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**HOW DOES GEOGRAPHY MATTER IN ETHNIC
LABOR MARKET SEGMENTATION PROCESS?**

A CASE STUDY OF CHINESE IMMIGRANTS IN THE SAN FRANCISCO CMSA

by

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Abstract

In the context of continuing influxes 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 growing attention. Using a confidential dataset extracted from the United States Decennial Long Form Data 2000 and a multilevel regression modeling strategy, this paper presents a case study of Chinese immigrants in the San Francisco metropolitan area. Correspondent with the highly segregated nature of the labor market as between Chinese immigrant men and women, different socioeconomic characteristics at the census tract level are significantly related to their occupational segregation. This suggests the social process of labor market segmentation is contingent on the immigrant geography of residence and workplace. With different direction and magnitude of the spatial contingency between men and women in the labor market, residency in Chinese immigrant concentrated areas is perpetuating the gender occupational segregation by skill level. Whereas abundant ethnic resources may exist in ethnic neighborhoods and enclaves for certain types of employment opportunities, these resources do not necessarily help Chinese immigrant workers, especially women, to move upward along the labor market hierarchy.

Key Words: Chinese immigrants, ethnic niches, gender, residence, workplace, San Francisco.

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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 et al. 1994; Wright and Ellis 2000; Hudson 2003; Wilson 2003; Wang 2004). The segmentation of urban labor markets along the lines of race/ethnicity and gender has repeatedly been shown to exacerbate the socioeconomic inequalities among racial/ethnic groups². Many scholars have asked why ethnic minorities or immigrants concentrate in certain sectors. Is this because of lucrative returns on working in ethnic niches or is it because they simply 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/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; Hudson 2003; Portes and Sensenbrenner 1993; Waldinger 1994; Peck 1996; Waldinger and Der-Martirosian 2001). One area of neglect, however, has been the explicit consideration of how the spatial arrangement of

² The classification of race is most widely based on visible traits (especially skin color, facial features and hair texture), genes, and self-identification. Ethnic groups are also usually united by certain common cultural, behavioral, linguistic and ritualistic or religious traits. In many cases, race and ethnicity are understood as social constructs varying overtime. See Hamilton and Form (2003) for a detailed discussion on the complexity and ambiguous categorical usage of race and ethnicity. The concept of race as used by the Census Bureau reflects self-identification by people according to the race or races with which they most closely identify. By using the Census data, this study follows the same categorization without differentiating race and ethnicity. “Chinese” refers to a racial and ethnic group with members who identify themselves sharing common cultural, behavioral, linguistic and ritualistic traits. “Immigrant Chinese” refers to racial or ethnic Chinese who were born in Mainland China, Hong Kong, and Taiwan. However, as any categorization will generate, there is significant variation within the Chinese group.

residence and workplace influences immigrant ethnic minorities' labor market outcomes and how the influences are differentiated by race/ethnicity and gender³.

There are compelling reasons to believe that the geography of residence and workplace affects labor market outcomes and that these effects differ among ethnic and gender groups (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 home and the geography of work have simultaneously influenced spatial mobility for different ethnic or gender groups.

Personal contacts through social networking are of particular importance in 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, interests and affiliations (Blau 1977). Spatial proximity also strongly influences the durability of relationship by reducing the costs of maintaining a relation (Sorenson 2003). Even in today's society spatial mobility is surprisingly increased by high technology, we are still more likely to exchange information with people with whom we interact during our daily

³ Exceptional examples include case studies by Hanson and Pratt (1991, 1992, 1995), England (1993), McLafferty and Preston (1991), and Parks (2004a). However, most work focused on either gender occupational segregation without considering ethnicity, or "availability of job" (measured by unemployment or not) but not labor market segregation. Until very recently, geographers (Ellis et al 2004; Parks 2004b) provided empirical studies to examine the relationship between immigrant or ethnic minority residential place, workplace, and labor market segregation. These studies will be discussed later.

lives than with those who are farther away (Wellman 1996). Research has found many immigrants or ethnic minority workers tend to get jobs through social networking among their co-ethnic population which is particularly abundant in ethnically concentrated areas (Zhou 1992, 2004; Waldinger 1994).

The practice of social networking is not confined to residential neighborhoods only. Studies of interaction patterns within organizations also observe that employees communicate more frequently with co-workers in nearby offices (Allen 1977). It is not uncommon that employers recruit new workers through networking of current employees, thus homogenizing the racial or ethnic diversity in the workplace (Rosenfeld and Tienda 1999; Waldinger and Der-Martirosian 2001; Johnson-Webb 2003; Ellis et al 2004). Employers use “geography” in other ways as well. For example, some of Chicago’s inner-city employers deliberately take note of the addresses of job candidates during screening to avoid applicants from specific neighborhoods (Necherman and Kirschenman 1991).

All these studies suggest that the mechanisms by which the geography of residence and geography of jobs affect labor market outcomes are to influence both the spatial (i.e. physical location of residential and jobs) and social accessibility (social network leading to employment) of jobs, through the employers’ recruiting practices or job-seekers’ active search in the labor market (see Fernandez and Su 2004 for a comprehensive review). Despite the accumulation of the rich literature, few studies have examined ethnic labor market segmentation with simultaneous consideration of the spatial arrangement of residence and the geography of jobs, and how the spatial process is contingent on race/ethnicity, gender, and immigration status.

Ellis et al (2004) compared the tract of residence to the tract of work for 12 ethnic/racial groups (including both foreign- and native-born) in Los Angeles. They found a strong positive

and linear effect of residential segregation on work tract segregation. For the same study area Parks (2004b) examined how living in immigrant residential neighborhoods influences the probability of working in ethnically concentrated industrial sectors for six major immigrant groups. She found that residential segregation plays an important role in sustaining labor market segregation among immigrants. Parks' findings re-emphasized the spatial mechanism through which ethnic neighborhoods facilitate or inhibit geographic accessibility of jobs and co-ethnic or within-family social networks in affecting immigrant ethnic labor market segmentation.

Using 2000 US Census of Housing and Population long form data, this case study of Chinese immigrants (who were born in Mainland China, Hong Kong and Taiwan) in the San Francisco metropolitan area extends the empirical work under a similar theoretical framework by arguing 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. However, different from most previous studies, through a multi-level modeling strategy in controlling for personal and household characteristics, this study emphasizes the socioeconomic characteristics of immigrant ethnic neighborhoods associated with immigrant occupational segregation, and detangles the effects of living in immigrant ethnically concentrated areas from these neighborhood-level socioeconomic characteristics.

Ethnic residential segregation studies for decades have suggested the spatial phenomenon of residential segregation results from a multi-dimensional social process which has to do with social, economic, political, cultural, and historical conditions (Massey 1984; Alba and Logan 1993; Allen and Turner 1996; Logan et al 2002). For a specific place (e.g., at the census tract level), the status of being an immigrant neighborhood (or not) is also overlapped with its economic status, industrial structure, ethnic composition, and other socioeconomic

characteristics. Thus, the socio-spatial context in which labor market segregation occurs represents much more than a “physical point” of location, the distance between residence and work, and the embeddedness of ethnic-employment networks. For instance, the detrimental effects of an ethnic “ghetto” may simply be due to poverty or low education of the residents. The lack of social resources and poverty, female-headedness of household, and other socioeconomic characteristics may perpetuate each other in affecting the economic welfare of their residents. Then, what types of neighborhood contexts are associated with labor market segregation? After controlling for certain personal and household characteristics and socioeconomic characteristics at the neighborhood level, does living in an immigrant ethnically concentrated area still matter? How would men and women be different? In addressing these questions, this study simultaneously examines the geography of residence and workplace by differentiating concentration types as either immigrant ethnic residential concentration place or immigrant ethnic work concentration place. The rationale and significance of the endeavor will be discussed in the following section.

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, inner-city residents are increasingly concentrated in residential areas where they are less likely to find job opportunities with economic restructuring. At the same time, racial barriers in housing 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). Given that most U. S. inner-city residents are ethnic minorities (most of whom are African American), residential segregation is significant to understanding labor market inequality between racial/ethnic groups.

Residential location not only affects spatial accessibility by determining the distance from home to work, but also facilitates or inhibits social mobility of residents in the labor market. There is a rich literature suggesting the role of social networking in matching people to jobs through two channels: On the job-seekers' side, workers in a labor market often gain inside information about jobs from their friends, neighbors or acquaintances; on the employers' side, employers often recruit desired workers through via employee referrals (Granovetter 1974; Necherman and Kirschenman 1991; Newman 1999; Tilly et al. 2001; Johnson-Webb 2003).

Social networking can be highly spatially contingent for specific groups. As Wellman (1996) has argued, in contrast with many other environments, neighborhoods and workplaces are more socially homogeneous and have stronger effects on contact in personal community networks –“social relations have not been liberated entirely from ‘geography’” (see also Massey and Denton 1993). Bayer and his colleagues (2004) also find in the Boston metropolitan area that people who live close to each other (defined as living in the same census block) tend to work together (defined as working in the same census block).

A number of studies have established the negative effects, such as criminalization, youth pregnancy, and unemployment, of ethnic “impoverished ghettos” on individual socioeconomic status (Wilson 1987; Massey and Denton 1993; Fernandez-Kelly 1995). As evidence, recent economic studies have found a significant correlation between high unemployment and low socioeconomic status of poor black neighborhoods (Topa 2001; Ioannides and Loury 2004). In these cases, both spatial and social mobility are constrained in those ethnic neighborhoods that

are characterized by extreme levels of disadvantage and subsequent development of a ghetto underclass resulting from structural changes in the economy combined with an exodus of middle-class black families (For a comprehensive review see Wilson 1987; Charles 2003).

In contrast to the detrimental effects of spatial concentration in black neighborhoods, studies of immigrant ethnic minority spatial concentration focus on the role of ethnic spatial clustering in reducing the human capital depreciation initially experienced by new immigrants and in improving the overall economic position of immigrants in the labor market in the long run. For Portes and his colleagues, ethnic enclaves are no mere ghettos; instead, the ethnic enterprises that arise in these areas can be an effective avenue for economic mobility (Wilson and Portes 1980; Portes and Bach 1985; Zhou 1992). These studies suggest that geographic areas in which a particular ethnic group concentrates may provide beneficial ethnic resources including familiar work environment, on-the-job training, capital/credit, and information on employment and housing.

There is reason to expect that immigrant ethnic neighborhoods play a key role in perpetuating immigrant ethnic minority workers' occupational segregation if they rely on their co-ethnic population for potential jobs. In many cases the informal personal contacts are made with co-ethnic populations in the ethnic neighborhood who convey information that is heavily biased toward jobs in the area immediately surrounding their residences as well as biased toward the type of work they themselves are most likely to be familiar with (i.e., immigrant ethnic minority concentrated sectors). In reality this could be truly the case for many immigrants whose language, cultural, educational and financial barriers certainly restrict their spatial mobility vis-à-vis housing choices. And again, the segregation pattern is reinforced by some employers who are

looking for low-cost labor and preferred characteristics possessed by specific immigrant ethnic minority workers through actively recruiting from certain neighborhoods (Johnson-Webb 2003).

Gender, Space, and the Labor Market

So far the discussion has been focused on the ethnic minority and immigrant labor force. A considerable literature has addressed that women frequently work in different types of jobs from men that are more likely to be semi- or low-skilled, unstable, with bad working conditions and low-pay (Hanson and Pratt 1995). The female-dominated occupational segregation corresponds with women's spatial concentration: Ellis et al (2004) found that men are more likely to work in the census tracts with non-coethnic men than women with non-coethnic women in Los Angeles. Other studies have shown that women in female-segregated jobs work closer to home not only more prevalently than men, but also more prevalently than other women (Hanson and Johnston 1985; Johnston-Anumonwo 1988).

Feminist perspectives strongly argue that power relations in the household and the gendered nature of social life define job priorities and spatial extents of labor market differently for men and women. That is, due to greater domestic responsibilities, tendency to make employment decisions from a fixed residential location, and high valuing of proximity to childcare, men and women may value job attributes differently. Many women prefer jobs located close to home and/or those that offer convenient hours by giving up high income and better job stability. This preference could restrict the spatial mobility of women in the labor market (Hanson and Pratt 1992, 1995; England 1993; Reskin 1993; Reskin and Cassirer 1996; Carlson 1997; Wyly 1999).

Women's spatialized job search networks reinforce the localized nature of women's job prospects as well. Gilbert's (1998) case study demonstrates that personal networks in the

workplace and neighborhood are an important component of women's survival strategies. Her study is consistent with Hanson and Pratt's (1995) observations that many women made use of personal contacts within neighborhoods to concentrate into certain job sectors in the local labor market. Fernandez-Kelly (1995) also argues that the neighborhood plays an important role in shaping the social networks of low-income residents, especially those of women.

How would the social-spatial process work for the foreign-born ethnic minority women? Being over-represented in the poorly paid service or labor-intensive manufacturing industries, immigrant women are hypothesized to experience greater hardships than do both native-born women and immigrant men (Pedraza 1991; Green 1996). Moreover, Rajiman and Semyonov (1997) argue that recent immigrant women from the less developed countries of Asia or Africa (i.e., immigrant ethnic minority women) have experienced greater economic losses than women from Europe and the Americas in rejoining the labor force and in translating their occupational resources to "adequate" jobs. However, accommodating household responsibilities seems not be making immigrant ethnic minority women's commutes shorter than their native-born white counterparts or co-ethnic male workers (McLafferty and Preston 1991; Preston et al 1998; Johnston-Anumonwo 1995).

Parks' (2004b) studies on Los Angeles found that women are more likely to be segregated in coethnic female-dominated industries than men in coethnic male-dominated industries. Specifically, living in ethnic enclaves is positively related to working in co-ethnic concentrated industries for Mexican men and women, but negatively related for Korean men and women. Better spatial accessibility is negatively related to ethnic industrial segregation for Foreign-born Mexicans and Chinese, but positively related for Salvadorans, Guatemalans, and Vietnamese. An interesting result is that, the sign of model parameters for "ethnic enclave

residency” and “spatial accessibility of jobs” changes to the opposite direction after the two variables are interacted with “sex” (620). This result suggests different social-spatial process of labor market segregation between men and women.

Putting Together: Geography of Residence and Workplace

Taken together, the above discussions suggest that spatial arrangements of home and work play a key roles in immigrant ethnic labor market segregation between men and women. Specifically, a person living in immigrant ethnic neighborhoods is expected to be more likely to work in his or her co-ethnic workers concentrated labor market sectors. Since “ethnic neighborhoods” is the foundation for our key argument of labor market segregation as a social and spatial process, it deserves more investigation.

There have been hot “ethnic enclave” debates that focus on the role of ethnic spatial clustering in reducing the human capital depreciation initially experienced by new immigrants and in improving the overall economic position of immigrants in the labor market in the long run (See Waldinger 1993 for a review). While scholars hold different perspectives, “ethnic enclave” is defined diversely, either as a concentration of ethnic enterprises in physical space with a significant proportion of workers from the same ethnic group, or as ethnic residential agglomerations, or ethnically-concentrated worksites (Wilson and Portes 1980; Sanders and Nee 1987; Zhou and Logan 1989; Gilbertson and Gurak 1993; Waldinger 1993). Although the place of work and place of home were a key issue in discussions, 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 et al’s (2002, 300) recent work classified ethnically concentrated areas into “immigrant enclave” versus “ethnic community” in New York and Los Angeles. Immigrant

enclaves are characterized by “less desirable as places to live” and with concentration of “immigrants who are recently arrived and have few socioeconomic resources.” Ethnic community, by contrast, refers to “ethnic neighborhoods that are selected as living environments by those who have wider options based on their market resources.” They said,

“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 of central city versus suburbia. Whereas this classification considered the changes in the nature of urban space and the function of ethnic neighborhoods in the contemporary world, they said, “This is only a first approximation” (320).

This study explores different types of “ethnic neighborhoods” by differentiating residential place and workplace. That is, all the census tracts at the study areas can be divided into four types for Chinese immigrants:

	Chinese immigrants Residential Concentration	Chinese immigrants Workplace Concentration
Residential Concentration	Yes	No
Workplace Concentration	No	Yes
Both Residence and Workplace Concentration	Yes	Yes
Non-Concentration Area	No	No

The *Chinese immigrant residential concentration* is defined as a Chinese immigrant concentrated residential area (at the census tract level), but not a Chinese immigrant concentrated workplace. As discussed earlier, on the labor market supply side, residential places may

constrain or facilitate job seekers' spatial or social mobility. The close-knit and geographically compact ethnic neighborhoods 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 (Krauth 2003; 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.

On the labor market demand side, employers actively attract or avoid immigrant ethnic workers from different neighborhoods or even purposely locate themselves in specific area. These practices link the geography of jobs to the geography of residence and labor market segregation (Hanson and Pratt 1995). The workplace may be an important arena for contact between groups who do not share the same residential neighborhoods (Patterson 1997; Blumen and Zamir 2001). Segregation by race/ethnicity, education, and skills at the workplace has been examined recently at worksites, at the census block level and the census tract level (Hellerstein and Neumark 2002; Bayer et al 2004; Ellis et al 2004). Therefore, this study looks at the *Chinese immigrant workplace concentration* specifically, which refers to the area with high concentration of Chinese immigrants at the workplace but without a significant residential concentration. I hypothesize that living close to a coethnic concentrated workplace could offset the disadvantages in transportation mobility for their residents. Compared to a non-Chinese concentrated area, living in a place with a co-ethnic cohorts working nearby could provide more opportunities for Chinese immigrant to work in the same area and occupations⁴.

Both *residence and workplace concentration* refers to the area as one of both workplace concentration and residential concentration for Chinese immigrants. Traditional Chinatown is a

⁴ Although this study focuses on the effects of living in Chinese immigrant concentrated areas, later discussion will introduce the effects of *working* in Chinese immigrant workplace concentrated tracts for comparison purposes.

typical example of this type where Chinese immigrants concentrate to work and live (Zhou 1992). Some suburban ethnic communities in Los Angeles are also 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 Chinatown in the daytime, while sleeping (residing) on the upper floors of the same apartment building or apartments nearby at night. This type of area is expected to offer both abundant resources in ethnic neighborhoods (such as cultural familiarity and housing) and economic opportunities (such as familiar work environments and lower requirements for English proficiency); and, thus, provide more opportunities than 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 *non-concentration areas*. I hypothesize that people living in these dispersed areas are the least likely to depend on ethnic contacts that are contingent on spatial concentration to find a job.

Putting all the discussion together, the study will specifically address the following questions: First, after controlling for personal socioeconomic characteristics, such as age, education, length of stay in the US, commuting time between home and work, whether living in ethnically concentrated area still matters? If so, what are the socioeconomic characteristics at the neighborhood level associated with Chinese immigrant occupation niche employment? Can the effects of living in an ethnically concentrated area be detangled from these neighborhood characteristics? How do the effects differ between men and women?

Chinese Immigrants in the San Francisco CMSA

I use the San Francisco Consolidated Metropolitan Statistical Area (CMSA) as a case study. In the 1980s, the Bay Area was the only metropolitan area in the U.S. 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, while 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 may 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 one hundred and forty 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, 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-ethnicity population between 1990 and 2000, and is now the place with the highest proportion of people of Chinese ethnicity (U.S. Census Bureau 2000).

According to the Census 2000 data for the San Francisco CMSA, Chinese immigrants make up a higher proportion of 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 San Francisco area, consistent with the long history of Chinese immigration and economic restructuring in the study area.

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 are restaurants, laundries, garment factories, gift shops, and jewelry stores (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 and networked activity (Wu, 1997; Wong 2005).

Along with rapid economic development, the Bay area has 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 overtime. In the old days, Chinatown was the main residential location for Chinese immigrants. Today, they are scattered throughout the Bay Area as shown in Figure 1 (The mapping strategy is discussed later). Overall, the size and diversity of San Francisco’s Chinese population provides 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 CMSA. Like the Public Use Microdata Samples (PUMS), this confidential dataset 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 purposes of exposing the micro-geography of residence and work for individual workers.

The Decennial Long Form data used in this study allows simultaneous consideration of an individual's place of work and place of residence at the census tract level, which normally includes approximately 4,000 residents. These data are governed by strict confidentiality and disclosure rules that, to some extent, restrict the range of analyses that can be conducted. For example, disclosure rules make it very difficult to map ethnic concentrations extensively at this scale. These restrictions are more than compensated for, however, by the useful insights that the data are in a position to provide. As noted earlier, I focus this study on Chinese born in Mainland China, Hong Kong, and Taiwan⁵ between the ages of 16 and 64 who are in the civilian labor force and both live and work in the San Francisco CMSA. I will refer them as "Chinese immigrants" thereafter. The analysis is conducted in three steps.

Identifying Chinese Immigrants 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 ratio⁶ (Logan et al. 1994; Wilson 2003), given by:

⁵ As one of the anonymous reviewers pointed out, there is much diversity among foreign-born Chinese from mainland China, Hong Kong, Taiwan, and other regions outside of the United States. According to Census 2000 in the San Francisco CMSA, of the total foreign-born Chinese the approximate proportion by birth of place from mainland China, Hong Kong, and Taiwan, respectively, is 64%, 18%, and 18%.

⁶ A representation index or location quotient has also been used (Ellis and Wright 1999; Hudson 2003; Rosenfeld and Tienda 1999) in previous studies. Compared to the representation index and location quotient, the odds ratio is

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

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 non-food 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, in order 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 1000 (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 1000) Chinese immigrant men or women and an odds ratio equal to or greater than 1.5.⁷ Therefore, at the individual level, wherever they live or work, each respondent within study area is coded, 1 if she or he works in an occupational niche; otherwise, coded 0.

more sensitive to the change of employment distribution, although their implications are similar. See Wang and Pandit (2007) for more discussion.

⁷ Both the threshold value of 1.5 and the minimum restriction (50% 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; Hudson 2003; Wright and Ellis 2000), 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 (Wilson 2003). However, a percentage measure is preferable to an absolute value to reflect the nature of ethnic labor markets, since the size of the labor force and the share of each sector varies 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).

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 concentration⁸. 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 residing (RO) and working (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 in or working respectively in census tracts other than i , OR_i and OW_i are the numbers of non-Chinese respectively residing or working 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 (Allen and Turner 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 et al. 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 WO_i larger than 2.0 is defined as a Chinese immigrant concentrated workplace (data

⁸ 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 indices, location quotients, and odds ratios (e.g., Allen and Turner 1997; Wong 1998, Logan and Zhang 2004; Park 2004a).

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) $RO_i \geq 5$ & $WO_i < 2$: Chinese immigrant Residential Concentration
- (2) $RO_i < 5$ & $WO_i \geq 2$: Chinese immigrant Workplace Concentration
- (3) $RO_i \geq 5$ & $WO_i \geq 2$: Chinese immigrant residential and workplace concentration
- (4) $RO_i < 5$ & $WO_i < 2$: Non-Concentrated area

For each respondent with a residential place at the census tract level, she or he is classified as living in one of above four types of area. Therefore, we get two levels of data for each Chinese immigrant: at the individual level - working in either niche or non-niche 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 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 macro-level 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 non-niche 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 1 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 at 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 estimated net of differences across a census tract in the distribution of the observed individual-level variables (for example, education). Then, variations in gender in working in ethnic niches across the census tract are estimated by equation 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. γ_0 and γ_1 give the coefficients of census tract level variables for men and women.

W_j represents the socioeconomic characteristics of immigrant Chinese according to where the respondent lives at the census tract level, such as the racial composition of all residents, the rent level, the property values, home ownership, the percentage of female-headed households, and the proportion of new immigrants (arrived in the U.S. between 1990 and 2000) and old immigrants (arrived in the U.S. before 1975). Particularly, after controlling for demographic and economic conditions, the model examines whether residential location (i.e., living in one of four different types of concentrated census tracts) has a different influence on niche employment. See Table 1 for the description and coding strategy of the variables at the census tract level.

Labor Market Concentration of Chinese Immigrants

Like US-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 2 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 are available from the author upon request). Most Chinese male niche workers work in computer, electronics, or engineering-related

occupations. 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 such as computer software engineers, most of them concentrate in the lower level of the labor market, such as electromechanical assemblers and data entry keyers.

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 Waldinger and Der-Martirosian (2001). Accordingly, average job earnings for Chinese immigrant niche male workers are much higher than those of their co-ethnic niche female workers. Among Chinese immigrant women, workers in co-ethnic-concentrated occupations earn less than their co-ethnic non-niche workers. It is worth noting that, although both Chinese immigrant men and women 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 3 describes the socioeconomic characteristics of Chinese who live or work in co-ethnic concentrated census tracts. Generally speaking, compared with people who neither live nor work in concentration with co-ethnics, living in Chinese-concentrated areas or both living and working in Chinese-concentrated areas are 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 high Chinese concentration are working in information and public administration industries. This pattern is in distinct contrast with 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 co-ethnic population could provide more resources for those disadvantaged in the open labor market.

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 4. Residents in non-Chinese-concentrated tracts have the highest personal income, household income, monthly rent, homeownership, and the lowest proportion of households having sub-families and living in crowded conditions. In contrast, residents of Chinese immigrant concentrated areas (both residence and workplace) have the lowest average personal and household incomes, monthly rents, levels of homeownership, and the highest proportion of households with sub-families 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 while some Chinese immigrant residential and workplace concentrated areas are able to attract new immigrants by low rent, work opportunities, and a familiar cultural environment, they also house many old 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 5. Model 1 includes only the four types of concentrations (non-concentrated area is the reference category); Model 2 includes the socioeconomic characteristics at the census tract level; and Model 3 includes both 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 Chinese immigrant concentrated residential place is the only significant predictor for Chinese immigrant men, and living in Chinese immigrant concentrated workplace is not significant anymore for women. This pattern strongly suggests the “overlapped” effects of residency in ethnically concentrated area and other socioeconomic characteristics at the census

tract level. Thus, it is necessary to detangle the “co-existing” 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 household are positively related to Chinese immigrant women’s niche employment. On the contrary, Chinese immigrant male niche workers are more likely to be living in the tracts with higher property values and 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.

After controlling for the personal and socioeconomic conditions in residential census tracts for Chinese immigrant women, although living in a Chinese workplace concentration area is not a significant factor, living in a 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. In particular, inconsistent with expectation, living in area with both residential and workplace concentration is not necessarily more associated with niche employment than living in residential concentration only. The model⁹ examining where Chinese immigrants *work* shows similar pattern that, *working* in Chinese immigrant concentrated residential place or places with both residence and workplace is significantly related to Chinese immigrant women’s niche employment, but working in Chinese immigrant concentrated workplace does not matter. However, working in Chinese

⁹ The models by where people *work* are constructed in the same way as the model by where people *live* (as shown in this study). The *work* model is not shown here but available from the author upon request.

workplace concentrated area is still a strong negative predictor for Chinese immigrant male niche workers after controlling personal and tract level characteristics. This indicates that residential neighborhood has a greater effect for women than workplace does; also, residential neighborhood is more important for women than for men in affecting their labor market outcomes.

Opposite to the effects on 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 an assumed worker whose socioeconomic characteristics are at the average level of Chinese immigrants in the San Francisco metropolitan areas and who lives in a census 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.

Consistent with the labor market concentration patterns, Chinese immigrant women's employment niches are more associated with those with lower incomes and a higher percentage of production and personal services. This may suggest that, although living in a co-ethnically concentrated area can provide more job opportunities, the opportunities are limited. 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, employment in a niche job does not necessarily offer advantages such as a decreased risk of being jobless or access to high-status jobs that pay wages

above what one would expect in the general local labor market. The attraction of ethnic niches for women thus 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 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 replacement 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 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 3-digit-codes provided by the Census 2000 (i.e., industrial sectors dominated by Chinese men and women workers that show industrial concentration), 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 upon request). This finding reemphasizes that neighborhood effects on labor market concentration are confined to certain levels of job skills.

Overall, the difference in neighborhood effects on ethnic niche employment for Chinese immigrant men and women polarizes the labor market segmentation into niche and non-niche occupations between different job skills and between men and women. 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).

Conclusions

Chinese immigrants in the San Francisco Bay area are clearly segmented by gender and by job skill: Chinese males are more concentrated in knowledge- and capital-intensive occupations with higher pay, more upward mobility, and better working conditions, while women workers are most concentrated in semi-professional, 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. It reinforces that 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: residential location could perform as facilitator or barrier for both spatial and social mobility in job searching/matching process, through either job seekers' or employers' practices (Hanson and Pratt 1992, 1995; Fernandez and Su 2004; Ioannides and Loury 2004; Parks 2004).

The relationship between where people live and work and their labor market outcomes is complicated. After controlling for personal characteristics, socioeconomic conditions at the tract

level and residency in co-ethnically concentrated areas are “co-existing” in influencing Chinese immigrants’ labor market segmentation patterns. The “overlapped” effects suggest that labor market segmentation along the lines of race/ethnic 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/ethnic groups and classes at large are not only producing the inequality geography of residence but also deepening the socioeconomic inequality among their residents including labor market segregation.

The housing market is particularly limited for immigrant ethnic minorities whose language, cultural and financial barriers often leave very few choices for them and often “put” them in traditional ethnic enclaves or neighborhoods with co-ethnic residents and/or workers. Under this circumstance, job searches will start from the ethnic enclaves. 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 may be very “alluring” in co-ethnic concentrated occupations or industries for those who otherwise could be unemployed. In this sense, residency in co-ethnic concentrated areas could perpetuate the concentration of Chinese immigrant in specific sets of occupations.

The segmenting effect is particularly momentous for immigrant ethnic minority women. In the San Francisco Bay area, the education level (measured by the percentage of labor force with a Bachelor’s degree) among Chinese immigrant men and women, US-born white and US-born Chinese women are very similar. However, different from their immigrant Chinese gender counterparts, also different from US-born white and Chinese women (those two groups have very similar occupational concentration patterns), a large number of Chinese immigrant women

are working in labor intensive, semi- or low-skilled assembly lines and factories. These jobs at the bottom of the ladder of the labor market hierarchy can be called as “opportunities” when compared with “joblessness”; however, they could be just one of survival strategies for many immigrant Chinese women, since they hardly offer any advantages in earnings or upward mobility.

Further more, these immigrant niche women workers are more likely to reside in areas with lower socioeconomic conditions. Considering the significant role of residential neighborhoods, living in these co-ethnically concentrated neighborhoods and enclaves is actually intensifying the bifurcation of the local labor market and thus earnings inequalities by gender. When the pattern is reinforced by constrained spatial mobility and limited social resources in the mainstream economy for immigrant minority women, these niche workers hardly have the chances of getting out of their segregated occupations. In this case, the positive view on ethnically concentrated areas could be overly sanguine.

This study explores the ethnically concentrated areas by differentiating the geography of work and geography of home at the census tract level. Compared to non-co-ethnically concentrated areas, living or working in Chinese immigrant concentrated places are significantly related to working in Chinese immigrant concentrated occupations for both men and women, before controlling for tract level socioeconomic conditions. When controlling for these “co-existing” factors, residency in Chinese immigrant concentrated neighborhoods proves to be the most significant predictor for niche employment particularly for women. Again, this reiterates the importance of residential location in affecting immigrant ethnic minority women’s economic welfare. Needless to say, the causal direction of the relationship and the specific mechanism

between occupation segregation, workplace segregation, and residential segregation deserve further investigation.

Another area which 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. Immigrant women and men within same ethnic group or different ethnic groups have very different concentration patterns in Los Angeles, New York and nationwide in terms of types of work, job skills and corresponding working conditions (e.g., Ellis and Wright 1999; Wang 2004; Parks 2004b). Are the different effects of residential location for men and women are more about gender difference or skill? Would the Chinese immigrant men working in low-skilled niche occupations and women in upper level labor market hierarchy have the same relationship as discussed above? It is a general assumption that the skill level of jobs should be determined by the education, English proficiency, length of stay in the host society and other characteristics at personal level. In this study, these personal characteristics are already considered in the regression modeling; however, specific investigation on different skill levels and industries/occupations would provide valuable insights in the spatial dimension of ethnic immigrant labor market segmentation.

References:

- Alba, R. D., and J.R. Logan. 1993. Minority proximity to whites in suburbs: An individual level analysis of segregation. *American Journal of Sociology* 98(6): 1388-1427.
- Allen, J. P., and E. Turner. 1996. Spatial patterns of immigrant assimilation. *Professional Geographer* 48 (2): 140-155.
- Allen, J.P., and E. Turner. 1997. *The ethnic quilt: Population diversity in Southern California*. California State University, Northridge: Center for Geographical Studies.
- Allen, T. J. 1977. *Managing the flow of technology*. Cambridge, MA: MIT press.

- Bayer, P., S. Ross, and G. Topa. 2004. Place of work and place of residence: Informal hiring networks and labor market outcomes. *NBER Working Paper No. 11019*. Yale University.
- Bean, F. D., and G. Stevens. 2003. *America's newcomers and the dynamics of diversity*. New York: Russell Sage.
- Becker, G. S. 1975. *Human capital*. New York: Columbia University Press.
- Blau, P. M. 1977. *Inequality and heterogeneity: A primitive theory of social structure*. New York: Free Press.
- Blumen, O. and I. Zamir. 2001. Two social environments in a working day: Occupation and spatial segregation in metropolitan Tel Aviv. *Environment and Planning A* 33:1765–84.
- Carlson, V.L. 1997. *The availability of women workers: The effects on company location in the suburbs*. New York: Garland Press.
- Cervero, R., and J. Landis. 1997. Twenty years of the Bay area rapid transit system land use and development impact. *Transportation Research* 31(4): 309-333.
- Charles, C. Z. 2003. The dynamics of racial residential segregation. *Annual Review of Sociology* 29:167-207.
- Ellis, M., and R. Wright. 1999. The industrial division of labor among immigrants and internal migrants to the Los Angeles economy. *International Migration Review* 33:26-54.
- Ellis, M., R. Wright, and V. Parks. 2004. Work together, live apart? Geographies of racial and ethnic segregation at home and at work. *Annals of the Association of American Geographers* 94 (3): 620-37.
- England, P. 1993. *Theory on gender/feminism on theory*. New York: Aldine De Gruyter.
- Ettlinger, N., and S. Kwon. 1994. Comparative analysis of U.S. urban labor markets: Asian immigrant groups in New York and Los Angeles. *Tijdschrift voor Economische en Sociale Geografie* 85: 417-33.
- Fernandez-Kelly, M. P. 1995. Social and cultural capital in the urban ghetto: Implications for the economic sociology of immigration. In *The economic sociology of immigration*, ed. A. Portes, 213–247. New York: Russell Sage.
- Fernandez, R., and C. Su. 2004. Space in the study of labor markets. *Annual Review of Sociology* 30: 545-69.
- Gilbert, M. 1998. Race, space and power: The survival strategies of working poor women. *Annals of the Association of American Geographers* 88(4): 595-621.
- Gilbertson, G. and D. Gurak. 1993. Broadening the enclave debate: The labor market experiences of Dominican and Colombian men in New York city. *Sociological Forum* 8(2): 205-220.
- Gordon, M. 1964. *Assimilation in American Life: The role of race, religion, and national origins*. New York: Oxford University Press.
- Granovetter, M. 1974. *Getting a job: A study of contacts and careers*. Cambridge: Harvard University Press.
- Granovetter, M. 1985. Economic action and social structure: The problem of embeddedness. *American Journal of Sociology* 91 (3): 481-510.
- Green, N. L. 1996. Women and immigrants in the sweatshop: Categories of labor segmentation revisited. *Comparative Studies in Society History* 38 (3): 411-33.
- Hamilton, R. F., and W. H. Form. 2003. Categorical Usages and Complex Realities: Race, Ethnicity, and Religion in the United States. *Social Forces* 81: 693-714.

- Hanson, S., and I. Johnston. 1985. Gender differences in worktrip lengths: Implications and explanations. *Urban Geography* 6(3): 193-219.
- Hanson, S., and G. Pratt. 1991. Job search and the occupational segregation of women. *Annals of the Association of American Geographers* 81(2):229-253.
- Hanson, S., and G. Pratt. 1992. Dynamic dependencies: a geographic investigation of local labor markets. *Economic Geography* 68:373-405.
- Hanson, S., and G. Pratt. 1995. *Gender, work and space*. London and New York: Routledge.
- Hellerstein J. and D. Neumark 2002. *Ethnicity, Language, and Workplace Segregation: Evidence from a New Matched Employer-Employee Data Set*. NBER Working Paper 9037.
- Holzer, H. J. 1991. The spatial mismatch hypothesis: What has the evidence shown? *Urban Studies* 28:105-22.
- Hudson, M. 2003. Modeling the probability of niche employment: Exploring workforce segmentation in metropolitan Atlanta. *Urban Geography* 23:528-59.
- Ihlanfeldt, K. R. 1995. The spatial mismatch between jobs and residential locations within urban areas. *Cityscape* 1:219-44.
- Ioannides, Y.M., and L. Loury. 2004. Job information networks, neighborhood effects, and inequality. *Journal of Economic Literature* 42:1056-93.
- Johnson-Webb, K.D. 2003. *Recruiting Hispanic labor: Immigrants in non-traditional areas*. New York: LBF Scholarly Publishing.
- Kain, J. F. 1968. Housing segregation, negro employment, and metropolitan decentralization. *Quarterly Journal of Economics* 82:175-97.
- Krauth, B. 2000. *Social interactions, thresholds, and unemployment in neighborhoods*. Economic Department, Simon Fraser University Working Paper.
- Li, W. 1998. Anatomy of a New Ethnic Settlement: the Chinese Ethnoburb in Los Angeles." *Urban Studies* 35 (3): 479-501.
- Logan, J., R. Alba, and T. McNulty. 1994. Ethnic economies in metropolitan region: Miami and beyond. *Social Forces* 72: 691-724.
- Logan, J. R., R. Alba and W Zhang. 2002. Immigrant enclaves and ethnic communities in New York and Los Angeles. *American Sociological Review* 67(2): 299-322.
- Logan, J., and W. Zhang. 2004. Identifying ethnic neighborhoods with census data: group concentration and spatial clustering. In *Spatially Integrated Social Science*, ed. M. F. Goodchild and D. G. Janelle, 113-16. Oxford University Press.
- Massey, D. 1984. *Spatial division of labor: Social structures and the geography of production*. New York: Methuen.
- Massey, D., and A. Denton. 1993. *American apartheid: Segregation and the making of the underclass*. Cambridge: Harvard University Press.
- McLafferty, S., and V. Preston. 1991. Gender, race, and commuting among service sector workers. *The Professional Geographer* 43(1): 1-15.
- Neckerman, K.M., and J. Kirschenman. 1991. Hiring strategies, racial bias, and inner-city workers. *Social Problem* 38 (4):433-447.
- Newman, K. S. 1999. *No Shame in My Game: The Working Poor in the Inner City*. New York: Knopf and the Russell Sage Foundation.
- Parks, V. 2004a. Access to work: The effects of spatial and social accessibility on unemployment for native-born black and immigrant women in Los Angeles. *Economic Geography* 80 (2): 141-72.

- Parks, V. 2004b. Immigrant enclaves and ethnic niches: The gendered connection between residential and labor-market segregation in Los Angeles. *Urban Geography* 25 (7): 589-630.
- Patterson, O. 1997. *The ordeal of integration*. Washington, DC: Civitas/Counterpoint.
- Pedraza, S. 1991. Women and migration: The social consequences of gender. *Annual Review of Sociology* 17: 303-25.
- Peck, J. 1996. *Work-place: The social regulation of labor markets*. New York: Guilford Press.
- Portes, A., and R. L. Bach. 1985. *Latin journey: Cuban and Mexican immigrants in the United States*. Berkeley and Los Angeles: University of California Press.
- Portes, A., and J. Sensenbrenner. 1993. Embeddedness and immigration: Notes on the social determinants of economic action. *American Journal of Sociology* 98:1320-50.
- Preston, V., S. McLafferty, and X. F. Liu. 1998. Geographical barriers to employment for American-born and immigrant workers. *Urban Studies* 35(3):529-545.
- Raijman, R., and M. Semyonov. 1997. Gender, ethnicity, and immigration: Double disadvantage and triple disadvantage among recent immigrant women in the Israeli labor market. *Gender and Society* 11 (1): 108-25.
- Raudenbush, S.W., and A. S. Bryk. 2002. *Hierarchical Linear Models: Applications and data analysis methods* (2nd Ed.). Thousand Oaks, CA: Sage.
- Reskin, B. F. 1993. Sex segregation in the workplace. *Annual Review of Sociology* 19:241-70.
- Reskin, B. F., and Cassirer, N. 1996. Segregating Workers: Occupational Segregation by Race, Ethnicity, and Sex. *Sociological Focus* 29 (3): 231-44.
- Rosenfeld, M., and M. Tienda. 1999. Mexican immigration, occupational niches, and labor-market competition: Evidence from Los Angeles, Chicago, and Atlanta, 1970-1990. In *Immigration and Opportunity*, ed. F. Bean and S. Bell-Rose, 64-105. New York: Russell Sage Foundation.
- Sanders, J., and Nee, V. 1987. Limits of ethnic solidarity in the enclave economy. *American Sociological Review* 52: 745-773.
- Scott, A. J. 1988. *Metropolis: from the Division of Labor to Urban Form*. Berkeley and London: University of California Press.
- Solnit, R., and S. Schwartzberg. 2000. *Hollow city: The siege of San Francisco and the crisis of American urbanism*. London and New York: Verso.
- Sorenson, O. 2003. Social networks and industrial geography. *Journal of Evolutionary Economics* 13: 513-527.
- Tilly, C., P. Moss, J. Kirschenman, and I. Kennelly. 2001. Space as a signal: How employers perceive neighborhoods in four metropolitan labor markets. In *Urban inequality: Evidence from four cities*, ed. Alice O'Connor, Chris Tilly, and Lawrence D. Bobo. New York: Russell Sage Foundation.
- Topa, G. 2001. Social interactions, local spillovers and unemployment. *Review of Economic Studies* 68 (2): 261-95.
- Waldinger, R. 1994. The making of an immigrant niche. *International Migration Review* 28:3-30.
- Waldinger, R. 1995. The other side of embeddedness: A case study of the interplay of economics and ethnicity. *Ethnic and Racial Studies* 18:555-79.
- Waldinger, R. 1996. *Still the promised city? New immigrants and African-Americans in post-industrial New York*. Cambridge, MA: Harvard University Press.

- Waldinger, R., and C. Der-Martirosian. 2001. The immigrant niches: Pervasive, persistent, diverse. In *Strangers at the gate: new immigrants in urban America*, ed. R. Waldinger, 228-271. Berkeley: University of California Press.
- Wang, Q. 2004. Asians' Concentration in the U.S. urban labor market: A disaggregated study. *Population, Space and Place* 10:479-94.
- Wang, Q., and K. Pandit. 2006. Measuring ethnic labor market segmentation and concentration. Forthcoming, *Journal of Ethnic and Migration Studies*.
- Wilson, W. J. 1987. *The truly disadvantaged*. Chicago, IL: University of Chicago Press.
- Wilson, F. 2003. Ethnic niching and metropolitan labor markets. *Social Science Research* 32: 429-66.
- Wilson, K. L., and Portes, A. 1980. Immigrant enclaves: An analysis of the labor market experiences of Cubans in Miami. *American Journal of Sociology* 86:295-319.
- Wong, B. P. 1998. *Ethnicity and Entrepreneurship: The new Chinese immigrants in the San Francisco Bay area*. Boston: Allyn and Bacon.
- Wong, B. P. 2005. *The Chinese in Silicon Valley: Globalization, social networks, and ethnic identity*. Lanham: Rowman & Littlefield.
- Wong, D. 1998. Measuring multiethnic spatial segregation. *Urban Geography* 19(1): 77-87.
- Wellman, B. 1996. Are personal communities local? A Dumptarian reconsideration. *Social Networks* 18: 347-354.
- Wright, R., and M. Ellis. 2000. The ethnic and gender division of labor compared among immigrants to Los Angeles. *International Journal of Urban and Regional Research* 24:583-601.
- Wu, K. L. 1997. *Employment and housing development and their impacts on metropolitan commuting: An empirical study of the development of the Silicon Valley Region of the San Francisco Bay area*. PhD Dissertation. University of California, Berkeley.
- Wyly, E. K. 1999. Local Labor Markets and Occupational Sex Segregation in an American Metropolis. *Journal of Urban Affairs* 21: 1-33.
- Zhou, M. 1992. *Chinatown: The socioeconomic potential of an urban enclave*. Philadelphia: Temple University Press.
- Zhou, M., and J. Logan. 1989. In and out of Chinatown: Residential mobility and segregation of New York City's Chinese. *Social Forces* 70(2): 387-407.

Table 1. Coding Strategy of Variables in Multilevel Linear Modeling

Variable	Coding Strategy
Individual-level Variables	
Female	Binary; Being female=1
Age	Continuous;
Travel time	Continuous; travel time from home to work
Married	Binary; being married = 1
Degree	Binary; having college degree =1
Self-employed	Binary; being self-employed = 1
Immi9520	Multinomial; Immigrated between 1995-2000
Immi9094	Multinomial; Immigrated between 1990-1994
Immi8589	Multinomial; Immigrated between 1985-1989
Immi8084	Multinomial; Immigrated between 1980-1984
English	Binary; 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 Asian 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
Immigration92	Percentage of immigrants coming to US 1990-2000
Immigration75	Percentage of immigrants coming to US in and before 1975
HomeCon	Where s/he lives is Chinese-residential-concentrated tract
WorkCon	Where s/he lives is Chinese-workplace-concentrated tract
HWCon	Where s/he lives is both home and workplace concentrated tract
NonCon	The census tract where s/he lives is not Chinese-concentrated tract

Table 2. Top Twenty Chinese Ethnic Niches by Sex, ranked by the number of workers employed in each occupation

Male		Female	
Occupation	% ¹	Occupation	% ²
Computer Software Engineers	17.8	Accountants and Auditors	13.8
Electrical & 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, & 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 Non-Retail Sales Workers	2.8	Electrical, Electronics, & Electromechanical Assemblers	3.4
Chef and Head Cooks	2.8	Financial Managers	3.2
Computer Scientists & System Analysts	2.7	Maids and Housekeeping Cleaners	2.9
Engineering Manager	2.4	Inspectors, Testers, Sorters, Samplers, & Weightier	2.7
Physical Scientists	2.2	Computer Programmers	2.6
Food Service Managers	2.2	Miscellaneous Assemblers & Fabricators	2.5
Civil Engineers	2.1	Production Workers including Semiconductor Processor & Cooling & Freezing Equipment Operators	2.0
Automotive Service Technicians & Mechanics	2.0	Physical Scientists	1.7
Network Systems & 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, & Cosmetologists	1.4
Postal Service Carriers	1.4	Clinical Laboratory Technologists & Technicians	1.3

Note: 1. Percentage for each niche sector of the total male niche workers.

2. Percentage for each niche sector of the total female niche workers.

Table 3. Characteristics of Chinese Immigrants in Different Spatial Concentration Patterns

Characteristics	All Workers	Live in Concentration	Work in Concentration	Live&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	47468	29043	40713	27549	49771
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 & 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 1990-94	17.59	17.18	15.49	9.13	17.60
Immigrate 1985-89	19.92	19.84	21.38	19.71	19.76
Immigrate 1980-84	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 measure by US Dollars, all other variables are the percentage of the total immigrant Chinese workers in the sample.

Table 4. Socioeconomic Characteristics of Residents in Four Types of Area

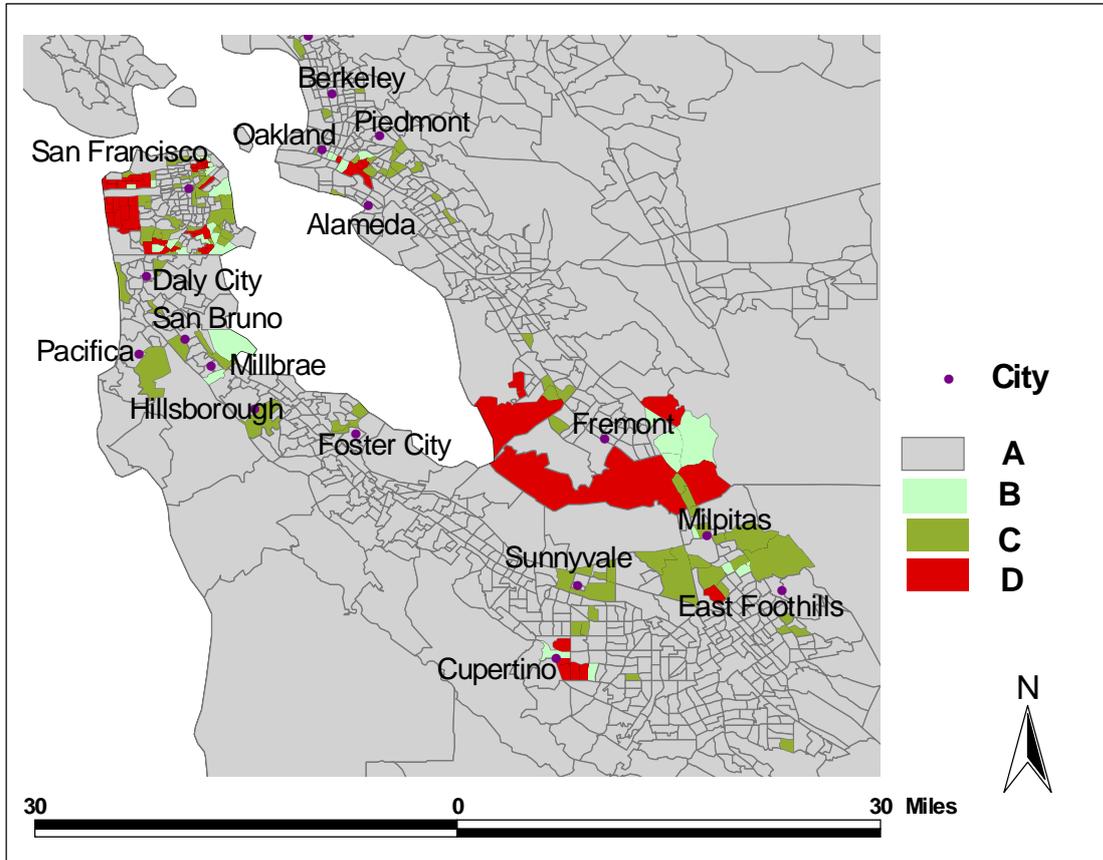
Characteristics of People Living in the Census Tract	Type of Chinese Spatial Concentration in Census Tract			
	Residential Concentration	Workplace Concentration	Chinese Enclave	Non Concentrated Area
Personal Income (\$)	34990	37075	33349	39866
Household Income (\$)	89748	91367	86254	93919
Monthly Gross Rent (\$)	1113	1199	1098	1201
Homeownership (%)	54.06	51.73	50.20	59.31
Having Sub-Families (%)	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

Table 5. Effects of Residential Place at Census Tract Level on Niche Employment

	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**
BlackH		-0.018***	-0.017		0.015**	0.014**
HispanH		-0.003	-0.007		0.004	0.006
AsianH		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***
Femalehead		-0.003	-0.003		0.011	0.008
Im92H		0.019**	0.027***		-0.021**	-0.020***
Im75H		-0.077***	-0.065***		0.075***	0.068***
Variance Component	0.222	0.085	0.085	0.583	0.112	0.099

Significance levels: * P < 0.05 level, ** P < 0.01, *** P < 0.001

Figure 1. Geography of Chinese Immigrants in the San Francisco CMSA, by Type of Concentration Pattern



A: Non-Chinese Concentrated Area; B: Chinese Immigrant Residential Concentrated Area;
 C: Chinese Workplace Concentrated Area; D: Chinese Ethnic Enclaves

Figure 2. Effects of Four Types of Census Tracts on Niche Employment by Residence

