

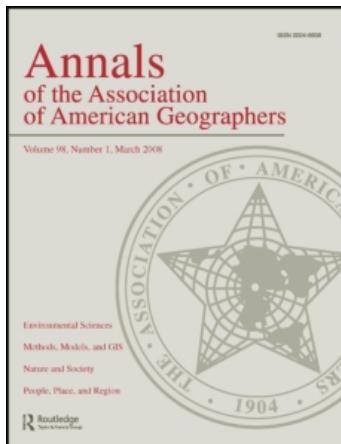
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How Does Geography Matter in the Ethnic Labor Market Segmentation Process? A Case Study of Chinese Immigrants in the San Francisco CMSA

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How Does Geography Matter in the Ethnic Labor Market Segmentation Process? A Case Study of Chinese Immigrants in the San Francisco CMSA

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With the continuing influx of large numbers of immigrants to the United States, urban labor market segmentation along the lines of race, ethnicity, gender, and class has drawn considerable attention. Using a confidential data set extracted from the United States Decennial Long Form Data 2000 and a multilevel regression modeling strategy, this article presents a case study of Chinese immigrants in the San Francisco metropolitan area. Correspondent with the highly segregated nature of the labor market between Chinese immigrant men and women, different socioeconomic characteristics at the census tract level are significantly related to their occupational segregation. The results of this study suggest that the social process of labor market segmentation is contingent on the immigrant geography of residence and workplace. Whereas the direction and magnitude of the spatial contingency are different between men and women, residency in Chinese immigrant-concentrated areas is perpetuating gender occupational segregation by skill level. Abundant ethnic resources might exist in ethnic neighborhoods and enclaves for certain types of employment opportunities; however, these resources do not necessarily help Chinese immigrant workers, especially women, to move upward in the labor market hierarchy. **Key Words:** *Chinese immigrants, ethnic niches, gender, residence, San Francisco, workplace.*

随着大量移民不断涌入美国，城市劳动力市场按照种族，民族，性别和阶层而产生的隔离情况引起很大关注。通过使用取自美国 2000 年的十年长表格数据的保密数据集，以及多层回归模型策略，本文对旧金山大都会地区的华人移民情况进行了案例研究。对于华人移民男性和女性之间劳动力市场的高度隔离，在人口普查区级水平上，不同的社会经济特征与他们的职业隔离是显著相关的。本研究结果表明，劳动力市场分割的社会进程是与居住和工作场的移民地理特征相关的。虽然男女之间在空间可能性的方向和规模的不同，技术水平差异使得居住在中国移民集中地区的性别职业隔离长期存在。在民族聚居社区和飞地，对于特定的一些就业机会，可能存在丰富的民族资源；但这些资源并不一定能够帮助中国移民工人，特别是妇女，在劳动力市场的层次结构上得以高升。**关键词：**中国移民，种族生境，性别，居住地，旧金山，工作场所。

Con el continuo flujo de gran número de inmigrantes a los Estados Unidos, la segmentación del mercado laboral urbano a lo largo de las líneas de raza, etnicidad, género y clase, ha atraído considerable atención. Mediante el uso de un conjunto de datos confidenciales extraído de la Decennial Long Form Data 2000 de los Estados Unidos y una estrategia de modelado de regresión de nivel múltiple, este artículo presenta un estudio de caso de inmigrantes chinos en el área metropolitana de San Francisco. Correspondiendo con la naturaleza altamente segregada del mercado laboral entre los inmigrantes chinos, hombres y mujeres, las diferentes características socioeconómicas a nivel del trácto censal están significativamente relacionadas con su segregación ocupacional. Los resultados de este estudio sugieren que el proceso social de la segmentación del mercado laboral es contingente con la geografía de residencia y lugar de trabajo del inmigrante. Si bien la dirección y magnitud de la contingencia espacial son diferentes entre hombres y mujeres, la residencia en las áreas de concentración de inmigrantes chinos está perpetuando la segregación ocupacional de género por nivel de habilidad. Recursos étnicos abundantes podrían existir en vecindarios étnicos y enclaves para cierto tipo de oportunidades de empleo; sin embargo, tales recursos no necesariamente ayudan a que los trabajadores chinos inmigrantes, en especial las mujeres, asciendan en la jerarquía del mercado del trabajo. **Palabras clave:** *inmigrantes chinos, nichos étnicos, género, residencia, San Francisco, lugar de trabajo.*

The continuing influx of large numbers of immigrants to the United States has long been associated with a particular labor market phenomenon whereby an occupation or an industrial

sector becomes dominated by a particular ethnic group, such as Mexican immigrants in construction, Filipino immigrants in domestic work, and Asian Indian immigrants in computer programming (Logan, Alba, and

McNulty 1994; Wright and Ellis 2000; Hudson 2003; F. Wilson 2003; Wang 2004). The segmentation of urban labor markets along the lines of race, ethnicity, and gender has repeatedly been shown to exacerbate socioeconomic inequalities among racial and ethnic groups.¹ Many scholars have asked why ethnic minorities or immigrants concentrate in certain sectors. Is it because of lucrative returns on working in ethnic niches or is it because they cannot compete in the open economy? Particularly, given the significant gender differences in the nature and extent of labor market concentration (Hanson and Pratt 1991; England 1993; Ellis and Wright 1999), how does gender interact with race and ethnicity in the urban labor market process? In answer to these queries, previous studies have revealed that personal characteristics, human capital, discrimination, ethnic networking, and institutional regulation are associated with ethnic labor market concentration (Becker 1975; Portes and Sensenbrenner 1993; Waldinger 1994; Peck 1996; Waldinger and Der-Martirosian 2001; Hudson 2003). One area of neglect, however, has been the explicit consideration of how the spatial arrangement of residence and workplace influences immigrant ethnic minorities' labor market outcomes and how the influences differ by race, ethnicity, and gender.²

There are compelling reasons to believe that the geography of residence and workplace affects ethnic labor market segmentation and that these effects differ among ethnic and gender groups (Everitt 1976; Fernandez and Su 2004). For example, the spatial-mismatch hypothesis argues that the decentralization of employment combined with persistent residential segregation has resulted in increased distances between African American residential areas and regions of rapid job growth and has restricted their labor market opportunities (Kain 1968; Ihlanfeldt 1995). Similarly, the spatial-entrapment-of-women hypothesis argues that women's domestic responsibilities have restricted their spatial mobility in searching for jobs, which reinforces occupational sex segregation (Hanson and Pratt 1992, 1995; England 1993). In both cases, the geography of residence has directly influenced spatial mobility and thus labor market outcomes for specific ethnic or gender groups.

Personal contacts through social networking are of particular importance in the job searching process (Granovetter 1974); however, networks do not randomly link individuals. Rather, people interact most frequently with those who live in close geographic proximity and with whom they share backgrounds, inter-

ests, and affiliations (Blau 1977). Spatial proximity also strongly influences the durability of relationships by reducing the costs of maintaining a relationship (Sorenson 2003). Even in today's society with spatial mobility surprisingly increased by high technology, we are still more likely to exchange information with people with whom we interact during our daily lives than with those who are farther away (Wellman 1996).

The practice of social networking is not confined to residential neighborhoods only. It is not uncommon for employers to recruit new workers through networking of current employees, thus homogenizing the racial or ethnic diversity in specific workplace or job sectors (Rosenfeld and Tienda 1999; Waldinger and Der-Martirosian 2001; Johnson-Webb 2003; Ellis, Wright, and Parks 2004). In some cases, employers deliberately locate their operations near pools of a targeted labor force; thus, industrial location decisions reinforce the socioeconomic relationships in segregated neighborhoods (Scott 1988; Hanson and Pratt 1995).

All these studies suggest that the geography of residence and geography of jobs affect labor market outcomes both spatially and socially, through the employers' recruiting practices or job-seekers' active search behaviors (see Fernandez and Su 2004 for a comprehensive review). By comparing the census tracts of residence to tracts of work for twelve ethnic and racial groups in Los Angeles, Ellis, Wright, and Parks (2004) found a strong positive and linear effect of residential segregation on work tract segregation. For the same study area, Parks (2004b) and Ellis, Wright, and Parks (2007) demonstrated that living in immigrant residential neighborhoods plays an important role in sustaining their industrial segregation and both local geographies of residences and geographies of jobs across ethnic groups are significant in understanding an immigrant ethnic minority group's industrial concentration.

Extending from this body of work, this study argues that the labor market segregation between immigrant ethnic minority men and women has to be understood as both a social and spatial process embedded in the geography of residence and the geography of workplace. Departing from most previous studies, however, using the 2000 U.S. Census of Housing and Population long form data, this study classifies the San Francisco Consolidated Metropolitan Statistical Area (CMSA) into different types of Chinese immigrant-concentrated areas according to both the geography of their residences (by tract of residence) and the geography of their jobs (by tract of workplace) to link both geographies to their occupational concentration and segregation. It employs

a multilevel modeling strategy to examine the socioeconomic characteristics of Chinese immigrant ethnic neighborhoods associated with their occupational segregation and seeks to detangle the effects of living in different types of immigrant Chinese concentrated areas from personal characteristics and the neighborhood-level socioeconomic characteristics.

Considering the effects of living in Chinese concentrated areas together with neighborhood socioeconomic characteristics is very important. For many decades, the ethnic residential segregation literature has suggested that the spatial phenomenon of residential segregation results from a multidimensional social process that has to do with social, economic, political, cultural, and historical conditions (Massey 1984; Alba and Logan 1993; J. P. Allen and Turner 1996; Logan, Alba, and Zhang 2002). Racially segregated neighborhoods have long been associated with certain socioeconomic characteristics such as high levels of poverty, lack of social resources, limited spatial mobility, lack of positive role models, or the historical development of "cultures" of disadvantage (W. J. Wilson 1987; Crane 1991; Massey and Denton 1993). There is a mutually reinforcing relationship between the characteristics of ethnic neighborhoods and their residents' individual characteristics, and both are carried into the labor market outcomes. Thus, it is impossible to understand the neighborhood effects on labor market segregation if we do not examine the characteristics of the neighborhoods in which the affected group lives. It is also insufficient to examine the effects of residing in ethnic concentrated areas without controlling for certain personal characteristics as well.

Using the privileged confidential data, this study examines the effects of different types of Chinese immigrants' geographies of residence and workplace (at the census tract level) on their occupational concentrations, by accounting for the socioeconomic characteristics of both an individual labor force and their neighborhoods. It also explores the relationship of the geography of work and home and immigrant ethnic occupational concentration in a different way, by dividing the intraurban geographies based on concentration by residential place or by workplace. It addresses the following questions: First, after controlling for personal socioeconomic characteristics, such as age, education, length of stay in the United States, and commuting time between home and work, does living in a Chinese immigrant-concentrated area still matter? If so, what are the socioeconomic characteristics at the neighborhood level associated with Chinese immigrant occupation niche employment? How does living in different

coethnic-concentrated areas affect Chinese immigrant labor market concentration? How do the effects differ between men and women?

Geography, Ethnic Labor Market Concentration, and Gender

Geography and Ethnic Minority Labor Market Outcomes

The relationship between residential location and labor market outcomes is explicitly examined in the literature on "spatial mismatch." According to this hypothesis, in the context of economic restructuring, inner-city residents are increasingly concentrated in residential areas where they are less likely to find job opportunities commensurate with their skill and education levels. At the same time, racial barriers in the housing market and the lack of an efficient mass transit system for delivering workers from their central-city residential locations to work sites in the suburbs effectively deny inner-city residents the opportunity to work in booming satellite cities (Kain 1968; for comprehensive reviews, see Holzer 1991 and Ihlanfeldt 1995).

Residential location can also facilitate or inhibit social mobility of residents in the labor market. Conley and Topa's (2002) study on the city of Chicago showed a strong positive and statistically significant spatial dependence in the distribution of raw unemployment rates measured at the census tract level. In understanding such spatial correlations in unemployment, previous studies suggest the influences of residential neighborhoods in different ways. For example, neighbors could serve as role models or might exert mutual peer pressure on each other (W. J. Wilson 1987; Crane 1991). In particular, a rich literature suggests the role of social networking in matching people to jobs (Granovetter 1974; Neckerman and Kirschenman 1991; Tilly et al. 2001; Johnson-Webb 2003), but social networking is not completely free from space. For example, in many cases friendships develop and are maintained at clubs, workplaces, and neighborhoods (Everitt 1976). As Wellman (1996, 352) has argued, "Proximity's influence is not dead." In contrast with many other environments, neighborhoods and workplaces have stronger effects on contact in personal community networks, "social relations have not been liberated entirely from 'geography'" (see also Massey and Denton 1993). Accordingly, Bayer, Ross, and Topa's (2004) study in the Boston metropolitan area showed that

the increased availability of neighborhood referrals has a significant impact on a wide range of labor market outcomes including employment and wages; and people who live close to each other tend to work together. A number of studies have also demonstrated that many job seekers living in ethnic “impoverished ghettos,” especially African American segregated residential neighborhoods, suffered significantly from a lack of social contacts in the labor market (W. J. Wilson 1987; Massey and Denton 1993; Topa 2001; Ioannides and Loury 2004).

Employers play an important role as well. For example, some of Chicago’s inner-city employers take note of the address of job candidates during screening to deliberately avoid applicants from specific neighborhoods (Neckerman and Kirschenman 1991). Newman (1999) found that Harlem’s low-wage service sectors tend to hire workers from outside the local area. Tilly et al. (2001) also found a similar pattern among some employers in Boston, Atlanta, Detroit, and Los Angeles. All these studies indicate that the spatial dimension of job accessibility goes beyond distance and social networking; actually, “space” here is used as an apparent signal of the quality of the prospective employees. Therefore, exodus of middle-class families, spatial mismatch between residence and job locations, and lack of social networking, combined with other structural factors, have resulted in extreme levels of disadvantage in some black neighborhoods that perpetuate their residents’ constrained social-spatial mobility in the labor market (for a comprehensive review, see W. J. Wilson 1987; Charles 2003).

In contrast to the studies of black neighborhoods, empirical studies on immigrant ethnic minority-concentrated areas have suggested that those immigrant ethnically concentrated areas are no mere ghettos; instead, they can help reduce the human capital depreciation initially experienced by new immigrants and provide beneficial ethnic resources including a familiar work environment, on-the-job training, and information on employment (K. L. Wilson and Portes 1980; Portes and Bach 1985; Zhou 1992). Although immigrant ethnic neighborhoods can help improve the overall economic position of immigrants, they can also play a key role in perpetuating immigrant ethnic minority workers’ occupational segregation. Webber (1964) has argued that, contrasted with the intellectual elite who are members of “spatially dispersed, non-place communities,” the working class has “social organization (that) is territorially coterminous with neighborhood place” (60, 62). Immigrants, especially those ethnic minori-

ties who likely face discrimination as well as linguistic, cultural, educational, and financial barriers that restrict their spatial mobility in both labor and housing market choices, are more likely dependent on ethnic resources within their neighborhood. In many cases their informal personal contacts are made with coethnic populations who convey information that is heavily biased toward jobs in the immediately surrounding areas as well as biased toward the type of work with which they themselves are most likely to be familiar. The spatial and labor market concentrations are thus intensified by each other in these cases. At the same time, the segregation pattern can be exacerbated by some employers who actively recruit from immigrant ethnic neighborhoods looking for low-cost labor or those with perceived preferred characteristics (Johnson-Webb 2003).

Gender, Space, and the Labor Market

A considerable literature has addressed the evidence that women frequently work in different types of jobs from men and are more concentrated in semi- or low-skilled, unstable sectors with poor working conditions and low pay (England 1993; Hanson and Pratt 1995). Immigrant women are particularly overrepresented in the poorly paid service or labor-intensive manufacturing industries, experiencing greater hardships in the labor market than both native-born women and immigrant men (Pedraza 1991; Green 1996). Moreover, Rajzman and Semyonov (1997) postulated that recent immigrant women from the less developed countries of Asia or Africa (i.e., immigrant ethnic minority women) are “triple disadvantaged” with greater economic losses than women from Europe and the Americas in translating their occupational resources to “adequate” jobs.

Women’s labor market segregation is also a spatial phenomenon. Studies have shown that women in female-segregated jobs work closer to home compared not only to men but also to other women working in non-female-segregated sectors (Hanson and Johnston 1985; Johnston-Anumonwo 1988). In Los Angeles, Ellis, Wright, and Parks (2004) found that men are more likely to work in census tracts with non-coethnic men than women with non-coethnic women. For the same study area, Parks (2004b) also found that women are more likely to be segregated in coethnic female-dominated industries than men in coethnic male-dominated industries. In particular, “ethnic residency” and “spatial accessibility of jobs” have different spatial effects across ethnic groups and gender. For example, living in ethnic enclaves is positively

related to working in coethnic concentrated industries for Mexican-origin men and women but negatively related for Korean-origin men and women.

The spatial concentration of female-segregated jobs reflects women's restricted spatial mobility and localized social networking. First, gender roles in society define the spatial extent of the labor market differently for men and women. Most often as the primary breadwinner, men travel farther from home than their wives and as a result cover a greater spatial area. Women, however, are more likely to make employment decisions from a fixed residential location and value proximity to child care with high priority; thus, women have a greater tendency to give up high income and better job stability to take jobs located close to home or those that offer convenient hours. As a consequence, they are more likely to work in female-concentrated sectors (Reskin 1993; Reskin and Cassirer 1996; Carlson 1997). Second, women's localized job search networks reinforce the segregated nature of their job prospects as well. For women who are housewives or who work not far from home, social networks tend to be localized within their residential area. Everitt (1976) pointed out that, unlike men, for whom workplace functions as the major place of social interaction, friendships among women have predominantly resulted from neighborhood activities. Fernandez-Kelly (1995) also argued that the neighborhood plays an important role in shaping the social networks of low-income residents, especially those of women. Hanson and Pratt (1995) reemphasized the same idea that many women make use of personal contacts within neighborhoods to locate certain jobs in the local area.

Putting It Together: Geography of Residence and Workplace

Taken together, the preceding discussions suggest that living in an immigrant ethnically concentrated area is expected to significantly influence the probability of working within coethnic labor force-concentrated labor market sectors, and that this probability differs for men and women. In the heated "ethnic enclave" debates in the 1980s and early 1990s (see Waldinger 1993 for a review), ethnic concentration was defined diversely, either as a spatial concentration of ethnic enterprises with a significant proportion of workers from the same ethnic group, as ethnic residential agglomerations, or as ethnically concentrated work sites, or in some cases as labor market sectoral concentrations without spatial dimension (K. L. Wil-

son and Portes 1980; Sanders and Nee 1987; Zhou and Logan 1989; Gilbertson and Gurak 1993; Waldinger 1993). Although defining ethnic concentration as the location of residence or location of workplace became the crucial issue on which researchers could not reach consensus, the unavailability of data at the fine scale necessary for investigating the spatial forms of ethnic concentration patterns makes it difficult to differentiate these two types of geography directly.

Logan, Alba, and Zhang (2002, 300) classified ethnically concentrated areas into "immigrant enclaves" versus "ethnic communities" in New York and Los Angeles. Immigrant enclaves are characterized as "less desirable as places to live" and with a concentration of "immigrants who are recently arrived and have few socioeconomic resources." Ethnic communities, by contrast, refer to "ethnic neighborhoods that are selected as living environments by those who have wider options based on their market resources." They write, "If we compared different neighborhoods of a single ethnic group, we might discover that some neighborhoods are better understood as immigrant enclaves, others as ethnic communities, and still others as minority ghettos" (320). Although they also found a correlation between ethnic neighborhood residence and ethnic employment, they did not consider employment or workplace when they classified enclaves, communities, or ghettos. Under the framework of "spatial assimilation," their classification of enclave versus community is based on the boundary between central city and suburbia. Although this classification considers the changes in the nature of urban space and the function of ethnic neighborhoods in the contemporary world, they acknowledged, "This is only a first approximation" (320).

With the geographically detailed information provided by the confidential data, this study differentiates Chinese immigrant concentrated areas by where they concentrate to live and where they concentrate to work at the census tract level. Census tracts in the study areas are classified as (1) residential concentrated areas only, (2) workplace concentration only, (3) both residential and workplace concentration, or (4) nonconcentrated areas. This study focuses on the effects of *living* in these different types of Chinese immigrant-concentrated areas, although later discussion introduces the effects of working in different types of areas for comparison purposes. The typology of these different types of concentrations is given in Table 1.

The Chinese immigrant residential concentration is defined as a Chinese immigrant-concentrated residential area (at the census tract level) but not a Chinese

Table 1. Typology of immigrant concentrated areas

| Concentration | Chinese immigrants residential concentration | Chinese immigrants workplace concentration |
|--|--|--|
| Residential concentration | Yes | No |
| Workplace concentration | No | Yes |
| Both residence and workplace concentration | Yes | Yes |
| Nonconcentration area | No | No |

immigrant-concentrated workplace. Close-knit and geographically compact ethnic neighborhoods such as these residential concentrations can provide a social web through which members of the same ethnic group interact closely and frequently, influencing one another's behavior and transmitting valuable information about economic opportunities both within and beyond the residential concentration (Ioannides and Loury 2004). The geography of Chinese immigrant residential concentration is thus hypothesized to be significantly related to labor market occupational segregation for job seekers, especially women.

The location of a workplace can be an important arena for contact between groups who do not share the same residential neighborhoods, especially for men (Everitt 1976; Patterson 1997; Blumen and Zamir 2001). This study looks at Chinese immigrant workplace concentrations, which refer to the census tracts with a high concentration of Chinese immigrants working in them but without a significant Chinese immigrant residential concentration. I hypothesize that living in an area with a high concentration of coethnic workers offsets the disadvantages in transportation mobility for residents. Compared to a non-Chinese-concentrated area, propinquity to a place with a coethnic cohort working nearby could provide more opportunities for Chinese immigrants to work in the same area and in similar occupations.

Residence and workplace concentration refers to the census tracts with both workplace and residential concentrations of Chinese immigrants. The traditional Chinatown is a typical example of this type, where Chinese immigrants concentrate to work and live (Zhou 1992). Some suburban ethnic communities in Los Angeles are other examples characterized by both residential concentration and ethnic economic activities (Li 1998). Even today, a large number of Chinese still work on the first floors of the stores along Stockton Street in San Francisco's Chinatown in the daytime, while resid-

ing on the upper floors of the same building or in nearby apartments at night. This type of area is expected to offer both abundant resources for ethnic neighborhoods (such as cultural familiarity and housing) and economic opportunities (such as familiar work environments and lower requirements for English proficiency) and thus to provide more opportunities than would non-ethnically concentrated areas and the other two types of ethnic concentrations (residential only or workplace only) in providing niche employment opportunities.

The remaining areas without any form of ethnic concentration, either residential or workplace, are defined as nonconcentration areas. I hypothesize that people living in these dispersed areas are the least likely to depend on coethnic spatial concentration to find a job.

Chinese Immigrants in the San Francisco CMSA

I use the San Francisco CMSA as a case study. In the 1980s, the Bay Area was the only metropolitan area in the United States where blacks, Hispanics, and Asians had the same proportion of the population. With the continued influx of the foreign-born, however, Hispanics and Asians have increased their proportion of the metropolitan population. By 2000, whites were 50.6 percent of the total metropolitan population, and blacks, Hispanics, and Asians were, respectively, 7.8, 19.7, and 20.4 percent of the total population. This unusual degree of ethnic diversity and San Francisco's tradition of openness could mitigate discrimination and prejudice against ethnic minorities, affording them greater freedom in occupation and location choice (Solnit and Schwartzberg 2000).

The San Francisco Bay Area has been a home for Chinese immigrants for more than 140 years. The earliest significant group of immigrants to the Bay Area was the Chinese who served as an important source of cheap labor in mining, railroad construction, manufacturing, and agriculture. After the reform of U.S. immigration policy in 1965, immigrants from China (mainland China, Hong Kong, and Taiwan) have constituted one of the largest groups of newcomers to the Bay Area. Of all U.S. metropolitan areas, the San Francisco CMSA had the highest growth rate of the Chinese population between 1990 and 2000 and is now the metropolitan area with the highest proportion of Chinese.

According to the Census 2000 data for the San Francisco CMSA, Chinese immigrants make up a higher proportion of the labor force with bachelor's degrees and self-employment than do most other groups, including native-born whites. Compared with Mexican immigrants (another major immigrant group in the study area) and most other Asian immigrants, Chinese immigrants have lower unemployment rates, higher job earnings, more concentration in information industries, and higher take-up of U.S. citizenship. The statistics support a "high profile" of Chinese immigrants in the San Francisco area, consistent with the long history of Chinese immigration and economic restructuring (B. P. Wong 2005).

Since the 1950s San Francisco has been evolving from a blue-collar port city of manual labor and distribution of material goods to a white-collar center of finance, administration, tourism, and, now, the "knowledge industries" increasingly dependent on its service sectors, particularly business services and high-technology manufacturing in computers, electronics, instruments, and defense. The traditional Chinese immigrant employment niche sectors in this region are restaurants, laundries, garment factories, gift shops, and jewelry stores (B. P. Wong 1998). Now, Chinese-origin engineers and computer scientists are playing an important role in the dramatic growth of high-tech industries to meet the increasing demand for fast, global, networked activity (Wu 1997; B. P. Wong 2005).

Along with rapid economic development, the Bay Area experienced one of the fastest rates of suburban employment growth in the country during the 1980s, highlighted by the emergence of major suburban employment agglomerations in the Silicon Valley, Pleasanton, San Ramon, and the San Francisco International Airport area (Cervero and Landis 1997). Along with changes in the geography of jobs, Chinese residential patterns have decentralized over time. In the old days, Chinatown was the main residential location for Chinese immigrants. Today, they are much more scattered. As shown in Figure 1 (the mapping strategy is discussed later), the Chinese concentrated areas are mainly in three regions: (1) San Francisco county housing the oldest Chinatown in the United States, characterized both by high concentration of residence and workplace; (2) the Silicon Valley region, characterized by both workplace concentration and enclaves; and (3) the Oakland area at a smaller scale. Overall, the size and diversity of San Francisco's Chinese population provide an excellent case study of ethnic labor market concentration and different types of spatial concentration.

Data and Methodology

The data used in this study come from the 2000 Decennial Long Form U.S. Census for the San Francisco

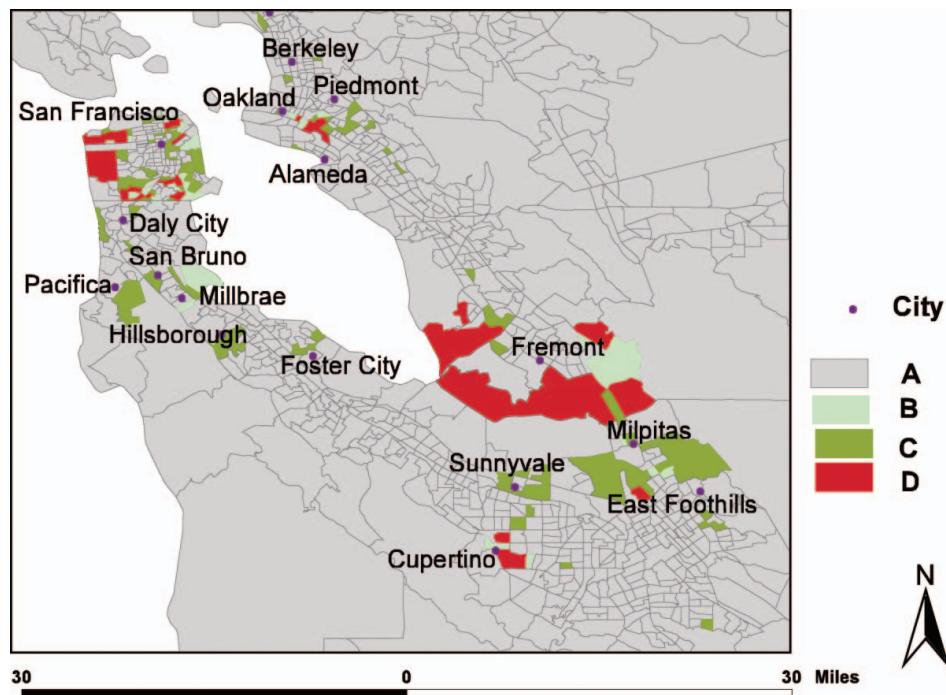


Figure 1. Geography of Chinese immigrants in the San Francisco Consolidated Metropolitan Statistical Area, by type of concentration pattern note. (A = non-concentration; B = residential concentration; C = workplace concentration; D = Chinese enclaves.)

CMSA. Like the Public Use Microdata Samples (PUMS), this confidential data set is rich in socioeconomic characteristics about individuals, such as their place of birth, ethnicity, occupation, and income; however, PUMS data are poor in geographic detail. The smallest spatial unit in the PUMS, the Public Use Microdata Area (PUMA), has a minimum population of 100,000, which is too large for the purpose of exposing the microgeography of residence and work for individual workers. The Decennial Long Form data used in this study provide individual information as well as place of residence and place of work at the census tract level, allowing simultaneous exploration of the geography of residence and geography of workplace at a very fine geographic scale. These data are governed by strict confidentiality and disclosure rules at the Census Bureau's Census Data Research Centers. This study focuses on Chinese immigrants born in Mainland China, Hong Kong, and Taiwan³ between the ages of sixteen and sixty-four who are in the civilian labor force, and both live and work in the San Francisco CMSA. I refer to them as Chinese immigrants hereafter. The analysis is conducted in three steps.

Identifying Chinese Immigrant-Concentrated Employment Niches

To identify Chinese immigrant labor market concentration patterns, this study uses a total of 501 detailed occupations provided by Census 2000. The occupations that are dominated by a particular ethnic group (i.e., ethnic niches) are identified by an odds ratio⁴ (Logan, Alba, and McNulty 1994; F. Wilson 2003), given by:

$$\text{Odds Ratio} = (E_i/E_{t-i})/(O_i/O_{t-i}) \quad (1)$$

The numerator represents the odds of Chinese immigrants (E) being engaged in sector i , and the denominator represents the odds of all other groups (O) working in the same sector i . For example, if E_i is the number of Chinese immigrants in food service, E_{t-i} represents Chinese immigrants in all other occupations, O_i is the number of all other group members except for Chinese immigrants in the food service sector, and O_{t-i} represents all other group members employed in nonfood service sectors. The calculation is separate for Chinese immigrant men and women.

Consistent with previous studies, an occupational niche is defined as one in which the odds ratio is 1.5 or greater (Ettlinger and Kwon 1994; Wright and Ellis 2000; Hudson 2003). Additionally, to prevent a bias

resulting from very small numbers, I stipulate that an occupation niche has to be at least 50 percent of the average size of all employment sectors. For example, if there are 501,000 Chinese immigrants employed in the study area, the average number of Chinese immigrants per sector should be 1,000 (a total of 501,000 Chinese workers divided by 501 sectors). A Chinese immigrant niche (either male or female) must then have at least 500 (50 percent of 1,000) Chinese immigrant men or women and an odds ratio equal to or greater than 1.5.⁵ Therefore, at the individual level, wherever they live or work, each respondent within a study area is coded 1 if she or he works in an occupational niche; otherwise, he or she is coded 0.

Identifying Chinese Immigrant Spatial Concentration Patterns

For the same reason as using odds ratio for labor market niches, and also to be consistent with the measurement of labor market concentration, this study uses the odds ratio as an index for measuring spatial concentration.⁶ Two odds ratios are used to identify, respectively, Chinese immigrant residential and workplace concentrations:

$$RO_i = (R_i/R_{t-i})/(OR_i/OR_{t-i}) \quad (2)$$

$$WO_i = (W_i/W_{t-i})/(OW_i/OW_{t-i}) \quad (3)$$

where RO_i and WO_i represent the odds ratios of each census tract (i) where Chinese immigrants reside (RO) and work (WO), respectively; R_i and W_i are the number of Chinese immigrants residing or working, respectively, in census tract i ; R_{t-i} and W_{t-i} are the number of Chinese immigrants residing or working, respectively, in census tracts other than i ; OR_i and OW_i are the numbers of non-Chinese residing or working, respectively, in census tract i ; and OR_{t-i} and OW_{t-i} are the numbers of non-Chinese living and working, respectively, in census tracts other than i .

Consistent with previous studies on Los Angeles (J. P. Allen and Tuner 1997; Logan and Zhang 2004), this study uses a threshold value of 5.0 to designate a Chinese residential concentration. Thus, all census tracts with odds ratios of 5.0 or greater are considered to be Chinese residentially concentrated census tracts. Previous literature suggests that the ethnic geography of work tends to be much less segregated than residential geography due to the nature of recruitment and networking and the interaction of different types of jobs in the same job site (Ellis, Wright, and Parks 2004). Testing from this

study indicates the same pattern. It is therefore appropriate to have a lower odds ratio for designating a workplace concentration. In this study any census tract with a value of WO_i larger than 2.0 is defined as a Chinese immigrant-concentrated workplace (data show that the values of $RO_i = 5.0$ and $WO_i = 2.0$ result in a similar percentage of Chinese immigrants in the residence- or workplace-concentrated census tracts).

Using this strategy, the census tracts in the San Francisco CMSA can be classified into four categories as follows (Figure 1 showing the four types was mapped in the same manner):

1. $RO_i \geq 5 \text{ & } WO_i < 2$: Chinese immigrant residential concentration
2. $RO_i < 5 \text{ & } WO_i \geq 2$: Chinese immigrant workplace concentration
3. $RO_i \geq 5 \text{ & } WO_i \geq 2$: Chinese immigrant residential and workplace concentration
4. $RO_i < 5 \text{ & } WO_i < 2$: Nonconcentrated area

For each respondent with a residential place at the census tract level, she or he is classified as living in one of these four types of areas. Therefore, we get two levels of data for each Chinese immigrant: at the individual level, working in either niche or nonniche occupations plus other personal characteristics; at the census tract level, having one of four types of residency plus other neighborhood characteristics. The regression of a respondent's working in occupational niches on both personal and neighborhood characteristics will be conducted under such a two-level data structure.

Relating the Geography of Residence and Workplace to Labor Market Concentration

In conventional studies, neighborhood variables (here at the census tract level) are merged with individual-level variables to assess the effects of local conditions on individual outcomes. This is not appropriate for the measurement of the neighborhood effect, as its significance can be overestimated due to correlation error within each neighborhood (for detailed discussion, see Raudenbush and Bryk 2002). To correct for this and other problems, this study uses a multilevel linear regression model with detailed data on both individuals and census tracts. This two-level approach includes random errors that control for correlation error among individuals in the same census tract; therefore, it allows for simultaneous estimation of a full macrolevel model

with controlled personal-level variables to predict the chance of niche employment.

Level 1 model: Effects of individual characteristics.

At Level 1, the odds (in log form) of working in an ethnic niche versus a nonniche sector are estimated using individual-level data for each census tract. The full multilevel model is

$$Y_{ij} = \beta_{0j} + \beta_{1j} (\text{Female})_{ij} + C_{ij}\rho + e_{ij} \quad (4)$$

where Y_{ij} is the dependent variable, which is the odds (in log form) of an individual i working in an ethnic niche job located in census tract j . Female_{ij} is the binary variable representing the gender of the individual (female = 1). A standard vector of C_{ij} individual-level variables with their associated coefficients ρ is included. These variables include age, marital status, level of education, entrepreneurship, year entered the United States, and the commuting time from home to work (see Table 2 for the description and coding strategy of the variables).

Level 2 model: Effects of geography. At Level 2, variation in the probability of niche employment across census tracts is modeled as a function of the socioeconomic characteristics in the residential area. To control for personal differences, the individual-level variables (except gender) are assumed to be fixed across the labor market and are centered around their grand means. That is, the probability of niche employment is the estimated net of differences across a census tract in the distribution of the observed individual-level variables (e.g., education). Then, variations in gender in working in ethnic niches across the census tract are estimated by Equations 5 and 6:

$$\beta_{0j} = \gamma_{00} + W_j\gamma_0 + \mu_{0j} \quad (5)$$

$$\beta_{1j} = \gamma_{10} + W_j\gamma_1 + \mu_{1j} \quad (6)$$

The adjusted average probabilities of niche employment for men and women are represented by β_{0j} and β_{1j} in Equations 5 and 6. The Level 2 error terms (μ_{0j} and μ_{1j}) indicate that a separate variance component is estimated for men and women. This random spatial variation in probability of niche employment is partially explained by vector W_j , which represents a set of census tract-level characteristics, such as the racial composition of all residents, the rent level, the property values, homeownership, the percentage of female-headed households, and the proportion of different age cohorts

Table 2. Coding strategy of variables in multilevel linear modeling

| Variable | Coding strategy |
|-------------------------------------|--|
| Individual-level variables | |
| Female | Being female = 1 |
| Age | Continuous |
| Travel time | Continuous; travel time from home to work |
| Married | Being married = 1 |
| Degree | Having college degree = 1 |
| Self-employed | Being self-employed = 1 |
| Immi9520 | Immigrated between 1995 and 2000 |
| Immi9094 | Immigrated between 1990 and 1994 |
| Immi8589 | Immigrated between 1985 and 1989 |
| Immi8084 | Immigrated between 1980 and 1984 |
| Immibf80 | Immigrated before 1980 (reference group) |
| English | Fluent English speaking = 1 |
| Census tract-level variables | |
| Black | Percentage of blacks of total population |
| Hispanic | Percentage of Hispanics of total population |
| Asian | Percentage of Asians of total population |
| Property | Average value of property in the census tract |
| Rent | Percentage of gross rent as household income |
| Education | Percentage of people with bachelor's degree |
| Ownership | Percentage of households owning a home |
| Female-headed | Percentage of female-headed households |
| Immi9020 | Percentage of immigrants coming to United States between 1990 and 2000 |
| Immibf75 | Percentage of immigrants coming to United States in and before 1975 |
| HomeCon | Where he or she lives is Chinese residential-concentrated tract |
| WorkCon | Where he or she lives is Chinese workplace-concentrated tract |
| HWCon | Where he or she lives is both home and workplace-concentrated tract |
| NonCon | The census tract where he or she lives is not Chinese-concentrated tract (reference) |

of immigrants (particularly the most recent and oldest cohorts). See Table 2 for the description and coding strategy of the variables at the census tract level. γ_0 and γ_1 give the coefficients of census tract-level variables for men and women.

Labor Market Concentration of Chinese Immigrants

Like U.S.-born whites in the San Francisco CMSA, Chinese immigrants are significantly concentrated in computer, mathematical, engineering, management, and professional occupations. Whereas half of Chinese immigrants work in Chinese ethnic niches, Chinese immigrant men and women have distinct labor market concentration patterns. Table 3 lists the twenty largest niche sectors for men and women (the table of the odds ratios for 501 occupations for Chinese immigrant men and women is available from the author on request). Most Chinese male niche workers work in computer, electronics, or engineering-related occupa-

tions. In contrast, although some Chinese immigrant women niche workers work as professionals and engineers, most of them are concentrated in semi- or low-skilled and labor-intensive occupations, such as clerks, cashiers, waitresses, and food preparation workers. For instance, the odds ratio for immigrant Chinese women working as sewing machine operators is as high as 53, which indicates their absolute concentration in this occupation. Although they have niches in computer and electronics-related sectors, most of them concentrate in the lower level of the labor market, such as electromechanical assemblers and data entry clerks.

Overall, the Chinese immigrant labor force is typically bifurcated in the capital and knowledge-based new economy in the San Francisco metropolitan area: On one hand, the highly trained Chinese immigrant engineers (mainly men) are dominating the occupational niche for global programming in the region; on the other hand, a large number of immigrants, especially women, are performing assembly-line work in factories and services in restaurants and hotels. This pattern is consistent with that observed by Wu (1997) and

Table 3. Top twenty Chinese ethnic niches by sex, ranked by the number of workers employed in each occupation

| Male | | Female | |
|--|----------------|---|----------------|
| Occupation | % ^a | Occupation | % ^b |
| Computer software engineers | 17.8 | Accountants and auditors | 13.8 |
| Electrical and electronics engineers | 9.0 | Computer software engineers | 9.7 |
| Miscellaneous engineers | 7.0 | Sewing machine operators | 8.6 |
| Cooks | 6.1 | Cashiers | 5.3 |
| Chief executive | 4.1 | Bookkeeping, accounting, and auditing clerks | 5.2 |
| Computer programmers | 3.6 | Waitress | 4.2 |
| Computer hardware engineers | 3.1 | Office clerks, general | 3.9 |
| First-line supervisors/managers of nonretail sales workers | 2.8 | Electrical, electronics, and electromechanical assemblers | 3.4 |
| Chefs and head cooks | 2.8 | Financial managers | 3.2 |
| Computer scientists and system analysts | 2.7 | Maids and housekeeping cleaners | 2.9 |
| Engineering managers | 2.4 | Inspectors, testers, sorters, samplers, and weighers | 2.7 |
| Physical scientists | 2.2 | Computer programmers | 2.6 |
| Food service managers | 2.2 | Miscellaneous assemblers and fabricators | 2.5 |
| Civil engineers | 2.1 | Production workers including semiconductor processor and cooling and freezing equipment operators | 2.0 |
| Automotive service technicians and mechanics | 2.0 | Physical scientists | 1.7 |
| Network systems and data communication analysts | 2.0 | Data entry keyers | 1.7 |
| Engineering technicians | 1.8 | Food service managers | 1.5 |
| Computer support specialists | 1.6 | Food preparation workers | 1.4 |
| Mechanical engineers | 1.6 | Hairdressers, hairstylists, and cosmetologists | 1.4 |
| Postal service carriers | 1.4 | Clinical laboratory technologists and technicians | 1.3 |

^aPercentage for each niche sector of the total male niche workers.

^bPercentage for each niche sector of the total female niche workers.

Waldinger and Der-Martirosian (2001). Accordingly, average job earnings for Chinese immigrant niche male workers are much higher than those of their coethnic female niche workers. Among Chinese immigrant women, workers in coethnic-concentrated occupations earn less than coethnic nonniche workers. It is worth noting that, although as an entire ethnic group Chinese immigrants have higher percentages of labor force participants with bachelor's degrees and high concentrations in the higher skilled segments of the labor market, the difference in job earnings between Chinese immigrants and native-born whites is not consistent: Both male and female native white niche workers earn more than their Chinese immigrant counterparts.

Spatial Concentration of Chinese Immigrants

Table 4 describes the socioeconomic characteristics of Chinese who live or work in coethnic concentrated

census tracts. Generally speaking, compared with people who neither live nor work in concentration with coethnics, living in Chinese-concentrated areas or both living and working in Chinese-concentrated areas is more strongly associated with working in Chinese occupational or industrial niche sectors, low proportions of bachelor's (or above) degree holders, low job earnings, low English proficiency, and low proportion of U.S. citizenship. A negligible proportion of Chinese immigrants who both live and work in areas of high Chinese concentration are working in the information and public administration industries. This pattern is in distinct contrast to the Chinese immigrants who neither work nor live in Chinese-concentrated areas. The unfavorable socioeconomic conditions for spatially concentrated Chinese immigrants seem to suggest that either living or both living and working with a coethnic population could provide more resources for those disadvantaged in the open labor market.

Table 4. Characteristics of Chinese immigrants in different spatial concentration patterns

| Characteristics | All workers | Live in concentration | Work in concentration | Live and work in concentration | Not concentrated |
|-----------------------------|-------------|-----------------------|-----------------------|--------------------------------|------------------|
| Occupation niche | 50.59 | 53.04 | 48.06 | 50.00 | 51.31 |
| Industrial niche | 45.61 | 49.62 | 36.65 | 48.08 | 46.73 |
| Bachelor's degree | 53.36 | 40.73 | 43.19 | 42.79 | 55.94 |
| Earnings | 47,468 | 29,043 | 40,713 | 27,549 | 49,771 |
| Manufacturing | 27.59 | 31.44 | 28.09 | 33.65 | 28.21 |
| Whole trade | 4.30 | 2.21 | 6.99 | 5.77 | 4.35 |
| Retail trade | 8.49 | 13.36 | 13.16 | 8.17 | 8.06 |
| Information | 4.49 | 2.56 | 2.80 | 0.00 | 4.70 |
| Professional and scientific | 14.32 | 17.68 | 10.66 | 21.63 | 14.54 |
| Service | 12.59 | 12.31 | 15.05 | 23.56 | 11.88 |
| Public administration | 2.18 | 1.41 | 1.74 | 0.00 | 2.21 |
| English proficiency | 71.66 | 61.58 | 65.18 | 51.92 | 73.41 |
| Being a citizen | 65.44 | 51.43 | 66.55 | 51.92 | 66.31 |
| Immigrate 1995–2000 | 13.60 | 20.94 | 11.93 | 18.75 | 13.01 |
| Immigrate 1990–1994 | 17.59 | 17.18 | 15.49 | 9.13 | 17.60 |
| Immigrate 1985–1989 | 19.92 | 19.84 | 21.38 | 19.71 | 19.76 |
| Immigrate 1980–1984 | 19.85 | 23.71 | 22.50 | 19.71 | 19.53 |
| Immigrate 1975–1979 | 13.36 | 9.49 | 16.65 | 13.46 | 13.46 |

Note: Except for earnings, which are measured in U.S. dollars, all other variables are the percentage of the total immigrant Chinese workers in the sample.

The descriptive statistics at the individual level are consistent with the characteristics of the census tracts where Chinese immigrants are concentrated. The socioeconomic characteristics of all the residents for each type of spatial concentration are depicted in Table 5. Residents in non-Chinese-concentrated tracts

have the highest personal income, household income, monthly rent, and levels of homeownership and the lowest proportion of households having subfamilies and living in crowded conditions. In contrast, residents of Chinese immigrant concentrated areas (both residence and workplace) have the lowest average

Table 5. Socioeconomic characteristics of residents in four types of areas

| Characteristics of people living in the census tract | Type of Chinese spatial concentration in census tract | | | |
|--|---|-------------------------|-----------------|----------------------|
| | Residential concentration | Workplace concentration | Chinese enclave | Nonconcentrated area |
| Personal income (\$) | 34,990 | 37,075 | 33,349 | 39,866 |
| Household income (\$) | 89,748 | 91,367 | 86,254 | 93,919 |
| Monthly gross rent (\$) | 1,113 | 1,199 | 1,098 | 1,201 |
| Homeownership (%) | 54.06 | 51.73 | 50.20 | 59.31 |
| Having Subfamilies (%) | 9.96 | 9.56 | 11.54 | 7.06 |
| Living crowded (%) | 24.45 | 26.42 | 29.31 | 18.92 |
| Black (%) | 7.12 | 10.18 | 3.71 | 7.31 |
| Hispanic (%) | 7.52 | 18.68 | 7.93 | 19.26 |
| Asian (%) | 49.36 | 29.34 | 55.00 | 14.90 |
| Foreign-born (%) | 45.98 | 36.67 | 52.14 | 25.40 |
| Immigrate 1995–2000 (%) | 18.25 | 14.97 | 19.98 | 10.37 |
| Immigrate before 1975 (%) | 8.78 | 7.48 | 11.37 | 5.87 |
| Citizen (%) | 26.08 | 17.31 | 30.60 | 10.58 |
| Fluent English (%) | 38.38 | 35.13 | 41.45 | 25.21 |
| Bachelor's degree (%) | 42.22 | 43.24 | 46.53 | 40.67 |

personal and household incomes, monthly rents, and levels of homeownership and the highest proportion of households with subfamilies and living in crowded conditions. At the same time, these areas have the highest proportion of both new and old Chinese immigrants. The socioeconomic characteristics of Chinese immigrant residentially concentrated areas are very similar, particularly with regard to a similarly high proportion of newly arrived immigrants. This suggests that even as some Chinese immigrant residential and workplace concentrated areas are able to attract new immigrants with low rent, work opportunities, and a familiar cultural environment, they also house many older generations by providing traditional employment niche jobs or strong social-cultural ties.

Spatial Concentration and Niche Employment

The regression results showing the relationship between residential location and niche employment after controlling for personal characteristics are given in Table 6. Model 1 includes only the four types of concentrations (nonconcentrated area is the reference category), Model 2 includes the socioeconomic characteristics at the census tract level, and Model 3 includes the four concentration types and socioeconomic characteristics at the census tract level. The overall pattern indicates that where Chinese immigrants live is significantly related to their niche employment for both women and men; however, the direction of the effects are opposite between them.

Before controlling for other tract-level characteristics, living in different types of Chinese immigrant concentrated places is significantly related to labor market niche employment for both men and women (Model 1). Meanwhile, the tract-level characteristics are significantly associated with Chinese immigrant niche employment, such as the percentage of black population, the property values, homeownership, percentage of female-headed households, and the percentage of different age cohorts of immigrants (Model 2). After controlling for these characteristics, however, living in a Chinese immigrant-concentrated residential place is the only significant predictor for Chinese immigrant men, and living in census tracts with Chinese immigrant workplace concentration is no longer significant for women (Model 3). This pattern strongly suggests the “overlapped” effects of residency in ethnically concen-

trated areas and other socioeconomic characteristics at the census tract level. Thus, it is necessary to detangle the “coexisting” effects if we want to examine the effects of residing in Chinese immigrant concentrated areas.

It is also noticeable that the characteristics at the tract level associated with occupational niche employment are different for men and women. As Model 2 and Model 3 have shown, higher percentage of black population, lower property values and homeownership, and higher percentage of female-headed households are positively related to Chinese immigrant women's niche employment. On the contrary, Chinese immigrant male niche workers are more likely to live in the tracts with higher property values and levels of homeownership and less likely to reside with other ethnic minority group members. This pattern seems to suggest a more disadvantaged socioeconomic status of residential neighborhood at the census tract level for Chinese immigrant female niche workers. There is no way to know with this data set who dictates residential location of working couples in single households. With that said, the data do reveal interesting patterns of labor force participation between men and women: Of all the Chinese immigrant male labor force in the San Francisco area, the married (with spouse present) represent 68 percent, compared to 63 percent of women who are married. Among these husbands, their wives' labor force participation rates differs by husbands' occupations. For example, for the men working in management, professional, and related occupations, 67 percent of their wives are in the labor force. These women also have higher levels of education, better English proficiency, and a higher concentration in similar high-skilled occupations. For the men working in production occupations, more than 80 percent of their wives are in the labor force, with a high concentration at the low end of the job hierarchy. Consistently, for married Chinese immigrant women who participate in the labor force, 90 percent of their husbands are also in the labor force (compared to only 70 percent of the overall married female labor force having spouses in the labor force). Those women with lower socioeconomic status and working in low-skilled jobs are also more likely to be married to men with similarly low status and working in similar jobs. Therefore, the socioeconomic status of residential neighborhoods for Chinese immigrant male and female niche workers reflects the differences between husband and wife in labor force participation within households.

After controlling for the personal and socioeconomic conditions in residential census tracts for

Table 6. Effects of residential place at census tract level on niche employment

| Variable | Male | | | Female | | |
|--------------------|----------|-----------|-----------|----------|-----------|-----------|
| | Model 1 | Model 2 | Model 3 | Model 1 | Model 2 | Model 3 |
| Intercept | 0.059 | -0.626 | -0.606 | -0.143 | 0.910 | 0.818 |
| HomeCon | -0.242* | | -0.239*** | 0.532** | | 0.460*** |
| WorkCon | -0.191* | | -0.045 | 0.382** | | 0.187 |
| HWCon | -0.221** | | -0.096 | 0.571*** | | 0.344** |
| Black | | -0.018*** | -0.017 | | 0.015** | 0.014** |
| Hispanic | | -0.003 | -0.007 | | 0.004 | 0.006 |
| Asian | | 0.003 | | | 0.004 | |
| Property | | 0.038** | 0.036** | | -0.039* | -0.037 |
| Rent | | -0.008 | -0.009** | | 0.008 | 0.011 |
| Education | | 0.002 | 0.001 | | -0.009** | -0.009*** |
| Ownership | | 0.008*** | 0.009*** | | -0.010*** | -0.010*** |
| Female-headed | | -0.003 | -0.003 | | 0.011 | 0.008 |
| Immi9020 | | 0.019** | 0.027*** | | -0.021** | -0.020*** |
| Immibf75 | | -0.077*** | -0.065*** | | 0.075*** | 0.068*** |
| Variance component | 0.222 | 0.085 | 0.085 | 0.583 | 0.112 | 0.099 |

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Chinese immigrant women, although living in a Chinese workplace-concentrated area is not a significant factor, living in Chinese residential-concentrated areas or places with both residential and workplace concentration significantly increases the chance of working in a niche job compared to those women living in non-Chinese-concentrated areas. Inconsistent with expectations, however, living in an area with both residential and workplace concentration is not more significantly associated with niche employment than living in an area with residential concentration only. This indicates that residential neighborhood has a greater effect for women than does workplace; also, the residential neighborhood is more important for

women than for men in affecting their labor market outcomes.⁷

As contrasted to the results for women, after controlling for the personal and socioeconomic conditions in residential census tracts, living in a Chinese immigrant residentially concentrated area lowers the propensity of men to work in their niche sectors compared to those men living in non-Chinese-immigrant-concentrated areas. To capture the residential location effect graphically, Figure 2 shows the predicted probability of working in ethnic niche occupations for an assumed worker whose socioeconomic characteristics are at the average level of Chinese immigrants in the San Francisco metropolitan area and who lives in a census

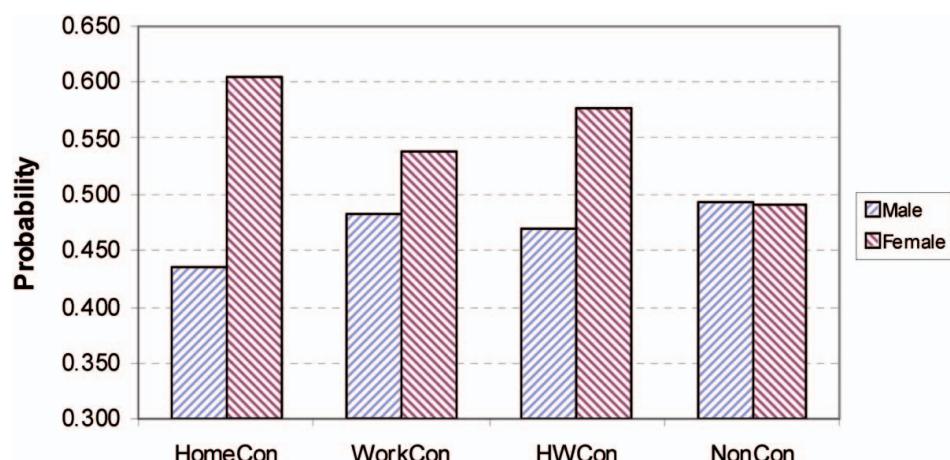


Figure 2. Predicted probability of niche employment by four types of spatial concentration.

tract with the average socioeconomic conditions in the study area, separately by men and women. It shows similar opposite effects of residency in Chinese immigrant-concentrated areas.

The seemingly contradictory spatial effects come from the opposite nature of jobs concentrated among Chinese immigrant women and those taken by their gender counterpart niche workers. As shown earlier, Chinese immigrant women's employment niches are more associated with those with lower incomes and a higher percentage of production and personal services. The available job information in ethnic neighborhoods or enclaves is more associated with those traditional ethnic niches that normally do not require high technology or English proficiency, are easy to access, and are more desirable for women who assume more family responsibilities. For many immigrant Chinese women, the attraction of ethnic niches for women quite probably is the availability of the jobs themselves but not necessarily wages that are relatively higher than wages paid in other jobs (Rosenfeld and Tienda 1999; Bean and Stevens 2003).

Ethnic neighborhoods or enclaves could also provide similar job opportunities for Chinese immigrant men; however, Chinese men's niches are mainly in computer, mathematical, and engineering jobs, which require high-technology training and intensive competition in the open labor market. Recruitment in these sectors is more likely to occur through formal channels such as employment agencies, union hiring halls, and school placement services (Ioannides and Loury 2004). Although ethnic job referrals can occur, the spatial and social contacts of the employees in these sectors quite probably go far beyond ethnic neighborhoods or ethnic enclaves. For most immigrants living in ethnic neighborhoods or enclaves, the spatial boundaries of these ethnic enclaves also coincide with the span of their social networking and ethnic resources, making it hard to interact with most niche workers at the highest levels of the labor market hierarchy. This is why living in Chinese immigrant neighborhoods or enclaves is negatively related to niche employment for Chinese men, after controlling for personal characteristics and other neighborhood variables.

The neighborhood effects on niche employment are limited to occupational niches only. When the niche employment sector is measured by "industries" using the three-digit codes provided by the Census 2000, ethnic residential-concentrated areas or enclaves are no longer significant predictors for either men or women after controlling for personal characteristics and socioeconomic

characteristics at the census tract level (regression results on industrial niches are available from the author on request). This finding reemphasizes that neighborhood effects on labor market concentration are confined to certain levels of job skills. The ethnic resources within ethnic neighborhoods and enclaves could provide job opportunities; however, ultimately, they are limited in how far they can assist the immigrant's upward mobility in the labor market (Granovetter 1985; Waldinger 1995). This highlights the significance of place and context in shaping the relationship between space and multiple relations of power, in this case, gender and class.

Conclusions

Chinese immigrants in the San Francisco urban labor market are clearly segmented by gender and job skill: Men are more concentrated in knowledge- and capital-intensive occupations with higher pay, more upward mobility, and better working conditions, whereas women are mostly concentrated in semiprofessional, clerical, production, and service-related jobs. As one among very few studies, this article demonstrates that the geography of home and the geography of work are significantly related to this labor market segmentation process. Place of home and place of work are not only the "location"—physical territory of residence or workplace—but also a medium through which gender relations and racial relations are integrated into a socially and spatially contingent labor market searching process (Hanson and Pratt 1992, 1995; Fernandez and Su 2004; Ioannides and Loury 2004; Ellis, Wright, and Parks 2007).

The relationship between where people live and work and their labor market outcomes is complicated. After controlling for personal characteristics, neighborhood socioeconomic conditions and residency in coethnic population-concentrated areas "coexist" to influence Chinese immigrants' labor market segmentation patterns. The overlapped effects suggest that labor market segmentation along the lines of race, ethnicity, and gender goes far beyond personal characteristics (e.g., human capital), the commuting time between home and work, and coethnic social networking. The social, cultural, historical, and institutional factors behind residential segregation among different racial and ethnic groups and classes at large are not only producing an unequal residential geography but also deepening socioeconomic inequality among the people

who live in different residential areas. The spatial effects of residential arrangements are particularly significant for immigrant ethnic minorities whose language, cultural, and financial barriers often leave very few choices for them in the housing market and often “place” them in traditional ethnic enclaves or neighborhoods with coethnic residents, or workers, or both. Under this circumstance, their job searches will start from these ethnically concentrated areas. Due to the same lack of avenues in the open housing market, spatial mobility for these immigrants is very limited on the one hand; on the other hand, job opportunities might be very alluring in coethnic-concentrated occupations for those who otherwise could be unemployed. In this sense, residency in coethnic population-concentrated areas is perpetuating the concentration of Chinese immigrants in specific echelons of occupations.

This study explores ethnically concentrated areas by differentiating the geography of work and geography of home at the census tract level. When compared to areas without Chinese immigrant concentration, living in Chinese immigrant-concentrated places is significantly related to working in Chinese immigrant-concentrated occupations for both men and women, before controlling for tract-level socioeconomic conditions. When controlling for the “coexisting” neighborhood effects, residency in Chinese immigrant-concentrated residential areas proves to be the most significant predictor for niche employment. The effect is particularly momentous for immigrant Chinese women. In the study area, the overall level of education (measured by the percentage of labor force with a bachelor’s degree) among Chinese immigrant men and women, U.S.-born white women, and U.S.-born Chinese women is very similar; however, in contrast to these other groups, a large number of Chinese immigrant women are more concentrated in labor-intensive, semi-skilled, or low-skilled assembly line and factory jobs. These jobs at the bottom of the ladder of the labor market hierarchy can be regarded as “opportunities” when compared with joblessness; however, these niche jobs could represent just a survival strategy for many immigrant Chinese women, hardly offering any advantages in earnings or upward mobility. Furthermore, these immigrant niche women workers are more likely to reside in areas with lower socioeconomic conditions. When the job segregation pattern is reinforced by constrained spatial mobility and limited social resources for immigrant minority women living in ethnic neighborhoods, these niche workers hardly

have any chance of getting out of their segregated occupations. In this sense, the positive view on ethnically concentrated areas could be overly sanguine—living in these areas is actually intensifying the bifurcation of the local labor market and thus earnings inequalities by gender.

This study has focused on an individual labor force and their neighborhood characteristics. Among Chinese immigrants, wives of highly skilled male labor force participants at certain life stages might choose not to work; or, if they work, they are more likely to be found in high-skilled sectors than those women working in low-skilled jobs who most likely come from families with lower socioeconomic status. Although women from different households (with different structures) have different labor force participation patterns, occupational segregation among Chinese immigrant women and the segmentation between male and female niche workers to a large extent also reflects the segregation by household (e.g., different classes). Because low-income households have particularly limited choices in the housing market, the perpetuating effect of residential neighborhood on labor market segmentation is not only between individual labor forces but also between different households. Examining household structure and skill segments within and between households instead of only personal differences in future research would be significant in helping researchers understand the social-spatial process of labor market segmentation.

Another area that deserves further study is labor market segregation by skill. Ethnic concentration does not necessarily mean disadvantages for those workers in the niche sectors. For instance, in the San Francisco area, many Chinese immigrant men are working in highly skilled, privileged sectors; and not all niche sectors for Chinese immigrant women are those low-skilled and labor-intensive occupations. Are the different effects of residential location for men and women more about gender difference or skill? Would the Chinese immigrant men working in low-skilled niche occupations and women in the upper levels of the labor market hierarchy have the same relationship as discussed in this analysis? In this study, education, English proficiency, length of stay in the host society, and other individual-level characteristics are already considered in the regression modeling; however, specific investigation of different skill segments would provide more valuable insights into the spatial dimension of ethnic immigrant labor market segmentation.

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Notes

1. The connections and differentiations between race and ethnicity are one of the central debates, and American racial dynamics is one of the most thoroughly discussed issues in social science literature including geography (see, for example, Hamilton and Form 2003). Numerous works have argued that "race" is a social construction, a result of "discursive, thoroughly material—and human—social processes" by which "racialized groups are identified, given stereotypical characteristics, and coerced into specific living conditions" (Kobayashi and Peake 2000, 393; Kobayashi and Peake 1994; also see Omi and Winant 1994). Interacting with class and gender, racialization often involves social and spatial segregation mirrored in restricted intergroup contact and constrained resources (Ellis, Wright, and Parks 2004). For the purpose of this study that relies on census data analyses, however, I follow the Census Bureau's categorization of race and use self-identification by people according to the racial category with which they most closely identify, without differentiating race and ethnicity in the discussions of Chinese immigrants.
2. Exceptional examples include case studies by Hanson and Pratt (1991, 1992, 1995), England (1993), McLafferty and Preston (1991), and Parks (2004a). Most work, though, focused on either gender occupational segregation without considering ethnicity and immigrant status or "availability of job" (measured by unemployment or not) but not labor market segregation. Until very recently, geographers (Ellis, Wright, and Parks 2004, 2007; Parks 2004b) provided empirical studies to examine the relationship between immigrant or ethnic minority residential place, workplace, and labor market segregation. These studies are discussed later.

3. Immigrant Chinese refers to racial or ethnic Chinese who were born in Mainland China, Hong Kong, and Taiwan. As with any categorization, however, there is significant variation within the Chinese group. According to Census 2000 in the San Francisco CMSA, of the total foreign-born Chinese, the approximate percentages by birth from Mainland China, Hong Kong, and Taiwan, respectively, are 64, 18, and 18 percent.
4. A representation index or location quotient has also been used (Ellis and Wright 1999; Rosenfeld and Tienda 1999; Hudson 2003) in previous studies. Compared to the representation index and location quotient, the odds ratio is more sensitive to the change of employment distribution, although their implications are similar. See Wang and Pandit (2007) for more discussion.
5. Both the threshold value of 1.5 and the minimum restriction (50 percent of the average size) are arbitrary. In previous studies the threshold for defining an ethnic niche was between 1.2 and 2.0 (e.g., Ettlinger and Kwon 1994; Wright and Ellis 2000; Hudson 2003), but they are all arbitrary in nature. We should be aware that choosing a threshold level *a priori* is risky because the range of values depends on the number of sectors, groups, and the size of the sample. For the restriction on minimum number of workers, some studies use absolute number; for example, at least 300 or 500 workers in niche sector (F. Wilson 2003). A percentage measure is preferable to an absolute value to reflect the nature of ethnic labor markets, however, because the size of the labor force and the share of each sector vary greatly across ethnic groups. For a more detailed discussion on different usages of employment sector, threshold of odds ratio, and the minimum worker restriction, please see Wang and Pandit (2007).
6. Mapping the percentage of ethnic minorities in a geographic unit (such as a census tract) is a common practice in geography. Recent practices include mapping local entropy indexes, location quotients, and odds ratios (e.g., J. P. Allen and Turner 1997; D. Wong 1998; Logan and Zhang 2004; Parks 2004a).
7. The models shown in this study are constructed by where people reside. Similar modeling strategy is employed by where people work to examine the effects of working in four types of concentration areas on labor market outcomes. These models show a similar pattern: Working in a Chinese immigrant-concentrated residential place or places with both residence and workplace is significantly related to Chinese immigrant women's niche employment, although working in an area of Chinese immigrant-concentrated workplaces does not matter. However, working in a Chinese workplace-concentrated area is still a strong negative predictor for Chinese immigrant male niche workers after controlling for personal and tract-level characteristics. The workplace models are not shown here but are available from the author on request.

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