

**COMMUNITY, FAMILY, AND SUPPORT: DEPRESSION
AMONG OLDER ASIAN IMMIGRANTS IN THE
COVID-19 PANDEMIC**

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ABSTRACT

This dissertation examines the complex interplay of structural, psychosocial, and cultural determinants shaping depression risk among older Asian American ethnic subgroups during the Coronavirus disease 2019 (COVID-19 pandemic). Addressing critical gaps in mental health research on this rapidly growing yet understudied population, this mixed-method investigation disaggregates the often-homogenized “Asian American” racial category to study significant heterogeneity in mental health outcomes and their determinants across Chinese, Filipino, Korean, and Vietnamese American immigrant communities in the greater Philadelphia (PA-NJ) and the New York City (NYC) areas.

The first study analyzes depression prevalence and severity among older Asian Americans (n=482, aged 65 and above) across PA-NJ and NYC areas using quantitative survey data that were collected during the pandemic. To address missing data and preserve statistical power, I employed multiple imputation using chained equations (MICE) to impute missing values in key variables. Multivariate progressive logistic regression models reveal pronounced depression disparities between community contexts and ethnic subgroups. Chinese Americans in NYC exhibited remarkably elevated depression risk (OR=4.76, $p<0.001$) compared to their PA-NJ counterparts, while Korean and Filipino Americans demonstrated comparatively lower depression rates. Socioeconomic factors, acculturation levels, and cardiometabolic conditions emerged as significant predictors of depression outcomes. Oaxaca-Blinder decomposition analysis

further illuminates that while observable factors largely explain the Filipino- Chinese depression gap, unobserved factors primarily drive differences between other community subgroups. These findings, interpreted through weathering and cumulative disadvantage theoretical frameworks, suggest that differential exposure to pandemic stressors, particularly in high-density urban environments, exacerbated pre-existing vulnerabilities in specific Asian American communities.

The second study delves deeper into the mechanisms underlying these disparities by examining how structural and psychosocial determinants operate differently across community contexts. Through exploratory factor analysis, I identified two latent constructs: Cumulative Human Capital Advantage and Aging-Related Family Strain. Multivariate logistic regression models with interaction terms present that while cumulative human capital advantage generally provides protection against depression, its protective effects are unevenly distributed. Chinese immigrants in NYC maintain elevated depression risks despite higher socioeconomic resources, suggesting the presence of community context-specific stressors that overwhelm traditional protective factors. Aging-related family strain has particularly strong detrimental effects among Chinese NYC and Vietnamese older immigrants. In contrast, Korean Americans show notable resilience to these stressors, suggesting more culturally specific mechanisms of vulnerability and protection.

The third study employs participant-driven photo elicitation interviews among 20 older Chinese Americans residing in PA-NJ and NYC to examine how collectivist cultural values specifically shape the mental health experiences and support-seeking

behaviors of this population during the pandemic. This qualitative study reveals that collectivism has paradoxical impacts on mental health outcomes. Specifically, although collectivist values discourage mental-health-related help-seeking through concerns about burdening others, they simultaneously facilitate support exchange through principles of mutual responsibility that are rooted in collectivist cultures. The findings demonstrate how collectivism constructs perceived social support into a multi-layered ecosystem in which family and friends, community organizations, and government assistance are interpreted through a distinguishing cultural lens and perception. Notably, within collectivist contexts, providing support becomes a pathway to mental wellness itself, as this act offers meaning and purpose during crisis under a collectivist context.

In conclusion, this dissertation makes significant contributions to a better understanding of depression disparities among older Asian Americans during the COVID-19 pandemic. The research shows how mental health risks develop from the interplay of structural inequalities, psychosocial stressors, community contexts, and cultural frameworks by employing the mixed-method approach and drawing on theoretical frameworks such as the weathering hypothesis, cumulative disadvantage theory, and social support theory. Although with some limitations, the findings underscore the critical importance of disaggregated approaches to mental health research among Asian American immigrants and suggest that effective interventions must be tailored not only to address structural inequalities but also to leverage culturally specific resources and family dynamics that shape vulnerability and resilience differently across Asian American subgroups. This research has important implications for developing

culturally responsive mental health services and interventions that can better address the diverse needs of the rapidly growing and aging Asian American population in the United States.

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CHAPTER 1

INTRODUCTION

Depression is a prevalent and persistent mental health condition that imposes substantial personal, social, and economic burdens, with approximately one in four US adults (24.7%) reporting symptoms of mild depression or greater (Ettman et al. 2020). Among older adults, depression is the most prevalent psychological disorder and a leading risk factor for suicide (Bartels et al. 2002; Iwamasa and Hilliard 1999). Its chronic and recurrent nature necessitates ongoing care and treatment, generating long-term costs for individuals and healthcare systems (Chan et al. 2024). Projections indicate that by 2030, depression will become the leading cause of disease burden in high-income countries and globally (Bucciarelli et al. 2022; Mathers and Loncar 2006).

Asian Americans are one of the fastest-growing racial minority groups in the United States. From 2000 to 2019, the Asian American population increased by 81%, outpacing all other racial and ethnic groups (Ruiz and Budiman 2021a). By 2065, Asian Americans are projected to become the largest immigrant group in the country. Among older adults aged 65 and above, the Asian American population is projected to grow by 118% between 2019 and 2040, making it the second fastest-growing elderly population after Hispanic Americans (Administration for Community Living 2024). This demographic expansion has been largely driven by immigration, resulting in a predominantly foreign-born older population with unique mental health vulnerabilities. Challenges such as limited English proficiency, lower healthcare access, and underutilization of professional mental health services exacerbate their risk of depression

(Bauer, Chen, and Alegría 2010; Sorkin, Nguyen, and Ngo-Metzger 2011). The cultural stigma surrounding mental illness (Lee et al. 2008) and a lack of awareness of formal resources further contribute to underdiagnosis and undertreatment (Kim and Gonzales 2024; Mui and Kang 2006).

The COVID-19 pandemic functioned as a powerful stress test that magnified existing mental health disparities. Globally and in the US, depression rates surged (Chao et al. 2021; Salari et al. 2020). Communities of color were disproportionately affected by pandemic-related stressors, and Asian Americans were uniquely impacted by rising anti-Asian sentiment, discrimination, and hate crimes (Gee et al. 2007; Green 2020; Kim and Epstein 2021). Older Asian Americans faced compounded risks: higher exposure to COVID-19 due to employment in essential roles (Honoré and Hu 2023), limited language access (Ma et al. 2021), increased social isolation (Murayama, Okubo, and Tabuchi 2021), and targeted racism (Han, Riddell, and Piquero 2022). Previous research suggests lifetime depression prevalence among this population may have reached as high as 40% (Mui and Kang 2006), with significant increases in diagnoses during the pandemic (Czeisler 2020).

Prior research finds that Asian Americans, when confronted with psychological distress, often turn to informal social support over formal mental health services (Spencer and Chen 2004). However, cultural norms such as collectivism, filial piety, emotional restraint, and avoidance of shame may constrain the mental health benefits of support networks (Sangalang and Gee 2012a). This results in a complex interplay: while collectivist values may inhibit help-seeking to avoid burdening others, they may also

promote mutual responsibility and interdependence. Despite this complexity, the potential positive contributions of collectivism to mental health, especially during crisis periods, remain underexplored. Understanding how older Asian Americans perceive and navigate social support during the pandemic requires attention to both cultural meanings and structural contexts.

This study will contribute to the mental health disparities experienced by older Asian Americans by addressing the following gaps in previous research. First, there is limited understanding of intra-ethnic variation in depression among older Asian Americans, particularly during the COVID-19 pandemic, which may mask subgroup-specific risks and protective factors. Second, existing work rarely examines how community context and local resources shape mental health outcomes across regions. Third, existing ethno-racial health inequality theories are frequently applied to other marginalized groups, but less so among older Asian Americans. Finally, while cultural stigma is often cited, few studies have examined how collectivist values shape perceptions of and access to social support during crisis periods.

To fill these gaps, this dissertation employs a mixed-methods design and is organized as three standalone, journal article-style chapters:

Chapter 2 investigates ethnic and geographic disparities in depression prevalence among older Asian Americans during the COVID-19 pandemic, focusing on four major subgroups (Chinese, Korean, Vietnamese, and Filipino) in New York City and Greater Philadelphia. The analysis explores how individual-level factors such as education,

income, and acculturation explain observed differences. The weathering hypothesis and cumulative disadvantage theory will guide this quantitative research.

Chapter 3 deepens our analysis by applying a theory-informed lens to examine how structural position and aging-related family strains differentially affect depression risk across five older Asian American communities. Similar to Chapter 2, this quantitative chapter will extend the weathering hypothesis and cumulative disadvantage theory with empirical support from the older Asian immigrant community.

Chapter 4 uses qualitative photo-elicitation interviews with older Chinese Americans to explore how collectivist cultural values shape social support dynamics and mental health coping. It investigates whether cultural values are barriers or resources and how they influence help-seeking during crises.

Each chapter contributes to a more nuanced understanding of how structural inequalities and cultural logic intersect to shape mental health among older Asian Americans. Together, they offer an integrated framework for developing more effective, culturally informed mental health interventions for this growing and underserved population.

CHAPTER 2

**CUMULATIVE DISADVANTAGES AND DEPRESSION: COMMUNITY
CONTEXT, ACCULTURATION, AND PRE-EXISTING METABOLIC
CONDITIONS AMONG ASIAN AMERICAN ELDERLY DURING
THE COVID-19 PANDEMIC**

Abstract

This study investigates heterogeneity in depression prevalence among elderly Asian American ethnic subgroups during the COVID-19 pandemic, addressing critical gaps in mental health research on this rapidly growing population. Using data from the AD-CRC Project, I analyzed depression severity measured by PHQ-9 across Chinese, Filipino, Korean, and Vietnamese Americans aged 65 and above from the greater Philadelphia (PA-NJ) and New York City (NYC) areas (n=482). Multivariate logistic regression models revealed significant depression disparities: Chinese Americans in NYC exhibited the highest depression risk (OR=4.76, $p<0.001$) compared to their PA-NJ counterparts, while Korean and Filipino Americans showed lower depression rates. Socioeconomic factors, acculturation, and cardiometabolic conditions significantly influenced depression outcomes. Oaxaca-Blinder decomposition analysis demonstrated that observable factors explained most of the Filipino - Chinese depression gap, while unobserved factors primarily drove other community differences. Guided by weathering and cumulative disadvantage theories, findings suggest that differential exposure to pandemic stressors, particularly in high-density urban environments, exacerbated pre-

existing vulnerabilities. Results underscore the importance of disaggregated approaches to mental health research and culturally tailored interventions for different Asian American subgroups.

Literature Review

Depression is a complex social issue, and its prevalence in the population is shaped in part by broader structural and institutional systems in the United States (Donohue and Pincus 2007; Greenberg and Birnbaum 2005; Lépine and Briley 2011). Research finds that this mental health condition constitutes substantial social challenges, affecting approximately one-quarter (24.7%) of the US population (Ettman et al. 2020). The negative and accelerating impacts of depression extend beyond individual manifestations and create reverberation effects throughout communities (Mathers and Loncar 2006), generating significant healthcare expenses and social costs that impact collective well-being (Bucciarelli et al. 2022). Understanding racial and ethnic differences in depression prevalence and the underlying mechanisms that produce them is crucial for addressing mental health disparities in the United States. Answering these questions will inform healthcare providers' and policymakers' efforts to develop community-level interventions that address the underlying social determinants contributing to mental health inequities across diverse populations (Kim et al. 2015).

Among Asian Americans, one of the nation's most rapidly expanding minority populations, the incidence of depression has been reported to vary substantially across ethnic groups (Iwamasa and Hilliard 1999; Kim et al. 2015). The elderly Asian American population in the US is projected to increase from 6.6 million in 2019 to 14.4 million in

2040, a 118% increase (Administration for Community Living 2021), making it the second fastest growing population among all racial/ethnic elderly groups (Administration for Community Living 2024). Previous research finds that depression is a significant health concern among this rapidly expanding population, with studies indicating lifetime depression prevalence rates as high as 40% among some older Asian American ethnic subgroups (Japanese, Vietnamese, Indians, Chinese, Korean, and Filipino Americans) (Mui and Kang 2006). Meanwhile, the average lifetime depression rate among all older Americans is 20.3% in a large-scale cohort study (Xi 2023). Moreover, this population experiences more severe mental health disparities and elevated distress levels compared to younger Asian American cohorts (Uba 2003). The rapid growth of the population size and documented disparities in depression prevalence underscore the urgent need to better understand mental health challenges facing elderly Asian Americans and the diverse set of national-origin and ethnic groups comprising this broad, pan-ethnic population.

Previous research has identified some significant factors that contribute to elevated depression risk among elderly Asian Americans, including perceived generational cultural differences, self-reported poor health status, exposure to stressful life events, religious beliefs, relationships with adult children (both emotional closeness and received assistance), and duration of US residency (Mui and Kang 2006). Moreover, acculturation-related challenges, particularly limited English proficiency and unfamiliarity with American cultural and institutional norms, have been shown to play a role in depression development (Mui 1996). In addition, research has identified socioeconomic status, social support, and chronic health conditions as significant risk

factors of depression (Woo et al. 1994). Advanced age, limited social connections, and reduced community participation compound the above-mentioned challenges (Adams, Sanders, and Auth 2004).

The substantial heterogeneity in depression prevalence across Asian American ethnic groups is well documented (Mui and Kang 2006). Research conducted before the COVID-19 pandemic shows that Southeast Asians have the highest risk of depression at 19%, followed by South Asians at 11%, and East Asians at 9% (Misra et al. 2020). A 2015 meta-analysis by Kim and colleagues indicates that about one-third (33.3%-34.4%) of Filipino- and Korean American adults were depressed, with the estimated depression rates about twice as high as those among Chinese Americans (15.7%) (Kim et al. 2015). Moreover, some risk factors have different effects on depression among different ethnic groups. For instance, racial and ethnic identity is negatively related to depression in Filipinos but has a positive relationship in Chinese Americans (Ai et al. 2015).

Despite extensive documentation of depression prevalence variation among Asian American ethnic groups in the general adult population, research specifically examining these differences among older adults (65 years and above) remains sparse. This knowledge gap is concerning given that older Asian Americans face unique risk factors that may differentially impact mental health across ethnic subgroups. The COVID-19 pandemic exacerbated mental health vulnerabilities among elderly Asian Americans through multiple mechanisms, including increased social isolation (Sayin Kasar and Karaman 2021), anti-Asian discrimination (Anti-Defamation League 2020; Gover, Harper, and Langton 2020; Han et al. 2022), and limited healthcare access due to

language barriers (Paun and Kim 2024; Swartz et al. 2024). Although there is research indicates significant increases in depression rates across Asian American adults during this period (with rates doubling from 9% to 21% in some groups) (Ettman et al. 2020; Lozano et al. 2022), limited attention was given particularly to the experiences of older Asian Americans.

This study addresses this knowledge gap by systematically exploring the heterogeneity in depression among ethnic sub-groups of elderly Asian immigrants in the Northeast US. Furthermore, the study incorporates a geographical dimension, investigating how regional variations in COVID-19 severity and associated stressors may differentially impact depression outcomes. This regional consideration is crucial given the well-documented geographic heterogeneity in pandemic intensity and response measures across the United States (Hallas et al. 2021; Vallée 2022). The integration of both ethnic and regional analyses will provide a more comprehensive understanding of depression and its risk factors among elderly Asian American populations during a public health crisis.

Beyond the above-stated gaps, the relationship between pre-existing cardiometabolic conditions and mental health outcomes among elderly Asian Americans also represents a significant yet understudied aspect of chronic stress during the COVID-19 pandemic. Research has established that individuals with a cardiovascular disease history exhibit increased vulnerability to COVID-19 infection and experience more severe clinical manifestations, leading to adverse health outcomes (Bansal 2020). While prior investigations have demonstrated that the association between psychiatric disorders

and cardiovascular diseases varies across racial and ethnic groups, including African Americans, Caribbean Blacks, and non-Hispanic Whites (Assari and Lankarani 2014), this relationship remains largely unexplored among Asian American elderly populations.

The depression variation among intra-Asian subgroups during the pandemic can be better understood through the theoretical frameworks of weathering theory and cumulative disadvantage. Weathering theory, developed by Arline Geronimus in 1992, proposes that chronic exposure to social, economic, and political stressors leads to accelerated biological aging and poor health outcomes, particularly among African Americans (Benson 2014; Geronimus et al. 2006). The theory suggests that persistent stress from discrimination, poverty, and systemic inequities causes physiological “wear and tear” on the body’s systems, similar to how weather erodes physical structures over time (Geronimus et al. 2020). Meanwhile, Dale Dannefer’s Cumulative Disadvantage Theory (CDT) examines how inequalities compound and become more pronounced over time through a process of systematic disadvantages that accumulate across the life course (Dannefer 2003; Ferraro and Shippee 2009). This theory also explains how early disadvantages lead to reduced opportunities, which in turn create additional barriers, forming a cycle of increasing inequality (Dannefer 2003). Both theories delve into structural and systematic disparities and their long-term impacts on health, and concede that disparities tend to increase over time, and also help explain persistent social and health inequities. Both theoretical frameworks offer valuable insights into understanding depression disparities among elderly Asian Americans. However, the application of these theories to Asian American populations is sparse and requires further development

through empirical research. Specifically, the current study examining disaggregated data across diverse intra-Asian subgroups would enhance our understanding of how different immigration histories, cultural contexts, and socioeconomic characteristics influence depression outcomes during crises. The study would not only validate these theoretical frameworks but also reveal unique patterns of disadvantage accumulation and stress-related weathering across different Asian American communities, ultimately strengthening the theories' explanatory power and practical utility in addressing mental health disparities.

To sum up, guided by the cumulative disadvantage and weathering theories, this study investigates the variation in depression across elderly Asian American ethnic groups during the COVID-19 pandemic. Specifically, the research explores the extent to which between-group variation in depression can be attributed to different risk factors among these populations across geographical regions. This investigation addresses critical gaps in current literature by: 1) providing an analysis of depression disaggregated across four elderly Asian American ethnic groups during the pandemic period, 2) examining the role of pre-existing cardiometabolic conditions as a potential mediator of mental health outcomes, and 3) accounting for regional variation. The overall goal of this study is to advance our understanding of how ethnic-specific health characteristics and geographic and community contexts interact to influence depression risk among elderly Asian American populations during the COVID-19 pandemic.

Method

Participants and Recruitment

This paper analyzes survey data drawn from a project titled “Factors Associated with Alzheimer Disease/Alzheimer's Disease Related Dementias and Colon Cancer Among Elderly” (AD-CRC Project, funded by NIH, Principal Investigator: Dr. Grace Ma). The AD-CRC project was conducted from March 2020 to September 2021, a period of time that was significantly affected by the COVID-19 pandemic. Following a Community-Based Participatory Research approach (Geronimus et al. 2020; Israel et al. 2005; Ma et al. 2012), the research team reached out to and collaborated with community- and faith-based organizations for participant recruitment. Eligibility screening was conducted before data collection. Individuals were invited to join the study if they 1) were age 65 or older and 2) self-identified as Chinese, Korean, Vietnamese, or Filipino Americanⁱ. Individuals were excluded from the study if they 1) were diagnosed with Alzheimer’s Disease (AD) or Alzheimer’s Disease-Related Dementia (ADRD); 2) had other psychiatric or neurological disorders; 3) had noticeable cognitive impairment; and 4) had functional difficulties that required intensive care or support. Through one-on-one phone interviews, trained bilingual interviewers collected the AD-CRC survey data from elderly participants aged 65 and above residing in New York City (NYC) and the greater Philadelphia area (PA-NJ). The questionnaire was translated into plain Asian languages to ensure accessibility for all participants. The study was approved by Temple

ⁱ The AD-CRC project also collected data from the African-American community, but African Americans were not included in the analytical sample of this paper.

IRB (protocol number 26336). All participants provided informed consent in their preferred languages before any data was collected from them. In this study, only data collected from the four Asian subgroups (n=482) was included in the analysis, including n=99 Chinese, n=100 Filipino, n=100 Vietnamese, n=83 Korean American participants from the Greater Philadelphia area, and n=100 Chinese participants from New York City.

Measures

In the AD-CRC project, depression was measured by the Patient Health Questionnaire 9 (PHQ-9), which is a self-administered tool designed to screen for and measure the severity of Major Depressive Disorder (MDD) in the preceding two weeks. (Beswick et al. 2022; Kroenke, Spitzer, and Williams 2001). The PHQ-9 questionnaire comprises nine itemsⁱⁱ that align with the diagnostic criteria for MDD, rated on a scale from zero (never) to three (nearly every day). PHQ-9 has demonstrated strong reliability and validity across various Asian American populations, making it a valuable tool for depression screening in these groups (Donnelly and Kim 2008; Harry et al. 2021; Nguyen, An, and Dong Phuong Tien 2022). The total PHQ-9 score ranges from 0 to 27, with 0-4 for non-minimal, 5-9 for mild, 10-14 for moderate, 15-19 for moderately severe, and 20-27 for severe depressive symptoms (Kroenke and Spitzer 2002). The traditional cut-off score of ≥ 10 is often used in clinical settings, but research indicates that the cut-

ⁱⁱ The nine items are: 1. Little interest or pleasure in doing things; 2. Feeling down, depressed, or hopeless; 3. Trouble falling or staying asleep, or sleeping too much; 4. Feeling tired or having little energy; 5. Poor appetite or overeating; 6. Feeling bad about yourself or that you are a failure or have let yourself or your family down; 7. Trouble concentrating on things, such as reading the newspaper or watching television; 8. Moving or speaking so slowly that other people could have noticed. Or the opposite being so fidgety or restless that you have been moving around a lot more than usual; 9. Thoughts that you would be better off dead, or of hurting yourself.

off score can vary depending on the population and context, with some studies advocating for a lower cut-off to improve sensitivity without significantly compromising specificity. Based on Kim et al.'s findings in the Korean and community-collected data context in 2023 (Kim et al. 2023), a threshold value of 5 as the cut-off point of depression was employed for multivariate analysis in this paper.

The ethnicity variable in the AD-CRC dataset was measured by the question “to which of the following do you identify” with options “Black/African American, Chinese, Korean, Vietnamese, Filipino, other (please specify)_____.” Therefore, the ethnicity group was self-identified by participants during the data collection process. Based on the participants’ residential regions, combined with self-reported ethnicity, the community variable includes five categories: Chinese community from the greater Philadelphia area (including south New Jersey) (CN PA-NJ), Chinese community from New York City (CN NYC), Filipino PA-NJ, Korean PA-NJ, and Vietnamese PA-NJ.

One’s history of cardiometabolic conditions (heart disease, hypertension, diabetes, high cholesterol, and stroke) was measured using the question, “Have you ever been told by a doctor, nurse, or other health professionals that you had the following conditions?” For each listed condition, information on whether the condition was present, the year of diagnosis, and whether medication was prescribed was collected.

Moreover, socioeconomic and acculturation-related data on age, gender, immigration age, marriage status, education level, employment status, annual household income, family size, and English proficiency was included in the AD-CRC questionnaire.

Missing Data

Primary data analysis revealed that approximately 40% of the sample (n=191) will be excluded due to missing data via listwise deletion in the multivariate analysis. To address missing data, preserve statistical power while minimizing potential bias from complete-case analysis, multiple imputation using chained equations (MICE) was employed with key variables (Bachmeier, Van Hook, and Bean 2014; White, Royston, and Wood 2011). The imputation model utilized different statistical approaches tailored to each variable's distribution type. To be specific, binary variables such as gender were imputed using logistic regression models. Missing data in categorical variables with more than two response options (e.g., marital status, educational attainment, employment status, annual household income, household composition, and English proficiency) were addressed through multinomial logistic regression. For continuous variables, including PHQ-9 depression score, immigration age, and number of cardiometabolic conditions, predictive mean matching with three nearest neighbors was implemented to preserve the natural distribution of these measures. A fixed random seed (103006) was used to ensure reproducibility of results. A summary of the imputation results is presented in Table A.1 in Appendix A. The data completeness varied across variables, with gender having the highest completion rate (0.6% missing) and the number of cardiometabolic conditions showing the lowest completion rate (33.6% missing). Depression (10.4% missing), immigration age (8.3% missing), and household composition (8.1% missing) also had notable missing data. Using the MICE procedure, all missing values were successfully

imputed, resulting in 20 complete datasets for subsequent statistical analyses. The process of imputation validation was included in Appendix B.

Data Analysis

With the imputed datasets, proportion analysis was conducted to compare how the above-stated variables vary across the targeted ethnic groups. Following a rigorous assessment of regression assumptions, including linear regression, Poisson regression, negative binomial regression, logistic regression, and ordered logistic regression, the logistic regression model was found to be optimal for the dataset based on statistical diagnostics and theoretical considerations. A series of two-tailed logistic regression analyses were conducted. Moreover, Oaxaca-Blinder decomposition analysis was conducted to disentangle the sources of depression disparities between intra-Asian subgroups. All data analysis was implemented using Stata 15.0, and a p-value that is smaller than 0.05 is considered statistically significant, while a p-value that is smaller than 0.1 and greater than 0.05 is considered marginally significant to capture potential patterns.

Results

Participant Characteristics Across Ethnic Groups

Demographic characteristics of the study sample (n=482, imputed sample) are shown in Table 2.1. The sample has a mean age of 74.85 years, is two-thirds female (63%, CI: [0.58, 0.67]), and two-thirds of the sample was married at the time of the survey (67%, CI: [0.63, 0.71]). Table 2.1 also presents that a substantial proportion of

participants (63%, CI: [0.58, 0.68]) reported annual household incomes below \$10,000, while the mean household size was 3.06 persons. Most participants (90%, CI: [0.87, 0.93]) were not employed. Regarding acculturation status, a considerable proportion of participants reported limited English proficiency, with 27% (CI: [0.23, 0.31]) reporting no English language ability and 44% (CI: [0.40, 0.49]) reporting poor English language skills. Immigration age indicated that 43% (CI: [0.39, 0.48]) of the participants had immigrated to the United States at or before age 45. Moreover, the table showed that 45% (CI: [0.40, 0.49]) of participants had achieved college-level or higher education.

Table 2.1 also reveals significant intra-ethnic variations across demographic characteristics. Filipino participants in PA-NJ demonstrated notably higher socioeconomic indicators, with 94% (CI: [0.89, 0.99]) reporting college-level or higher education, and only 12% (CI: [0.05, 0.18]) reported annual household income lower than \$10,000. The Filipino sample also showed substantially higher acculturation advantages, with 95% reporting strong English language proficiency and 79% having immigrated at or before age 45. While Chinese participants from New York City aligned closely with the overall sample means, their PA-NJ counterparts showed significant deviations, including a higher “not working” rate (96%, CI: [0.91, 1.00] vs. 90%, CI: [0.87, 0.93]), a more significant proportion of low-income households (<\$10,000: 87%, CI: [0.80, 0.94] vs. 63%, CI: [0.58, 0.68]), elevated rates of no English proficiency (58%, CI: [0.48, 0.67] vs. 27%, CI: [0.23, 0.31]), and later-life (after age 45) immigration (73%, CI: [0.64, 0.82] vs. 57%, CI: [0.52, 0.61]).

Table 2.1 Descriptive and Bivariate Analysis of Sociodemographic Predictors by Community

Socio-demographic	Communities					Total (n=482)
	Chinese PA-NJ (n=99)	Chinese NYC (n=100)	Filipino PA-NJ (n=100)	Korean PA-NJ (n=83)	Vietnamese PA-NJ (n=100)	
Age (mean and CI)	73.31 [72.12, 74.51]	71.82 [70.66, 72.98]	73.82 [72.85, 74.79]	81.11 [79.80, 82.41]	75.22 [74.06, 76.38]	74.85 [74.26, 75.43]
Gender (proportion and CI)						
Female	0.63 [0.53, 0.72]	0.58 [0.48, 0.67]	0.64 [0.55, 0.73]	0.69 [0.59, 0.79]	0.61 [0.52, 0.71]	0.63 [0.58, 0.67]
Male	0.37 [0.28, 0.47]	0.43 [0.33, 0.52]	0.36 [0.27, 0.45]	0.31 [0.21, 0.41]	0.39 [0.29, 0.48]	0.37 [0.33, 0.42]
Marital Status (proportion and CI)						
Now married/living as married	0.67 [0.58, 0.77]	0.72 [0.63, 0.81]	0.71 [0.62, 0.80]	0.60 [0.50, 0.71]	0.63 [0.53, 0.73]	0.67 [0.63, 0.71]
Unmarried	0.13 [0.06, 0.20]	0.14 [0.07, 0.21]	0.07 [0.02, 0.12]	0.06 [0.01, 0.11]	0.06 [0.01, 0.11]	0.09 [0.07, 0.12]
Widowed	0.20 [0.12, 0.28]	0.14 [0.07, 0.21]	0.23 [0.14, 0.31]	0.34 [0.23, 0.44]	0.31 [0.22, 0.40]	0.24 [0.20, 0.28]
Highest Education (proportion and CI)						
Below high school graduate	0.42 [0.32, 0.52]	0.42 [0.32, 0.52]	0.01 [-0.01, 0.03]	0.45 [0.34, 0.56]	0.20 [0.12, 0.28]	0.29 [0.25, 0.34]
High school	0.21 [0.13, 0.29]	0.30 [0.21, 0.39]	0.05 [0.01, 0.09]	0.41 [0.31, 0.52]	0.33 [0.24, 0.42]	0.26 [0.22, 0.30]
College and above	0.37 [0.28, 0.47]	0.28 [0.19, 0.36]	0.94 [0.89, 0.99]	0.13 [0.06, 0.21]	0.47 [0.37, 0.57]	0.45 [0.40, 0.49]
Employment Status (proportion)						
Employed	0.04 [0.00, 0.09]	0.12 [0.05, 0.19]	0.16 [0.09, 0.24]	0.11 [0.04, 0.18]	0.07 [0.02, 0.12]	0.10 [0.07, 0.13]
Not working	0.96 [0.91, 1.00]	0.88 [0.81, 0.95]	0.84 [0.76, 0.91]	0.89 [0.82, 0.96]	0.93 [0.88, 0.98]	0.90 [0.87, 0.93]
Annual Household Income (proportion and CI)						
Less than \$10,000	0.87 [0.80, 0.94]	0.60 [0.50, 0.70]	0.12 [0.05, 0.18]	0.65 [0.53, 0.76]	0.92 [0.87, 0.97]	0.63 [0.58, 0.68]
\$10,000 and above	0.13 [0.06, 0.20]	0.40 [0.30, 0.50]	0.88 [0.82, 0.95]	0.35 [0.24, 0.47]	0.08 [0.03, 0.13]	0.37 [0.32, 0.42]
Household Size (mean and CI)	2.88 [2.55, 3.21]	3.20 [3.00, 3.39]	3.15 [2.84, 3.45]	2.15 [1.91, 2.38]	3.81 [3.56, 4.06]	3.06 [2.94, 3.20]
English Proficiency (proportion and CI)						
Do not speak English at all	0.58 [0.48, 0.67]	0.39 [0.29, 0.49]	0.00	0.30 [0.20, 0.40]	0.10 [0.04, 0.16]	0.27 [0.23, 0.31]

Table 2.1 (Continued)

Speak English not well	0.36 [0.26, 0.45]	0.40 [0.30, 0.50]	0.05 [0.00, 0.09]	0.63 [0.52, 0.73]	0.82 [0.74, 0.90]	0.44 [0.40, 0.49]
Speak English well or very well	0.07 [0.02, 0.12]	0.21 [0.13, 0.29]	0.95 [0.91, 1.00]	0.07 [0.02, 0.13]	0.08 [0.03, 0.13]	0.29 [0.24, 0.33]
Aged Arrived at the US (proportion and CI)						
45 and younger	0.27 [0.18, 0.36]	0.55 [0.45, 0.65]	0.79 [0.71, 0.87]	0.30 [0.20, 0.40]	0.22 [0.14, 0.30]	0.43 [0.39, 0.48]
above 45	0.73 [0.64, 0.82]	0.45 [0.35, 0.55]	0.21 [0.13, 0.29]	0.70 [0.60, 0.80]	0.78 [0.70, 0.86]	0.57 [0.52, 0.61]

The Vietnamese PA-NJ community presented distinct socioeconomic patterns, characterized by higher prevalence of low-income households (92%, CI: [0.87, 0.97] vs. 63%, CI: [0.58, 0.68]), larger household sizes (3.81, CI: [3.56, 4.06] vs. 3.06, CI: [2.94, 3.20]), greater proportion reporting limited English proficiency (82%, CI: [0.74, 0.90] vs. 44%, CI: [0.40, 0.49]), and higher rates of later-life immigration (78%, CI: [0.70, 0.86] vs. 57%, CI: [0.52, 0.61]). Korean PA-NJ participants were distinguished by significantly higher mean age (81.11 years, CI: [79.80, 82.41] vs. 74.85, CI: [74.26, 75.43]), higher proportion of high school education (41%, CI: [0.31, 0.52] vs. 26%, CI: [0.22, 0.30]), smaller household size (2.15, CI: [1.91, 2.38] vs. 3.06, CI: [2.94, 3.20]), and elevated rates of limited English proficiency (63%, CI: [0.52, 0.73] vs. 44%, CI: [0.40, 0.49]).

Depression Variation Across Intra-Asian Ethnic Groups

Turning now to group comparisons in depression prevalence, Figure 2.1 shows the mean depression scores across older Asian American communities. Specifically, Chinese NYC showed the highest mean depression score at 9.30 (95% CI: [8.07, 10.53]),

and Vietnamese PA-NJ came second with 6.97 (95% CI: [6.31,7.63]). Chinese PA-NJ had a score of 6.61 (95% CI: [5.50, 7.73]), Korean PA-NJ showed 4.49 (95% CI: [3.20, 5.78]), while Filipino PA-NJ had the lowest score at 2.48 (95% CI: [1.75-3.36]). The results suggest striking differences across the Asian communities. Specifically, Chinese NYC showed significantly higher depression scores than Chinese PA-NJ. Filipino PA-NJ presented markedly lower depression scores compared to other communities. Meanwhile, the confidence intervals were relatively narrow for most groups, suggesting good precision in the estimates.

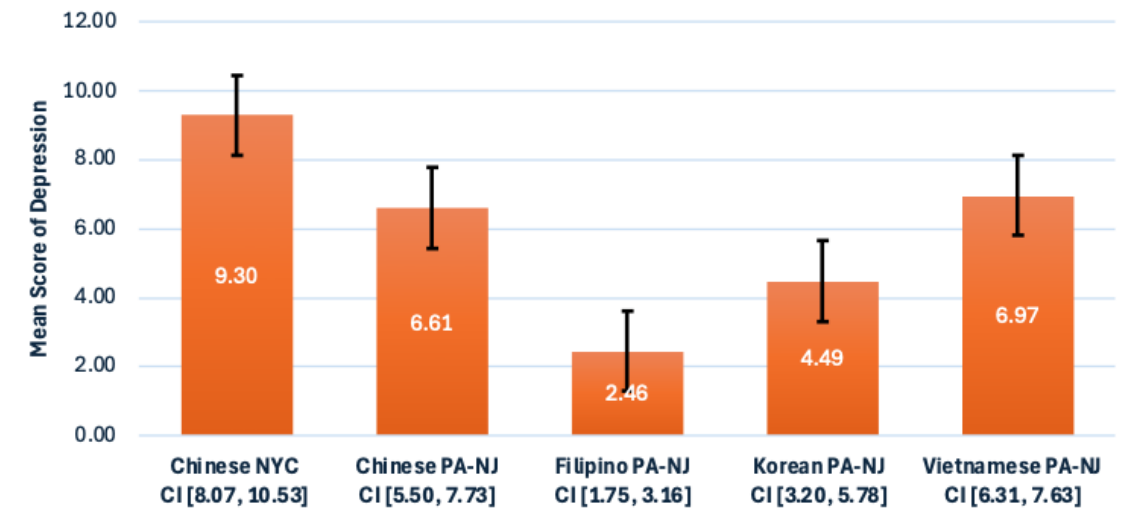


Figure 2.1 Mean Depression Score by Community with 95% Confidence Interval.

Predictors of Depression Across Intra-Asian Ethnic Groups

I dichotomized the PHQ-9 depression score into two categories: none and minimal (scores 0-4) versus mild to severe depression (scores 5-27). Using the dichotomized depression variable as the dependent variable, several progressive logistic regression models were conducted to explore cross-community variation in depression. As illustrated in Table 2.2, Model 1 was the base model that only had the ethnic-community as the primary independent variable. Model 2 included socioeconomic variables in addition to the base model. Model 3 incorporated acculturation factors to Model 2, and Model 4 added the number of pre-existing cardiometabolic conditions based on Model 3. The average Pseudo R2 pooled from 20 imputed datasets was listed for each model. All the models were statistically significant and showed reasonable imputation quality and strong explanatory power.

Model 1 is the unadjusted model, and it presented results that were consistent with the bivariate analysis. Chinese in NYC (OR = 2.54, $p = 0.004$) showed significantly higher odds of depression compared to PA-NJ Chinese. Specifically, they had 154% higher odds of being in the mild to severe depression category. Filipino respondents (OR = 0.17, $p < 0.001$) demonstrated significantly lower odds of severe depressive symptoms. Their odds of being in a more severe depression category were about 83% lower than those of the reference group. Korean PA-NJ participants (OR = 0.45, $p = 0.016$) also showed significantly lower odds of mild to severe depressive symptoms, with odds about 55% lower than the reference group. Vietnamese PA-NJ participants showed higher odds of depression (OR = 2.14, $p = 0.017$) compared to Chinese PA-NJ.

Model 2 illuminated intra-Asian variation in depressive symptom severity after adjusting for sociodemographic characteristics, including demographic, family, and human capital related predictors. Among sociodemographic variables, age (OR = 1.07, $p = 0.002$), unmarried status (OR = 2.21, $p = 0.071$), widowed status (OR = 2.18, $p = 0.027$) and household size (OR = 3.10 and $p = 0.075$ for “living with 1-3 family members”) were positively associated with depression, indicating higher odds of mild to severe depression with increasing age, not being married, and larger households. By contrast, compared with lower than 10k annual household income, higher income (OR = 0.30, $p = 0.001$) was negatively associated with depression, suggesting the protective effects of higher household income against depression. On the other hand, gender, education, and employment status didn’t show significant associations with depression. After controlling for sociodemographic variables, 1) Chinese NYC still showed significantly higher odds of more severe depression compared to Chinese in PA-NJ, and the effect is stronger (from 2.54 in Model 1 to 4.62); 2) the initial Filipino-Chinese difference in Model 1 became marginally significant and weaker in Model 2 (OR increased from 0.17 to 0.43, $p = 0.086$); 3) the Korean-Chinese difference strengthened and remained significant (OR changed from 0.45 to 0.36); 4) Vietnamese effect became marginally significant. These changes suggest that more risk factors should be accounted for to explain the intra-Asian ethnic depression disparities among other elderly Asian communities.

Table 2.2 Logistic Regression Models Predicting Depression Risks (Odds Ratios) Among Asian American Elderly

Variables	Model 1	Model 2	Model 3	Model 4
Community (ref: Chinese PA/NJ)				
Chinese (NYC)	2.54**	4.62***	4.86***	4.76***
Filipino (PA-NJ)	0.17***	0.43†	0.45	0.33†
Korean (PA-NJ)	0.45**	0.36*	0.42†	0.39†
Vietnamese (PA-NJ)	2.14*	1.91†	2.57*	2.09†
Demographic				
Age (continuous)	--	1.07**	1.07**	1.06*
Female (ref: Male)	--	0.94	0.93	0.94
Marital Status (ref: Married)				
Unmarried	--	2.21†	2.32†	2.11
Widowed	--	2.18*	2.23*	2.11*
Education (ref: Less than high school)				
High school	--	1.13	1.35	1.36
College and above	--	0.70	0.85	0.80
Employment (ref: Working)				
Not working	--	1.40	1.35	1.11
Household income (ref: below \$10,000)				
\$10,000 and above	--	0.30**	0.31**	0.29**
Household Size (ref: Living alone)				
Living with 1-3 family	--	3.10†	3.46†	3.87*
Living with 4+ family	--	3.24	3.75†	4.15†
English Proficiency (ref: Not at all)				
English: Not well	--	--	0.48*	0.48*
English: Well and very well	--	--	0.50	0.60
Immigration Age (ref: ≤45)				
Immigration age > 45	--	--	0.67	0.69
Health Status				
Number of metabolic conditions (continuous)	--	--	--	1.48**
Constant	1.32	0.00***	0.00***	0.00***
Model Statistics				
F(df1, df2)	F(4, 3391)	F(14, 9576)	F(17, 11107)	F(18,9909)
F-statistic	18.20***	6.48***	5.50***	5.29***
Average Pseudo R2 across 20 datasets	0.16	0.25	0.26	0.29

Note:

- 1) The dependent variable is a dichotomized PHQ-9 score, where scores ranging from 0 to 4 are categorized as 0 (no depression) and scores from 5 to 27 are categorized as 1 (mild to severe depression).
- 2) Continuous variables are indicated in parentheses

- 3) Progressive model adjustments
Model 1: Unadjusted
Model 2: + Sociodemographic factors
Model 3: + Language and immigration factors (acceleration factors)
Model 4: + Number of metabolic conditions
- 4) Significance levels: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, † $p < 0.1$
- 5) $n=482$

In Model 3, after incorporating English proficiency and age at immigration, substantial variation in depressive severity persisted across older Asian American subgroups. Consistent with the notion that “acculturative stress,” English language proficiency emerged as a significant protective factor against depressive symptoms. Compared to those with no English ability, individuals speaking English “not well” (OR = 0.48, $p = 0.033$) reported significantly lower odds of depressive symptoms. Age at immigration did not show statistically significant impacts on depression risks. After adjusting for the acculturation factors, Chinese NYC (OR = 4.86, $p < 0.001$) and Vietnamese PA-NJ (OR = 2.57, $p = 0.019$) maintained significantly elevated odds of more severe depressive symptoms compared to Chinese PA-NJ participants, while Korean PA-NJ effect remained marginally significant (OR = 0.42, $p = 0.095$), similar to Model 2. The Filipino PA-NJ effect became non-significant in Model 3. Among sociodemographic factors, age (OR = 1.07, $p = 0.007$) and not being married (OR = 2.32, $p = 0.063$ for unmarried, and OR = 2.23, $p = 0.025$ for widowed) retained significant positive associations with depression risk. Meanwhile, higher household income (OR = 0.31, $p = 0.003$) continued to be negatively associated with depression. Notably, household composition showed stronger effects in this model, with both medium (living

with 1-3 family members, $OR = 3.46, p = 0.059$) and large households (living with 4+ members, $OR = 3.75, p = 0.075$) marginally associated with increased depression risk.

In the final model (Model 4) incorporating metabolic conditions, the number of pre-existing metabolic conditions turned out to be a significant predictor of depression severity ($OR = 1.48, p = 0.003$), suggesting that each additional metabolic condition was associated with a 48% increase in the odds of more severe depressive symptoms. Importantly, with the inclusion of this health-related factor, the variation patterns of depression risk across older Asian American communities remained robust. Chinese Americans in New York City continued to demonstrate significantly higher odds of more severe depressive symptoms ($OR = 4.76, p < 0.001$) compared to their PA-NJ counterparts. At the same time, Korean Americans maintained a marginally significant lower risk ($OR = 0.39, p = 0.069$). The differences for Filipino Americans became marginally significant ($OR = 0.33, p = 0.069$), and the Vietnamese effect was weakened to marginally significant ($OR = 2.09, p = 0.075$). However, the incorporation of metabolic conditions changed several previously observed associations. Specifically, the effects of “unmarried” became non-significant ($OR = 0.11, p = 0.107$), while household composition effects strengthened for both medium ($OR=3.87, p = 0.047$) and large households ($OR = 4.15, p = 0.062$). Meanwhile, sociodemographic variables such as age, not speaking English, lower than 10k annual household income, and being widowed maintained their significant positive associations with depression.

To better understand the observed difference in depression prevalence across the five groups, I next decomposed the differences into the share of the difference that is

accounted for by observed differences in group characteristics and those that are unexplained. This is done using the commonly used Oaxaca-Blinder decomposition technique (Blinder 1973). The decomposition models include all of the same independent variables used in Model 4 above. Because the AD-CRC data was multiple imputed to fill in missing data, the Oaxaca-Blinder decompositions were executed on each of the imputed data sets separately and then the results, shown in Table 2.3, were averaged, which shows decomposition results for each of four groups compared to the Chinese PA-NJ community, which serves as the reference group. The “observed” component in a decomposition analysis represented the portion of the difference in depression that is explained by observable characteristics in the data (i.e., demographic and family factors, acculturative stress, metabolic conditions, etc.). The “unexplained” portion of the depression gap is sometimes referred to as “differences in coefficients” and measured by how different predictors of depression operate differently to shape depression risk among each group.

As presented in Table 2.3, the largest differences in depression between Chinese PA-NJ and the other groups are explained by factors that were observable in this study only in the case of Filipino PA-NJ, but for the other comparisons (Chinese NYC, Korean PA-NJ, and Vietnamese PA-NJ), the depression differences are mostly explained by unobserved factors that were not included or measured in the current study.

Table 2.3 Oaxaca-Blinder Decomposition of Depression Differences Among Asian Elderly Communities

Component	Differences in Depression Between Chinese PA-NJ and			
	Chinese NYC	Filipino PA-NJ	Korean PA-NJ	Vietnamese PA-NJ
Overall Difference in Depression	-0.24	0.35	0.15	-0.20
Overall Explained Component	0.06	0.47	0.00	-0.01
Overall Unexplained Component	-0.30	-0.13	0.15	-0.19
Explained Factors				
▪ Demographic Factors	0.01	-0.02	-0.04	-0.05
▪ Family	0.01	0.01	-0.02	0.02
▪ Human Capital	0.02	0.17	0.06	0.00
▪ Acculturation Factors	0.02	0.34	0.03	0.07
▪ Number of Cardio-metabolic Conditions	-0.01	-0.02	-0.03	-0.06
Unexplained Factors				
▪ Demographic Factors	-0.32	-0.21	-0.49	-0.22
▪ Family	-0.50	-1.13	-0.48	-1.33
▪ Human Capital	-0.07	0.15	-0.15	0.20
▪ Acculturation Factors	0.03	0.12	0.10	0.04
▪ Number of Cardio-metabolic Conditions	0.35	0.85	0.61	2.21

Note:

1. Demographic factors include age and gender.
2. Family factors include marital status and household size.
3. Human capital factors refer to education, annual household income, and employment.
4. Acculturation factors include English language proficiency and immigration age.

To be specific, the depression difference between Chinese PA-NJ and Chinese NYC is mainly due to unobserved factors, with only approximately 25% of the explained difference, suggesting the depression difference may stem from factors like regional characteristics and social support networks that are not captured in the AD-CRC data. For the comparison between Chinese PA-NJ and Filipino PA-NJ, a significant part of the difference in depression likelihood is explained by observable factors, with about 138%

of the depression difference attributed to these observable factors. This finding is consistent with the regression models and indicates that the Filipino advantage in low depression rate is predominantly due to their relatively high human capital (0.17) and acculturation levels (0.34). By contrast, 0% of the depression difference between Chinese PA-NJ and Korean PA-NJ is explained by observable factors, indicating that there are unique aspects of the Korean PA-NJ community, such as discrimination, religious beliefs, or social support resources, that are not captured by the data and model. Similarly, only 5% of the difference in depression between Chinese PA-NJ and Vietnamese PA-NJ is explained, suggesting that there may be significant cultural or social support factors not accounted for in the model. The Oaxaca analysis points to the necessity of further investigating cultural, discrimination, social support, and mental health resources in different older Asian communities.

Discussion

The present study reveals significant heterogeneity in depression risk across older Asian American subgroups during the COVID-19 pandemic, highlighting the importance of disaggregated analysis in understanding mental health disparities. There are several key findings that warrant detailed discussion. The patterns of depression severity across Asian American subgroups reflected both cumulative disadvantage and weathering theories. Most notably, Chinese Americans in New York City consistently presented significantly higher odds of depressive symptoms compared to their counterparts in PA-NJ. This robust finding suggests that the depression disparity

experienced by NYC Chinese Americans persists independently of sociodemographic characteristics, acculturation levels, and pre-existing metabolic conditions, indicating that compounded disadvantages from pre-existing structural inequities, anti-Asian discrimination during the pandemic, and NYC's early COVID-19 epicenter status. The weathering effects likely accelerated due to acute pandemic stressors, including higher exposure risk in dense urban environments and racial stigmatization.

Older Korean Americans in PA-NJ maintained significantly lower odds of depression across all models, suggesting a consistently better mental health profile compared to their Chinese counterparts. Interestingly, the Filipino American advantage observed in the unadjusted model becomes non-significant in multivariate models, indicating the apparent mental health advantage among older Filipino Americans is primarily explained by sociodemographic and acculturation factors, demonstrating how apparent advantages can mask underlying vulnerability to weathering processes.

Vietnamese Americans showed consistently higher depression risks compared with PA-NJ Chinese Americans across all models, indicating significant mental health disparity experienced by this subgroup. These patterns underscore how geographic and ethnic variation in mental health risk among elderly Asian Americans is shaped by the accumulation of disadvantages over time and the physiological toll of chronic stress exposure, particularly evident in high-stress urban environments like New York City. The findings suggest that community-specific factors, including differential exposure to chronic stressors and varying access to protective resources, create distinct trajectories of

advantages and disadvantages that manifest in mental health outcomes across subgroups and locations of older Asian Americans.

Among sociodemographic factors, marriage and age are the strongest predictors of depression, while economic factors (annual household income) and household composition (size) show some evidence of influence. Interestingly, the findings suggest larger household sizes are associated with increased depressive symptoms, contrasting with South Korean research, where extended families provide protective mental health benefits (Sempungu et al. 2022). Instead, our results align with Chinese studies linking household overcrowding to higher depression rates (Wang and Liu 2023). The conflicting findings require further investigation into the family component and social support dynamics and depression during COVID-19 among older Asian Americans in the US, which will be reflected in Chapter 4.

Consistent with the notion that acculturation stress can amplify depression, being proficient in English demonstrated notable protective effects against depression, suggesting that even modest English language abilities may confer mental health benefits, potentially through enhanced access to healthcare services, improved social integration, and greater capacity for community participation. Moreover, although not significant, immigration after age 45 exhibited some protective tendency against depression, indicating older age immigration may offer unique protective factors, possibly including stronger maintenance of cultural ties (Bhugra and Becker 2005), well-established pre-migration identity (Alegría, Álvarez, and DiMarzio 2017), or selective migration patterns (Norman, Boyle, and Rees 2005).

This study has several limitations. First, the cross-sectional design of the study precludes causal inference. The observed variations in determinants underscore the necessity for targeted longitudinal studies examining depression risk patterns across immigration trajectories and aging processes. Second, as self-reported data were utilized throughout the study, a standard limitation in psychological research is that this methodology introduces potential recall bias that may influence the findings. Moreover, the utilization of the PHQ-9 as the primary depression assessment tool presents additional constraints. This instrument, while widely validated, has inherent limitations, including potential self-reporting bias and the possibility of oversimplification of complex depressive symptoms. Furthermore, its two-week assessment window provides a narrow temporal perspective of depressive manifestations. The third limitation is the exclusive reliance on self-reported measures, which may exhibit differential validity across subgroups. Another notable limitation is the absence of racial discrimination experiences from our analysis, a factor previously established as a significant predictor of depression in the Asian American population (Ertorer 2024; Kim and Epstein 2021). Finally, while our study identified specific urban characteristics that were associated with depression risk, our comparative regional analysis was restricted to data from the Chinese American community. The robustness of these findings would be enhanced through the inclusion of comprehensive data from both Pennsylvania-New Jersey and New York City metropolitan areas across all Asian subgroups.

Regardless of the limitations, the findings of this study provide significant contributions to understanding both sociological theory and social policy. From a

sociological perspective, this research advances our understanding of how disadvantages accumulate differently across Asian American subgroups, contributing meaningfully to cumulative disadvantage theory (CDT). The persistent mental health disparity observed among NYC Chinese Americans, even after controlling for multiple socioeconomic factors, suggests that disadvantages compound through complex interactions between individual, household, and community-level factors. This pattern aligns with CDT's core premise while extending it to consider immigration-specific pathways of disadvantage accumulation. The study's findings regarding the effects of cardiometabolic conditions on depression risk also substantially support and extend weathering theory. The significant association between the number of health conditions and depression severity demonstrates how physical health challenges can accelerate the weathering process, particularly among Asian American immigrant populations. This relationship becomes even more meaningful when considered alongside the potentially protective effects of later life immigration, suggesting that the timing of exposure to US social conditions may influence the weathering process differently than previously theorized.

Moreover, the research reveals critical intervention points for mental health services, particularly highlighting the need for linguistically appropriate care given the strong protective gradient effect of English proficiency. The geographic variation in mental health outcomes, particularly the elevated risk among NYC Chinese Americans, underlines the importance of region-based interventions and community-specific approaches to mental health support. Furthermore, the findings regarding household size and depression risk challenge previous assumptions about family support in Asian

American communities, suggesting a need to reconsider how social services are structured for multigenerational households during crises like the COVID-19 pandemic. These results are particularly timely given the increasing size and diversity of the aging population and the growing recognition of mental health disparities among immigrant communities.

The findings of this study point to several crucial areas for future research, particularly the interplay of family dynamics and marital status, as well as the qualitative dimensions of social support among Asian American older immigrants. Future research should examine the interaction effects of family dynamics and marital status, as the impact of living with family members likely differs substantially between married and unmarried elderly. Traditional Asian cultural values emphasize filial piety and multigenerational living arrangements. How these cultural expectations interact with marital status could reveal important nuances. Regarding social support, qualitative research methods would provide valuable insights into the unexpected finding that larger household size correlates with increased depression risk. Participant-driven photo-elicitation interviews have the potential to shed some light on the complexities of intergenerational relationships, caregiving responsibilities, and family dynamics within Asian American households during the COVID-19 pandemic.

CHAPTER 3

DEPRESSION RISK AMONG OLDER ASIAN IMMIGRANTS IN THE UNITED STATES: CUMULATIVE HUMAN CAPITAL, AGING-RELATED FAMILY STRAIN AND COMMUNITY CONTEXT

Abstract

This study investigates ethnic heterogeneity in depression risk among older Asian American immigrants during the COVID-19 pandemic, specifically examining how structural and psychosocial determinants function differently across community contexts. Drawing on survey data from 482 Asian Americans aged 65 and older across four subgroups (Chinese, Filipino, Vietnamese, and Korean) in the New York City (NYC) and the greater Philadelphia area (PA-NJ), I employed exploratory factor analysis to reveal two latent constructs: Cumulative Human Capital Advantage and Aging and Related Family Strain. Guided by cumulative disadvantage and weathering frameworks, I used multivariate logistic regression models with interaction terms to assess how these two factors shape depression risk across five communities: Chinese NYC, Chinese PA-NJ, Korean PA-NJ, Vietnamese PA-NJ, and Filipino PA-NJ. Results reveal that while cumulative human capital advantage generally protects against depression, its protective effects are uneven, with Chinese seniors in NYC maintaining elevated depression risks despite higher socioeconomic resources. In contrast, aging-related family strain exerts particularly strong detrimental effects among Chinese NYC and Vietnamese older adults, whereas Korean Americans demonstrate notable resilience to these stressors. These

findings suggest that targeted intervention design will not only focus on structural inequalities but also on culturally specific family dynamics that shape vulnerability and resilience across older Asian immigrant subgroups.

Literature Review

In the first article comprising this dissertation, it was demonstrated that there was pronounced heterogeneity in depression risks among older Asian American subpopulations during the COVID-19 pandemic, highlighting the impacts of accumulative human capital and aging-related family strain on depression. This raised important questions about whether the impacts of the two factors on depression across the intra-Asian ethnic groups of the study are uniform. This chapter will address these questions by involving a two-stage analytical strategy, including an exploratory factor analysis to distill survey instrument indicators into latent constructs and the application of multivariate regression models with interaction terms. This comparative analytical framework facilitates the identification of variation in the manifestation of these social determinants.

Depression in later life is a pressing sociological and public health issue, particularly among racial and ethnic minority populations who face cumulative social and structural disadvantages over the life course (Okereke et al. 2022; Verropoulou 2020). In particular, older Asian Americans reported significantly lower levels of psychological well-being as compared to older Americans on average (Wong and Reker 1985), and experienced more pronounced mental health disparities and higher levels of distress than their younger Asian counterparts (Moon and Pearl 1991; Nicassio and Pate 1984;

Rumbaut 1985; Uba 2003). Before the COVID-19 pandemic, the prevalence of lifetime depression measured with a 30-item Geriatric Depression Scale among elderly Asian Americans could be as high as 40% (Mui and Kang 2006).

Guided by the weathering hypothesis (Geronimus et al. 2006) and cumulative disadvantage theory (Dannefer 2003), Chapter 2 examined how prolonged exposure to structural inequality and psychosocial stressors contributes to heightened depression risk among older Asian American immigrants. These theoretical frameworks suggest that the accumulation of disadvantage can compound over time, leading to early onset, higher risks, and greater severity of mental health challenges in later life (Heterogeneous Trajectories of Physical and Mental Health in Late Middle Age: Importance of Life-Course Socioeconomic Positions 2017; Karvonen, Kestilä, and Rimpelä 2020).

Previous research has underscored the role of both structural resources (Alegría et al. 2018; Rottnek and Bello-Kottenstette 2024) and social stressors (Cotton and Shim 2022; Kirkbride et al. 2024) in shaping depression outcomes. Older Asian Americans faced heightened vulnerability to depression during the COVID-19 pandemic, attributed not only to social strains related to COVID comorbidities, higher mortality rate (CDC COVID-19 Response Team 2020), social isolation caused by quarantine (Brooks et al. 2020; Morley and Vellas 2020), but also other important disadvantages that can accumulate over the life course. These include relatively high rates (60%) of limited English proficiency (Stop AAPI Hate 2022) and related limited access to health care (Le et al. 2020), relatively high poverty rates (Asian American Federation 2022; Tran 2017), and experiences of anti-Asian discrimination (Han et al. 2022). Moreover, these risk

factors have been shown to produce heterogeneous effects across local community contexts, but limited research has sought to better understand and empirically document these disparate community effects. This chapter applies a theory-informed lens to examine how structural position and the potential family strains related to aging are differentially associated with depression risk across five older Asian American communities.

With recent population growth fueled by large-scale migration, often by highly skilled and educated individuals, Asian Americans display a pronounced dedication to the investment in human capital, thereby culminating in advantageous socioeconomic attainment (Sakamoto, Goyette, and Kim 2009). The research underscores that Asian Americans, notably those of Chinese, Japanese, Korean, Filipino, Indian, and Vietnamese descent, prioritize education and the cultivation of human capital, leading to augmented wages and incomes (Martinez 1987). Since the 1960s, the model minority myth (MMM) has portrayed Asians as successful in educational and economic domains, while their susceptibility to social issues such as discrimination (Trinh-Shevrin, Islam, and Rey 2009) and mental health disparities (Woo 2018) is largely overlooked. The mental health disparities faced by Asian American elderly should not be masked by aggregated socioeconomic attainment. In fact, MMM itself has led to mental health issues among Asian Americans due to the pressure to conform to these stereotypes by imposing unrealistic expectations on this population (Rajagopal and Durkee 2024). Moreover, there are significant variabilities among Asian subgroups regarding socioeconomic attainment, such as education and household income (Ruiz and Budiman 2021b; Sakamoto et al.

2009), while the literature historically treats all Asian immigrants as a pan-ethnic, model minority case (Adler 2006). There is a need for more nuanced research on Asian immigrants' mental health issues due to the complex and multifaceted nature of this population (Chang and Moon 2016) and the fact that this group is growing rapidly (Administration for Community Living 2024).

Older Asian Americans face a variety of social strains that significantly impact their mental health, particularly in terms of depression. These strains are often rooted in cultural, linguistic, and social dynamics that are unique to this demographic group. The interplay between social support, social strain (Mussa, McIntosh, and Tadros 2024; Sangalang and Gee 2012b), acculturation stress (Mui and Kang 2006), and neighborhood environments (Wang et al. 2023) are critical factors influencing depressive symptoms among older Asian Americans.

This chapter examines how the stated socioeconomic status and stress-related determinants of depression function differently across intra-Asian ethnic groups. To do so, I first employ exploratory factor analysis to reduce survey data measures to reveal latent measures of *socioeconomic status* and *family-related migration strain*. I then employ multivariate regression models that use interaction terms to examine how the effects of the latent factors vary within five community contexts: Chinese in New York City (NYC), Chinese in the greater Philadelphia area (PA-NJ), Korean PA-NJ, Vietnamese PA-NJ, and Filipino PA-NJ. The results indicate that these latent factors operate differently in shaping older Asian immigrants' mental health in the five ethnic-regional contexts, thereby providing a more nuanced empirical understanding of how risk

factors may operate differently across intra-Asian subgroups and within different community contexts.

Method

Dataset Descriptionⁱⁱⁱ

This study analyzes cross-sectional survey data from the NIH-funded “Factors Associated with Alzheimer Disease/Alzheimer’s Disease Related Dementias and Colon Cancer Among Elderly” project (AD-CRC project). The research employed a Community-Based Participatory Research approach to collect data from older Asian and African Americans (aged 65 and above) from March 2020 to September 2021. The analytical sample only comprised 482 Asian participants from four subgroups, including Chinese from New York City (NYC, n=100) and the greater Philadelphia area, including South New Jersey (PA-NJ, n=99), Filipino (PA-NJ, n=100), Vietnamese (PA-NJ, n=100), and Korean Americans (PA-NJ, n=83). Following Temple University IRB approval and informed consent procedures, trained bilingual interviewers conducted data collection through one-on-one phone survey interviews using questionnaires translated into appropriate Asian languages.

The study measured depression using the Patient Health Questionnaire-9 (PHQ-9) (Kroenke et al. 2001), a validated nine-item screening tool that assesses major depressive disorder symptoms on a scale of 0-27. While clinical settings typically use a cut-off score

ⁱⁱⁱ Please refer to Chapter 2 for more detailed description of the AD-CRC project and data collection.

of ≥ 10 , this study employed a lower threshold of 5 based on Kim et al.'s 2023 findings specific to Korean and community-collected data contexts (Kim et al. 2023).

Across all study variables, listwise deletion would remove approximately 40% of the sample (n=191) from the analysis. Therefore, to maximize statistical power, I dealt with missing data using multiple imputation with chained equations (MICE). MICE allows for variables at different levels of measurement (dichotomous, multinomial, continuous, etc.) to be imputed simultaneously. Specifically, in this study, the MICE model employed logistic regression for binary variables, multinomial logistic regression for categorical variables with multiple response options, and predictive mean matching for continuous variables (including PHQ-9 depression scores, immigration age, and number of cardiometabolic conditions). This approach successfully generated 20 complete datasets for analysis, with the completeness of original data varying considerably across variables (from 0.6% missing for gender to 33.6% missing for cardiometabolic conditions).

Data Analysis

Exploratory factor analysis (EFA) was conducted separately in each imputed dataset for data reduction purposes. Items including age, gender, marital status, education, employment status, annual household income, family size, English proficiency, and immigration age were added to the EFA process. Dummy variables were created from categorical variables to fit the EFA requirements on variables' measurement levels, while generated dummy variables such as being male, being married, being employed, and immigration age being older than 45 were dropped due to collinearity

concerns. The remaining 10 variables were included in the EFA process, with principal component factoring (PCF) as the extraction method. After the initial factor analysis, varimax rotation was employed to improve the interpretability of the factor loadings. The same factor analytic process was repeated in each imputed dataset, with the results being exported to Excel spreadsheets, and the averaged values from the 20 imputed datasets were employed as the final results. The number of retained factors was determined using a combination of eigenvalues, scree plot inspection, and the theoretical framework. Accordingly, to common practice, variables with factor loadings greater than $|0.4|$ ($\geq +0.4$ or ≤ -0.4) were considered influential. Factor scores were generated from the EFA process for each imputation, and the averaged factor scores were included in the following data analysis process. Factor scores are calculated such that they have a mean of zero and a standard deviation of one. Zero represents the average level of a given factor – in this case, socioeconomic status or family/immigration strain. And factor scores are normally distributed, so that about 68 percent of the sample falls within one standard deviation above or below the mean of zero.

Following data reduction, a series of logistic regression models examining the relationship between the factors and depression were conducted. The base model (Model 1) examined the association between ethnic communities and the number of cardiometabolic conditions with depression. In Model 2, both factor scores were introduced to assess their direct relationships with mental health outcomes. Models 3 and 4 incorporate interaction terms to investigate whether the relationships between the factors and depression vary by community context. Specifically, Model 3 tests whether

community type moderates the relationship between human capital advantages and depression outcomes, while Model 4 examines whether community context influences how aging and family strain impact depression levels. Finally, I calculate predicted probabilities based on Models 3 and 4 to demonstrate graphically how the latent factors vary in their effects on mental health among older Asian immigrants residing in the two contexts.

Results

Factor Analysis

Guided not only by statistical evidence but also by theoretical considerations grounded in cumulative disadvantage theory and the weathering hypothesis, a total of two factors were retained. First, the scree plot of eigenvalues across 20 imputed datasets is presented in Figure 3.1, with the blue dots representing eigenvalues from individual imputed datasets ($m=1$ to $m=20$) and the red line representing the average eigenvalues. Eigenvalues serve as a measure of the explanatory value (in terms of variance explained) of each latent factor identified in a factor analysis, and a scree plot informs researchers' decisions about the number of factors to be retained in the analysis. The scree plot in Figure 3.1 displays an apparent "elbow" after the second factor, where the slope noticeably flattens. This visual evidence, consistent across all imputed datasets, provided empirical justification for a two-factor solution. Moreover, Figure 3.1 also shows remarkably stable eigenvalues across imputations, as the blue dots cluster around the mean for each factor. The first factor (F1) has eigenvalues between 2.63 and 2.69, with

the pooled value being 2.65. The second factor (F2) shows eigenvalues ranging from 1.43 to 1.51 and a pooled value of 1.48.

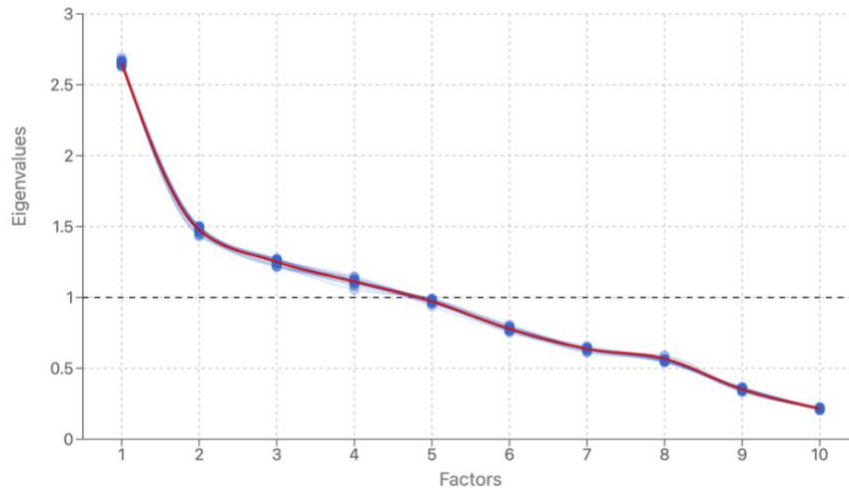


Figure 3.1 Scree Plot of Eigenvalues Across 20 Imputed Datasets.

Notes:

- Blue dots represent eigenvalues from individual imputed datasets ($m=1$ to $m=20$), connected by light blue lines to show trends within each dataset.
- The red line represents mean eigenvalues across all 20 datasets.
- The dashed black line represents the Kaiser criterion (1.0).

What strengthens this decision further is its alignment with our theoretical framework, as shown in the factor loading table (Table 3.1). Cumulative disadvantage theory posits that inequalities compound over time as initial disadvantages lead to subsequent ones through various mechanisms (Dannefer 2003; Ferraro and Shippee 2009). Similarly, weathering theory suggests that chronic exposure to social and economic adversity accelerates health deterioration among marginalized populations

(Geronimus et al. 2020). These theories suggest interrelated but distinct dimensions of disadvantage that manifest in social and health domains.

Table 3.1 Rotated Average Factor Loadings Across 20 Imputed Datasets

Items	Factor 1: Cumulative Human Capital Advantage	Factor 2: Aging and Related Family Strain
Age	-0.24	0.54
Female Gender	0.03	0.61
Unmarried	0.04	-0.16
Widowed	-0.03	0.76
Education level	0.64	-0.25
Not working	-0.33	0.38
Annual household income	0.86	-0.05
Household size	-0.09	-0.35
English proficiency level	0.89	-0.01
Arrived in the US at age 45 or younger	0.62	0.21

Notes: The factor loadings ≥ 0.4 or ≤ -0.4 are bolded since $\geq |0.40|$ is typically considered meaningful in common practice; n=482

The first factor reveals a particular dimension that captures the essence of cumulative disadvantage theory. The factor loadings for F1 showed a clear pattern of resource accumulation. Specifically, there are strong positive loadings for higher education (0.64), higher income (0.86), higher English proficiency (0.89), and immigration to the US at a younger age (0.62). This pattern illustrates how advantages compound over time. Early arrival in the US provides more opportunities to develop

language skills and education, which in turn facilitate higher income. These resources accumulate and reinforce each other, creating diverging trajectories of advantages and disadvantages across the life course. As a result, I label this factor “Cumulative Human Capital Advantage” to reflect how early exposure to US society, along with educational, linguistic, and economic resources, compound over time.

The second factor captures elements that align with the weathering theory’s focus on how social stressors accelerate health deterioration. To be specific, factor 2 has strong positive loadings for getting older (0.54), being female (0.61), and being widowed (0.76). These variables reflect different demographic and family roles that can contribute to varying levels of stress, social support, and strain, which are key mechanisms in weathering theory. The loadings suggest that being female, widowed, and older cluster together, potentially representing a configuration associated with specific types of strain and reduced social support that could accelerate “weathering” processes. Accordingly, the second factor is named “Aging and Related Family Strain” to reflect how this factor may create different exposure pathways to stressors and differential health outcomes. The two retained factors were included in logistic regression analysis for a closer understanding of their main and interaction effects on depression among the targeted populations, as included in Table 3.2.

Multivariate Analysis

As presented in Table 3.2, nested regression models were estimated using the two newly generated factors to understand how the effects of cumulative advantage/disadvantage and life course strain operate differently across community

contexts. The dependent variable is a dummy variable created from the PHQ-9 score, with scores ranging from 0 to 4 categorized as 0 (None to minimal depression) and scores from 5 to 27 classified as 1 (mild to severe depression). The models showed progressive improvement in explanatory power, with the Pseudo R² increasing from 0.19 in Model 1 to 0.25 in Model 4.

The base model indicates that being in the Chinese NYC community (ref: Chinese PA-NJ, OR=2.57, $p<0.01$) and having more pre-existing metabolic conditions (OR=1.58, $p<0.001$) were positive and significant predictors of having depression, while the Filipino (OR=0.12, $p<0.001$) and Korean (OR=0.36, $p<0.01$) community contexts were significantly associated with lower odds of depression.

Model 2 incorporates the two factors from EFA and indicates that factor 1 (cumulative human capital advantages, F1) has strong protective effects, with each standard deviation increase in the factor score associated with 47% lower odds of depression (OR=0.53, $p<0.001$). The aging and related family strain factor (factor 2, F2) also exhibits a strong association with depression in Model 2. Each standard deviation increase in the score of F2 is associated with 50% higher odds of depression (OR=1.50, $p<0.01$), controlling for community and number of metabolic conditions. Notably, the Vietnamese community in Model 2 showed significantly higher odds of depression (OR=2.04, $p<0.05$) after accounting for socioeconomic status and family/life course strain.

Table 3.2 Logistic Regression Models Estimating the Odds of Depression by Ethnic Community, Health Status, and Psychosocial Factors Among Older Asian Americans

Variables	Model 1	Model 2	Model 3	Model 4
Community (ref: Chinese PA-NJ)				
Chinese (NYC)	2.57**	4.01***	4.09***	4.12**
Filipino (PA-NJ)	0.12***	0.39†	0.48	0.38†
Korean (PA-NJ)	0.36**	0.29**	0.34*	0.37*
Vietnamese (PA-NJ)	1.65	2.04*	1.83	2.38*
Health Status				
Number of metabolic conditions (continuous)	1.58***	1.47**	1.47**	1.48**
F1: Cumulative Human Capital Advantage (continuous)				
		0.53***	0.52†	0.53***
F2: Aging and Related Family Strain				
		1.50**	1.52**	2.22*
Interaction of Community* F1 (ref: Chinese PA-NJ*F1)				
Chinese (NYC)*F1	-	-	1.09	-
Filipino (PA-NJ)*F1	-	-	0.88	-
Korean (PA-NJ)*F1	-	-	1.41	-
Vietnamese (PA-NJ)*F1	-	-	0.68	-
Interaction of Community* F2 (ref: Chinese PA-NJ*F2)				
Chinese (NYC)*F2	-	-		0.83
Filipino (PA-NJ)*F2	-	-		0.49
Korean (PA-NJ)*F2	-	-		0.43*
Vietnamese (PA-NJ)*F2	-	-		1.13
Constant	0.70	0.57†	0.56	0.61
Model Statistics				
Average Pseudo R2 across 20 databases	0.19	0.24	0.24	0.25

Note:

1) The dependent variable is a dichotomized PHQ-9 score, where scores ranging from 0 to 4 are categorized as 0 (no depression), and scores from 5 to 27 are categorized as 1 (mild to severe depression).

2) Continuous variables are indicated in parentheses

3) Progressive model adjustments

Model 1: Unadjusted

Model 2: + factor 1 and factor 2

Model 3: + interaction of community and factor 1 to model 2

Model 4: + interaction of community and factor 2 to model 3

4) Significance levels: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, † $p < 0.1$

5) $n=482$

Model 3 adds the interaction of factor 1 and each ethnic community dummy variable to examine whether the protective effect of cumulative human capital varies across groups. Because the factor score has a mean of zero, the main effect for the score in Model 3 represents the effect of human capital accumulation on depression among the reference group, older Chinese immigrants residing in the Greater Philadelphia region. The main effect of factor 1 becomes marginally significant with the inclusion of the interaction, and none of the interaction terms reached statistical significance, indicating that the protective effect of human capital operates similarly across all communities. However, the point estimates suggest some variation (Korean PA-NJ×F1 shows the highest interaction OR at 1.41).

Based on Model 2, Model 4 includes the interaction between factor 2 and the ethnic community indicators to test whether the negative impact of aging and related family strain on depression varies across intra-Asian subgroups. The main effects of F2 became substantially stronger (OR increases from 1.52 to 2.22, $p < 0.05$), indicating its effect is magnified when considering community-specific variations. In this case, the main effect in Model 4 indicates that among the reference group, Chinese in PA-NJ, a standard deviation increase in factor 2 is associated with more than a doubling of the odds of reporting depression. These effects of F2 are significantly weaker among Korean immigrants in PA-NJ (OR=0.43, $p < 0.05$). Although not statistically significant, the interaction of Filipino and F2 shows a potentially meaningful effect (OR=0.49), suggesting a similar buffering effect.

Examination of the main effects of community contexts on depression odds reveals distinctive patterns of risk that evolve through model adjustments. Compared with their same ethnic counterparts from PA-NJ, Chinese immigrants in NYC maintain consistently elevated odds (2.57-4.12, $p < 0.01$) across all models, suggesting persistent risk factors independent of additional covariates. In contrast, Filipino immigrants demonstrate a notable shift from strongly protective odds (0.12, $p < 0.001$) in Model 1 to marginally significant or non-significant values (0.38-0.48) in subsequent models, indicating that initial protective associations may be partially mediated by F1 and F2. Older Korean immigrants exhibit remarkably stable and protective odds (0.29-0.37, $p < 0.05$) throughout all analytic iterations, suggesting enduring cultural or community-specific protective mechanisms. Vietnamese immigrants present the most variable pattern, with odds increasing from a non-significant elevation in Model 1 (1.65, $p > 0.1$) to a significant risk in Models 2 and 4 (2.04-2.38, $p < 0.05$), indicating that comprehensive adjustment may unmask previously obscured risk factors in this population.

To better illustrate potential variations of the impacts of F1 and F2 on depression, marginal effects were estimated at -2, -1, 0, 1, and 2 standard deviations of each factor and were plotted in Figure 3.2 and Figure 3.3. As shown in Figure 3.2, the cumulative human capital advantage was protective against depression risk across older Asian immigrant subgroups. However, there are some nuances in the effects of this factor across different communities (although not statistically significant in Model 3), with Vietnamese and Filipino adults showing the largest reductions in depression risk with increasing human capital, whereas Chinese adults in NYC exhibited persistently higher

depression risks despite human capital gains, suggesting possible moderating effects of urban environmental stressors or unmeasured structural barriers.

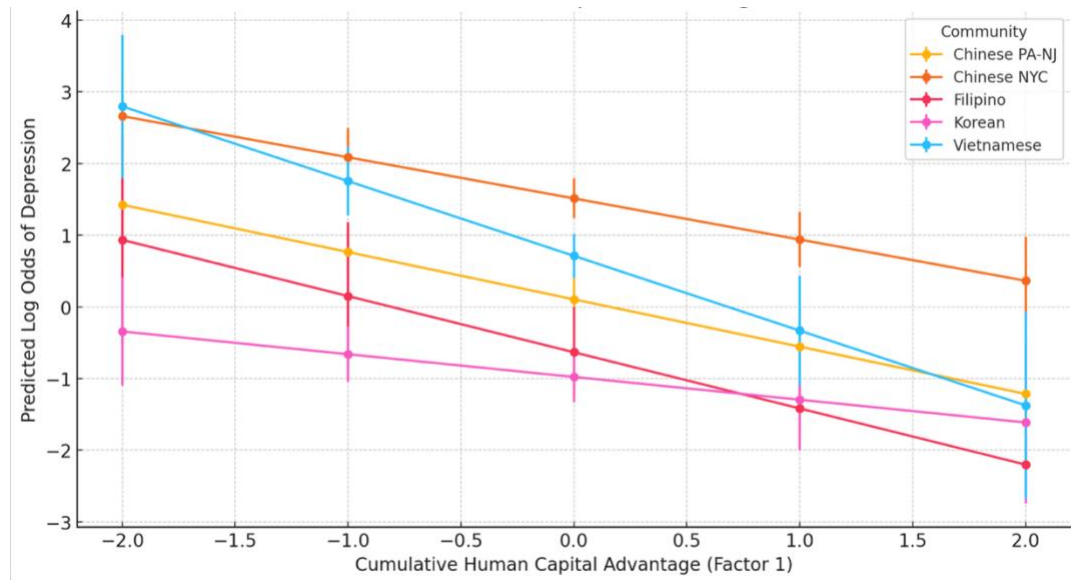


Figure 3.2 Predicted Log Odds of Depression by Community Across Levels of Cumulative Human Capital Advantage

Being consistent with Model 4, Figure 3.3 illustrates that higher levels of aging and related family strain were associated with increased depression risk across most of the Asian immigrant subgroups, and the magnitude of this association varies significantly. To be specific, Chinese NYC and Vietnamese immigrants exhibit particularly steep increases in depression risk with greater strain, whereas Filipino and Korean participants demonstrate relative resilience to increasing F2 stressors.

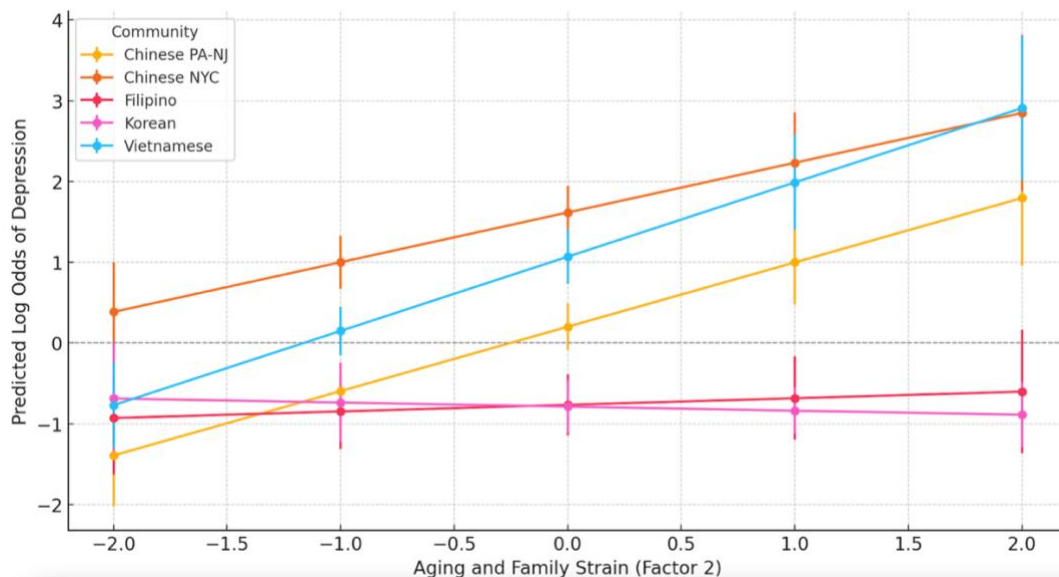


Figure 3.3 Predicted Log Odds of Depression by Community Across Levels of Aging and Related Family Strain

Discussion

Through EFA, this study identified two latent factors, Cumulative Human Capital Advantage and Aging and Related Family Strain, as key depression determinants. Using multiple imputation-based logistic regression models with interaction terms, the study found that the impacts of these two factors on depression risk were significant, and the impacts varied across older Asian immigrant community groups. Specifically, greater cumulative human capital was associated with lower depression risk, while higher aging and related family strain predicted elevated depression risk. The strength and directions of these associations differed across older Asian communities, underscoring the critical role of contextual and community-specific factors. While both factors play critical roles in shaping depression risk, the findings of this study suggest that aging and family-related

stressors may exert a more immediate and pronounced influence on late-life depression than cumulative human capital advantage. This aligns with the weathering hypothesis, which emphasizes the compounded effects of chronic stressors over time and underscores the need to address both structural inequalities and family dynamics in mental health interventions.

In particular, the relative resilience of aging and family strain observed among older Korean immigrants may reflect several potential protective factors from this community. Prior research suggests that Korean immigrant communities often emphasize strong familial obligations balanced with collective coping strategies, which may mitigate the psychological burden of caregiving and intergenerational tension (Chang 2017). Additionally, higher rates of religious participation, particularly within Korean Christian churches, may provide robust social support networks that buffer the adverse effects of aging and family strain (Park and Edberg 2021). It is also possible that cultural values surrounding endurance (often captured in concepts like “han”) promote adaptive emotional regulation strategies in the face of family-related stressors (Rigazio-DiGilio and Ki 2013). These protective mechanisms warrant further investigation to better understand how cultural and community assets contribute to social support and mental health resilience among Korean American older adults.

These findings are consistent with prior research demonstrating that socioeconomic advantages are protective against depression among minority older adults and that family strain exacerbates mental health vulnerabilities. However, the interaction model approach employed here extends the literature by demonstrating that these

relationships are not uniform across ethnic groups. Specifically, the findings emphasize that even within broad racial categories such as “Asian American,” significant heterogeneity exists in how structural and familial factors shape mental health outcomes. This underscores the importance of disaggregating data and tailoring interventions to the unique needs and vulnerabilities of specific communities.

Moreover, the results demonstrate substantial variation in depression risk across Asian American communities, with Chinese immigrants in NYC exhibiting significantly higher odds of depression compared to their counterparts in PA-NJ. This disparity persisted and even strengthened after accounting for F1 and F2, suggesting that contextual factors unique to urban environments may play a crucial role in mental health outcomes for older Chinese American immigrants.

This study has several strengths, including the use of multiple imputations to address missing data, the application of exploratory factor analysis to empirically derive key latent factor constructs, and the examination of ethnic subgroup differences using an interaction modeling approach. Nonetheless, several limitations should be noted. First, the cross-sectional design limits causal inference. Second, the outcome variable (depression risk) was self-reported and may be subject to reporting bias. Additionally, while the study adjusted for key socioeconomic and health variables, unmeasured confounders such as data collection period, neighborhood conditions, or experiences of discrimination may have influenced the observed associations.

Regardless of the limitations, the findings from this study have important implications for research, policy, and practice. They suggest that interventions aimed at

reducing late-life depression in Asian American immigrants during social crises like the COVID-19 pandemic should address both structural barriers and family-level stressors. Furthermore, efforts should be community-specific, recognizing that the same determinant may function differently across groups. Future research should employ longitudinal designs to clarify causal pathways and explore additional contextual moderators, including racial discrimination, ethnic density, and cultural coping resources. By adopting a more nuanced, subgroup-sensitive approach, future public health efforts can promote mental health equity more effectively among aging Asian American populations.

CHAPTER 4

**SOCIAL SUPPORT, COLLECTIVISM, AND RECIPROCITY: BUFFERING
DEPRESSION RISK AMONG OLDER CHINESE IMMIGRANTS
DURING THE COVID-19 PANDEMIC**

Abstract

This chapter examines how collectivism shapes the mental health experiences and social support-seeking behaviors of older Chinese immigrants during the COVID-19 pandemic. Drawing on 20 participant-driven photo elicitation interviews, the analysis reveals that collectivist values function as dynamic cultural frameworks that both constrain and facilitate support-seeking and adaptation. First, I demonstrate how collectivism creates a paradoxical impact on mental health by simultaneously inhibiting help-seeking through concerns about burdening others while facilitating support exchange through principles of mutual responsibility. Second, I illustrate how collectivism transforms social support into a multi-layered ecosystem where family and friends, community organizations, and government assistance are interpreted through culturally distinct perception filters. The findings suggest that within collectivist contexts, the act of providing support itself becomes a pathway to mental wellness, offering meaning and purpose during crisis. This research advances theoretical understanding of cultural influences on mental health by revealing how collectivism mediates both support-seeking behaviors and the subjective interpretation of received support, ultimately shaping psychological outcomes during pandemic conditions.

Literature Review

Research on stress finds that social support is a mediator in the sense that it has been shown to govern (or mediate) the effects of stressors on stress outcomes (Pearlin 1989), and it is especially beneficial to immigrants' mental well-being (Kim 2014; Xu and Chi 2012). Due to cultural values, acculturation stress, racial discrimination, and other factors, Asian Americans are less likely to seek professional services to solve emotional and mental problems, making social support their main coping strategy to deal with depression (Spencer and Chen 2004). The COVID-19 pandemic brings many stressors to older Asian Americans, which makes this population even more mentally vulnerable, and some research has revealed that communicating with significant others could buffer the negative effects of COVID-19 racial discrimination on depressive symptoms among Asian Americans (Woo and Jun 2022).

Social support is defined as the perception of being loved and cared for, respected and valued, and being part of a social network where people help each other out and have responsibilities towards each other (Wills 1991). Through one's social support network, individuals may receive assistance from family, friends, and other sources to effectively manage stress. There are several different classifications of social support. Social support could be emotional support, structural support, or some combination of the two (Brown and Scheid 2009). The classification could be expanded to be more specific: emotional, instrumental, informational (Thoits 2011; Wills 1991), appraisal (Feeney and Collins 2015), and companionship support (Lakey and Cronin 2008). As a multidimensional

construct (Turner and Brown 2009), social support could also be classified as perceived support and received support (Gottlieb and Bergen 2010; Turner and Brown 2009).

There's a long history of medical sociologists taking social support as a fundamental cause of health, as it shows a persistent connection to health outcomes, even as individual diseases and risk factors shift through time (Link and Phelan 1995). Moreover, its positive impacts on mental health are repeatedly confirmed (Thoits 2011) by both sociological and neurobiological studies. A large body of research indicates that social support plays a crucial role in directly ameliorating distress (Noh and Kaspar 2003; Thoits 1995), maintaining good mental health status (Ozbay et al. 2007) and buffering against the negative impacts of stressors (Mui and Kang 2006; Noh and Avison 1996; Stokes et al. 2002; Taylor et al. 2004), while the lack of social support and connections are associated with higher risks of depression development. Social support from family members is exceptionally significant in protecting the psychological well-being of Asian American elderly individuals from diverse ethnic backgrounds (Mui and Kang 2006; Stokes et al. 2002).

It is noteworthy that extensive sociological literature suggests that the above-mentioned positive effects of social support on mental health could be obtained even without active utilization of social support and connections (Kessler and McLeod 1985; Taylor et al. 2004; Thoits 1995; Turner and Brown 2009). The studies found that perceived social support could function as a stress-buffering mechanism, whereby an individual's sense of being cared for and valued and the perception that aid and assistance are ready to be offered to them during difficult times act as a coping resource to alleviate

distress (Kessler and McLeod 1985; Turner and Brown 2009). Additionally, studies have proposed that in certain situations, the perception of available social support, even if not utilized, may be more advantageous than actively mobilized support. For instance, Wethington and Kessler (1986) discovered that perceived social support was a more influential factor in predicting adjustment to stressful life events than actual received support (Taylor et al. 2004; Wethington and Kessler 1986). Also, the impact of received support might be influenced by how supported someone feels (Wethington and Kessler 1986).

This finding about the effectiveness of perceived social support is especially important for Asian Americans, as this population is found to be less inclined to report the needs and receipt of social support, compared with White Americans (Taylor et al. 2004). Related studies show that social support plays a crucial role in the mental health outcomes of Asian Americans, particularly during the COVID-19 pandemic (Park et al. 2023). Research has also shown that increased social support is associated with better physical and mental health among this population, highlighting the importance of supportive networks (Lee et al. 2022). However, barriers exist. For example, individuals with Asian or Asian American backgrounds often adhere to Asian cultural values like collectivism (Sangalang and Gee 2012a; Triandis 2018). Collectivism is a cultural pattern that emphasizes the importance of group goals, social harmony, and loyalty over individual interests (Sorensen and Oyserman 2009; Triandis 2018). This culture orientation could impede social support seeking due to concerns about potential relational consequences, such as disrupting group harmony, losing social standing, facing criticism,

and exacerbating the situation (Taylor et al. 2004). By contrast, persons from societies marked by more individualist cultural orientations may not feel similar constraints about seeking help for health-related concerns. Moreover, there is discomfort in discussing mental health within Asian families due to stigma surrounding mental health issues, which can hinder the willingness of Asian Americans to seek help from family members (Li Verdugo, Oh, and Jang 2023; Wong, Santos, and Thomas Tobin 2023).

Studies also indicate that the source of social support matters. Link et al. (1989) found, consistent with labelling theory, that the more an individual fears social devaluation-discrimination, the less likely they are to seek social support from outside the household, increasing reliance on household support (Link et al. 1989). Similarly, a 2012 study found that getting support from family, but not from friends, was linked to lower chances of depression, even after considering factors like age and education, suggesting it is important to look at who exactly is offering support (Sangalang and Gee 2012). However, the importance of sources of perceived social support has received limited attention from prior studies. Based on current literature, we may hypothesize that perceived social support from family and friends is greatly valued among Asian American elderly. Still, we do not know how this population will perceive community-level supportive collective activities during the COVID-19 pandemic. Therefore, in this chapter, I try to answer how various sources/levels of social support contribute to moderating the negative impacts of COVID-19-related stressors on depression among Chinese American elders, and what role Asian cultural values, especially collectivism, play in this mechanism.

Method

Study Design

Participant-driven photo elicitation interview (PEI) is a powerful visual research approach that repositions participants as active knowledge producers rather than passive subjects (Harper 2002). This method involves equipping participants with photographic tools to document elements of their lived experience related to the research questions, followed by in-depth interviews, in which these visual images serve as catalysts for meaning-making (Rose 2022). Unlike researcher-driven visual media that may inadvertently reproduce power asymmetries, participant-created images function as “embodied visual knowledge” that reflects participants’ own framing and interpretation of social phenomena (Pink 2020). The subsequent dialogue around these photographs often elicits richer data than conventional interviewing techniques by accessing tacit (Gubrium and Harper 2016) and embodied knowledge that might otherwise remain unarticulated (Packard 2008). Moreover, this collaborative process also acknowledges participants’ authority over their own feelings, perceptions, and experiences (Clark-Ibañez 2004), thereby producing knowledge that more authentically reflects the complexities of human experience (Liebenberg 2018).

Participant-driven photo-elicitation was used in this study to explore the above-stated research questions. Actively engaging community-based organizations (CBOs), a total of 20 Chinese American immigrants aged 65 and above during the COVID-19 pandemic were interviewed from the greater Philadelphia area and New York City. Each verbally consented participant was asked to provide 6-8 pictures that reflect their cultural

values, social support they experienced, and their mental health status during the COVID-19 shutdown. The pictures were printed out, numbered, and brought to the face-to-face, one-on-one PEI interviews. The study was approved by Temple IRB (protocol 31804) on Sep 23rd, 2024.

The interviews lasted 40-60 minutes in private and quiet spaces to protect participants' privacy. Before the interview, a written consent form that grants permission for audio recording was collected from the participant. Following the informed consent process, the interviews started with rapport building, in which the participant told their stories about a typical day during the pandemic and their experiences living as an Asian person in the United States. This naturally transitions into more focused topics about participants' experience with the photography assignment, which provided context for the more in-depth photo exploration that follows. The heart of the interviews involved discussing each photo individually. For each image, the participant shared when and where it was taken, the story behind it, the emotions associated with it, and how their experiences of social support, cultural values, or depressive symptoms were connected to the photo. After discussing each photograph, the participant wrote a caption for it, adding another layer of meaning to the visual narrative. After that, the interviewer asked the participant to sort the photos into clusters, which helped identify patterns and themes across the images. The discussion broadened to explore how these personal stories might reflect experiences common to older Chinese Americans in general, particularly regarding mental health impacts. The interviewer also probed deeper into the participants' experiences with depressive symptoms, their cultural values around support-

seeking, and what advice they would offer to someone diagnosed with depression. The interviews concluded by giving the participant space to share anything not yet discussed and to ask questions about the research. Throughout the process, the photographs served as powerful entry points into sensitive topics, allowing participants to share their experiences in a semi-structured yet personal way.

Analytical approach

The audio recordings of the interviews were transcribed into simplified Chinese and then translated into English for data analysis. Coding and corresponding thematic data analysis (Braun and Clarke 2013) was conducted using Atlas.ti. An initial, thorough reading of all transcripts was made to gain a better understanding of the participants' narratives. Detailed coding was implemented in the second round of reading by identifying and tagging significant elements that relate to the research questions, paying particular attention to both explicit statements and underlying meanings. To strengthen the reliability and validity of the coding process, ChatGPT was employed as a supplementary analytical tool (Yan et al. 2024) with structured prompts that included the research questions alongside de-identified transcripts. The AI-generated codes were then systematically compared against the initial coding framework in Atlas.ti to establish inter-coder reliability and ensure comprehensive coverage of emerging themes. Following this comparison, the codes were revised to reach internal consistency. Then, in Atlas.ti, the codes were clustered into preliminary themes that capture broader patterns in the data. The themes were refined to ensure that they represent meaningful participants' experiences while maintaining analytical coherence. Clear definitions for each theme

were developed. The analysis addressed several anticipated thematic areas, including COVID-19-related challenges, help-seeking behaviors during the pandemic, preferred social support sources, intergenerational interactions, Asian cultural values, traditional practices, acculturation levels, and manifestations of depressive symptoms.

Results

Characteristics of the Participants

Table 4.1 presents the characteristics of the 20 Chinese immigrant participants included in this study. The sample consisted of 8 males and 12 females. Regionally, 8 participants were from New York City, while 12 were from the greater Philadelphia area. In terms of years residing in the United States, the participants were diverse: 5 had lived in the US for 10 years or less, 3 for 11–20 years, 5 for 21–30 years, and 7 participants had resided in the country for more than 30 years.

Table 4.1 Characteristics of the Participants

Characteristics		n=20
Gender	Male	8
	Female	12
Region	New York City	8
	Greater Philadelphia Area	12
Years in the US	10 Years and Less	5
	11-20 Years	3
	21-30 Years	5
	More than 30 Years	7

Figure 4.1 is a word cloud figure generated from the qualitative coding process in Atlas.ti, illustrating the frequency of key concepts across 20 interviews. The size of each word represents its occurrence in the coded data, with more prominent terms such as “pandemic,” “home,” “family,” “child,” “daughter,” “friend,” “doctor,” “community,” and “government” reflecting core terms raised by participants. This visualization provides an overview of the dominant topics emerging from the data, highlighting the centrality of pandemic-related stressors, social support sources, and cultural contexts in shaping participants’ mental health outcomes. The prominence of family- and health-related terms underscores the central role of kinship ties and healthcare navigation during the COVID-19 pandemic. Similarly, frequent references to “government” and “community” indicate the salience of collective identity among older Chinese Americans.



Figure 4.1 Word Cloud of Key Concepts from Qualitative Coding in Atlas.ti.

The thematic analysis following the coding process yielded seven interrelated subthemes representing the complex mechanisms through which social support moderates the negative impacts of COVID-19-related stressors on mental health outcomes among older Chinese immigrants, in which collectivism significantly shaped participants' life experience, social support perceptions, and mental health outcomes. Based on the subthemes, two themes were identified to answer the research questions for this chapter.

Theme 1: Collectivism's Impacts on Mental Health Outcomes

Cultural Values as Double-Edged Swords

Consistent with previous research, collectivist cultural values such as filial piety, family obligation, and harmony shaped how older Chinese Americans perceived and responded to stress and support during the pandemic. Many participants internalized beliefs that discouraged expressing personal needs or seeking help, particularly from family, in order to avoid burdening others:

- *“We didn't bother them (adult children).”*
- *“My family had to push me in a wheelchair (during a travel) ...even though I wasn't physically tired...I felt emotionally burdened. I didn't like feeling like I was troubling them.”*
- *“If they (community members) don't speak up, no one can help them... during this pandemic, a lot of Chinese people kept their struggles to themselves.”*

However, at the same time, collectivist values could also facilitate adaptive coping and mental health help-seeking. Participants who aligned with collectivist principles often emphasized shared responsibility and mutual aid:

- *“I am on the side of collectivism...for those with depression, I think they should let others help them as much as possible.”*
- *“I used to have depression, but I feel better after attending the senior center and gained lots of help from the CBO leaders and peers.”*

Providing Support to the Community as a Pathway to Mental Wellness

A unique manifestation of collectivist values was the act of providing support, which itself became a coping strategy that promoted emotional well-being. Participants described how volunteering and helping others offered meaning, purpose, and emotional relief during the pandemic:

- *“Helping others is also a form of self-protection... If your community is sick and suffering, it will impact you, too.”*
- *“During the pandemic, I helped people book vaccine appointments... I felt I had contributed something to the community in fighting against COVID-19, and that’s something I should do.”*
- *“I had been volunteering for 13 years... I helped people buy tickets, deposit money, join dance activities...these activities helped make daily life more enjoyable.”*

- *“I did a dance performance for older Chinese people living in a nursing home and hadn’t seen anyone else since the pandemic. They looked pleased. They were happy, and therefore we performers were also very happy.”*
- *“When my friends had trouble registering for vaccines, I helped them. It felt good to be useful.”*

Their roles as volunteers, informal helpers, and peer supporters emerged as sources of purpose, agency, and emotional connection. For some, continuing to assist (by sharing information, checking on neighbors, or supporting friends) was not simply an obligation, but also a culturally informed expression of reciprocity and collective responsibility. This active role in giving support enhanced their sense of belonging and social connectedness, reinforcing a perception that they remained valued contributors to their community. Providing support also functioned as a coping mechanism, counteracting feelings of helplessness or passivity during the pandemic. By “giving,” participants reclaimed a sense of agency while being surrounded by widespread uncertainty. Moreover, being able to contribute to others’ well-being reinforced their sense of being embedded in a reciprocal network of care, which highlights the culturally relational nature of social support in collectivist contexts. This reflects a culturally grounded relational model in which both receiving and giving support promote mental health.

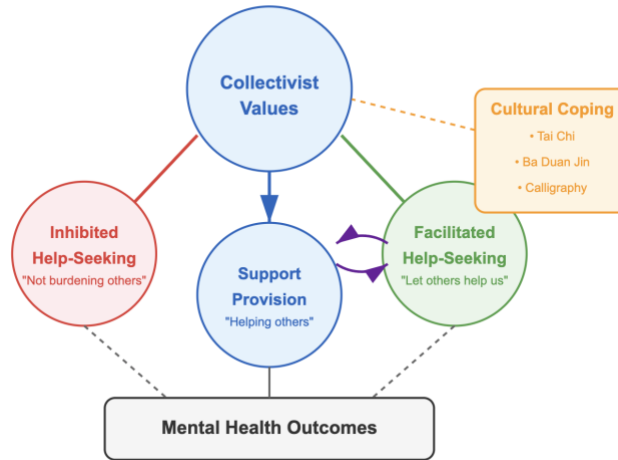


Figure 4.2 Collectivism’s Impacts on Mental Health Outcomes

Coping and Psychological Outcomes

Participants described multifaceted pandemic stressors, including social isolation, fear of infection, disrupted healthcare access, and witnessing community suffering. For many elders, the closure of senior centers, faith-based organizations, and social gathering spaces that served as key sources of daily interaction and routine led to heightened loneliness and emotional distress. Strategies to cope with these stressors include physical activities (Tai Chi, Ba Duan Jin), Chinese art (drawing and calligraphy), and faith-based practices (Buddhism and Daoism) that often reflect culturally consonant forms of emotional regulation. Notably, some of these were supported by family or CBOs:

- *“During the lockdown, I had some time...I learned Ba Duan Jin through wellness sessions organized by the apartment and felt so much healthier and happier.”*

- *“The CBO leader taught me how to use Zoom, so that I could join the weekly online gatherings.”*
- *“I spent most of my time painting and practicing calligraphy. That kept me occupied and more satisfied with the lockdown life.”*

These narratives illustrate how collectivism influenced both the willingness to seek or provide support and the development of culturally embedded coping strategies that shaped mental health outcomes.

Theme 2: Collectivism and Perceived Social Support Sources

Multi-Level Support Systems

Despite COVID-19-related challenges, many participants described relying on multiple sources of social support, including family members, friends, neighbors, faith communities, and CBOs. Support varied in formats, ranging from emotional encouragement, informational guidance (e.g., COVID-19 vaccine updates), instrumental assistance (e.g., grocery delivery), to spiritual solidarity through remote religious gatherings. CBOs were pivotal in providing practical resources. These structures often reflected collectivist principles in both design and function:

- *“Every Friday, the activity center would deliver a bag of groceries to my door.”*
- *“Because of our church, we had Zoom meetings... It felt like we were still together.”*

- *When I got COVID-19, my friends left supplies at my door. They would either hang them on the doorknob or leave them on the floor and then notify me to pick them up after they left. Everyone looked out for each other.”*

Many participants expressed positive emotional responses to the support they received, indicating that the support they received reduced pandemic-related anxiety. This diversity of support reflects a layered ecology of care, underscoring the importance of both intimate and community-based sources in mitigating the negative psychological impacts of the pandemic for people from a collectivist background.

Perceived Social Support

Beyond structural access, participants emphasized the importance of emotional resonance and cultural congruence in their support experiences. Some felt emotionally sustained by modest gestures:

- *“I feel like it’s given me a lot of help, both psychologically and in my life.”*
- *“The works of these (Chinese) artists resonated deeply... it was a big effort to better our community’s mental well-being.”*
- *“It made me feel remembered, that they didn’t forget about us.”*

And some participants would perceive that the social support they provided would be paid back someday when needed:

- *“I have done a lot of good things for the community... Good intentions will be rewarded. Many people say that.”*

This reinforces that collectivist cultures do not only value support as an exchange of resources, but as an affirmation of relational harmony and shared identity.

Community-Level Collectivism

Community-based organizations played an especially vital role, often perceived not only as service providers but as familial extensions of collective identity:

- *“Even though I couldn’t go to the center, they still called us, asked if we needed anything.”*
- *“Through the community Zoom singing group, I still felt like I was with my friends.”*
- *“The organization organized lectures telling us about the safety of our lives during the COVID-19 pandemic.”*

These forms of support were often framed not only as practical assistance but as symbols of belonging and collective care. For many elders, community organizations filled critical gaps when family or institutional support was limited. Some participants described CBOs as lifelines, providing material resources (food, masks, informational pamphlets in Chinese) and emotional reassurance through regular check-ins and communication. Beyond tangible aid, elders perceived community-level support as an affirmation of their social value and cultural belonging. Community programs rooted in shared cultural identity (e.g., language-concordant staff, culturally familiar activities) enhanced trust and engagement. Participation in group activities (although virtually) helped mitigate feelings of isolation by maintaining a sense of connection.

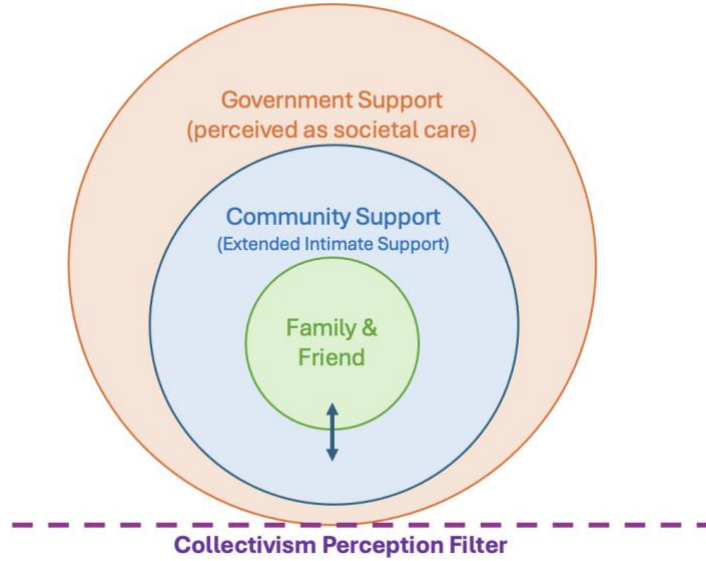


Figure 4.3 Collectivism and Multi-Layered Social Support Ecosystem.

Institutional and Government Support

In contrast with Western culture that treat government assistance as a right or social contract (Weale 2020), older Chinese American interviewees interpreted government aid (including stimulus checks, testing sites, vaccination provision, translated materials, etc.) through a collectivist lens, and expressed appreciation and a sense of societal care and support:

- *“We were lucky the government gave us masks and free testing... It showed they cared.”*
- *“The US government takes good care of us.”*

Several participants emphasized feeling thankful not only for the direct resources but also for the broader sense of protection and reassurance these public health efforts symbolized. For example, some expressed appreciation that local health departments partnered with community organizations to provide linguistically and culturally appropriate information:

- *“They gave us pamphlets in Chinese, so we understood what was happening. That made me feel safe.”*

For others, financial aid, such as stimulus checks, was acknowledged as a lifeline that helped meet essential needs:

- *“The money we got from the government helped pay the bills. I’m grateful because without it, things would have been harder.”*

This gratitude reflects not only participants’ appreciation for tangible assistance but also their broader cultural tendency to acknowledge and value institutional efforts within a collectivist framework, where recognizing the contributions of larger systems and authorities aligns with norms of relational harmony and social order.

Discussion

The findings from this study highlight the complex, culturally embedded ways that Chinese American elders experienced, received, provided, and perceived social support during the COVID-19 pandemic. A central thread woven across participants’ narratives was the profound influence of collectivist cultural values, including filial piety, reciprocity, mutual obligation, and prioritization of harmony. These values shaped not

only how support was sought and received but also how it was interpreted, constrained, and emotionally processed.

Collectivism functioned as both a source of protection and a constraint in elders' support networks. On one hand, collectivist orientations strengthened family bonds and community solidarity. Participants frequently expressed confidence that family would care for them, even if they minimized their requests to avoid burdening loved ones. Acts of mutual aid, such as volunteering and helping neighbors, were framed not only as duties but as sources of personal meaning and belonging. Providing support reinforced participants' self-worth and relational connectedness, which served as a coping strategy that, in turn enhanced the helpers' own perception of being socially supported. However, consistent with previous research, collectivism also carried social constraints that discouraged overt help-seeking or emotional disclosure (Marshall 2008; Pejičić 2024). Participants' reluctance to "bother" their adult children or admit feelings of loneliness reflected internalized expectations to uphold harmony, preserve face, and avoid burdening others. Importantly, participants' active roles as support providers underscore that social support was bidirectional and relational. Providing support functioned not only as assistance to others but also as a mechanism of sustaining their own emotional resilience and sense of social integration. This dynamic reflects collectivist ideals of interdependence, mutual responsibility, and communal well-being, expanding Western-centric conceptualizations of elders as passive support recipients (Triandis 2018).

Meanwhile, collectivism intersected with structural barriers (language, technology, institutional mistrust) to mediate participants' access to and utilization of

both formal and informal support systems. While collectivist networks buffered some institutional gaps, they could not fully compensate for systemic inequities that left certain elders isolated or underserved. This intersection reinforces the need to address both cultural and structural determinants of support disparities in immigrant elder populations.

Several limitations warrant reflection. First, as a qualitative inquiry drawing on a purposive sample of participants primarily recruited through CBOs, the findings are not intended to be generalizable to all Asian American elders. The perspectives captured in this study may overrepresent individuals who were more socially connected, resource-engaged, or already linked to supportive community infrastructures. Therefore, the sample potentially underrepresents the experiences of more isolated, homebound, or institutionally marginalized elders. Second, the analytic process was conducted by one human coder and was inherently interpretive. While the study employed AI-human collaboration, systematic coding, and reflexive practices to enhance trustworthiness, the analysis was shaped by the researcher's positionality, theoretical orientation, and cultural lens (Berger 2015). Alternative interpretations and thematic emphases are possible. To sum up, these limitations underscore the need for caution in extrapolating the findings beyond the study's context, while also pointing to opportunities for future research to build on, expand, and diversify the understanding of culturally embedded social support experiences among Asian American elderly populations.

Despite the limitations, this study is strengthened by its use of participant-driven photo elicitation interviewing as a qualitative method. The incorporation of participant-selected images enhanced the depth, nuance, and emotional resonance of participants'

narratives. Participants' feedback on the photo elicitation process itself underscores the method's value. Many participants described the photographs as facilitating reflection, memory recall, and emotional connection, enabling them to articulate experiences that might have been more difficult to express in a conventional interview format. As one participant from Philadelphia reflected: "*Looking at the photos helped me remember things I hadn't thought about in years.*" Another participant noted that the images provided an accessible entry point for storytelling: "*Without the photos, I wouldn't have known where to start talking about these feelings.*" This feedback suggests that participant-driven PEI fostered richer, more grounded narratives by visually anchoring participants' stories in concrete images. For some, the process also enhanced their sense of agency and control over the interview content: "*It made me feel like I had control over what to show and talk about.*" These participant perspectives align with literature suggesting that participant-driven PEI can democratize the research encounter, empower participants, and elicit more layered, emotionally salient data (Harper 2002). In this study, the photo elicitation approach thus not only enriched the substantive findings but also functioned as a relational and empowering tool that deepened participants' involvement in meaning-making.

Using this powerful qualitative method, the findings of this study show that community-based and faith-based organizations are critical in bridging cultural gaps, offering trusted spaces where elders can access support without stigma. Programs integrating culturally familiar activities (e.g., tai chi, calligraphy) may enhance engagement. Future research should explore intergenerational dynamics in social support,

examining how adult children's understanding of filial piety intersects with elders' expectations. Longitudinal studies could assess how pandemic-related disruptions in support influence long-term mental health outcomes. Moreover, research comparing sub-ethnic groups (e.g., Chinese, Korean, Vietnamese elders) may uncover culturally specific variations in how collectivism shapes support-seeking and coping.

Policy makers may consider expanding funding for community-based organizations serving Asian American elders, considering their roles in delivering linguistically and culturally tailored support. Moreover, there's a need to support digital literacy programs for elders to reduce technological barriers to accessing virtual support for mental health betterment. Furthermore, it's also necessary to provide funding to support the development of culturally congruent mental health interventions that frame counseling and psychological services within collectivist values, as these kinds of interventions have great potential in reducing stigma around mental health issues. Finally, promoting intergenerational education programs that foster mutual understanding of cultural expectations and emotional needs between elders and their families could contribute to reducing family stress and elder depression.

CHAPTER 5

CONCLUSION

This dissertation set out to examine the structural vulnerabilities and cultural resilience shaping depression risk among older Asian Americans during the COVID-19 pandemic. Using a mixed-methods design, I integrated survey data from the AD-CRC study and participant-driven photo elicitation interviews with older Chinese immigrants to understand how structural, community, and cultural dynamics intersect to produce mental health disparities. In doing so, the dissertation contributes to the empirical, theoretical, and practical understanding of depression in immigrant aging populations.

Empirical Contributions

Empirically, this research revealed critical disparities that would have remained hidden if Asian Americans were treated as a monolithic group. In Chapter 2, disaggregated analyses demonstrated that depression risk varies significantly across ethnic subgroups and geographic regions. Chinese elders in NYC, for instance, exhibited significantly higher odds of depression compared to their PA-NJ counterparts and other Asian subgroups, even after adjusting for demographic and health variables. In contrast, Filipino elders initially appeared less vulnerable, but their advantage diminished once socioeconomic factors were accounted for.

Chapter 3 added depth by identifying two latent factors, Cumulative Human Capital Advantage and Aging Related Family Strain, that functioned differently across ethnic groups in shaping depression risks. These findings illustrate that the same risk factors do not operate uniformly across communities. Instead, their impact is shaped by

intersecting contexts of migration history, social position, and cultural expectations. This underscores a central empirical insight: disaggregation matters. Without it, real-world variations in mental health risks and protective factors are obscured, limiting the effectiveness of mental health research and intervention design.

The methodological approach itself represents another contribution. By combining multiple imputation, Oaxaca-Blinder decomposition, exploratory factor analysis, and qualitative photo elicitation interviews, this study demonstrates the power of integrating statistical and narrative-based investigation tools. These methods helped not only to quantify group-level disparities but also to surface the lived experiences behind the numbers, especially those that defy conventional expectations, such as the surprising finding that larger household size was associated with higher depression risk in some community contexts.

Theoretical Contributions

Theoretically, this dissertation supports and extends three major sociological frameworks: the Weathering Hypothesis, Cumulative Disadvantage Theory, and Social Support Theory.

The results affirm the Weathering Hypothesis by showing how chronic exposure to marginalization and structural barriers, particularly among Chinese elders in urban areas, contributes to accelerated mental health decline in later life during crises like the COVID-19 pandemic. Similarly, findings are consistent with Cumulative Disadvantage Theory, highlighting how disparities in education, English proficiency, and income compound over time to widen depression risk among older immigrants. Importantly, the

study also extends the application of these two theories to the Asian American community.

Moreover, the study reveals the dual role played by collectivist cultural values. Collectivism was found to be both protective and problematic for help-seeking. Chapter 4 revealed that these values can create emotional distance (not burdening others) and suppress help-seeking, but meanwhile, they foster interdependence and resilience to depression through shared caregiving and community belonging. This insight contributes to Social Support Theory by emphasizing that support is not universal, as it is shaped by cultural interpretations. Not all support is experienced as helpful, and cultural context plays a defining role in shaping its meaning and mental health impact.

Policy and Practice Implications

This research also offers actionable insights for improving mental health equity among older Asian immigrants. First, it affirms the importance of community-specific approaches. What works for one group may not be as effective for another group with different needs. For example, language-accessible counseling for Vietnamese elders may not be as effective among Chinese elders navigating intense family expectations and low trust in formal services. Interventions must be tailored not only to ethnic identity but also to geographic context and migration histories.

Second, the findings call for culturally sensitive mental health interventions. For instance, framing help-seeking as a form of community care—not personal failure—can reduce stigma and better align with collectivist values. Additionally, policies that

improve economic security, caregiving support, and language access for older immigrants are crucial structural levers for reducing mental health disparities.

Finally, future research should adopt longitudinal designs to track how depression risks evolve over time and examine additional moderators such as racial discrimination, ethnic density, and cultural coping mechanisms. Extending qualitative tools like photo elicitation to other subgroups will further enrich our understanding of aging and resilience in immigrant communities.

Looking ahead, this study lays a strong foundation for my future research agenda, which will continue exploring the intersections of aging, immigration, and health disparities through both sociological theory and applied public health frameworks. The methodological and theoretical tools utilized here, especially the integration of disaggregated survey analysis and culturally grounded qualitative inquiry, can be extended to examine mental health disparities in other older adult populations. While this dissertation focused primarily on Asian American communities, the frameworks of cumulative disadvantage, weathering, and culturally shaped social support are broadly applicable to older Black, Latino, and other populations who also face structural exclusion and culturally mediated forms of resilience. Moreover, the participatory research model employed here can guide future work with diverse communities to co-produce knowledge that is both empirically rigorous and practically relevant. In this way, the findings of this study not only deepen our understanding of Asian American elder mental health but also offer scalable models for equity-centered research and intervention across racialized aging populations.

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APPENDIX A
MULTIPLE IMPUTATION SUMMARY

Table A.1 Multiple Imputation Results Summary

Variable	Number of Observations			Total
	Complete	Incomplete	Imputed	
Gender	479	3	3	482
Marital Status	474	8	8	482
Highest Education	471	11	11	482
Employment Status	460	22	22	482
Annual Household Income	447	35	35	482
Household Size	443	39	39	482
English Proficiency	476	6	6	482
Depression Level	432	50	50	482
Age Arrived in the US	442	40	40	482
Number of Cardiometabolic Conditions	320	162	162	482

APPENDIX B

IMPUTATION VALIDATION

I implemented a systematic approach that simulated missing data patterns to validate the quality of the imputation process. Considering the fact that the number of pre-existing metabolic conditions (*met_n*) had the highest rate of missingness, the imputation validation process was conducted with this variable. First, I established a baseline by regressing the depression score on all predictor variables using only complete cases ($n=291$). I then randomly assigned 33.6% of the *mets_n* values to missing for 33.6% of the complete-case sample, thus creating a validation dataset where imputed values can be compared against known true values. A regression model was fitted to predict the missing *mets_n* values using all available covariates stated in Chapter 2. After generating predicted values for the artificially missing observations, we replaced the missing values with their predictions and re-ran the original outcome regression to assess whether the statistical relationships were preserved after imputation. A comparison of the model performance is shown in Table B.1, and the comparison of coefficients of the two models is presented in Table B.2.

Tables B.1 and B.2 showed that key statistical relationships were generally preserved, with some changes in effect sizes. The overall model performance remained stable (R-squared: 0.4748 vs 0.4806). Most notably, the *mets_n* variable maintained its strong statistical significance in predicting depression scores, though the coefficient magnitude increased from 0.99 to 1.53 (54% increase), with corresponding changes in standard errors (0.23 to 0.28). Other predictors held relatively consistent directions and magnitudes across models, suggesting the imputation did not substantially alter the

underlying data patterns. While the moderate increase in the mets_n coefficient warrants attention, the overall stability of the model structure and maintenance of statistical significance support the validity of the regression-based imputation approach.

Table B.1 Model Performance Summary

Metric	Before Imputation	After Imputation	Change
R-squared	0.4748	0.4806	+0.0058
Adjusted R-squared	0.4429	0.4525	+0.0096
F-statistic	14.91	17.12	+2.21
Root MSE	3.7986	3.794	-0.0046

Table B.2 Coefficient Comparison for Key Variables Predicting Depression Score

Variable	Before Imputation			After Imputation			Change in Coef. (%)
	Coef.	SE	p-value	Coef.	SE	p-value	
Imputed Variable							
Number of Metabolic Conditions	0.991	0.228	<0.001	1.527	0.278	<0.001	+54%
Communities							
Chinese NYC	4.739	0.830	<0.001	3.666	0.761	<0.001	-23%
Filipino PA-NJ	-0.146	1.412	0.918	-1.151	1.285	0.371	+689%
Korean PA-NJ	-4.115	1.257	0.001	-3.952	1.116	<0.001	-4%
Vietnamese PA-NJ	1.065	0.890	0.232	0.338	0.824	0.682	-68%
Other Variables							
Age	0.152	0.048	0.002	0.104	0.047	0.026	-32%
Female	0.584	0.572	0.309	0.216	0.536	0.687	-63%
Age in the USA	0.002	0.024	0.938	0.007	0.023	0.760	+250%
Marital Status	0.192	0.212	0.366	0.081	0.204	0.689	-58%
Highest School	-0.712	0.300	0.018	-0.825	0.286	0.004	+16%
Employment Status	-0.815	0.725	0.262	-0.435	0.677	0.521	-47%
Household Income	-0.702	0.288	0.016	-0.689	0.279	0.014	-2%
Household Size	0.007	0.188	0.971	-0.040	0.180	0.826	-671%
English Proficiency	-1.026	0.462	0.027	-0.796	0.448	0.077	-22%