GLOBAL ECONOMIC LINKAGES LEADING MIGRANTS TO NEW DESTINATIONS: A CASE STUDY OF THE SETTLEMENT OF CHINESE MIGRANTS IN TEXAS

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CHAPTER I

INTRODUCTION

The past 150 years has been a period of great technological advancement that has led to a time-space compression (Dicken 2004, Antonio and Bonanno 2000). Transportation innovations have allowed for transcontinental movement of people and goods in a matter of hours, not months. Innovations in information technology have allowed for companies to transfer capital instantaneously with a click of a button. Time-space compression has allowed the global economy to become integrated at levels never before fathomable.

These advancements in transportation and information technology have facilitated the growth of the global economy as an expansive network of nodes and linkages, which connects cities from across the world with each other. In order to increase their stake in the global economy, cities market themselves, in the contexts of space and place, to attract foreign direct investment (FDI) and transnational corporations (TNCs) specific to their cities specialization in the global economy.

Increasing FDI combined with the location of TNCs in global cities has led to increasing employment opportunities. High-skilled migrants are being drawn to global cities because of high-waged positions and the high quality of life that global cities offer. Low-skilled migrants are drawn to global cities in hopes of attaining better economic

opportunities than can be found in their homeland. Low-skilled migrants often seek to fill menial positions not appealing to the local native-born labor force.

Due to the ever-expanding labor demands of and wage inequity created by the global economy, immigration to the United States is at record levels. While the popular media focuses on the large undocumented immigrant flows from Latin America, immigration from Asia has increased 10 percent since 2008 and has almost equaled the migration rate of Latin America (US Department of Commerce 2011). Texas has a long history of migration from Latin America due to its spatial proximity. However, following the national trend, Texas has seen a large influx of immigrants from Asia, particularly China, who have settled with little fanfare from the media and even less attention from academia.

The global economy is linking cities around the world. As a result, migrants looking for economic opportunity are settling in new destinations. For this study, I propose to explore settlement patterns of Chinese migrants to three global cities in Texas. I am particularly interested in the relationship between the ethnic Chinese population and TNCs in order to determine how migration related to the global economy is affecting the transformation of place. In addition, this study will examine the spatial relationship between the cultural community and the ethnic population and explore how ethnic identity is maintained across potentially spatially dispersed populations.

This thesis is in four parts. The literature review will give an overview of three areas related to Chinese migration to global cities in Texas, 1) the global economy and its relationship with migration flows, 2) settlement theories and frameworks, and 3) specific settlement patterns associated with Chinese migration. The second section will explore

the methods proposed in this study, including site selection, data used for analysis, and potential findings. The third section will examine the findings of this study. The last section will discuss the implications of this study and potential future studies.

CHAPTER II

LITERATURE REVIEW

There are two distinct literatures that are relevant to this study. The first is related to globalization and the global economy. Second, are studies related to migration and ethnic issues. Migration of high-skilled labor transforms the global-urban landscape (Ewers 2007). This transformation can be impacted by the origin of the migrants leading to different transformations of place within world cities. While high-skilled migrants may be central to the global-urban process, low skilled migrants are also a critical component (Sassen 2000). This study will look at three global cities in Texas, focusing on the growing Chinese population in an area traditionally known for Mexican migration. The aim of this study is to explore how place affects the spatial formation of Chinese ethnic communities within global cities.

Global Economy and Migration

The modern global economy is dynamic and characterized by uneven geographies. Dicken (2004) created a framework to explain the evolving global economy. In Dicken's framework there are five main actors in the global economy: firms/transnational corporations (TNCs), states, labor, civil society organizations (CSO), and consumers (Figure 1). Dicken contends that actors that are able to transcend geographical boundaries and tap into local assets have a substantial advantage over those who cannot. This ability to transcend national boundaries allows TNCs to potentially

have greater power over other actors because they are spatially flexible. While this model seems to put nations at a disadvantage, they still have a significant amount of power

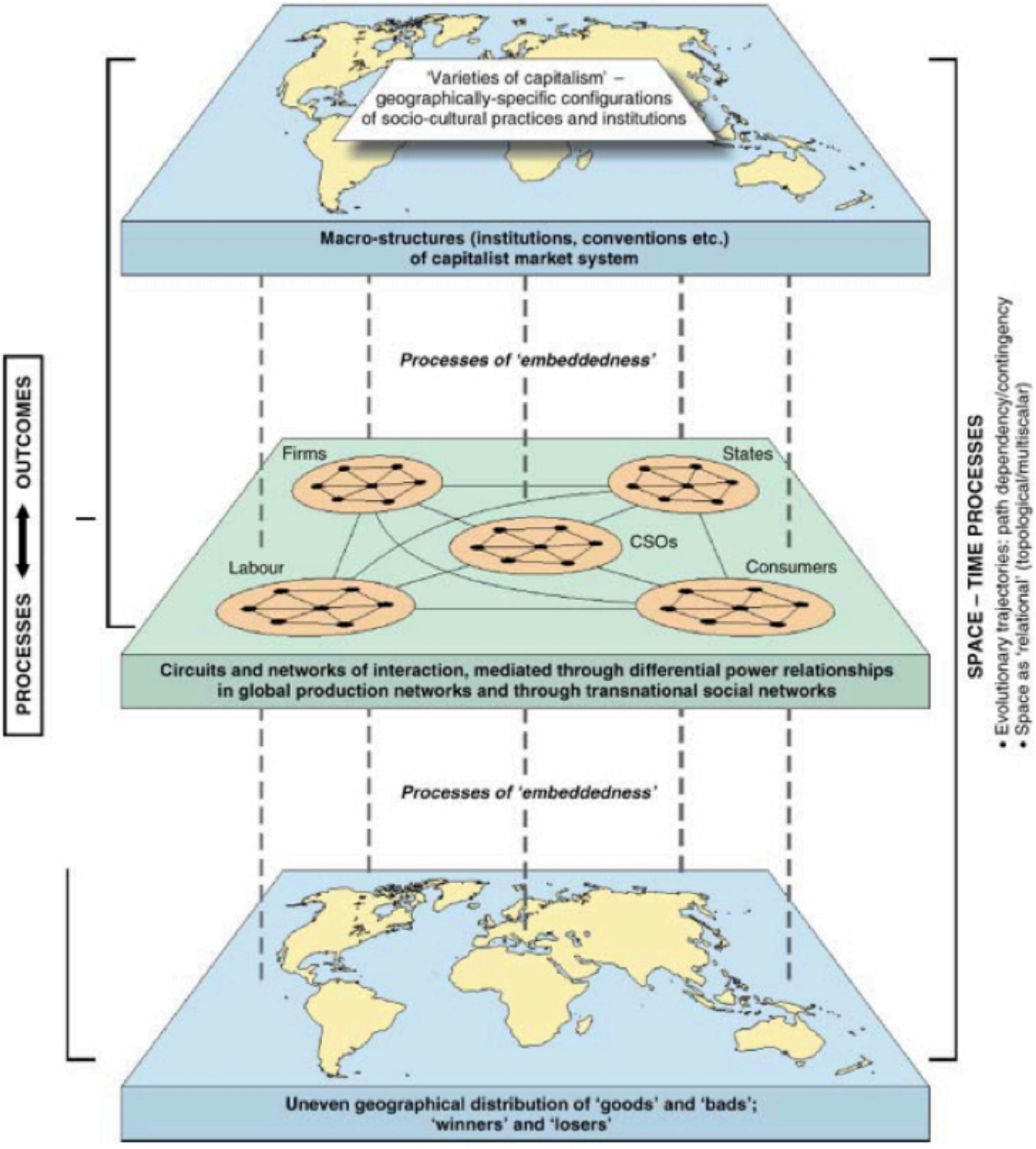


Figure 1. Framework for Analyzing Economic-geographical Globalization (Dicken 2004).

because they can control access to their dominion and define the rules under which TNCs operate. As in any business operation, TNCs need labor in order to operate, and Dicken

(2004) argues that labor is inherently local. Sassen (2000), however, argues that labor is becoming increasingly more mobile, especially due to the increasing demands of the global economy. Specialization of certain economic sectors also requires specialized labor that might not be present in certain labor markets (Ewers 2007). CSOs are organizations that have the potential to bridge the gap between TNCs and labor since they can transcend physical space and organize labor through such sources as the internet (Dicken 2004). While consumers are a critical part of the global economy, this study will not pursue this actor since study is not focusing on the impact of Chinese migrants as consumers.

Although Dicken's framework fails to account for the city as an actor, this study argues that each city contributes its own unique component to the global economy. According to Sassen (2000), cities are strategic sites for TNCs capital. While nations allow access to their territory and establish the overarching rules for the TNCs to operate, cities are the strategic space in which the TNCs operate. Cities have the potential to be one of the most critical spaces in terms of prospective political and economic potential (Sassen 2000).

A global city is one that has significant linkages to the global economy. The level of connectivity is primarily determined by the presence of advanced producer services (APS). APSs are defined by Fossaert (2001) as accounting, advertising, finance, and insurance firms. The Globalization and World Cities Research Network (GaWC) is a global think tank whose focus is on examining the process of globalization and the development of world cities (Globalization and World Cities Research Network 2013) The GaWC has created a hierarchical structure based on the number of linkages a city has

to the global economy (Taylor, Walker and Beaverstock 2000) (see Appendix A). It uses the number of APSs, international firms, airlines, and telecommunications to determine ranking (Ewers 2007, Dicken 2004, Sassen 2000). This hierarchical structure has three categories: Alpha, Beta and Gamma. The Alpha classification indicates that a city has a significant presence of APSs, Beta a smaller presence, and Gamma has the smallest number of APS firms present to be classified as a world city. The classifications if Alpha, Beta and Gamma are further broken down into in to subdivisions of +/- to further classify cities by their level of global economic integration.

TNCs look for a multitude of attributes when deciding where to locate a new office. Among these factors are a strong telecommunications network, transportation infrastructure, and quality of life (Coe et al. 2010, Ewers 2007, Dicken 2004, Sassen 2000). While TNCs require a well-developed communication and transportation system to conduct business in today's global economy, TNCs also look at the quality of life indicators, in hopes of attracting employees. In order to stay competitive, cities must also focus on building or improving the social, cultural and scientific environment (Ewers 2007).

Global cities provide a space for the new transnational workforce. According to Sassen (2000), cities are "also a space for the transmigration of cultural entities, for the reterritorialization of "local" subcultures" (92). Large numbers of immigrants to global cities are reconfiguring local subcultures. One of the main objectives of this study is to look at the spatiality of the cultural community in the Chinese population of Texas' global cities. Having discussed the importance of migration in the global economy, the remainder of this chapter will turn to the settlement patterns of immigrant populations.

Migration and Ethnic Issues

The American industrial revolution brought millions of immigrants to the US. With large populations of immigrants living and working in the US, early immigration researchers were searching for a viable framework to study the process of migration and settlement in the US. In the 1920s, the Chicago School devised the framework of assimilation. Gordon (1964, 62) defined assimilation as "a process by which immigrant groups, over time can expected to acquire the memories, sentiments and attitudes of those around them, and by sharing their experiences and history, become incorporated with them into a common cultural life." Assimilation theory predicts a smooth transition into society over the course of multiple generations (Nagel 2009). Modifications of assimilation theory over time have demonstrated that, with the level of global interconnectiveness, the current migration phenomenon is more intricate and complex than the original assimilation framework provided for analysis (Nashleanas 2011, Ling 2005, Zelinsky and Lee 1998).

In assimilation theory, immigrants live first in an enclave to adjust to life in the host country. While assimilation theory provides a system of analysis for the progression from the ethnic enclave to full integration into the receiving country's society, Zelinsky and Lee (1998) argued that not all migrants settle first into an enclave. They coined the term "heterolocalism" to describe the phenomena wherein immigrants bypass traditional enclaves and immediately or soon after arrival spatially disperse within a host society. Zelinsky and Lee (1998) argue that in order to bypass the ethnic enclave there has to be reduced need for new immigrants to settle outside of the ethnic support system that enclaves provide. They also note fundamental differences between past and present

migrants, including the amount of prior knowledge of the western culture and increased English proficiency. They note that current immigrants often come from places where English is now the first or second language, and better-educated individuals from other nations arrive with an advanced degree of English comprehension and speaking abilities. Better English proficiency and knowledge of American culture have allowed some migrants to by-pass the enclave and settle directly into American society. Zelinsky and Lee (1998) contend that another key characteristic of heterolocalism is that the phenomena is only possible under the socio-economic and technological conditions which presented themselves in the late 20th century.

Zelinsky and Lee (1998) focused on the spatial aspect of assimilation and only briefly noted the effects of cultural identity in their heterolocal framework. Cultural identity and the longing for the familiar cannot be overlooked. Ling (2005) examined how community is maintained within a dispersed population in her concept of 'cultural community.' According to Ling, a cultural community is an ethnic community comprised of "its language schools, religious institutions, community organizations, cultural agencies, political coalitions or ad hoc committees, and a wide range of cultural celebrations and activities" (2005, 67).

With more and more new migrants choosing to disperse directly into American society, Ling (2005) believes the cultural community model helps to better understand the issue of cultural identity. She argues that a cultural community is formed due to a psychological need for one's native culture. This need is not present in the assimilation model due to the fact the enclave provides the cultural community for new migrants.

For Ling (2005) and Zelinsky and Lee (1998), the notion that an ethnic community could survive outside an enclave was in part based on technological advancements made in the latter part of the 20th century. The same technological advances have led to a new approach to the study of immigration. Transnationalism is generally defined as "the processes by which immigrants forge and sustain multi-stranded social relations that link together their societies of origin and settlement'' (Basch et al. 1994, 6). The advent of jet aircraft, mobile telephones, the internet, and other high-tech means of communication and transportation, along with the restructuring of the world economy and with the globalization of capital and labor has led to an all-new level of interconnectedness and transnationalism (Zhou 2004).

Technological advances are allowing for the global economy and migrants to reach cities far beyond traditional immigrant gateway cities in which assimilation theory has its roots. Migrants are moving to global cities in unprecedented numbers (Sassen 2000). Theoretical frameworks such as heterolocalism, cultural community, and transnationalism have given researchers greater flexibility in examining new migration trends. The problem researchers face is conceptualizing the multiple processes that are occurring within the global city. Nashleanas (2011) attempts to capture all of these fundamental processes in her Metageographical Community (MGC) model.

Nashleanas (2011) describes a Metageographic Community (MGC) as a "multi-scaled network of like-minded individuals, institutions, and organizations where physical nearness is not essential for the expression or maintenance of collective identity" (628). She contends that the use of personal media allows individuals, institutions, and organizations to utilize immediacy of connection, social proximity, and shared identity

without boundaries, which enables users to embed networks across multiple locations. The extent of communities today is no longer limited by geographical boundaries, but only by the range of the technologies that link their members.

The ability to link its members across space allows for communities to grow beyond one geographical site. In her framework of MGC, Nashleanas' (2011) model involves various scales in an effort to examine social structure and community on the basis of location and distance (Table 1). The framework includes four different levels of analysis, which can be used simultaneously or individually. The first level is the localized site. A localized site is the basis for the majority of ethnic studies. The localized site is not limited to a specific type of spatial settlement. Instead it could include one or more of the following: historical core, functional enclave, transnational site, or the individual (spatially dispersed). The second level is the extended localized community. This level incorporates individual cultural linkages between localized communities. The third level is the formalized network. The formalized network is comprised of media, associations, and joint ventures, which can connect individuals and communities at the regional, national, and even international levels. At the formalized level, cultural events can be coordinated in multiple different locations. The final level of analysis is the spatial signature. This level of analysis is completely objective and aims to analyze how immigrant communities have impacted the spatial landscape.

Since this study involves multiple large urban areas, Nashleanas' MGC framework is well suited to analyze the global cities within this study for two reasons. First, the MGC allows for analysis at multiple different scales. Choosing cities at different levels of global integration and varying urban populations poses scalar issues,

which cannot be addressed using the other frameworks discussed earlier. Second, the MGC model incorporates various components of assimilation theory, heterolocalism, cultural community, and transnationalism. This is critical because of the different phenomena that may be occurring at and within each location. The MGC framework allows for a certain amount of flexibility in understanding and explaining what is occurring within an ethnic community.

Table 1. Comprehensive Metageographic Community Analysis Matrix (Nashleanas 2011).

Metageographic Community Level	Example of Primary Classifications	Secondary Classifications
Localized site	Functional enclave	Generations
	Historical core Transnational site Individual	Ethnic, transnationals, entrepreneurs, refugees, émigrés
Extended localized community	Extended family visits Voluntary associations Paired associations Local joint ventures	Cultural complementarity
Formalized network	Ethnic newspapers or other media networking Regional or national ethnic association Political organizations Educational programs or institutions Regional business partnerships	Cultural simultaneity
Spatial signatures	Impact on or changes to the physical, cultural, or social landscape that reflects the presence of cumulative identity	Cultural, economic, political

Chinese Immigrants to the United States

The overhaul of the global economy and US immigration policy in the 1960s led to increasing flows of immigrants to the US. Since the 1960s, the US has seen a tremendous influx of Chinese emigrants. While earlier Chinese immigrants were poor, uneducated and primarily from Guangdong province (Shen 2010), the post-1965 Chinese immigrants were wealthy, well educated and from Taiwan and Hong Kong (Li 1998, 2005). The advancement of technology has allowed emigrants to stay connected over small and long distances for business and personal pleasure (Lin, Song and Ball-Rokeach 2010). With these advancements have come changes in the spatial settlement patterns of the ethnic Chinese. According to Ling (2005), most studies of Chinese settlements have only focused on the physical space. These spaces can be urban or suburban, and in rare cases, rural. The spaces generally studied focus on the urban and suburban popular Chinese gateway cities of New York, Los Angeles, and San Francisco (Leung 2007, Skop and Li 2005, Logan, Alba and Stults 2003). In order to gain a better understanding of the different spatial settlement pattern of Chinese immigrants, researchers must look at more than just location. They must also take into consideration social aspects (Ling 2005), economic structure (Zhou 2004), and place (Zhou 1998). While every place has its own unique qualities that are embedded into the fabric of a specific location, there are some generalizations that can be made about the three different settlement types; Chinatown, the Ethnoburb and the Invisiburb.

Chinatown

Chinatowns in the United States are characterized by a concentration of Chinese people and economic activities in a geographic area of one or more city blocks (Ling 2005, Zhou 1998). This high urban density forms a unique component of the urban fabric. It is basically a distinctive Chinese community amidst an urban environment (Ling 2005). Chinatowns have public services, community organizations and business associations to help community members at all levels of the social ladder (Zhou 2004, Zhou 1998).

Many new Chinese immigrants to the United States find themselves to be total strangers and experience difficulties in getting connected to the larger host society and institutions because of their lack of English language proficiency (Lin, Song and Ball-Rokeach 2010, Rovito and Masucci 2009, Zhou 2009) and cultural familiarity (Ling 2005). By living in Chinatown upon arrival to the United States, they are able to establish and rebuild networks with relative ease through involvement in ethnic institutions because of their shared culture and language (Rovito and Masucci 2009, Zhou 2009). Rovito and Masucci (2009) argue that the importance of being able to conduct everyday transactions in Chinese is a contributing factor that accounts for the geographic concentration of people, housing, and businesses. It is also a key factor for new immigrants deciding to settle in a Chinatown.

Another component to Chinatown settlement is the high occurrences of entrepreneurship. In an enclave such as a Chinatown, people tend to go into business for themselves to avoid racism and compensate for limited English proficiency (Rovito and Masucci 2009, Li 2005, Ling 2005, Zhou 2004, Zhou 1998). These are a special type of

entrepreneurs called enclave entrepreneurs (Zhou 2004). Enclave entrepreneurs are bounded by co-ethnicity, co-ethnic social structures, and location (Zhou 2004), which allows them to thrive in densely populated Chinatown. Ethnic entrepreneurs in enclave tend to hire co-ethnics. The enclave entrepreneur, therefore, is intertwined in an intricate system of coethnic, social networks (Zhou 2004).

While there are still thriving Chinatowns in the United States, the Chinese demographic immigrating to the United States has changed. After the United States overhauled its immigration policy in 1965, most migrants from China originated from Hong Kong and Taiwan. This was true until the 1980s. In 1979, China opened its doors to the world, allowing in capitalist influences and allowing its citizens to emigrate. Since the 1980s, immigration from the mainland has risen exponentially, while immigration from Hong Kong and Taiwan has decreased. The changing demographics have caused a shift away from traditional Chinatowns and towards the ethnoburb (Li 1998) and invisiburbs (Skop and Li 2005).

Ethnoburb

Suburban Chinatown also is made up of an intricate system of coethnic, social networks but predominately consisting of middle and upper-class Chinese immigrants. These Chinese suburbs began to develop in the 1960s, coexisting or competing with the older downtown Chinatown traditionally found in American central cities (Lin and Robinson 2005). Suburban Chinatown is not simply Chinatown relocated into a suburban area. There are some fundamental differences that exist between the suburban Chinese community and Chinatown in terms of underlying dynamics, community and economic

structures and the socioeconomic profiles of residence and neighborhoods (Li 2005). The term ethnoburb was first coined by Li (1998) in her study of the ethnic Chinese suburb in California's San Gabriel Valley. She characterized an ethnoburb as follows: "The combination of global ties and local ethnic service jobs gives the ethnoburb its unique characteristics: a fully functioning global economic outpost with a distinctive ethnic signature, formed in part as a result of recent international economic restructuring processes and changing geopolitical situations" (1998, 488).

The demographic composition of an ethnoburb is key to its differentiation from Chinatown. Li (1998) found that residents of Los Angeles' ethnoburb are primarily from Hong Kong and Taiwan. Due to industrialization and a rising economy, many people from Hong Kong and Taiwan accumulated wealth and were motivated to move from their countries of origin for various geopolitical and economic reasons, thus forming large pools of potential emigrants (Ling 2005). These new immigrants were not only wealthy, but also well-educated and professionally trained (Lin, Song and Ball- Rokeach 2010, Lin and Robinson 2005, Li 2005, Ling 2005, Zhou 2004, Li 1998, Zhou 1998). Emigrants often choose global cities with large numbers of their co-ethnics, located in suburban enclaves, to develop and support transnational businesses and personal networks (Lin and Robinson 2005, Li 2005).

The development and sustainment of transnational business has become increasingly important in recent years. Economic restructuring has changed global economic relations in recent decades, allowing Asian countries a seat at the global economic table (Lin and Robinson 2005, Li 2005). Asian countries, most recently China, have shifted their economies from manufacturing-based to an economy geared towards

high technology and service (Li 2005). This increases the role of an ethnoburb as a vital entry point into a new market because it serves as a staging ground between companies in Asia and the US market.

Invisiburb

The vast majority of studies on the ethnic Chinese population in the United States focus on the enclave. While a relatively small number of ethnic Chinese choose to disburse directly into mainstream society, this choice is becoming more and more prevalent (Ling 2005). Spatial dispersion is the pinnacle of the traditional assimilation model (Skop and Li 2005). Highly skilled, well educated Chinese are choosing more and more to bypass traditional Chinatowns or newer ethnoburbs, instead choosing to settle directly into mainstream American society. Skop and Li (2005) argue that arrival into mainstream society is no longer indicative of assimilation. While immigrants have to engage the dominant culture, they no longer have to shed their ethnic and cultural identities to achieve spatial assimilation (Wilcox 2011).

Ling (2005) argues that Chinese immigrants who are geographically dispersed form a cultural community in lieu of a community with physical boundaries. She describes a cultural community as one possessing a variety of different attributes, including "Chinese language schools, Chinese religious institutions, Chinese-American community organizations, Chinese-American cultural agencies, Chinese-American political coalitions or ad hoc committees, and the wide range of cultural celebrations activities facilitated by the aforementioned agencies and groups" (2005, 67). A cultural community, according to Ling (2005) is more likely to be found in geographical areas

where the global economy has not fully penetrated. While this study focuses on cities that are integrated into the global economy, the potential for the formation of a cultural community is still relevant. Even though the global economy is classified based on advanced producer sectors, professional and technological based sectors, which attract Chinese migrants are still a vital part of the global economy.

Since high-skilled Chinese migrants are primarily professionals employed by mainstream companies, this limits the need for social networking for economic interest (Ling 2005). Thus, Ling (2005) concludes that a cultural community forms because of the psychological need for cultural and ethnic identity. Wilcox (2011) adds that immigrants also initiate cultural maintenance to pass their heritage on to future generations. These identities and communities are both transnational and place-bound, premised on both a need for belonging and ever-shifting circumstances in sending and receiving societies (Wilcox 2011).

In conjunction with policy changes in China, changes in US economic and immigration policy have had a profound impact on the number of Chinese migrating to the United States. High-skilled migrants are drawn to global cities all around the United States for the enhanced quality of life and higher incomes (Ewers 2007). Low-skilled migrants are drawn to global cities to fill the more menial jobs (Sassen 2000). Regardless of the skill level of the immigrants, it is clear that the global economy is attracting migrants to global cities.

While there is plethora of literature on Chinese immigrants in traditional gateway cities, such as New York, Los Angeles and San Francisco (Li 2005, Ling 2005, Zhou 1998), there is a gap in research on Chinese immigrants that choose to settle outside of

these cities. Moreover, existing studies focus on the enclaves that are formed within gateway cities. Li (2005), Ling (2005), and Skop and Li (2005) all agree that more research is needed to fully understand spatially dispersed Chinese communities. This study will seek to address these gaps by analyzing the spatial settlement pattern of Chinese migrants in three different global cities within Texas. In doing so, I will analyze the Chinese population and the spatial relationship with TNCs and the spatial configuration of the Chinese cultural community in each city.

CHAPTER III

SITE SELECTION

This study will focus on three Texas cities, which have significant Chinese populations and are classified as global cities as determined by the GaWC. The Chinese population in Texas is greatest in cities identified by the GaWC as global cities (Table 2). Chinese ethnic settlement studies in the United States are almost exclusively focused on the three major gateway cities of New York, Los Angeles and San Francisco. Texas hosts the largest population of Chinese immigrants outside of New York and California. In its focus on populations of Chinese immigrants outside of the traditional gateway cities, this study will examine the attributes of Chinese settlement patterns in new settlement areas. It will also analyze the impact of the global economy on settlement patterns. This study will use Nashleanas' (2011) metageographic community framework to help explain the spatial phenomena between the ethnic Chinese population and each city's Chinese cultural community.

Table 2. Population of Major Metropolitan Areas in Texas (Department of Commerce 2010a).

Metro-Area	Metro-Total	Metro-Asian	Metro-Chinese	Asian % of total population	Chinese % of total population
Austin	1,716,289	82,433	16,853	4.80	0.98
Dallas	6,371,733	341,503	47,716	5.36	0.75
El Paso*	800,647	8,284	1,253	1.03	0.16
Houston	5,946,800	389,007	72,320	6.54	1.22
San Antonio*	2,142,508	45,330	5,978	2.12	0.28

* Cities not included on the GaWC world cities list

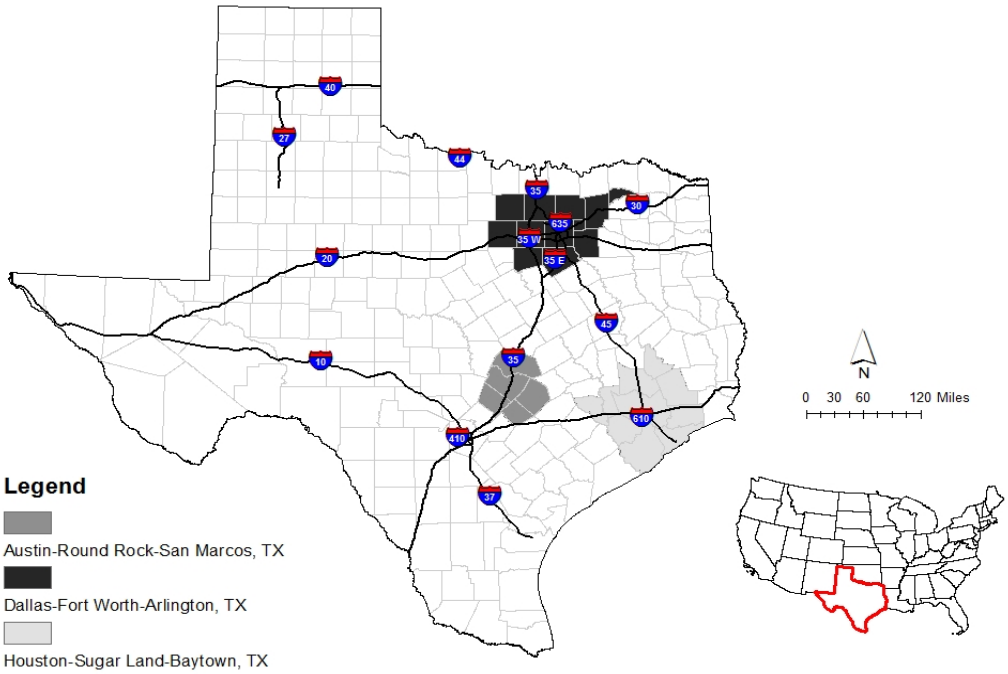


Figure 2. Texas Global Cities and Surrounding Metropolitan Areas.

The three cities chosen for this study are Dallas, Houston and Austin (Figure 2). They are classified as Alpha-, Beta+ and Gamma- cities respectively. Factors determining the classification of a global city are the presence of APS firms, international firms, airlines, and telecommunications (Ewers 2007, Dicken 2004, Sassen 2000). The classification of Dallas as an Alpha city indicates that it is highly integrated in the global economy (Appendix A). Houston has fewer of these key determinants present, and Austin has the least. The entire metropolitan area for each city has been selected to adhere to the concept of what constitutes a global city. There is the potential for many counties in the metropolitan areas to have an insignificant Chinese population. In the case of an insignificant Chinese population within a county, that county will be left out of the analysis for this study.

While Dallas, Houston and Austin are located within a 250-mile radius of each other, they are very different in terms of place and space. In terms of physical space, Dallas is located in the rolling plains of north Texas. Houston, along the Gulf of Mexico, is located on the coastal plains. Austin is in a transitional area between two landscapes, the Texas Hill Country west of Interstate 35 and rolling plains to the east. Geographical space is critical in determining where TNCs will locate. It could also be a deciding factor in where migrants elect to locate.

Table 3. Target Industries of Texas Global Cities (Sources: * Dallas Economic Development 2012, **City of Houston 2012, ***City of Austin 2012).

Dallas*	Houston**	Austin***
Building Design, Construction, & Furnishing	Oil and Gas Exploration	Convergence Technologies
Company Headquarters & Operations	Basic Petroleum Refining	Creative Media
Food Manufacturing	Petrochemical Production	Clean Energy
Instruments	Medical Research and Health Care Delivery	Corporate and Professional Operations
IT Services	High-Technology	Health Care & Life Sciences
Logistics	Government (City, state and federal)	Advanced Manufacturing
Media	International Import and Export	Software
Telecommunications	Commercial Fishing	Semiconductor
	Agriculture	
	Education	
Transportation Manufacturing & Assembly	Film and Media	
	Banking and Finance	
	Manufacturing and Distribution	
	Related Service Industries	

While TNCs and migrants could choose to locate to a city based on its geographical space, cities choose to enhance their space by creating places that will lure TNCs and make their city more attractive to global professionals. Each city makes strategic decisions based on place and space to better position themselves within the global economy (Ewers 2007). Each global city in Texas has target industries (Table 3).

These specialized roles within certain sectors often require specialized labor, which often means bringing in employees to fill voids in the local labor force.

The US Department of Commerce provides job counts by the North American Industry Classification Sector (NAICS) for American cities (Table 4). According to the 2010 data provided, all three global cities in Texas are strikingly similar in terms of the percentage of jobs in each sector. The most notable difference is in the educational services sector. Austin has nearly eighteen percent of its jobs located in the educational service sector, compared to Dallas with nine percent and Houston with eleven percent.

Table 4. 2010 Job Counts by NAICS Industry Sector for Study Areas (Department of Commerce 2010b).

NAICS Industry Sector	Dallas	Houston	Austin
Agriculture, Forestry, Fishing and Hunting	0.10%	0.10%	0.10%
Mining, Quarrying, and Oil and Gas Extraction	0.80%	3.60%	0.30%
Utilities	0.50%	0.80%	0.80%
Construction	4.80%	7.20%	5.50%
Manufacturing	9.50%	9.00%	6.20%
Wholesale trade	6.20%	5.70%	5.50%
Retail trade	10.80%	10.50%	8.80%
Transportation and Warehousing	4.90%	4.40%	1.30%
Information	3.00%	1.60%	2.40%
Finance and Insurance	6.60%	3.70%	4.10%
Real Estate and Rental and Leasing	2.10%	2.00%	1.60%
Professional, Scientific, and Technical Services	7.20%	7.50%	7.80%
Management of Companies and Enterprises	1.30%	0.90%	0.60%
Administration and Support, Waste Management and Remediation	7.20%	6.40%	5.60%
Educational Services	9.10%	11.00%	17.70%
Healthcare and Social assistance	11.00%	11.30%	10.70%
Arts, Entertainment, and Recreation	1.30%	1.10%	1.40%
Accommodation and Food Services	7.70%	7.30%	8.00%
Other Services (excluding Public Administration)	2.60%	2.70%	3.30%
Public Administration	3.20%	3.10%	8.30%

While educational services are not a part of APS, Ewers (2007) considers students and scholars to be global professionals. He also considers business professionals, high-tech workers, engineers, and medical workers to be global professionals. All three cities have large percentages of their workforce employed in these sectors.

CHAPTER IV

DATA

Advanced producer services are a primary determinant for where a city ranks on the hierarchy of global cities, but global professionals are not limited to industries within APS. Business professionals, high-tech workers, engineers, medical workers, students and scholars, and entrepreneurs are all considered to be global professionals. Chinese immigrants do not have high participation rates in APS sectors of the economy, but they have high participation rates in many of the other categories considered as global professionals. According to Ling (2005), most Chinese migrants work as IT professionals, scientists, medical doctors and engineers (Ling 2005). Another significant stream of Chinese migration to the Unites States associated with the global professional workforce is the student population (Poston and Luo 2007). In order to account for where Chinese professionals were working in 2012, I used the research database Uniworld to obtain a listing of TNCs by sector. The industry sectors that were targeted for this study are information, professional, scientific and technology services, educational services, heavy and civil engineering and space and research technology. Once the data were obtained, duplicate entries were removed based on business name and address. Also, retail and service outlets were removed from the dataset.

The next source of data focused on the Chinese businesses and cultural community in each city. Following Ling (2005), this study defines the Chinese cultural community as comprised of several key components; native language schools, religious institutions, community organizations, cultural agencies, political coalitions or ad hoc committees, and a wide range of cultural celebrations and activities. In addition to the cultural community, businesses that cater to the ethnic population and their cultural values were included. Addresses for cultural centers and ethnic oriented businesses were obtained from the Chinese Yellow Pages. Businesses included in this study have the potential to serve the greater community but given their listing in the Chinese Yellow Pages, it maybe inferred that they are targeting the ethnic Chinese population as a customer base.

While there are many categories of businesses in the Chinese Yellow Pages, results were filtered to include businesses and cultural organizations that were targeting the ethnic Chinese population in their advertising. The first category included was businesses and cultural organizations that were oriented towards maintaining cultural identity. Businesses and organizations in this category include: Chinese language schools, Chinese dance and music schools, martial arts businesses and Chinese religious institutions.

In addition to the Chinese cultural community, this study also includes a Chinese business community, also obtained through the Chinese Yellow Pages, in all three cities. While businesses such as Chinese restaurants and food distributors were included, Chinese restaurants that were known Americanized chains were excluded. Another category that was included was medical professionals, as Chinese migrants that are new

to an area may feel more comfortable seeing a doctor with the same ethnic identity. In additional to medical professionals, Chinese herbalist and eastern medical experts also were included. Following along the same reasoning as medical professionals, legal professionals and Asian financial institutions, organizations and financial professionals were also included.

The Chinese community places great emphasis on academic excellence; therefore a category was included for prekindergarten and after school tutoring services. In addition to after school tutoring services, listings for institutions of higher education were also included. Colleges and universities were included as the Chinese businesses and cultural center dataset for two reasons: 1) because of the cultural emphasis placed on higher education and 2) institutions of higher education are known to have cultural organizations targeted towards immigrant student population.

The Dallas and Houston metropolitan areas had extensive business and cultural listings in the Chinese Yellow Pages. The Austin metropolitan area had many fewer entries. In order to yield additional results that would create a more robust listing, components of the cultural community were run through an Internet search engine for the Austin metropolitan area.

To obtain spatial population, income and English language proficiency data for people with Chinese ancestry, I downloaded data from the spatial database source Simply Map. Since the Census Bureau does not release data on populations that do not meet its privacy threshold, Simply Map uses a mixed methods approach to estimate the Chinese population at the census block level. Simply Map used the 2010 American Community Survey and United States Postal Service (USPS) mailable household data for the census

block as data sources to put into a proprietary model to estimate how many people of Chinese ancestry live within a census block.

In addition to data related to the cultural community and the Chinese population, this study also examines the relationship of the Chinese population to schools that were rated exemplary by the Texas Education Agency. In her study of the Chinese community in Los Angeles, Li (2005) noted that transnational businessmen who traveled back and forth from Asia would often settle their families in affluent neighborhoods in and around Los Angeles that also were known to have exemplary schools. This was to ensure that their children would receive the best education and have a better chance to attend the university of their choice. This study includes the location of exemplary schools to determine if the quality of schools has an effect on where Chinese migrants choose to settle in the three study areas in Texas. In order to obtain this data, I contacted the Texas Education Agency and requested the school ratings for the Austin, Dallas and Houston metropolitan area. Once the data was obtained, the table was joined to shapefile provided by the Texas Education Agency with the geographical location of all the exemplary school within the three study areas. Catchment areas for individual schools were not used because the Texas Education Agency does not require that independent schools districts (ISD) provide that information to the agency. Exemplary school data was used in conjunction with income data, obtained from Simply Map, to illustrate the relationship between Chinese settlement and median income. This provides qualitative insight into the neighborhoods into which Chinese migrants are settling.

CHAPTER V

METHOD

In order to analyze spatial clustering of the Chinese population, I used the local Moran's I. This spatial analysis technique obtains the z-scores and the corresponding p-values for the Chinese population in each census block. Using the local Moran's I, I first identified clusters of the ethnic Chinese population in each study area and then created a shapefile that classified each census block's Chinese population with the independent variable into four different cluster types; high-high, high-low, low-high, low-low or not significant. The cluster type high-high indicates that the census block selected and the surrounding census blocks have a high clustering of the Chinese population. On the other end of the spectrum, a classification of low-low would indicate that the census block selected and the surrounding census blocks have a low clustering of Chinese population. The high-low classification would indicate that the census block selected has a high clustering of the Chinese population while the surrounding census blocks have a low clustering, and finally, a low-high clustering would be the inverse of the high-low classification. The output of the cluster analysis was also used as an overlay of general income distribution to make generalizations of what parts of the metropolitan area Chinese immigrants settled.

To analyze the relationship between the Chinese population and the TNCs, the Chinese cultural community and exemplary schools, I ran two types of analyses. The first was the Poisson regression analysis in the statistical package SPSS. The Poisson

regression analysis is the primary type of analysis used in studies with data set that have an abnormal distribution. This study has an abnormal distribution due to the large number of census blocks with a zero Chinese population. The use of this analysis showed if the relationship between the Chinese population and TNCs, the Chinese cultural community and exemplary schools was statistically significant.

In addition to the Poisson regression analysis, I ran a geographically weighted regression using ArcGIS 10.x. This analysis complements the Poisson regression in that this analysis allowed for the mapping of the spatial relationship of the Chinese population and TNCs, the Chinese cultural community and exemplary schools. This analysis creates significance values for each census block along with coefficients. When the coefficients are mapped the phenomena in question can be viewed across space. The census blocks with the highest coefficients will form a hotspot. A hotspot is simply where the mapped phenomena is most likely to occur.

The statistical analysis in this study will be used to facilitate a discussion to answer the question of the spatial relationship between the Chinese population and TNCs. This analysis will also enable a discussion on spatial relationship between the Chinese population and Chinese businesses and cultural centers and exemplary schools. The statistical analysis allows a quantification of the relationship between TNCs, Chinese business and cultural centers, and exemplary schools. Tier four of Nashleanas (2011) Metageographic community, spatial signatures, will be used to interpret how Chinese migrant populations have impacted space and place.

CHAPTER VI

RESULTS

Each of the three study areas were shown to have a unique spatial clustering of the Chinese population. While all three cities are unique in terms of their relative location in the global economy as well as in space and place, I expected some similarity in the three populations of Chinese migrants to Texas due to the general demographic shift of Chinese migrants since the 1980s. Newer Chinese migrants tend to be better educated, have above average English proficiency and high incomes. Data obtained from Simply Map on the Chinese population in the Texas metropolitan areas found that the settlement patterns found are consistent with the known demographic shifts in major centers of Chinese settlement such as Los Angeles and New York City (Zhou 1998).

Austin had an invisiburb settlement pattern, with the population dispersed in census blocks close to exemplary schools. Dallas had a large cluster of Chinese in the northeastern suburbs of Plano and Richardson. Houston was expected to have a small urban Chinatown. The results of the cluster analysis, however, showed no sign of clustering in the central, urban area of Houston. There also was evidence of the formation of an ethnoburb in the suburb of Bellaire. This study also revealed a second, unexpected, invisiburb in the sprawling suburbs south and west of Houston's Bellaire suburb.

In terms of how the ethnic Chinese population is spatially located within each global city, patterns seen in earlier studies by Li (2005) Ling (2005) and Skop and Li

(2005) predict a large percentage of the population in all three cities to be spatially dispersed among the general population based on trends of Chinese migrants having higher educational attainment, higher incomes and higher English language proficiency. This was found to be true for all three global cities. Based on Li's (2005) study, I envisaged some clustering around primary and secondary schools that are rated exemplary. In addition to clustering around exemplary primary and secondary schools, I would expect to see clustering around institutions of higher education based on Poston and Luo's (2007) study. This study found both cases to be true.

The results of this study will be presented in five parts. First, a general overview of the spatial patterns of Chinese migrants will be given for each city, showing general spatial trends using maps that indicate the total Chinese population, TNCs, Chinese businesses and cultural centers, and exemplary schools. Second, I will explain the findings of the local Moran's I analysis, which detects spatial clustering. Next, I will present the findings of the Poisson regression analysis and discuss its implications. I will then explore the findings of the geographically weighted regression analysis. Finally, I will use Nashleanas' (2011) metageogrpahic community framework in combination with income data provided by Simply Map to highlight the strong Chinese presence in affluent areas with exemplary schools.

General Overview

In the Austin metropolitan area, the vast majority of the Chinese population resides in southern Williamson county and Travis county (Figure 3). The border between Travis and Williamson counties represents the area within the Austin metropolitan area

that has a high number of technology-based firms. Industry giants such as Apple, Dell, and Sun-Micro Systems all have offices in this part of the metropolitan area. Just north of downtown Austin is the University of Texas-Austin and the census blocks in this vicinity have a relatively high percentage Chinese population. As also evident in Figure 3, 83.7 percent of the Chinese population throughout the metropolitan area lives within five-miles of an exemplary school.

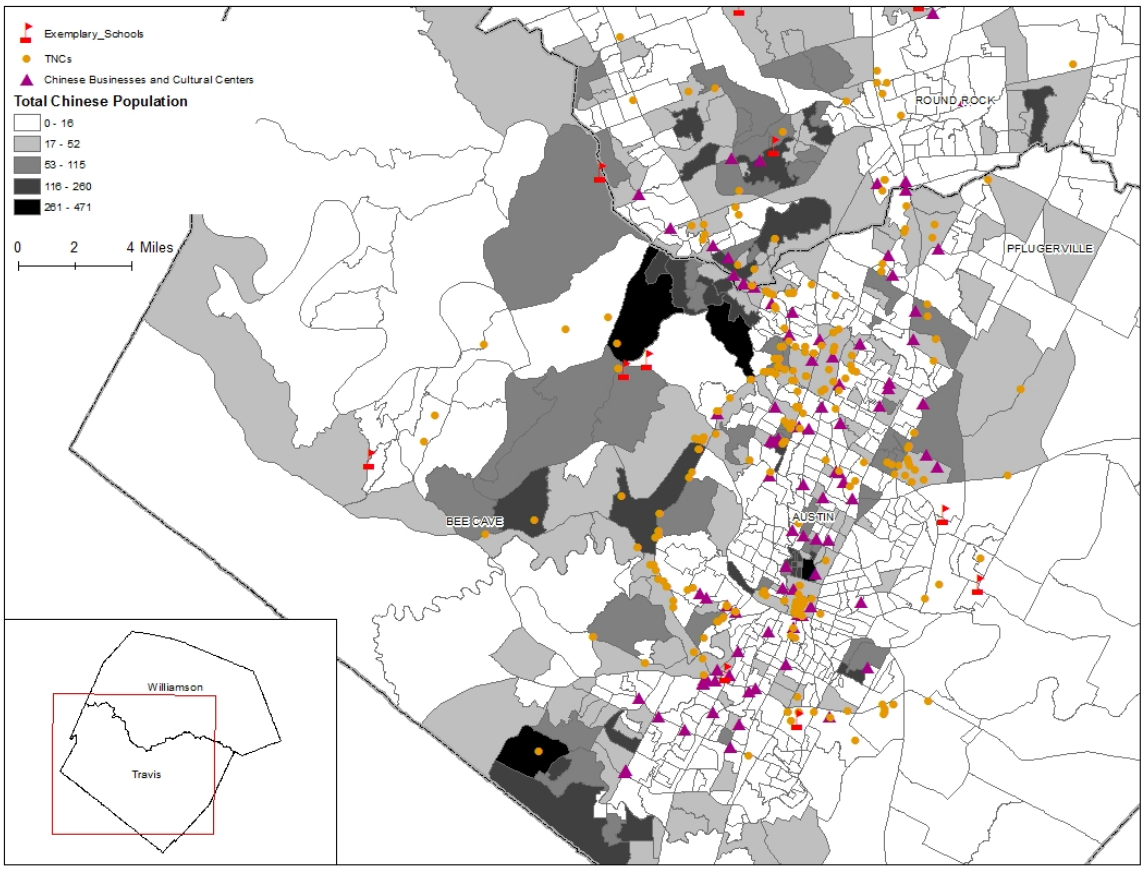


Figure 3. Map of the Chinese Population TNCs, Chinese Businesses and Cultural Centers and Exemplary Schools in the Austin Metropolitan Area.

Hays County is also part of the Austin metropolitan area but was excluded from this study because the Chinese population does not exceed 500 people. Hays County is a predominantly rural county south of Travis County. Even though it is largely rural, it is

home to Texas State University-San Marcos. Hays County does have a small Chinese population that is concentrated in the census blocks surrounding the university.

The Dallas metroplex is much larger than that of Austin. The entire metroplex consists of eleven counties. The only counties in the metroplex with a significant Chinese population are Denton, Collin, Tarrant and Dallas counties. Within this four county area, the majority of the Chinese population is concentrated in southwest Collin County, northern Dallas County, and southeast Denton County (Figure 4).

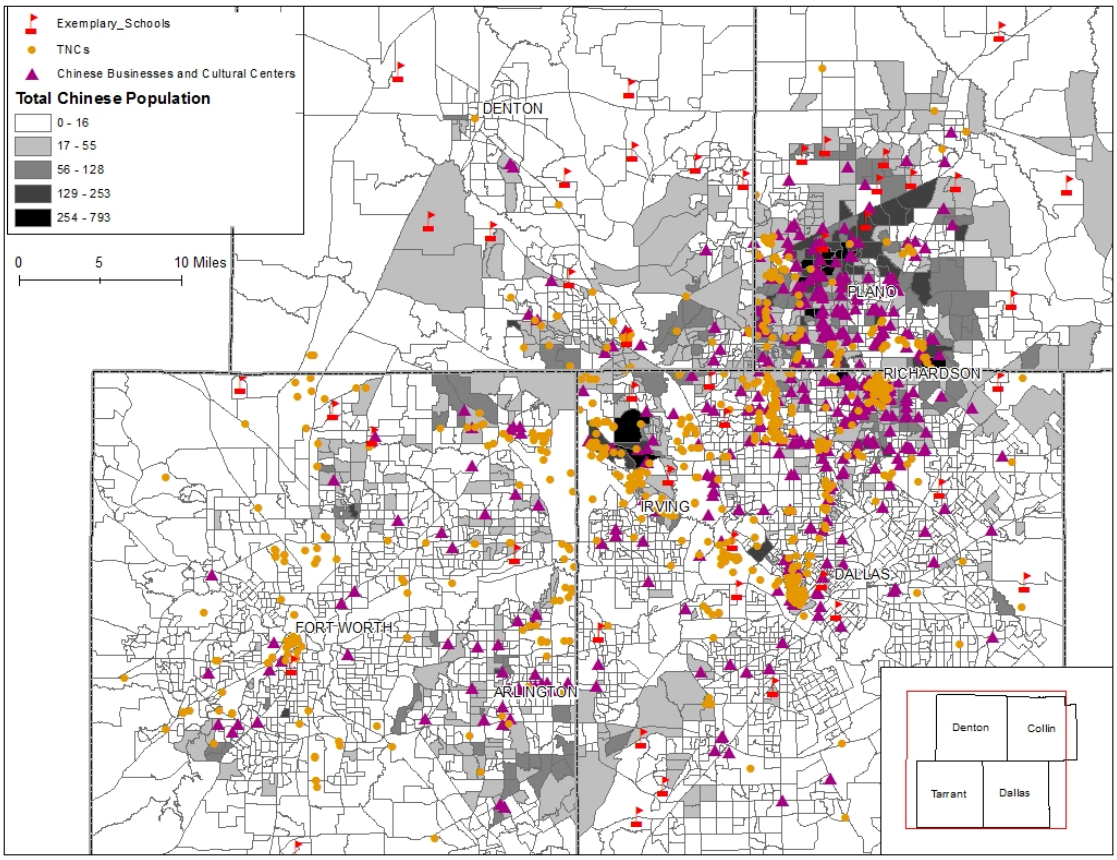


Figure 4. Map of the Chinese Population TNCs, Chinese Businesses and Cultural Centers and Exemplary Schools in the Dallas Metropolitan Area.

The largest concentration of the Chinese population in the Dallas metroplex is north of the city of Dallas in the suburbs of Richardson and Plano. This area is the core of

Dallas' technology and scientific industry. Companies like Hewlett-Packard, Texas Instruments and Dell all have offices located in these suburbs. These industries attract a large number of high-skilled Chinese migrants.

Plano and Richardson also have a large number of Chinese ethnic businesses and cultural centers. The large population of Chinese migrants that live in the area increases the demand for ethnic businesses and cultural organizations.

While the Chinese population, Chinese businesses and cultural centers, and TNCs are heavily concentrated in the suburbs of Plano and Richardson, other pockets of ethnic Chinese do exist in the metroplex. These pockets in southern Dallas and Tarrant counties, and western Denton counties, located outside of the main cluster of Plano and Richardson, have ten exemplary schools. The Chinese population within a five-mile radius of these schools in these outlying areas is 10,066. This accounts for 20.2 percent of the total Chinese population in the Dallas metropolitan area. The total number of Chinese that lives within a five-mile radius of an exemplary school is 40,297 or 80.8 percent of the total population. This would suggest that Chinese migrant populations, inside or outside of the main cluster, tend to locate around exemplary schools.

The Houston metropolitan area is comprised of ten counties and is home to the largest population of ethnic Chinese in the State of Texas. The majority of the Chinese population is located in five counties directly in and surrounding the City of Houston. Within this five county area, the most densely populated areas of ethnic Chinese live south and west of the City of Houston, with sparsely populated Chinese areas north and east of the City of Houston (Figure 5).

The most densely populated Chinese areas are in southwest Harris County and northwest Fort Bend County. This area is home to Houston's Chinatown, which is an ethnoburb. This area is the center of Houston's Chinese cultural community and this is reflected in the distribution of (or highly concentrated nature of the Chinese) ethnic oriented business and cultural centers.

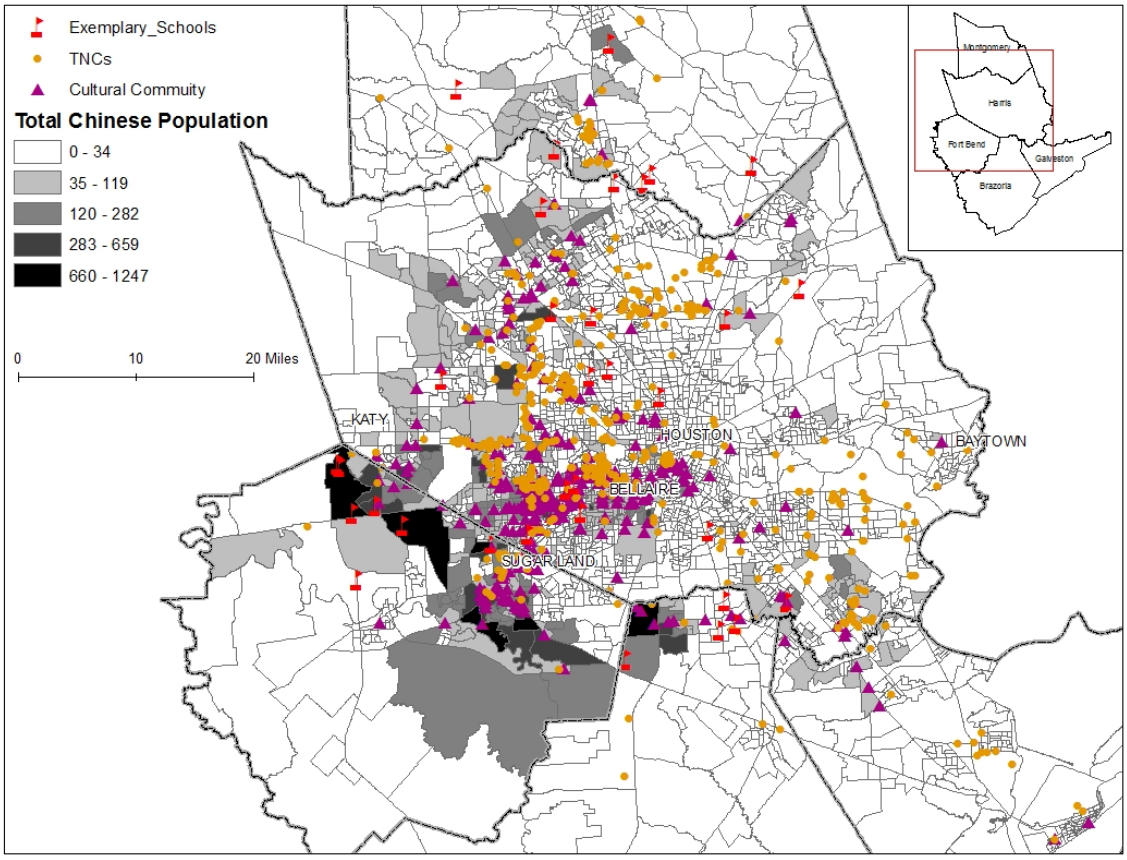


Figure 5. Map of the Chinese Population TNCs, Chinese Businesses and Cultural Centers and Exemplary Schools in the Houston Metropolitan Area.

While the core of the Chinese population is located in southwest Harris and northwest Fort Bend Counties, the Chinese population throughout the metropolitan area has a tendency to locate in close proximity of exemplary schools. In the Houston metropolitan area 78.5 percent of the Chinese population lives within five miles of an

exemplary school. This is similar to the percent of the Chinese population that lives within a five mile radius of an exemplary school in Austin and Dallas.

Unlike in Dallas and Austin, TNCs in Houston are more spatially dispersed throughout the metropolitan area. There are more TNCs concentrated in the western half of the metropolitan area, which could account for the larger Chinese population. Located in the same area are Houston's robust medical community and academic institutions. The eastern side of the metropolitan area has a lot of industrial activity related to the oil and gas industries. Also evident are clusters of high Chinese census blocks that are located near TNCs.

Spatial Clustering

This study used the local Moran's I analysis technique to identify the spatial clustering patterns of Chinese migrants in the three Texas study areas. This technique classifies clusters into four different categories: high-high (HH), high-low (HL), low-high (LH), low-low (LL) or not significant (NS). The cluster type HH indicates that the census block selected and the surrounding census blocks have a high clustering of the Chinese population. On the other end of the spectrum, a classification of LL would indicate that the census block selected and the surrounding census blocks have a low clustering of Chinese population. The HL classification would indicate that the census block selected has a high clustering of the Chinese population while the surrounding census blocks have a low clustering, and finally, a LH clustering would be the inverse of the HL classification. The NS classification indicates that the analysis found no statistical significance to form a cluster in relation to the Chinese population. In the discussion that

follows here, this analysis will be used to evaluate whether a settlement pattern can be classified as a Chinatown, an ethnoburb or an invisiburb.

A spatial clustering will be defined as a Chinatown, if the clustering is located within the urban core of a metropolitan area and has greater than a thirty percent Chinese population in successive census blocks. A spatial clustering will be defined as an ethnoburb if it is located in the suburban areas surrounding the urban core of the metropolitan area, has a grouping of census blocks with more than thirty percent ethnic Chinese population, and has a presence of a strong, cohesive cultural and ethnic business community. Finally a spatial clustering will be designated an invisiburb if it is located in the suburban areas surrounding the urban core of the metropolitan area, has a grouping of census blocks with less than thirty percent ethnic Chinese population, and shows few signs of a centrally located, cohesive cultural and ethnic business community.

Austin

The Austin metropolitan area is the lowest ranked global city in Texas and the smallest metropolitan area included in this study. Even though the Austin area is ranked as a Gamma city, it has the second largest percentage of ethnic Chinese living in the State of Texas. The local Moran's I analysis revealed that the highest clusters of ethnic Chinese were in southern Williamson County and north and west Travis County (Figure 6). This clustering pattern is away from the urban city center of Austin, which would indicate that there is not a well-defined downtown Chinatown enclave. The suburban nature of the cluster pattern would indicate the formation of an ethnoburb or even further spatial assimilation, designated as an invisiburb. The unavailability of census data regarding the

demographic composition of the ethnic population in these areas limit our ability to precisely identify an ethnoburb rather than an invisiburb. Even though census data are not available for the study areas, the absence of a central cultural community combined with the fact that no census block has more than a sixteen percent Chinese population would suggest that Austin's Chinese population is best characterized as an invisiburb.

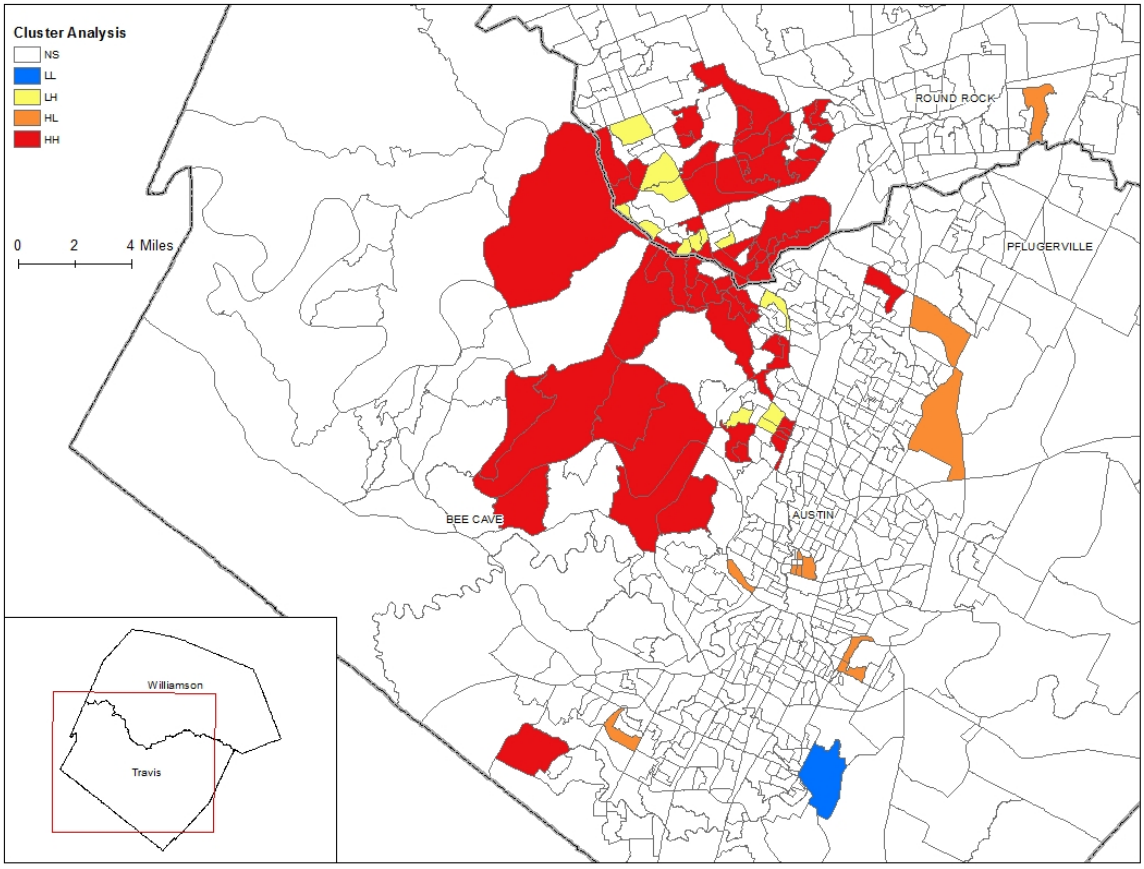


Figure 6. Cluster Analysis of the Austin Metropolitan Area.

Austin has a significant educational sector and hosts the largest university in the State of Texas, the University of Texas at Austin. Chinese students often come to universities in the United States, primarily to obtain graduate degrees in science and technology based fields. Because there are a large number of Chinese migrants who

migrate to obtain advanced degrees, I expected to see clustering around these institutions. The cluster analysis preformed in this study did indicate clustering in the census blocks around the university (Figure 7).

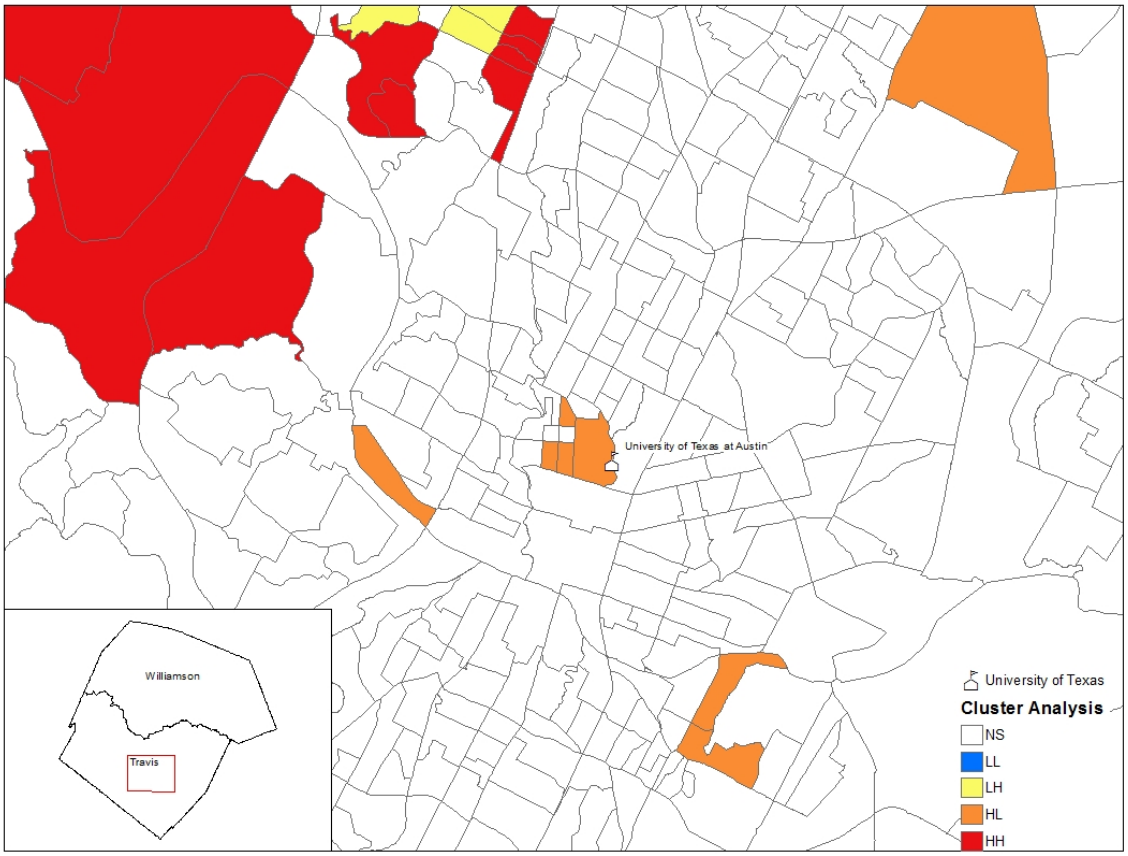


Figure 7. Clustering Around the University of Texas at Austin.

Dallas

The Dallas metropolitan area is classified as Alpha on the GaWC world cities list. Even with this classification, the Dallas metroplex has the lowest percentage of ethnic Chinese in Texas. After performing the local Moran's I analysis, a strong HH cluster can be seen in the southwest Collin County and extending into north Dallas County and east Denton County (Figure 8). This is the location of the suburbs of Richardson and Plano

northeast of Dallas. Like Austin, census data are not available for the Chinese population in this area.

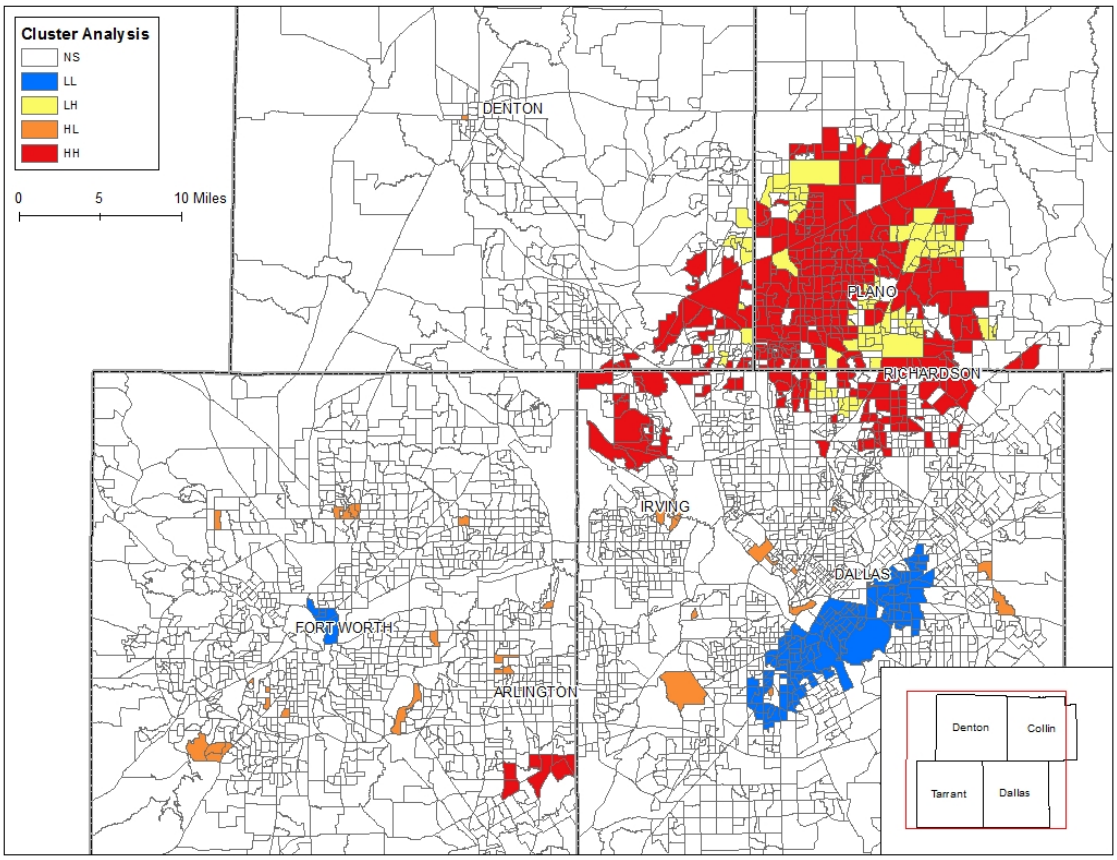


Figure 8. Cluster Analysis of the Dallas Metropolitan Area.

Although a suburban cluster pattern in the northeast portion of the Dallas metroplex is evident in this spatial analysis, because the percentage of Chinese to the total population is relatively low, this study is classifying it as an invisiburb. Even though there is a large cluster in the suburbs of Plano and Richardson, not one census block exceeds fifteen percent total Chinese population. There is a small "Chinatown" in the Richardson/Plano area. It is not a Chinatown in the sense that it is a place Chinese people work and live, but rather a commercialized strip mall with ethnic oriented businesses. Because Chinese migrants live and work among the general population and seemingly

only seek out Chinese businesses and organizations for cultural identity, the Plano/ Richardson suburb of Dallas should be classified as an invisiburb.

Houston

The Houston metropolitan area is classified as a Beta city by the GaWC. This rank indicates that it is the second tier of cities in the global economy. Although Dallas is higher on the world cities ranking, Houston has the largest percentage ethnic Chinese in Texas. The local Moran's I cluster analysis reveals that the Houston metropolitan area is clearly divided. The areas east of the city are largely classified as LL, which indicates a statistically significant, very low or non existent Chinese population in the selected census block and the surrounding census blocks (Figure 9). There are a few census blocks that are classified as HL, meaning that the indicated census block has a high Chinese population and the surrounding census blocks have a very low Chinese population. These clusters of HL pockets on the eastside of the metropolitan area seem to be associated with exemplary schools and TNCs. These HL clusters are all within a five-mile radius of exemplary schools, TNCs, or both.

The west side of the Houston metropolitan area has a high density of HH clustering. Houston's Chinatown, Texas' largest concentration of Chinese residents, is located in the suburb of Bellaire. While this HH clustering is referred to as Chinatown, it is not located in the urban core of Houston, in which case it can more accurately be called an ethnoburb. Census blocks in the Bellaire suburb have up to a forty-percent ethnic Chinese population.

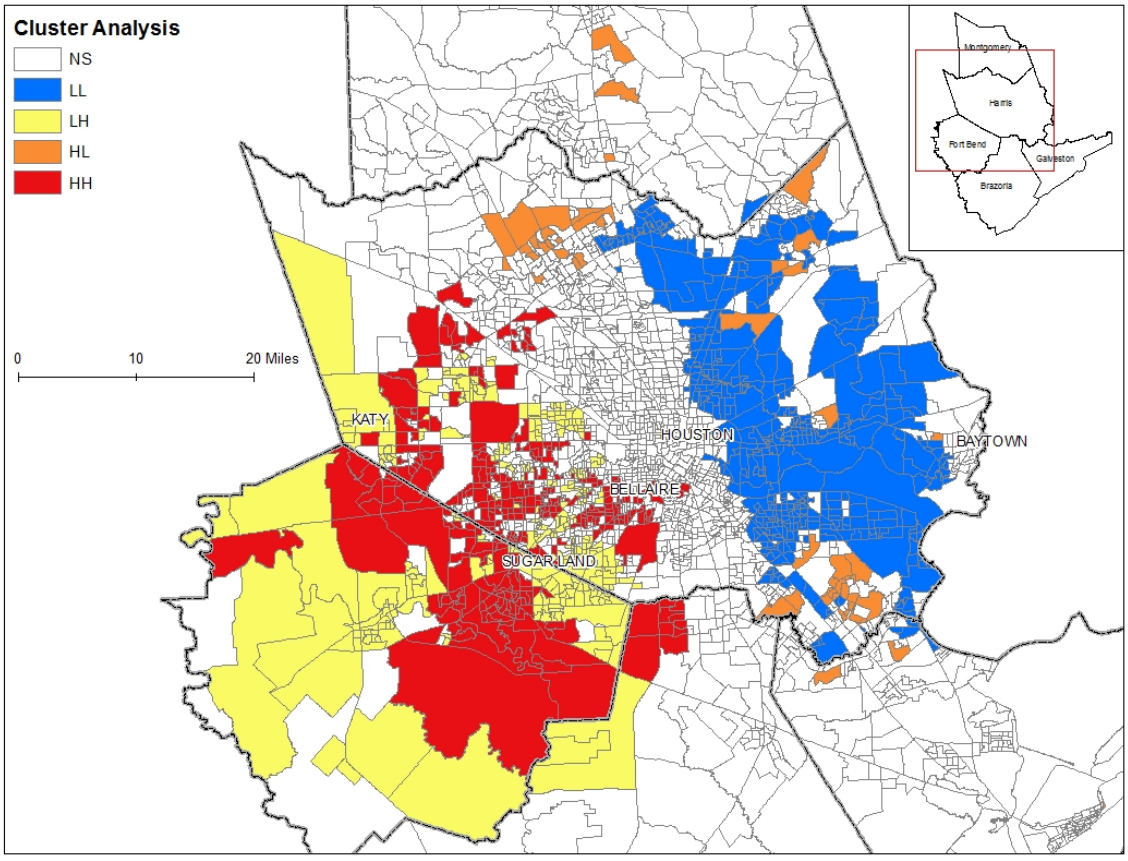


Figure 9. Cluster Analysis of the Houston Metropolitan Area.

Before running the spatial analysis, I expected the majority of the population to live in and around the enclave, with a portion of the Chinese population dispersed among the general population due to different demographics. The data in fact indicated the exact opposite. The majority of the population was dispersed into the general population, while only 15 percent of the Chinese population lived near Bellaire. There was a correlation between the Chinese population and exemplary schools, so it could be inferred that the population is dispersing in order to attain better educational opportunities for their children. While the relationship between the Chinese population and TNCs is not statistically significant, there are certain clusters throughout the metropolitan area that

have high populations of ethnic Chinese and high numbers of TNCs, which would indicate that these migrants chose to live closer to TNCs. The cultural community does remain based in the enclave.

Poisson Regression Analysis

The Poisson regression analysis was used in this study because the overwhelming majority of census blocks in all three study areas have no ethnic Chinese within them. This skews the data and the normality assumption is lost. The Poisson regression model expresses the natural logarithm of the outcome of interest as a linear function of a set of predictors (Meyers, Gamst and Guarino 2006).

The preliminary results of the correlation analysis indicated significant correlation between TNCs and exemplary schools for all three study areas. It also indicated that TNCs were not a significant factor in Chinese residential location. Thus, TNCs were removed from the model and rerun only with cultural community and exemplary schools as parameters. The adjusted model showed a significant relationship between the Chinese population and almost all of the parameters in the study areas (Table 5). The only insignificant factor was having an exemplary school within one mile in the Dallas metropolitan area. This would indicate that the Chinese population lived further away from exemplary schools than one-mile but does not necessarily mean that they did not live within the exemplary school's boundary. In both the Austin and Houston study areas there was a negative relationship between the Chinese population and both exemplary schools and Chinese businesses and cultural centers at the three mile radius interval. The variance in distance the Chinese population to exemplary and Chinese businesses and cultural centers, in this case and others throughout the study, could be

indicative of many factors. This reflects a family's desire to live near exemplary schools, while at the same time choosing the best location within the schools catchment area that fits their lifestyle needs.

Table 5. Results of the Poisson Regression Analysis.

	Parameter	B	Sig.*
Austin	(Intercept)	2.3620	0.0001
	Cultural Community within one mile	0.1220	0.0001
	Cultural Community within three miles	-0.0590	0.0001
	Cultural Community within five miles	0.0280	0.0001
	Exemplary School within one mile	0.4350	0.0001
	Exemplary School within three miles	-0.2350	0.0001
	Exemplary School within five miles	0.2450	0.0001
Dallas	(Intercept)	1.2990	0.0001
	Cultural Community within one mile	0.0030	0.0001
	Cultural Community within three miles	0.0020	0.0001
	Cultural Community within five miles	0.0120	0.0001
	Exemplary School within one mile	0.0170	0.1820
	Exemplary School within three miles	0.2320	0.0001
	Exemplary School within five miles	0.1920	0.0001
Houston	(Intercept)	2.9080	0.0001
	Cultural Community within one mile	0.0130	0.0001
	Cultural Community within three miles	-0.0030	0.0001
	Cultural Community within five miles	0.0030	0.0001
	Exemplary School within one mile	0.4360	0.0001
	Exemplary School within three miles	-0.0980	0.0001
	Exemplary School within five miles	0.0520	0.0001

*Significant at < 0.05
Note: TNCs were found to be insignificant in all three study areas and were removed from the Poisson Regression because of concerns of multicollinearity

In the Austin metropolitan area, the Chinese businesses and cultural centers parameter with the most influence was within one mile of the Chinese population. There was also a weaker relationship when the cultural community was within five miles. There was a negative relationship between the Chinese population and Chinese business and

cultural center points that were within three miles. The relationship between exemplary schools and the Chinese population was stronger than the relationship with Chinese businesses and cultural centers. The parameters within one and five miles have a positive relationship while the parameters within three miles have a negative relationship.

In the Dallas metropolitan area, there was a weak, positive relationship between the Chinese population and all three-distance intervals of the cultural community. There was not a significant relationship between the Chinese population and exemplary schools within one mile; however, there was a positive relationship between the three and five-mile distance intervals. While this could indicate that catchment areas for local schools are larger, the statistical relationship between the Chinese population and exemplary school is more likely to be associated with a variety of factors related to quality of life when Chinese migrants choose to live within school catchment areas.

The Houston metropolitan area saw similar results as the Austin and Dallas metropolitan areas. There was a weak correlation between the Chinese population and the business and cultural community at the one and five mile distance intervals and a negative correlation at the three-mile interval. The strongest relationship in the Houston area Chinese population was with exemplary schools within one mile. There was a very weak relationship for exemplary schools within five-miles of the Chinese population.

While there is a statistically significant relationship between the Chinese population and the various distance intervals of the Chinese businesses and cultural centers in all three study areas, the correlation was weak for every parameter. The strongest correlations in all three study areas were between the Chinese population and exemplary schools. While the number of businesses and cultural centers in the study area

indicates a desire to maintain cultural identity, proximity to Chinese businesses and cultural centers is not a significant factor. This suggests that Chinese migrants are behaving like native born residents and settling in neighborhoods in accordance with their financial capabilities.

Since TNCs were left out of the Poisson regression analysis due to mutlicollinearity concerns, an exemplary schools variable (a factor analysis in conjunction with a linear regression) was run to determine if TNCs had a statistically significant impact on where the Chinese population decided to settle within the three study areas. Before running the factor analysis and linear regression correlation matrices were computed for each of the study areas (Tables 6-8). The analysis did not reveal a significant correlation between TNCs and exemplary schools. It did, however, reveal significant but very low correlations between TNCs and Chinese cultural centers and businesses, TNCs and exemplary schools, Chinese cultural centers and businesses and exemplary schools. This indicated a need to run factor analysis to minimize multicollinearity prior to linear regression.

The factor analysis extracted three components with Eigen values greater than one. These factors were Chinese businesses and cultural centers, exemplary schools, and TNCs for each study area (Table 9). The results from the factor analysis (factor scores) were then used in a linear regression to determine if the TNC factor was relevant in deciding where the Chinese population decided to locate in the metropolitan areas. Using the factor scores from the factor analysis, I then ran a multiple linear regression using a backwards-stepwise method of extraction. All three study areas produced two models

(Table 10), which both indicated that TNCs were an insignificant factor in determining where the Chinese population decided to locate (Table 11).

Table 6. Austin Metropolitan Area Correlation Matrix.

	Mile Radius	Chinese	TNCs			Cultural Community and Businesses			Exemplary Schools		
			One	Three	Five	One	Three	Five	One	Three	Five
Chinese		1	-0.01	-0.003	0.033	.114**	0.057	.083*	0.06	-0.008	.103**
TNCs	One	-0.01	1	.280**	.123**	.101**	.091**	.105**	0.001	-0.044	-0.002
	Three	-0.003	.280**	1	.542**	0.068	.073*	.069*	-0.012	-0.037	-0.019
	Five	0.033	.123**	.542**	1	0.017	0.04	0.053	-0.012	-0.003	0.013
Cultural Community and Businesses	One	.114**	.101**	0.068	0.017	1	.772**	.684**	-0.023	-.102**	-0.012
	Three	0.057	.091**	.073*	0.04	.772**	1	.930**	-.092**	-.073*	-0.003
	Five	.083*	.105**	.069*	0.053	.684**	.930**	1	-.092**	-.103**	0.027
Exemplary Schools	One	0.06	0.001	-0.012	-0.012	-0.023	-.092**	-.092**	1	.509**	.244**
	Three	-0.008	-0.044	-0.037	-0.003	-.102**	-.073*	-.103**	.509**	1	.522**
	Five	.103**	-0.002	-0.019	0.013	-0.012	-0.003	0.027	.244**	.522**	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
Note: n= 823

Table 7. Dallas Metropolitan Area Correlation Matrix.

	Mile Radius	Chinese	TNCs			Cultural Community and Businesses			Exemplary Schools		
			One	Three	Five	One	Three	Five	One	Three	Five
Chinese		1	0.013	0.016	0.008	.290**	.355**	.367**	.054**	.113**	.117**
TNCs	One	0.013	1	.334**	.123**	.056**	.047**	.054**	0.024	.065**	.040*
	Three	0.016	.334**	1	.698**	.033*	.035*	.041*	-0.022	0.003	.036*
	Five	0.008	.123**	.698**	1	0.002	0.015	0.017	-0.016	0.008	.039*
Cultural Community and Businesses	One	.290**	.056**	.033*	0.002	1	.795**	.735**	-.069**	-.104**	-.086**
	Three	.355**	.047**	.035*	0.015	.795**	1	.947**	-.087**	-.125**	-.100**
	Five	.367**	.054**	.041*	0.017	.735**	.947**	1	-.082**	-.115**	-.073**
Exemplary Schools	One	.054**	0.024	-0.022	-0.016	-.069**	-.087**	-.082**	1	.510**	.346**
	Three	.113**	.065**	0.003	0.008	-.104**	-.125**	-.115**	.510**	1	.712**
	Five	.117**	.040*	.036*	.039*	-.086**	-.100**	-.073**	.346**	.712**	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
Note: n= 3690

Table 8. Houston Metropolitan Area Correlation Matrix.

	Mile Radius	Chinese	TNCs			Cultural Community and Businesses			Exemplary Schools		
			One	Three	Five	One	Three	Five	One	Three	Five
Chinese		1	0.001	0.001	-0.002	.304**	.201**	.194**	.103**	.131**	.154**
TNCs	One	0.001	1	.175**	.114**	0.028	.042*	0.034	-0.016	-0.002	0.019
	Three	0.001	.175**	1	.364**	0.03	0.02	0.025	-0.006	-0.005	0.028
	Five	-0.002	.114**	.364**	1	-0.005	0.006	0.014	-0.008	0.016	0.019
Cultural Community and Businesses	One	.304**	0.028	0.03	-0.005	1	.645**	.456**	.039*	.294**	.363**
	Three	.201**	.042*	0.02	0.006	.645**	1	.823**	.215**	.463**	.566**
	Five	.194**	0.034	0.025	0.014	.456**	.823**	1	.266**	.537**	.602**
Exemplary Schools	One	.103**	-0.016	-0.006	-0.008	.039*	.215**	.266**	1	.545**	.370**
	Three	.131**	-0.002	-0.005	0.016	.294**	.463**	.537**	.545**	1	.703**
	Five	.154**	0.019	0.028	0.019	.363**	.566**	.602**	.370**	.703**	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
Note: n= 2904

Table 9. Results from the Factor Analysis.

Rotated Component Matrix				
Metropolitan Area	Variable	Component Community	Schools	TNCs
Austin	Chinese population	0.158	0.149	0.010
	TNC within one mile	0.105	-0.018	0.502
	TNC within three miles	0.016	-0.018	0.871*
	TNC within five miles	-0.022	0.022	0.809*
	Cultural community within one mile	0.872*	-0.029	0.047
	Cultural community within three miles	0.963*	-0.042	0.057
	Cultural community within five miles	0.936*	-0.042	0.067
	Exemplary school within one mile	-0.061	0.726*	-0.004
	Exemplary school within three miles	-0.077	0.869*	-0.031
	Exemplary school within five miles	0.055	0.750*	-0.002
Dallas	Chinese population	0.535	0.227	0.006
	TNC within one mile	0.061	0.068	0.495
	TNC within three miles	0.006	-0.024	0.922*
	TNC within five miles	-0.025	-0.024	0.855*
	Cultural community within one mile	0.866*	-0.104	0.026
	Cultural community within three miles	0.953*	-0.121	0.031
	Cultural community within five miles	0.938*	-0.101	0.038
	Exemplary school within one mile	-0.024	0.706*	-0.026
	Exemplary school within three miles	-0.035	0.907*	0.032
	Exemplary school within five miles	-0.010	0.840*	0.065
Houston	Chinese population	-0.039	0.505	-0.023
	TNC within one mile	-0.043	0.068	0.494
	TNC within three miles	0.010	-0.009	0.795*
	TNC within five miles	0.043	-0.059	0.759*
	Cultural community within one mile	0.066	0.842*	0.030
	Cultural community within three miles	0.398	0.808*	0.041
	Cultural community within five miles	0.516	0.684	0.043
	Exemplary school within one mile	0.813*	-0.129	-0.041
	Exemplary school within three miles	0.856*	0.243	-0.006
	Exemplary school within five miles	0.729*	0.418	0.035

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
* Factors extracted within component

Table 10. Multiple Step-Wise Linear Regression Model.

Metropolitan Area	Model		Sig.	R Squared	F
Austin	1	(Constant)	0.0001	0.013	3.6
		REGR factor score exemplary schools for analysis 1	0.008		
		REGR factor score Chinese businesses and cultural community for analysis 1	0.06		
		REGR factor score TNCs for analysis 1	0.771		
	2	(Constant)	0.0001	0.013	5.363
		REGR factor score exemplary schools for analysis 1	0.008		
		REGR factor score Chinese businesses and cultural community for analysis 1	0.06		
Dallas	1	(Constant)	0.0001	0.154	224.142
		REGR factor score exemplary schools for analysis 1	0.0001		
		REGR factor score Chinese businesses and cultural community for analysis 1	0.0001		
		REGR factor score TNCs for analysis 1	0.315		
	2	(Constant)	0.0001	0.154	335.707
		REGR factor score exemplary schools for analysis 1	0.0001		
		REGR factor score Chinese businesses and cultural community for analysis 1	0.0001		
Houston	1	(Constant)	0.0001	0.067	69.947
		REGR factor score exemplary schools for analysis 1	0.0001		
		REGR factor score Chinese businesses and cultural community for analysis 1	0.0001		
		REGR factor score TNCs for analysis 1	0.901		
	2	(Constant)	0.0001	0.067	104.949
		REGR factor score exemplary schools for analysis 1	0.0001		
		REGR factor score Chinese businesses and cultural community for analysis 1	0.0001		

Table 11. Excluded Variables from the Linear Regression Model.

Metropolitan Area	Model		Sig.
Austin	2	REGR factor score TNCs for analysis 1	0.771
Dallas	2	REGR factor score TNCs for analysis 1	0.315
Houston	2	REGR factor score TNCs for analysis 1	0.901

*Dependent variable: Chinese population

Geographically Weighted Regression (GWR)

A geographically weighted regression (GWR) is a geostatistical process in which ArcGIS performs a local form of linear regression. The process creates an equation for each feature. Once the analysis is complete, the results can be mapped for each variable by using the coefficients divided by the standard error. This allows the results to be represented visually across space. The Local R^2 is the statistic used to determine goodness of fit. When this statistic is mapped it can visually determine where the model has the highest probability of producing the most accurate results. Areas with a high R^2 would indicate that the model will most accurately predict the mapped phenomena in the associated areas. If the R^2 is low, the model accuracy will be lower in the associated areas. The results for each city's local R^2 maps are presented in Figures 10-12. While the local R^2 is low in Austin and moderate in the Dallas and Houston metro areas, it is interesting to note that the areas where R^2 is highest correlates with known Chinese populations. This would indicate that the GWR for each study area has the highest probability of predicting the relationship of the Chinese population to TNCs, Chinese businesses and cultural centers, and exemplary schools.

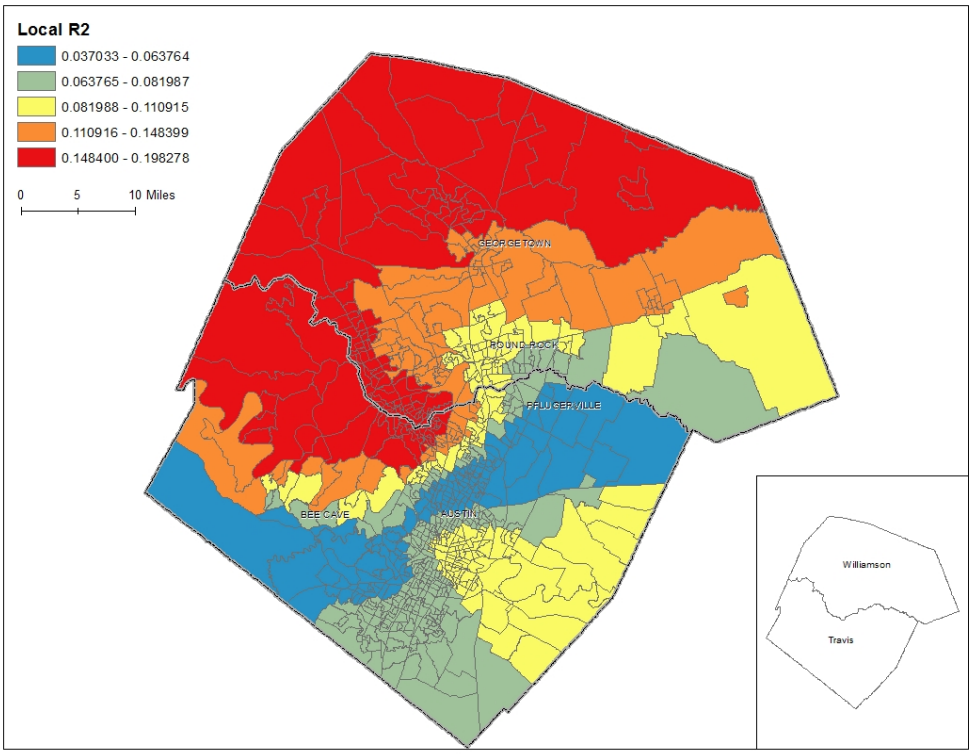


Figure 10. Local R^2 Map for the Austin Metropolitan Area.

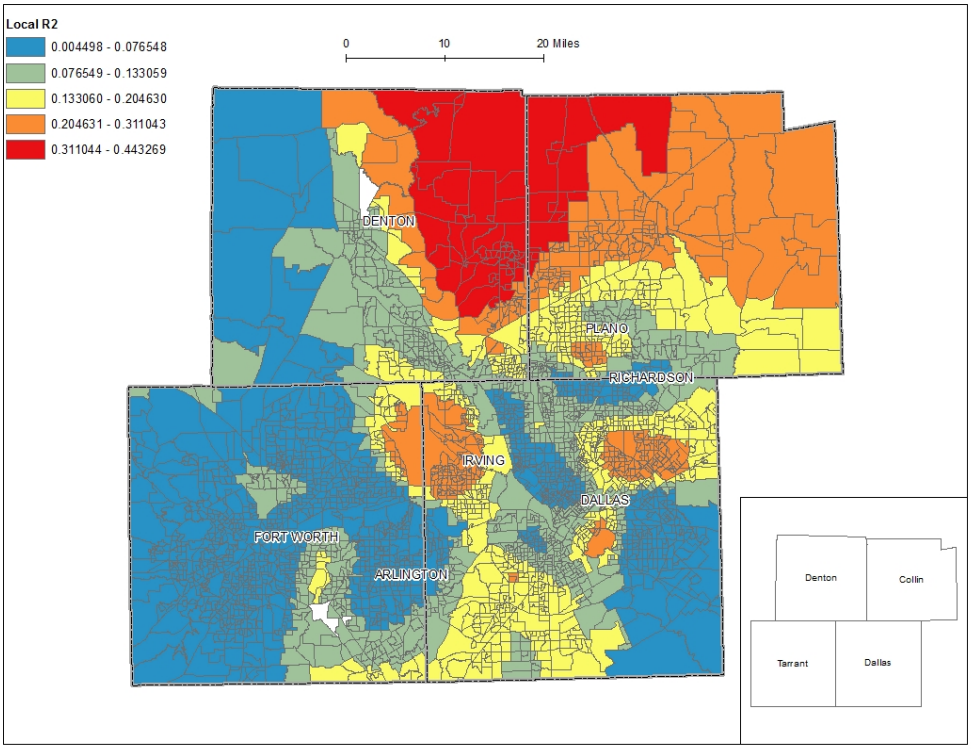


Figure 11. Local R^2 Map for the Dallas Metropolitan Area.

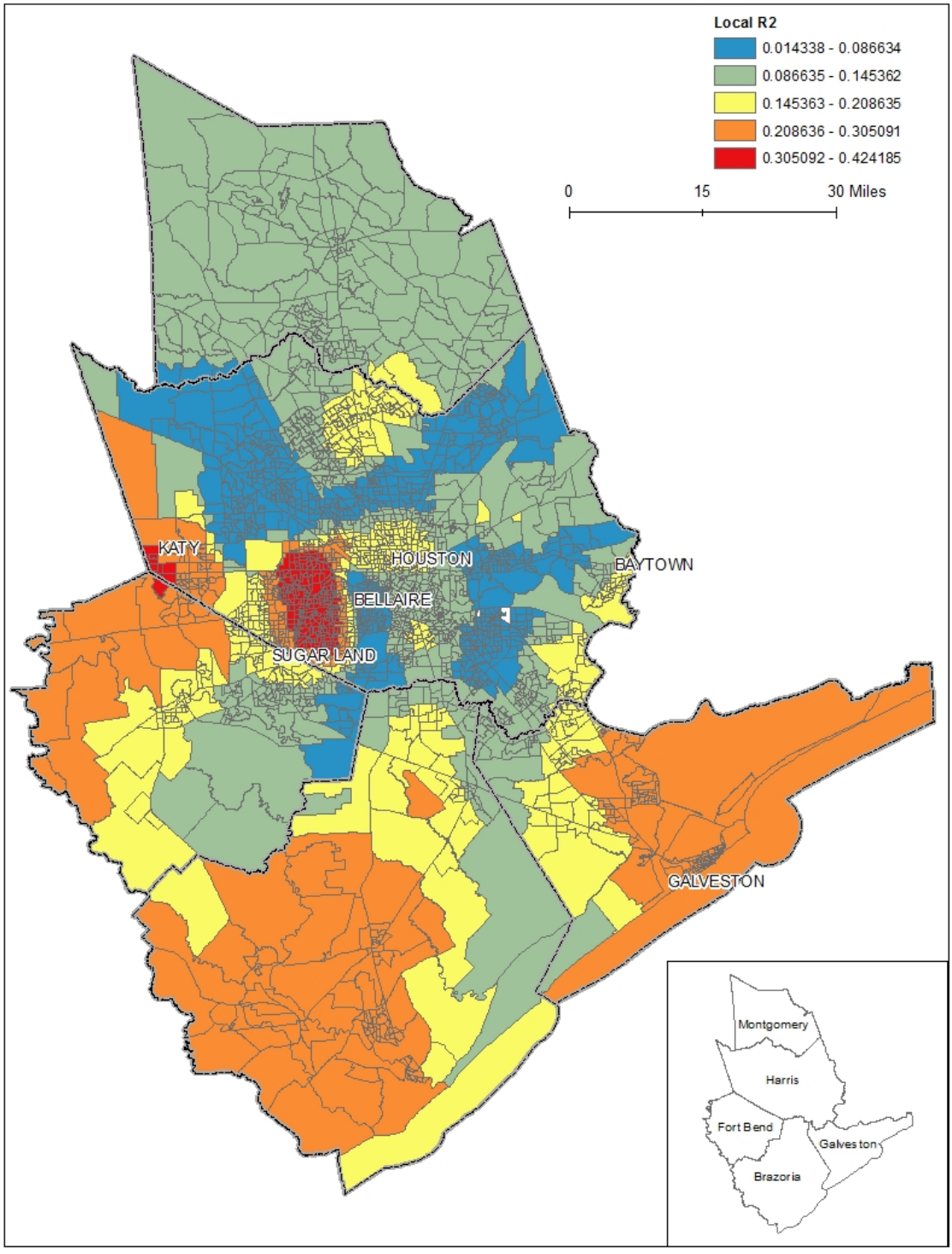


Figure 12. Local R^2 Map for the Houston Metropolitan Area.

In order to visualize the spatial distribution of each independent variable, each variable was mapped using the coefficient divided by the standard error. This step allows

the relationship between the dependent and each independent variable to be visualized and hotspots for that phenomena to be identified. Hotspots are spatial concentrations where the relationship between the independent and dependent variables is the highest, thus indicating an area where the hypothesis is most likely to occur. For example, if the Chinese population as a strong spatial correlation to exemplary schools that spatial correlation would form a hotspot over that geographical area. This indicates that the model predicts Chinese living within a certain distance of an exemplary school is most likely to occur within the hotspot. The accuracy of the prediction is based on the R^2 for the model.

GWR Analysis for the Chinese Businesses and Cultural Centers

The results of the GWR for the Chinese cultural community were revealing in all three study areas. The two intervals that were most reveling in the Austin metropolitan area were the one- and five-mile intervals (Appendix B.1). At the one-mile interval, the hotspot was centered over the densest population in the metropolitan area. Whereas at the five-mile interval, the hotspot was located to the east where a smaller Chinese population resided. This indicates that the population to the west would have to drive further to interact with businesses defined as part of the cultural community.

There is a similar pattern that occurs in the Houston metropolitan area. At the one-mile interval, the hotspot is located over the known ethnoburb (Appendix B.3). At the five-mile interval, the hotspot shifted to the eastern half of the metropolitan area and centered over much smaller Chinese populations. This would indicate that in the areas with a high Chinese population there is a closer spatial relationship with the Chinese

businesses and cultural community. In areas where the Chinese population is more dispersed, Chinese migrants are willing to drive greater distances to have interactions with Chinese cultural centers and businesses.

The most interesting spatial patterns occurred in the Dallas metropolitan area. At the one-mile interval, the hotspot was not located in the most densely populated Chinese areas of Plano and Richardson but rather just west of this area (Appendix B.3). The three-mile hotspot shifted just south of the majority of the Chinese population, which resides in Tarrant County. Finally, at the five-mile interval, the hotspot centers over the northern part of the Chinese population center. It is interesting that no one particular interval level encompasses the majority of the Chinese population in the Dallas metropolitan area. This may indicate an older core of the Chinese population that resides in the hotspot of the one-mile interval where the Chinese community is most established. The hotspots for the three and five-mile intervals could indicate populations of Chinese migrants that are more spatially integrated into the larger society but still would like to live in close spatial proximity to Chinese businesses and cultural centers.

GWR analysis for Exemplary Schools

The GWR analyses of exemplary schools for all three study areas were remarkably similar. At all three-mile intervals, the hotspot remained over the known, most dense, Chinese population within the study area. This would suggest that exemplary schools have the most influence over where Chinese migrants decide to locate within the metropolitan study areas. This concurs with the Poisson regression analysis.

The most surprising finding of all three study areas can be seen in the Houston metropolitan area. The eastern half of the metropolitan area has a very small Chinese population. The population is confined to a small grouping of census blocks. It is surprising that there is not a stronger correlation to exemplary schools given their isolation from the larger Chinese population (Appendix C).

CHAPTER VII

DISCUSSION

The global economy is an expansive network of nodes and linkages, which connects cities and people from around the world with each other. All three cities included in this study were named on the GaWCs global cities list and all three had similar target industries in order to attract foreign direct investment and facilitate growth. The majority of these target industries are in the science and technology based sectors of the economy. These sectors are known to attract high-skilled Chinese migrants.

One goal of this study was to examine the spatial relationship of the settlement patterns of Chinese migrants and TNCs. This study used one, three and five-mile radius intervals to examine the spatial relationship. The statistical analysis used in this study found no significance in the relationship of where Chinese migrants settled and the location of TNCs. This would indicate that TNCs are not a factor in where Chinese migrants decide to settle other than merely attracting them to a particular city.

Even though this study did expect to find some clustering around TNCs, the finding that TNCs did not affect settlement patterns is not completely unexpected. Texas cities and the surrounding metropolitan areas are expansive geographical areas. It is not uncommon for people to drive more than five miles to work. The lack of statistical significance between the Chinese population and TNCs indicate that Chinese migrants area behaving like the general population.

Another aim of this study was to examine the relationship of the Chinese population and the cultural community and ethnic businesses. While the analysis did find statistical significance between Chinese businesses and cultural centers, the correlation was weak. To complement the statistical analysis presented above, a qualitative analysis of the location of Chinese population in relation to business and cultural centers can also signal changes evident in the physical, cultural, or social landscape. Additionally, to provide insight into the nature of settlement patterns found in the three study areas, I mapped median income data from Simply Map (Figures 13-15) to illustrate the relationship between Chinese settlement and median income.

Over the past 15 years, researchers have been providing alternative approaches to assimilation theory. Zenlinsky and Lee (1998) argued that migrants do not need to first live in enclave in order to achieve spatial assimilation. Ling (2005) then introduced the concept of a cultural community, the idea of maintaining an ethnic and cultural identity in cities without a formal enclave. Following Zelinsky and Lee (1998) and Ling (2005), Nashleanas (2011) conceptualized the framework of the metageographic community, a concept in which a cultural community transcends spatial limitations rather than being bound by them to form a community. A metageographic community implies that new forms of technology, such as television, the internet and other advancements in telecommunications allow persons seeking to maintain their cultural identity to interact, regardless of physical spatial location. Using the localized site and spatial signatures tiers of Nashleanas' (2011) metageographic community framework, I was able to look for impacts on or changes to the physical, cultural, or social landscape that reflect the presence of cumulative identity on each localized site.

Within the localized site, Nashleanas (2011) proposes identifying a functional enclave, historical core, transnational site and individual settlement. While there is not a historical core in any of the study areas, there are signs of an enclave, transnationalism and individual settlement. The Houston metropolitan area has a functioning enclave in the suburb of Bellaire. All three study areas show signs of individual settlement (invisiburb) and transnationalism.

The ethnoburb in Houston's Bellaire suburb is the only functioning Chinese enclave in Texas. The suburb has the densest concentration of ethnic Chinese in the State of Texas and hundreds of businesses and cultural organizations that serve the ethnic population. Extending west from the ethnoburb is an invisiburb spatial pattern. In these areas, the Chinese population in each census block represents a much smaller percent of the total population. While there are still Chinese business and cultural centers that are located in the area of the invisiburb, Chinese people have the ability to interact with the enclave and fully immerse themselves in Chinese culture to maintain ethnic identity. The population that lives on the outskirts of the enclave may rely on media or telecommunications to stay apprised of the events that are occurring in the enclave.

The Dallas and Austin metropolitan areas are different from Houston in that there is not a functioning enclave. The residents in both of these metropolitan areas live in an invisiburb settlement pattern. Because there is no functioning enclave, if Chinese residents want to maintain their cultural identity they must do so over longer distances. In order to stay apprised of cultural events in the metropolitan areas, the Chinese residents have to make a more conscience effort to stay apprised of cultural events, organization and location of ethnic oriented businesses. A virtual connection, which transcends space,

has the potential to be greatest between the Chinese who live in an invisiburb because these communities have no physical ethnic core.

In the study areas of Dallas and Houston, Chinese migrants were concentrated in large suburban areas. While there is not a strong quantitative correlation between where Chinese migrants settled and the location of Chinese businesses and cultural centers at the one, three and five-mile intervals, the mere presence of Chinese language schools, Chinese churches and Buddhist temples, eastern medicine specialists, and other ethnic businesses targeted at the ethnic community are clear spatial signatures of Chinese presence. This is especially true in the Houston suburb of Bellaire and the Dallas suburbs of Plano and Richardson.

In the Austin metropolitan area, the Chinese population is much more spatially dispersed. The metropolitan area has no distinct concentration of the Chinese population. Despite the lack of spatial concentration, it still has the same spatial signatures as the Dallas and Houston study area. There is a presence of Chinese language schools, churches, medical specialists, civic organizations and ethnic-oriented businesses.

The presence of a Chinese cultural community and ethnic-oriented businesses is a clear spatial signature that can be seen in all three-study areas, which signifies a cumulative presence of ethnic Chinese identity. A weak correlation at the one, three and five-mile interval would indicate that Chinese migrants seeking out a cultural community and ethnic business are willing to commute in order to seek out Chinese businesses and cultural centers. This indicates that the Chinese population in Texas may have been able to achieve spatial assimilation without shedding their cultural identity.

Another part of this study focused on the relationship of the Chinese population and exemplary schools. The Chinese population in the United States has a strong cultural and social identity that prides itself on education. The exemplary schools variable had the strongest correlation to the Chinese population, indicating that the quality of public schools had the greatest impact on where Chinese migrants chose to settle.

Demographic data related to the Chinese population were unavailable from the Census Bureau due to population thresholds related to privacy laws not being met for census block or tract. Without this data, we cannot precisely know the demographic make up of the Chinese population in Texas. However, by looking at aggregate data provided by Simply Map, based on median household incomes and percentage of the population that speaks English at home, we can make generalizations based upon what we know about Chinese communities and known settlement patterns.

This study found that the Austin and Dallas Chinese populations formed an invisiburb. These populations were dispersed among the general population. Migrants who settle in the invisiburb settlement pattern have high incomes, high educational attainment and high levels of English proficiency.

In general, the Austin metropolitan area is divided into two halves by Interstate 35, which runs north to south through the region. This physical divide creates two different demographic profiles. The population living to the east of Interstate 35 have lower household incomes, a lower percentage of the population that speaks English at home and lower educational levels. The population living to the west of Interstate 35 has higher household incomes, a higher percentage of the population that speaks English at home and is better educated (Figure 13).

The Chinese population that lives in the Austin metropolitan area followed the same demographic divide as the general population. As reflected in the Census data shown in Figure 13, Chinese residents that have lower household incomes live in Census blocks east of Interstate 35, characterized by a lower percentage of residents that speak English at home. Wealthier migrants with very high household incomes live in census blocks west of Interstate that have higher percentage rates of people who speak English at home.

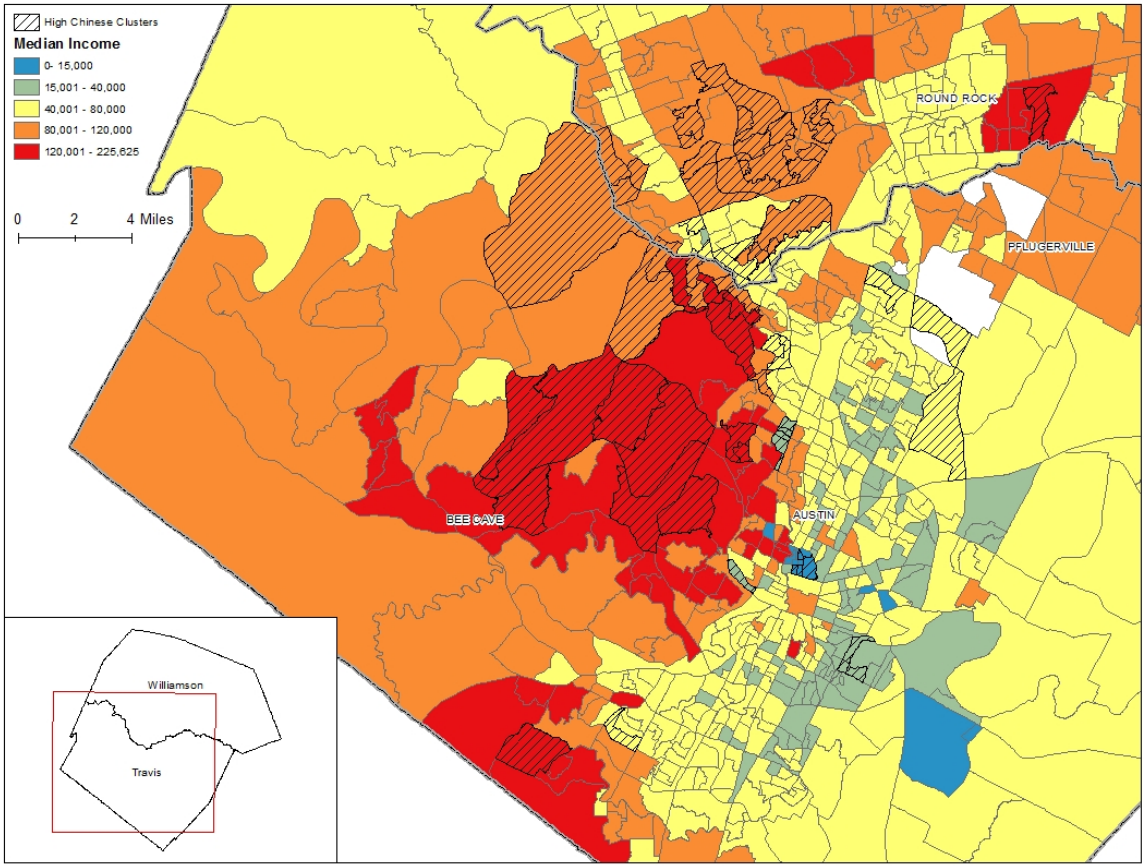


Figure 13. Median Household Incomes for the Austin Metropolitan Area.

* Areas shown in white are areas where data was not available

The only caveat to this is the area around the University of Texas at Austin. The populations in these census blocks all have very low median household income and live

in areas with a relatively high percentage rate of people who speak English at home. This is fully understandable given that this is an area that is home to students who do not earn a lot of money.

While the Dallas metropolitan area has the same invisiburb settlement patterns as Austin, the Dallas metropolitan area is much more complex. It is a vast area of urban sprawl with many different economic centers. This study established the Plano and Richardson area of the Dallas metroplex as the area with the highest amount of Chinese settlement. Median household incomes, in the majority of the area, range from $80,000 to $243,000 (Figure 14). There is a cluster of high Chinese population census blocks along the Dallas\Tarrant county line. This is the general location of the University of Texas at Dallas, explaining the low household incomes within these census blocks.

The suburbs of Irving, Arlington and Fort Worth have clusters with high populations of ethnic Chinese. These pockets are on the suburban areas of the individual cities. Median household incomes vary from city to city, with the highest household incomes in the suburb north of Irving. While median household incomes are not high in all of the pockets of high Chinese clusters, the relative long distances from other high clusters of Chinese population combined with high rates of English being spoken at home within these census blocks allows these areas to be identified as an invisiburb settlement pattern.

Houston was known to have a large ethnoburb and this study confirmed that there is a strong, growing ethnoburb in the suburb of Bellaire. An ethnoburb is a type of enclave that forms in a suburban area. Migrants that settle in an ethnoburb have the means to bypass an urban enclave. This would indicate that Chinese migrants living in

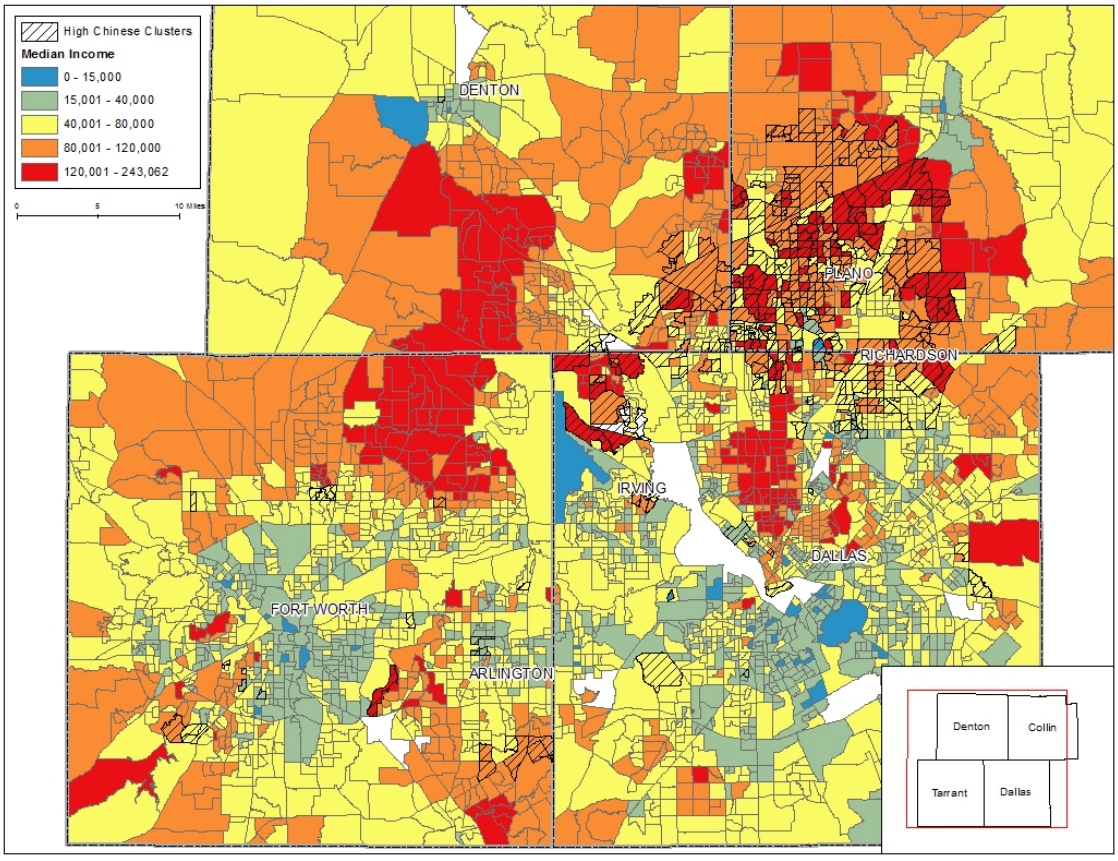


Figure 14. Median Household Incomes for the Dallas Metropolitan Area.

* Areas shown in white are areas where data was not available

Bellaire have higher incomes (Figure 15) and higher educational attainment. The choice to settle in the ethnoburb also may indicate that these Chinese migrants might not have high levels of English proficiency (Rovito and Masucci 2009, Zhou 2009, Li 2005). Past studies have shown that migrants who live and work in an ethnoburb conduct transnational business with China and thus would not need to have high levels of English proficiency. This transnational business operation by Chinese migrants could be facilitated through the seaport of Houston. This type of trade would not be possible in Austin or Dallas.

A small urban Chinatown once existed in the Houston metropolitan area (Moreno 2009). This study found no evidence of a Chinatown in the urban center of Houston. Data regarding median household income and 'speaks English at home' indicate that the urban Chinatown has relocated into the larger Bellaire ethnoburb. There are three census blocks in Bellaire where median household incomes are very low and the percent of people that do not speak English at home is very high (Figure 15).

The Chinese population of Houston has also expanded past the ethnoburb towards the suburbs of Katy to the west and Sugar Land in the south. These suburbs have some of the highest total number of Chinese residents in the metropolitan area. Even though the Chinese population is high in total numbers it is low in terms of the proportion of Chinese to non-Chinese residents. This would indicate an invisiburb settlement. The formation of an invisiburb was not expected in this area. Spatial assimilation of Chinese migrants in this area could be due to the fact that there are eight exemplary schools in entire area. In addition to exemplary school, twenty TNCs are directly in the Sugar Land area. Even though TNCs are not statistically significant with in the metropolitan area, they have the potential of influencing settlement within this small area. These factors could indicate that Chinese migrants with better English language proficiency have migrated to these suburbs.

In addition to main Chinese settlement in the Bellaire, Katy and Sugar Land suburbs, there are population clusters of ethnic Chinese spread around the outskirts of the Houston metropolitan area. These cluster are primary associated with median household income levels exceeding $80,000 and 'speaks English at home' percentages greater than 70 percent.

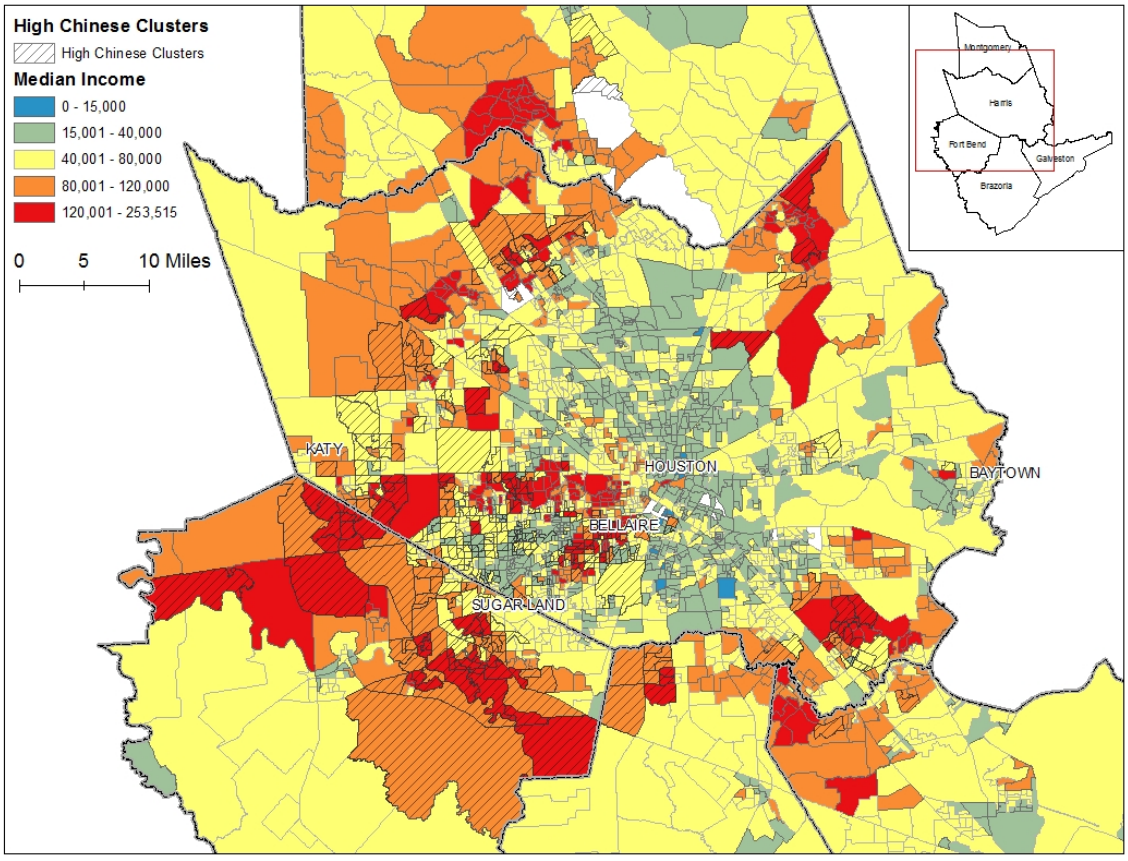


Figure 15. Median Household Income for the Houston Metropolitan Area.

* Areas shown in white are areas where data was not available

Future Studies

This study provides a glimpse into the settlement patterns of the growing Chinese population in Texas. Additional qualitative research is needed to gain insight into the composition of the growing Chinese communities in Texas. Chinese communities in Texas are spread out over large geographical areas. Migrants wishing to maintain a sense of cultural identity must make a conscious effort to do so. Future qualitative studies focusing on how Chinese migrants stay connected within the expansive metropolitan area of Texas would be beneficial to understand how such communities are created and maintained over distances. In addition to understanding how ethnic communities form a

cultural community at the local level, regional-level studies could explore the degree to which Chinese communities in Texas interact with each other.

Texas is not the only area of the country with rapidly growing immigrant populations, Chinese or otherwise. When examining patterns of immigrant spatial settlement, the utility of US Census data is often limited due to small thresholds of population within a census unit. Researchers who are looking to study these immigrant populations where census data is not available may turn to data provided by third party companies, such as Simply Map, as of the basis of their demographic and quantitative analysis.

CHAPTER VIII

CONCLUSION

This study represents a quantitative snapshot of patterns of Chinese settlement in Texas' three global cities. Statistically, the study showed overall little significance between the Chinese population and the location of TNCs, cultural communities, and exemplary schools. The lack of statistical significance connecting TNCs and cultural communities to Chinese settlement indicates a high degree of spatial integration among Chinese migrants to Texas. Rather than assume that Chinese migrants are seamlessly assimilating into American culture, the spatial signatures that are evident through Chinese businesses and cultural centers instead hint at an invisiburb settlement pattern.

Invisiburbs are home to highly skilled, well-educated Chinese migrants who choose to bypass traditional Chinatowns or newer ethnoburbs, and settle directly into mainstream society. In the classic assimilation model, suburbanization is an indication of migrants who have chosen to shed their ethnic identity. This study contributes to a body of literature indicating that assimilation does not necessarily indicate a loss of cultural community. The results of this study indicated that the Chinese population is spatially dispersed throughout Texas' three global cities, yet the spatial signatures of ethnic businesses and cultural center suggest a desire to maintain Chinese cultural identity.

This study highlights differences between Chinese settlements in major Texas cities when compared to other well-studied centers of Chinese settlement, New York and Los Angeles. Studies in New York and Los Angeles focus on the enclave, whether it is an

urban or suburban enclave. Chinese migrants to Texas are, for the most part, not settling into enclaves. They are settling into invisiburbs and living among the general population.

The importance of Chinese migrants settling into mainstream society in Texas cannot be underestimated. While their visibility among the general population may be subtle, there are changes in the cultural and social landscape is occurring in a state with a very strong cultural identity. What it is to be a Texan is instilled in youth from a very young age. The rapid change in demographic composition of the metropolitan areas due to global economic growth has an impact on the migrant population and the receiving communities.

APPENDIX A

THE WORLD ACCORDING TO GAWC 2010

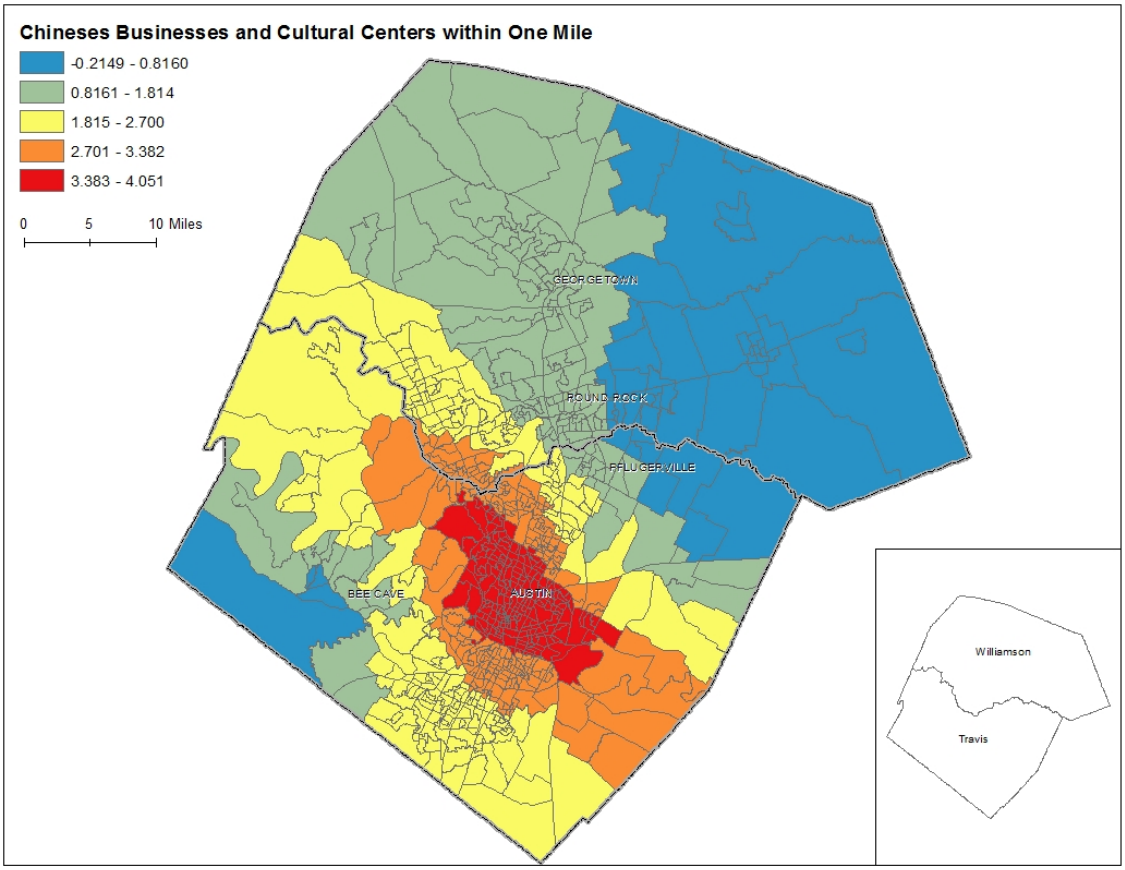
Alpha++	London	**Beta+**	Düsseldorf	**Gamma+**	Glasgow
	New York		Stockholm		Nairobi
			Prague		Bristol
Alpha+	Hong Kong		Montréal		Hanoi
	Paris		Rome		Cincinnati
	Singapore		Hamburg		Charlotte
	Tokyo		Manila		Antwerp
	Shanghai		Houston		Doha
	Chicago		Berlin		Lahore
	Dubai		Athens		Baltimore
	Sydney		Tel Aviv		Jeddah
			Bangalore		Edinburgh
Alpha	Milan		Copenhagen		Amman
	Beijing		Cairo		Zagreb
	Toronto		Bogotá		Adelaide
	Sao Paulo		Vancouver		Kuwait
	Madrid				Portland
	Mumbai	**Beta**	Budapest		Belgrade
	Los Angeles		Beirut		San Jose (CR)
	Moscow		Luxembourg		Tunis
	Frankfurt		Guangzhou		San Jose (US)
	Mexico City		Seattle		Riga
	Amsterdam		Caracas		
	Buneo Aires		Ho Chi Minh City	**Gamma**	Valencia (SP)
	Kuala Lumpur		Auckland		Kansas City
	Seoul		Oslo		Phoenix
	Brussels		Kiev		Almaty
	Jakarta		Chenni		Guadalajara
	San Francisco		Budacharest		Lyon
	Washington		Manchester		Quito
			Karachi		St. Petersburg
Alpha-	Miami		Lima		Leeds
	Dublin		Cape Town		Santo Domingo
	Melbourne		Riyadh		San Salvador
	Zurich		Montevideo		Vilnius
	New Delhi		Minneapolis		Rotterdam
	Munich				Tampa
	Istanbul	**Beta-**	Abu Dhabi		Columbus
	Boston		Nicosia		Indianapolis
	Warsaw		Birmingham		Pittsburgh
	Dallas		Rio de Janeiro		Edmonton
	Vienna		Brisbane		
	Atlanta		Geneva	**Gamma-**	Tallin
	Barcelona		Kolkata		Pune
	Bangkok		Detroit		Porto
	Taipei		Denver		Porto Alegre
	Santiago		Monterrey		Orlando
	Lisbon		Bratislava		Gothenburg
	Philadelphia		Port Louis		Marseille
	Johannesburg		Casablanca		Ottawa
			Manama		Colombo
			Stuttgart		Tegucigalpa
			Sofia		Ljubljana
			Cologne		Richmond
			St. Louis		Islamabad
			Helsinki		Muscat
			Panama City		Durband
			San Diego		Austin
			Lagos		Belfast
			Perth		Guayaquil
			Shenzhen		Nagoya
			Cleveland		Turin
			San Juan		South Hampton
			Calvary		Milwaukee
			Guatemala City		Wellington
			Osaka		Curitiba
					Accra
					Georgetown (CI)

(Globalization and World Cities Research Network 2013)

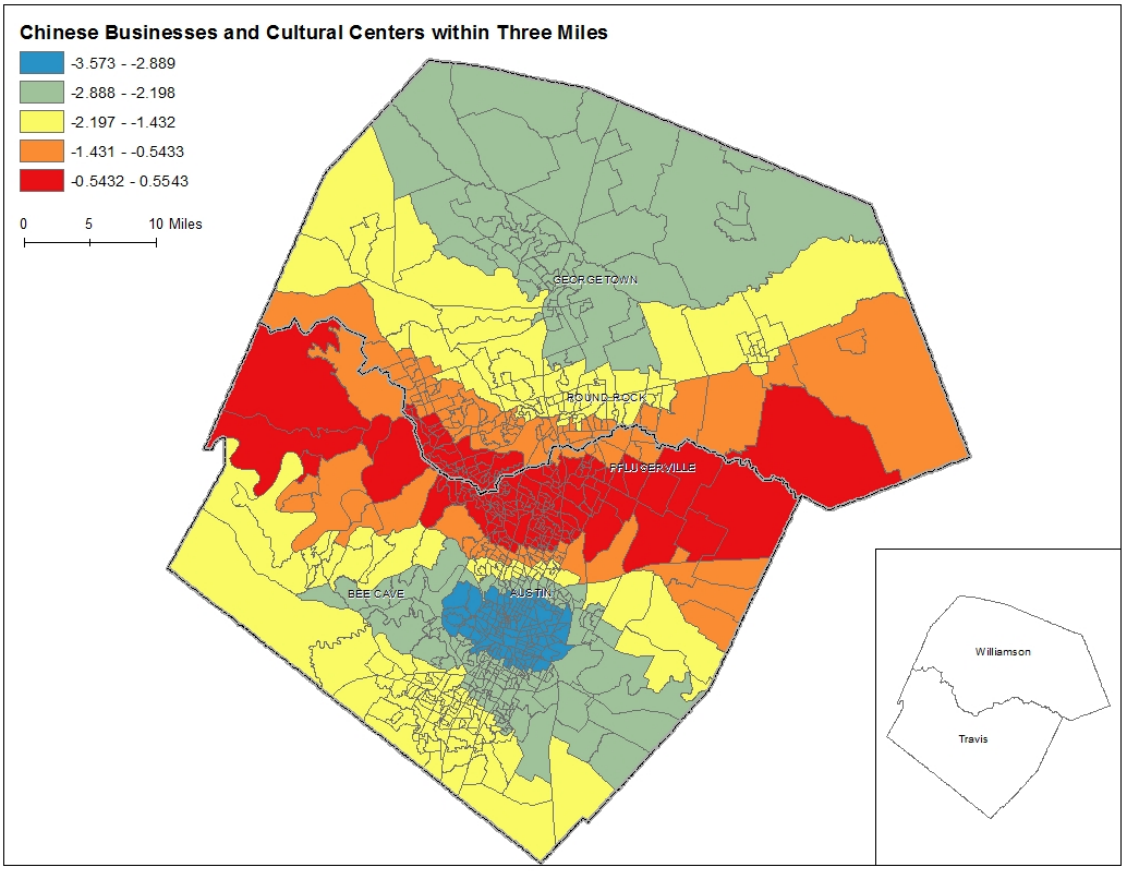
APPENDIX B

COFFICENT MAPS FOR CHINESE BUSINESSES AND CULTURAL CENTERS

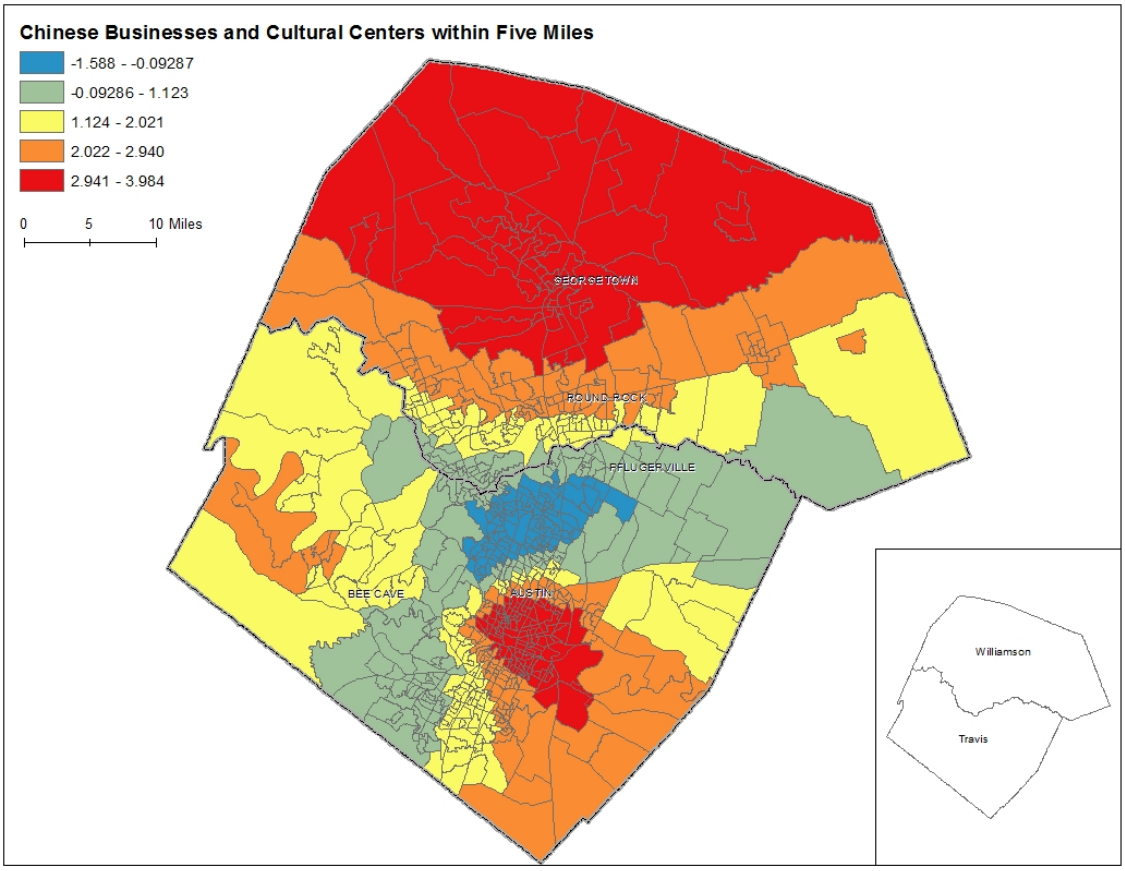
Appendix B.1.1 Austin Chinese Businesses and Cultural Centers within One Mile



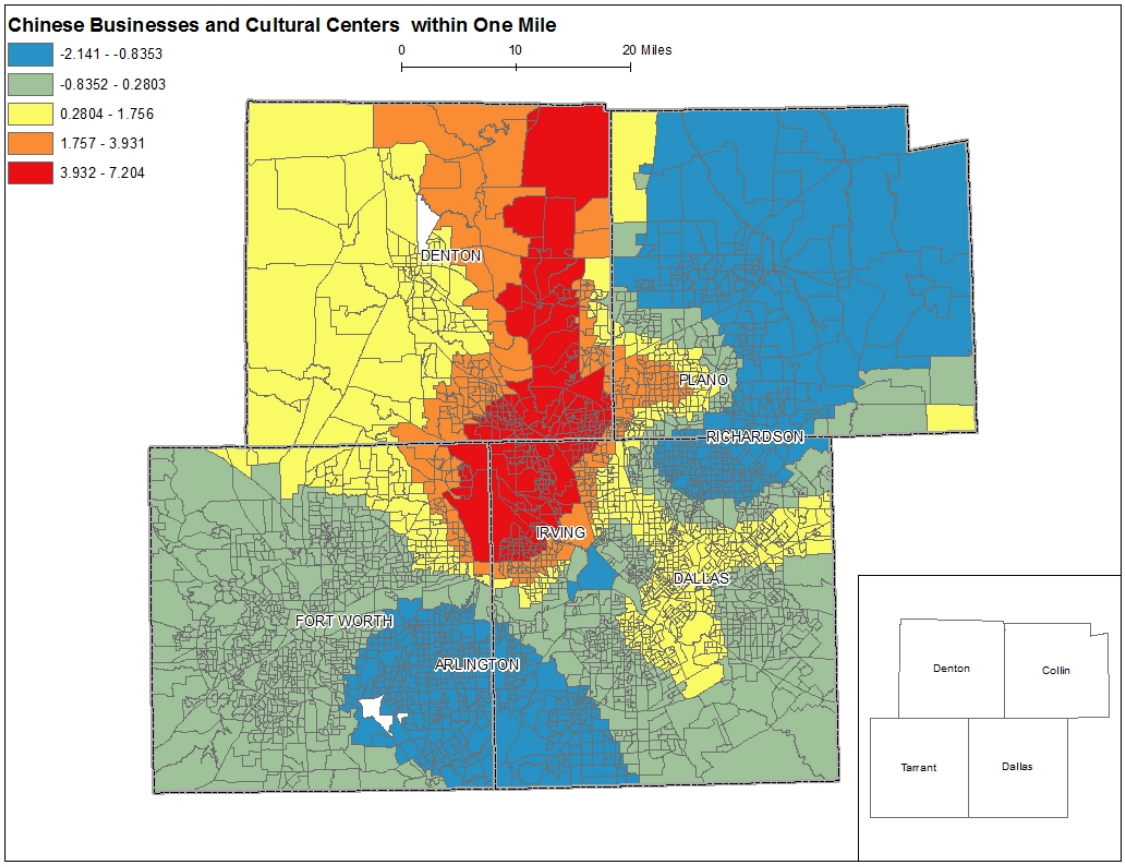
Appendix B.1.2 Austin Chinese Businesses and Cultural Centers within Three Miles



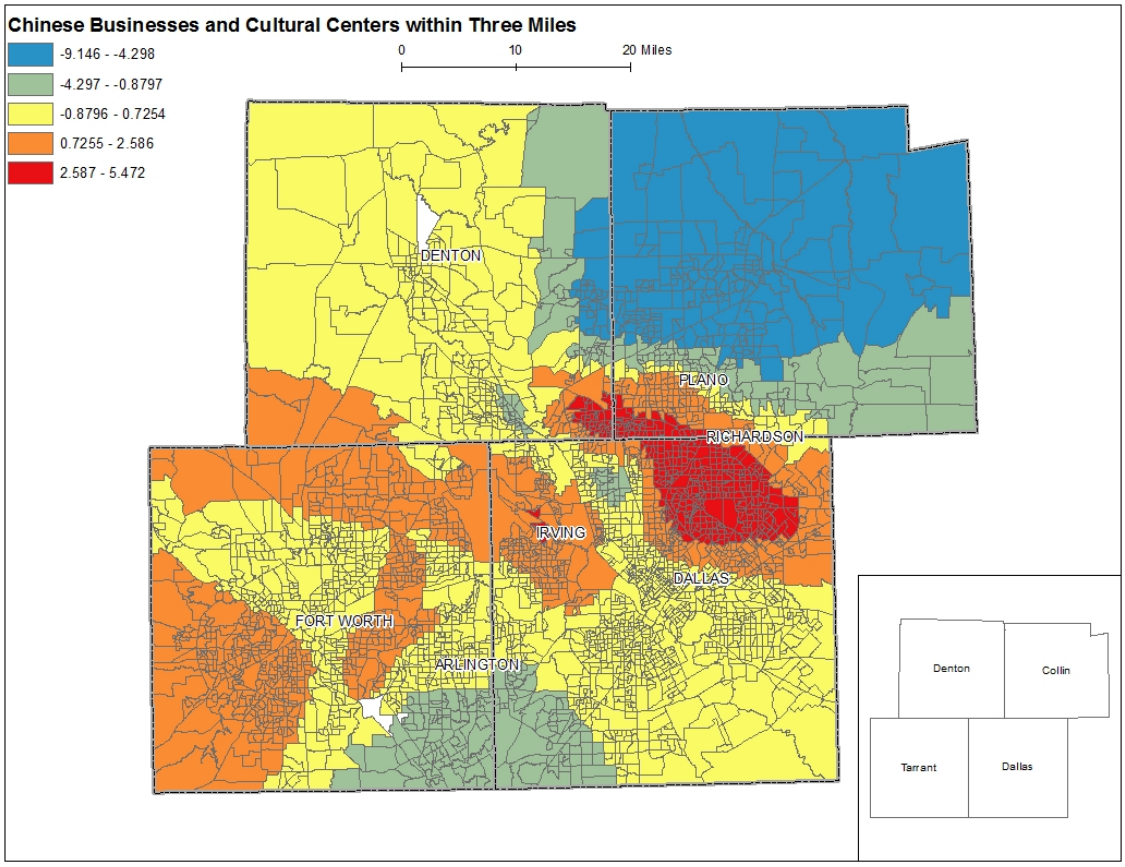
Appendix B.1.3 Austin Chinese Businesses and Cultural Centers within Five Miles



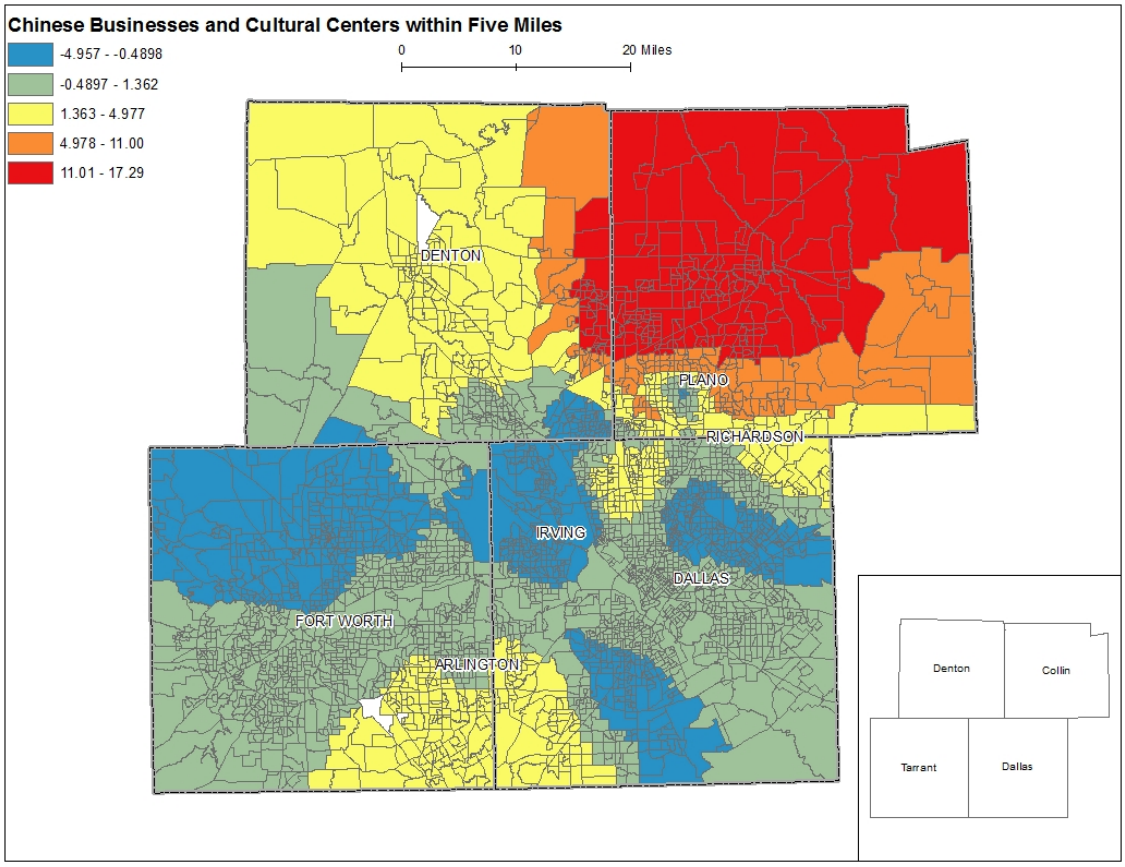
Appendix B.2.1 Dallas Chinese Businesses and Cultural Centers within One Mile



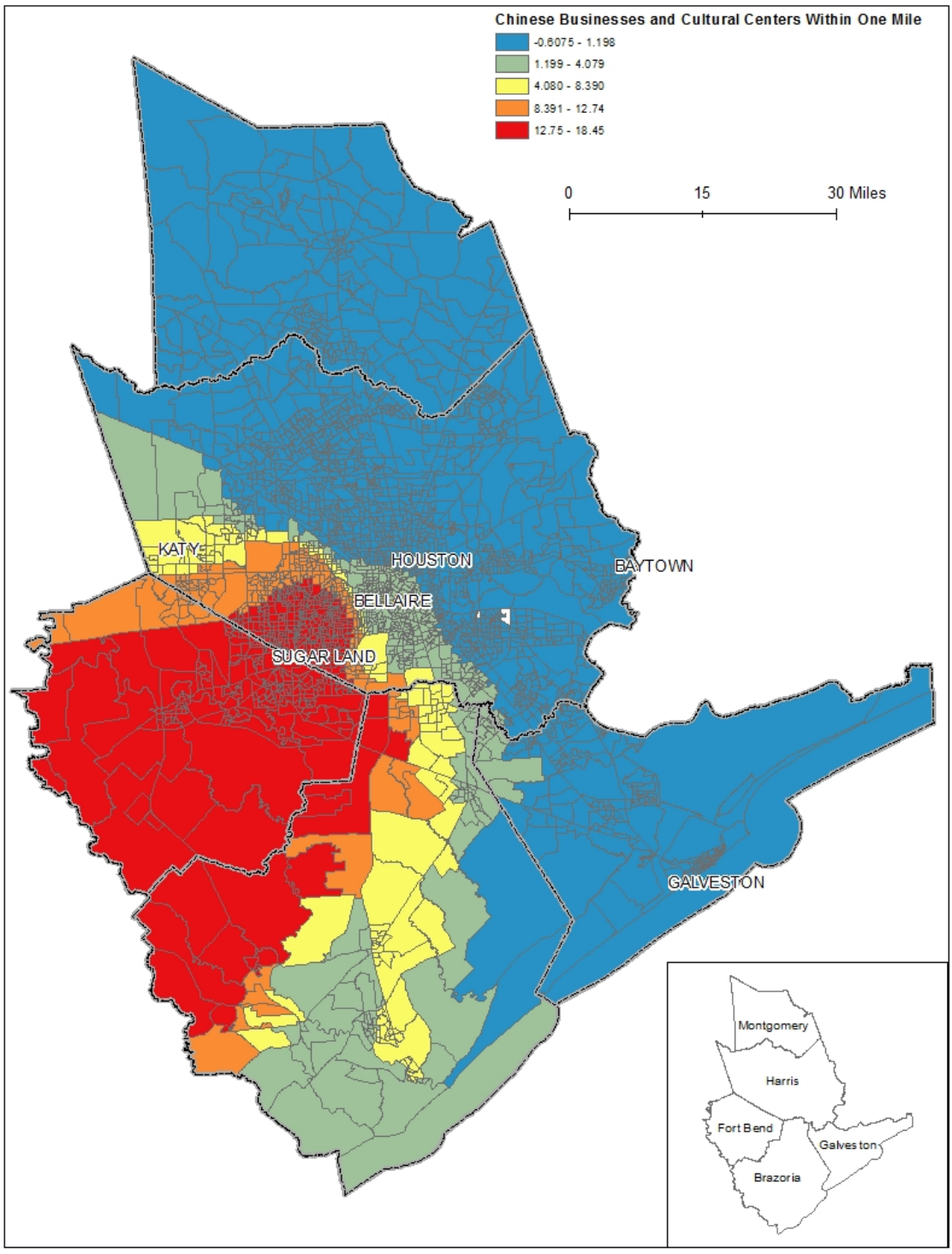
Appendix B.2.2 Dallas Chinese Businesses and Cultural Centers within Three Miles



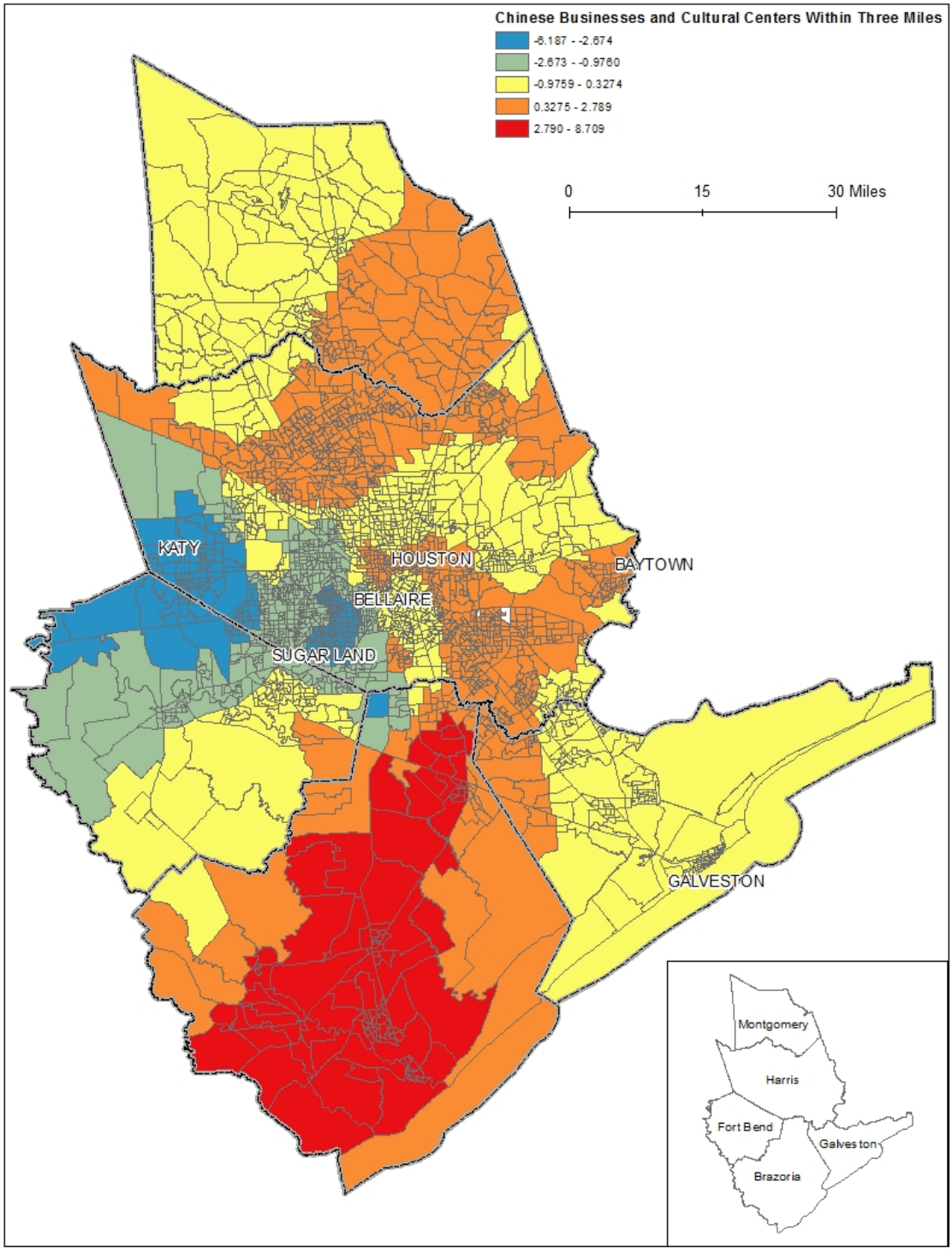
Appendix B.2.3 Dallas Chinese Businesses and Cultural Centers within Five Miles



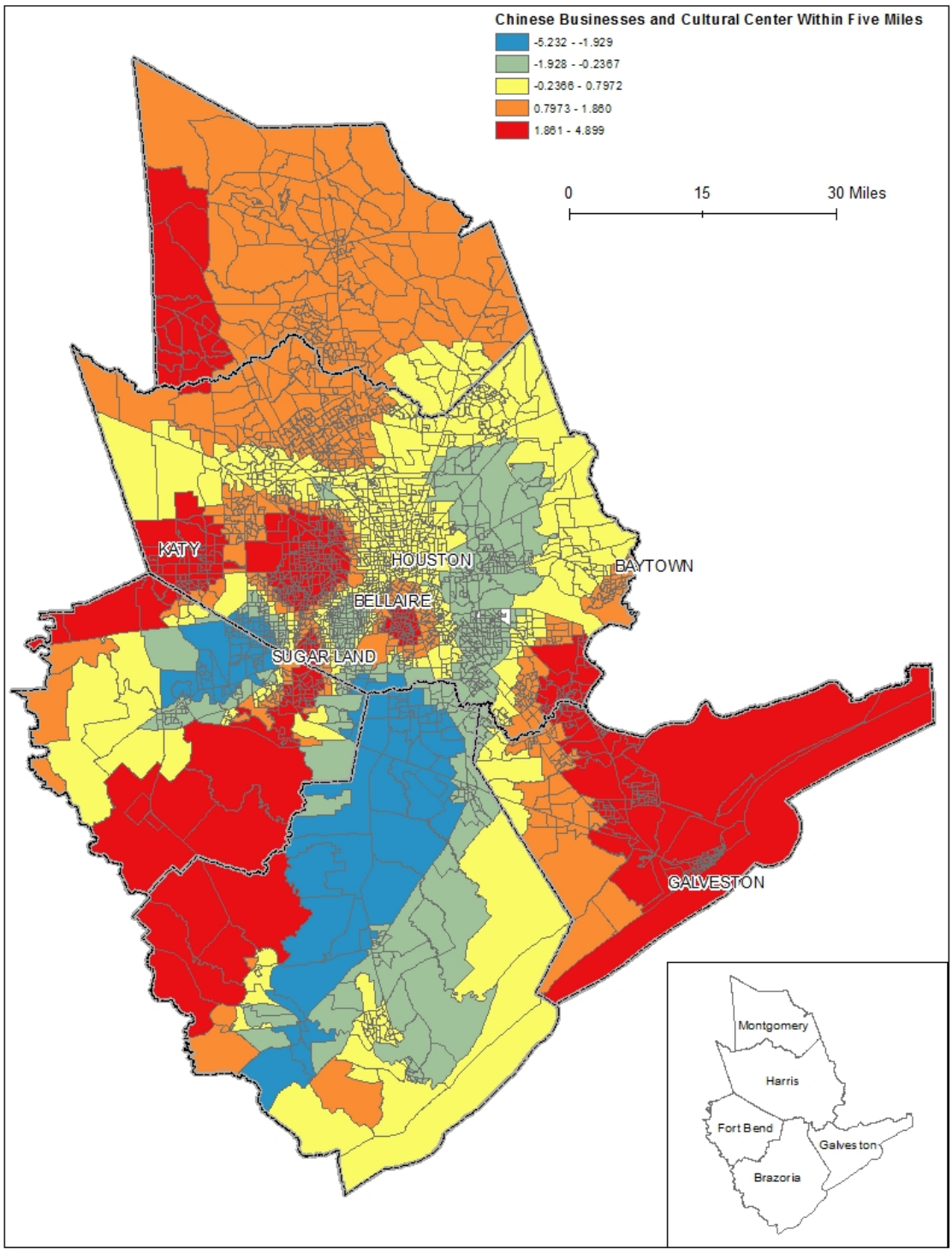
Appendix B.3.1 Houston Chinese Businesses and Cultural Centers within One Mile



Appendix B.3.2 Houston Chinese Businesses and Cultural Centers within Three Miles



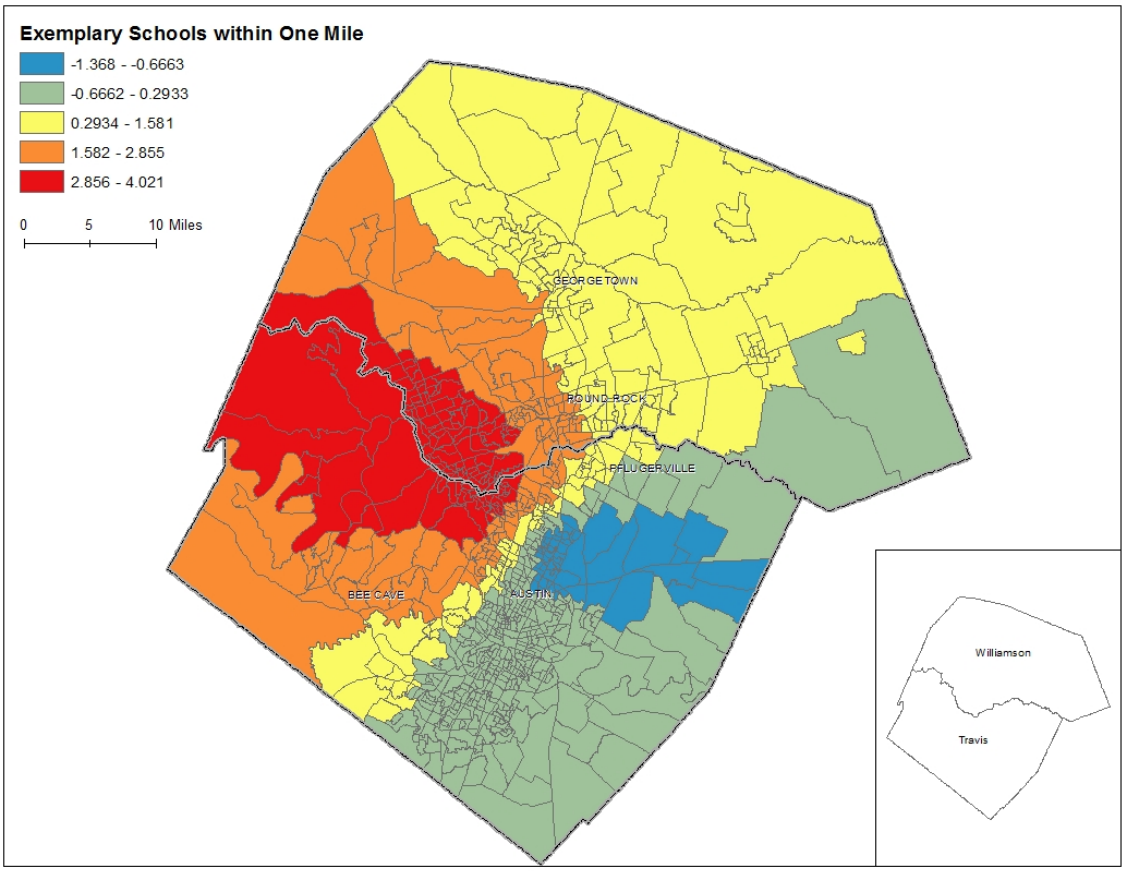
Appendix B.3.3 Houston Chinese Businesses and Cultural Centers within Five Miles



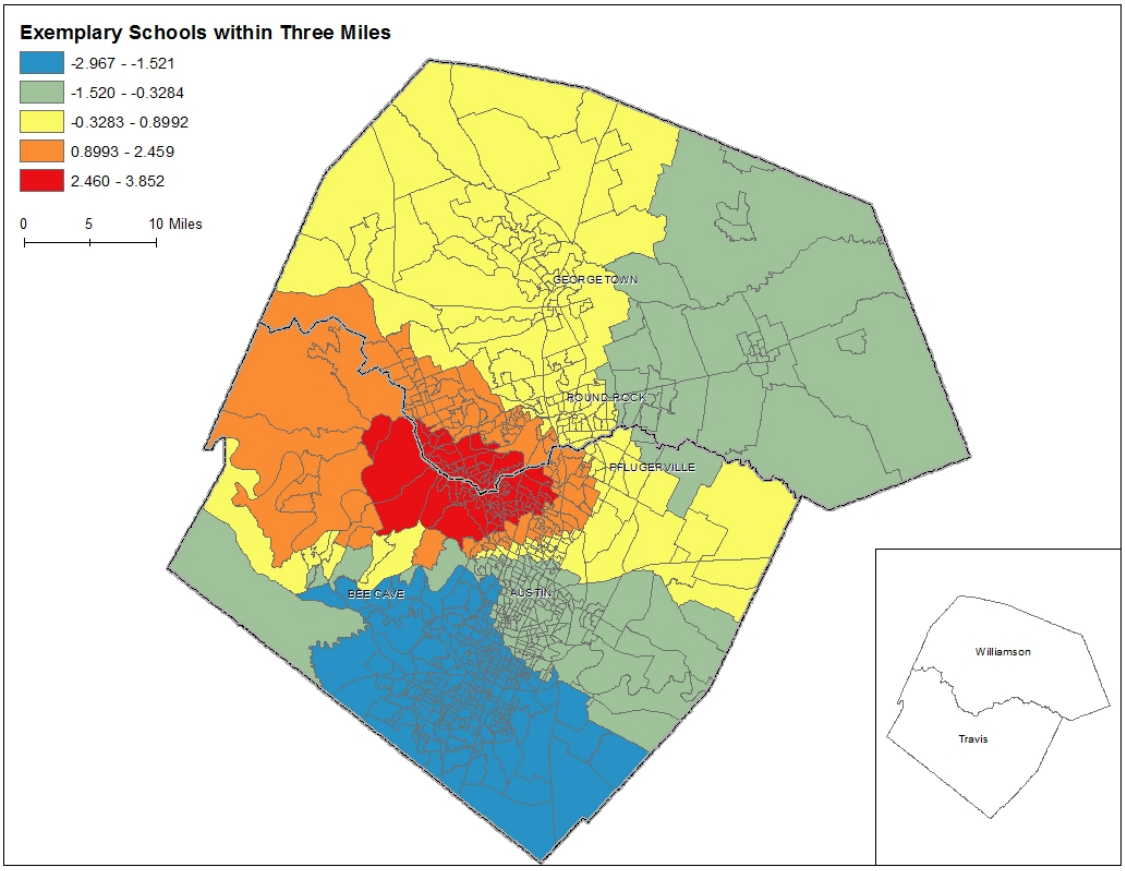
APPENDIX C

COEFFICIENT MAPS FOR EXEMPLARY SCHOOLS

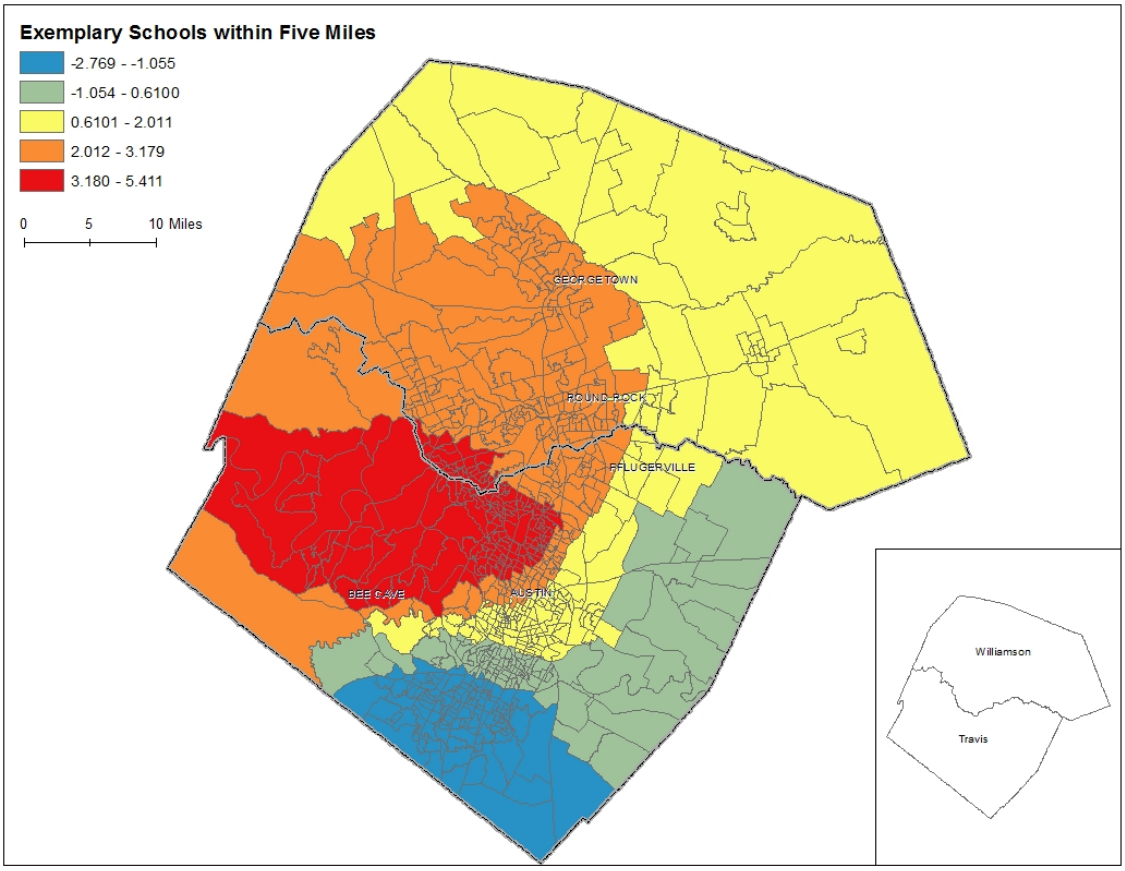
Appendix C.1.1 Austin Exemplary Schools within One Mile



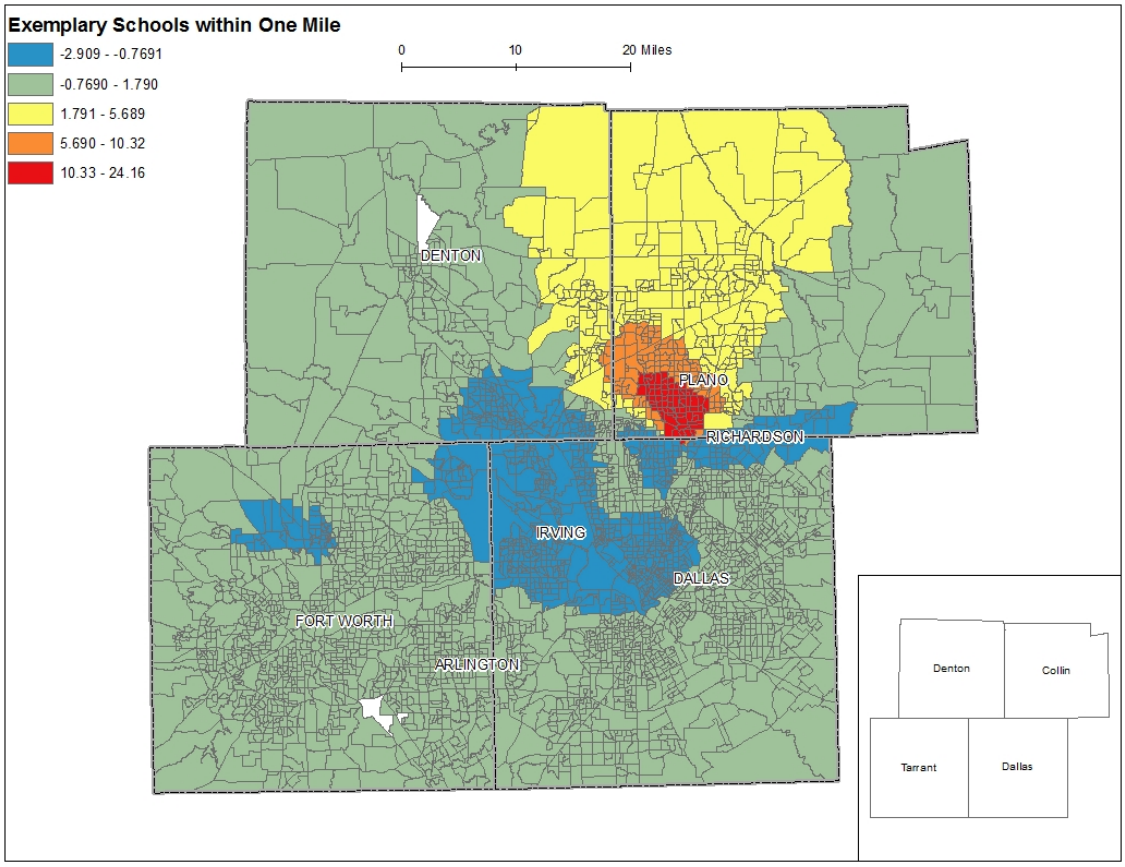
Appendix C.1.2 Austin Exemplary Schools within Three Miles



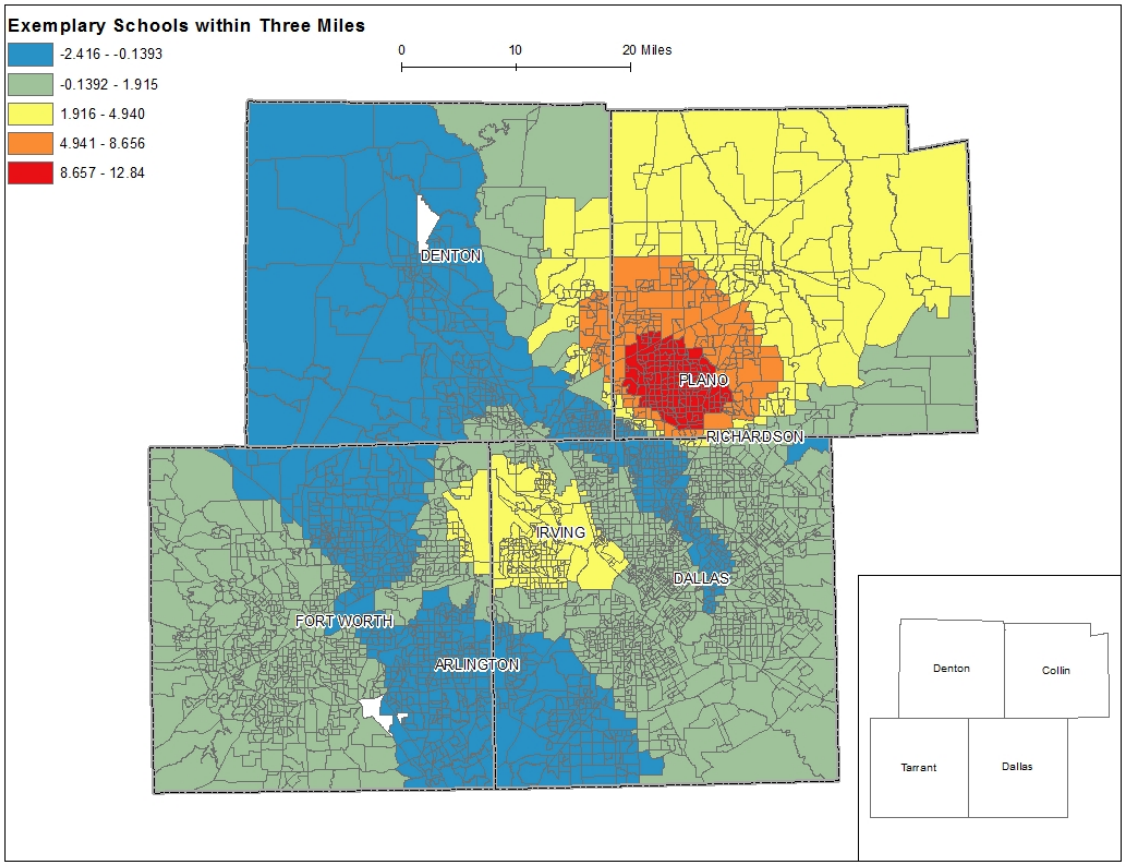
Appendix C.1.2 Austin Exemplary Schools within Five Miles



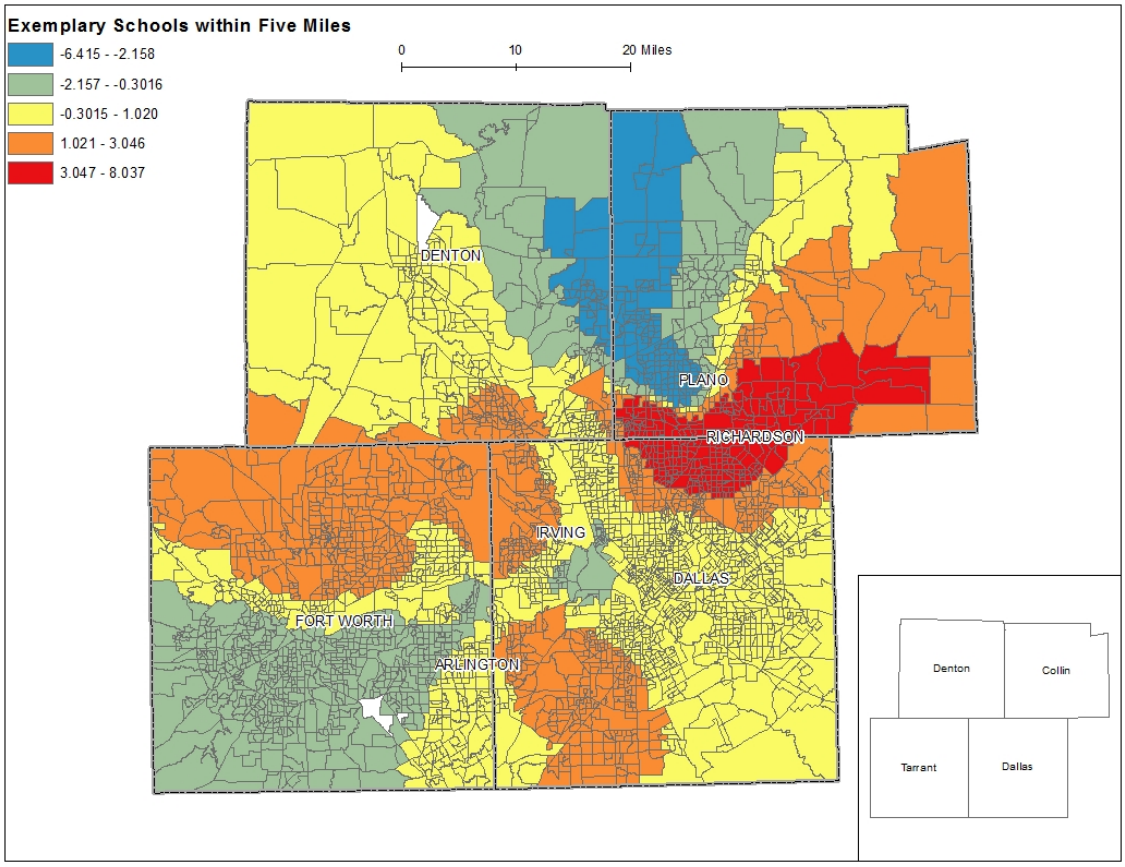
Appendix C.2.1 Dallas Exemplary Schools within One Mile



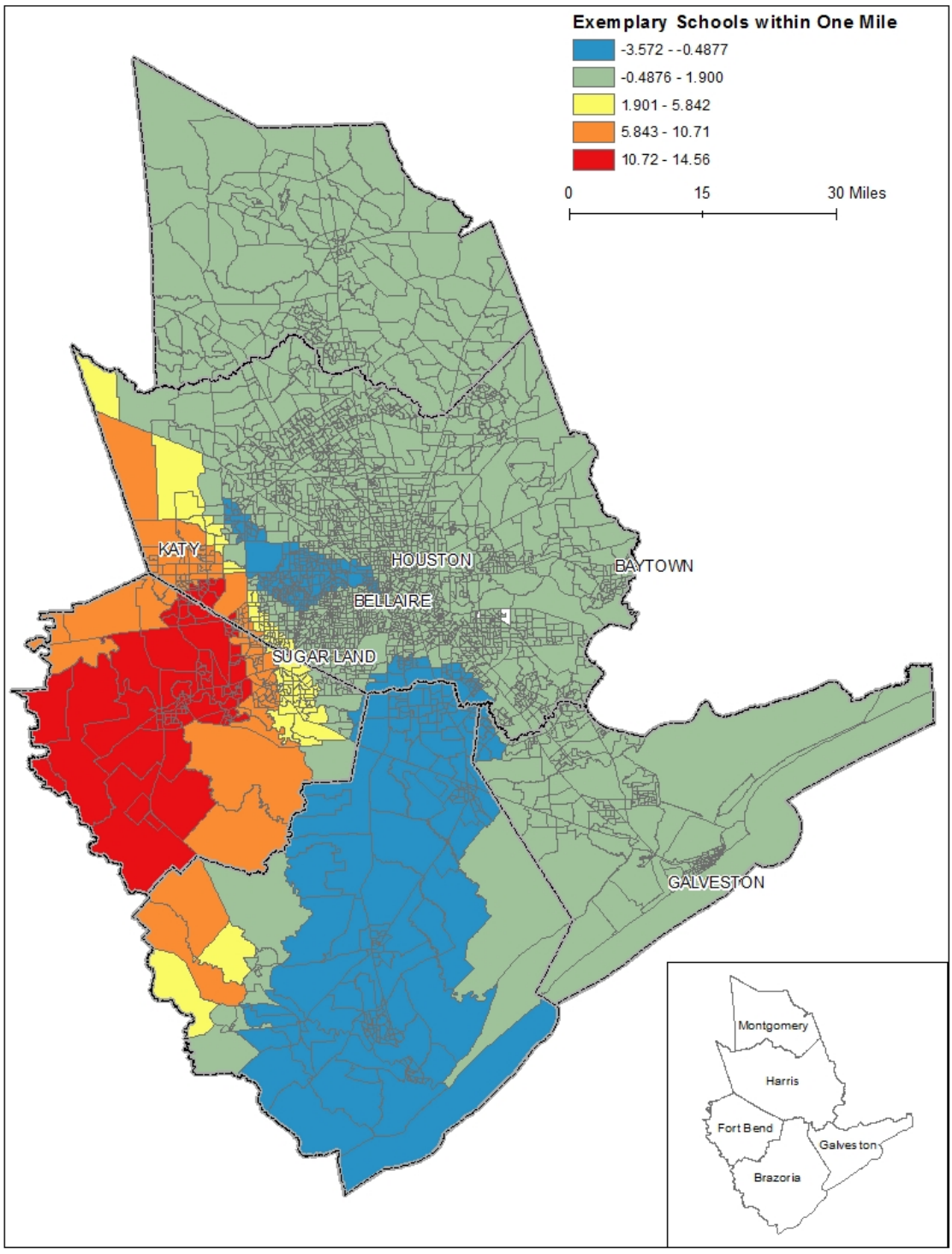
Appendix C.2.2 Dallas Exemplary Schools within Three Miles



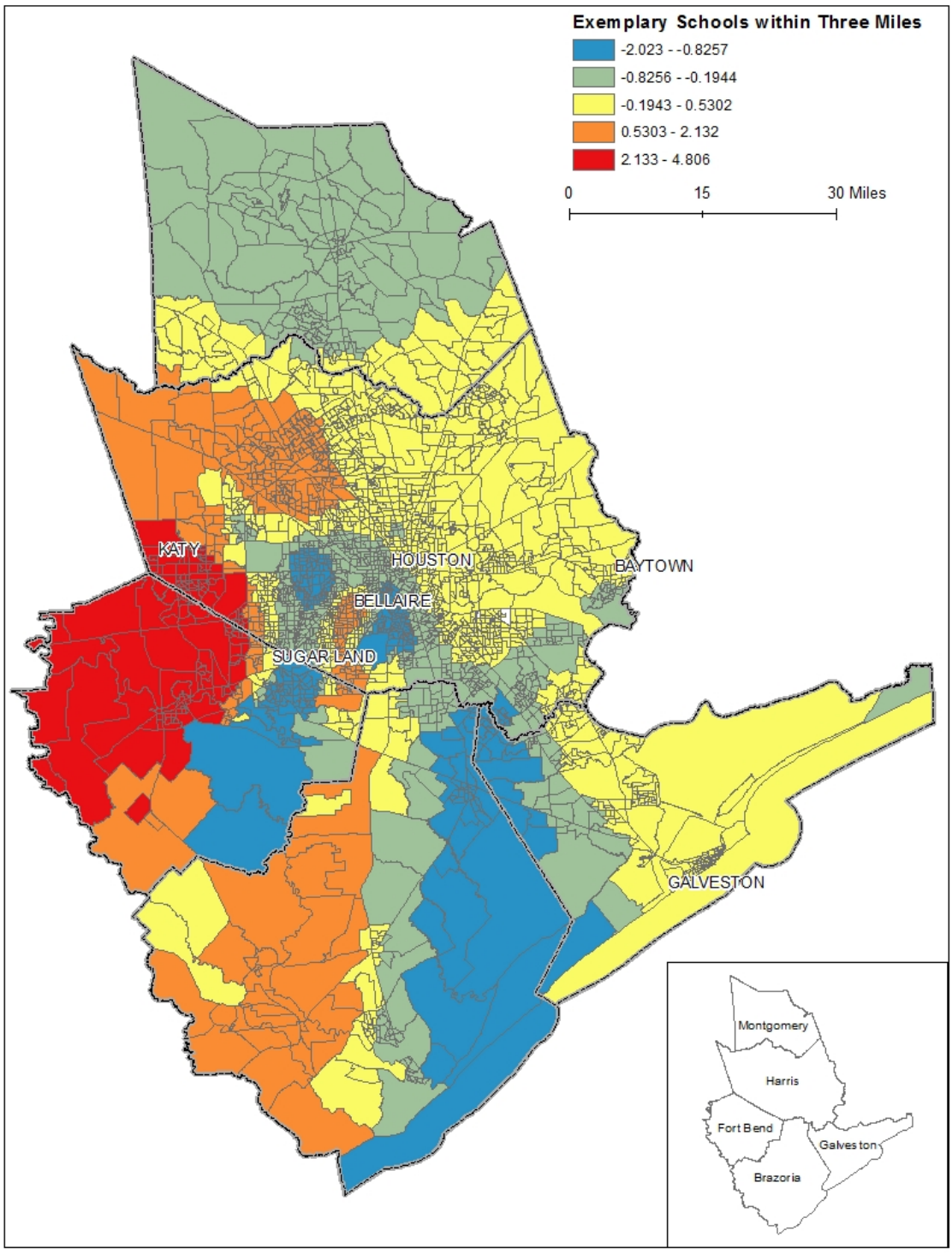
Appendix C.2.3 Dallas Exemplary Schools within Five Miles



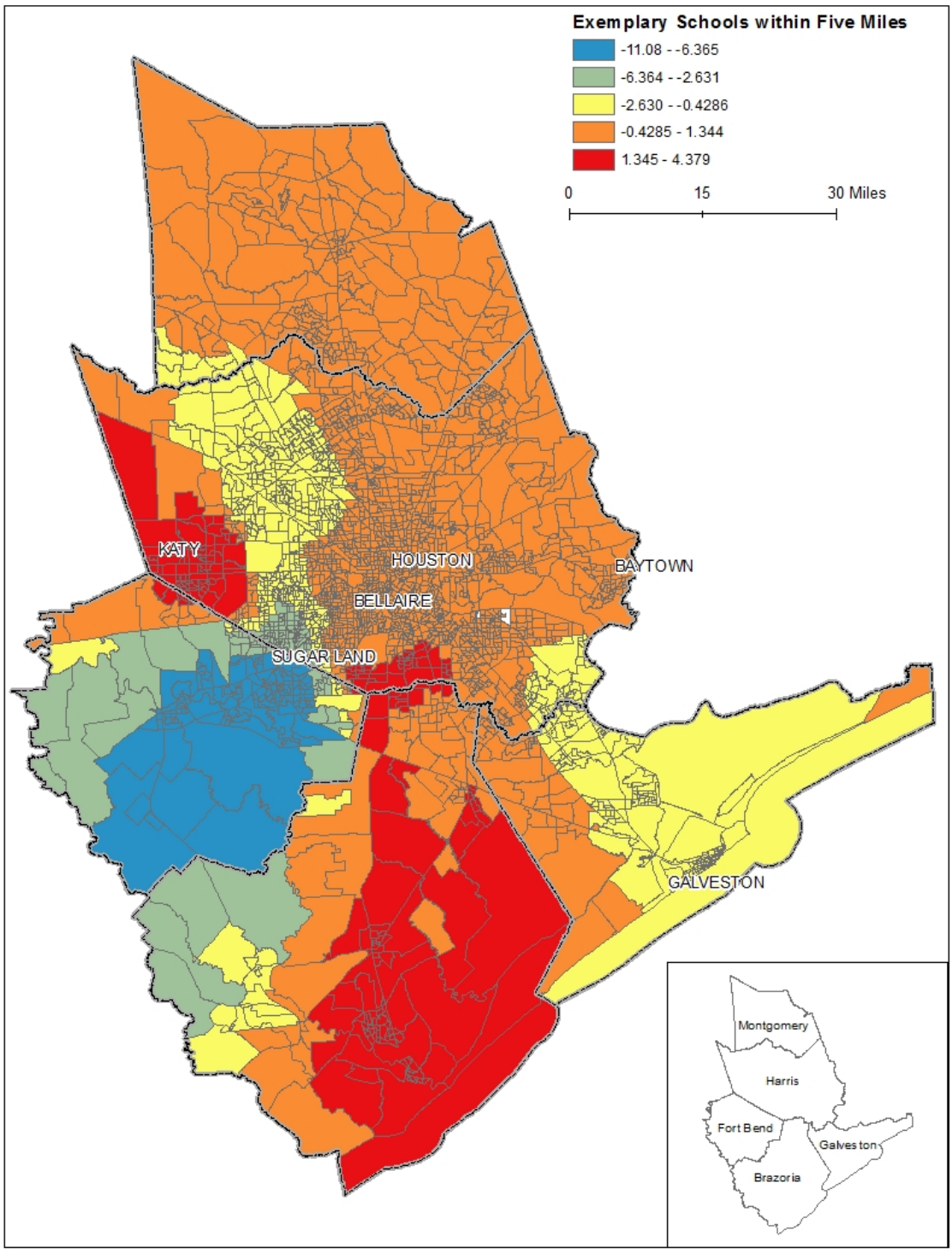
Appendix C.3.1 Houston Exemplary Schools within One Mile



Appendix C.3.2 Houston Exemplary Schools within Three Miles



Appendix C.3.3 Houston Exemplary Schools within Five Miles



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