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Doctoral Dissertations, 2011-2026 Sociology

2016

GETTING A JOB, GETTING TO WORK: HIDDEN INEQUALITY IN SPATIAL MISMATCH AMONG US ETHNORACIAL GROUPS

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Princeton, NJ : Princeton University

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GETTING A JOB, GETTING TO WORK: HIDDEN INEQUALITY IN SPATIAL MISMATCH AMONG US ETHNORACIAL GROUPS

Janeria Easley

A DISSERTATION
PRESENTED TO THE FACULTY
OF PRINCETON UNIVERSITY
IN CANDIDACY FOR THE DEGREE
OF DOCTOR OF PHILOSOPHY

Adviser: Douglas Massey

November*2016

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Abstract

Despite the growing size of Asian and Hispanic populations in the United States (U.S.), the literature on spatial mismatch, which focuses on the physical distance between housing and employment opportunity, largely continues to focus on blacks and whites. The limited work that does incorporate Hispanic or Asian Americans, fails to account for subpopulation heterogeneity within those groups. This dissertation explores the exposure to, determinants of, and implications of spatial mismatch among Mexicans, Puerto Ricans, Cubans, Indians, Chinese, Filipinos, Koreans, and Vietnamese, while simultaneously revisiting the literature on blacks and whites. I incorporate data from the U.S. census, the American Community Survey, and Zip Code Business Patterns to produce measurements of spatial mismatch across all MSAs in the U.S. I then evaluate the role of residential segregation from whites, suburbanization, and access to high value zip codes as determinants of exposure to spatial mismatch among these groups. Finally, I present descriptive estimates of the relationship between spatial mismatch and labor force outcomes: labor force participation, employment, and weekly wages. I find meaningful differences in exposure to spatial mismatch among Asian and Hispanic subpopulations. Relative to the average black American, the average Cuban and Vietnamese American experience more spatial mismatch. I also find that the determinants of spatial mismatch differ across groups. Residential segregation is a key predictor of spatial mismatch for blacks only, while access to high value housing is a key determinant of spatial mismatch among almost all groups. Finally, descriptive analysis suggests that spatial mismatch is consequential for wages and employment outcomes for most groups. Taken together, these findings indicate that further research on spatial mismatch among all minority groups in the U.S. is warranted.

Acknowledgements

To my husband, Steven, thank you for your continued sacrifices and support. You know what is means to be a partner, and to shoot with them in the gym.

To Peanut, we made it!

To Douglas Massey, for being an excellent and supportive chair.
To Tod Hamilton, for teaching me to be a little bit more of a perfectionist.
To Angel Harris, for helping to get me started on this path.
To Patricia Fernández-Kelly, my first year advisor, for being a great source of support both academically and emotionally.

To Brittney and Daniel, watching you hustle up and down Route 1 to get to work inspired this work.

To Arthur, for giving me a good kick in the rear end whenever I needed it.
To Angela, for being my sounding board and always reminding me that WE could do it.
To Linsey, I will always look up to and be inspired by you.
To Kijan, for being a great friend and for organizing the Graduate Women of Color Caucus, just when I needed it the most.
To Tikia, for proofreading and for trying to get me to spend countless hours in the library.

To my accountability partners, Samantha, Denia, and Sal, thanks for pushing me, especially when I was feeling burned out. It takes special people to be effective accountability partners.

To Dean Weaver and Dean Hill-Mitchell, thank you for providing so many words of wisdom and support.

To my parents, siblings, grandparents, and extended family. Your stories have always inspired and driven my research.

To the PUPP scholars and staff, for giving me a much-needed break every week, and for always reminding me where this journey all began and why it is important to continue.

Table of Contents

Introduction....8
Overview of Findings....9
Spatial Mismatch Beyond Black and White....11
The Role of Residential Segregation in Shaping Business Presence....13
Does Space Matter for Labor Market Outcomes....14
Chapter 1....16
Spatial Mismatch Beyond Black and White:....16
Levels and Determinants of Job Access among Asian and Hispanic Subpopulations 16
Abstract....16
I. Introduction....17
II. Literature....19
III. Data, Measures, and Methods....22
Independent variables....24
Methods....26
IV. Results....28
Descriptive....28
Predicting Spatial Mismatch....30
V. Discussion....34
VI. Conclusion....37
Chapter 2....52
"The Role of Residential Segregation in Shaping Business Presence: What is the Role of Concentrated Poverty?"....52
Abstract:....52
I. Introduction....53
II. Segregation, Poverty, and Business Activity....57
III. Data, Measures, and Methodology....61
Methods....63
IV. How Segregation Affects Business Activity....65
V. Discussion and Conclusion....68
Chapter 3 Labor Market Outcomes: Does Space Always Matter?....80
Abstract....80
I. Introduction....81
II. Why Spatial Proximity to Jobs Adversely Impacts Employment Outcomes....83
Limitations of Earlier Work on Hispanics and Asians....84
III. Methods....85
IV. Results....87
V. Discussion....90
Conclusion....104

Chapter 1

Table 1: Descriptive Statistics for Full Sample Hispanic and Reference Groups 2010…42
Table 2: Descriptive Statistics for Full Sample Asian and Reference Groups 2010…….43
Table 3: Sub-Sample Analysis Predicting Spatial Mismatch: Hispanic Subgroups, White, and Black Non-Hispanic……44
Table 4: Sub-Sample Analysis Predicting Spatial Mismatch: Asian American Subgroups ……45
Table 5: Sub-Sample Analysis Predicting Ethnoracial Gaps in Spatial Mismatch: Hispanic Subgroups, White, and Black Non-Hispanic…….46
Table 6: Sub-Sample Analysis Predicting Ethnoracial Gaps in Spatial Mismatch: Asian American Subgroups…….47
Table 7: Sub-Sample Analysis Predicting Spatial Mismatch: Accounting for Housing Value……..48
Table Appendix.1 Source of Variables Included in Analysis 50
Table Appendix.2: Unweighted Estimates of Spatial Mismatch and Segregation ……...51
Table Appendix.3: Unweighted Estimates of Spatial Mismatch and Segregation ……...51

Chapter 2

Table 1: Descriptive Estimates for the Full Sample……..73
Table 2: Descriptive Estimates of the Average Number of Organizational Resources, By Resource Type……...74
Table 3: Change in the Number of Organizational Resources……..75
Table 4: Model Predicting Concentrated Poverty and Business Presence……76
Table Appendix.1: 2000 Cross-Sectional: Organizational Resources as a Function of Residential Segregation and Concentrated Poverty……...78
Table Appendix.2: 2010 Cross-Sectional: Organizational Resources as a Function of Residential Segregation and Concentrated Poverty……...79

Chapter 3

Table 1: Descriptive Statistics for Hispanic Subpopulations, Whites and Blacks…….....94
Table 2: Descriptive Statistics for Asian American Subpopulations…….....94
Table 3: Predicting Odds of Labor Force Participation…….....95
Table 4: Predicting Odds of Labor Force Participation…….....96
Table 5: Predicting Odds of Employment…….....97
Table 6: Predicting Odds of Employment…….....98
Table 7: Predicting Log Weekly Earnings…….....99
Table 8: Predicting Log Weekly Earnings…….. 100

Figures

Figure 1.1 Degree of Spatial Mismatch (weighted average dissimilarities) between group members and jobs in U.S. Metropolitan Areas 2010 49
Figure 2.1 Path Relationship Between Proportion Black and Number of Businesses 77
Figure 2.2 Path Analysis Results: Concentrated Poverty as Mediator of Percent Black 77
Figure 3.1 Predicted Probabilities of Labor Force Participation Among Hispanic Subpopulations 101
Figure 3.2 Predicted Probabilities of Labor Force Participation Among Asian Subpopulations 101
Figure 3.3 Predicted Probabilities of Employment Among Hispanic Subpopulations 102
Figure 3.4 Predicted Probabilities of Employment Participation Among Asian Subpopulations 102
Figure 3.5 Predicted Wages Among Hispanic Subpopulations 103
Figure 3.6 Predicted Wages Among Asian Subpopulations 103

Introduction

Urban sociologists have linked residential segregation between whites and non-whites to a host of negative outcomes for minority groups in the United States (U.S.) (Burdick-Will et al. 2009; Clampert-Lundquist and Massey 2008; Galster 2012; Massey 2004; Massey and Denton 1993; Massey, Gross and Eggers 1991; Sampson 2008; Sampson 2012; Sampson, Morenoff and Gannon-Rowley 2002; Sharkey and Elwert 2011; Sharkey and Faber 2014). However, there is still much to be done in terms of empirically documenting the "black box" of mechanisms that link segregation to a host of negative outcomes for minority groups. Specifically, labor economists argue that one of the implications of black- white residential segregation is isolation from employment opportunity for black Americans (Kain 1968, 1992). Proponents of spatial mismatch—which is defined as a disequilibrium between job and housing opportunity--argue that residential segregation prevents blacks from relocating to job dense suburbs, which in turn limits their labor market outcomes (Fernandez 2008; Ihlanfedlt and Sjoquist 1998; Kain 1968, 1992). This dissertation seeks to explore the relationship between segregation from whites and spatial access to employment for blacks and other minority groups in two key ways.

First, no prior work provides estimates of exposure to spatial mismatch for the largest Asian and Hispanic subpopulations. Instead, most estimates are based on panethnic categories, lumping ethnic groups with largely varying immigration and settlement patterns into one group. Doing so likely obscures differences in exposure to spatial mismatch, as well as blocks the potential of exploring variation between subpopulations that could produce greater insight into both how spatial mismatch arises and how it impacts labor market outcomes.

Furthermore, since the 1960s, the majority of the U.S. based literature has focused on spatial mismatch between blacks and whites. However, exploring the determinants and

implications of spatial mismatch between whites and other ethnoracial groups presents an opportunity to re-examine the basic tenants of spatial mismatch. To what extent does residential segregation from whites predict exposure to spatial mismatch among non-black minority groups in the United States? Does spatial mismatch impact employment outcomes among these groups as well? Comparing the determinants and implications of spatial mismatch among the largest Asian and Hispanic subgroups to that of black Americans provides insight into whether spatial mismatch among blacks is unique.

Overview of Findings

This dissertation explores the relationship between the spatial distribution of jobs, labor market outcomes, and residential segregation from whites for the largest minority ethnic groups in the United States: blacks, Mexicans, Puerto Ricans, Cubans, Indians, Chinese, Filipinos, Koreans, and Vietnamese populations[1]. While examining spatial mismatch, labor economists have focused almost exclusively on blacks and whites when examining spatial mismatch. Proponents of spatial mismatch have argued that trends in residential segregation prevented blacks from relocating to job dense suburbs (Fernandez 2008; Kain 1968, 1992). To this date, very little has been written about exposure to, as well as determinants of, spatial mismatch for other groups.

This dissertation seeks to fill this gap by using a consistent measure of spatial mismatch to summarize the extent to which blacks and various other racial and ethnic groups are unevenly distributed across space, relative to employment. In doing so, I specifically find relatively high exposure to spatial mismatch among Vietnamese and Cuban Americans, so much so that the

[1] I use census self-reports of race for blacks and whites, and self-reports of ancestry for Asian and Hispanic subgroups. This includes both foreign-born and native-born individuals.

average Vietnamese and Cuban American experiences a higher exposure to spatial mismatch than the average black. Ultimately, I also explore the determinants of spatial mismatch among all of these groups. Work on spatial mismatch to date has focused on the role of residential segregation from whites in shaping access to employment among black Americans. This dissertation re-examines that premise in two key ways: 1) Asking whether residential segregation from whites determines exposure to spatial mismatch among non-black minority groups. 2) Determining whether it is residential segregation or segregation's correlates that shapes spatial mismatch among blacks.

I find that residential segregation does not determine exposure to spatial mismatch for most non-black minority groups. Instead, other factors such as access to high value neighborhoods shape the level of exposure to spatial mismatch for the majority of these groups.

While this project explores the determinants of spatial mismatch among ten minority groups, it also re-examines spatial mismatch between whites and black Americans. Chapter 1 suggests that residential segregation is indeed unique among black Americans, in that it carries a distinct implication for this group: diminished job access. Specifically, I ask, is it residential segregation that shapes spatial mismatch among blacks, or is it one of segregation's key correlates: poverty concentration.

It is evident from the analysis presented here that residential segregation does not depress job access primarily by restricting access to suburbs. Instead, another potential explanation for the distinctiveness of residential segregation among blacks is the concentration of poverty that corresponds with exposure to segregation among this group. Several works establish that residential segregation among blacks necessarily concentrates poverty by confining blacks, who experience higher poverty rates, to a small number of locations (Massey and Denton 1993;

Quillian 2012). In turn, this poverty concentration potentially leads to commercial disinvestment, depressing the number of businesses and jobs in areas with high concentrations of blacks, many scholars argue. While logical, the findings presented here suggest that poverty concentration is not the driving force behind the relationship between the concentration of blacks and the spatial distribution of businesses. Instead, a large proportion of the relationship between the concentration of blacks and business count is left unexplained. While the current project does not directly assess the role of racial bias in business locational decisions, the evidence presented here suggests that future research should more strongly consider bias as an explanation for the dearth of business in segregated black communities.

The next section provides an overview of the goals, methods, and findings of each empirical chapter.

Spatial Mismatch Beyond Black and White

Chapter 1 presents descriptive estimates of exposure to spatial mismatch among blacks, whites, Mexicans, Puerto Ricans, Cubans, Indians, Chinese, Filipinos, Koreans, and Vietnamese Americans. Spatial Mismatch is operationalized as the extent to which group members are unevenly distributed across zip codes within a Metropolitan Statistical Area (MSA). Using data from the 2010 Zip Code Business Patterns dataset (ZBP) and the 2010 U.S. decennial census, I utilize an index of dissimilarity to capture this unevenness. The index has the convenient interpretation of the proportion of group members or jobs that would need to change zip codes to eliminate unevenness. I find that there is sub-population heterogeneity in exposure to spatial

mismatch among Asian and Hispanic groups. In fact, the average Cuban or Vietnamese American is exposed to a higher level of spatial mismatch than the average black American.

I also explore the specific metropolitan, group-level characteristics that correlate with higher exposure to spatial mismatch across ethnoracial groups. In doing so, I explore three core questions: 1) Are MSAs where minorities experience higher exposure to residential segregation from whites also MSAs where they experience the highest levels of spatial mismatch? 2) Are MSAs where minorities are more likely to live in suburban areas also MSAs where they experience the lowest levels of spatial mismatch? 3) Finally, are MSAs where minorities live in neighborhoods with higher housing values also MSAs where minorities experience lower levels of spatial mismatch?

The answers to these questions were surprising. Exposure to residential segregation from whites at the MSA level did not predict exposure to spatial mismatch for most nonblack minority groups. Additionally, access to suburban neighborhoods predicted exposure to spatial mismatch among only a few subpopulations: Puerto Ricans, Vietnamese, and Japanese Americans. However, similar to whites, residing in MSAs where a given group has access to neighborhoods with higher housing values predicted exposure to spatial mismatch for Cubans and most Asian subpopulations: Chinese, Filipino, Vietnamese, Korean, and Japanese Americans. The most compelling aspect of this finding is that it holds net of socioeconomic differences in ethnic groups across MSAs. That is, it is not necessarily MSAs where certain minority groups have higher socioeconomic status (SES) that these groups experience lower spatial mismatch, instead, MSAs where given groups are able to translate their given SES into higher value neighborhoods tend to be MSAs where those groups are also exposed to lower levels of spatial mismatch.

Among blacks, residential segregation predicts exposure to spatial mismatch, but the relationship is net of the role of access to suburban neighborhoods. That is, access to suburbs, which early proponents of spatial mismatch regarded as the central determinant of job access, is not the core mechanism creating spatial mismatch among black Americans in 2010. While residential segregation from whites appears to be the main driving force, segregation is not limiting access to employment by blocking access suburban neighborhoods. In Chapter 2, I explore alternative explanations for the relationship between segregation and spatial mismatch among black Americans.

The Role of Residential Segregation in Shaping Business Presence

Chapter 2 further explores spatial mismatch and its unique relationship with residential segregation between whites and blacks. Contrary to what early labor economists have argued, Chapter 1 suggests that access to suburban neighborhoods is not the central mechanism driving the relationship between residential segregation among blacks and spatial mismatch in 2010. This chapter explores one potential counter explanation: the role of concentrated poverty. It has long been understood that residential segregation among blacks is inextricably linked to poverty concentration, given higher rates of poverty among black Americans and their other-race neighbors (Massey and Denton 1993; Massey et al. 1991; Quillian 2012). For this reason, it would seem logical that poverty concentration might depress business activity in segregated black neighborhoods. To determine the degree to which this is true, this chapter evaluates whether concentrated poverty acts as a pathway between residential segregation among blacks and the number of businesses in a given area. Specifically, using data from the 2000 and 2010 ZBP, the 2000 and 2010 decennial census, and the 2006-2010 5 year American Community

Survey file, I exploit longitudinal data to explore whether changes in poverty concentration that correspond to changes in residential segregation among blacks are in part associated with changes in the number of businesses in a given area over time. The pathway analysis indicates that poverty concentration does account for a small portion of the relationship between residential segregation and business count. However, a large portion of the relationship between segregation and business count remains unexplained. Future work should explore the role of bias in business locational decisions as a possible explanation for the remaining disparity.

Does Space Matter for Labor Market Outcomes

Finally, Chapter 3 takes up the relationship between spatial mismatch and labor market outcomes. Some argue that spatial job access is no longer a significant predictor of employment outcomes, especially among minorities (Hellerstein 2008; Kasinitz and Rosenberg 1996). The descriptive analysis presented in Chapter 3 establishes that, for vulnerable segments of every ethnoracial group (i.e. those possessing a high school degree or lower levels of education), group level exposure to spatial mismatch significantly predicts both employment and wages. Chapter 3 suggests that future work should continue to take space seriously when exploring the labor market outcomes and disparities.

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Chapter 1

Spatial Mismatch Beyond Black and White: Levels and Determinants of Job Access among Asian and Hispanic Subpopulations

Abstract

United States (U.S.) based research suggests that spatial mismatch between residency and employment constrains labor market outcomes for black Americans. Furthermore, research suggests that spatial mismatch is mainly driven by residential segregation from whites, which restricts access to job-dense suburbs. However, few studies examine patterns and drivers of spatial mismatch among Asian and Hispanic subpopulations in the United States (U.S.). Using data on job counts from the 2010 Zip Code Business Patterns dataset and on population counts from the 2010 U.S. decennial censuses, I estimate spatial mismatch for the largest ethnoracial groups in the U.S.: black, white, Mexican, Puerto Rican, Cuban, Asian Indian, Chinese, Filipino, Korean and Vietnamese Americans. To measure spatial mismatch, I create indices of dissimilarity between jobs and residency for all MSAs where there is available data. Estimates of spatial mismatch based on panethnic categories mask subpopulation heterogeneity. The results show high levels of spatial mismatch among Vietnamese and Cuban Americans. Unlike for black Americans, the extent of spatial mismatch for Hispanic and Asian subpopulations is not significantly correlated with residential segregation from whites. In contrast, access to neighborhoods with higher housing values is an important determinant for Asian subpopulations and Cuban Americans.

Keywords: spatial mismatch, residential segregation, panethnicity, job access

I. Introduction

Extensive work documents contemporary and historic levels of racial residential segregation (Charles 2003; Kim and White 2010; Massey and Denton 1993; Massey, Rothwell and Domina 2009; Massey and Tannen 2015). However, there is room to better understand how residential segregation from whites translates into negative outcomes for ethnic and racial minorities, such as unemployment. Spatial mismatch— defined as a dearth of employment options in close proximity to one's place of residence— is a central neighborhood level mechanism that is purportedly driven by residential segregation from whites (Kaim 1968).

The vast majority of U.S. based literature documenting spatial mismatch and its implications focuses on blacks and whites. Labor economists largely argue that residential segregation between black Americans and whites limits access to job-dense suburban neighborhoods, which in turn suppresses labor market outcomes (Kain 1968). Additionally, some work on spatial mismatch examines Asian and Hispanic panethnic categories. A few key studies attempt to illuminate the labor market implications of spatial mismatch for Hispanic subpopulations (Aponte 1996; Dickerson vonLockette and Johnson 2010). However, given that this earlier work estimates proxies for spatial mismatch, rather than direct measures, there is room for a more comprehensive examination of this phenomenon among Hispanic subpopulations in the U.S. Additionally, Asian American subgroups are largely left out of this literature altogether. But, to what extent do Indian, Chinese, Filipino, Korean, and Vietnamese Americans experience spatial mismatch?

We also possess limited knowledge of the extent to which findings developed for blacks and whites correlate with outcomes for these important subpopulations. Since these groups constitute an increasingly large segment of the U.S. population, understanding exposure to

spatial mismatch for a wider number of U.S. ethnoracial groups is crucial. Studies that focus on blacks and whites ignore other portions of the U.S. population. Furthermore, studies that examine panethnic categories gloss over extensive differences across Asian and Hispanic subpopulations, while ignoring especially factors that purportedly are linked to exposure to spatial mismatch. Examining spatial mismatch among these groups might produce insight into the mechanisms and central determinants of spatial mismatch. An important question remains: Are residential segregation and access to suburban neighborhoods key drivers of spatial mismatch among these groups?

I utilize several methods to examine the degree of spatial mismatch among Mexican, Puerto Rican, Cuban, Indian, Chinese, Filipino, and Vietnamese residents. First, I pair data from the 2010 Zip Code Business Patterns dataset (ZBP). I also aggregate zip code[2] data from both the Summary File 1 of the 2010 decennial census and the American Community Survey (ACS) five year file (2007-2011), as well as the 2010 ACS IPUMS micro sample. I then proceed by comparing these estimates to that of panethnic categories: black, white, Asian, and Hispanic. The results reveal high levels of spatial mismatch for Vietnamese, Indian, Korean and Cuban Americans. Furthermore, the results also demonstrate that residential segregation is only a key predictor of spatial mismatch for blacks, but not for other ethnoracial groups. In contrast, access to neighborhoods with higher housing values is a central predictor for Asian American subgroups and Cuban Americans. Additionally, residence in urban areas is an important determinant for Puerto Ricans. As a result, estimates of spatial mismatch based on the Asian and Hispanic panethnic categories fail to reveal the extent to which most subgroups experience spatial mismatch, especially among Asian American subgroups.

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[2] The census approximates zip codes using ZCTA. This is discussed in greater detail below.

II. Literature

The literature on residential segregation outlines a dense set of mechanisms that link segregation from whites to poor life outcomes for minority populations (Massey and Denton 1993; Peterson and Krivo 2010; Sampson 2012; Sharkey and Faber 2014). One such mechanism is disinvestment, whereby financial institutions and businesses fail to serve areas with high proportions of minority populations. Whether driven by the attractiveness of suburban locations for business, financial redlining, or the byproduct of concentrated poverty, disinvestment can lead to and exacerbate negative neighborhood conditions (Galster 2012; Massey and Denton 1993; Small and McDermott 2006). The literature on spatial mismatch represents one line of research that is useful for illuminating one potential implication of residential segregation: the increased physical separation between housing and job options for disadvantaged groups.

According to spatial mismatch theory, residential segregation from whites is a key determinant of exposure to spatial mismatch for minorities, mainly blacks (Fernandez 2008; Gobillon, Selod and Zenou 2007; Holzer 1991; Ihlanfedlt and Sjoquist 1998; Kain 1968, 1992; Mouw 2000). The central proponents of the theory argue that spatial mismatch arises when minorities face barriers in obtaining housing in job dense areas, usually in the suburbs (Fernandez 2008; Kain 1968; Stoll and Covington 2012). Research suggests that living in close proximity to job opportunities contributes positively to employment prospects (Fernandez 2008; Gobillon et al. 2007; Holzer 1991; Ihlanfedlt and Sjoquist 1998; Kain 1968, 1992; Mouw 2000). Furthermore, spatially mismatched groups are more likely to experience unemployment, endure longer commutes, and earn lower wages (Gobillon et al. 2007; Holzer 1991; Kain 1992; Kirschenman and Neckerman 1991; Tilly et al. 2001).

While important, the majority of the empirical support for these findings relies on empirical analysis of whites and blacks. In contrast, Houston (2005) posits that spatial mismatch is not necessarily racialized. Additionally, any form of residential immobility, whether caused by low income or credit constraints, likely limits access to housing in job-rich areas. This warrants an exploration of exposure to spatial mismatch among other ethnic groups, as well as further inquiry into the centrality of residential segregation from whites as the central driver of exposure to spatial mismatch.

Previous studies suggest that Asian and Hispanic panethnic groups are less exposed to spatial mismatch than blacks (Hellerstein, McInerney and Neumark 2009; Stoll 2005). While these are substantial findings, studies that fail to measure the rate of disparities within these large groups remain limited. A few key studies examine spatial mismatch among Hispanic subpopulations by exploring the relationship between residential segregation and employment outcomes. Specifically, these studies find that segregation from whites impacts employment among Puerto Ricans more than any other group. (Aponte 1996; Dickerson vonLockette and Johnson 2010).

Even so, these analyses do not include direct measures of the spatial distribution of employment opportunities relative to housing. Consequently, there is room for a more comprehensive estimation of spatial access to employment among the largest ethnoracial groups in the U.S. There is also room for an evaluation of the drivers of spatial mismatch among these groups. Focusing on the two central phenomena that create spatial mismatch, residential segregation and suburbanization, Asian and Hispanic subgroups differ on these factors in ways that potentially contribute to differences in exposure to spatial mismatch.

Given the centrality of trends in suburbanization for spatial mismatch theory, it is

important to note that Asian and Hispanic subgroups differ in their tendency to live in suburban neighborhoods (Logan, Zhang and Alba 2002; Massey and Denton 1985; Wen, Lauderdale and Kandula 2009). Cuban, Asian Indian, Filipino, and Vietnamese neighborhoods are highly represented in the suburbs, while Korean and Puerto Rican neighborhoods are not (Wen et al. 2009). If suburbanization is a key predictor of being spatially mismatched, subgroup differences in suburbanization likely correlate with differential access to employment. However, given that previous work presents mixed findings about the relationship between suburban access and spatial mismatch (Hu 2015), an exploration of the role of suburbanization in shaping exposure to spatial mismatch across the groups examined here is warranted.

Theorists suggest that residential segregation from whites limits access to suburbs among blacks, and this in turn contributes to spatial mismatch (Kain 1968). If segregation from whites is predictive of being spatially mismatched for all minority groups, documented differences in segregation likely correlate with differences in exposure to spatial mismatch. However, more recent work on spatial mismatch among white, black, and Hispanic panethnic groups suggests that residential segregation continues to be correlated with spatial mismatch after accounting for the suburbanization of employment (Stoll & Covington 2012).

Furthermore, residential patterns among Asian subpopulations suggest that analysis based on the panethnic Asian category likely obscures the experience of certain subpopulations. Compared to white, black, and Hispanic subgroups, Asian subgroups are more likely to live in nationality-specific communities, segregated from other Asian subgroups (Kim and White 2010). For this reason, it is likely that Asian subgroups experience distinct social locations, and therefore estimates of spatial mismatch based on the panethnic Asian category likely distort the extent of spatial mismatch experienced by any given group.

Several empirical and theoretical gaps remain in the literature on spatial mismatch. It is likely that conclusions drawn about all Hispanics or all Asians are limited in their ability to characterize the distinct experiences of any given group. Exploring spatial mismatch among a larger number of groups residing in the U.S. will both enhance our understanding of the spatial nature of inequality. Examining these patterns likely will enhance our understanding of the mechanisms and import of the spatial mismatch phenomenon.

III. Data, Measures, and Methods

This paper makes use of several census datasets[3]. Job counts are drawn from the Zip Code Business Patterns (ZBP) dataset for 2010. ZBP relies on estimates of the total number of jobs held across all businesses that report payroll information in a given zip code.

Ethnic group population counts at the Zip Code Tabulation Area (ZCTA)[4] are necessary to compute estimates of spatial mismatch and residential segregation. I derive these counts from the 2010 U.S. Census Summary File 1 for non-Hispanic blacks, non-Hispanic whites, Mexican, Puerto Rican, Cuban, Asian Indian, Chinese, Filipino, and Vietnamese U.S. residents. Unfortunately, the ZCTA estimates provided by the census do not allow one to distinguish between foreign born and native-born group members. These estimates also do not allow for an examination of black or white subpopulations (i.e, African and Caribbean immigrants and/or European subpopulations). Henceforth, for the sake of brevity, I refer to non-Hispanic blacks as blacks and non-Hispanic whites as whites for brevity.

The analytical sample investigated here has a data point for each ethnoracial group that is observed in a given MSA. As data for each group is not available for every MSA, the analytical

[3] The appendix includes a table that outlines all variables and their sources.
[4] ZCTAs are a Census generated unit of analysis that approximate zip codes, which are designated by the U.S. Postal Service.

sample covers anywhere from 149 for Japanese Americans to as high as 233 MSAs for whites. MSAs are defined as geographic areas with an urban core containing at least 50,000 residents. The Office of Management and Budget (OMB) constructs the boundaries of MSAs based on commuting patterns between the urban core and surrounding suburban areas. Therefore, it is by definition that the majority of those who live in a MSA work in that same MSA. However, businesses, and therefore jobs, are not uniformly distributed across MSAs (Siegel and Swanson 2008). To capture ethnoracial disparities in spatial mismatch, I utilize an index of dissimilarity between residence and jobs for each group. This index has been used to estimate spatial mismatch in earlier studies (Martin 2001; Stoll 2005; Stoll and Covington 2012).

The index of dissimilarity is a demographic measure of the evenness with which two groups are distributed across sub-geographic areas that make up a larger area. Using the index of dissimilarity, I quantify spatial mismatch as the proportion of jobs or group members that would need to relocate to eliminate disequilibrium at the zip code level for that group. In this case, the index represents the evenness with which jobs and specific racial/ethnic groups are distributed across zip codes that make up larger MSAs.

The index of dissimilarity between jobs and residence is calculated for each racial group j present in each MSA r. The formula is as follows:

$$D_{jr} = \frac{100}{2} \sum_{i=1}^{N} \left| \frac{m_{ir}}{M_{jr}} - \frac{e_i}{E_j} \right| \qquad \text{Formula 1}$$

The index of dissimilarity for racial group r in MSA j, D_{jr}, is estimated by subtracting the proportion of jobs in zip code i, e_i, as a fraction of total jobs in MSA j, E_j, from the proportion of minority residents r in zip code i, m_{ir} as a fraction of the total population of that racial group r in the MSA j, M_{jr}. The resulting values are summed across all zip codes in a given MSA. Next, the sum is divided by 2 in order to avoid double counting. I multiply estimates by 100 to re-scale the

index.

While I estimate the index of dissimilarity at the MSA level, the index effectively captures the distribution of groups and jobs across the zip codes of a given MSA. Zip codes may be the most appropriate level of aggregation from which to examine the spatial distribution of jobs[5]. At the census tract level, Mouw (2000) concluded that shifts in the number of jobs per worker hold significant implications for the likelihood of employment. However, very few people work within their census tracts (Hellerstein 2008). Given that zip codes are larger than census tracts, it is probable that job access at the zip code level is even more consequential for employment.

Independent variables

To examine the role of residential segregation in shaping spatial mismatch among Asian and Hispanic subpopulations, I utilize the index of dissimilarity between minorities and whites as a measure of segregation. I calculate this is in the same way as I do the spatial mismatch index, estimating the proportion of one group or another that needs to change zip codes in order to eliminate unevenness.

Barriers to suburbanization for blacks are a central tenant of the original spatial mismatch theory. Since "suburb" is not a standard census category, I include an estimate of the proportion of group members who reside in ZCTAs that are designated as a part of the urban core of a given MSA. Urban cores contain at least 50,000 people and the surrounding business zones that might be less populated. Previous work provides mixed findings as to the direction of the relationship between suburbanization and exposure to spatial mismatch.

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[5] The census approximates zip codes using Zip Code Tabulation Areas (ZCTA). All zip code level decennial census and ACS data refers to estimates based on ZCTA.

Similar to Mouw (2000), I utilize controls for median housing value as a proxy for neighborhood quality. Higher housing prices likely indicate high-income homeowners and better amenities. Unfortunately, estimates of median housing value by zip code are not available in the 2010 census. Therefore, five-year averages are drawn from the ACS summary file from 2007-2011. For each group, I average housing values across all zip codes where a given group lives, weighing each zip code according to the population of a given group residing there. This statistic captures the median zip code housing value, where the average group member in a given MSA lives. The resulting estimate is logged.

For each MSA, I include estimates of both the population count and proportion of the total population of each ethnoracial group in order to assess whether exposure to spatial mismatch varies with relative and actual population size. Additionally, all models include an indicator for MSAs where a given group has fewer than 1000 members. This accounts for estimates that may be inflated by small group size[6].

In order to better isolate the relationship between race, ethnicity and exposure to spatial mismatch, I control for a given ethnic group's educational composition, proportion of working age group members, and the gender composition of working age group members. These key factors vary among Asian and Hispanic subgroups, and often reflect differences in selection and immigration trends. Additionally, these characteristics account for groups that likely are different in their attachment to work across gender and the life cycle. To control for differences in SES, I also include estimates of the group's average income and proportion employed. These estimates

[6] The index is inflated by random factors when the number of minority members is small relative to the number of areal units Iceland, J., D.H. Weinberg, and E. Steinmetz. 2002. "Racial and Ethnic Residential Segregation in the United States: 1980-2000." in *Series CENSR_3*. Washington, DC: U.S. Census Bureau.

are compiled from the 2010 ACS microsample.

Methods

In the regression analysis, I focus on whether variations in spatial mismatch, for a given group across MSAs, are driven by differences in the factors outlined above. By doing so, I aim to understand what factors lead to the presence of spatial mismatch for the various subgroups studied here. The factors include: a) exposure to residential segregation from whites; b) the percent living in urban cores; c) access to high value neighborhoods; d) socioeconomic composition. In order to highlight racial differences in the relationship between residential segregation from whites and exposure to spatial mismatch, I estimate the following for each minority group, using Ordinary Least Squares regression (OLS):

$$D_i = \alpha_i + \beta_i a + \gamma_i b + \delta_i c + d_i \gamma + p_i \theta + u_i \tau + e_i \qquad \text{Equation 1}$$

For each group, i, this model predicts the index of dissimilarity D. Models are estimated separately for each group. I include a measure of segregation from whites experienced by the given group, a. The variable b captures the proportion of the group that lives in urban areas and the variable c captures median housing values in zip codes where the average group member resides. The vector d includes socioeconomic and demographic variables: including 1) the educational composition of that group; 2) the proportion of group members that are of working age; 3) the proportion of female working age group members; 4) log average wages; 5) the percent of the group that is employed. Vector p captures population size measured as log of the group's size and the proportion of the MSAs total population that the group represents. Finally u is an indicator that takes the value **one** for MSAs with fewer than 1000 group members, and **zero** for MSAs with greater than 1000 members.

Subsequently, I estimate the relationship between this set of predictors and ethnoracial disparities in spatial mismatch. With this analysis, I aim to understand what leads to disparities in exposure to spatial mismatch between whites and minorities. In this case, I model the relationship between residential segregation from whites and other control variables on the difference in exposure to spatial mismatch for each group relative to whites. I estimate the following equation using OLS:

$$\Delta D_{mw} = D_{minority\ i} - D_{whites} = \alpha_{mw} + \kappa_{mw} a + \mu_{mw}(b_w - b_{mi}) +$$

$$\nu_{mw}(c_w - c_{mi}) + \xi_{mw}(d_w - d_{mi}) + (p_w - p_{mi}) o_{mw} + u_i \tau + e_i$$

Equation 2

For each minority group relative to whites, mw, differences in spatial mismatch, ΔD, are calculated by subtracting the value of a given estimate for whites from that of a minority group i, $D_{minority\ i} - D_{whites}$. In this equation, the relationship between a given predictor and the gap in spatial mismatch depends on both the sign of the coefficient and the direction of the variable. In contrast, I estimate differences in predictors by subtracting the value of a given estimate for minorities from that of whites. For example, differences in the average housing value in zip codes where a given minority group I lives, relative to the average housing value in zip codes where whites live, is shown as $(c_w - c_{mi})$. As a result, a positive coefficient on predictors of spatial mismatch, together with a positive variable, predicts larger gaps in spatial mismatch. In contrast, a positive coefficient on predictors of spatial mismatch, together with a negative variable, predicts smaller gaps in spatial mismatch. To offer an example of the interpretation of these variables, let us assume that the models present a positive coefficient on differences in the proportion of a group whose members possess college degrees. In the case of any minority group with a lower proportion of group members holding college degrees, relative to whites, a larger

disparity in education is associated with a larger gap in spatial mismatch. In contrast, in the case of groups that hold more college degrees than whites, a larger advantage among the minority groups (which results in a greater negative number) is associated with a decrease in the gap in spatial mismatch.

Note that two variables in Equation 2 are not measures of difference, but remain the same as in Equation 1. First, measures of residential segregation, s, capture the extent of segregation between whites and minorities. Second, there are no MSAs with fewer than 1000 whites. Therefore, the variable u is only relevant for minority populations.

IV. Results

Descriptive

Figure 1 presents estimates for weighed average spatial mismatch for each group, measuring each MSA according to the size of the groups' population in that MSA. Unweighted estimates treat MSAs with both small and large group populations the same. For this reason, it is more informative to view averages that give more weight to MSAs with larger populations of a given group (For unweighted estimates, see Appendix). Doing so allows us to better understand the extent of spatial mismatch experienced by a larger segment of a given group's population.

According to estimates of spatial mismatch for panethnic groups in Tables 1 and 2, Hispanics, and Asians experience less spatial mismatch than blacks but more than whites. About 35% of group members, or jobs, would need to relocate to eliminate mismatch for whites[7], compared to 40% for the Asian panethnic group, and 39 % for the Hispanic panethnic group. In contrast, 47% of blacks or jobs would need to relocate to eliminate mismatch for this population.

[7] The index typically refers to the percentage of group members or jobs that can relocate. For simplicity, I will refer to the proportion of jobs that would need to be relocated going forward.

However, Figure 1 also shows that the three Hispanic subgroups highlighted here exhibit slightly higher exposure to spatial mismatch than is evident given the Hispanic panethnic estimate. Mexican and Puerto Ricans exhibit rates of spatial mismatch that fall between the rates for blacks and whites. Specifically, about 41% and 45% of employers or group members would need to relocate to eliminate mismatch for Mexicans and Puerto Ricans respectively, compared to 47% for blacks and 35% for whites. In contrast, the average Cuban American experiences higher levels of spatial mismatch than the average black American[8]. There is indeed subpopulation heterogeneity in exposure to spatial mismatch within the Hispanic panethnic category.

It is also evident that subgroups experience higher rates of spatial mismatch than indicated by the estimate for the Asian panethnic group as a whole. Examining weighted estimates shows that the average Vietnamese American experiences more spatial mismatch than the average black American.

Tables1 and 2 display descriptive statistics for Hispanic (Table 1) and Asian subgroups (Table 2) for the full analytical sample of MSAs[9]. Blacks and whites are included in both tables for comparison purposes. Table 1 also includes weighted average estimates of residential segregation from whites among blacks and Hispanic subpopulations (For unweighted estimates, see Appendix). At the zip code level, most Hispanic groups exhibit lower levels of residential segregation than blacks.

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[8]Comparing weighted and unweighted estimates of spatial mismatch suggests that all Hispanic subgroups are more populous in areas with higher levels of spatial mismatch.

[9] There are 381 total Metropolitan Statistical Areas (MSAs) in the United States, excluding Puerto Rico. Data is limited to MSAs that both have data available at the ZCTA level and that are identified in the IPUMS sample. Trends in subgroup heterogeneity highlighted here are consistent for the full sample of MSAs with data available at the ZCTA level (not shown).

Table 2 includes descriptive statistics for each Asian subgroup, including measures of residential segregation from whites, demographics, and socioeconomic indicators. According to weighted estimates of segregation from whites, Asian subgroups experience lower levels of residential segregation at the zip code level than blacks.

In sum, descriptive estimates of spatial mismatch reveal that there is subgroup heterogeneity in both panethnic categories. Particularly, in the case of Asian American subgroups, estimates of spatial mismatch that are based on the panethnic category grossly underestimate the degree of exposure that most subpopulations experience. The next set of analysis examines the determinants of exposure to spatial mismatch for each group, and explores the drivers of differences in exposure to spatial mismatch between minority groups and whites.

Predicting Spatial Mismatch

In order to determine whether the determinants of spatial mismatch vary across groups, the models included in Tables 3 and 4 predict estimates of spatial mismatch for each group. Specifically, Table 3 includes OLS models predicting spatial mismatch among whites, blacks, and Hispanic subgroups.

According to Table 3, the predictors of spatial mismatch vary across groups. Segregation from whites is only a significant predictor in the case of blacks. That is, in MSAs where blacks experience greater degrees of segregation from whites, blacks also tend to exhibit higher rates of spatial mismatch. In MSAs where Cuban and whites reside in zip codes with higher housing values, Cubans and whites also tend to exhibit lower rates of spatial mismatch. Additionally, urban residence is a significant predictor of spatial mismatch for Puerto Ricans. Measures of average group income and educational composition predict exposure to spatial mismatch among whites, but not among blacks or Hispanic subpopulations.

Finally, whereas larger population size predicts spatial greater mismatch for all groups, the effect of group percentage in the population is negative for whites, blacks, and Mexican Americans, but positive for Puerto Ricans and Cubans (though the effect for the latter group is not significant). That is, in general, MSAs where groups constitute larger populations tend to be MSAs where groups experience less spatial mismatch. However, MSAs where whites, blacks, and Mexican Americans constitute a larger proportion of the total population, tend to be MSAs where these groups experience more spatial mismatch. For Puerto Ricans, MSAs where they constitute a larger proportion of the population tend to be MSAs where Puerto Ricans also experience less spatial mismatch.

According to Table 4, segregation from whites is not a significant predictor of exposure to spatial mismatch for Asian subgroups, including Vietnamese, Japanese, Chinese and Korean Americans. Instead, in MSAs where groups live in zip codes with higher housing values, these same groups also tend to exhibit lower levels of spatial mismatch. Additionally, urbanization stands as a significant predictor of exposure to spatial mismatch for Vietnamese and Japanese Americans. Finally, there are a few cases where socioeconomic differences across MSAs correlate with differences in exposure to spatial mismatch. MSAs where a higher proportion of Chinese Americans hold graduate degrees tend to be areas where Chinese Americans are more spatially mismatched. Also, MSAs where Koreans tend to have a higher average income tend to be areas where Koreans are more spatially mismatched.

To summarize, the above set of analysis suggests that there are clear differences in the central drivers of spatial mismatch across groups. However, the results also demonstrate that the centrality of residential segregation for exposure to spatial mismatch is only prevalent among

black Americans. For other groups, other predictors are more central, including access to high value zip codes and degree of urban residence, as opposed to suburban residence.

The next set of analysis examines how the various determinants of spatial mismatch are associated with disparities in exposure to spatial mismatch between whites and minorities. The following models predict the difference in spatial mismatch between whites and minorities in a given MSA as a function of the level of segregation and differences between the whites and minorities on the other independent variables. Again the interpretation of the relationship between the difference-coefficients (that is, coefficients on variables that capture the difference between minorities and whites) in these models depends on both the sign of the coefficient, and the sign of the variable. In any instance where minority groups outperform whites on a given indicator, the variable in the given data is negative and therefore would lead to a decrease in the gap in spatial mismatch.

Table 5 presents estimates for blacks and Hispanic subgroups. These models indicate that MSAs where blacks are more segregated from whites tend to be areas where the disparity in spatial mismatch tends to be larger. Larger differences in urbanization are associated with smaller disparities in exposure to spatial mismatch for blacks and Mexican Americans (as these groups tend to be more urbanized than whites). Nonetheless, differences in housing values for various zip codes arise as strong predictors of disparities in spatial mismatch across all groups. For blacks and Hispanics, who tend to live in zip codes with lower housing values, a one-unit increase in the gap in median housing value in ZCTAs where Hispanic subgroups and blacks reside relative to whites is associated with anywhere from a 35 to a 45 points larger gap in spatial mismatch.

Table 6 presents models of disparities in spatial mismatch relative to whites for Asian subgroups. In these cases, segregation from whites is only a significant predictor of the gap in spatial mismatch between those with Indian ancestry and whites. Finally, the relationship between ethnoracial differences in median housing value in zip codes where groups live and exposure to spatial mismatch differs across groups. Larger disparities in housing values in areas where Chinese, Indian, and Japanese Americans (all of whom live in zip codes with higher housing values) live relative to whites is associated with larger ethnoracial disparities in spatial mismatch.

For those with ancestry from the Philippines, who tend to live in zip codes with lower housing values than that of whites, larger disparities relative to whites are associated with larger disparities in spatial mismatch. The coefficient for Vietnamese is also negative. This group lives in zip codes with similar average housing values whites. Therefore, it is difficult to ascertain from these results whether the relationship between differences in housing value and spatial mismatch are different in areas where Vietnamese live in higher value zip codes, relative to whites, compared to zip codes where Vietnamese live in lower value zip codes relative to whites. The coefficient among Korean Americans is also negative, but this estimate is insignificant.

To further analyze the relationship between racial disparities in access to housing values and racial disparities in spatial mismatch, Table 7 predicts spatial mismatch, controlling for average median housing values in zip codes where whites and minority groups live[10]. These results show that access to high value zip codes among whites is a significant predictor of exposure to spatial mismatch for minorities. Furthermore, after accounting for this variable,

[10] Model specification similar to Equation 1. Only modification is the addition of a variable controlling for access to high value housing among whites in each MSA.

access to high value neighborhoods among blacks, Mexicans, and Puerto Ricans becomes a significant predictor of spatial mismatch. For Chinese, Indian, and Japanese Americans, greater access to high value zip codes among whites is negatively associated with exposure to spatial mismatch. In most other cases, grater access to high value zip codes among whites is positively associated with exposure to spatial mismatch. There are two exceptions, the average housing value in areas where whites live is not a significant predictor of spatial mismatch among Vietnamese and Filipino Americans.

In sum, the predictors of racial disparities in spatial mismatch vary across minority groups. Residential segregation is **not** a key predictor for most groups. In contrast, racial disparities in housing value in areas where almost all groups (Filipino Americans being the only exception) tend to live are significantly associated with exposure to spatial mismatch.

V. Discussion

This paper contributes to the literature on spatial mismatch by examining the phenomenon among the largest racial/ethnic groups in the U.S. The results presented here indicate that exposure to spatial mismatch varies within panethnic Asian and Hispanic categories. Looking at the average level of mismatch across metropolitan areas, I note especially high indices among Vietnamese, Indian, and Korean Americans. When looking at weighted estimates of spatial mismatch, Vietnamese and Cuban Americans exhibit higher spatial mismatch than that of blacks.

The analysis presented here also provides new insight into the central predictors of spatial mismatch. The subsample analysis suggests that the relationship between spatial mismatch and residential segregation, urban residence, and housing value varies across groups. While segregation from whites is still a strong predictor of spatial mismatch for blacks, other factors are

more important for Asian and Hispanic subgroups. MSAs where groups have access to zip codes with high housing values specifically tend to exhibit lower levels of spatial mismatch for most groups. Finally, in MSAs where a higher proportion of Puerto Rican, Japanese, and Vietnamese Americans live in urban areas, these groups also experience higher levels of spatial mismatch.

The findings presented here have several implications for both the empirical record and theoretical understanding of spatial mismatch. First, the use of panethnic categories to capture spatial mismatch appears to be especially inappropriate for Asian American subgroups in that these categories both conceal heterogeneity and underestimate the extent of spatial mismatch experienced by most subpopulations. One potential explanation is that panethnic measurements are especially problematic among groups that experience high levels of panethnic segregation, which occurs when subgroups are less likely to live with their panethnic counterparts. For example, Asian Americans experience higher levels of panethnic segregation than Hispanic, black, and white subgroups (Kim & White 2010). In other words, Asian subgroups are more likely to occupy distinct geographic locations from one another. In the case of spatial mismatch, this could translate into each ethnic subgroup having access to a smaller, distinct subset of jobs. Therefore, compiling these groups together would aggregate these distinct sets of jobs into one larger grouping. In contrast, if Hispanic American subgroups live near each other, the set of jobs located near each group will have much more overlap, resulting in a less dramatic distinction between Hispanic job access and access for any given subgroup. Overall, these findings necessitate that future work on spatial mismatch focus more closely on subgroup heterogeneity.

This project confirms that spatial mismatch is not reducible to residential segregation from whites, especially when looking beyond the experience of blacks. The results presented

here suggest that the relationship between segregation from whites and spatial mismatch mainly exists among black U.S. residents.

Furthermore, access to zip codes with higher median housing values is negatively associated with spatial mismatch, which presents a troubling relationship between neighborhood selectivity and access to employment. Despite the idea that those with more resources would be able to both afford higher value properties and longer commutes to work, this intuitive assumption does not reflect the pattern described here. It is possible that this trend is driven by a tendency of business owners to locate in these areas. As a result, even if more affluent homeowners attempt to shift away from businesses in pursuit of single-family homes and suburban living, business locational decisions may serve to reverse these patterns (Martin 2001). However, given that the relationship between access to high value zip codes and spatial mismatch exists after accounting for the socioeconomic composition of the group, and that socioeconomic indicators are largely insignificant for most minority groups, this finding suggests that MSAs where groups experience increased access to high value neighborhoods, net of their socioeconomic characteristics, tend to be MSAs where these same groups also experience lower exposure to spatial mismatch. Pais, South and Crowder (2012) find that minority class-based neighborhood attainment varies across metropolitan areas, with certain locations making it easier for minority groups to translate their socioeconomic resources into locational attainment. Further research should explore specific metropolitan characteristics that promote locational attainment among minorities, as well as how this translates into lower exposure to spatial mismatch.

The models that explore ethnoracial disparities in spatial mismatch relative to whites suggest that the geographic distribution of both whites and minorities shape disparities in spatial mismatch. For example, residential segregation from whites does not predict exposure to spatial

mismatch for Indian Americans, but it does predict a larger disparity between this group and whites. This suggests that in MSAs where whites are more segregated from this group, whites also tend to be less spatially mismatched. Similarly, only after accounting for access to high value zip codes among whites does access to high value zip codes among minorities predict spatial mismatch for blacks, Mexican Americans, and Puerto Ricans. Additionally, the relationship between white access to high value zip codes and spatial mismatch among minorities differs across groups. It is essential for future research to explore the relationship between housing value and spatial mismatch, as this analysis suggests that housing value is a central driver of disparities in exposure to spatial mismatch. With few exceptions, ethnoracial disparities in access to high housing value ZCTAs are associated with larger gaps in spatial mismatch.

VI. Conclusion

While this paper establishes that there are racial differences in exposure to spatial mismatch, including commonly obscured differences within panethnic categories, future research should examine the implications of these differences for a variety of labor market outcomes. Previous studies link the ability to live in close spatial proximity with job opportunities to labor market outcomes for blacks and whites (Mouw 2000). However, whether this proximity matters to the same extent for all minority groups is an empirical question. It is probable that some of the groups that experience high exposure to spatial mismatch are not as vulnerable to all or some of the negative implications. The apparent contradiction between high levels of employment among several Asian subgroups and their high levels of exposure to spatial mismatch makes these processes/patterns all the more compelling.

Differences in both constraints and preferences that correlate with employment trajectories likely contribute to high exposure of spatial mismatch among several subgroups. Groups that are located far from employment, due to residential preferences, are likely immune to the negative implications of spatial mismatch. In contrast, groups that face a number of housing constraints are probably far more vulnerable. Among highly professional subgroups, such as Asian Indians, high income likely translates into an increased ability to live far away from places of employment. "Middleman minorities," such as Korean U.S. residents, likely occupy spaces where there is a dearth of mainstream business opportunities (Portes and Manning 1986). Among populations with a history of refugee status, such as Vietnamese Americans, the U.S. government is primarily responsible for settlement. Therefore, locational decisions are not based on individual choices. This likely produces very different patterns of settlement than if groups had to navigate housing markets on their own. Finally, for groups that locate in ethnic enclaves, such as in the case of Chinese and Cuban U.S. residents, isolation from mainstream economies might also lead to higher exposure to spatial mismatch (Portes & Manning 1986). Further research should aim to disentangle how these differences correlate with both exposure to high levels of spatial mismatch, and which groups are actually vulnerable to the negative implications of spatial mismatch.

Furthermore, while census ZCTA population estimates do not allow for a disentanglement of nativity from ancestry, this proves to be an important line of inquiry, if we hope to understand better the shape and impact of the patterns observed here. While Liu and Painter (2012) find that the aggregate foreign-born population is less spatially isolated from employment opportunities than native-born blacks, there are likely important subpopulation differences here, as well. Immigrant groups experience a wide range of outcomes upon their

arrival in the U.S., due to differences in immigration histories, contexts of reception, socioeconomic status, and phenotype, and these patterns hold steady across subsequent generations (Bonilla-Silva 2004; Portes and Zhou 1993). Theories of segmented assimilation identify the spatial context into which immigrants assimilate as an important determinant of outcomes for future generations (Portes and Zhou 1993; Xie and Greenman 2011).

Better understanding subgroup differences in job access is integral to our understanding of racial/ethnic inequality in the U.S. Spatial mismatch can be incorporated as one such feature of environments where groups reside, as it likely influences access to employment, goods, and services (Allard and Small 2013; Schuetz, Kolko and Meltzer 2012; Small and McDermott 2006). As neighborhood context is seen as an important determinant of outcomes for the children of immigrants (Portes and Zhou 1993; Xie and Greenman 2011), measuring spatial mismatch across these groups likely presents a ripe opportunity to gauge the structure of opportunity to which different ethnoracial groups are exposed.

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Table 1: Descriptive Statistics for Full Sample Hispanic and Reference Groups 2010

	Black	White	Mexican	Puerto Rican	Cuban	Other Hispanic
Spatial Mismatch among Hispanics: 34.8						
Spatial Mismatch (Weighted)	47.0	34.8	40.7	45.1	53.8	38.7
Avg. Gap in Spatial Mismatch						
Relative to Whites in Same MSA	4.7		2.6	1.4	2.0	-0.6
Segregation from Whites (Weighted)	50.5		63.5	44.5	24.1	41.4
Median ZCTA Housing Value(Weighted)	156034.5	180601.4	158823.6	187207.4	179855.8	167465.6
Percent in Urban Area	50.6	52.6	44.1	46.7	49.2	46.9
Percent Working Age	52.3	55.5	46.7	60.7	50.7	56.0
Percent Female of Working Age Pop	48.3	51.4	45.8	48.3	48.9	53.9
Proportion of Total Population	5.7	0.1	4.1	46.0	0.2	1.1
Group Population Size (MSA)	99895.1	3799.7	77420.2	925329.7	11667.4	31433.0
Population Under 1000	0.0	0.6	0.0	0.0	0.7	0.1
Income/Wages	15530.6	24929.3	16382.4	31959.4	20452.2	22701.7
Percent Employed	58.0	72.9	69.9	67.8	65.3	69.2
Less Than High School	38.7	27.4	57.5	32.3	41.2	35.8
High school	30.8	30.7	24.5	24.8	25.6	24.4
Some College	19.4	19.4	11.1	18.8	19.9	20.6
Bachelor Degree	7.2	13.8	4.8	12.7	8.5	10.8
Graduate Degree	3.9	8.8	2.0	11.4	4.8	8.3
Group Avg. Education				5.9		
Observations	223	233	224	153	206	218

Note: Data drawn from the 2010 Zip Code Business Patterns dataset, the 2010 U.S. Census, the 2007-2011 American Community Survey, and the 2010 IPUMS ACS sample. Estimates are provided for all MSAs that are identifable in the IPUMS sample. Observations are at the group level

Table 2: Descriptive Statistics for Full Sample Asian and Reference Groups 2010

	Black	White	Chinese	Filipino	Indian	Vietnamese	Korean	Japanese	Other Asian
Spatial Mismatch among Asians: 39.9									
Spatial Mismatch (Weighted)	47.0	34.8	44.4	46.1	44.6	51.9	45.1	40.7	43.1
Avg. Gap in Spatial Mismatch									
Relative to Whites in Same MSA	4.7	0.0	3.7	2.0	6.5	8.2	5.6	3.7	4.3
Segregation from Whites (Weighted)	50.5		45.8	44.1	46.7	45.6	46.4	45.5	45.0
Median ZCTA Housing Value(Weighted)	156034.5	180601.4	206330.3	182612.0	202949.2	177437.5	209708.0	213344.1	183523.0
Percent in Urban Area	50.6	52.6	53.1	47.5	53.2	50.3	51.9	52.1	52.8
Percent Working Age	52.3	55.5	59.7	68.5	63.7	61.0	62.7	67.0	63.5
Percent Female of Working Age Pop	48.3	51.4	56.6	66.6	48.3	51.0	62.6	61.1	54.8
Proportion of Total Population	5.7	0.1	0.2	0.2	0.3	0.5	0.1	0.1	0.3
Group Population Size (MSA)	99895.1	3799.7	5290.8	5328.6	6689.4	13079.8	2969.4	2275.2	5899.0
Population under 1000	0.0	0.6	0.4	0.6	0.4	0.3	0.5	0.7	0.4
Income Wages	15530.6	24929.3	30505.1	29761.0	46538.3	20251.4	22736.3	36208.6	25805.5
Percent Employed	58.0	72.9	73.4	75.1	73.0	74.1	67.1	72.7	69.4
Less Than High School	38.7	27.4	30.3	20.1	24.0	38.1	25.1	11.9	27.8
High school	30.8	30.7	16.2	20.4	11.4	28.0	22.4	23.2	23.7
Some College	19.4	19.4	11.7	21.1	10.4	17.2	18.5	24.5	21.3
Bachelor Degree	7.2	13.8	17.5	28.5	22.0	12.3	21.6	23.9	15.5
Graduate Degree	3.9	8.8	24.2	10.0	32.4	4.4	12.5	16.6	11.7
Group Avg. Education						5.2			
Observations	223	233	193	200	190	175	176	149	193

Note: Data drawn from the 2010 Zip Code Business Patterns dataset, the 2010 U.S. Census, the 2007-2011 American Community Survey, and the 2010 IPUMS ACS sample. Estimates are provided for all MSAs that are identifable in the IPUMS sample. Observations are at the group level

Table 3: Sub-Sample Analysis Predicting Spatial Mismatch: Hispanic Subgroups, White, and Black Non-Hispanic

	White	Black	Mexican	Puerto Rican	Cuban	Other Hispanic
Segregation from Whites		0.572***	0.002	0.015	−0.010	−0.006
		(0.061)	(0.011)	(0.011)	(0.010)	(0.010)
Percent in Urban Area	−0.001	0.023	0.014	0.069*	0.022	0.057*
	(0.026)	(0.026)	(0.028)	(0.034)	(0.029)	(0.027)
Log Median Housing Value	−6.301***	1.613	−2.255	−2.887	−4.366**	−5.081**
	(1.323)	(1.656)	(1.654)	(1.839)	(1.618)	(1.651)
Income and Wages	2.202*	−1.434	3.053	0.159	−0.194	0.114
	(1.036)	(0.869)	(2.161)	(0.348)	(0.364)	(0.739)
Percent Employed	−0.212*	0.034	0.062	0.007	−0.009	−0.082*
	(0.089)	(0.054)	(0.055)	(0.031)	(0.028)	(0.039)
Percent Working Age	0.066	−0.030	−0.017	0.034	0.044	0.127*
	(0.087)	(0.113)	(0.094)	(0.039)	(0.040)	(0.060)
Population under 1000		−0.702	6.091	2.327	−0.138	−1.138
		(6.240)	(3.796)	(2.203)	(2.269)	(2.330)
High school	0.200	−0.037	0.011	−0.005	−0.020	0.042
	(0.122)	(0.121)	(0.077)	(0.042)	(0.043)	(0.061)
Some College	0.136	−0.011	−0.107	−0.015	−0.066	−0.068
	(0.108)	(0.100)	(0.082)	(0.041)	(0.047)	(0.058)
Bachelor Degree	0.306**	−0.102	−0.033	0.014	−0.043	−0.197*
	(0.115)	(0.201)	(0.098)	(0.049)	(0.076)	(0.089)
Graduate Degree	0.114	0.079	0.072	−0.087	−0.057	0.015
	(0.106)	(0.203)	(0.204)	(0.044)	(0.077)	(0.087)
Percent Female of Working Age Pop	−0.056	−0.041	−0.082	0.028	−0.015	−0.022
	(0.047)	(0.058)	(0.056)	(0.023)	(0.025)	(0.039)
Proportion of Total Population	−0.118***	−0.261**	−0.466***	1.096*	1.169	−0.062
	(0.029)	(0.086)	(0.124)	(0.547)	(0.627)	(0.446)
Log Population Size	3.439***	2.883***	4.570***	2.918***	1.724*	2.847***
	(0.655)	(0.732)	(0.766)	(0.849)	(0.842)	(0.784)
Constant	50.720*	−16.465	−9.091	34.748	77.777***	65.277***
	(19.594)	(21.237)	(25.940)	(22.002)	(19.176)	(19.500)
Observations	233	223	224	153	206	218
R-Squared	0.280	0.622	0.301	0.456	0.230	0.342
F	7.126	24.456	6.432	8.267	4.072	7.544

Note: Data drawn from the 2010 Zip Code Business Patterns dataset, the 2010 U.S. Census, the 2007-2011 American Community Survey, and the 2010 IPUMS ACS sample. Estimates are provided for all MSAs that are identifiable in the IPUMS sample. Observations are at the group level

Table 4: Sub-Sample Analysis Predicting Spatial Mismatch: Asian American Subgroups

	Chinese	Filipino	Indian	Vietnamese	Korean	Japanese	Other Asian
Segregation from Whites	−0.015	−0.012	−0.021	0.065	0.050	−0.015	−0.006
	(0.029)	(0.011)	(0.011)	(0.090)	(0.049)	(0.030)	(0.031)
Percent in Urban Area	0.053	−0.015	0.002	0.074*	0.046	0.085**	0.012
	(0.030)	(0.029)	(0.029)	(0.033)	(0.033)	(0.029)	(0.029)
Log Median Housing Value	−7.096**	−7.175**	−3.840	−5.421*	−7.268**	−8.630***	−7.791***
	(2.180)	(2.293)	(2.119)	(2.118)	(2.212)	(2.293)	(1.885)
Income and Wages	0.400	−0.025	−0.548	−0.058	0.599*	0.393	0.174
	(0.413)	(0.333)	(0.745)	(0.378)	(0.291)	(0.339)	(0.529)
Percent Employed	−0.061	0.005	0.006	0.048	−0.003	−0.037	−0.036
	(0.036)	(0.030)	(0.034)	(0.033)	(0.028)	(0.028)	(0.029)
Percent Working Age	−0.061	−0.011	−0.123*	0.068	0.007	0.054	−0.087*
	(0.051)	(0.037)	(0.052)	(0.059)	(0.037)	(0.037)	(0.042)
Popution under 1000	−1.825	0.766	−0.612	0.311	−6.141**	−1.860	2.865
	(2.068)	(2.133)	(2.121)	(2.376)	(2.172)	(2.444)	(2.042)
High school	0.094	−0.001	−0.048	−0.027	−0.016	−0.040	0.090
	(0.053)	(0.042)	(0.063)	(0.050)	(0.044)	(0.053)	(0.047)
Some College	−0.042	0.055	−0.029	−0.031	0.013	0.015	0.103*
	(0.071)	(0.043)	(0.061)	(0.054)	(0.045)	(0.052)	(0.041)
Bachelor Degree	0.060	0.042	0.053	−0.031	0.015	0.032	0.030
	(0.054)	(0.043)	(0.057)	(0.054)	(0.050)	(0.057)	(0.049)
Graduate Degree	0.148**	0.032	0.045	0.138	0.012	−0.016	0.131*
	(0.051)	(0.050)	(0.050)	(0.090)	(0.054)	(0.056)	(0.051)
Percent Female of Working Age Pop	0.007	−0.024	−0.090**	0.005	0.025	0.002	−0.004
	(0.035)	(0.026)	(0.034)	(0.034)	(0.026)	(0.021)	(0.029)
Proportion of Total Population	3.129	0.062	−0.822	−0.620	−0.188	0.763	−1.390
	(1.800)	(0.818)	(1.782)	(3.721)	(3.268)	(0.738)	(1.316)
Log Population Size	2.855**	4.678***	3.255***	3.742***	2.126*	1.307	4.047***
	(0.950)	(0.920)	(0.904)	(0.982)	(0.981)	(0.940)	(0.875)
Constant	96.540***	88.021**	77.740**	65.703*	102.143***	124.779***	99.294***
	(25.312)	(26.837)	(25.509)	(26.949)	(26.516)	(27.741)	(21.924)
Observations	193	200	190	175	176	149	193
R-Squared	0.375	0.332	0.282	0.403	0.381	0.248	0.264
F	7.637	6.579	4.902	7.700	7.076	3.162	4.569

Note: Data drawn from the 2010 Zip Code Business Patterns dataset, the 2010 U.S. Census, the 2007-2011 American Community Survey, and the 2010 IPUMS ACS sample. Estimates are provided for all MSAs that are identifiable in the IPUMS sample. Observations are at the group level

Table 5: Sub-Sample Analysis Predicting EthnoRacial Gaps in Spatial Mismatch: Hispanic Subgroups, White, and Black Non-Hispanic

	Black	Mexican	Puerto Rican	Cuban	Other
Segregation from Whites	0.392***	0.001	0.018	−0.005	−0.004
	(0.080)	(0.011)	(0.009)	(0.010)	(0.010)
Difference in Living in Urban Areas	0.159**	0.213***	0.071	0.088	0.133*
	(0.052)	(0.051)	(0.055)	(0.058)	(0.054)
Difference in House Value	45.261***	45.483***	41.004***	35.482***	37.982***
	(6.920)	(5.895)	(5.645)	(7.199)	(6.414)
Difference in Log Income and Wages	0.226	−1.780	0.057	0.133	−0.865
	(0.882)	(1.394)	(0.293)	(0.343)	(0.676)
Difference in Prop. Employed	0.098	−0.031	−0.013	0.015	0.068
	(0.057)	(0.058)	(0.026)	(0.028)	(0.036)
Difference in Prop. Working Age	−0.124	−0.065	−0.229	−0.475**	−0.136
	(0.209)	(0.190)	(0.166)	(0.176)	(0.172)
Population Under 1000	−10.391	3.917	1.702	1.152	1.620
	(6.698)	(3.585)	(1.544)	(1.689)	(2.127)
Difference in Prop. with HS degree	0.025	0.005	0.028	0.054	0.072
	(0.127)	(0.072)	(0.034)	(0.041)	(0.059)
Difference in Prop. Attended Some College	−0.018	0.054	0.040	0.068	0.074
	(0.113)	(0.082)	(0.033)	(0.045)	(0.056)
Difference in Prop. with Bachelors Degree	−0.003	0.047	−0.016	−0.020	0.051
	(0.170)	(0.091)	(0.041)	(0.067)	(0.082)
Difference in Prop. with Graduate Degree	−0.132	−0.090	0.089*	0.113	0.005
	(0.209)	(0.171)	(0.038)	(0.076)	(0.084)
Difference in Prop. Female	0.239	−0.064	0.206	0.424*	0.073
	(0.202)	(0.183)	(0.167)	(0.173)	(0.165)
Difference in Prop. of Total Population	−0.032	0.079	0.137***	0.147***	0.309***
	(0.044)	(0.052)	(0.035)	(0.038)	(0.059)
Difference in Log Population	3.212***	−0.933	−3.901***	−2.068**	−5.636***
	(0.897)	(0.931)	(0.680)	(0.768)	(1.212)
Constant	−22.011***	−2.447	8.010*	5.490	−1.167
	(3.105)	(2.492)	(3.160)	(3.603)	(2.810)
Observations	223	224	153	206	218
R-Squared	0.485	0.295	0.580	0.245	0.290
F	13.994	6.237	13.607	4.437	5.922

Note: Data drawn from the 2010 Zip Code Business Patterns dataset, the 2010 U.S. Census, the 2007-2011 American Community Survey, and the 2010 IPUMS ACS sample. Estimates are provided for all MSAs that are identifiable in the IPUMS sample. Observations are at the group level

Table 6: Sub-Sample Analysis Predicting Ethnoracial Gaps in Spatial Mismatch: Asian American Subgroups

	Chinese	Filipino	Indian	Vietnamese	Korean	Japanese	Other
Segregation from Whites	−0.034	−0.019	−0.026*	0.050	0.004	0.015	−0.041
	(0.030)	(0.010)	(0.012)	(0.089)	(0.043)	(0.031)	(0.033)
Difference Living in Urban Areas	−0.032	0.099	0.091	0.022	−0.027	0.028	0.002
	(0.051)	(0.065)	(0.049)	(0.054)	(0.055)	(0.068)	(0.053)
Difference in House Value	−17.773*	26.602**	−24.117**	34.871***	−16.193	−22.313**	12.623*
	(7.518)	(8.015)	(7.334)	(7.609)	(8.689)	(8.508)	(6.200)
Diff. in Log Income and Wages	−0.544	0.087	−0.296	−0.037	−0.568*	−0.370	−0.415
	(0.396)	(0.294)	(0.691)	(0.386)	(0.254)	(0.325)	(0.491)
Diff. in Prop. Employed	−0.003	0.014	−0.034	−0.019	0.025	0.029	0.015
	(0.032)	(0.027)	(0.032)	(0.034)	(0.025)	(0.026)	(0.029)
Diff. in prop. Working Age	−0.564**	−0.276	−0.345	−0.345	−0.481*	−0.303	−0.624**
	(0.196)	(0.175)	(0.198)	(0.246)	(0.188)	(0.204)	(0.203)
Population Under 1000	0.106	−1.364	0.473	−1.566	−3.309	0.259	1.276
	(1.781)	(1.490)	(1.965)	(2.169)	(1.718)	(1.783)	(1.783)
Diff. in Prop. w HS Degree	−0.038	0.026	0.106	0.055	0.020	0.001	−0.024
	(0.048)	(0.037)	(0.061)	(0.050)	(0.040)	(0.050)	(0.046)
Diff. in Prop. w Some College	−0.023	−0.036	0.118	0.001	−0.003	−0.048	−0.025
	(0.064)	(0.039)	(0.061)	(0.055)	(0.040)	(0.047)	(0.040)
Diff. in Prop. w Bachelors Degree	−0.043	−0.030	0.023	0.021	0.013	−0.027	−0.024
	(0.051)	(0.039)	(0.053)	(0.054)	(0.042)	(0.053)	(0.049)
Diff. in Prop. w Graduate Degree	−0.056	−0.006	0.035	−0.120	0.029	−0.002	−0.027
	(0.050)	(0.044)	(0.048)	(0.090)	(0.050)	(0.052)	(0.052)
Diff. in Prop. Female	0.606**	0.284	0.398*	0.310	0.504**	0.311	0.710***
	(0.187)	(0.171)	(0.197)	(0.246)	(0.185)	(0.200)	(0.201)
Diff. in Prop. of Total Population	0.091*	−0.025	0.084	0.017	−0.023	0.090	0.055
	(0.040)	(0.050)	(0.046)	(0.053)	(0.037)	(0.046)	(0.041)
Diff. in log Population	−5.002***	−1.800	−3.670**	−1.734	−0.710	−0.354	−3.238**
	(1.131)	(0.949)	(1.259)	(1.249)	(0.968)	(0.936)	(0.979)
Constant	25.772***	16.422***	19.656***	16.151*	13.001*	−0.707	21.638***
	(5.100)	(3.609)	(5.121)	(7.017)	(5.369)	(5.080)	(4.649)
Observations	193	200	190	175	176	149	193
R-Squared	0.264	0.272	0.208	0.243	0.218	0.142	0.221
F	4.560	4.943	3.283	3.666	3.210	1.584	3.605

Note: Data drawn from the 2010 Zip Code Business Patterns dataset, the 2010 U.S. Census, the 2007-2011 American Community Survey, and the 2010 IPUMS ACS sample. Estimates are provided for all MSAs that are identifiable in the IPUMS sample. Observations are at the group level

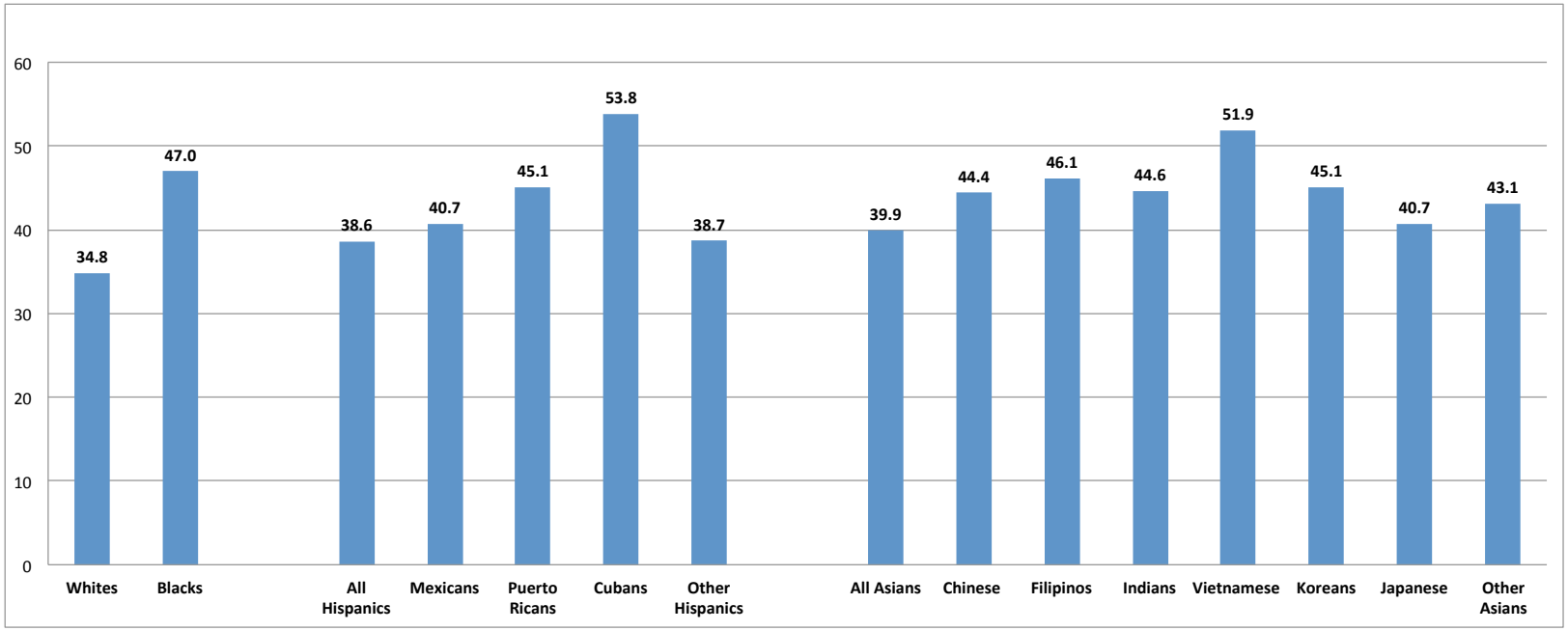
Table 7: Sub-Sample Analysis Predicting Spatial Mismatch: Accounting for Housing Value

	Black Spatial Mismatch	Mexican Spatial Mismatch	Puerto Rican Spatial Mismatch	Cuban Spatial Mismatch	Other Spatial Mismatch
Log Median Housing Value Where Group Lives	−32.004***	−43.033***	−26.344***	−24.440**	−25.792***
	(5.829)	(5.575)	(6.842)	(7.418)	(6.384)
Log Median Housing Value Where Whites Live	35.204***	43.562***	24.101***	20.951**	22.054***
	(5.889)	(5.746)	(6.791)	(7.562)	(6.578)
Observations	223	224	153	206	218
R-Squared	0.678	0.452	0.502	0.260	0.377
F	29.021	11.457	9.204	4.445	8.146

	Chinese	Filipino	Asian Indian	Vietnamese	Korean	Japanese	Other
Log Median Housing Value Where Group Lives	30.676***	−12.619	41.945***	−16.055*	40.645***	35.071***	−3.543
	(7.851)	(10.340)	(7.795)	(7.784)	(10.013)	(8.146)	(6.423)
Log Median Housing Value Where Whites Live	−36.022***	5.045	−42.256***	10.900	−44.529***	−43.551***	−4.432
	(7.228)	(9.342)	(6.970)	(7.680)	(9.105)	(7.850)	(6.405)
Observations	193	200	190	175	176	149	193
R-Squared	0.452	0.333	0.407	0.410	0.461	0.390	0.266
F	9.738	6.136	7.961	7.367	9.138	5.659	4.284

Note: Models include controls for segregration from whites, proportion of group that lives in urban area, group wages and income, proportion of group employed, educational composition, proportion working age, proportion of working age population that is female, group population, proportion of total population that group represents, and whether there are fewer than 1000 group members in an MSA.

Figure 1.1 Degree of Spatial Mismatch (weighted average dissimilarities) between group members and jobs in U.S. Metropolitan Areas 2010



Appendix. 1: Source of Variables Included in Analysis

Variable	Description	Source of original data
Jobs	Jobs held reported by all businesses in a given zip codes. Utilized to calculate index of dissimilarity within each MSA.	Zip Code Business Patterns
Group Population Counts	Population count for each racial/ancestry group by zip code. Utilized to calculate index of dissimilarity within each MSA and to calculate the proportion a given group represents of the total MSA population	Decennial Census, Summary File
Urban Area	Percent of racial group that lives in zip codes in Urban Areas 0-100	Zip Code Relationship Files (Census)
Education	Educational composition of each group: less than HS, HS degree, some college, college, and graduate degree	2010 ACS
Median Housing Value	Log of the average of the median housing value in zip codes where group members live, weighted by population	2006-2010 ACS 5 Year Summary File
Income	Log average income/wage level of racial group for each MSA	2010 ACS
Employed	Percent Employed for each racial group of each MSA	2010 ACS
Working Age	Percent between ages 25-64 in each racial group of each MSA	2010 ACS
Percent Female	Percent of working age population that is female	2010 ACS

Table Appendix.2: Unweighted Estimates of Spatial Mismatch and Segregation

	Black	White	Mexican	Puerto Rican	Cuban	Other Hispanic
Spatial Mismatch	36.4	31.7	34.3	34.3	33.8	31.1
Segregation from Whites	40.4	0.0	32.1	28.2	28.9	29.0
Observations	223	233	224	153	206	218

Table Appendix.3: Unweighted Estimates of Spatial Mismatch and Segregation

	Black mean	White mean	Chinese mean	Filipino mean	Indian mean	Vietnamese mean	Korean mean	Japanese mean	Other Asian mean
Spatial Mismatch	36.4	31.7	35.8	34.1	38.5	40.3	37.6	35.4	36.2
Segregation from Whites	40.4	0.0	35.1	28.0	39.6	40.1	33.8	29.4	34.2
Observations	223	233	193	200	190	175	176	149	193

Chapter 2
"The Role of Residential Segregation in Shaping Business Presence: What is the Role of Concentrated Poverty?"

Abstract:

Earlier theoretical work highlights the relationship between residential segregation, concentrated poverty, and commercial disinvestment in black neighborhoods. However, few studies exist that empirically evaluate the pathways linking these factors. In this chapter, I argue that prior work overemphasizes the role of concentrated poverty as a mediator in the relationship between residential segregation of blacks and business presence. I present new empirical evidence that reveals that poverty concentration does not account for a large proportion of the relationship between the residential segregation of blacks and commercial disinvestment. In so doing, I leverage longitudinal observations of zip codes from the 2000 and 2010 U.S. decennial censuses, the 2007-2011 American Community Surveys, and both the 2000 and 2011 Zip Code Business Patterns dataset, which allows me to quantify the extent to which concentrated poverty mediates the relationship between residential segregation and commercial disinvestment. Findings suggest the relationship between residential segregation and commercial investment exists largely independent of poverty. This evidence also suggests that the residential segregation of U.S. blacks leads to commercial disinvestment in segregated black neighborhoods, not only by concentrating poverty, but also by setting in motion a host of other mechanisms that are independent of poverty composition. I also discuss implications for neighborhood level inequality.

Keywords: Business presence, job access, residential segregation, concentrated poverty, commercial disinvestment

I. Introduction

Since the 1980's, there has been a resurgent interest in the ways that neighborhoods shape life chances. However, the mechanisms linking structural factors, such as residential segregation, to poor neighborhood outcomes remain a black box. Business presence at the community level provides several benefits, including access to employment opportunities, goods, and services (Massey and Denton 1993; Schuetz et al. 2012; Small and McDermott 2006; Wilson 1987). Many scholars recognize that commercial disinvestment in segregated black neighborhoods is consequential for neighborhood inequality (Fernández-Kelly 2015; Kwate et al. 2013; Massey and Denton 1993; Schuetz et al. 2012; Small and McDermott 2006; Wilson 1987). However, fewer studies empirically document the mechanisms leading to commercial disinvestment in these areas. Given the benefits that come with business presence, it is crucial to understand the mechanisms that produce disparities in commercial investment across neighborhoods.

In an empirical examination of the relationship between segregation, poverty, and business presence, Small and McDermott (2006) suggest that it is the residential segregation of blacks--and not poverty--that leads to deindustrialization. In fact, they show that neighborhoods with higher rates of poverty have a larger number of organizational resources. These resources are defined as small businesses that are physically located in a community while also providing goods and services, such as grocery stores, banks, childcare centers, pharmacies, etc. However, in order to better understand the mechanisms that lead to disparities in commercial investment, scholars need to examine more comprehensively the role of residential segregation, concentrated poverty, and the resulting interactions thereof for a wider set of business types. To what extent does the residential segregation of blacks contribute to commercial disinvestment, and to what

extent does concentrated poverty mediate the relationship between segregation and investment? This chapter seeks to address these two questions.

It is difficult to distinguish between the role of both the residential segregation of blacks and poverty in shaping neighborhood outcomes. This is primarily because these two structural factors are inextricably linked in the U.S. context. Black neighborhoods in the U.S. face unique underdevelopment processes, including discriminatory appraisal and lending practices (Massey and Denton 1993; Patillo 2005; Small and McDermott 2006; Wilson 1987). Furthermore, several scholars have concluded that residential segregation concentrates poverty by confining black populations, of which exhibit higher poverty rates, to a small number of locations (Massey and Denton 1985; Massey et al. 1991; Quillian 2012).

Given this relationship between residential segregation and poverty concentration, it is not surprising that earlier work hypothesizes that poverty concentration is the central mediator between residential segregation and negative neighborhood outcomes (Wilson 1987, Massey & Denton 1993). Small and McDermott's work differs from earlier perspectives, however, in that their scholarship treats residential segregation and poverty concentration as distinct processes that impact commercial investment. This paper examines the pathways linking the residential segregation of blacks, poverty concentration, and commercial presence. I leverage repeated zip code observations from 2000 to 2011 to carry out a pathway analysis that examines the extent to which concentrated poverty mediates the relationship between residential segregation and business presence.

Furthermore, given Small and McDermott's focus on a subset of businesses and use of cross-sectional data, there is room for a more comprehensive examination of the relationship between residential segregation, concentrated poverty, and the presence of business. Do Small

and McDermott's (2006) documented patterns persist when considering a broader set of businesses? Are the patterns observed influenced by the use of cross-sectional data?

This paper evaluates the generalizability of Small and McDermott's (2006) findings by incorporating longitudinal data and by examining a wider set of businesses. First, incorporating longitudinal data ensures that patterns attributed to residential segregation or concentrated poverty are not driven by a host of unobserved differences that exist across space, accumulate over time, and occur simultaneously with the concentration of blacks in certain neighborhoods. Alternatively, if the role of residential segregation persists as a specific location undergoes change, then one can rule out that historical and cross-sectional, unobserved confounders drive the observed relationship. Second, I examine whether the negative relationship between residential segregation and organizational resources exists among all business types. Identifying a negative relationship between residential segregation and the incidence of a broader set of businesses, including businesses that do not need to locate near consumers, suggests that locational decisions are not solely based on market access. Consequently, other mechanisms are likely at play.

Contrary to the findings of Small and McDermott (2006), the evidence presented in this paper indicates that both the residential segregation of blacks and concentrated poverty are negatively correlated with business presence. In fact, increases in the proportion of blacks and the proportion of the poor are associated with similar magnitude decreases in the number of businesses in a given location over time. Poverty concentration does in fact act as a mediator of the relationship between the proportion of blacks and the number of businesses, but not to the extent theorized in earlier work. Poverty concentration only accounts for 14 percent of the relationship between the proportion of blacks and business presence, suggesting that other

mechanisms are responsible for the majority of the relationship between residential segregation and commercial investment.

Furthermore, this work finds limited support for the generalizability of Small and McDermott's findings. The majority of Small and McDermott's findings are only present in cross-sectional analysis. In the case of organizational resources, estimation using longitudinal data presents a different pattern than that presented by Small and McDermott (2006). Across time, increases in poverty concentration are associated with fewer organizational resources for almost every type of resource. Additionally, in most cases proportion black is not significantly correlated with the number of organizational resources. There are two exceptions; proportion black bears a positive relationship with the number of convenience stores and fast food restaurants, which is unsurprising given that these establishments likely flourish in the absence of other, more mainstream retail.

Even though proportion black bears a neutral relationship with most organizational resources over time, when examining overall trends in business presence, a persistent negative relationship becomes evident. I argue that there is a need for further qualitative work to identify the specific types of businesses that provide key community benefits, and for further longitudinal analysis of the presence of those types of establishments using longitudinal data.

The remainder of this paper proceeds as follows. Section II discusses the relevant background literature, including trends in business location relative to black residential populations and the resulting implications. Additionally, Section II outlines potential mechanisms that could link residential segregation to a lack of commercial investment, net of poverty concentration. Section III describes the analytical approach, including methodological choices and the data employed in this analysis. Finally, Section IV documents the empirical

findings from this analysis while Section V provides a discussion of the implications and limitations. Section V also includes a set of conclusions, which consider directions for future research.

II. Segregation, Poverty, and Business Activity

At the community level, commercial activity provides a number of benefits. First, businesses provide access to a larger tax base and a broader range of goods and services (Kwate et al. 2013; Schuetz et al. 2012). Second, some scholars advance that businesses offer additional social benefits, including providing informal social control, preventing crime, and improving health outcomes (Small & McDermott 2006). Third, living in close proximity to commercial activity provides employment opportunities for residents (Fernandez 2008; Gobillon et al. 2007; Houston 2005; Jencks and Mayer 1990; Johnson 2006; Korsu and Wenglenski 2010; Mouw 2000). Given that scholars have determined that the spatial concentration of unemployment indicates neighborhood disadvantage, increased job access also produces benefits at the neighborhood level (Kain 1968, 1992; Massey and Denton 1993; Peterson and Krivo 2010; Wilson 1987, 1996). In all, the location of business enterprises likely has wide implications for neighborhood-level inequality.

Given the benefits of commercial activity, it is especially troubling that neighborhoods are stratified in terms of business density. Several works demonstrate the relationship between racial composition and business presence and find that blacks tend to live in areas with fewer employment opportunities (Ihlanfedlt and Sjoquist 1998; Kain 1968, 1992; Stoll 2005; Stoll and Covington 2012) and fewer providers of goods and services (Kwate et al. 2013; Schuetz et al. 2012). Prior work identifies a number of potential mechanisms explaining this relationship.

Scholars have debated the role of concentrated poverty versus race, or mechanisms that are more directly related to race and racism, and not related to socioeconomic composition that suppress business presence in segregated neighborhoods. Although Massey and Denton (1993) and Wilson (1987) differ in their formulation of the origins of poverty concentration in black neighborhoods, both suggest that poverty concentration in these neighborhoods stifles commercial investment. Wilson (1987) argues that a post-civil rights exodus of the black middle class left poor black neighborhoods without the resources to sustain business. Massey and Denton (1993) argue that no such exodus occurred; instead, the residential segregation of blacks led to concentrated poverty, which, in turn, led to commercial disinvestment. In other words, given rates of poverty among black Americans, confining blacks to a small subset of neighborhoods necessarily concentrates poverty, which, they argue, leads to a host of negative outcomes ((Massey and Denton 1993; Massey et al. 1991; Quillian 2012). Massey and Denton also suggest that resulting poverty concentration leads to commercial disinvestment, arguing that high poverty neighborhoods cannot sustain enough retail demand to keep businesses in operation. While the relationship between commercial activity and poverty concentration is logical, it remains an empirical question whether segregated, black communities cannot sustain commercial activity.

In contrast, Small and McDermott (2006) emphasize the role of race, rather than poverty, when examining Wilson's (1987) de-industrialization hypothesis. To test this hypothesis, Small and McDermott examine a subset of businesses using cross-sectional census data from 2010. They find a surprising relationship: that poverty concentration is associated with a higher density of organizational resources, while proportion black is associated with a lower concentration of these resources (Small & McDermott 2006). They also find a negative interaction between

proportion black and poverty concentration in the case of most of the organizational resources they examine. This suggests that neighborhood poverty exacerbates the negative relationship between larger black populations and businesses. Small and McDermott suggest that further analysis should explore longitudinal data, as the historical development of poor black neighborhoods has been distinct from that of other poor neighborhoods. Furthermore, the positive relationship between poverty concentration and business presence is potentially confined to the subset of businesses Small and McDermott (2006) examine, all of which warrants further exploration. Nevertheless, this unexpected finding calls into question whether locations with high concentrations of poverty necessarily are unable to sustain a business presence. Furthermore, this finding raises questions about the dearth of businesses in neighborhoods that experience higher proportions of blacks: if not poverty concentration, what explains this troubling pattern?

It is crucial to understand further whether residential segregation sets in motion other mechanisms beyond concentrated poverty that lead to commercial disinvestment. Scholars have documented extensively how homebuyers, real estate institutions, and lending institutions contribute to both structural and individual discrimination against individual blacks and entire black communities. Scholars further insist that this discrimination contributes to financial disinvestment in black neighborhoods net of socioeconomic status (Charles 2003; Emerson, Chai and Yancey 2001; Massey et al. Forthcoming; Massey and Denton 1993; Rugh, Albright and Massey 2015). However, fewer works document discrimination or biased perceptions that exists in business location decisions.

Instead, early theoretical work focuses on cost minimization, profit maximization, and competition as factors in the selection of business locations (Park, Burgess and McKenzie

1925/1967; Stahl 1987). Additionally, even in more recent works scholars continue to ignore the role of race-based bias in business location decisions (Kimelberg 2013; Kimelberg and Williams 2013; Morland et al. 2001; Salvesen 2003). In one of the few works that do propose that business location decisions are subject to bias, Tilly et al. (2001) conjecture that employers link the racial composition of a geographic area to a wide variety of attributes of location quality. These attributes include concerns about crime (i.e., the safety of consumers and workers, and vandalism), workforce quality (e.g. educational quality and work ethic), and other perceptions of urban pathologies such as family breakdown and welfare dependence. In their study, Tilly et al. (2001) find that a small subset of employers specifically referenced these attributes as important factors when deciding where to locate or whom to hire. While their theories are intriguing, Tilly et al could not assess directly whether race-based location perceptions were biased or inaccurate. Nor could they account for social desirability bias in interview responses.

While it is beyond the scope of the current project to identify bias in commercial disinvestment in segregated black communities, work on discrimination in other forms of investment should provide motivation for the future exploration of the links between residential segregation and commercial disinvestment, net of the role of concentrated poverty. This paper builds on the current empirical record by evaluating the following research questions:

1. Are Small and McDermott's (2006) findings generalizable? How does the focus on organizational resources, and the use of cross-sectional data, shape the patterns observed in this earlier work.
2. What is the relationship between the residential segregation of blacks and poverty concentration in shaping business location? To what extent does poverty concentration mediate the relationship between residential segregation

of blacks and business presence? To what extent does residential segregation operate independent of poverty concentration?

III. Data, Measures, and Methodology

By using data from the 2000 and 2011 Zip Code Business Patterns (ZBP) dataset, I analyze the association between racial composition and the number of firms in a particular zip code. Of note, zip codes are smaller than Metropolitan Statistical Areas (MSAs), but larger than census tracts. Arguably, as very few people work within their census tract, and virtually everyone works within their MSA, zip codes are a more appropriate level of aggregation from which to examine spatial mismatch (Hellerstein 2008). With few exceptions, ZBP covers the majority of the U.S. business population and U.S. economic activity. Additionally, ZBP excludes data on self-employed individuals, the employees of private households, railroad employees, agricultural production employees, and most government employers. Furthermore, ZBP excludes businesses without Employer Identification Numbers and those with no employees. ZBP is compiled in March of both 2000 and 2011. I pair ZBP data with data from the decennial census and ACS that is aggregated at the level of Zip Code Tabulation Areas (ZCTAs). ZCTAs are census-generated units of analysis that approximate the zip codes of the U.S. Postal Service.

The central outcome of interest is the total number of firms in a given zip code. In order to evaluate the role of organizational resources, I also model the number of hardware stores, grocery stores, convenience stores, pharmacies, savings banks, credit unions, childcare centers, restaurants, fast food restaurants, laundries, and hair salons. This selection closely approximates the analysis conducted by Small and McDermott (2006). The one key exception is that I analyze separately fast food restaurants from other types of restaurants. The classification of firms into these categories is based on the North American Industry Classification System (NAICS).

NAICS codes are reported in the ZBP dataset.

The independent variables of interest include racial and poverty composition. Models include estimates of the percent non-Hispanic black, percent Asian, and percent Hispanic in a zip code, as well as the proportion of foreign-born individuals. In this way, I use the proportion of the total zip code's population that belongs to a specific minority group as a latent measure of residential segregation. For this reason, going forward I use the proportion of blacks and residential segregation of blacks as interchangeable concepts. The reference category is the proportion of non-Hispanic whites. To account for poverty concentration, models include the proportion of families in a given zip code that have earnings below the poverty threshold in a given year. The poverty threshold varies by the demographic composition of the family unit. As an example, in 2000, a four-person household with two children would be classified as living in poverty if the household income was less than $17,761. In 2010, the threshold for the same demographic unit was $22,113.

Additionally, other measures of socioeconomic and demographic composition likely differ across zip codes by racial composition. Therefore, regression models include controls for the proportion of working aged individuals (between the ages of 19 and 64), the proportion of residents with a high school diploma or some college experience, the proportion of individuals with at least a bachelor degree in a given zip code, and population size.

Data from the 2000 and 2010 decennial census include population counts for each racial group, racial and age composition, and, in the case of the year 2000, the distribution of educational attainment and per capita income. Data on educational composition and proportion foreign-born for the second time period are drawn from the 2006-2010 ACS 5 year file, as these estimates are not available for the 2010 census. The published 2010 census only includes a

limited number of variables aggregated to the zip code level. Education composition, per capita income, and percent foreign-born only were reported at this level of aggregation via the 2006-2010 ACS 5 year file.

Methods

This analysis has two segments. First, in order to evaluate whether Small and McDermott's findings are consistent with longitudinal data, I analyze organizational resources separately. In all cases, I analyze changes across two points in time, from 2000 to 2011, which allows me to focus on what happens in a given zip code over time. This method also helps me to rule out time-invariant confounders. Analyzing changes in zip codes over time fully accounts for all time invariant characteristics, such as region of the U.S., and whether a given zip code is located in the urban core or suburban ring of a metropolitan area. Then, I evaluate the relationship between segregation, concentrated poverty, and business presence in two ways: I consider 1) the extent to which concentrated poverty mediates the relationship between residential segregation and business presence, and 2) the extent to which the relationship between segregation and business presence can or cannot be explained by poverty.

This analysis distinguishes between pathways linking the residential segregation of blacks to business presence. More specifically, I decompose the role of residential segregation into two pathways: 1) residential segregation of blacks concentrates poverty, which in turn limits business presence, and 2) residential segregation likely sets into motion other mechanisms, net of poverty concentration, that also depress business presence. I proceed by estimating two linear models. First, I estimate the mediator of interest, change in concentrated poverty from 2000 to 2010 in a given zip code, ΔP_i, as a function of change in proportion black and the change in a host of demographic and socio-indicators over the time period.

$$\Delta P_i = \beta_1 \Delta Prop.Black_i + \Delta OtherRacial\ Comp_i \beta_2 + \Delta Socio_i \beta_3 + \Delta Demo_i \beta_4 + \Delta Geo_i \beta_5$$

Equation 1

Then I estimate the outcome of interest, change in number of businesses between 2000 and 2011 in a given zip code, ΔY_i, as a function of change in proportion black, change in concentrated poverty, and a host of other controls.

$$\Delta Y_i = \beta_1 \Delta P_i + \beta_2 \Delta Prop.Black_i + \Delta OtherRacial\ Comp_i \beta_3 + \Delta Socio_i \beta_4 + \Delta Demo_i \beta_5 + \Delta Geo_i \beta_6$$

Equation 2

Estimating the mediating effect of concentrated poverty involves a path analysis, which decomposes the total relationship between residential segregation and business presence into indirect and direct pathways. Specifically, these two components of the total relationship between proportion black and the number of businesses are represented below in Figure 1. Equation 1 represents path A, and, together with path B, constitutes the indirect relationship between residential segregation and business presence as mediated by poverty concentration. Path C captures the remaining "direct" relationship between residential segregation and business presence. Testing for mediation in this analysis involves estimating the extent to which a change in proportion black is associated with a change in concentrated poverty, which in turn is associated with a change in the number of businesses in that zip code (see Tingley et al. (2014) for a description of the R package used to carry out this analysis).

To further explore the direct relationship between residential segregation and business presence, net of poverty concentration, I narrow the sample to zip codes that either maintained the same level of poverty concentration from 2000 to 2010, or exhibited a decrease in poverty

concentration over that same time period. I then re-estimate Equation 2 for this reduced sample.

Finally, by estimating an extension of Equation 2, I examine the same set of organizational resources explored by Small & McDermott. I predict the number of establishments in a specific category, O_i. I repeat this estimation for each of the organizational resources explored by Small and McDermott (2006): hardware stores, grocery stores, convenience stores, pharmacies, savings banks, credit unions, childcare centers, restaurants, fast food restaurants, laundries, and hair salons.

$$O_i = \beta_1 P_i + \beta_2 Prop.Black_i + OtherRacial\ Comp_i\beta_3 + Socio_i\beta_4 + Demo_i\beta_5 + Geo_i\beta_6$$

Equation 2b

IV. How Segregation Affects Business Activity

Table 1 presents descriptive estimates of the outcome and predictors utilized in this analysis. Column 1 provides estimates of the outcome of interest and key predictor variables at time 1; Column 2 displays the same for time 2; and Column 3 summarizes changes over time. On average, zip codes experienced increases in the number of businesses over this time period. The average zip code saw a net increase of 20 businesses within its borders between 2000 and 2011. On average, both proportion black and proportion poor increased over the time period as well. The average zip code experienced just over a half a percent increase in percent black, while poverty concentration increased almost 2 percent. In general, zip codes underwent increases in the proportion of minorities, and these proportions correspond with decreases in the proportion of whites.

Table 2 presents descriptive estimates of the average number of organizational resources across zip codes, specifically by type of establishment. On average, the number of organizational

resources has increased slightly over the time period, with the exception of Savings Banks and Laundries. Table 3 presents changes in numbers of various types of organizational resources as a function of changes in proportion black, concentrated poverty, and a host of controls (See appendix for cross-sectional results and comparison to Small and McDermott's estimates). By analyzing changes over time, I detect different patterns than that of Small and McDermott. Increases in the proportion poor are negatively associated with organizational resources, although a number of these estimates are statistically insignificant. These models only detect a positive relationship between proportion poor and organizational resources in the case of restaurants and hair salons. Proportion black is positively associated with a number of organizational resources, although, in a number of cases, the coefficient is insignificant, as well. Given that I find the relationship between proportion black and most organizational resources is either insignificant or positive, I do not test for mediation.

Table 4 presents the models used to estimate mediation. Model 1 predicts the mediator of interest and the change in concentrated poverty, while Model 2 presents the outcome of interest, along with the change in the number of businesses in a given zip code. In Model 1, change in concentrated poverty is a function of change in proportion black, as well as a number of controls. An increase in the proportion of blacks in a given zip code is associated positively with an increase in concentrated poverty between 2000 and 2010. A one-unit increase in the proportion of blacks is associated with a 0.14 increase in concentrated poverty.

In model 2, the change in the number of businesses located in a given zip code is a joint function of the proportion of blacks, concentrated poverty, and a number of controls. Both changes in proportion black and concentrated poverty are associated with a statistically significant decrease in the number of businesses, net of a host of socioeconomic and

geographical controls. A one-unit increase in concentrated poverty is associated with a -0.54 change in the number of businesses. Similarly, a one-unit increase in proportion black is associated with a -0.49 change in the number of businesses in that zip code. These results differ from that of Small & McDermott (2006) in that poverty concentration is associated with a smaller number of total businesses. Below I further examine whether this difference in findings is due to the use of cross-sectional data or from differences in the relationship between segregation and organizational resources, specifically.

Together, these models reveal that changes in proportion black are associated positively with changes in proportion poor. These models also reveal how changes in proportion black are associated negatively with changes in the number of businesses. They also suggest that increases in concentrated poverty are associated with decreases in the number of businesses over time. The next analysis more directly examines the extent to which the relationship between proportion black and proportion poor independently affect business density.

Figure 2 presents results from that path analysis. The total effect is decomposed into paths A, B, and C. Path A represents the increase in poverty concentration that corresponds with an increase in proportion black. Path B represents the role of concentrated poverty, as a mediator of residential segregation on the change in the number of businesses. Path C represents the direct role of residential segregation, net of the mediated relationship. Of note, I find that concentrated poverty is a statistically significant mediator of the relationship between proportion black and business presence, but to a relatively small extent. The total relationship between proportion black and the number of businesses is -.55. Of this relationship, 14 percent can be attributed to increases in poverty concentration that correspond with increases in proportion black, or -.08. The rest of the relationship between proportion black and business presence remains after

accounting for poverty concentration specifically, -.48.

V. Discussion and Conclusion

Research question 1 calls for an evaluation of the relationship between the residential segregation of blacks, concentrated poverty, and business location. More specifically, it warrants an exploration of the role of concentrated poverty as a mediator in the relationship between residential segregation and commercial investment. The analysis presented here suggests that concentrated poverty does in fact act as a mediator of this relationship, but not to the extent that earlier literature suggests. Earlier theorists posit that poverty concentration is negatively correlated with business presence, but, earlier work tends to overstate the role of concentrated poverty as a mediator in this relationship. Only a small fraction of the relationship between proportion black and business presence is driven by the sub-relationship between residential segregation and poverty concentration.

Furthermore, research question 2 inquires whether Small and McDermott's analysis is generalizable beyond organizational resources and across time. This analysis provides mixed support for Small and McDermott's (2006) findings**.** According to Small and McDermott, the residential segregation of blacks is negatively associated with organizational resources. The analysis presented here suggests that residential segregation among blacks is in fact associated with fewer businesses, overall, and this relationship holds across time. Zip codes that experience an increase in proportion black tend also to experience a decrease in the number of businesses over time. In contrast, with respect to poverty concentration Small and McDermott's findings are not generalizable to a broader spectrum of businesses.

The concept of organizational resources is a useful one, and warrants an additional exploration of various business types that may provide positive community benefits. For example, Kwate et al (2013) explore a number of retail establishments, distinguishing between those that likely provide positive externalities (such as grocery stores that benefit health) from those that likely provide negative health externalities (such as fast food establishments). Future work should explore the multitude of different types of establishments by specifically focusing on various neighborhood level outcomes. This work also should evaluate whether the presence of those establishments vary by racial composition. Still, the fact that proportion black is negatively associated with overall business presence over time presents a troubling empirical fact in and of itself. Future work should continue to evaluate the drivers and implications of this pattern.

The current analysis has several limitations. There are a number of omitted variables that are likely consequential for business presence, including changes in crime, changes in transportation access and costs, and changes in tax incentives. The use of longitudinal data here mitigates some of the concerns over unobserved variables, although future work should examine the relationship between changes in business presence, residential segregation, and these factors. Furthermore, the current analysis does not account for differences in establishment quality, as some businesses may produce negative community externalities while others produce positive externalities. Finally, although this analysis pursues a dynamic approach, especially by utilizing longitudinal zip code level data, the data used here does not allow for an examination that follows businesses over time. Future work should examine the relationship between changes in racial composition and business opening, closing, and relocation Understanding whether the dearth of business in these areas is due to relocation, a lack of start-ups, or business failure would

provide additional insight into whether these patterns are driven by locational decisions or other factors that make operating in these areas difficult (Aldrich and Jr 1976; Bates 2008).

Future work should empirically document alternative explanations for the relationship between residential segregation and commercial disinvestment. Scholars should expand the focus of their discussions to business locational decisions and the factors that decisions-makers consider. It is clear from this work that poverty plays a role, but it does not appear to be the driving force of racial disparities in access to commercial investment.

The measure of concentrated poverty utilized here is based on the U.S. poverty level, which incorporates an arbitrary cut -off, which some scholars argue is insufficient for capturing actual experiences of poverty (Brady 2003).

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Table 1: Descriptive Estimates for the Full Sample

	Time 1	Time 2	Average Change
	mean/sd	mean/sd	mean/sd
Number of Businesses	322.45	341.44	20.68
	445.72	457.68	104.17
Percent Black	9.15	9.68	.58
	17.19	17.05	4.38
Percent Below Poverty	11.45	13.50	1.90
	9.84	11.87	7.68
Other Racial/Ethnic Composition			
Percent White	77.73	73.48	-2.46
	25.25	26.24	6.17
Percent Asian	2.21	3.04	.78
	5.07	6.26	2.32
Percent Hispanic	8.81	11.44	2.64
	16.80	18.22	4.22
Percent Foreign Born	7.13	8.50	1.38
	10.19	10.89	4.06
Other Demographic			
Total Population	13.8K	14.4k	1K
	15455.91	16076.54	4448.72
Percent under 18	25.47	23.03	-2.18
	5.70	6.12	3.09
Percent over 65	12.83	14.06	1.25
	6.11	6.80	3.53
Education			
Less than HS Degree	19.24	13.95	-5.18
	12.13	10.86	7.00
Percent with College Degrees	22.14	26.05	3.72
	15.66	17.68	7.19
Gepgraphy (Not included in Differencing Models)			
South	0.34	0.34	
	0.47	0.47	
Midwest	0.25	0.25	
	0.43	0.43	
West	0.11	0.11	
	0.31	0.31	
Central City	0.40	0.40	
	0.49	0.49	
Observations	16909*	16663	16663

Note: Data drawn from the 2000-2010 Zip Code Business Patterns dataset, the 2000-2010 U.S. Census, the 2006-2010 American Community Survey, and the 2010 IPUMS ACS sample. Estimates are provided for all ZCTAS within MSAs.

Table 2: Descriptive Estimates of the Average Number of Organizational Resources, By Resource Type

	Time 1	Time 2	Average Change
	mean/sd	mean/sd	mean/sd
Hardware Stores	1.53	1.61	0.07
	0.91	1.00	1.06
Grocery Stores	4.42	4.66	0.06
	4.91	6.63	3.75
Convenience Stores	2.73	3.01	1.83
	2.49	2.80	2.97
Pharmacies	3.34	3.63	0.36
	3.43	3.28	2.85
Savings Banks	2.43	2.19	-0.29
	2.45	1.82	1.96
Credit Unions	2.22	2.26	0.17
	1.78	1.75	1.39
Child Care	4.83	5.48	0.80
	4.33	5.35	3.60
Restaurants	11.60	14.03	2.58
	14.91	17.76	7.11
Fast Food	11.87	15.06	3.74
	12.56	15.25	7.24
Laundries	1.99	2.01	-0.09
	1.68	2.32	1.86
Hair Salon	6.40	6.74	0.27
	6.43	6.96	3.96
Observations	15388	15047	13943

Note: Data drawn from the 2000-2010 Zip Code Business Patterns dataset. Estimates are provided for all ZCTAS within MSAs.

Table 3: Change in the Number of Organizational Resources

	(1) Hardware	(2) Grocery	(3) Convenience	(4) Pharmacies	(5) Banks	(6) Credit Unions	(7) Childcare	(8) Restaurants	(9) Restaurants 2	(10) Laundries	(11) Grooming
	β / SE	β / SE	β / SE	β / SE	β / SE	β / SE	β / SE	β / SE	β / SE	β / SE	β / SE
Change Population (Log)	0.271***	0.805***	−1.136***	1.306***	0.173	0.631***	1.506***	3.150***	3.935***	0.320	3.298***
	(0.074)	(0.164)	(0.233)	(0.148)	(0.158)	(0.087)	(0.154)	(0.241)	(0.273)	(0.192)	(0.181)
Change Prop. Black	0.005	0.016	0.022*	0.015	0.011	0.015**	0.060***	−0.082***	0.072***	0.005	−0.062***
	(0.004)	(0.010)	(0.011)	(0.008)	(0.009)	(0.005)	(0.009)	(0.016)	(0.017)	(0.008)	(0.011)
Change Prop. Asian	−0.004	0.162***	0.065**	0.123***	−0.068***	−0.003	0.185***	0.745***	0.684***	0.117***	0.168***
	(0.009)	(0.020)	(0.024)	(0.017)	(0.014)	(0.011)	(0.019)	(0.033)	(0.035)	(0.016)	(0.021)
Change Prop. Hispanic	0.010*	0.062***	0.109***	0.045***	−0.058***	0.000	0.046***	0.020	0.173***	0.038***	−0.055***
	(0.005)	(0.011)	(0.013)	(0.009)	(0.009)	(0.006)	(0.011)	(0.019)	(0.020)	(0.009)	(0.013)
Change Prop. Foreign Born	0.006	0.044**	0.031	−0.026*	0.053***	−0.004	−0.024	−0.021	−0.012	−0.025*	−0.019
	(0.006)	(0.014)	(0.017)	(0.012)	(0.011)	(0.008)	(0.014)	(0.023)	(0.025)	(0.012)	(0.016)
Change Prop. Below Poverty	0.003	−0.040***	0.028*	−0.029***	−0.017	−0.012*	−0.006	−0.047***	−0.071***	−0.039***	−0.037**
	(0.004)	(0.009)	(0.011)	(0.008)	(0.009)	(0.005)	(0.009)	(0.014)	(0.016)	(0.009)	(0.012)
Change Prop. Under 18	−0.013	−0.104***	−0.104***	−0.021	−0.001	−0.005	−0.007	−0.121***	−0.203***	−0.056**	−0.081***
	(0.008)	(0.019)	(0.024)	(0.016)	(0.017)	(0.009)	(0.018)	(0.029)	(0.032)	(0.018)	(0.021)
Change Prop. Over 64	−0.004	−0.024	−0.171***	0.057***	0.050***	0.064***	−0.012	−0.006	0.078**	−0.019	0.108***
	(0.007)	(0.017)	(0.021)	(0.014)	(0.013)	(0.009)	(0.016)	(0.026)	(0.029)	(0.017)	(0.018)
Change Prop. Less than HS	−0.005	−0.040***	−0.059***	−0.003	−0.019*	0.030***	−0.052***	0.074***	0.021	−0.053***	0.046***
	(0.004)	(0.010)	(0.013)	(0.009)	(0.009)	(0.006)	(0.010)	(0.015)	(0.018)	(0.010)	(0.012)
Change Prop. At Least Bachelor	−0.006	0.014	0.006	0.003	0.002	−0.002	0.021*	0.140***	0.069***	−0.022*	0.055***
	(0.004)	(0.009)	(0.012)	(0.008)	(0.008)	(0.005)	(0.009)	(0.014)	(0.016)	(0.010)	(0.011)
Constant	−0.018	−0.776***	0.881***	−0.005	−0.217*	0.277***	−0.005	1.311***	1.626***	−0.491***	−0.069
	(0.044)	(0.100)	(0.130)	(0.085)	(0.085)	(0.054)	(0.100)	(0.157)	(0.176)	(0.098)	(0.113)
Observations	5052	10442	4592	8905	4139	4711	10099	12311	11037	3466	8666
R-Squared	0.006	0.027	0.060	0.026	0.023	0.042	0.036	0.098	0.092	0.044	0.090
F	3.224	28.994	29.260	23.606	9.781	20.662	37.741	133.761	111.775	15.760	85.142

Note: Data drawn from the 2000-2010 Zip Code Business Patterns dataset, the 2000-2010 U.S. Census, the 2006-2010 American Community Survey, and the 2010 IPUMS ACS sample. Estimates are provided for all ZCTAS within MSAs where data is available.

Table 4: Model Predicting Concentrated Poverty and Business Presence

	Dependent variable:	
	Mediator	Outcome of Interest
	Change Prop. in Poverty	Change in Number of Businesses
	(1)	(2)
Change Prop. in Poverty		−0.54***
		(0.12)
Change Prop. Black	0.14***	−0.49*
	(0.01)	(0.20)
Change Prop. Asian	−0.21***	10.30***
	(0.03)	(0.42)
Change Prop. Hispanic	0.09***	1.51***
	(0.01)	(0.22)
Change Prop. Foreign Born	0.04*	0.65**
	(0.02)	(0.25)
Change Total Population (Log)	−1.08***	92.76***
	(0.16)	(2.55)
Change Prop. 18 and under	0.13***	−1.01***
	(0.02)	(0.30)
Change Prop. over 64	−0.07***	3.41***
	(0.02)	(0.29)
Change Prop. Less than HS Degree	0.14***	0.60***
	(0.01)	(0.14)
Change Prop. At Least Bachelor Degree	−0.10***	0.60***
	(0.01)	(0.13)
Constant	3.25***	−5.16**
	(0.10)	(1.61)
Observations	16,663	16,663
R^2	0.07	0.15
Adjusted R^2	0.07	0.15
Residual Std. Error	6.09 (df = 16653)	96.62 (df = 16652)
F Statistic	141.88*** (df = 9; 16653)	303.57*** (df = 10; 16652)
Note:		*p<0.1; **p<0.05; ***p<0.01

Figure 2.1 Path Relationship Between Proportion Black and Number of Businesses

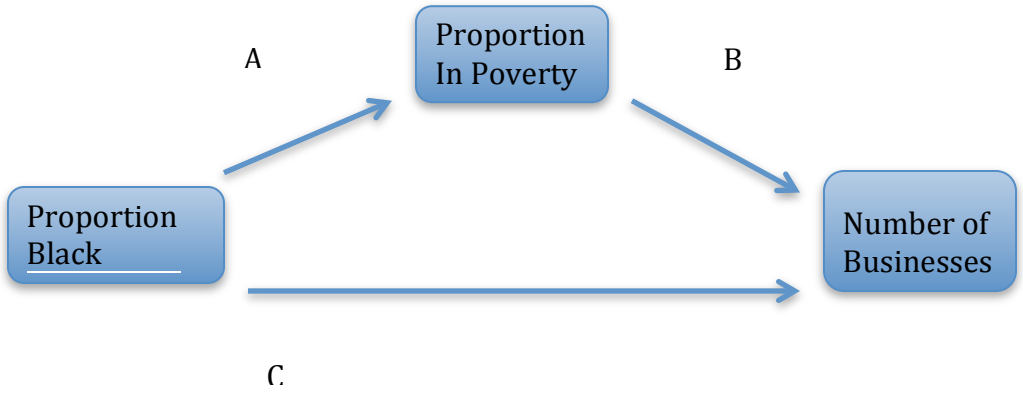


Figure 2.2 Path Analysis Results: Concentrated Poverty as Mediator of Percent Black

Total Relationship Between proportion Black and Number of Businesses: -.56

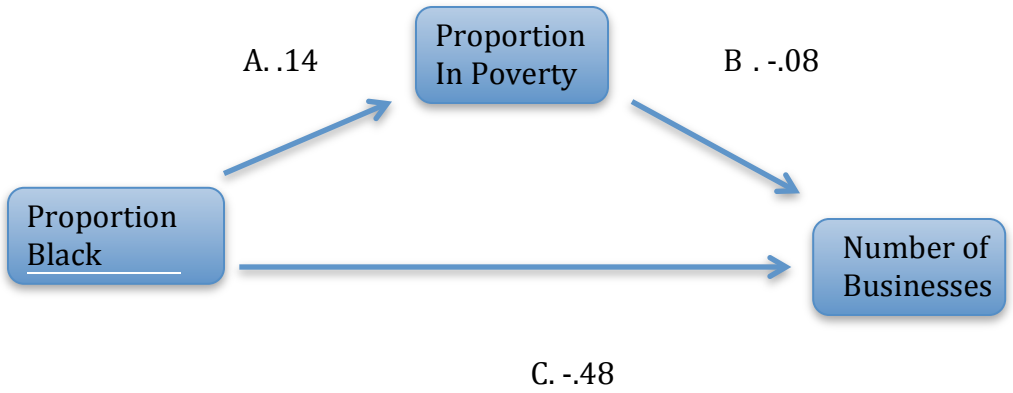


Table Appendix.1: 2000 Cross-Sectional: Organizational Resources as a Function of Residential Segregation and Concentrated Poverty

	(1) Hardware β / SE	(2) Grocery β / SE	(3) Convenience β / SE	(4) Pharmacies β / SE	(5) savingsbanks β / SE	(6) Credit Unions β / SE	(7) Childcare β / SE	(8) Restaurants β / SE	(9) Restaurants 2 β / SE	(10) Laundries β / SE	(11) Grooming β / SE
Prop. Below Poverty	0.003	0.013***	0.002	0.009***	0.007***	0.014***	0.006***	0.020***	0.014***	0.004*	0.000
	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Total Population (Log)	0.248***	0.654***	0.430***	0.662***	0.293***	0.263***	0.685***	0.681***	0.785***	0.450***	0.727***
	(0.013)	(0.007)	(0.010)	(0.010)	(0.015)	(0.013)	(0.008)	(0.006)	(0.007)	(0.017)	(0.009)
Prop. Black	−0.002**	0.002***	0.001	−0.003***	−0.004***	−0.001	0.004***	−0.006***	−0.002***	0.001	−0.008***
	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
Prop. Asian	−0.008***	−0.003**	−0.005**	−0.006***	0.004*	0.009***	0.002	0.005***	0.014***	−0.012***	−0.007***
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Prop. Hispanic	−0.004**	−0.006***	−0.007***	−0.008***	−0.001	0.001	−0.002**	0.003***	0.005***	−0.002*	−0.005***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Prop. Foreign Born	0.004*	0.011***	0.006***	0.004***	0.000	−0.010***	−0.006***	0.001	−0.008***	0.012***	0.003**
	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Central City	−0.018	0.054***	0.183***	0.098***	0.235***	0.133***	0.047***	0.175***	0.286***	−0.003	0.303***
	(0.025)	(0.014)	(0.019)	(0.016)	(0.026)	(0.025)	(0.014)	(0.014)	(0.014)	(0.026)	(0.016)
South	−0.083**	−0.119***	−0.069***	−0.066***	−0.363***	0.003	−0.041**	−0.028	0.061***	−0.149***	−0.040*
	(0.027)	(0.014)	(0.019)	(0.016)	(0.028)	(0.027)	(0.014)	(0.015)	(0.015)	(0.025)	(0.016)
Midwest	0.073**	−0.108***	0.026	−0.067***	−0.231***	0.103***	−0.054***	0.042*	0.164***	−0.049	0.014
	(0.027)	(0.016)	(0.022)	(0.018)	(0.028)	(0.028)	(0.016)	(0.016)	(0.017)	(0.028)	(0.018)
West	−0.017	−0.073***	−0.026	−0.276***	−0.214***	0.171***	0.010	0.071***	0.103***	−0.188***	−0.162***
	(0.039)	(0.020)	(0.029)	(0.026)	(0.039)	(0.034)	(0.020)	(0.021)	(0.021)	(0.040)	(0.024)
Prop. under 18	−0.011***	−0.023***	−0.025***	−0.027***	−0.023***	−0.031***	−0.001	−0.068***	−0.057***	−0.027***	−0.038***
	(0.003)	(0.001)	(0.002)	(0.002)	(0.003)	(0.002)	(0.001)	(0.001)	(0.001)	(0.003)	(0.002)
Prop. over 65	−0.001	0.001	−0.007***	0.008***	0.008***	−0.004	−0.003*	−0.003*	−0.015***	−0.007**	0.011***
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Prop. Less Than HS Degree	0.007**	0.016***	0.010***	0.014***	−0.004	−0.001	−0.002	−0.003**	0.000	0.006**	−0.003*
	(0.002)	(0.001)	(0.002)	(0.001)	(0.003)	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)
Prop. with College Degrees	0.002*	0.004***	−0.004***	0.004***	−0.000	−0.006***	0.007***	0.008***	0.001	0.002	0.007***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	−1.858***	−4.940***	−2.689***	−5.168***	−1.588***	−1.086***	−5.286***	−2.920***	−4.049***	−3.330***	−4.744***
	(0.168)	(0.089)	(0.121)	(0.118)	(0.171)	(0.153)	(0.097)	(0.079)	(0.085)	(0.198)	(0.109)
lnalpha	−25.300	−2.600***	−2.324***	−2.807***	−2.046***	−2.878***	−2.291***	−1.308***	−1.401***	−21.681	−1.647***
	(.)	(0.044)	(0.058)	(0.062)	(0.063)	(0.136)	(0.039)	(0.017)	(0.019)	(.)	(0.027)
Observations	6796	11935	8627	9504	5438	5389	11090	13299	11902	5451	9788

Note: Data drawn from the 2000-2010 Zip Code Business Patterns dataset, the 2000-2010 U.S. Census, the 2006-2010 American Community Survey, and the 2010 IPUMS ACS sample. Estimates are provided for all ZCTAS within MSAs where data is available.

Table Appendix.2: 2010 Cross-Sectional: Organizational Resources as a Function of Residential Segregation and Concentrated Poverty

	(1) Hardware β / SE	(2) Grocery β / SE	(3) Convenience β / SE	(4) Pharmacies β / SE	(5) savingsbanks β / SE	(6) Credit Unions β / SE	(7) Childcare β / SE	(8) Restaurants β / SE	(9) Restaurants 2 β / SE	(10) Laundries β / SE	(11) Grooming β / SE
Prop. Below Poverty	0.003	0.010***	0.007***	0.009***	−0.001	0.010***	0.008***	0.015***	0.007***	0.002	−0.002
	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Total Population (Log)	0.267***	0.698***	0.467***	0.691***	0.364***	0.343***	0.730***	0.761***	0.862***	0.465***	0.779***
	(0.014)	(0.009)	(0.011)	(0.010)	(0.015)	(0.014)	(0.008)	(0.007)	(0.007)	(0.021)	(0.010)
Prop. Black	−0.003***	0.004***	0.001	−0.002***	−0.006***	−0.002*	0.006***	−0.008***	−0.000	0.001	−0.011***
	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
Prop. Asian	0.001	−0.008***	−0.009***	−0.005***	−0.015***	0.008***	−0.002	0.002*	0.009***	−0.012***	−0.010***
	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Prop. Hispanic	−0.002	−0.008***	−0.006***	−0.006***	−0.016***	−0.000	−0.004***	0.002**	0.004***	−0.008***	−0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Prop. Foreign Born	−0.000	0.019***	0.009***	0.011***	0.011***	−0.011***	0.002*	0.003**	−0.004***	0.022***	0.011***
	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Central City	0.024	0.105***	0.253***	0.117***	0.211***	0.102***	0.044**	0.172***	0.259***	0.033	0.297***
	(0.024)	(0.015)	(0.020)	(0.015)	(0.026)	(0.022)	(0.014)	(0.014)	(0.013)	(0.031)	(0.016)
South	−0.006	−0.365***	0.004	0.002	−0.382***	0.024	−0.130***	0.040**	0.077***	−0.341***	0.009
	(0.026)	(0.015)	(0.019)	(0.015)	(0.027)	(0.024)	(0.014)	(0.015)	(0.013)	(0.029)	(0.017)
Midwest	0.063*	−0.202***	−0.186***	−0.062***	−0.376***	0.024	−0.085***	0.025	0.094***	−0.186***	0.008
	(0.028)	(0.018)	(0.025)	(0.018)	(0.029)	(0.027)	(0.016)	(0.016)	(0.016)	(0.035)	(0.019)
West	0.039	−0.214***	−0.030	−0.303***	−0.333***	0.186***	0.005	0.048*	0.116***	−0.309***	−0.059*
	(0.035)	(0.022)	(0.029)	(0.024)	(0.039)	(0.030)	(0.020)	(0.020)	(0.019)	(0.049)	(0.024)
Prop. under 18	−0.012***	−0.022***	−0.033***	−0.021***	−0.017***	−0.025***	0.006***	−0.065***	−0.050***	−0.022***	−0.035***
	(0.003)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.003)	(0.002)
Prop. over 65	−0.002	0.003*	−0.010***	0.010***	0.005**	−0.010***	−0.002	−0.002	−0.013***	−0.003	0.005***
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.003)	(0.001)
Prop. Less Than HS Degree	0.007**	0.023***	0.009***	0.007***	0.008**	−0.005*	−0.002	−0.001	0.002	0.016***	−0.003
	(0.002)	(0.001)	(0.002)	(0.002)	(0.003)	(0.002)	(0.001)	(0.001)	(0.001)	(0.003)	(0.002)
Prop. with College Degrees	−0.001	0.005***	−0.006***	0.002***	0.003**	−0.004***	0.007***	0.013***	0.005***	0.001	0.009***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	−1.928***	−5.581***	−2.843***	−5.578***	−2.510***	−1.861***	−5.960***	−4.009***	−5.000***	−3.879***	−5.422***
	(0.164)	(0.100)	(0.129)	(0.113)	(0.174)	(0.153)	(0.096)	(0.078)	(0.079)	(0.237)	(0.112)
lnalpha	−48.765	−2.185***	−2.103***	−2.895***	−3.273***	−3.253***	−2.108***	−1.281***	−1.531***	−2.719***	−1.589***
	(.)	(0.033)	(0.050)	(0.068)	(0.189)	(0.177)	(0.032)	(0.017)	(0.019)	(0.108)	(0.025)
Observations	6705	11306	8156	9842	5257	6146	11349	13274	12200	4585	9685

Note: Data drawn from the 2000-2010 Zip Code Business Patterns dataset, the 2000-2010 U.S. Census, the 2006-2010 American Community Survey, and the 2010 IPUMS ACS sample. Estimates are provided for all ZCTAS within MSAs where data is available.

Chapter 3 Labor Market Outcomes: Does Space Always Matter?

Abstract

Spatial access to employment is consequential for a wide number of labor market outcomes. This empirical fact has been well documented among blacks and whites in the U.S. To a lesser extent, a few studies have examined the phenomenon of spatial mismatch- or spatial separation between residency and employment opportunity- among Hispanic subpopulations, and virtually no work examines Asian subpopulations. However, these limited works do not distinguish between exposure to spatial mismatch and the implications of that exposure. This analysis uses data from the 2010 American Community Survey (ACS), the 2010 Zip Code Business Patterns (ZBP) dataset, and the 2010 census to describe the relationship between spatial mismatch and labor market outcomes among the largest ethnoracial groups in the U.S. I find that spatial mismatch predicts employment and wages for most groups. Furthermore, while exposure to spatial mismatch differs across Asian and Hispanic subpopulations, the magnitude oft he relationship between spatial mismatch and labor market outcomes is largely consistent across Asian and Hispanic subpopulations. Together, these findings warrant further investigation of the implications of spatial mismatch for these groups.

I. Introduction

Despite increasing access to transportation, the spatial arrangement of business and employment opportunity, relative to housing, continues to be consequential for employment outcomes of low-wage workers in the United States (U.S.). Even though this is likely to be true across ethnoracial groups, scholars examining spatial mismatch in the U.S. context focus almost exclusively on blacks and whites. A small subset of this literature examines Asian and Hispanic panethnic categories, but virtually no work examines Asian and Hispanic subpopulations. This is troubling, especially given that these groups are a rapidly growing segment of the U.S. population, and because there exists large differences in residential and employment outcomes within Asian and Hispanic panethnic categories.

On average, Asian and Hispanic panethnic groups exhibit higher labor force participation and employment rates than that of both whites and blacks (Labor 2014). However, there is subpopulation heterogeneity within the Asian and Hispanic panethnic categories. For Asians, this chapter examines labor market outcomes among Chinese, Japanese, Asian Indian, Vietnamese, Filipino, and Korean Americans. Of the groups examined here, Indians and Filipinos have the highest proportion of their working-age populations engaged in the labor force, while Japanese and Koreans exhibit the lowest proportions. Meanwhile, Indians and Japanese exhibit the highest weekly earnings, while Vietnamese are the only Asian subgroup that possesses lower median weekly earnings than whites (Labor 2014). Among the Hispanic subpopulations examined here, Mexicans, Puerto Ricans, and Cubans, Mexican Americans have the highest rates of labor force participation and employment, but the lowest wages (Motel and Patten 2012).

While differences in educational attainment contribute to these differences, this chapter suggests that the spatial arrangement of employment likely also contributes to disparities between groups.

Earlier studies establish that the greater presence of job opportunities in close proximity to one's place of residence significantly predicts labor market outcomes for black Americans and, to a lesser extent, whites (Dawkins, Shen and Sanchez 2005; Mouw 2000). However, the question remains whether the same is true for other ethnoracial groups in the U.S. Chapter 3 investigates whether greater exposure to spatial mismatch within Metropolitan Statistical Areas (MSA) significantly depresses labor market outcomes among the largest Hispanic and Asian subgroups in the U.S., including Mexican, Puerto Rican, Cuban, Chinese, Japanese, Asian Indian, Vietnamese, Filipino, and Korean residents of the U.S. This chapter also compares these results to that of blacks and whites. Thus, two additional important questions emerge: Does spatial mismatch impact the labor market outcomes of other ethnoracial groups in the U.S.? Does the magnitude of these results vary across ethnoracial groups?

To address the aforementioned gap in the literature, I estimate the relationship between exposure to spatial mismatch and labor market outcomes for the largest Asian and Hispanic subgroups. I argue that spatial mismatch impacts employment outcomes for all low-wage workers, regardless of race. I find that spatial mismatch is indeed consequential for labor market outcomes across groups.

Chapter 3 proceeds as follows. The first section provides an overview of spatial mismatch theory and the existing empirical work on the subject. More specifically, this section outlines the basic reasons why job access adversely impacts employment outcomes for low-skilled workers. The second section describes the methodological choices and the data employed. Finally, the third section presents the main results, while the fourth section provides a discussion of

limitations and implications of the results presented here. The fifth and final section provides a conclusion that outlines directions for future research.

II. Why Spatial Proximity to Jobs Adversely Impacts Employment Outcomes

The literature on spatial mismatch suggests that the spatial distribution of employment relative to housing is consequential for employment. The literature demonstrates how spatially mismatched groups are more likely to be unemployed, endure longer commute times, and that they also are paid lower wages (Gobillon et al. 2007; Kain 1992). There are several demand- and supply-side mechanisms linking spatial mismatch to these labor market outcomes.

Gobillon et al (2007) provide a more detailed discussion of such mechanisms. On the demand side, employers might assume that commuting workers will experience lower productivity. For this reason, employers might pay long-distance commuters lower wages or refuse to hire them (Holzer 1991; Tilly et al. 2001). Furthermore, increased competition in job-scarce areas likely depresses wages (Gobillon, Selod and Zenou 2007). On the supply side, workers might refuse long commutes primarily because wages do not cover the costs or burden of traveling long distances to work, especially if commuting involves the use of public transportation. Additionally, searching for a job at a greater distance from one's own community is likely to be less efficient and incur higher search costs. This occurs largely because individuals likely have less information about jobs that are farther away, whether these jobs are advertised formally or through social networks (Selod and Zenou 2006; Tilly et al. 2001).

Some scholars counter that space matters little for employment outcomes, and that racial discrimination instead drives employment disparities (Hellerstein 2008; Kasinitz and Rosenberg 1996). They argue that even in the context of high job opportunity, stigmatized job seekers potentially have trouble locating employment because of discrimination. I argue that the space or

race binary is unnecessary. Some scholars allude that spatial mismatch might arise as a result of discrimination, whereby employers relocate to be closer to their ideal labor force (Quillian and Pager 2010; Tilly et al. 2001). Additionally, I argue that spatial mismatch likely exacerbates the role of employment discrimination, whereby stigmatized job seekers, who face limited job opportunities, also have fewer opportunities to apply for employment and fewer successes following the application. This interaction amplifies the role of discrimination in shaping employment outcomes.

Limitations of Earlier Work on Hispanics and Asians

A small subset of work examines sub-panethnic characteristics, such as generational difference and language difficulties, which impact vulnerability to spatial mismatch. Among Hispanics, spatial mismatch accounts for disparities in employment among third generation Hispanics and up, but not among third generation and up Asians, or the first and second immigrant generation (Painter, Liu and Zhuang 2007). Additionally, among Hispanics, those with poor English-speaking abilities are more vulnerable to spatial mismatch (Hellerstein 2009). Hellerstein (Stein 2009) provides important insight into the specific characteristics that increase vulnerability to spatial mismatch. However, sub-panethnic analysis that focuses on ancestry still is important, especially as the composition of U.S. immigrants shifts over time.

Even where scholars have examined Hispanic subgroups, they have failed to include actual measures of job access (Aponte 1996; Dickerson vonLockette and Johnson 2010). Failure to distinguish between the determinants of spatial mismatch, exposure to spatial mismatch, and the implications of spatial mismatch limits, in the end, the robustness of examinations of spatial mismatch (Houston 2005). For example, using residential segregation as an indicator of job access obscures the difference between groups that are segregated from whites and live great

distances from jobs, from those that are also segregated but live close to employment opportunity (ibid). This is problematic, especially given Chapter 1's findings, which indicate that residential segregation does not predict exposure to spatial mismatch among most Hispanic and Asian sub-panethnic groups. Furthermore, conflating measures of exposure and the impact of spatial mismatch likely conceals the differences between groups that are exposed to high levels of spatial mismatch, but who also are immune to its implications, and those who are exposed to low levels of spatial mismatch (ibid). For this reason, it is important to distinguish empirically between exposure to spatial mismatch and the implications thereof by including direct measures of job access, and by modeling the relationship between these measures and labor market outcomes.

Following the framework laid out by earlier empirical work, this current chapter explores three outcomes that spatial mismatch could potentially impact: Higher exposure to spatial mismatch can discourage workers, leading to higher incidences of dropping out of the labor force.

1. Spatial mismatch can increase the probability of being unemployed, either by reducing the efficiency of job searches or by making a person more likely to leave or be fired from their job.
2. Finally, spatial mismatch can depress wages if employers suspect lower productivity, discriminate, or if individuals are employed in areas where lower job access increases competition for jobs.

The next section describes the methods used to evaluate these three potential outcomes.

III. Methods

In order to examine the relationship between spatial mismatch and individual level outcomes, I compile data from several census sources. To compute indices of dissimilarity between jobs and group residence, I incorporate data on the spatial distribution of jobs from the Zip Code Business Patterns dataset (ZBP). ZBP provides estimates for the number of jobs held within different zip codes of a given metropolitan area. The decennial census provides estimates of the population count by zip code for all groups of interest. I employ data on individuals from the 2010 American Community Survey (ACS), obtained via the Integrated Public Use Microdata Series (IPUMS). The ACS includes measures of individual labor market outcomes, as well as several control variables of interest.

The focus here is on individuals who are more likely to be employed in low wage jobs. For this reason, I narrow the sample to those who completed no degrees beyond high school or those who did not complete high school by the date of the survey. . To avoid counting those who are still continuing their education, I narrow the sample to those who are over 18 and not enrolled in school.

The outcomes of interest are labor force participation, employment, and average log weekly wages. First, to evaluate disparities in labor force participation a dichotomous variable is generated that equals 1 for all individuals who report being in the labor force and equals 0 for all other individuals. Second, the employed variable equals 1 if a person
who reports being in the labor force also reports being employed and equals 0 for individuals who are in the labor force but are not employed. Last, we examine weekly earnings. I generate the variable weekly wages by summing the wage/salary income of respondents and dividing this total by the number of weeks worked by the respondents in the previous year. In doing so, I hope to more accurately capture differences in earning that result from differences in wages, rather

than from difference in time employed or seasonal employment. I model these outcomes as a function of spatial mismatch, a metropolitan level random effect, and individual level factors.

Log(P Being in Labor Force 1-P not in Labor Force)$_{ij}$= Equation1

$$\alpha+\beta_1 \textit{ Spatial Mismatch}_{ij} +\beta_2 \textit{ Demographic}_{ij} + \beta_2 \textit{ Education}_{ij} +\beta_3 \textit{ Experience}_{ij}+\beta_4 \textit{ Experience}_{ij}^2 +u_{ij}$$

Log(P Employed/ 1-P not Employed)$_{ij}$= Equation 2

$$\alpha+\beta_1 \textit{ Spatial Mismatch}_{ij} +\beta_2 \textit{ Demographic}_{ij} + \beta_2 \textit{ Education}_{ij} +\beta_3 \textit{ Experience}_{ij}+\beta_4 \textit{ Experience}_{ij}^2 +u_{ij}$$

Log(Weekly Wages)= Equation 3

$$\alpha+\beta_1 \textit{ Spatial Mismatch}_{ij} +\beta_2 \textit{ Demographic}_{ij} + \beta_2 \textit{ Education}_{ij} +\beta_3 \textit{ Experience}_{ij}+\beta_4 \textit{ Experience}_{ij}^2 +u_{ij}$$

At the metropolitan level, I expect a group's exposure to spatial mismatch to significantly predict employment outcomes for group members. At the individual level, I account for educational background, sex, marital status, whether a person is foreign-born, and English speaking ability, and work experience. Work experience is a standard predictor of labor outcomes, and is calculated as age-education-6 (see Borjas 1986, Borjas 1987, Model 2008). To account for the non-linear relationship between work experience and labor force outcomes, I also include work experience squared. The log odds of being in the labor force, the log odds of being employed, and the log of one's weekly wages is a function of the same metropolitan and individual factors.

IV. Results

Included below, tables 1 and 2 present descriptive statistics for the sample of MSA residents with no more than a high school degree. Labor force participation for all ethnoracial groups range from 60% to 44%, with Chinese and Indian Americans displaying the highest proportions of those employed. Of those in the labor force, Whites, Chinese, and Indian Americans also exhibit the highest proportion employed, at 87%, and with most other groups hovering around 82-84%. There is much more variation in weekly earnings. Most Asian and Hispanic subpopulations exhibit lower average weekly earnings than both blacks and whites. Again Chinese and Indian Americans are the exception, with higher weekly earnings than whites.

Table 3 and 4 display results predicting the odds of labor force participation after accounting for spatial mismatch and background characteristics. It is important to remember that coefficients in logit models must be exponentiated before interpretation (Exp(β)). A one-unit increase in spatial mismatch is associated with a 8 percent decrease in the relative odds of labor force participation for whites, and a 2 percent increase in for blacks. Cuban Americans are the only other groups for which spatial mismatch predicts labor force participation; a one unit increase in spatial mismatch is associated with a 2 percent decrease in the odds of participating in the labor force. For the other Hispanic and Asian subpopulations, spatial mismatch does not predict labor force participation. This suggests that spatial mismatch is more consequential for labor force participation among whites than for the other groups. The control variables are all in the expected direction, with education, marriage, and English speaking ability, and immigrant status being associated with higher relative odds of labor force participation. Work experience is also in the expected direction, positively associated with the odds of labor force participation until a certain extent.

Figures 1 and 2, also included below, present the relationship between spatial mismatch and the predicted probability of labor force participation. Figure 1 displays this relationship for Hispanic subgroups, relative to whites and blacks. Figure 2 displays this relationship for Asian subgroups, also relative to whites and blacks. 95% of groups experience indices of spatial mismatch that are just below 15 and just below 60, therefore the figures are restricted to predicted probabilities between these data points. The figures illustrate two important points. 1) There are sharp differences in the odds of labor force participation by race. Among those with a high school degree or less, whites have the highest odds of employment, followed by Mexican Americans and blacks and, then, the remaining Hispanic and Asian subgroups. Most of the Hispanic and Asian subpopulations included here display very similar odds of employment. 2) As was evident in table 1, there are differences in the slope between spatial mismatch and labor force participation. Spatial mismatch is a significant predictor of labor force participation for whites, blacks, and Cuban Americans, but not for the other groups.

Tables 5 and 6 predict the relative odds of employment. Again, coefficients must be exponentiated before interpretation. Spatial mismatch bears a similar relationship to the odds of being employed among most groups, ranging from 3 to 6 percent. Blacks are the exception; the estimate is not statistically significant. Most of the controls bear a similar relationship to employment as they did to labor force participation, with the exception that education does not predict employment among this population for most of the minorities examined here. The exception are Black, Mexican, and Cuban Americans.

Figure 3 and 4 present predicted probabilities of being employed for these groups. Here, whites are again the most likely to be employed, followed by Asian and Hispanic subpopulations, and then blacks. For minorities, employment probabilities are largely

statistically similar. As was evident in table 5 and 6, the slope on spatial mismatch is greater for whites and Asian and Hispanic subgroups. In fact, blacks cross-over and exhibit higher employment probabilities than most Asian and Hispanic subpopulations, with the exception of Mexican Americans, at a spatial mismatch index of 50.

Tables 7 and 8 predict log weekly wages for these groups. In this case, spatial mismatch is more consequential for weekly wages for the Asian and Hispanic subpopulations than for whites, and blacks. Mexican Americans are, again, the exception, experiencing the same coefficient as whites and blacks. The control variables are in the expected directions, and education is a significant predictor of wages among these populations.

Turning to figure 5 and 6, blacks, Asians, and Hispanics have similar predicted wages. Blacks and Mexican Americans exhibit similar wages throughout various levels of exposure to spatial mismatch. Spatial mismatch more quickly depresses the expected wages for the remaining Asian and Hispanic subgroups.

These findings suggest that spatial mismatch predicts wages for almost all Asian and Hispanic subgroups. Some differences in the magnitude of the relationship between mismatch and wages exist. Combined, all of these results suggest that spatial mismatch impacts labor market outcomes through employment and weekly wages among Asian and Hispanic subgroups, but not through labor market participation.

V. Discussion

Among those possessing no more than a high school education, group level exposure to spatial mismatch significantly predicts a number of labor market outcomes for whites, blacks, and Asian and Hispanic sub groups. Typically, labor force participation is excluded in examinations of the impact of spatial mismatch. One might expect that labor force participation

emerges as an outcome when individuals exercise the most autonomy, and depends primarily on social, demographic, and human capital. In contrast, employment and wages are more likely to be shaped by mismatch. Spatial mismatch does significantly predict lower wages for all groups, and lower employment probabilities among Asian and Hispanic subgroups, as well as whites. These descriptive estimates motivate further examinations into the role of spatial mismatch in determining labor market outcomes among Asians and Hispanics.

This examination provides a first look at the relationship between spatial mismatch and labor market outcomes for a number of the groups studied here. However, the measure utilized here is quite crude, since the data and methods I have utilized include four key limitations. First, while census data allows for a more in-depth examination of subpopulations, it is difficult to use macro level data to focus on the types of jobs that would be most relevant to this group. Second, it is also possible that there are differences in exposure to job access within these subpopulations, although it is impossible to detect such differences with the data presented here. Furthermore, using the index of dissimilarity in this way creates a zero-one binary; presumably, jobs located outside of one's zip code are out of reach, no matter whether one's zip code lies adjacent or lies miles away. The index of dissimilarity is useful for capturing disequilibrium across space and for summarizing job access for a large number of groups and MSAs. However, future analysis should examine specific MSAs for specific groups while using data that more fully takes into account distance to job opportunities. Finally, I am unable to measure legal status, which is likely to have a large effect on the wages

VI. Conclusion

In sum, future work should evaluate the impact of spatial mismatch on labor market outcomes for Hispanic and Asian subpopulations. This chapter provides descriptive evidence that higher exposure to spatial mismatch at the MSA level is correlated with employment and

earnings for almost all groups. Moving beyond this descriptive analysis requires data that can help us sort through endogeniety in the relationship between employment and housing opportunity.

Endogeniety is a central concern in spatial mismatch analysis. While space likely influences labor market outcomes, labor market outcomes likely also influence residential moves and attainment. Individuals who live in job rich areas may be more employable for unobserved reasons. Additionally, under residential mobility endogeniety, once someone obtains employment, he/she might be able to move closer to his/her job (Korsu and Wenglenski 2010). In this case, current residence is determined by employment outcome and does not reflect the location where the individual searched for work and faced spatial mismatch. A common approach to dealing with endogeneity includes examining the relationship between spatial mismatch and labor market among youths, whose residential location is determined by their parents, and less so by their individual characteristics. This approach minimizes, but does not fully address, endogeniety, as parent characteristics that impact residential location likely also impacts youth individual characteristics, that in turn influence youth employability. Another approach is to measure unemployment duration among those who did not relocate during a specified period. The focus here is on search duration, which is likely to be impacted by spatial constraints.

Data that outlines job search durations for the groups studied here would go a long way towards disentangling endogeneity in the spatial mismatch process, and provide more concrete evidence of the implications of spatial mismatch.

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Table 1: Descriptive Statistics for Hispanic Subpopulations, Whites and Blacks

	Black	White	Mexican	Puerto Rican	Cuban	Other Hisapnic
In Labor Force	0.49	0.53	0.50	0.45	0.45	0.47
	0.50	0.50	0.50	0.50	0.50	0.50
Employed (of those in labor force)	0.82	0.87	0.84	0.82	0.82	0.83
	0.39	0.33	0.37	0.38	0.38	0.38
Weekly Earnings	542.21	685.45	528.37	511.23	517.37	518.14
	666.09	725.70	523.89	536.25	541.85	535.54
Immigrant	0.34	0.18	0.44	0.44	0.44	0.46
	0.47	0.38	0.50	0.50	0.50	0.50
Education	9.90	11.06	9.69	9.14	9.20	9.34
	1.67	1.53	1.60	1.27	1.31	1.42
Experience	35.78	36.90	34.73	38.17	37.77	37.15
	19.80	18.92	20.46	20.18	20.25	20.23
Experience Squared	1672.22	1719.81	1624.71	1864.20	1836.57	1789.39
	1544.81	1464.87	1585.58	1632.66	1629.10	1616.12
Poor English	0.21	0.10	0.27	0.29	0.28	0.28
	0.41	0.30	0.44	0.45	0.45	0.45
Married	0.40	0.51	0.44	0.43	0.43	0.43
	0.49	0.50	0.50	0.50	0.50	0.50
Observations	224734	501828	204290	164951	168000	177105

Note: Data drawn from the 2000-2010 Zip Code Business Patterns dataset, the 2000-2010 U.S. Census, the 2006-2010 American Community Survey, and the 2010 IPUMS ACS sample. Estimates are provided for all ZCTAS within MSAs where data is available.

Table 2: Descriptive Statistics for Asian American Subpopulations

	Chinese	Filipino	Indian	Vietnamese	Korean	Japanese	Other Asian
In Labor Force	0.60	0.45	0.60	0.45	0.44	0.44	0.45
	0.49	0.50	0.49	0.50	0.50	0.50	0.50
Employed (of those in labor force)	0.87	0.82	0.87	0.82	0.82	0.82	0.82
	0.33	0.38	0.33	0.38	0.38	0.38	0.38
Weekly Earnings	695.78	511.57	696.67	509.35	509.99	510.30	510.74
	752.81	536.33	753.03	532.14	537.77	569.11	533.94
Immigrant	0.16	0.44	0.16	0.44	0.44	0.44	0.44
	0.37	0.50	0.36	0.50	0.50	0.50	0.50
Education	11.98	9.12	11.99	9.12	9.10	9.10	9.12
	0.31	1.25	0.15	1.25	1.23	1.22	1.24
Experience	33.43	38.19	33.37	38.18	38.29	38.40	38.10
	18.37	20.20	18.35	20.16	20.18	20.22	20.23
Experience Squared	1455.14	1866.44	1450.48	1863.98	1873.47	1883.84	1861.17
	1323.24	1634.02	1320.47	1632.32	1634.60	1639.60	1635.24
Poor English	0.05	0.28	0.05	0.29	0.29	0.29	0.29
	0.23	0.45	0.22	0.45	0.45	0.45	0.45
Married	0.51	0.43	0.51	0.44	0.43	0.43	0.43
	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Observations	496954	163833	494495	163779	162595	162260	163464

Note: Data drawn from the 2000-2010 Zip Code Business Patterns dataset, the 2000-2010 U.S. Census, the 2006-2010 American Community Survey, and the 2010 IPUMS ACS sample. Estimates are provided for all ZCTAS within MSAs where data is available.

Table 3: Predicting Odds of Labor Force Participation

	White	Black	Mexican	Puerto Rican	Cuban	Other Hispanic
Immigrant	0.448***	0.784***	0.659***	0.780***	0.705***	0.793***
	(0.014)	(0.017)	(0.015)	(0.018)	(0.018)	(0.017)
Spatial Mismatch	−0.008***	0.002**	0.000	−0.001	−0.002*	−0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Education	0.182***	0.129***	0.113***	0.059***	0.058***	0.095***
	(0.003)	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)
Experience	0.085***	0.075***	0.074***	0.080***	0.077***	0.078***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Experience Squared	−0.002***	−0.002***	−0.002***	−0.002***	−0.002***	−0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Poor English	−0.000	−0.202***	−0.262***	−0.224***	−0.200***	−0.224***
	(0.017)	(0.018)	(0.016)	(0.018)	(0.018)	(0.017)
Married	0.202***	0.336***	0.201***	0.273***	0.289***	0.243***
	(0.008)	(0.011)	(0.012)	(0.013)	(0.013)	(0.013)
Constant	−1.265***	−1.446***	−1.161***	−0.814***	−0.734***	−1.077***
	(0.051)	(0.050)	(0.055)	(0.067)	(0.066)	(0.061)
lnsig2u	−3.378***	−3.221***	−3.025***	−3.260***	−3.248***	−3.243***
	(0.117)	(0.143)	(0.141)	(0.155)	(0.154)	(0.152)
Observations	474980	215431	197404	158441	161185	170265

Note: Data drawn from the 2000-2010 Zip Code Business Patterns dataset, the 2000-2010 U.S. Census, the 2006-2010 American Community Survey, and the 2010 IPUMS ACS sample. Estimates are provided for all ZCTAS within MSAs where data is available.

Table 4: Predicting Odds of Labor Force Participation

	Chinese	Filipino	Indian	Vietnamese	Korean	Japanese	Other Asian
Immigrant	0.777***	0.793***	0.779***	0.805***	0.775***	0.775***	0.776***
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.019)	(0.018)
Spatial Mismatch	−0.001	−0.001	−0.001	−0.001	−0.001	−0.001	−0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Education	0.045***	0.063***	0.048***	0.056***	0.047***	0.050***	0.053***
	(0.005)	(0.006)	(0.006)	(0.005)	(0.006)	(0.006)	(0.006)
Experience	0.081***	0.080***	0.080***	0.081***	0.080***	0.081***	0.079***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Experience Squared	−0.002***	−0.002***	−0.002***	−0.002***	−0.002***	−0.002***	−0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Poor English	−0.237***	−0.226***	−0.231***	−0.241***	−0.225***	−0.225***	−0.227***
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.019)	(0.018)
Married	0.268***	0.265***	0.266***	0.268***	0.268***	0.265***	0.264***
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Constant	−0.714***	−0.873***	−0.721***	−0.824***	−0.721***	−0.751***	−0.777***
	(0.066)	(0.067)	(0.068)	(0.066)	(0.068)	(0.070)	(0.068)
lnsig2u	−3.283***	−3.239***	−3.288***	−3.258***	−3.267***	−3.264***	−3.252***
	(0.157)	(0.154)	(0.157)	(0.156)	(0.156)	(0.155)	(0.155)
Observations	158554	157346	156316	157253	156111	155793	156962

Note: Data drawn from the 2000-2010 Zip Code Business Patterns dataset, the 2000-2010 U.S. Census, the 2006-2010 American Community Survey, and the 2010 IPUMS ACS sample. Estimates are provided for all ZCTAS within MSAs where data is available.

Table 5: Predicting Odds of Employment

	White	Black	Mexican	Puerto Rican	Cuban	Other Hispanic
Immigrant	0.483***	0.598***	0.627***	0.672***	0.658***	0.708***
	(0.025)	(0.027)	(0.024)	(0.030)	(0.029)	(0.027)
Spatial Mismatch	−0.005***	−0.002	−0.003*	−0.005***	−0.006***	−0.006***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Education	0.194***	0.058***	0.117***	0.000	0.033***	0.051***
	(0.006)	(0.007)	(0.006)	(0.009)	(0.009)	(0.007)
Experience	0.034***	0.045***	0.033***	0.037***	0.038***	0.034***
	(0.001)	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)
Experience Squared	−0.000***	−0.000***	−0.000***	−0.000***	−0.000***	−0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Poor English	0.110***	−0.022	−0.043	−0.103***	−0.067*	−0.077**
	(0.028)	(0.029)	(0.027)	(0.030)	(0.031)	(0.029)
Married	0.549***	0.398***	0.384***	0.346***	0.361***	0.325***
	(0.013)	(0.019)	(0.019)	(0.022)	(0.022)	(0.021)
Constant	−0.943***	−0.113	−0.451***	0.644***	0.342**	0.244*
	(0.086)	(0.081)	(0.089)	(0.112)	(0.112)	(0.101)
lnsig2u	−2.457***	−2.452***	−2.426***	−2.453***	−2.471***	−2.455***
	(0.123)	(0.147)	(0.150)	(0.161)	(0.159)	(0.157)
Observations	252383	105810	100125	71341	73147	80267

Note: Data drawn from the 2000-2010 Zip Code Business Patterns dataset, the 2000-2010 U.S. Census, the 2006-2010 American Community Survey, and the 2010 IPUMS ACS sample. Estimates are provided for all ZCTAS within MSAs where data is available.

Table 6: Predicting Odds of Employment

	Chinese	Filipino	Indian	Vietnamese	Korean	Japanese	Other Asian
Immigrant	0.717***	0.706***	0.684***	0.705***	0.698***	0.691***	0.706***
	(0.030)	(0.030)	(0.030)	(0.030)	(0.031)	(0.031)	(0.030)
Spatial Mismatch	−0.006***	−0.004**	−0.006***	−0.004**	−0.005***	−0.005***	−0.005***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Education	0.015	0.016	−0.002	0.007	0.008	0.007	0.014
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.010)	(0.009)
Experience	0.037***	0.037***	0.037***	0.037***	0.037***	0.037***	0.037***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Experience Squared	−0.000***	−0.000***	−0.000***	−0.000***	−0.000***	−0.000***	−0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Poor English	−0.091**	−0.086**	−0.082**	−0.087**	−0.077*	−0.077*	−0.086**
	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)
Married	0.340***	0.342***	0.340***	0.339***	0.346***	0.341***	0.341***
	(0.022)	(0.022)	(0.022)	(0.022)	(0.023)	(0.023)	(0.022)
Constant	0.486***	0.441***	0.642***	0.524***	0.516***	0.549***	0.493***
	(0.111)	(0.112)	(0.115)	(0.110)	(0.115)	(0.118)	(0.114)
lnsig2u	−2.400***	−2.294***	−2.407***	−2.412***	−2.419***	−2.366***	−2.408***
	(0.159)	(0.154)	(0.159)	(0.159)	(0.159)	(0.157)	(0.158)
Observations	71255	70788	70016	70784	69777	69248	70549

Note: Data drawn from the 2000-2010 Zip Code Business Patterns dataset, the 2000-2010 U.S. Census, the 2006-2010 American Community Survey, and the 2010 IPUMS ACS sample. Estimates are provided for all ZCTAS within MSAs where data is available.

Table 7: Predicting Log Weekly Earnings

	White	Black	Mexican	Puerto Rican	Cuban	Other Hispanic
Immigrant	0.050***	0.053***	0.035***	0.094***	0.084***	0.086***
	(0.006)	(0.008)	(0.007)	(0.009)	(0.008)	(0.008)
Spatial Mismatch	−0.001***	−0.001**	−0.001***	−0.003***	−0.003***	−0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Education	0.100***	0.058***	0.058***	0.037***	0.049***	0.041***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)
Experience	0.054***	0.043***	0.039***	0.038***	0.039***	0.037***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Experience Squared	−0.001***	−0.001***	−0.001***	−0.001***	−0.001***	−0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Poor English	−0.153***	−0.164***	−0.176***	−0.190***	−0.175***	−0.184***
	(0.008)	(0.008)	(0.007)	(0.008)	(0.008)	(0.008)
Married	0.165***	0.175***	0.171***	0.174***	0.178***	0.171***
	(0.003)	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)
Constant	4.403***	4.792***	4.876***	5.083***	4.990***	5.081***
	(0.022)	(0.024)	(0.025)	(0.034)	(0.033)	(0.029)
Observations	213191	89411	86543	62756	64339	70019

Note: Data drawn from the 2000-2010 Zip Code Business Patterns dataset, the 2000-2010 U.S. Census, the 2006-2010 American Community Survey, and the 2010 IPUMS ACS sample. Estimates are provided for all ZCTAS within MSAs where data is available.

Table 8: Predicting Log Weekly Earnings

	Chinese	Filipino	Indian	Vietnamese	Korean	Japanese	Other Asian
Immigrant	0.095***	0.096***	0.090***	0.091***	0.096***	0.096***	0.098***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Spatial Mismatch	−0.003***	−0.002***	−0.003***	−0.003***	−0.003***	−0.003***	−0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Education	0.031***	0.038***	0.033***	0.031***	0.036***	0.038***	0.040***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Experience	0.038***	0.038***	0.038***	0.038***	0.038***	0.039***	0.038***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Experience Squared	−0.001***	−0.001***	−0.001***	−0.001***	−0.001***	−0.001***	−0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Poor English	−0.193***	−0.182***	−0.182***	−0.187***	−0.184***	−0.180***	−0.183***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Married	0.170***	0.175***	0.174***	0.172***	0.173***	0.174***	0.172***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.006)
Constant	5.135***	5.059***	5.129***	5.146***	5.103***	5.072***	5.070***
	(0.033)	(0.033)	(0.034)	(0.033)	(0.035)	(0.036)	(0.034)
Observations	62859	62542	61763	62350	61511	61185	62222

Note: Data drawn from the 2000-2010 Zip Code Business Patterns dataset, the 2000-2010 U.S. Census, the 2006-2010 American Community Survey, and the 2010 IPUMS ACS sample. Estimates are provided for all ZCTAS within MSAs where data is available.

Figure 3.1 Predicted Probabilities of Labor Force Participation Among Hispanic Subpopulations

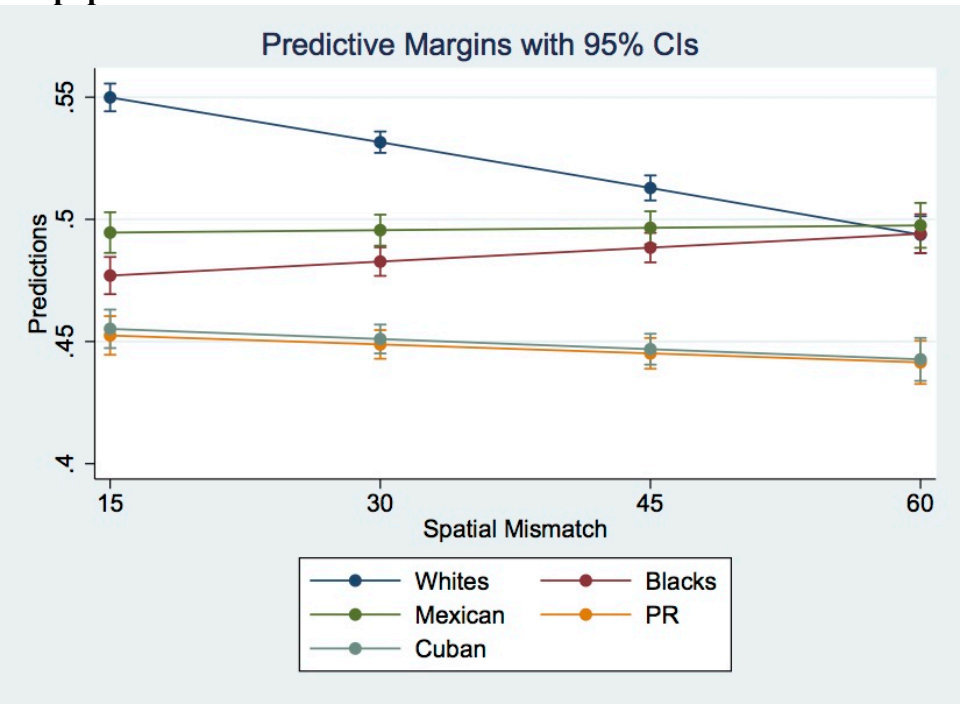


Figure 3.2 Predicted Probabilities of Labor Force Participation Among Asian Subpopulations

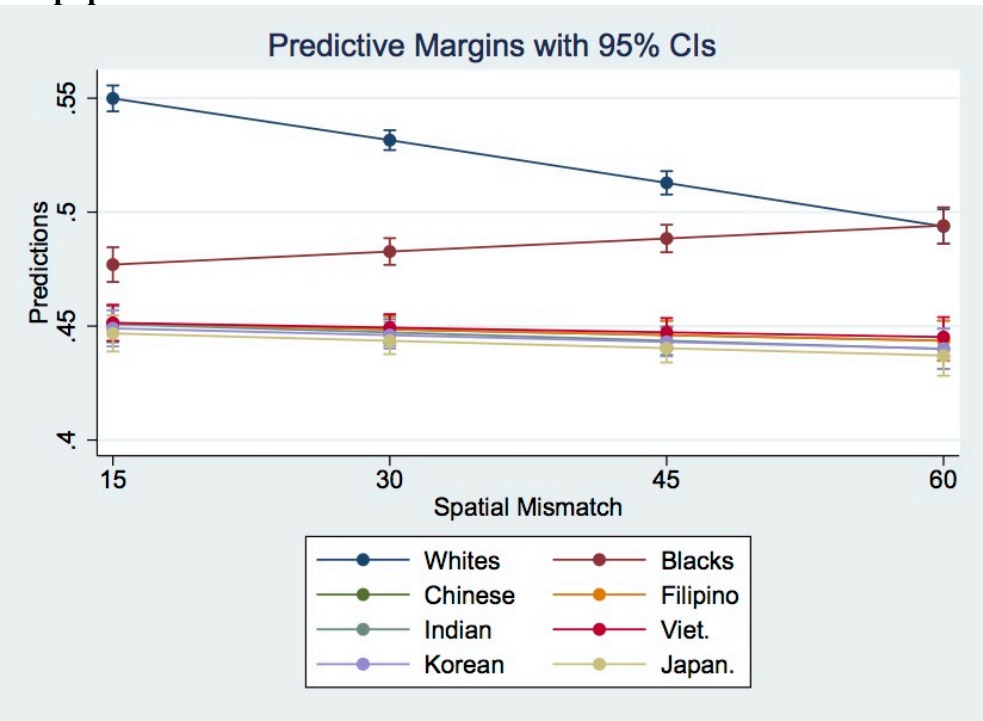


Figure 3.3 Predicted Probabilities of Employment Among Hispanic Subpopulations

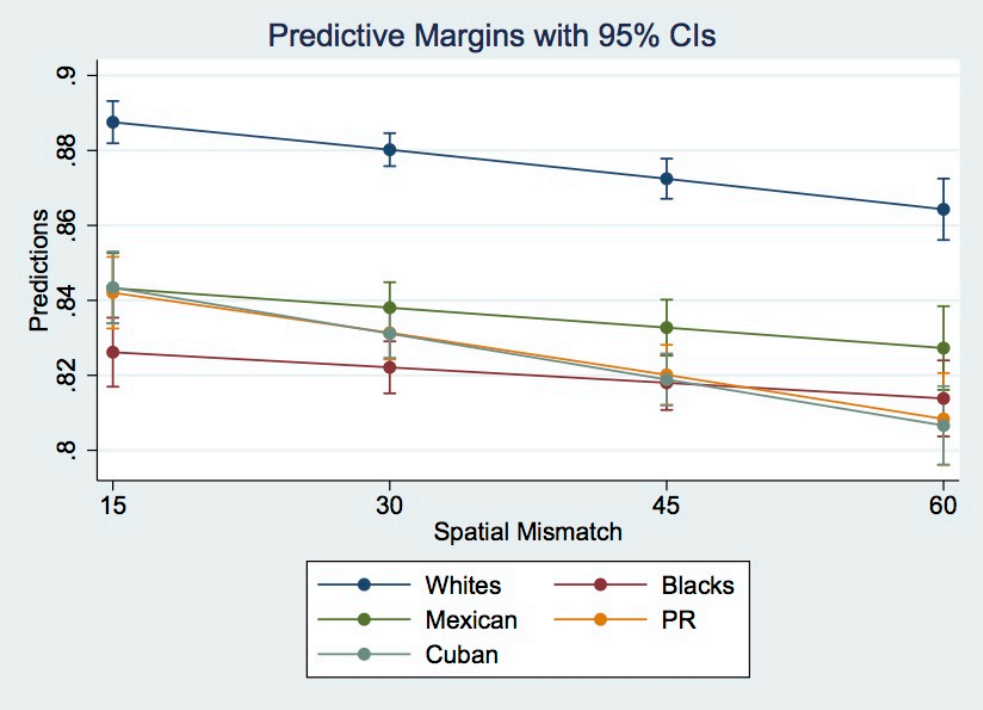


Figure 3.4 Predicted Probabilities of Employment Participation Among Asian Subpopulations

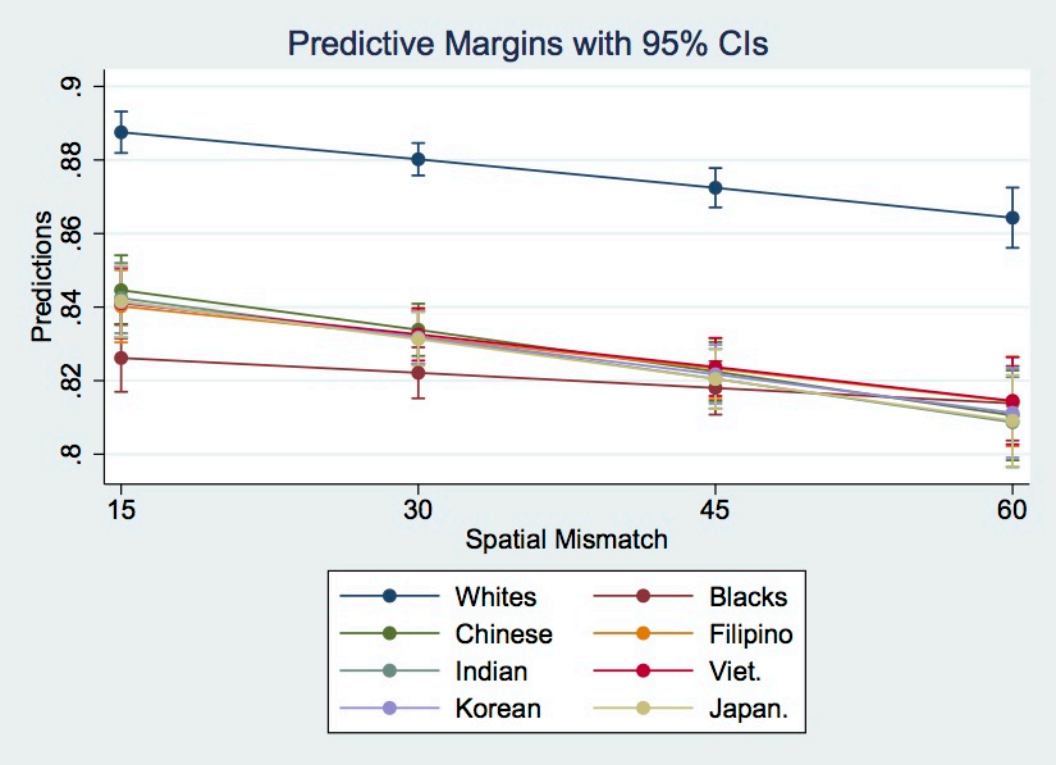


Figure 3.5 Predicted Wages Among Hispanic Subpopulations

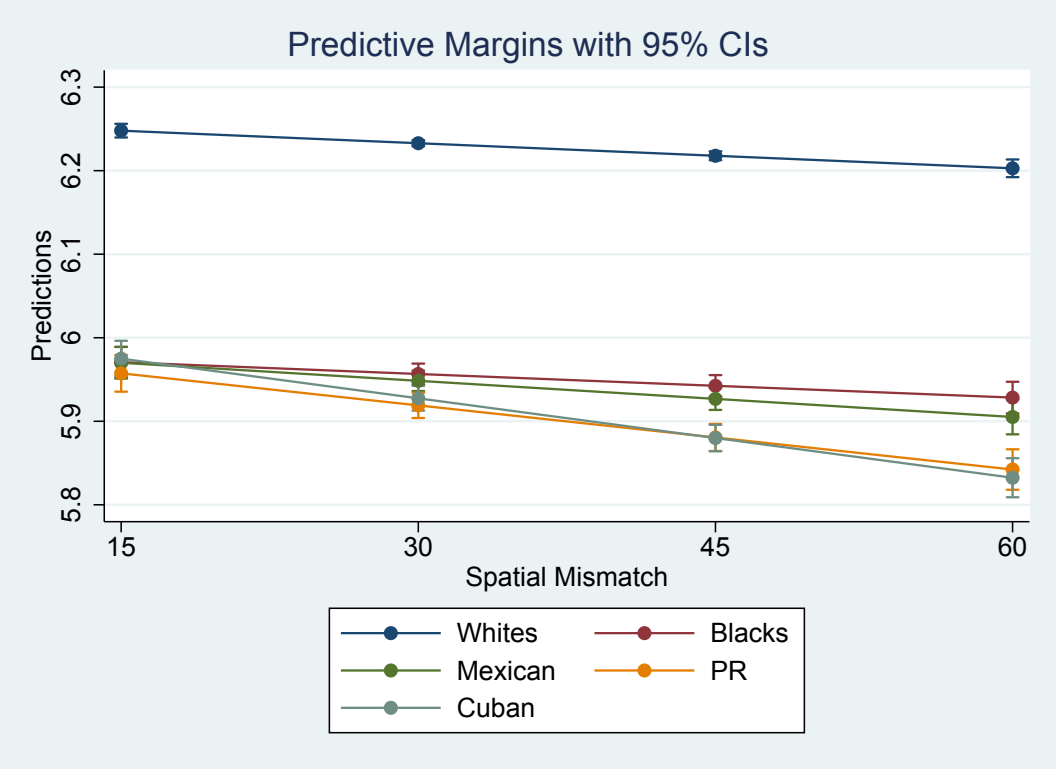
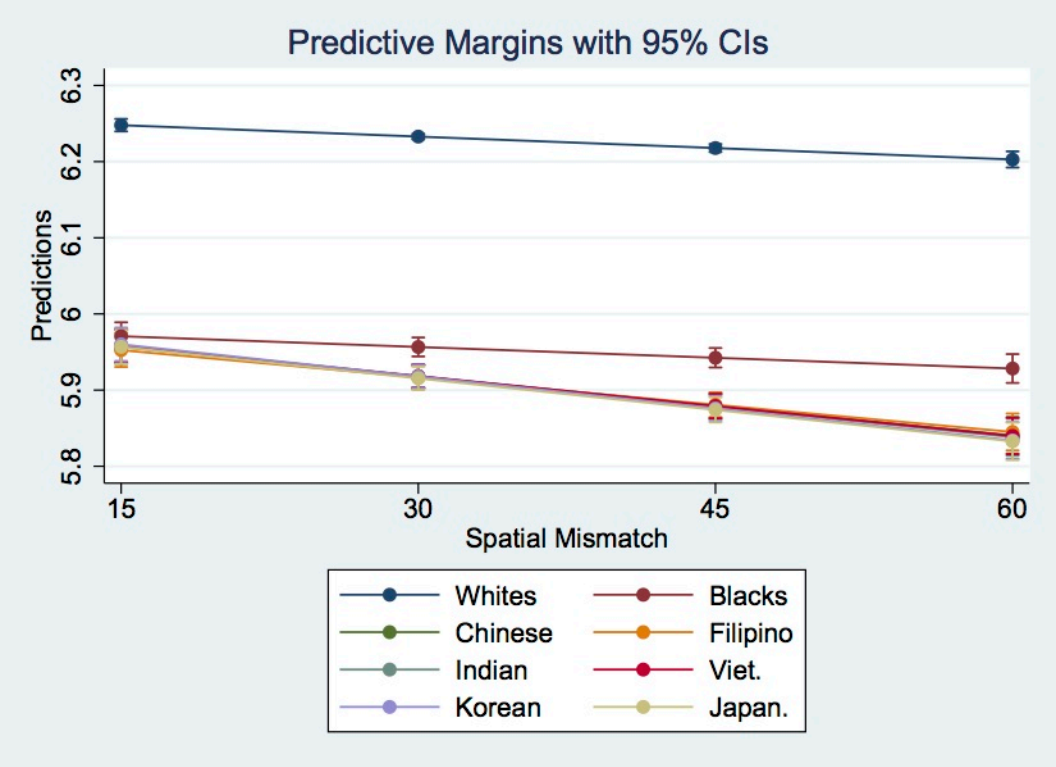


Figure 3.6 Predicted Wages Among Asian Subpopulations



Conclusion

This dissertation advances three arguments. First the literature on spatial mismatch should expand its focus beyond examining blacks and whites, and in doing so, empirical work should put special focus on differences among Asian and Hispanic subpopulations. This United States (U.S.) is growing increasingly diverse, and Asian and Hispanic subpopulations come with vast differences in characteristics and arrive under vastly different contexts.

Second, this dissertation maintains that, for some portions of every ethnoracial group, space continues to matter for employment. That is, this dissertation highlights a descriptive relationship between overall exposure to spatial mismatch for a given group and the employment and wage outcomes for those with a high school degree or less.

I find differences in the level of exposure and the determinants of spatial mismatch across groups. The average Vietnamese and Cuban American experiences higher spatial mismatch than the average black American. Furthermore, the analysis presented here suggests that it is not residential segregation from whites, per se, that is correlated with spatial mismatch. For most of the minority groups examined here, higher exposure to segregation from whites does not correlate with higher exposure to spatial mismatch. Instead, differences in economic residential mobility across Metropolitan Statistical Areas (MSAs) correlate with exposure to spatial mismatch. That is, net of group socioeconomic status, in MSAs where a given group enjoys access to higher value zip codes, that group experiences lower rates of spatial mismatch. Work on neighborhood attainment suggests that there is heterogeneity across MSAs in the ability of minorities to convert income into neighborhood attainment (Pais et al. 2012). Combined, these findings suggest that MSAs that promote neighborhood attainment among minority groups, especially among Asian subpopulations, are areas where these groups are better able to minimize

spatial mismatch. There is much work to be done to further evaluate this hypothesis, especially as it relates to low-wage workers in these groups.

The only group for which segregation from whites is correlated with exposure to spatial mismatch is black Americans. That is, black-white segregation is indeed unique in terms of being consequential for job access among blacks. However, this relationship is more nuanced than the spatial mismatch canon suggests. Relying on Census and American Community Survey (ACS) data from 2010, it becomes evident that residential segregation does not limit job access among blacks due to their limited access to suburban areas. This may have been true in earlier decades, but it does not seem to be the case now. This is consistent with work that suggests that suburban blacks also are spatially mismatched from employment opportunity (Schneider and Phelan 1990).

Third, this dissertation examines one additional mechanism linking residential segregation to job access among blacks: poverty concentration. Given the inextricable link between residential segregation and poverty concentration among black Americans, it seems logical that poverty concentration acts as a pathway between segregation and depressed business activity. I do find evidence of this pathway, although a large majority of the relationship between residential segregation and business presence remains. Future work should evaluate the role of bias in business locational decisions.

Future Directions

Other measures of spatial mismatch

This dissertation utilizes a relatively simplistic measure of spatial mismatch, which is useful for comparing job access for the largest ethnoracial groups in the U.S. and across all MSAs. However, the index of dissimilarity is in some ways a spaceless measure, in that it does

not account distance between units. In other words, group members could live adjacent to zip codes with large proportions of employers, but this adjacency would not be captured by the index of dissimilarity. Other, more sophisticated measures of job access have been developed, such as those that capture actual distance to employment and/or incorporate decay functions. These measures often focus on one to two cities or MSAs given the complexity in developing these measures (Dawkins et al. 2005; Houston 2005; Hu 2014, 2015; Mouw 2000). Future work should investigate MSAs where specific groups experience high rates of spatial mismatch (see Chapter 1) and employ these increasingly sophisticated measures to more fully characterize spatial mismatch in these locations.

Beyond descriptive analysis

Similarly, more sophisticated analytical techniques have been developed to evaluate the role of spatial mismatch on employment outcomes (Blumenberg, Pierce and Smart 2015; Dawkins et al. 2005; Mouw 2000). One such method, measuring unemployment duration among those who do not relocate, seems to provide the most insight into the role of spatial mismatch in shaping labor market outcomes. However, the census no longer includes estimates of employment duration on its questionnaire. Future work needs estimates of unemployment duration for the various ethnoracial groups examined here.

Bias in Business Location Decisions

Much more work needs to be done to understand why there is a persistent relationship between percent black and business presence. The relationship between residential segregation among blacks and business activity is not explained by inner city/suburban differences, nor by poverty concentration. Earlier work lays the foundation for an analysis of bias in business location decisions. Bias has been detected among individuals acting as home owners or renters

(Quillian and Pager 2010). Therefore, it is logical to assume that similar bias exists among other actors when making inferences and decisions that impact neighborhoods with black populations (Tilly et al. 2001). However, such bias has not been empirically documented. Future work should seek to evaluate the extent to which bias shapes business location decisions in ways that impact access to jobs, goods, and services (Small and McDermott 2006).

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