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Spatial Segregation and Voting Behavior among Asian Americans in 2020 General Election

Yongjun Zhang

Department of Sociology and Institute for Advanced Computational Science, Stony Brook University, NY, USA

Abstract

This article explores the link between residential segregation and political engagement among Asian American voters in New York City. Despite frequently being perceived as apolitical and concentrated in ethnic enclaves, Asian Americans constitute a diverse group. This paper investigates how multifaceted spatial isolation based on race, class, and partisan affiliation was associated with the likelihood of Asian American voters participating in the 2020 general election. We demonstrate that a monolithic view of Asian Americans perpetuates stereotypes of political passivity, but a closer examination of distinct ethnic groups reveals varied patterns of political engagement. For instance, Japanese Americans showed a high level of political engagement comparable to that of non-Hispanic whites. Our findings further indicate that spatial isolation across race, class, and partisan dimensions had varying impacts on political engagement.

Introduction

Asian Americans are the fastest-growing racial minority group in the United States. According to the 2020 Census, 20.6 million people identified as Asian, Native Hawaiian, or Pacific Islander alone, representing 6.2% of the nation's population. As their population continues to expand, political analysts anticipate that Asian Americans may evolve into a substantial voting bloc in American elections. Despite this potential for political influence, mainstream media often depicts Asian Americans as affluent, highly educated "model minorities" who are apolitical and reside in ethnic enclaves. Nearly six decades following the enactment of the Immigration and Nationality Act of 1965 by the US Congress, lingering questions remain about the extent of political engagement among Asian Americans and what factors may explain variations in their participation.

While scholars, journalists, and pundits frequently depict Asian Americans as politically inert, the notion of Asian Americans as apolitical remains contentious. The rapid growth of the Asian American population in the US is primarily driven by an influx of foreign-born immigrants. Consequently, political participation among Asian Americans can be seen as a three-step progression encompassing naturalization, registration, and voting turnout (Lien, Collet, Wong, and Ramakrishnan, 2001). When accounting for variations in naturalization and registration rates, political participation among Asian Americans has been found to exceed that of other minority groups (Masuoka, Han, Leung, and Zheng, 2018; Masuoka, Ramanathan, and Junn, 2019). Moreover, previous studies often treat Asian Americans

as a monolithic group despite their considerable diversity in terms of culture, language, religion, and national origin (Lee and Kye, 2016; Junn and Masuoka, 2008a). Scholars are still debating whether Asian Americans share a pan-ethnicity identity or favor their own national origin groups when casting their votes (Masuoka et al., 2019; Bejarano, Brown, Gershon, and Montoya, 2021; Chan and Jasso, 2021). In this paper, we accommodate political incorporation status by comparing registered voters across different racial and ethnic groups in New York City. This approach enables us to scrutinize both intra- and inter-group variations in Asian American political participation.

Asian Americans are also often characterized as perpetual foreigners due to their propensity to dwell in ethnic enclaves. Scholars have extensively studied the potential impact of residential racial segregation on political participation, alongside other factors such as resource availability, insufficient acculturation, and institutional barriers in naturalization and voter registration (Brady, Verba, and Schlozman, 1995; Sakamoto, Goyette, and Kim, 2009; Lee and Kye, 2016). Previous research presents conflicting findings concerning the relationship between residential segregation and political participation among Asian Americans. Some studies suggest that inhabiting ethnic enclaves can impede voting participation due to lower societal assimilation, limited political knowledge, and lack of mobilization (Uslaner and Conley, 2003; Wong, 2005; Diaz, 2012). Conversely, other studies propose that living in ethnic enclaves may actually enhance political participation through increased political awareness, community social norms, and local political mobilization (Wong, Lien, and Conway, 2005; Seo, 2011). Our study strives to reconcile these disparate findings by presenting new evidence on the relationship between racial isolation and political participation.

While considerable attention has been devoted to studying racial segregation, less research has been conducted on how income and partisan segregation affect political participation, particularly among Asian Americans. Previous research has suggested that economic and partisan segregation could alter local civic and political environment, thereby shaping individual political participation (Widestrom, 2015, 2017; Mummolo and Nall, 2017; Brown and Enos, 2021). For instance, in more economically segregated communities, wealthier residents might be more inclined to participate in neighborhood organizations and engage civically; while in more politically segregated communities, residents might be more likely to mobilize through party infrastructure (Wichowsky, 2019). We will extend our analysis to the relationship between income/partisan segregation and political participation. Based on the newly released 2020 census data, a recent study shows a consistent decline in the segregation of Blacks with other groups, but an increase in the segregation of Hispanics and Asians with the White population as well as between Hispanics and Asians from 1990 to 2020 (Elbers, 2021). Income and partisan segregation have also grown rapidly in the US in the past half-century (Reardon, Farrell, Matthews, O’Sullivan, Bischoff, and Firebaugh, 2009; Logan and Stults, 2011; Owens, Reardon, and Jencks, 2016; Mummolo and Nall, 2017; Brown and Enos, 2021). But the impact of income and partisan segregation in residential environments on voting remains understudied. Our work will provide the first empirical analysis of how multiplex spatial segregation is associated with individual-level political participation across different racial and ethnic groups.

The Myth of Political Participation among Asian Americans

In the past half century, numerous social scientists have dedicated their research to unraveling the mystery low political participation among Asian Americans (Xu, 2002, 2005; Lee and Kye, 2016). The classic resource model posits that citizens' political participation is influenced by their time, money, and civic skills, which can vary across different socioeconomic groups (Brady et al., 1995). The resource model suggests that the disparities in political participation among racial groups are likely to diminish as communities of color accumulate enough resources. However, despite their socioeconomic mobility, Asian Americans remain politically inactive, prompting scholars to explore additional theoretical frameworks that go beyond individual socioeconomic status to explain their low political participation (Xu, 2002).

Following the resource model suggesting that individuals acquire civic skills through their participation in institutional life such as attending schools, workplaces, and churches, some scholars argue that Asian Americans' low political participation as new immigrants is due to insufficient acculturation resulting from lack of civic education (Brady et al., 1995). For instance, the White-centered civic education (e.g., political science classes) in universities has led to unequal gains in political efficacy between Asian Americans and whites (Chan and Hoyt, 2021). Moving beyond individual-level account, recent scholarship has paid particular attention to various contextual factors, such as group political awareness, spatial concentration, jurisdictional composition, and local mobilization, to provide a more comprehensive understanding of Asian Americans' political participation. For example, previous studies have highlighted the significance of pan-ethnicity identity in mobilizing Asian Americans (Okamoto, 2003; Junn and Masuoka, 2008a, 2008b; Chan and Jasso, 2021; Sadhwani, 2022). The pan-ethnicity consciousness is more salient among Asian Americans with higher incomes, involvement in Asian-American politics, self-identification as Democrats, and experiences of racial discrimination (Masuoka, 2006). Based on the empirical analysis of the 2016 Collaborative Multiracial Post-Election Survey, Chan and Jasso (2021) discovered that Asian Americans, Latina/os, and African Americans were more likely to engage in political action if they shared a sense of linked fate with their expansive communities of color. Furthermore, using voter registration and return data from all counties in California, Sadhwani (2022) demonstrated that Asian Americans in districts with the co-ethnic political candidates in federal elections were more inclined to vote, with the likelihood varying based on the percentage of Asian Americans in a given district.

Some scholars have directed their attention to examining institutional barriers that impede civic engagement among Asian Americans. They propose a three-step process for new immigrants' political participation, involving naturalization, voter registration, and voting turnout. Given the sizable proportion of foreign-born individuals in Asian American communities, the cost associated with political activities is significantly higher for Asian Americans compared to other racial groups in the US. For instance, Cho (1999) discovered a negative association between English proficiency and voter turnout among Asian Americans and Latinx individuals, suggesting that the language barrier experienced by foreign-born immi-

grants hampers their socialization, assimilation into mainstream society, and their ability to gain political efficacy. Other institutional barriers have also been identified, including the absence of multilingual ballots and lengthy residency requirements for voter registration, both of which discourage political participation among communities of color (Lien, 1994; Xu, 2005). Additionally, previous research indicates that political parties and politicians are less likely to target Asian Americans for mass mobilization due to the prevalent apolitical stereotype surrounding this group (Wong, 2005). However, it is worth noting that institutional barriers within the naturalization and voter registration processes account for a significant portion of the variation in voter rates across different racial groups (Masuoka et al., 2019). The perception of Asian Americans as apolitical is partly attributed to the use of the adult population rather than the adult citizen population when calculating turnout rates. Once the political incorporation status, including citizenship status and voter registration, is taken into account, Asian Americans' voting turnout rate shows no significant differences compared to other minority groups (Lien et al., 2001).

Prior studies tend to treat Asian Americans as a monolithic group when examining racial disparities in political participation and often overlook the diversity and intra-group variation within Asian American communities. As the fastest growing minority group in the US, the Census Bureau projects that Asian Americans will make up the largest share (38 percent) of the foreign born population by 2065. China and India have surpassed Mexico as the top countries sending immigrants to the US since 2013 (Lee and Ramakrishnan, 2020). Asian Americans are incredibly diverse, with over twenty subgroups that have distinct migration patterns, languages, religions, cultures, and socioeconomic backgrounds (Lee, Ramakrishnan, and Wong, 2018; Lee and Ramakrishnan, 2020). Based on data from American Community Survey in 2016-2020, the Census Bureau estimated that Chinese Americans are the largest Asian origin group (4.15 million), making up 21 percent of the Asian population, followed by Indians (4.14 million), Filipinos (2.88 million), Vietnamese (1.85 million), Korean (1.48 million), and Japanese (0.77 million). Although individuals with origins from the Far East, South East Asia, or South Asia are counted as Asian by the US Census Bureau, the public, including White, Black, Latino and most Asian Americans, tends to see East Asian as the default for the Asian racial category and exclude South Asians such as Indians and Pakistanis (Lee and Ramakrishnan, 2020). Data from National Asian American Survey also shows that Asian Americans were more likely to self-identify with their national origin than with the broad category of "Asian" or "Asian American," with the percentage increasing from 75 percent in 2008 to 84 percent in 2012 (Lee et al., 2018).

Despite frequently depicted as "model minority", socioeconomic status varies substantially across different ethnic groups in the Asian American community (Wong and Shah, 2021; Drouhot and Garip, 2021; Vo, Schleifer, and Hekmatpour, 2023). Analysis of data from the 2019 American Community Survey reveals variations in foreign-born rates, with Japanese at 27 percent, Chinese at 62 percent, and Malaysian and Bhutanese at 85 percent. Poverty rates also differ, ranging from 6 percent for Indians, 7 percent for Filipinos, 13 percent for Chinese, to 25 percent for Burmese and Mongolians. In terms of educational attainment, the percentage of individuals aged 25 and older with a bachelor's degree or higher varies from 15 percent for Bhutanese, 18 percent for Laotians, 48 percent for Filipinos, to 75 percent for Indians (Budiman and Ruiz, 2021). Using data from the Current Population Survey,

Vo et al. (2023) demonstrated that Asian Americans have made significant progress toward economic parity with white individuals. However, this overall trend masks income variations within racial and ethnic groups as well as across genders. For instance, workers of Indian descent tend to earn the highest yearly income, while Korean and Japanese workers earn relatively less. Given the considerable socioeconomic stratification and diversity in cultural backgrounds and migration histories within the Asian American community, it is reasonable to expect significant intra-group variation in political participation. Previous studies have indeed found evidence of voting gaps among Asian Americans. For instance, Japanese Americans exhibited higher voter turnout rates, whereas Chinese and Indian Americans had lower rates in the 2016 presidential election. Additionally, Filipino and Vietnamese voters were more likely to vote compared to East Asian voters (Masuoka et al., 2019).

Spatial Segregation and Political Engagement

In this paper, we focus on one particular type of contextual constraints, spatial isolation, and its role in Asian Americans' political participation. Residential segregation is an enduring feature in American society (Massey and Denton, 1985). Social scientists have extensively studied the factors leading to spatial segregation, its dynamics, patterns, and associated consequences (Reardon and O'Sullivan, 2004). In particular, scholars often portray Asian Americans as perpetual foreigner because of their tendency to live in ethnic enclaves such as Chinatown (Zhou, 2009) and Asian ethnoburbs, communities with a notable concentration of Asians in middle-class and suburban settings (Li, 1998a; Li, Skop, and Yu, 2007; Kye, 2023).

Much of prior research on residential segregation focuses solely on racial isolation in communities of color, as scholars are debating whether racial and ethnic diversity increases or decreases political participation. But segregation is a multiplex phenomenon (Fiel, 2021). Individuals are embedded in a web of different social relations and race is only one dimension. Thus, the question of how income and partisan segregation shape political engagement is one of the main issues raised but as yet left not answered by the literature. Over the past two decades, spatial segregation along class and partisan lines has become increasingly prominent in the US (Owens et al., 2016; Bishop, 2009). Many scholars have examined how income or wealth inequality shape political behavior (Brady et al., 1995), but limited research has explored the relationship between economic/partisan segregation and political participation (Widestrom, 2015, 2017).

Racial Segregation

There is a large body of literature debating the positive or negative relationship between residential racial segregation and political engagement. Early studies on political participation in urban cities have yielded contradictory results regarding the effects of residential segregation (Massey and Denton, 1989; Schlichting, Tuckel, and Maisel, 1998; Uslaner and Conley, 2003; Ananat and Washington, 2009). On one hand, some scholars suggest that spatial isolation of minorities of color in certain urban ghettos leads to their withdraw from social and political life of the mainstream American society (Massey and Denton, 1989). For instance,

using data from the 1989 Detroit Area Study, Cohen and Dawson (1993) examined the effect of neighborhood poverty on African Americans' public opinion and political participation. They found that Blacks living in the isolated impoverished neighborhoods were less likely to engage in political activities due to the lack of political and economic networks providing political access and the negative impact on perceptions of the effectiveness of political acts and community efficacy. Furthermore, it is worth noting that concentrated communities of color are often more susceptible to systemic voter suppression measures. Examples include the closure or relocation of polling stations and reductions in early voting opportunities, which disproportionately affect these communities (Haspel and Knotts, 2005; Combs, 2016; Daniels, 2020).

On the other hand, many scholars argue that racial segregation can actually lead to greater political involvement because segregation may foster community social norms and group political awareness and facilitate the growth of political and social organizations that help maintain political socialization and mobilization. For instance, Schlichting et al. (1998) discovered that neighborhoods surrounded by communities sharing the same racial composition were more likely to have higher vote turnout compared to those surrounded by diverse communities. Similarly, Seo (2011) found that residing in ethnically homogeneous residential areas and consuming ethnic media heightened Asian-related political awareness, which subsequently facilitated political engagement among Asian Americans. Another perspective highlighted by Chan and Phoenix (2020) is the role of political homophily within religious organizations, which can facilitate the formation of social bonds and social capital among racial and ethnic minorities. Their study, based on data from the 2016 Collaborative Multiracial Post-Election Survey, revealed that Asian Americans who attended politically homogeneous churches were more likely to vote. This suggests that shared political values and affiliations within religious settings can enhance political participation among Asian Americans.

Income Segregation

Trends in income and wealth inequality are one of the primary forces driving economic segregation (Reardon and Bischoff, 2011; Owens et al., 2016; Owens, 2019). An examination of income segregation in the 100 largest metropolitan areas, Owens et al. (2016) discovered that income segregation rose by about 20 percent among families with children. Previous studies have consistently shown that economic resources and constraints shape where households reside, leading to the unequal spatial distribution of high- and low-income households (Owens, 2019). One unintended consequence of the rising economic segregation in the US is altering neighborhood civic environments (Widestrom, 2017). Residential economic segregation can shape the presence and efficacy of mobilizing institutions within communities such as voluntary associations, churches, and political parties, and these institutions help citizens gain civic skills and connect with public officials (Widestrom, 2015). More importantly, the unequal spatial concentration of impoverished or wealthy residents may alter the level of collective efficacy, candidate appeal, political representation, and perceived outgroup threat in different communities (Fiel, 2013; Widestrom, 2017; Flavin and Franko, 2020).

Widestrom (2015)'s work on residential segregation in Atlanta demonstrates that economic segregation negatively impacted voter turnout in all but the wealthiest counties, and this

occurred because economic segregation led to an unequal distribution of resource-deficit or resource-rich communities that shape political participation. In more economically segregated communities, wealthier residents were more likely to join neighborhood organizations and have civic engagement (Wichowsky, 2019), while lower-income communities often lacked critical resources such as childcare, transportation, and time off work that support voting and were disproportionately affected by measures making voting more challenging such as strict voter ID laws or limited polling hours (Daniels, 2020). As a result, income isolation might disproportionately impact impoverished communities' political participation.

Partisan Segregation

Similar to the rising trend in economic segregation, Americans appear to be more politically divided than ever in the past two decades. A significant proportion of American voters now reside in residential environments with limited exposure to individuals from opposing political parties (Mummolo and Nall, 2017; Brown and Enos, 2021). Partisan geographic sorting can arise from various factors, including affective polarization, intentional gerrymandering, and other spatial policies like the construction of interstate highways (Chen, Rodden, et al., 2013; Iyengar and Westwood, 2015; Nall, 2015; Brown and Enos, 2021). Previous studies have consistently shown that partisan isolation is more prominent among Democrats in densely populated urban areas, while it is more pronounced among Republicans in rural areas (Rodden, 2019). The most extreme isolated 10% of Democrats are expected to have over 93% of in-partisan encounters in their local residential environments (Brown and Enos, 2021).

The isolated partisan environments can have great implications for voting behavior. For instance, political messages conveyed through neighbors' yard signs can have a persuasive effect on voting decisions (Green, Krasno, Coppock, Farrer, Lenoir, and Zingher, 2016). The simulation analysis of intentional gerrymandering conducted by Chen et al. (2013) shows that the geographic concentration of Democratic voters can lead to electoral bias favoring Republicans. A recent analysis of 400 million voter records in the US further shows the presence of turnout deserts—areas where minorities, youth, and democrats prefer to live but are less likely to vote, compared to areas living by whites, older citizens, and Republican Party supporters (Barber and Holbein, 2022).

We suspect that partisan isolation may alter local political environments that shape political participation. For instance, Republican- or Democratic-segregated neighborhoods may lead to the different levels of political mobilization by party officials compared to non-partisan-isolated communities. When American voters are segregated by party, political parties can initiate their campaign efforts more efficiently by targeting areas with a high concentration of their supporters. Communities with a high level of partisan isolation may also accumulate more civic skills, denser social networks, and a higher level of political socialization and loyalty, creating a civic environment that promotes political participation (Whitford, Yates, and Ochs, 2006). Political isolation may also contribute to ideological extremity in isolated communities, as exposure to out-partisans may facilitate the diffusion of competing views reducing extremism. Previous studies have shown that the extremity of political views is correlated with political participation (Huckfeldt and Sprague, 1987; Verba, Schlozman, and

Brady, 1995; Brown and Enos, 2021).

Variation by Racial and Ethnic Groups

Given that different racial and ethnic groups have distinct migration patterns, cultural backgrounds, partisan alignment, and socioeconomic status, we expect some heterogeneity in the relationship between spatial segregation and voting participation across groups (Lee and Kye, 2016; Vo et al., 2023). After sixty years that President Lyndon Johnson signed the Civil Rights Act of 1964, residential segregation still persists in the US. Blacks are still highly segregated from Whites, Asians are the least, and Hispanics are in-between in contemporary America. Within the Asian population, Chinese, Filipinos, Japanese, and Koreans are more likely to live in ethnic enclaves or ethnoburbs, while Indian and Vietnamese counterparts show some spatial assimilation (Li, 1998b; Li and Zhang, 2021; Kye, 2023). Okamoto (2003) argues that the segregation of Asians as a group raises the frequency of pan-national collective action, while the segregation among Asian subgroups depresses the rate of pan-Asian collective action. Since different racial and ethnic groups vary in residential segregation across race, class, and partisan lines, we suspect that racial, economic, and partisan segregation may work differently across different racial and ethnic groups.

Methodology

New York City

After the passage of the Immigration and Naturalization Act of 1965 which abolished an earlier quota system excluding Chinese and other Asian immigrants, the Asian population upsurged from 980 thousand in 1960 to 24 million by 2020 (Asian alone or in combination with another race). The top 10 states with the highest percentage of Asians consist of Hawaii (56.6), California(17.8), Washington (12.2), Nevada (11.4), New Jersey (11.3), New York (10.8), Virginia (8.8), Alaska (8.4), Massachusetts (8.3), and Maryland (8.1). Most Asian groups were concentrated in California and New York, especially the Los Angeles metro, San Francisco Bay area, and New York City (Logan and Zhang, 2013). We focus on spatial segregation and voting among registered voters in New York City. The 2020 Census data shows that the Asian American population in New York State grew from 1.58 million in 2010 to 2.17 million in 2020 and NYC was home to the largest Asian community in the state, with 1.53 million residents accounting for 17.3 percent of the city’s population. In addition, New York City is home to many Asian American ethnic enclaves. For instance, Chinatown in Lower East Manhattan was a well-defined ethnic settlement that has survived over 170 years and today’s Chinese population is more spread out as most live in satellite Chinatowns in Queens and Brooklyn (Zhou and Logan, 1991).

Data

Our primary data source is L2 Political Voter File (L2 data) as of May 2021, accessed via New York University. L2 offers voters’ basic demographic information, party affiliation, and

voting behavior. Our main NYC analytic sample includes 5.1 million registered voters from New York County, Bronx County, Kings County, Queens County, and Richmond County, accounting for 91.34 percent of total registered voters in New York City (5,586,318).

L2 data collects voter registration and history for all 50 states and the District of Columbia from publicly available government records. These records only record whether a person voted in an election or not. Voter registration data are augmented by demographic information from external propriety commercial data. L2 regularly updates registered voter data typically at least every six months.

Measuring individual-level spatial segregation requires high-resolution, fine-grained geospatial data for the whole study population. L2 data provides detailed geospatial information for registered voters, which allows scholars to extract each focal voter’s nearest neighbors to construct a scale-dependent neighborhood. We use high performance computing system to extract each registered voters’ 3000-nearest neighboring voters and compute relevant spatial isolation measures.

Variables

Dependent Variable

Our key outcome is a dummy variable indicating whether an individual voted in 2020 general election. The 2020 election year was unique because of the rise of anti-Asian racism stemming from the COVID-19 pandemic and the presence of the co-ethnic vice-president candidate of Asian descent (Chan, Nguy, and Masuoka, 2022). The outbreak of the COVID-19 pandemic led to a global surge of hate crimes and discrimination against Asians, particularly, Chinese (Tessler, Choi, and Kao, 2020). A recent study by Chan et al. (2022) shows that stronger perceptions of racial discrimination led to a higher turnout rate and vote in support of the Democratic party among Asian immigrants. Thus, we might expect that Asian American voters in New York City exhibit a higher level of voting participation. But this might limit the generalizability of our finding in a temporal manner.

Independent Variables

Our key independent variables include a series of spatial segregation measures along race, class, and partisan lines. We focus on the exposure dimension and use spatially weighted measures of racial, income, and partisan isolation indices to capture individual spatial segregation as follows. *Spatial isolation* measures the extent to which one social group is exposed to its own group in its local residential environments.

$$Spatial\ Isolation_i = \frac{\sum_{k=1}^{N=M} P(p_k = p_i) \cdot \frac{1}{(d_k+1)}}{\sum_{k=1}^{N=M} \frac{1}{(d_k+1)}} \quad (1)$$

where p_i is the social category (i.e., race, income, or partisan identification) of focal individual i , p_k is the racial, income, or partisan identification of neighbor k , $P(p_k = p_i)$ is the probability that neighbor k has the same social category with focal individual i , and

d_k represents the distance between focal individual i and neighbor k . N denotes the total number of neighbors that we take into consideration, and M is a threshold constant we use to define the K -nearest neighbors. In this study, we present spatial isolation with $M = 1000$ in the main results, but we also considered $M = 100, 500, 1000, 1500, 2000, 2500, 3000$ for robustness checks (Brown and Enos, 2021).

One big methodological issue in prior studies is to simply use the percentage of Asian Americans or Asian-White dissimilarity index in a community, typically conceptualized as a census tract or block group, to capture the contextual or neighborhood effect. But decades of neighborhood studies show that individuals’ residential environments do not align with census geographic boundaries (Sharkey and Faber, 2014; Cagney, York Cornwell, Goldman, and Cai, 2020; Pinchak, Browning, Calder, and Boettner, 2021). Scholars such as Reardon and colleagues have offered an alternative segregation profile approach to move beyond the census-based measure (Reardon and O’Sullivan, 2004; Reardon, Matthews, O’Sullivan, Lee, Firebaugh, Farrell, and Bischoff, 2008). The segregation profile approach is to treat the geographic scale of residential environments as a variable instead of a constant and consider individuals’ proximity in residential space. It captures the local exposure of the focal individuals in their own egocentric neighborhoods. We modify the original segregation profile approach by computing scale-dependent proximity-weighted segregation measures for each registered voter (Östh, Clark, and Malmberg, 2015). We use the K -nearest neighbors (e.g., focusing on 100, 500, 1000, 2000, and 3000 neighbors) to define the egocentric local environments. This approach allows scholars to flexibly account for both population density and spatial proximity when computing individual spatial segregation (Wong, 2004).

Control Variables

Following previous studies, we also control for a series of potential factors that might affect individual-level voting participation, such as racial and ethnic categories, gender, partisanship, age, and income (Brady et al., 1995; Masuoka et al., 2018; Vo et al., 2023). *Race* is measured as a categorical variable (1=White, 2=Asian, 3=Black, 4=Hispanic, 5=Other). *Ethnicity* is measured as a categorical variable indicating countries of origin (1=Chinese, 2=Indian, 3=Japanese, 4=Korean, 5=Vietnamese, 6=Other). *Gender* is measured as a dummy variable (1=Female, 0=Male). *Partisanship* is measured as a categorical variable, indicating whether a registered voter is Democratic-leaning, Republican-leaning, or Other (independent and nonpartisan). *Income* is an ordinal variable, ranging from less than 50K (Q1), between 50K-15K (Q2), and larger than 15K (Q3). *Age* is a continuous variable ranging from 18 to 99. Table 1 documents the detailed summary statistics for variables used in the analyses obtained from L2 Data.

Table 1: Summary Statistics for Analytic Samples

Variables	All Voters¹	Asian American Voters¹
Voting in 2020	2,987,714 (59%)	241,120 (55%)
Racial isolation	0.50 (0.23, 0.70)	0.09 (0.02, 0.28)
Partisan isolation	0.65 (0.28, 0.78)	0.49 (0.28, 0.64)

Income isolation	0.71 (0.45, 0.80)	0.68 (0.39, 0.77)
Age	48 (34, 64)	46 (33, 62)
Income		
Q1	1,445,915 (29%)	81,426 (19%)
Q2	2,503,467 (51%)	245,281 (57%)
Q3	1,003,933 (20%)	99,937 (23%)
Female	2,833,388 (56%)	241,907 (56%)
Party Affiliation		
Democrat	3,466,242 (68%)	244,395 (56%)
Other	1,098,717 (22%)	153,237 (35%)
Republican	537,738 (11%)	38,911 (8.9%)
Race		
White	1,493,507 (33%)	
Asian	436,543 (9.6%)	
Black	1,100,732 (24%)	
Hispanic	1,201,553 (26%)	
Other	336,027 (7.4%)	
Ethnicity		
Chinese		252,409 (58%)
Indian		95,191 (22%)
Japanese		11,465 (2.6%)
Korean		44,097 (10%)
Vietnamese		16,555 (3.8%)
Other		16,826 (3.9%)
N	5,102,697	436,543

¹n (%); Median (IQR)

Analytic Strategies

We first treat Asian American voters as a homogeneous group and compare Asians with Blacks, whites, and Hispanics. In so doing, we build a baseline for Asian Americans. We then treat Asians as a heterogeneous group and focus on the major five ethnic groups, including Chinese, Indian, Korean, Japanese, and Vietnamese, based on countries of origin. We systematically compare intra-group variation in voting. We use county-level fixed effects models to account for other county-level features that might explain individuals' civic and political engagement.

Results

Descriptive Analyses

We begin by describing racial and ethnic disparities in spatial isolation and voter turnout rate. Table 2 shows summary statistics on spatial isolation and turnout rate for Asian, Black,

Hispanic, and white voters in New York City. In the 2020 general election, among registered New York voters, white voters had the highest level of turnout rate (0.652), followed by Black voters (0.568), Asian American voters (0.552), and then Hispanic voters (0.519). With regard to spatial isolation, Asian Americans voters were the least isolated racial group. We report the $K = 1000$ distance-weighted isolation index in Table 2. Black voters were the most racially (0.607) and politically (0.708) isolated racial group in New York City. Hispanic voters were the most economically (0.645) isolated racial group followed by Black voters (0.615).

Table 2: The 2020 General Election Voter Turnout Rate and Spatial Isolation by Race in New York City

Race	Turnout Rate	Racial Isolation	Partisan Isolation	Income Isolation
White	0.652	0.523	0.482	0.589
Asian	0.552	0.268	0.459	0.580
Black	0.568	0.607	0.708	0.615
Hispanic	0.519	0.429	0.579	0.645

Table 3 documents intragroup variation only for Asian American voters. In the 2020 general election, among registered Asian American voters, Japanese Americans had the highest level of turnout rate (0.658), followed by Indian Americans (0.610). These two groups were comparable to non-Hispanic White voters in New York City. Korean Americans and Vietnamese Americans had a similar turnout rate with Black voters. Chinese Americans had the lowest turnout rate (0.522), but still it was slightly higher than the turnout rate by Hispanic voters (0.519). Within the major Asian ethnic groups, Chinese was the most isolated ethnic group (0.315), followed by Korean, Vietnamese, and Indian. Japanese was the least isolated ethnic group (0.127) among Asian American voters. But Japanese American voters were the most politically and economically isolated Asian ethnic group, while Chinese American voters were the least.

Table 3: The 2020 General Election Voter Turnout Rate and Spatial Isolation by Major Asian Ethnic Groups

Ethnicity	Turnout Rate	Ethnic Isolation	Partisan Isolation	Income Isolation
Chinese	0.522	0.315	0.440	0.571
Indian	0.610	0.179	0.497	0.591
Japanese	0.658	0.127	0.522	0.596
Korean	0.546	0.275	0.464	0.590
Vietnamese	0.566	0.225	0.455	0.586

Taken together, based on descriptive analyses, if we treat Asian Americans as a monolithic group when analyzing racial disparities in political engagement, like prior studies adding

evidence to support the apolitical stereotype, our findings show that compared with white and Black voters, the voting turnout rate for Asian American voters was lower, but it was comparable to Black voter turnout rate and even larger than Hispanic voter turnout rate in the 2020 general election. When we view Asian Americans as a heterogeneous group, we show that some ethnic groups’ voting rates were comparable to that of non-Hispanic white voters in NYC. Japanese and Indian Americans’ turnout rates in 2020 were similar to white voters and Japanese Americans even had a higher level of turnout rate.

Regression Analyses

Next, we move to regression analyses focusing on the relationship between spatial isolation and voting behavior at the individual voter level. We fit a series of county-level fixed-effects models to predict whether a registered voter voted in the 2020 general election. We start with comparing Asian American voters with Blacks, Hispanics, and whites and then move to intra-group variation among Asian American voters.

Asian American Voters as a Monolithic Group

Table 4 presents logit coefficients from the logistic regression models predicting individual voting using spatial isolation and other demographic information. Model 1 shows the main effects of spatial isolation on voting across race, class, and partisan lines after accounting for demographic and socioeconomic factors. We find that partisan and racial isolation were positively associated with voting turnout but income isolation was negatively associated with voting after holding other variables constant. More specifically, the odds of voting among registered New York voters in the 2020 general election increased by 91.4% ($\exp(0.649)=1.914$) for a unit increase in partisan isolation among its 1000 nearest neighbors. Similarly, a unit increase in racial isolation was associated with an increase of 3.8% ($\exp(0.037)=1.038$) in the odds of voting, while a unit increase in income isolation was associated with a 45% ($\exp(-0.599)=0.549$) reduction in the odds of voting.

Model 1 also confirms the descriptive patterns of racial disparities in voting after holding other factors constant. For instance, the odds of voting in the general 2020 election for Asian American voters was 32% smaller ($\exp(-0.390)=0.678$) compared to white New York voters. Similarly, compared to white voters, Black and Hispanic voters’ odds of voting decreased by 28.5% ($\exp(-0.335)=0.715$) and 33.5% ($\exp(-0.408)=0.665$), respectively. This finding suggests that after controlling for socioeconomic and demographic factors, Asian American voters were not the least politically inactive racial group in the 2020 general election.

Table 4: County-level Fixed-Effects Logistic Regression Predicting Individual Voting in 2020 General Election among Registered Voters in New York City

	Model 1	Model 2	Model 3	Model 4
Partisan Isolation	0.649***	0.712***	0.925***	0.647***

	(0.010)	(0.011)	(0.013)	(0.010)
Racial Isolation	0.037***	0.886***	0.054***	0.038***
	(0.005)	(0.008)	(0.005)	(0.005)
Income Isolation	-0.599***	-0.617***	-0.597***	-0.768***
	(0.004)	(0.004)	(0.004)	(0.008)
Asian	-0.390***	0.347***	-0.363***	-0.793***
	(0.004)	(0.007)	(0.009)	(0.010)
Black	-0.335***	0.005	-0.261***	-0.401***
	(0.003)	(0.007)	(0.008)	(0.007)
Hispanic	-0.408***	0.251***	-0.129***	-0.521***
	(0.003)	(0.006)	(0.006)	(0.007)
Other Race	-0.186***	0.195***	-0.009	-0.418***
	(0.005)	(0.007)	(0.010)	(0.011)
Income Q2	0.238***	0.190***	0.234***	0.236***
	(0.002)	(0.003)	(0.002)	(0.002)
Income Q3	0.452***	0.300***	0.446***	0.466***
	(0.003)	(0.004)	(0.003)	(0.004)
Age	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Female	0.214***	0.212***	0.214***	0.214***
	(0.002)	(0.002)	(0.002)	(0.002)
Other Party	-0.286***	-0.256***	-0.266***	-0.286***
	(0.006)	(0.006)	(0.006)	(0.006)
Republican	0.074***	0.088***	0.104***	0.071***
	(0.006)	(0.007)	(0.007)	(0.007)
Asian × Racial Isolation		-2.076***		
		(0.019)		
Black × Racial Isolation		-0.804***		
		(0.012)		
Hispanic × Racial Isolation		-1.527***		
		(0.013)		
Other × Racial Isolation		-0.722***		
		(0.025)		
Asian × Partisan Isolation			-0.038*	
			(0.018)	
Black × Partisan Isolation			-0.188***	
			(0.012)	
Hispanic × Partisan Isolation			-0.523***	
			(0.011)	
Other × Partisan Isolation			-0.362***	
			(0.018)	
Asian × Income Isolation				0.684***
				(0.015)
Black × Income Isolation				0.115***
				(0.011)

Hispanic \times Income Isolation				0.189*** (0.011)
Other \times Income Isolation				0.390*** (0.017)
<hr/>				
Num.Obs.	4 148 854	4 148 854	4 148 854	4 148 854
BIC	5 405 298.6	5 385 426.9	5 402 764.3	5 403 119.8
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* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; Robust standard errors in parentheses

Models 2, 3, and 4 further examine how the association of racial, partisan, and income segregation with voting behavior varies across different racial groups. For the ease of presentation, Figure 1 plots the corresponding interaction terms between spatial isolation and racial categories. Note that X-axis indicates the level of spatial isolation across different dimensions, ranging from 0 to 1, while the Y-axis denotes the predicted probability of voting and the color of lines indicates different racial groups.

Panel A in Figure 1 shows the interaction terms between racial isolation and racial categories from Model 2. We suspect that the influence of residential racial isolation on voting might be distinct across different racial groups, given the substantial heterogeneity in socioeconomic status, migration histories, racial exclusion, institutional barriers, and cultural backgrounds. As shown in panel A in Figure 1, the probability of voting for white New York voters in 2020 general election rose as racial isolation increased. But for Black voters, the likelihood of voting only slightly increased when racial isolation in local residential environments increased. More importantly, we observe an opposite relationship between spatial isolation and voting for Asian and Hispanic voters in New York City. The probability of voting for Asians and Hispanics dropped as they were living in a more isolated local residential environment. Panel A also shows that when racial residential isolation was low for Asians and Hispanics, their voting likelihood was much higher than non-Hispanic whites. This suggests that spatial assimilation by Asians and Hispanics might contribute to their voting participation.

Panel B in Figure 1 plots the interaction terms between partisan segregation and racial categories based on Model 3. It shows that the voting gap between whites and minority groups except Hispanics remained relatively stable across varying levels of partisan isolation. However, the voting gap between Hispanics and whites became more pronounced as partisan isolation increased. Furthermore, among communities of color, when partisan isolation was low, Asian Americans exhibited the lowest likelihood of voting, while Hispanic voters displayed the highest likelihood of voting. However, this relationship was reversed when partisan isolation reached high levels. In this scenario, Asian Americans were the most likely to vote among all minority groups, while Hispanic voters became the least likely to vote.

Panel C illustrates how the relationship between income isolation and voting varies across different racial groups based on Model 4. One noticeable result is that unlike white, Black, and Hispanic voters' large drop in voting, Asian American voters' likelihood of voting only declined slightly as spatial income isolation increased. When income isolation was small,

Asian American voters were the least likely to vote compared to other groups, but they were more likely to vote compared to Black and Hispanic voters when income isolation was very high.

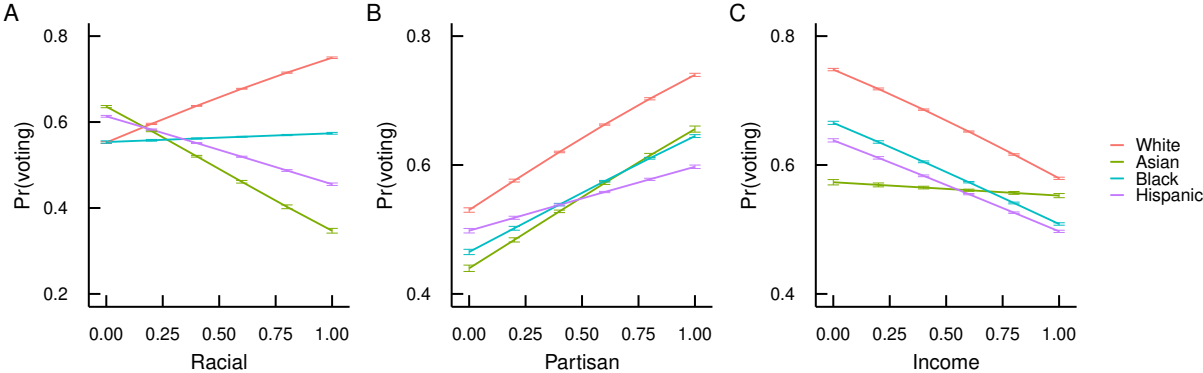


Figure 1: Plot how the relationship between spatial isolation and voting varies across racial groups in New York City. Error bars indicate 95% confidence intervals.

To sum, the relationship between spatial isolation and voting was racially heterogeneous. Overall, there was a positive association between racial/partisan isolation and voting participation in the 2020 general election and negative association between income isolation and voting participation. Of course, the overall pattern on the relationship between residential racial segregation and political engagement contributes to past theorizing that racial segregation might foster community social norms and group political awareness and facilitate the growth of political and social organizations that help maintain political socialization and mobilization. But the intergroup analysis between whites and minority groups shows that the positive pattern was only driven by whites and Blacks, and Asian and Hispanic voters actually showed an opposite relationship. The results also provide first large-scale empirical evidence supporting the positive association between partisan isolation and voting participation across different racial groups, although there were some heterogeneity within communities of color. The results also show an overall negative association between income isolation and voting participation except Asian American voters.

Asian American Voters as a Heterogeneous Group

After we establish a baseline that compares Asian Americans with Blacks, Hispanics, and whites, next we begin by describing intra-group variation in political engagement within Asian American voters in NYC. Table 5 presents the logit coefficients from the logistic regression models predicting individual voting among Asian American voters. Model 5 shows the main effects of spatial isolation on voting across race, class, and partisan lines. Similar to the finding using the entire NYC sample, we find a positive relationship for partisan isolation and a negative association for income isolation after controlling for a series of confounders. But unlike the NYC sample, we show a negative association between racial isolation and

voting within the Asian voter population as the above interaction terms suggest. A unit increase in racial isolation for Asian American voters was associated with a decrease of 69.6% ($\exp(-1.1915)=0.303$) in the odds of voting in the 2020 general election.

Model 5 further shows a consistent pattern on ethnic variation in voting with descriptive patterns in Table 3. After controlling for socioeconomic, demographic, and political factors, we show that Indian and Japanese Americans were more likely than Chinese Americans to vote in the 2020 general election, while Korean and Vietnamese Americans were less likely to vote compared to Chinese American voters. In addition, unlike the NYC sample showing the higher odds of voting for Republican voters, Republican leaning Asian American voters were less likely to vote in 2020 compared to Democratic leaning Asian American voters.

Table 5: County-level Fixed-Effects Logistic Regression Predicting Individual Voting in 2020 General Election among Registered Asian American Voters in New York City

	Model 5	Model 6	Model 7	Model 8
Partisan Isolation	0.288*** (0.037)	0.279*** (0.037)	0.308*** (0.042)	0.290*** (0.037)
Racial Isolation	-1.191*** (0.022)	-1.182*** (0.023)	-1.191*** (0.022)	-1.178*** (0.022)
Income Isolation	-0.210*** (0.015)	-0.212*** (0.015)	-0.211*** (0.015)	-0.117*** (0.019)
Indian	0.102*** (0.009)	0.102*** (0.012)	0.190*** (0.020)	0.213*** (0.022)
Japanese	0.192*** (0.022)	0.094* (0.040)	-0.078 (0.051)	0.500*** (0.056)
Korean	-0.162*** (0.012)	-0.121*** (0.016)	-0.277*** (0.028)	-0.045 (0.030)
Vietnamese	-0.095*** (0.018)	-0.003 (0.027)	-0.119** (0.039)	-0.002 (0.046)
Others	0.089*** (0.019)	0.012 (0.023)	0.156*** (0.041)	0.232*** (0.049)
Income Q2	0.186*** (0.009)	0.185*** (0.009)	0.187*** (0.009)	0.191*** (0.009)
Income Q3	0.367*** (0.011)	0.365*** (0.011)	0.368*** (0.011)	0.378*** (0.011)
Age	-0.004*** (0.000)	-0.004*** (0.000)	-0.004*** (0.000)	-0.004*** (0.000)
Female	0.090*** (0.007)	0.090*** (0.007)	0.090*** (0.007)	0.090*** (0.007)
Other Party	-0.472*** (0.015)	-0.475*** (0.015)	-0.468*** (0.015)	-0.471*** (0.015)
Republican	-0.094***	-0.097***	-0.089***	-0.094***

	(0.022)	(0.022)	(0.022)	(0.022)
Indian × Racial Isolation		0.001 (0.072)		
Japanese × Racial Isolation		16.784** (5.622)		
Korean × Racial Isolation		-0.722*** (0.179)		
Vietnamese × Racial Isolation		-7.447*** (1.658)		
Others × Racial Isolation		14.924*** (2.836)		
Indian × Partisan Isolation			-0.181*** (0.038)	
Japanese × Partisan Isolation			0.530*** (0.090)	
Korean × Partisan Isolation			0.246*** (0.055)	
Vietnamese × Partisan Isolation			0.053 (0.077)	
Others × Partisan Isolation			-0.141 (0.077)	
Indian × Income Isolation				-0.188*** (0.033)
Japanese × Income Isolation				-0.509*** (0.084)
Korean × Income Isolation				-0.196*** (0.047)
Vietnamese × Income Isolation				-0.155* (0.071)
Other × Income Isolation				-0.235** (0.074)
Num.Obs.	382 936	382 936	382 936	382 936
BIC	506 770.1	506 757.2	506 733.2	506 760.0

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; Robust standard errors in parentheses

Models 6, 7, and 8 explore how the association of racial, partisan, and income segregation with voting behavior varies across different ethnic groups among Asian American voters. Figure 2 plots the interaction effects between spatial isolation and ethnicity. Model 6 explores how the relationship between racial isolation and voting varies across major ethnic groups, including Chinese, Indian, Japanese, Korean, and Vietnamese. Compared with the Asian pattern in Figure 1, Panel A based on Model 6 in Figure 2 shows that the overall decline pattern between racial isolation and voting odds was mainly driven by Chinese and Indian American voters. But there are two exceptions. Japanese Americans displayed an

exponential growth in the odds of voting when spatial isolation increased, while Vietnamese Americans' likelihood of voting exponentially decreased when spatial isolation increased. This suggests greater heterogeneity in voting across different Asian American groups.

Panel B plots the interaction terms based on Model 7 for partisan isolation. It shows that the voting gap among major Asian ethnic groups except Japanese Americans was becoming smaller when partisan isolation increased. When partisan isolation was small, Indian Americans' voting likelihood was the largest, followed by Chinese, then Japanese, Vietnamese, and Korean. But as partisan isolation was getting large, the voting gap between Japanese Americans and other ethnic groups was more salient.

Panel C plots interaction terms in Model 8 for income isolation. Vietnamese and Korean American voters had a similar declining pattern and their voting gap with Chinese Americans became larger when income isolation increased. But the voting gap among Japanese, Indian, and Chinese American voters shrunk when income isolation increased. Overall, the negative association between income isolation and voting within the Asian American voters was driven by Japanese, Indian, Korean, and Vietnamese voters except Chinese Americans.

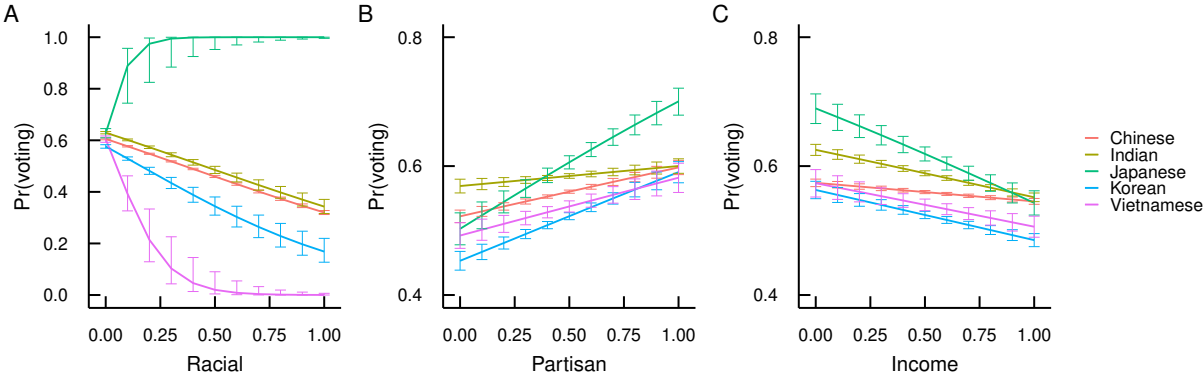


Figure 2: Plot how the relationship between spatial isolation and voting varies across different dimensions within Asian American voters. Error bars indicate 95% confidence intervals.

To summarize, when we treat Asian Americans as a homogeneous group and compare them with other racial groups, the relationship between partisan/racial isolation and voting was positive, while the relationship between income isolation and voting was negative among registered New York voters. However, racial isolation was negatively associated with voting for Asian American voters. Disaggregating racial, partisan, and income segregation into different ethnic groups shows greater heterogeneity in their association with voting participation. For instance, unlike other Asian ethnic groups, Japanese American voters had a higher voting participation likelihood when racial segregation increased and the voting gap between Japanese Americans and other Asian ethnic groups was also larger when partisan isolation was more pronounced. The negative relationship between income isolation and voting participation within the Asian community was mainly driven by non-Chinese American voters.

Robustness Tests

We report main results using $K = 1000$ in our main text. Here we also report logit coefficients from a series of logistic regression models using different K-nearest neighbors in Table 6. Although the magnitudes of spatial isolation are slightly different, our conclusion on the relationship between spatial isolation and voting behavior in the 2020 general election in New York City holds across different specifications of K-nearest neighbors in local residential environments.

Table 6: Scale-dependent Spatial Isolation and Voting Behavior in 2020 General Election

	K=100	K=500	K=1000	K=2000	K=3000
Partisan Isolation	0.703*** (0.004)	0.696*** (0.004)	0.690*** (0.004)	0.684*** (0.004)	0.681*** (0.004)
Racial Isolation	0.115*** (0.004)	0.144*** (0.004)	0.154*** (0.004)	0.159*** (0.004)	0.160*** (0.004)
Income Isolation	-0.735*** (0.004)	-0.726*** (0.004)	-0.694*** (0.004)	-0.652*** (0.004)	-0.622*** (0.004)
Num.Obs.	4 438 778	4 438 791	4 438 791	4 438 791	4 438 791
BIC	5 908 609.0	5 912 068.5	5 916 442.0	5 921 420.9	5 924 576.0
County FE	Yes	Yes	Yes	Yes	Yes

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; Robust standard errors in parentheses

Our main analyses focus on how the association of spatial segregation with voting varies across different racial and ethnic groups. We showed that the overall positive association between racial isolation and voting was driven mainly by white and Black voters, not Asian and Hispanic groups. Similarly, we also suspect that the impact of partisan and income isolation may vary across different partisan and income groups. To illustrate what groups drive the partisan or income isolation’s impact on voting, we ran additional models to assess how partisan and income isolation interact with different partisan and income groups (not shown in main text for space limitation). We plot the interaction terms in Figure 3. Panel A in Figure 3 shows that if individual New York voters were republican-leaning, their probability of voting increased rapidly as partisan isolation increased. This is also the case for democratic-leaning voters, but the probability of voting for independent or nonpartisans did not vary too much. Panel B shows the interaction terms between income isolation and partisanship. Overall, as residential income isolation increased, New York voters’ likelihood of voting decreased, but this pattern was more salient for low-socioeconomic status voters. For high-income group voters, their voting probability only slightly decreased as income isolation increased.

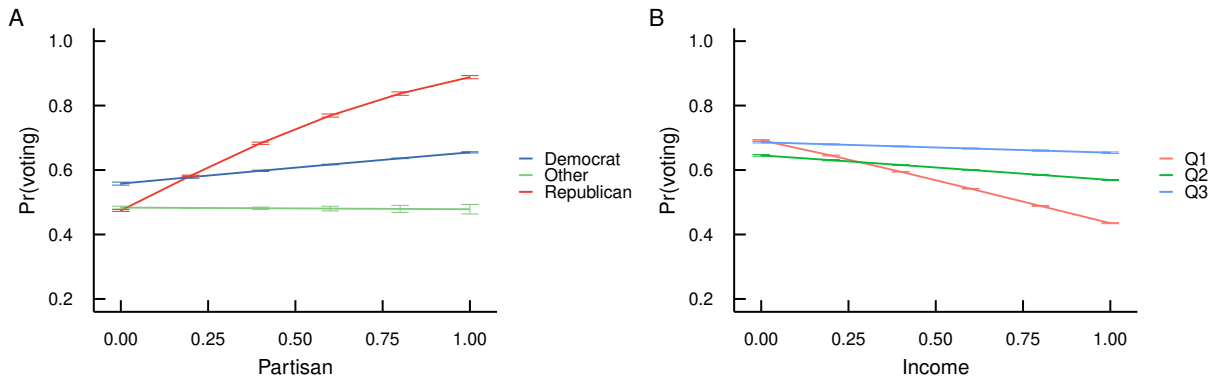


Figure 3: Plot how the relationship between spatial partisan/income isolation and voting varies across different dimensions. Error bars indicate 95% confidence intervals.

Discussion and Conclusion

The past six decades’ segregation research has provided an abundance of knowledge about spatial segregation, predominantly focusing on how Blacks, Hispanics, and Asians are segregated from whites. Yet, the overwhelming use of simplified racial categories (e.g, Blacks, whites, Hispanics, and Asians) masks the internal, profound variation in segregation patterns among distinct ethnic groups. The monolithic view of Asian Americans confirms the stereotype that Asian Americans were less likely to vote compared to other racial groups in the 2020 general elections, but disaggregating the pan-ethnic Asian group into dissimilar ethnic groups reveals a strikingly different pattern that some ethnic groups are very politically active and comparable to non-Hispanic whites. Asian Americans are very diverse in terms of social, economic, religious, and political backgrounds, which in turn results in heterogeneity in political participation.

This paper also systematically examined whether racial, partisan, and economic segregation might affect individual-level voting participation and how spatial isolation might work differently across racial and ethnic groups. Overall, we found a positive association of racial and partisan isolation with voting but a negative relationship between income isolation and voting among registered voters in NYC. But after breaking down NYC voters into different racial and ethnic groups, we found substantial heterogeneity in the relationship. Scholars have long debated the positive and negative relationship between racial residential segregation and voting. Our work reveals that the positive association was driven mainly by white voters, while the negative association was mainly due to other communities of color such as Asian and Hispanic voters. Black voters only had a slightly higher likelihood of voting as racial isolation increased. Our results also suggest that economic segregation was negatively associated with voting participation among different racial groups except Asian voters. More importantly, our work first suggests that partisan isolation was also an important social dimension that might increase voting.

These findings have important theoretical and methodological implications to the study of Asian Americans' political engagement. First, our work provides an attempt to reconcile inconsistent results on Asian Americans' lower political engagement. Unlike journalists, pundits, and policymakers' depiction of political quiescence, Asian Americans voters were politically active in the 2020 general election. For those registered New York voters, there was no significant gap between Asian Americans and communities of color. Some of these Asian ethnic groups such as Japanese Americans actually are highly politically active. This is reasonable as Japanese Americans are assimilated into the mainstream society than other Asian ethnic groups and political engagement is a three-step process including naturalization, registration, and turnout (Lien, 2004). Given that the rapid growth in Asian Americans is due to the influx of the foreign-born population, this suggests that overcoming the institutional barrier is an inevitable step for political participation among people of color (Masuoka et al., 2018).

Second, this paper examines the relationship between multiplex spatial isolation in local environments and voting turnout. Past studies have focused overweeningly on racial dimension and provided some contradictory results. Our work adds new evidence to the heterogeneous effects of spatial isolation on political engagement. Past theorizing on the relationship between racial segregation and voting turnout shows divergent predictions. Our work provides some evidence that reconciles the inconsistent results, as the positive association was mainly driven by white voters while the negative association was driven by voters of color, particularly by Asian and Hispanic voters. To our best knowledge, our work is also the first to provide evidence supporting the positive association between partisan isolation and voting behavior on a large scale. For voters living in a segregated residential environments without out-partisans, their odds of voting was higher and this pattern holds across different racial and ethnic groups. But for highly isolated independent and non-partisan voters, the odds of voting did not change too much for NYC sample and even rapidly declined for Asian American sample as partisan isolation increased. Given that a large proportion of Asian Americans are nonpartisans, this suggests that political socialization in the partisan system matters in political engagement. Our work also adds evidence to the recent theorizing on the impact of economic segregation on political engagement. As economic segregation alters the civic environment in neighborhoods such as the presence of mobilizing institutions, voters in wealthier communities are more likely to vote but voters in resource-deficit communities tend to be less active in political engagement. Our work however shows that the negative association between income isolation and voting was mainly driven by low-income groups as the voting gap between poor and wealthy voters was more salient when their surrounding neighbors were more homogeneous.

Third, this article relies on the latest development in big data and spatial computing to compute scale-dependent individual spatial isolation instead of using the census geography to measure segregation in residential environments. Decades of studies on spatial segregation often uses census data to compute racial segregation due to the lack of more fine-grained geospatial data. We take advantage of administrative records on voter registration files and use detailed geolocation to isolate each voter's up to 3000 nearest neighbors in the local environment. We then calculate the proximity-weighted individual spatial isolation index to quantify the neighborhood segregation. The robustness check using different K-nearest

neighbors shows that the different conceptualization of the local residential environment matters. A coarsen interpretation of the results in Appendix Table 6 shows that the magnitude of spatial isolation with voting behavior shrinks for partisan and income segregation but increases for racial isolation when the K-nearest neighbors increase from 100 to 3000. This calls for more research on spatial isolation using the segregation profile approach (Reardon et al., 2008).

Even with the contributions laid out in this study there are limitations. First, this study is cross-sectional and would benefit from longitudinal data analysis that isolates causal mechanisms. Future research can take advantage of voter registration files dating back to early 2000 and examine the dynamic patterns between residential segregation and political engagement. Again, the 2020 election year was unique because of the rise of anti-Asian racism stemming from the COVID-19 pandemic and the presence of the co-ethnic vice-president candidate of Asian descent (Chan et al., 2022). Thus, the higher voting turnout by Asian American voters might be a short-run phenomenon instead of a long-term change. This warrants more future research. Second, due to data availability, we only account for a limited number of confounding factors that might influence political engagement. Third, since this is a case study of spatial isolation and political engagement in NYC, the results cannot be generalized to the entire US. But since our focus is the Asian American racial group and NYC hosts a large proportion of Asian Americans in the US, our findings still can be informative in terms of understanding their political engagement. Future research can aim to address this research gap by, for instance, incorporating Asian Americans in California and New York state. Finally, even though our measure using bespoke neighborhoods moves beyond the conceptualization of neighborhoods as census geographic units, it still cannot capture all social conditions and individual experiences during their daily movements. A recent study shows that human mobility patterns are highly associated with experienced partisan segregation (Zhang, Cheng, Li, and Jiang, 2023). Future studies should incorporate partisan segregation in activity spaces into their research design.

Despite these limitations, this study still advances our understanding of Asian American voters' political participation in contemporary America.

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