The Invisible Burden of Food Insecurity in Asian Americans:
A Disaggregated Analysis

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ABSTRACT

The Asian American community is a diverse population encompassing over 40 ethnic groups with nuanced diasporic and socio-cultural histories; however, modern discourse makes invisible the community's struggles through racial homogenization. One urgent environmental health issue disproportionately affecting certain groups more than others is food insecurity. Although some research suggests that certain ethnic groups exhibit higher rates of insecurity, these studies are far too few and preliminary. This project aims to expand the understanding of Asian American food insecurity, while exploring key variables that may contribute to disparities across all racial and ethnic groups. Utilizing multiple binary logistic regression models using data from the 2017 California Health Interview Survey, I found significant variation in food insecurity risk across Chinese, Japanese, Vietnamese, and Other Asian subgroups. The Vietnamese subgroup demonstrated the highest likelihood and proportion of food insecurity, with a similarly high risk as other Black and Latinx groups. Additionally, I found that English proficiency plays a key role in these disparities. My research exposes the violence of homogenization and the failure to adequately address and alleviate food insecurity among all racial and ethnic groups, while challenging standardized approaches to demographic public health research.

KEYWORDS

INTRODUCTION

Food insecurity is an urgent public health and environmental justice issue in the United States, asymmetrically affecting 11 percent of families nationwide (Coleman-Jensen et. al 2019). Defined as a household-level economic or social condition of limited or uncertain access to adequate food (USDA), the consequences of food insecurity infiltrate the individual both physically and mentally while perpetuating vicious cycles of inheritance within families and communities (Lai et. al 2021). Though research has shown that racial minority groups are disproportionately burdened by food insecurity (Becerra et. al 2018), there is a profound lack of information on the risks among Asian-American populations (Lai et. al 2021).

Historically and to this day, the need for public health and social services for Asian American populations has been critically devalued and consequentially disregarded in discourse and research (Holland et. al 2021, Nguyen et. al 2019). Even though Asian-Americans are the fastest growing racial group in the nation (U.S. Census 2021), and encompass over 40 ethnicities, 100 different dialects, and complex diasporic histories (Jang and Kim 2018), the population has been aggregated in most public and environmental health research, including food insecurity discourse (Dong et. al 2018). As a result, nearly all the literature on food insecurity has regarded Asian-Americans as the least burdened minority demographic, while prioritizing other racial/ethnic minority populations for further research (Becerra et. al 2019, Dong et. al 2018).

I argue that imposed socio-cultural images of Asian American success work concomitantly with homogenized research to erase Asian Americans from the public and academic gaze. These ideologies not only mask urgent and substantial inequities among Asian-American populations but discount the struggles of other racial/ethnic minority populations—attributing their disproportionate health burdens to laziness or lack of fortitude as opposed to the country's structural systems of oppression. As a result, barriers in health and social service access continue to afflict both Asian American populations as well as other minority groups due to variant and contrived methods of violence.

While in aggregated analysis, Asian-Americans are found to be even more food secure than their white counterparts, disaggregated research suggests significant disparities among different ethnicities (Becerra et. al 2018). However, due to the preliminary status of disaggregated research, the few existing studies have failed to adequately address underlying causes of food insecurity

disparities such as ethnic categorization, age, language diversity, residence time in the U.S., access to health care, and intersections among these categories.

To better understand the prevalence of food insecurity within the Asian American population, I sought to study how food insecurity rates differ across disaggregated Asian American ethnic groups and examine the impact of possible confounding variables on food insecurity risk across the ethnic subgroups, such as age, gender, country of birth, level of English proficiency, and geographic location. Additionally, I wanted to assess the proportions of Asian American ethnic subgroups participating in public assistance programs, such as California Work Opportunity and Responsibility to Kids (CalWORKs), Temporary Assistance for Needy Families (TANF), food stamps, and Supplemental Security Income (SSI) to get an idea of the adequacy and accessibility of current programs that aim to address food insecurity. Lastly, I planned to situate these analyses within the framework of other racial/ethnic groups in order to resituate Asian American subgroups into standardized demographic survey data, and to possibly challenge preconceptions about the Asian American group and the way that environmental health data is approached.

I hypothesize that food insecurity levels do vary across Asian American ethnic groups due to different levels of social and material capital across groups of varied historical and socio-cultural contexts. However, I do believe that certain factors like English proficiency, birthplace, gender, and age may affect all racial/ethnic groups. Therefore, I also predict that taking these variables into account will reveal a similar disproportionate burden of food insecurity across all racial/ethnic minority groups due to systematic inequalities which disproportionately exploit people of color at these intersections.

BACKGROUND

"Asian American": roots and distortion

The term "Asian American" itself was initially created as a new collectivist identity by the Asian American Political Alliance, an early radical group in the University of California Berkeley, for the purpose of promoting ethnic pride, pan-ethnic solidarity, and a political consciousness of shared history and experiences of oppression. This took place in the late 60's, when Asian American Pacific revolutionaries began to emerge along both coasts of the country to fight racism

and systematic oppression. In California, these groups were responsible for founding many of the Asian arts, cultural organizations, social services, and public health programs that have and continue to uplift ethnic enclaves in San Francisco and Los Angeles (Ho 2000). The initially radical connotation of the term Asian American has since then been distorted into a tool of violence, utilized for homogenization in popular media and academia.

The model minority myth is an ideology that functions on this homogenization, creating a delusive, spectacled consciousness that all Asian Americans achieve universal and unparalleled academic and occupational success (Paik et. al 2014, Museus and Kiang 2009). One contributor to this ideology was the hyper-selectivity of highly skilled and highly educated Chinese immigrants post 1965, a population much different from previous Chinese and other Asian immigrants (Lee 2016). This apocryphal image violently discounts Asian American history and struggle while masking urgent needs within the diverse population. The consequences are evident in the lack of public health data, policy, and discourse on Asian American struggle.

This myth also severs Asian Americans from other racial/minority populations, such as the Latinx, Black, or Native American communities. In higher education and discourse, Asian Americans are not considered an underrepresented minority. In fact, Asian Americans are viewed as "almost white" by other groups (Museus and Kiang 2009). However, this "view" is factually incorrect. Like most racial/ethnic minorities, Asian American college students report racial discrimination and pressure to conform to stereotypes in predominantly white institutions. Asian American researchers are 45% less likely to receive government funding compared to White investigators in the same field (Dong 2018). Additionally, compared to their white counterparts, Asian Americans with the same level of education earn lower wages and hold fewer managerial positions (Museus and Kiang 2009). Even with the onset of efforts to reevaluate the common narrative of Asian Americans, this myth continues to be pervasive in popular public perception (Museus amd Kiang 2009, Yi and Museus 2015).

Asian American diaspora

In order to contextualize the current social and material circumstances of the Asian American community as well as the complex social-cultural histories that may lead to food insecurity, I will briefly go over the history of the Asian American populations included in this

study: the Chinese, Filipino, Vietnamese Korean, and Japanese populations, making up around 70% of the Asian American population, and 24%, 19%, 9.8%, 8.4% and 6.7% respectively (Pew Research 2021).

In a new era of western imperialism, U.S. presence in Asia led to the first import of Chinese immigrants, coerced with false images of opportunity, during the mid-1800's (Lee 2015, Paik et. al 2014). However, most Chinese immigrants ended up being recruited for intense, laborious jobs considered to be too degrading or dangerous for white men. Ironically, as their population increased, a series of Chinese exclusion laws were passed that prevented Chinese laborers from entering the country (Lee 2015). The population saw little growth until the Magnuson Act of 1943, which allowed immigration once again – though with a quota (Paik et. al 2014).

Japanese immigrants were the largest Asian American group to arrive during the late 19th Century, coerced by similar American labor propaganda tactics used on the Chinese – in this case, taking advantage of those struggling economically during Japan's industrial expansion era (Lee 2015). In a similar pattern to the Chinese, their immigration rates were halted by the Immigrant Act of 1924, which blocked the entrance of all Asian immigrants. Due to this legislation, by World War II, most Japanese Americans were American-born. However, with the Executive Order 9066, there was mass internment of Japanese Americans in the West Coast, enforcing assimilation and provoking questions of identity both within the Japanese American populations and across Asian American ethnic groups. Korean immigrants arrived under similar circumstances from 1902-1905, experiencing the same challenges as laborers. However, with Japan's occupation of Korea from 1905-1940, Koreans were banned from leaving. Once the U.S. intervened in the Korean War, there was another influx of Korean immigrants in the form of brides, orphans, and sponsored students (Paik et. al 2014).

The first wave of Filipino immigrants was propelled by U.S. colonization of the Philippines (Lee 2015). Due to their previous western colonial history, Filipino immigrants were more acculturated to English and American culture. Though Filipino immigrants were allowed a few more rights than other Asian immigrants in the early 1900's, they were still given the lowliest and most exploitable positions in the service and agriculture industries (Lee 2015, Paik et. al 2014). While the Philippines' independence from the US prompted the Tidings-McDuffie Act of 1934, which limited Filipino immigration, government reception has been receptive to skilled professions such as nurses or servicemen (Paik et. al 2014).

Lastly, aggressive U.S. anticommunist foreign policy led it to Southeast Asia at the end of WWII. By the 1960's, the U.S. was engaged in war with North Vietnamese forces and allies in South Vietnam, leading to death, destruction, and displacement (Lee 2015). Southeast Asian immigrants arrived between 1975 and 1995 following the Vietnam war, consisting of mostly affluent individuals labeled as "refugees." Many were previous urban dwellers who were disproportionately educated compared to the average Vietnamese citizen. However, with barriers of language and community access, downward social mobility was inevitable (Bach and Caroll-Seguin, 1986). Despite social barriers, Vietnamese communities settled in necessary co-ethnic communities with business backing, somewhat buffering these barriers (Lee 2015).

Necessitated by discrimination and violence, most of these groups settled by into ethnic enclaves, the biggest being San Francisco Chinatown and Japantown, as well as Little Tokyo, Chinatown, and Koreatown in Los Angeles. Such communities strengthened over time and became "immigrant gateways" to build social networks, resource access, and house businesses for employment (Li and Skop, 2007). Continued influxes of immigrants have sustained these ethnic enclaves, while also creating new ethnoburbs. This is especially true of Koreans, who maintain the most concentrated communities of all Asian American ethnic groups due to strong employment and educational resources (Yu, 2005).

While there were government policies in the U.S. during and after the Vietnam war that granted special aid through refugee assistant acts to ease their transition, the assistance didn't last as long as needed (Paik et. al 2014), leading to a lack of English proficiency and acculturation. Though Vietnamese enclaves rose out of need in the later 20th century, they lack concentrations of professional and entrepreneur individuals necessary for collective upward mobility (Bankston and Zhou 1996).

Like many minority racial/ethnic groups, Asian immigrants were initially brought in as outsourced, cheap labor for the expansion of U.S. imperialism, and soon became the scapegoats for the social and economic problems inevitable under the nation's capitalistic structure. This has led to antagonism in the form of multiple fluxes of immigration restriction, prohibition of citizenship and land ownership, and overall violence towards the Asian American communities (Paik et. al 2014). Without strong ethnic enclaves, many Asian American immigrants (such as the Hmong population) end up one in dire social and economic circumstances (Lee 2015). Though I can't address the complexity and nuance of Asian American diaspora, including many South

Asians (Indian, Pakistani, Bangladeshi, Sri Lankan) and Southeast Asians (Cambodian, Hmong, Laotian), they share a similar history of oppressive government policy, hostile societal reception, and co-ethnic maneuvering with varied social and material outcomes due to niched circumstances.

Research framework

Disaggregated research on Asian American food insecurity is lacking due to the reporting of oversimplified, aggregated data in most federal databases (Museus and Kiang 2009, Becerra et. al 2018). However, the few existing studies and public federal databases disaggregating Asian American ethnicities in other health and social outcomes have informed the methodology of this study.

A disaggregated study on academic achievement illustrated variation in success among Asian American ethnic groups and introduces important factors that affect these outcomes –many of which have inspired this study. These include time of arrival, location, class status, occupation, education, and language ability (Paik et. al 2014). For example, the Chinese population showed differing rates of success based on their country of origin. Additionally, the Korean population showed the second highest achievement under South Asians, largely attributed to strong co-ethnic community. The Filipino group showed high, but somewhat mixed rates of success depending on the community's location. The approach with a diasporic and material-conditioned framework was embraced in my own study's methodology.

Research on chronic disease has also inspired this project by exposing significant disparities across Asian American ethnic groups while challenging the accessibility of public health services. For example, South Asian and Filipino groups exhibited higher rates of diabetes compared with other Asian American subgroups (Wang et. al 2011). Additionally, mortality rates of liver cancer have been found to be greater for Vietnamese, Korean, and Chinese groups (Holland et. al 2012). These differences, when inquired upon, have been attributed to differences in preventative and screening efforts.

Other studies have underscored the barrier of language in preventative health care, highlighting the lack of interpreters in medical care and other service industries (Lee et. al 2010). The U.S. Census data also shows significant differences across Asian American groups in terms of language proficiency (U.S. Census Bureau). Thus, in this study, I made sure to investigate

barriers to public health services by looking into language proficiency and participation in public aid programs that claim to alleviate food insecurity.

METHODS

Study population characteristics

The study population was a subcohort of adult residents sampled by the California Health Interview Survey (CHIS) between June and December of 2017. A dual-frame, multi stage sampling method was optimized to provide statewide estimates for California's overall racial/ethnic populations. The survey was conducted via web and phone-calls in six languages: English, Spanish, Chinese (Mandarin and Cantonese dialects), Vietnamese, Korean, and Tagalog. Questions covered sociodemographic characteristics, determinants of health status, and public program participation. I chose to use the 2017 database due to the inclusion of major Asian American ethnic subgroups in California: Chinese, Japanese, Korean, Vietnamese, and Filipino. More recent CHIS public data has omitted these disaggregated groups. Though I aimed to study as many Asian ethnicities as possible, this was the latest publicly available dataset including disaggregated Asian American populations. I chose to use California as the study site since the state is home to one-third of the Asian American population (Pew Research 2021) and is historically prevalent to their ethnographic history (Lee 2015).

Variables for analysis

The primary dependent variable in this study is the CHIS-provided variable of Food security, assessed through the *Six-Item Short Form of the Food Security Survey Module*, ranking scores on a scale of 1-6 from high to very low food insecurity, with questions regarding food access, anxiety over food access, frequency of skipped meals, and hunger (CHIS 2017 PUF Data Dictionary). CHIS provided a variable that combined poverty and food insecurity as: at or above 200% federal poverty level (FPL), below 200% FPL and food secure, below 200% FPL and food insecure without hunger, below 200% FPL and food insecure with hunger. In order to align with the USDA definition of food security as well as ensure adequate sample size, food insecure with

and without hunger was collapsed into one variable: Food Insecure; while the other answers were collapsed into the other binary variable: Food Secure.

The primary independent variable is the racial/ethnic subgroup for the assessment of possible variability within the disaggregated racial group and for comparative analyses across racial/ethnic groups. Information for race and ethnicity was self-reported through CHIS-administered surveys and classified into the following subgroups: Asian (Chinese, Korean, Japanese, Filipino, Vietnamese, and Other), Latino/Hispanic, White, African American, American Indian, and Other Race. Possible confounding or control variables tested for include age (18-44, 45-65, 65+), gender, country of birth (foreign-born vs. U.S. born), level of English proficiency, and geographical location (Urban, rural). Income was not examined since food security is calculated only for those who are 200% below the federal poverty level.

Data analysis

STATA V14 (StataCorp; College Station, TX, USA) was used for all analyses. After cleaning the data and assessing population characteristics, I conducted chi-squared tests of association to determine possible confounding variables. For my primary mode of analysis, multiple binary logistic regression tests were performed, accounting for different controls, in order to determine whether food insecurity rates varied significantly within disaggregated ethnic groups and across all racial/ethnic groups, while taking into account other confounding variables. Finally, I tabulated food insecure individuals within racial/ethnic groups with participation in public assistance programs in order to visualize access to current methods claiming alleviation.

<div align="center">

RESULTS

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Study population characteristics

A total sample size of 21,153 adults with 1,504 self-identifying Asian-Americans were included in this study. Among the other racial/ethnic groups of the cohort, N=16,480 were White, N=1,375 were African American, N=4,756 were Latino/Hispanic, N=921 were American Indian, and N=1,497 were categorized as Other Race. As displayed in Figure 1, the highest prevalence of

food insecurity among the Asian American ethnicities was found among the Vietnamese subgroup (18.19%), which is more than twice the proportion of the Asian American aggregate group and approximates the proportions of other racial minority groups. Additionally, the Filipino and Korean subgroups had higher rates of food insecurity compared to the aggregated Asian American group (7.11%), with proportions of 9.85% and 10.19% respectively. The lowest incidence of food insecurity was found among the Japanese subgroup, with a rate of 4.11%.
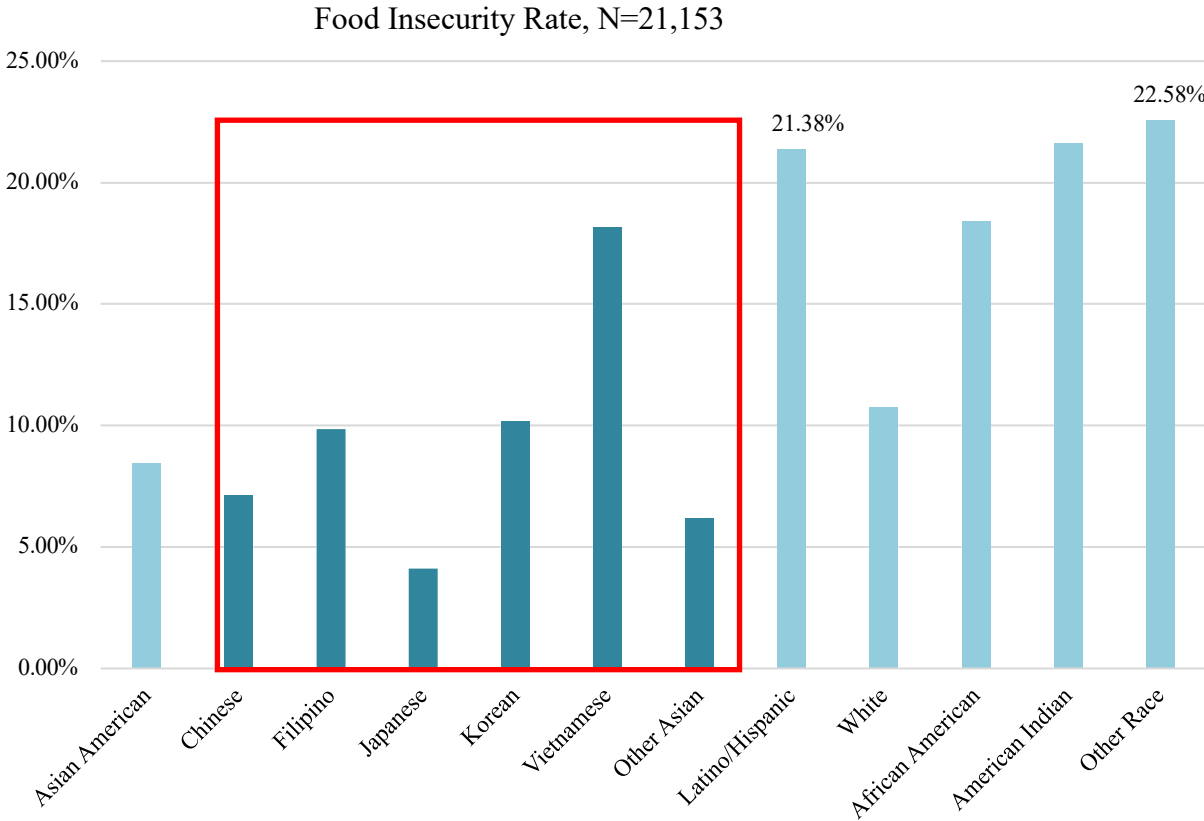

Figure 1. Food insecurity rate by race/ethnicity in 2017.

Other characteristics, such as birthplace and English proficiency, demonstrated significant proportional variation within the Asian American subgroup, and in comparison to other racial groups (Table 1a). While the average proportion of foreign-born adults was 57.78% in the Asian American aggregate group, the Japanese subgroup had a rate of only 15.75% foreign-born individuals, while other subgroups proximate 60%. The Vietnamese subgroup exhibited the highest rate of foreign-born individuals at 76.22%. Additionally, the level of English proficiency

was lowest among the Vietnamese subgroup with 35.66% of the subgroup at the lowest proficiency level. Compared to the average proficiency level among Asian Americans, Korean and Chinese subgroups also had higher proportions in the lowest proficiency level at 14.73% and 26.85% respectively. In terms of geographic location, Asian Americans were mostly found in urban areas.

Compared to other racial groups, Asian American ethnic subgroups overall demonstrated significantly higher rates of foreign-born individuals. Furthermore, Korean and Vietnamese subgroups demonstrated the highest proportions of individuals in the lowest proficiency tier, at similar levels to the Latino/Hispanic subgroup. Geographically, Asian Americans and ethnic subgroups resided in Urban areas more than any other racial group. Additional population characteristics are further displayed in Table 1a.

Public Assistance Program data on TANF/CALWORKS, Food Stamps, and SSI (Table 1b) showed that food insecure individuals in all Racial groups overall exhibit low rates of participation derived by cross-tabulation analysis. However, food insecure Asian Americans participated in food stamps in lower rates than food insecure individuals in other racial groups. Interestingly, SSI participation was among the highest rates in Japanese, Korean, and Vietnamese subgroups compared to all other racial/ethnic groups.

Chi-squared analysis demonstrated significant relationships between food insecurity prevalence and possible confounding variables, most notably English proficiency and Public Participation programs. However, birthplace and location didn't demonstrate significant association with food insecurity within the Asian American ethnic subgroups. Nonetheless, all variables resulted in significant association with enough groups to be included in the logistic regression analyses.

Table 2 shows the resulting odds ratios of binary logistic regression analyses between ethnic/racial groups and food security status, taking into account different control variables looked at earlier (Table 1). All Asian American ethnic subgroups were statistically significant except the Korean and Filipino subgroups. In the unadjusted regression analysis, the odds of being food insecure in the Vietnamese subgroup was 1.61 times higher than other subgroups, which proximate odds of the African American subgroup.

Table 1a. Sample characteristics. Data was downloaded from the 2017 California Health Interview Survey. Results are reported in rates (percentages). Red denotes higher rate than average Asian American proportion.

Race/Ethnicity	Asian American	Chinese	Filipino	Japanese	Korean	Vietnamese	Other Asian	Latino/Hispanic	White	African American	American Indian	Other Race	Total
N (%), n (%)	1504(7.11%)	421(27.99%)	274(18.21%)	146(13.85%)	108(10.25%)	143(13.57%)	339(32.16%)	4,756(22.48%)	16,480(77.91%)	1,375(6.50%)	921(4.35%)	1,497(7.08%)	21,153(100%)
Food Insecurity Rate	127(8.44%)	30(7.13%)	27(9.85%)	6(4.11%)	11(10.19%)	26(18.18%)	21(6.19%)	1,017(21.38%)	1,773(10.76%)	253(18.40%)	199(21.61%)	338(22.58%)	2,583(12.21%)
Age	44.99±.50	46.30±.92	44.86±1.24	55.10±1.24	44.94±2.01	45.15±1.62	40.24±1.03	38.13±1.90	58.36±.16	53.89±.56	53.94±1.30	49.98±2.73	53.84±0.13
Gender													
Male	745(49.53%)	208(49.41%)	129(47.08%)	59(40.41%)	50(46.30%)	67(46.85%)	189(55.75%)	2,094(44.03%)	7,164(43.47%)	547(39.78%)	400(43.43%)	725(48.43%)	9,317(44.05%)
Female	759(50.47%)	213(50.59%)	145(52.92%)	87(59.59%)	58(53.70%)	76(53.15%)	150(44.25%)	2,662(55.97%)	9,316(56.53%)	828(60.22%)	521(56.57%)	772(51.57%)	11,836(55.95%)
Birthplace													
U.S. Born	635(42.22%)	161(38.24%)	107(39.05%)	123(84.25%)	34(31.48%)	34(23.78%)	121(35.69%)	2,567(53.97%)	14,368(87.18%)	1,207(87.78%)	790(85.78%)	674(45.02%)	17,089(80.79%)
Foreign-Born	869(57.78%)	260(61.76%)	167(60.95%)	23(15.75%)	74(68.52%)	109(76.22%)	218(64.31%)	2,189(46.03%)	2,112(12.82%)	168(12.22%)	131(14.22%)	823(54.98%)	4,064(19.21%)
English Proficiency													
English (only)	564(37.50%)	133(31.59%)	125(45.62%)	108(73.97%)	30(27.78%)	19(13.29%)	115(33.92%)	1,283(26.98%)	13,300(80.70%)	1,133(82.40%)	584(63.41%)	262(17.50%)	15,334(72.49%)
English (well)	770(51.20%)	226(53.68%)	143(52.19%)	35(23.98%)	49(45.37%)	73(51.05%)	208(61.36%)	2,126(44.70%)	2462(14.94%)	176(12.8%)	262(28.45%)	712(47.56%)	4,280(20.23%)
English (not well)	170(11.30%)	62(14.73%)	6(2.19%)	3(2.05%)	29(26.85%)	51(35.66%)	16(4.72%)	1,347(28.32%)	718(4.36%)	66(4.80%)	75(8.14%)	523(34.94%)	1,539(7.28%)
Location													
Urban	1455(96.74%)	413(98.10%)	263(95.99%)	140(95.89%)	106(98.15%)	142(99.30%)	324(95.58%)	4,091(86.02%)	13,518(82.03%)	1,310(95.27%)	719(78.07%)	1,310(87.51%)	17,808(84.19%)
Rural	49(3.26%)	8(1.90%)	11(4.01%)	6(4.11%)	2(1.85%)	1(0.70%)	15(4.42%)	665(13.98%)	2,962(17.97%)	65(4.73%)	202(21.93%)	187(12.49%)	3,345(15.81%)
Public Program Participation													
TANF/CALWORKS	32(2.13%)	5(1.19%)	8(2.92%)	1(0.68%)	3(2.78%)	8(5.59%)	6(1.77%)	219(4.60%)	302(1.83%)	65(4.73%)	37(4.02%)	63(4.21%)	718(3.39%)
Food Stamps	50(3.32%)	15(3.56)	9(3.28%)	1(0.68%)	4(3.70%)	9(6.29%)	7(2.06%)	571(12.01%)	900(5.46%)	112(12.16%)	147(10.69%)	182(12.16%)	1,327(6.27%)
SSI	77(5.12%)	16(3.80%)	12(4.38%)	6(4.11%)	11(10.19%)	20(13.99%)	8(2.36%)	340(7.15%)	971(5.89%)	171(12.44%)	96(10.42%)	104(6.95%)	1,355(6.41%)

Table 1b. Participation of food insecure individuals in public participation programs across racial/ethnic groups. Cross-tabulation of the food insecure population (7.04% of total adult cohort). Results are reported in rates (percentages). Red denotes higher than overall average participation.

Race/Ethnicity	TANF/CALWORKS	Food Stamps	SSI
Asian American	15(11.81%)	18(14.17%)	26(20.47%)
Chinese	3(10.00%)	4(13.33%)	6(20%)
Filipino	4(14.81%)	5(18.52%)	2(7.41%)
Japanese	0(0%)	0(0%)	2(33.33%)
Korean	1(9.09%)	0(0%)	3(27.27%)
Vietnamese	2(7.69%)	3(11.54%)	9(34.62%)
Other Asian	4(19.05%)	4(19.05%)	4(19.05%)
Latino/Hispanic	103(10.13%)	261(25.66%)	150(14.75%)
White	161(9.08%)	425(23.97%)	382(21.55%)
African American	26(10.28%)	68(26.88%)	74(29.25%)
American Indian	21(10.55%)	56(28.14%)	48(24.12%)
Other Race	25(7.04%)	78(23.08%)	43(12.72%)
All	232(8.98%)	606(23.46%)	537(20.79%)

Adjusted analyses revealed that lower English proficiency and participation in public programs increased the prevalence of food insecurity across racial/ethnic groups. Being foreign born also increased the odds of food insecurity across all groups, excluding the Japanese subgroup. However, gender, age, and birthplace exhibited mixed effects. When controlling for Rural individuals, the odds of food security increased, contrary to my assumptions. This was possibly due to the undercounting of misrepresentative sampling of certain demographic groups.

Across all racial/ethnic groups, fully adjusted analyses showed that the variation of food security among racial subgroups was mediated (Figure 2), showing that the relationship between racial/ethnic group and food insecurity changes when covariates are included in the model. When holding place of birth, English proficiency, and participation in public assistance programs constant, the association between racial/ethnic group and food insecurity decreases in general for most of the subgroups.

Table 2. Association between ethnicity and food insecurity. Data from the 2017 CHIS was used to create various binary regression models with different controls to determine the association and variation between ethnicity and the rate of food insecurity. Values expressed as Odds Ratio (Confidence Interval).

|	M1(unadjusted)	M2	M3	M4	M5	M6	M7	M8
			Food Insecurity Rate					
Asian American	0.65 (0.53-0.78)**	0.54(0.45-0.65)**	0.66(0.55-0.79)**	0.47(0.39-0.57)**	0.47(0.39-0.57)**	0.69(0.57-0.84)**	0.70(0.57-0.86)**	0.62(0.50-0.78)**
Chinese	0.55(0.38-0.79)**	0.47(0.33-0.69)**	0.47(0.33-0.69)**	0.41(0.28-0.59)**	0.38(0.26-0.56)**	0.59(0.41-0.86)**	0.63(0.42-0.94)*	0.57(0.38-0.86)**
Filipino	0.78(0.53-1.16)	0.66(0.44-0.99)*	0.66(0.44-0.99)*	0.60(0.40-0.88)	0.69(0.46-1.03)	0.84(0.56-1.25)	0.87(0.56-1.35)	0.83(0.53-1.30)
Japanese	0.31(0.14-0.69)**	0.31(0.14-0.71)**	0.31(0.14-0.71)**	0.31(0.14-0.71)**	0.32(0.14-0.73)**	0.33(0.144-0.74)**	0.42(0.18-1.00)*	0.43(0.18-1.05)
Korean	0.81(0.44-1.52)	0.69(0.37-1.30)	0.69(0.37-1.30)	0.60(0.32-1.11)	0.52(0.28-0.988)*	0.88(0.47-1.64)	0.79(0.40-1.56)	0.70(0.35-1.37)
Vietnamese	1.61(1.04-2.44)*	1.39(0.90-2.13)	1.39(0.90-2.13)	1.14(0.74-1.74)	0.90(0.59-1.41)	1.75(1.14-2.70)*	1.16(0.73-1.85)	1.03(0.65-1.67)
Other Asian	0.47(0.30-0.74)**	0.37(0.24-0.57)**	0.37(0.24-0.57)**	0.34(0.22-0.54)**	0.37(0.24-0.58)**	0.50(0.32-0.78)**	0.57(0.36-0.93)*	0.49(0.31-0.79)**
Latino/Hispanic	2.55(2.38-2.78)**	2.22(2.00-2.43)**	2.22(2.00-2.44)**	2.32(2.13-2.56)**	1.75(1.56-1.96)**	2.63(2.38-2.86)**	1.35(1.23-1.49)**	1.02(0.89-1.16)
White	0.57(0.53-0.63)**	0.66(0.60-0.72)**	0.66(0.60-0.72)**	0.67(0.60-0.73)**	0.80(0.72-0.88)**	0.53(0.49-0.59)**	0.85(0.76-0.93)**	0.98(0.88-1.92)
African American	1.69(1.47-1.96)**	1.61(1.41-1.85)**	1.61(1.41-1.85)*	1.79(1.56-2.08)**	1.90(1.67-2.22)**	1.82(1.59-2.08)**	1.41(1.19-1.64)**	1.47(1.25-1.75)**
American Indian	2.04(1.75-2.44)**	1.89(1.61-2.22)**	1.89(1.61-2.04)**	2.17(1.82-2.56)**	1.96(1.67-2.32)**	2.00(1.69-2.38)**	1.34(1.16-1.67)**	1.28(1.08-1.54)**
Other Race	2.27(2.00-2.56)**	1.92(1.67-2.17)**	1.92(1.67-2.17)**	1.85(1.64-2.13)**	1.30(1.12-1.49)**	2.32(2.04-2.63)**	1.20(1.05-1.39)**	0.98(0.84-1.14)
Age Control	No	Yes	No	No	No	No	No	Yes
Gender Control	No	No	Yes	No	No	No	No	Yes
Birthplace Control	No	No	No	Yes	No	No	No	Yes
English Proficiency Control	No	No	No	No	Yes	No	No	Yes
Location Control	No	No	No	No	No	Yes	No	Yes
Public Program Participation	No	No	No	No	No	No	Yes	Yes
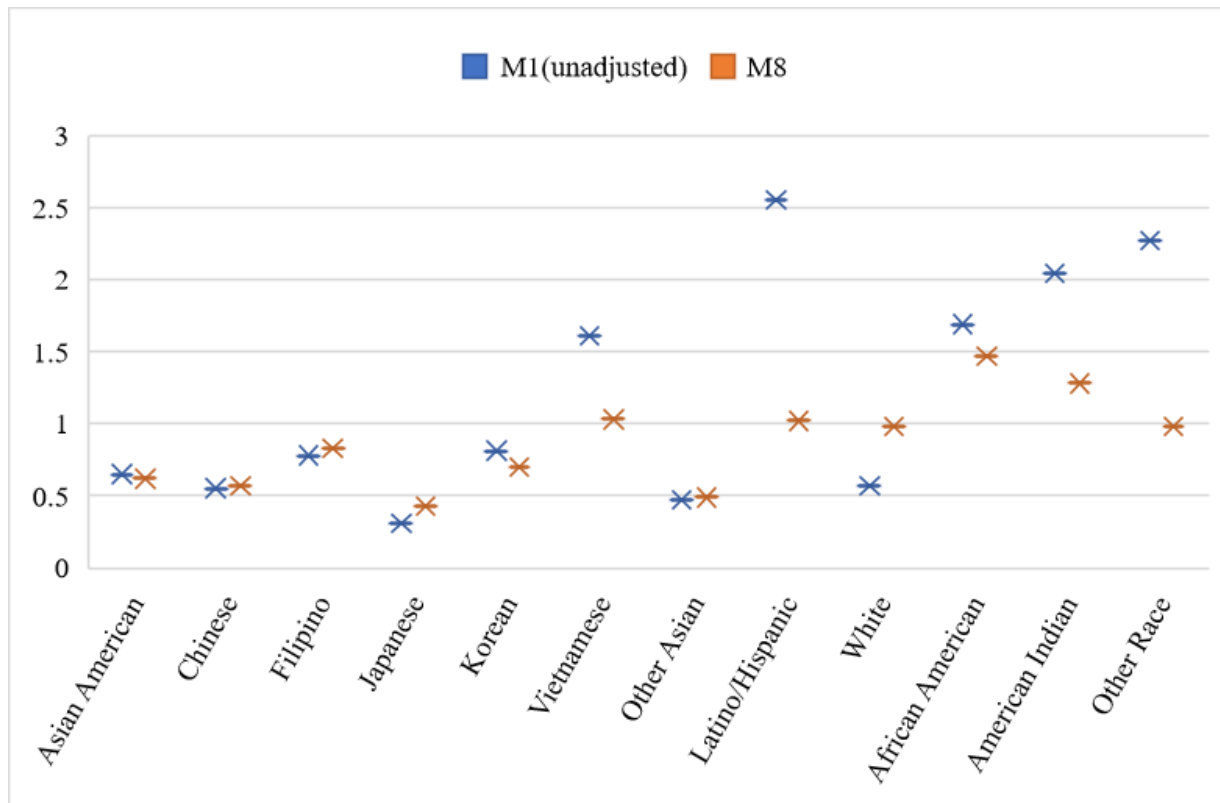
Figure 2. Association between ethnicity and food insecurity, adjusted versus unadjusted.

DISCUSSION

My findings suggest that aggregated analysis is insufficient at assessing variation of food security risk within Asian American populations. The logistic regression coefficient describing the relationship between food insecurity and ethnic/racial group was statistically significant for the Chinese, Japanese, Vietnamese, and Other Asian American subgroups, while inconclusive for the Korean and Filipino subgroups. Despite the fact that the Asian American group as a whole had a lower food insecurity rate than all other racial subgroups, disaggregated analysis revealed significant disparities, especially among the Vietnamese subgroup, exhibiting a risk as high as the African American subgroup. These findings support my claim that Asian American homogenization violently obscures disproportionately burdened communities. Specific structural inequalities affecting these results were revealed through analysis of participation in public aid programs (TANF/CALWORKS, Food Stamps, SSI), birthplace, and the levels of English

Proficiency within each racial/ethnic subgroup. Asian Americans are participating in public assistance programs less than all other racial groups and have more foreign-born individuals than any other racial groups. Additionally, Vietnamese Americans have the lowest English proficiency among all ethnic/racial groups. These results expose not only the lack of environmental health research within the Asian American communities, but also the failure to address public health crises in the state of California overall.

Material analysis of ethnic disparities

I argue that the ethnic disparities in food insecurity risk are the results of many temporal, sociocultural, and geographic contexts that have influenced the varying material outcomes across the Asian American populations in California. One of the outcomes underscored in this study is English proficiency. I found that this was a significant predictor of food insecurity among Asian Americans, as well as across racial/ethnic groups in general. Vietnamese Americans had the highest rate of food insecurity, and the lowest rate of English proficiency out of not only all Asian American ethnic subgroups, but among all racial/ethnic groups collected in the survey. In contrast, the Japanese subgroup had the lowest food insecurity rate and highest English proficiency. These findings are supported by one existing study disaggregating Asian Americans for food security outcomes (Lin et. al 2020). Historical contextualization can help explain these disparities in English proficiency. For example, immigrants account for only 27% of Japanese Americans who began arriving in the U.S. as early as the 19th century (Budiman et. al 2021). By contrast, Vietnamese Americans started arriving in the US in the late 20th century with a lack of language and cultural assimilation resources (Lee 2016), and currently live in areas with large foreign-born populations (Harjanto 2021). Community resources and capital accumulation acquired through revolutionary building and co-ethnic building by groups who have lived in the U.S. for generations, such as Chinese, Japanese, and Korean populations, explain the temporal effect on English proficiency and subsequently, on food insecurity. While certain studies argue that aggregating Asian Americans is helpful for predicting health outcomes (Gordon et. al 2019), looking at the material underlying causes of food insecurity makes it clear that racial predictors are inadequate for food insecurity.

English proficiency seems to be a greater and more vital demographic measurement of food insecurity, and perhaps other health outcomes, as emphasized in my logistic regression results, especially for contextualizing disparities among Asian American populations. This aligns with the conclusions of several previous studies. For example, it's been found that higher levels of health literacy and acculturation were associated with higher levels of cancer screening behaviors (Dong 2018). These types of outcomes are most likely due to language barriers in access to public program access and utilization, a significant barrier noted in public health research on Asian American populations (Ding et. al 2009). For example, Vietnamese immigrants, with the lowest English proficiency rate are significantly less likely to be uninsured than the total foreign-born population (Harjanto 2021) and were the highest hospitalized Asian American ethnic group during the COVID-19 pandemic in New York, approximating Hispanic and Black populations (Marcello et. al 2021). However, my research also underscores the lack of access and utilization of these public participation programs across all food-insecure Asian American individuals, which all had foreign-birth rates above 50% (excluding the Japanese subgroup).

It is clear that there is a lack of public initiatives to alleviate food insecurity among affected Asian American communities, especially among immigrants or language-burdened populations. Previous studies on food insecurity alleviation have also aligned with my findings on Asian American public participation (Becerra et. al 2021). Lack of participation in food aid programs has been explained by benefits being either "too low" to make applying worthwhile, or the application process being too invasive or complicated (Gabor et. al 2002). Recent cutoffs in Supplemental Nutrition Assistance Program (SNAP) benefits have also been found to increase household food insecurity (Ettinger de Cuba et. al 2019). Therefore, though public assistance programs exist, food insecure Asian Americans are most likely not accessing these resources due to either their inability to qualify, inability to access (language barriers), or lack of knowledge (language and community severance).

The flaws of standardized environmental health research

Standardized environmental health research addressing disparities fails to adequately address underlying causes of environmental health disparities through aggregated racial data analysis. My findings reveal both invisible burdens of food insecurity, while also providing

plausible explanations for the disparities, showing that when English proficiency, place of birth, and access to public participation resources are taken into account, differences among all racial and ethnic groups become mediated. While previous studies on disaggregation of Asian Americans in public health research have concluded that there is an imperative need to address food insecurity burden among Asian Americans (Becerra et. al 2021, Leong et. al 2014), the bigger picture is lacking. English proficiency and place of birth subdued effects of food insecurity among not just Asian Americans, but among all other racial groups. This indicates that food insecurity burden needs not only to be reassessed within Asian American populations, but all other populations as well. While most research had concluded that the other major minority racial groups are found to be more burdened by food insecurity than their white counterparts (Becerra et. al 2021), the causes of these disparities are most important to conclude with for alleviation of these burdens.

I argue that more historical and material contextualization is needed to address these disparities. Different racial/ethnic groups encompass complexities that can and must be addressed in environmental justice research. There is no justice in merely deeming a group to be more burdened. There are structural and systemic impositions of violence that have led to each population's niche occupation in this country, such as lack of resources for immigrants, leading to generations of severance and poor economic and health outcomes. Food insecurity is only one symptom of these complex material occupations. There must be a decolonial stance towards assessing and addressing disproportionate burdens of access to a healthy life.

Limitations and Future Directions

Despite my intentions to increase understanding of Asian American food insecurity, there were several limitations to my research process. First, my population of study did not include all the Asian American ethnic populations in California, most notably South and Southeast Asian populations. These are significant and widespread populations where more invisible burdens of health lie. The Hmong population is among those with invisible burdens, with one of the highest poverty rates in California (Budiman et. al 2021). By being limited to only 5 Asian American ethnic groups, I have participated in the aggregation of all other Asian American ethnic groups in the "Other" category. I also want to note that disaggregation among "White", "Hispanic", "Black",

and "Indian American" subgroups are highly important, and while I hope my themes inspire future research in these populations, they were not addressed adequately in this study.

Additionally, my study sample is limited to California, with a size of 21,153 individuals, and 1,504 Asian American individuals. Though the sample was collected to approximate actual population proportions of racial/ethnic groups, this left a small cohort of Asian Americans, with certain groups, like the Japanese subgroup amounting to a total of only 108 individuals, which may have affected analysis outcomes. This sample was also collected in 2017, due to subsequent CHIS public data not providing disaggregated Asian American groups. Therefore, significant events, like the COVID-19 pandemic, which may have exacerbated disparities, is not accounted for in this study.

I was also unable to incorporate voices of the Asian American community due to a lack of time and resources. Community participatory research should be the prioritized research methods for environmental health disparities, in order to more accurately assess more personal and genuine individual narratives for contextualizing outcomes. In doing so, data that is complicated to capture via survey, such as family history, or reasons for lack of access to resources, could have climatized specific outcomes.

Future research must utilize more rigorous and inclusive methods of collecting data to accurately represent ethnic minority populations and their geographical locations to assess how specific Asian American populations are affected in different cities, within ethnic enclaves, or within White-dominant communities. The definition of food insecurity may also have to be expanded to include food anxiety or access to culturally-appropriate foods, both of which affect an individual's quality of life. Evidence suggests that Asian Americans have significantly worse self-reported mental health and higher rates of chronic conditions compared with their white counterparts (Nguyen et. al 2019). Taking this into account, "food insecurity" may not address all aspects of food justice.

Most importantly, future research should prioritize community-based participatory research (CBPR), providing urgent methods of alleviation of the community, while incorporating their feedback with malleable research design. CBPR approaches are found to be well-suited to address the nature of distress and help-seeking process within specific ethnocultural and communal contexts, and to promote dialogue between Asian American community members, researchers, and practitioners. (Okazaki et. al 2014). Possible alleviation methods for food insecurity can include

community gardens, health-educators with language interpreters and teachers, and other community-empowerment organizing.

Broader Implications

Food insecurity is not being addressed, despite it being a basic human right to health. The microcosm of structural environmental inequality in this study is just a symptom of the overarching violence imposed by the capitalistic tendencies to forsake human and environmental health for profit. Under this system, Asian Americans are made invisible: their history of organization distorted and their current suffering unaddressed. Addressing the lack of disaggregation and material analysis in research is important for unveiling these systems of violence and working towards empowerment by repossessing our rights to health and education.

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