

**Food Insecurity and the Implications of Tobacco Flavoring on overall Tobacco product
and E-cigarette Use**

Francine Soliz

California State University, Fresno

BITER Program

Dr. [Rosa Toro](#)

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Abstract

U.S. Latinx adults are three times as likely to smoke, and this trend has continued. New methods that allow for the ingestion and inhalation of nicotine and tobacco have become readily available, along with more flavored products, which appear to contribute to higher usage rates among young adults. A recent association between food insecurity and tobacco use has begun to appear in research. Latinx populations notably report concerns of experiencing food insecurity and tobacco use, and new research has addressed whether this may be the case in the college setting. The current study aims to examine Latinx college students' experience of food insecurity and whether flavoring mediates the relationship between food insecurity and tobacco use, specifically e-cigarette usage. It is expected that as food insecurity increases, use of flavored products will increase, overall leading to a higher usage of e-cigarettes. The study included 348 participants who identified as Latinx (70.7% female, 25% male; mean age=19.92). Participants were asked to complete an online survey through Qualtrics and were recruited through various means. Results highlighted that participants who identified as “Low food security” significantly used more e-cigarette products when compared to those who were food secure (Correlation analysis $p < .11^*$; Regression analysis 1.831, $p < .021$; $B = 0.54$, $SE = 0.24$, $z = 2.30$). Further research is needed to understand why this occurred, to develop more accurate cessation measures, or to enhance welfare programs that assist individuals experiencing low food security.

Introduction

Compared to other ethnicities, U.S. Latinx¹ adults are three times as likely to smoke (Kaplan et al., 2014). This demographic is increasingly at risk of tobacco product use (CDC, 2024). As new forms of tobacco products have become readily available there are these new methods allow for the ingestion and inhalation of nicotine and tobacco (e.g., vapes, e-cigarettes, nicotine pouches, and nicotine gum), and flavors appear to contribute to higher usage rates. E-cigarettes have become commonplace among youths, with rates of usage increasing from 1.5% in 2011 to 20.8% in 2018 (Fadus et al., 2019). Additionally, in a study that investigated young adults' usage of e-cigarettes, out of the 550 participants who had reported utilizing a nicotine device, 36.7% identified as Latinx. Approximately 95% of the young adults reported utilizing the JUUL, a popular e-cigarette device, highlighting once more that the new forms of tobacco usage are increasing. Researchers also highlight that 75% of the participants reported using mint or methanol flavoring, and 83% reported using sweet or fruit flavoring (Lanza et al., 2020). Further research is needed to investigate the impact of flavoring and the increasing usage rates as more of these flavors become available on the market. Thus, it is evident that flavoring contributes to increased usage of tobacco products, and research oriented toward reviewing this relationship can help offer insight into how to develop tobacco prevention for Latinx youth, as well as assist in developing all-encompassing tobacco cessation programs.

Recent literature is beginning to highlight a new concern surrounding the topic of tobacco use and the impact of food insecurity. Young adults who reported facing food insecurity reported using tobacco products at a higher frequency (Kim & Tsoh, 2016). A review of the literature

¹ Note the research papers throughout this paper may have used terms such as Latinx, Latina, Latinxs, these have been converted to be renamed as Latinx to be all inclusive

examined the NHANES data set from 1999 to 2014 and concluded that the use of any tobacco product was associated with food insecurity (Mayer et al., 2019). Furthermore, the association between college students and reports of experiencing food insecurity indicates there needs to be further research to look into the experiences of Latinx college students (Goldrick-Rab et al., 2019).

Latinx college students not only experience food insecurity, but research has begun to show higher usage of flavoring among this group. A large sample of 203 (37%) participants who identified as Latinx reported using flavored products (Lanza et al., 2020). There may be a relationship between Latinx college students who report being food insecure and the risk of using flavored tobacco products. Current data is limited in understanding how food insecurity affects tobacco usage. When considering the role of flavoring in this cycle, there is even less research available. Therefore, there is a need to understand the relationship between food insecurity and Latinx students' use of flavored tobacco products and how this contributes to their overall use of e-cigarette tobacco products.

Experience of food insecurity and its link to tobacco/nicotine use

The United States Department of Agriculture defines food insecurity as having limited or uncertain food access, or lacking nutritionally adequate or safe foods. In 2019, around 2.7 million U.S. Latinx households had higher rates of food insecurity than the national average (Coleman-Jensen et al., 2019). During an analysis of the National Health and Nutrition Examinations Survey (NHANES), tobacco users were found to have significantly higher odds of experiencing both low and very low food security compared to non-users (Mayer et al., 2019). The survey included various tobacco products, such as cigars, e-cigarettes, and smokeless tobacco (Mayer et al., 2019). In addition, smoking is known to suppress appetite (Audrian-McGovern & Benowitz, 2011). Use may likely serve as a function to combat the hunger aspect of food insecurity and relieve the stress of being food insecure, which can contribute to higher rates of reported usage (Bloom et al., 2019).

There may be a correlation between food insecurity and tobacco use. In another study set in New York, there was a large population of 1,917 people, with 10.3% reporting being Hispanic. The focus was on the participants' reports of consumption of fruits and vegetables in servings and how this connected to the rates of smoking. When the participants reported their intake of fruits and vegetables being between zero and one serving, this more than doubled the odds of smoking compared to those who consumed five or more servings of vegetables and fruits. It is unclear whether or not food insecurity can lead to higher usage of tobacco products or if the effects of tobacco suppressing appetite lead to suppression of appetite, which could account for the low rate of fruit and vegetable consumption (Hosler & Michaels, 2017).

As research indicates, Latinx households are likely to experience food insecurity (Coleman-Jensen et al., 2019) and be at risk for being tobacco users (Fitzgerald et al., 2011; Mayer et al., 2019). Support for this possible relationship comes from a cross-sectional study that sampled from a group of Latinx individuals to help examine the association of food insecurity with type 2 diabetes, which revealed, after a multivariate regression analysis, a possible link between food insecurity and smoking prevalence (Fitzgerald et al., 2011). The study aimed to capture risk factors for type 2 diabetes and examine other independent associations with food insecurity. During the analysis, symptoms of type 2 diabetes were positively related to low and very low food security, with cigarette smoking positively associated with very low food security (Fitzgerald et al., 2011). This revelation reveals there is a need to continue research into the relationship between food insecurity and the use of tobacco products, specifically among Latinx households.

When considering the association between e-cigarette use and food insecurity among low-income adults, results found from the California Health Interview Survey from 2014 to 2019 showed that those who were food insecure were also more likely to be e-cigarette users. In the sample, 59.9% of participants identified as Latinx. During the analysis, around 55.1% of participants who reported being current e-cigarette users, were also reported having experienced food insecurity, and those participants who were using multiple devices 60.2% reported food insecurity (Gu et al., 2023). Again, there is a concern among members of the Latinx community for experiencing food insecurity and tobacco use.

A particularly vulnerable subgroup within the Latinx community consists of college students. In addition to the vulnerability of Latinx college students, a study determined that those who reported receiving Pell grants or were first-generation status were also at risk of having food

insecurity. In Camella and Elliot's research published in 2019, participants that were found to be positively associated with being food insecure included students who were Latinx. (Camela & Elliott, 2019).

This concern is also supported by Goldrick-Rab (2019) and colleagues, who reported that 50% of Latinx students experience food insecurity. Additionally, a sample of young adults between the ages of 18 to 32, who identified themselves as Latinx, reported higher use of flavored tobacco compared (77.2%) to White users (73.5%) (Watkins et al., 2022). As the age range falls within the typical age for college students, what can be concluded from the studies published by Camela and Elliot (2019), Goldrick-Rab and colleagues (2019) and Watkins et al (2022), Latinx college students may be at risk of food insecurity. As further revealed by Goldrick-Rab and colleagues (2019) and Watkins et al (2022), Latinx students are more likely to use flavored tobacco products.

Increase in the appeal/use of flavored tobacco/nicotine products.

A study that reviewed the impact of flavored tobacco among youth in the United States aged 12 to 17 years has a large population sample of 13,651. Out of this sample, 22.5% identified as Latinx (Ambrose et al., 2015). Reported, 79.8% of participants overall reported using flavored tobacco products in the past 30 days, with the young users reporting that their first products they had used were flavored. Moreover, there were reports that flavoring was the reason for use for noncigarette tobacco use. (Ambrose et al., 2015). This study highlights that there is an appeal with flavored products that are specific to youth (Ambrose et al., 2015). Other research studies further support this notion that flavoring has a significant impact on the youth.

In another study, among individuals aged 18 to 24, fruit-flavored tobacco products were reported with higher satisfaction and were favored over other tobacco products. Nearly 63% of

participants used flavored tobacco products compared to unflavored tobacco products (Landry et al., 2019). A factor that may be contributing to the increase in tobacco products, specifically e-cigarettes, is the enhanced flavors, including fruit and mint, which were the top preferred flavors reported by participants (Landry et al., 2019). As reported in the findings by Landry et al (2019), around one-third of users noted flavored products were preferred and were a primary reason for the initiation of usage. Therefore, it can then be concluded that the flavoring of tobacco products influences usage. This could mean that as flavors continue to be put on the market or can be purchased, there may continue to be an increase in users who begin to use tobacco products (Landry et al., 2019). It is possible that, as more flavors are produced, there may also be an increase in youth usage of tobacco products (Landry et al., 2019).

Exploring links between food insecurity and flavored tobacco use

Individuals who report being food insecure or who may be receiving Supplemental Nutrition Assistance Program (SNAP) benefits are more likely to purchase ultra-processed foods (Leung et al., 2022). E-liquids available on the market mimic ultra-processed foods which are promoted online (e.g., strawberry custard, French vanilla cheesecake, whipped salted caramel; Vape Craft Inc., Accessed 2025). The marketing tactic involves promoting food flavors, and it is theorized that this may put vulnerable consumers at risk, as the tactics work to draw in consumers who are likely to use these flavored products. Some properties of flavoring that are concerning are the taste and aroma since this can appeal to increase the number of tobacco users (Landry et al., 2019).

The overall data showcased how more flavored e-liquids were associated with more frequent vaping (Morean et al., 2020). This is concerning to note, because flavoring may play a crucial role in the relationship between food insecurity and use of tobacco use. A study was done in Rhode Island that assessed 2,153 adolescents' use of flavored tobacco; students who reported being food insecure were five times as likely to use flavored products (Raut et al., 2025). Although this study was conducted with a younger population, it is important to continue research into the parallel between food insecurity and the use of flavored tobacco products.

There is evidence that with the use of flavored tobacco products, there is a decreased chance that users will quit. In a study that investigated the longitudinal associations of flavored tobacco use and cessation, it was concluded that for young adults between the ages of 18-24, who are current users of flavored tobacco products, experience a lower likelihood of product cessation (Steege et al., 2022). The impact of flavors is that they can promote persistent tobacco use (Steege et al., 2022).

Gathering all of what is known about food insecurity, tobacco usage, and the impact of flavoring (Gu et al., 2023); Steege et al., 2022; Landry et al., 2019). Being food insecure raises the risk of someone using tobacco products. Since there are now sales of flavored tobacco products that mimic food flavors, this could be a risk factor that influences the relationship between food insecurity and tobacco use. Flavored tobacco is believed to lead to a lower likelihood of product cessation among those between the ages of 18 to 24 (Steege et al., 2022). When considering who is likely to be food insecure, Latinx groups have been found to report low and marginal food security, as well as higher rates of current smoking (Iglesias-Rios et al., 2015).

Current Study

The hope is that the study will gather information on Latinx college students' use of tobacco products and e-cigarettes. More specifically, it will examine the relationship between food insecurity and the impact of tobacco flavoring on overall tobacco use. Its relevance lies in the need to investigate the vulnerability of these populations and how this relates to the usage of e-cigarette products. Adding to the literature to gain insight into this vulnerable population. Is there a relationship between food insecurity and tobacco and nicotine usage? Additionally, is flavoring a mediator between food insecurity and nicotine use? It is believed that a higher level of food insecurity will be associated with an increased likelihood of purchasing flavored tobacco products, contributing to a higher reported tobacco and e-cigarette use. In the data analysis, emphasis will be on analyzing whether flavoring can mediate the relationship between food insecurity and tobacco usage.

Methods

Participants

The study included 348 participants in the sample who identified as Latinx (70.7% female, 25% male; mean age=19.92). Participants from California State University of Fresno (CSUF), were recruited via flyer and email recruitment. Participants from CSUF were divided into two groups: those who were in the Psychology Department (n= 237) and those who were “Non-Psych” students (n=46). Participants from Fresno City College were recruited via flyers and in-person presentations (n= 65). After the participants had completed the survey, the

debriefing was presented, explaining the purpose of the study, and then resources were distributed.

Design and Procedure

Participants were asked to complete an online survey through Qualtrics. The students from a 2-year institution were offered a \$25 Amazon gift card. Students who were in the Psychology Department were given credit for their Research Methods course, and those students who were in the “Non-Psych” pool were given extra credit for completing the survey.

Tobacco Product Usage

Following this scale, questions from the National Youth Tobacco Survey (NYTS) 2023 Questionnaire, the following questions were asked: “In total, on how many days have you used e-cigarettes in your entire life?” Participants could report in the following manner: 1 day, 2 to 10 days, 11 to 20 days, 21 to 50 days, 51 to 100 days, or over 100 days. ($\alpha = .67$; Centers for Disease Control and Prevention [CDC], 2023).

Food Insecurity

Following this scale, the 6-item scale for Food Insecurity ($\alpha = .88$) designed by the US Household Food Security Module: Six Item Short Form was presented (Widome et al., 2015). Samples of the questionnaire include “The Food that (I/we) bought just didn’t last, and (I/we) didn’t have money to get more. Was that often, sometimes, or never true for (you/your household) in the last 12 months?”, “(I/we) couldn’t afford to eat balanced meals (you/your household) in the last 12 months?” and “Did you ever cut the size of your meals or skip meals because there wasn’t enough money for food?”, participants were able to respond on a 3-point Likert scale. This scale generated categorical variables identified as “Foodins_INT”, which was dependent on the number of instances participants reported. Participants who scored reported 5

to 6 instances of food insecurity were placed in the category labeled “Very low food security” and numerically equal to 3, those who reported 3 to 4 instances of experiencing food insecurity were placed in “Low food security” and numerically equal to 2, and those who scored 0 to 1 were placed in “High or marginal food security” and numerically equal to 1.

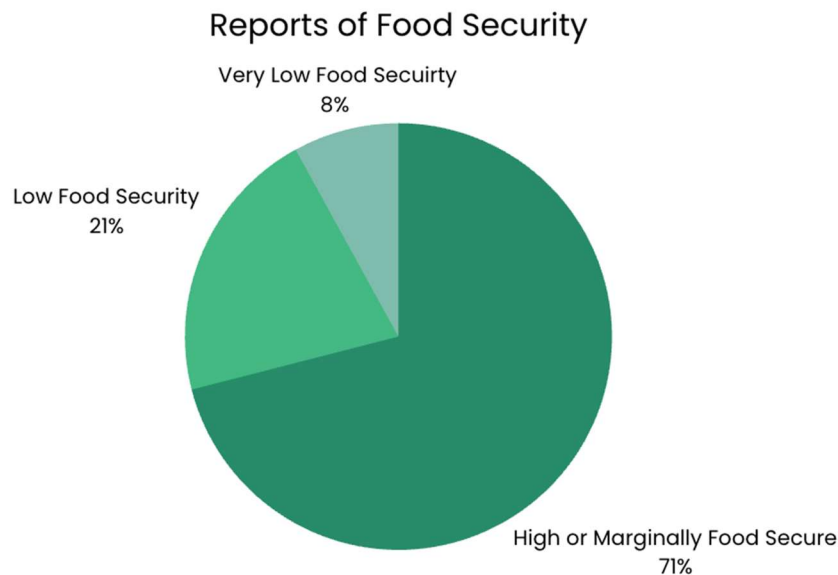
Flavored tobacco use

Participants were then asked to report what flavors of tobacco products they used with a 7-item option, including Mint/Menthol, Fruit, Candy, Sweet, Coffee/Chocolate, and were also presented with the option of “Other Specify” ($\alpha = .70$; Landry et al., 2019).

Results

Results indicated that 248 participants were food secure (71.3%), 73 reported “Low Food security” (21.0%), and 27 reported “Very Low Food security” (8.0%), as shown in Figure 1. Participants who were excluded include those who did not answer the questions about food security.

Figure 1.



Correlation analysis

A correlation analysis was used to identify if there was any significant relationship between variables, including lifetime use which gauges how many times in a participant's lifetime did they use a e-cigarettes, and the “E-cig” variables, capturing if participants ever used e-cigarettes once or twice. Instances of food insecurity were counted and then recategorized into the three categories of “High or marginally Food Security”, “Low Food Security” and “Very Low Food Security”. In addition, there were variables such as ever having tried tobacco or

nicotine products listed as “Tobnic_tried” and to capture if there were any significant differences in terms of gender and place of birth and use, female and status of citizenship was used in the analysis.

The correlational analysis revealed significance between being ‘Low food security’ and having tried electronic cigarettes even once or twice ($p=.11^*$)(View Table 1). Other results include: Lifetime use was shown to have a low but significant correlation with food insecurity ($p=.22^*$). Use of flavored tobacco products had a significant relationship to participants ever trying e-cigarettes just once or twice, lifetime use, and every trying tobacco and nicotine products ($p=.52^{**}$; $p=.28^{**}$; $p=.51^{**}$). Lastly, there was a low but significant correlation between “Low Food Security” and use of flavoring ($p=.13^*$), refer to Table 1. Those who were ‘Very low food secure’ showed no additional significance to the other variables or significance in the use of tobacco or e-cigarettes (Table 2).

Table 1
Correlation among Low Food Security

	1	2	3	4	5	6	7
1 E-cig							
2 Lifetime Use (E-cig)							
3 Tobnic_tried	.66**	.26**					
4 Foodsec_low	.11*	.22*	0.09				
5 Flavor Total	.52**	.28**	.51**	.13*			
6 FEMALE	0.09	-0.06	-0.03	-0.04	-0.03		
7 F born	-0.05	-0.16	-0.04	0.09	0.02	0	

Note. $N=348$ * $p < 0.05$; ** $p < .01$

Table 2*Correlation among Very Low Food Security*

	1	2	3	4	5	6
1 E-cig						
2 Lifetime Use (E-Cig)						
3 tobnic_tried	.66**	.26**				
4 foodsec_vlow	0.03	0.07				
5 Flavor Total	.52**	.28**	.51**	0.01		
6 FEMALE	0.09	-0.06	-0.03	0.03	-0.03	
7 f_born	-0.05	-0.16	-0.04	0	0.02	0

Note. N=348 * $p < 0.05$; ** $p < .01$

Regression analysis

Testing Hypothesis 1

To assess if there was a relationship between food insecurity and tobacco or nicotine use, and if this relationship was then mediated by flavoring, a regression model was run. Results indicated that e-cigarette use was predicted by flavored tobacco use ($B=0.19$, $SE = 0.02$, $z=9.17$, $p<.001$)(View Table 3). Moreover, gender and foreign-born status were also significant predictors of e-cigarette use. Females were more likely to use e-cigarettes compared to males or other genders ($B=0.16$, $SE = 0.06$, $z=2.44$, $p<.015$). Those who were foreign-born were less likely to use e-cigarette products ($B=-0.35$, $SE = 0.16$, $z=-2.22$, $p<.026$)(See Table 3).

Table 3*Regression Coefficients for Mediation Model: Low Food Security and Very Low Food Security*

Predictors	B	SE	Std. β	z	p
Outcome: Flavored Tobacco Use (Mediator)					
Low Food Security	0.54	0.24	0.16	2.30	0.02
Very Low Food Security	0.42	0.34	0.09	1.25	0.21
Female	-0.34	0.21	-0.11	-1.63	0.10
Age	0.03	0.04	0.05	0.79	0.43
Foreign Born	0.60	0.52	0.07	1.06	0.29
Outcome: E-Cigarette Use					
Flavored Tobacco Use	0.19	0.02	0.54	9.17	<.001
Low Food Security	0.00	0.07	0.00	0.02	0.98
Very Low Food Security	-0.01	0.10	-0.01	-0.14	0.89
Female	0.16	0.06	0.14	2.44	0.02
Age	0.01	0.01	0.04	0.76	0.45
Foreign Born	-0.35	0.16	-0.13	-2.22	0.03

Note. B = unstandardized coefficient; SE = standard error; Std. β = standardized beta.

$p < .05^*$

To further assess the level of food security, a more in-depth analysis was conducted. Since food insecurity was a categorical variable, the data needed to be divided into the following. The categories for Food Insecurity, “Low Food security”, and “Very Low Food security”, were then recorded for data analysis and compared to the sample that would act as the constant, which would be those who were food secure. In the second regression, the model revealed during the logistic regression coefficient model, those who were “Low Food Security” were 83% more likely to use e-cigarettes than those who were food secure (Exp B=1.831, $p<.026$; $B=0.54$, $SE =$

0.24, $z=2.30$, $p<.021$)(View Table 3.1 and Table 5) . There was no significance for the mediators and those who were considered “Very low food security” ($B=0.42$, $SE = 0.34$, $z=1.25$, $p<.213$)(View Table 5). There were no significant findings for any other covariates.

Table 4

Analysis of Indirect and Total Effects Involving Food Insecurity, Flavored Tobacco, and E-Cigarette Use

Effect Type	Estimate	SE	z	p
Indirect Effects				
Low Food Security → Flavored Tobacco → E-Cig Use				
	0.10	0.05	2.23	0.03
Very Low Food Security → Flavored Tobacco → E-Cig Use				
	0.08	0.07	1.24	0.22
Total Effects				
Low Food Security → E-Cig Use				
	0.11	0.84	1.25	0.21
Very Low Food Security → E-Cig Use				
	0.07	0.12	0.55	0.58

Note. B = unstandardized coefficient; SE = standard error;
 $p < .05^*$

Table 5
Regression Coefficients for Mediation Model: Food Insecurity

Predictors	B	SE	Std. β	z	p
Outcome: Flavored Tobacco Use (Mediator)					
Food Security	0.50	0.21	0.17	2.45	0.01
Female	-0.34	0.21	-0.11	-1.63	0.10
Age	0.03	0.04	0.05	0.76	0.45
Foreign Born	0.56	0.52	0.07	1.09	0.28
Outcome: E-Cigarette Use					
Flavored Tobacco Use	0.19	0.02	0.54	9.17	<.001
Food Insecurity	0.00	0.06	0.00	-0.05	0.96
Female	0.16	0.06	0.14	2.44	0.02
Age	0.01	0.01	0.04	0.75	0.46
Foreign Born	-0.35	0.16	-0.13	-2.22	0.03

Note. B = unstandardized coefficient; SE = standard error; Std. β = standardized beta.

Testing Hypothesis 2

A mediation analysis was used to determine the mediating effect of the total number of flavors on reports of low food insecurity and reports of very low food insecurity, and reported e-cigarette use. This was performed to determine if the total number of flavored tobacco products had an effect on the relationship between participants' reports of food insecurity and their usage of tobacco. The mediator (m) was coded to be the “Flavtotal” (total number of flavors), a1 was equal to those who were considered to have “Low food security” or “foodsec_low”, a2 stood for

those considered to be “Very low food security” or as presented “foodsec_vlow”. To account for e-cigarette usage, e-cig was coded for *B*. Other variables added included if participants' gender, age, and their citizenship status.

Assessing the indirect effect and direct effect of flavoring, the direct effect was nonsignificant ($B=0.08$, $SE = 0.07$, $z=1.25$, $p<.217$) (View Table 6). However, the indirect effects were considered significant ($B=0.10$, $SE = 0.05$, $z=2.23$, $p<.03$) (View Table 6). Other significant findings included a significant difference between e-cigarette usage and the use of flavoring ($p<0.00$; standard $p<0.05$).

Table 6

Analysis of Indirect Effects Involving Food Insecurity, Flavored Tobacco, and E-Cigarette Use

Effect Type	Estimate	SE	z	p
Indirect Effects				
Food Security → Flavored Tobacco → E-Cig Use				
	0.10	0.04	2.37	0.02

Note. B = unstandardized coefficient; SE = standard error; Std. β = standardized beta.

Discussion

To learn if food insecurity has a relationship with tobacco usage, multiple analyses were completed. The primary goal of this study was to review whether food insecurity and tobacco usage were connected, with the consideration for flavoring acting as a mediator of this relationship. Results from the regression analysis indicated that no matter the level of food insecurity, there was a positive correlation to tobacco usage (Table 3). Additional support to the hypothesis that there was a relationship between food insecurity and tobacco use showcased how food insecurity was indirectly related to tobacco and nicotine use (Table 4).

Additionally, the percentage of food-insecure households in the study was higher than the national average, with a total of 29% of households being food insecure compared to the national average of 13.5% (U.S. Department of Agriculture Economic Research Service, 2025).

When the level of food insecurity was taken into account, those with low food security used e-cigarette products significantly more than those with high or marginal food security, with no differences seen in other groups. This may imply that individuals experiencing low food security are more likely to afford e-cigarettes than those facing very low food security. When assessing if flavoring mediated the relationship between food insecurity and tobacco usage, the analysis did not support this hypothesis.

Other variables that showed significance were that the female participants were more likely to use e-cigarette products compared to the male population. Moreover, foreign-born participants were less likely to use e-cigarette products compared to U.S.-born participants.

Limitations and Future Directions

Our sample indicated low levels of tobacco usage, which may be attributed to findings that suggest individuals with lower education levels tend to use tobacco products more frequently (Kaplan et al., 2014). Both institutions in our sample provided food pantries, which may have contributed to the lower reported and perceived levels of food insecurity. Furthermore, it is possible that a social desirability bias influenced the self-reported data on tobacco and nicotine usage. Future research could look into how prolonged food insecurity affects tobacco and nicotine usage.

The sample had more females than males; this could limit the male experience of tobacco and nicotine usage, leading to a less accurate representation of male Latinx college students' use of these products. This may be influenced by the fact that some older participants reported higher e-cigarette usage compared to their younger counterparts, since they may have more disposable income. As for the foreign-born participants, this follows existing literature that U.S born are more likely to smoke compared to those who were foreign-born. (Nguyen et al., 2018; Wade et al., 2013).

Although the hypotheses that were set out were not fully supported, this does introduce the issue of food security needing to be addressed, highlighting that those who are low food secure are an at-risk population of experiencing tobacco and nicotine usage. Additionally, the study did not gather data regarding if participants used tobacco and nicotine products to suppress appetite. This could be a reason that people use tobacco and nicotine products and this was outside the scope of the project. As noted, the sample showcased a higher frequency of food-insecure households than the national average. The findings are significant for the Central Valley

as they examine the various factors influencing usage, contributing to the existing body of literature, and providing insights for the development of more comprehensive cessation models.

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