lower-income families and that the importance of these barriers varies by race and gender, also suggests that lowering these barriers will improve equity on campus.

Students generally do not find cafeteria food to be abundant in healthy options. Those who eat in cafeteria on average rated their diets as less healthy. Thus, such students cite time as a barrier to eating healthy — choosing such diet entails action that takes more time than going to the cafeteria. They also report to be eating more carbs and frozen food than they would want to, both because of time and because of expense. It is worth noting that fruits and vegetables are two most common answers respondents provide to the question about what food to add if given \$100. It is in the hands of campus administrators to work with food service companies to change relative prices of meals in cafeteria, lowering the prices of fresh produce and perhaps increasing prices of less healthy options. In addition, healthy food options should be put forward and need to be enticing to be selected by students. Such changes would not only improve overall health of the students, it will lead to more equality across demographic and income groups.

Table 1: Heterogeneity in perception of the importance of healthy diet

This table reports the results of an ordered logit regression. Dependent variable is as indicated, varies on the scale from 1 to 5 with 5 being highest. Base categories are “Non-Hispanic White Male,” “Shop: varies,” “Eat: at home.” Standard errors are in parentheses. \* significant at 10%, \*\*significant at 5%, \*\*\* significant at 1% level.

Dep. variable:	It is important to eat healthy				My diet is healthy			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
White Female	-1.852 (1.168)			-2.543* (1.336)	-2.046** (1.016)			-2.989*** (1.108)
Asian Male	-1.563 (1.408)			-2.115 (1.557)	-2.872** (1.263)			-3.345** (1.339)
Hispanic Male	-2.915** (1.343)			-3.377** (1.487)	-1.791 (1.292)			-1.769 (1.448)
Asian Female	0.584 (1.533)			1.152 (1.714)	2.328* (1.403)			3.547** (1.565)
Hispanic Female	3.477** (1.556)			4.045** (1.823)	2.155 (1.515)			2.486 (1.705)
Fin. independent (1)		-1.274 (2.231)		-1.331 (2.457)		-3.779* (2.134)		-4.190* (2.401)
Family income (2)		-0.878** (0.443)		-0.391 (0.517)		-0.620 (0.408)		-0.324 (0.544)
(1)*(2)		0.982 (1.121)		0.860 (1.270)		1.939* (1.096)		2.215* (1.237)
Shop: health/ethnic			0.920 (0.690)	1.011 (0.758)			0.318 (0.753)	0.564 (0.824)
Shop: large			1.511** (0.598)	1.552** (0.669)			-0.205 (0.590)	-0.032 (0.658)
Shop: none			0.797 (1.137)	1.777 (1.216)			0.131 (1.175)	0.408 (1.268)
Shop: corner store			1.070 (1.468)	-0.076 (1.637)			-1.223 (1.220)	-2.356* (1.328)
Eat: cafeteria			0.041 (0.542)	0.693 (0.621)			-1.530*** (0.561)	-1.511** (0.645)
Eat: out			-1.074 (0.718)	-0.132 (0.826)			-0.182 (0.789)	0.198 (0.953)
Cutoff 1	-5.28*** (1.238)	-4.99*** (1.234)	-2.51*** (0.737)	-5.74*** (1.760)	-4.71*** (1.014)	-3.97*** (1.069)	-3.58*** (0.763)	-6.89*** (1.781)
Cutoff 2	-3.58*** (1.122)	-3.33*** (1.112)	-0.71 (0.550)	-3.82** (1.681)	-2.23** (0.909)	-1.52 (0.946)	-0.96* (0.582)	-3.98** (1.665)
Cutoff 3	-1.82* (1.076)	-1.65 (1.040)	1.04* (0.561)	-1.81 (1.639)	1.10 (0.817)	1.53 (1.001)	2.19*** (0.709)	-0.120 (1.531)
Observations	68	68	67	67	68	68	67	67
Pseudo R <sup>2</sup>	0.077	0.039	0.059	0.147	0.062	0.026	0.071	0.167

Table 2: Heterogeneity in self-reported barriers to healthy eating

This table reports the results of a probit regression. Dependent variable is as indicated, with 0/1 indicator for each reflecting whether a respondent mentioned this particular barrier. Base categories are “Non-Hispanic White Male,” “Shop: varies,” “Eat: at home.” Standard errors are in parentheses. \* significant at 10%, \*\*significant at 5%, \*\*\* significant at 1% level.

Dep. variable:	Expense (1)	Access (2)	Time (3)	Socio-cultural (4)	Individual (5)
White Female	0.208 (0.627)	1.202* (0.724)	-0.175 (0.660)	-0.729 (0.908)	0.074 (0.634)
Asian Male	0.304 (0.810)	2.219* (1.164)	-1.614 (0.995)	-0.436 (1.187)	0.376 (0.781)
Hispanic Male	0.689 (0.848)	-0.500 (1.231)	-0.691 (0.940)		-0.644 (0.876)
Asian Female	-0.733 (0.971)	-2.864** (1.258)	0.855 (1.098)	0.581 (1.319)	-0.019 (0.913)
Hispanic Female	-1.216 (1.065)	-0.806 (1.321)	0.672 (1.162)		0.641 (1.055)
Fin. independent (1)	-1.933 (1.628)	-4.437* (2.424)	3.609** (1.669)	0.649 (2.649)	-5.234* (3.142)
Family income (2)	-0.619* (0.361)	-1.480** (0.585)	1.314*** (0.457)	0.583 (0.742)	-0.156 (0.339)
(1)*(2)	1.406* (0.837)	2.331* (1.212)	-1.338 (0.846)	0.010 (1.314)	2.227 (1.510)
Shop: health/ethnic	-0.641 (0.587)	0.027 (0.623)	0.241 (0.577)	-0.594 (0.903)	-0.129 (0.529)
Shop: large	0.014 (0.443)	-0.619 (0.514)	0.487 (0.464)	0.182 (0.643)	-0.065 (0.418)
Shop: none		1.425 (1.056)	0.644 (0.996)		
Shop: corner store	0.139 (0.920)		-0.842 (0.983)		0.067 (0.864)
Eat: cafeteria	-0.067 (0.409)	-1.090** (0.506)	0.333 (0.443)	1.263* (0.669)	0.020 (0.393)
Eat: out	-0.176 (0.632)	-1.548 (0.942)	-0.469 (0.710)	0.675 (0.946)	-0.046 (0.564)
Constant	0.864 (0.984)	2.946** (1.444)	-3.113** (1.216)	-2.894 (1.948)	0.365 (0.969)
Observations	64	64	67	61	64
Pseudo R <sup>2</sup>	0.12	0.28	0.24	0.20	0.11

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## A Appendix

Here is the full list of questions trained interviewers were using as a guide in their interview and to fill in the answers. These questions are the basis for the measures used in the analysis.

### Food habits and attitudes

- Where do they eat most meals (breakfast, lunch, dinner) these days [before COVID]?
- Before COVID, where did they mostly shop for food?
- Typical breakfast, lunch, dinner, snack
- If given a stipend of \$100 a month, what foods would they add to their diet?
- If given a stipend of \$100 a month, what foods would they remove from their diet?
- How healthy does the interviewee think their diet is?
- Do they want to eat healthier?
- Do they think it is important, in general, to eat more healthy?
- What are all their barriers to eating more healthy these days / before COVID?
- What ONE THING would make eating healthy easier for them?
- Does interviewee describe a healthy diet in any of these terms?

Low calories

Low fat

Low carb

Low cholesterol

Low meat

Low red meat

Low animal food

Low processed food

High protein

High chicken/fish

High fruits

High vegetables

High in nutrients (vitamins and minerals)

Organic

Non-GMO

Well balanced

Other



## **Socio-cultural and economic background**

- How old were they when they arrived in the U.S.?
- Where were they born?
- What religious/spiritual practices did they grow up with?
- What religious/spiritual practices do they follow now?
- How do they describe their ethnicity /socio-cultural group?
- How do they describe their race? Hispanic?
- Gender identity
- Are they EOP eligible (tuition assistance)?
- Are they first generation in their family to attend college?
- Do any of their parents or grandparents own a house or apartment in the U.S.?
- What type of high school did they attend?
- How did they describe their financial situation growing up?
- What was their family income when they were growing up?
- Are they financially independent now?