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Travel In the 'Hood: Ethnic Neighborhoods and Mode Choice

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ABSTRACT

Many urban planners promote mixed-use developments as one component of a broader sustainable development strategy. Scholars and advocates argue that these neighborhoods have the potential to reduce traffic congestion by promoting fewer trips, shorter travel distances, and alternative modes of travel.

With their mix of ethnic residents, businesses, services, and community institutions, many ethnic neighborhoods are mixed-use neighborhoods. We hypothesize, therefore, that residents of these ethnic neighborhoods will exhibit different travel behavior than those living outside of ethnic neighborhoods. Drawing on data from the 2000 U.S. Census, we examine whether residents of ethnic neighborhoods are more likely to commute by carpool and public transit than other workers. We find a significant relationship between residential location in ethnic clusters and travel behavior. The findings provide insight into the relationship among social networks, land use, and travel behavior.

1. INTRODUCTION

Many urban planners promote mixed-use developments as one component of a broader sustainable development strategy [1-3]. Among other benefits, scholars and advocates argue that these neighborhoods have the potential to reduce congestion by promoting fewer trips, shorter travel distances, and alternative modes of travel [4-6, for a critical review of these, see 7]. With their mix of ethnic residents, businesses, services, and community institutions, ethnic enclaves share many of the characteristics of these mixed-use neighborhoods. Consequently, residents living in these ethnic neighborhoods should exhibit different travel patterns than those living outside of these neighborhoods.

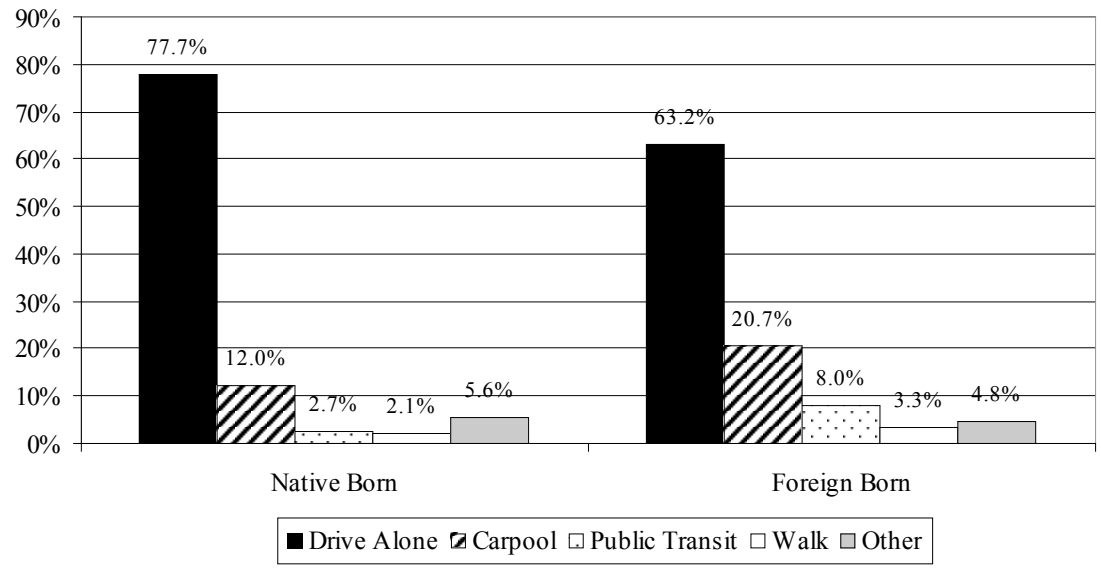
While numerous scholars have examined immigrant neighborhoods, much of this research has focused on their location, formation, and economic effects [8-12] . Transportation, mobility, and accessibility have been noticeably absent from this body of scholarship. In this paper, we test the relationship between immigrants' residential location in ethnic enclaves and their travel behavior by examining the commute travel of immigrants in Southern California, which we define as the Los Angeles Consolidated Metropolitan Area (CMSA) that includes Los Angeles, Orange, San Bernardino, Riverside, and Ventura counties. More specifically, the study tests whether residents of ethnic neighborhoods are more likely to use alternative travel modes (carpool and public transit) than other workers, controlling for a set of factors predicted to influence commute mode choice.

Overall, we find that residential location in ethnic clusters is significantly associated with differential travel patterns. In urban areas, presence in an ethnic cluster is positively related to the use of both transportation alternatives—carpools and public transit. In the suburbs, however, residential location in an ethnic cluster is positively related to carpooling but negatively associated with the use of public transit, after controlling for relevant factors. These findings underscore the importance of neighborhood-level characteristics—and in particular ethnic clustering—in influencing travel behavior.

2. ETHNIC NEIGHBORHOODS AND TRAVEL BEHAVIOR

Studies of the mode choice of immigrants show that immigrants are more likely to rely on alternative modes of travel—particularly carpooling and public transit—than native-born workers [13, 14]. As Figure 1 shows, this finding is true for immigrants in Southern California, who are almost twice as likely to carpool as native-born workers, and three times as likely to use public transit.

FIGURE 1 Commute Mode by Nativity, Los Angeles CMSA



Source: U.S. Census Bureau, Public Use Microdata, 5% Sample.

In part, these findings can be explained by spatial assimilation. Many immigrants arrive in the U.S. through a process of chain migration, in which prospective migrants learn about opportunities and receive aid from friends and relatives already living in the U.S. [15, 16]. As part of this process, immigrants—particularly recent immigrants—tend to locate in ethnic neighborhoods where social networks of friends and relatives can aid them in the assimilation process. Immigrant neighborhoods traditionally are located in the central city—ports of entry for recent immigrants. Among recent immigrants (those who entered the U.S. in the 10 years prior to the survey), 48 percent lived in central-city neighborhoods, compared to only 28 percent of native-born residents [17].

Immigrants tend to live in these central-city neighborhoods until their economic status improves, at which point they, like many other central-city residents, relocate to higher-income neighborhoods. As their incomes rise, immigrants are more likely to purchase automobiles. Concomitantly, they are also more likely to move to suburban neighborhoods where residential and employment densities are low and transit service minimal. Over time, therefore, the residential location and travel patterns of immigrants begin to resemble those of native-born families, in a process termed "spatial assimilation." Thirty-three percent of immigrants who entered the U.S. prior to 1970 live in the suburbs, a figure approaching that of the native-born population (U.S. Census Bureau, 2003). Moreover, a growing number of studies find a positive relationship between years in the U.S. and rates of auto ownership and driving among immigrants [13, 14, 18-21]. In Southern California, 41 percent of recent immigrants—those who arrived in the U.S. in the five years prior to the 2000 Census—drove to work alone, compared to 72 percent of immigrants who lived in the country more than 20 years.

Spatial assimilation is a plausible explanation for automobile use and ownership patterns among immigrants but, alone, it is not sufficient. First, differences in automobile

use between immigrants and native-born adults remain even after controlling for both years in the U.S. and income [13]. Further, some immigrants who have lived in the U.S. for more than thirty years, and have earnings and incomes that approximate those of the native-born population do remain in central-city neighborhoods. Finally, there have been changes in the residential location patterns of immigrants. In recent years, new suburban ethnic enclaves have emerged as immigrants relocate from the central city to higher-income neighborhoods on the urban periphery yet maintain a desire to live in close proximity to others of the same ethnicity, religion, or country of origin [16, 22-24]. Also, a small but growing number of new immigrants settle immediately in suburban locations rather than traditional central-city ports of entry [23, 25].

A second explanation for immigrants' disproportionate reliance on alternative modes of travel lies in the body of scholarship on the role of ethnic-specific resources in the economic outcomes of immigrants. This theory posits that ethnic agglomerations, ethnic neighborhoods, and ethnic enclaves enhance the economic outcomes of immigrants through local and ethnic-specific economic and cultural networks [26]. In other words, immigrants use ethnically-, religiously- or culturally-defined stocks of social capital in order to maximize the utility of their limited resources.

Ethnic neighborhoods may help to explain why immigrants are more likely than native-born adults to commute by carpool and public transit. Spatial proximity to other immigrants of the same ethnic, religious, or cultural group facilitates the use of this social capital and helps to build social networks. Indeed, research suggests that kinship networks motivate migration, and that many immigrants rely upon these networks to compensate for the limited availability of other forms of human and social capital [27, 28]. Recent immigrants often rely on help from family members to address their transportation needs. In a study of immigrants to Chicago, Choldin (1973) finds that 18 percent received transportation assistance when they arrived: 69 percent of these from family members (either immediate family or other relatives) and 25 percent from friends, co-workers, or neighborhoods [28].

We might hypothesize that just as new immigrants seek to maximize their utility by co-locating to share social networks, they may also be more likely to share transportation resources and utilize carpools. Family and kinship networks might allow adults to easily find carpooling partners and, therefore, avoid one of the principal barriers to carpooling: the increased travel time associated with picking up and dropping off carpool members. Charles and Kline (2006) find that spatial clustering along ethnic and racial lines contributes to higher carpooling rates [29]. Focusing specifically on race, they show that individuals are more likely to engage in carpooling when their neighbors are similar to themselves, hypothesizing that carpooling represents a complex form of social capital production. We extend this hypothesis to immigrants, positing that the location of many immigrants in ethnic neighborhoods represents a beneficial environment for the creation of racially-, culturally- and linguistically-based social capital necessary for the formation of carpools.

Further, residents of ethnic neighborhoods may be more likely to travel to common employment destinations easing yet another challenge associated with carpooling – dispersed destinations. The research in this area is suggestive, although not conclusive. Many immigrants find employment—particularly their first jobs—through

friends and relatives, and they are highly likely to find employment in jobs at work-sites that consist mainly of co-ethnics [30-32].[1]

Ethnic neighborhoods can take different forms. Some ethnic neighborhoods are largely residential. Other ethnic neighborhoods—termed ethnic enclaves—include ethnic-specific businesses and services. Ethnic enclaves form as ethnic firms agglomerate around consumers of ethnic goods and services, as well as around preferred ethnic labor. From the perspective of the individual, businesses in these enclaves offer ethnic-specific specialty goods and services, as well as opportunities for nearby employment with co-ethnics [23, 33-35]. The agglomeration of ethnic firms and residents provides a nexus in the city-region for the production and maintenance of social networks to facilitate the ethnic economy. For residents, these businesses can offer one-stop shopping experiences similar to those found at shopping malls and centers, while providing ethnic goods and services not readily available outside the enclave. Some ethnic enclaves primarily serve neighborhood residents, while others function as central places, attracting adjacent residents but also serving a wider ethnic community. Still others serve both an ethnic clientele and a much broader clientele interested in ethnic or niche products and services. If immigrants living in ethnic enclaves rely on these businesses—both as workers and as consumers—they would likely travel relatively short distances and, therefore, be inclined to use alternative modes of travel.

3. METHODOLOGY

We hypothesize that residents of ethnic neighborhoods are more likely to commute by carpool or public transit than other workers, even after controlling for a set of factors generally known to influence commute mode choice. To test this hypothesis, we rely on census-tract level data from the 2000 U.S. Census to define and characterize immigrant neighborhoods in the Los Angeles CMSA We first used Census 2000 Summary File 4 data to identify major immigrant groups: those with populations greater than 100,000 and where the foreign-born population is either greater than 50 percent of the total population or is greater than 100,000. For Los Angeles, this process identified eleven ethnic groups: Armenian, Chinese, Filipino, Guatemalan, Indian, Iranian, Japanese, Korean, Mexican, Salvadoran, and Vietnamese.[2]

To identify ethnic clusters, we used Luc Anselin's GeoDa software and the Local Indices of Spatial Autocorrelation (Local Moran's I), a standard measure of spatial autocorrelation. The measure reveals the likelihood that observed spatial patterns are non-random, and indicates the direction in which non-randomness occurs; spatial patterns can be non-randomly evenly distributed (regularity of the phenomenon), or can be non-randomly clustered. We selected all census tracts that received a high (clustered) value of the local Moran's I statistic that had a probability less than 0.01 of being the result of a random spatial process, and then omitting all single- and double-tract 'clusters' where the population density of the ethnic group was less than 40 percent of the tract total.

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[1] In a study of IRCA-amnestied immigrants in Los Angeles, Catanzarite and Aguilera (2002) find that 64 percent of Latino men and 67 percent of women were employed at jobsites where coworkers are primarily Latinos. (Her sample includes individuals who worked alone such as housecleaners or childcare providers.)

[2] Data are based on racial and ethnic group alone rather than in combination with another race and the Chinese population includes Taiwanese.

In order to examine the differences between ethnic enclaves located in urban and suburban settings, we used latent class analysis (LCA) to determine classes of urbanization. Latent class analysis is a statistical technique that identifies latent (unmeasured) class membership for a set of observations using specified predictor variables. We predicted census tracts' membership in differing classes of urbanization using standardized values of: (1) the tract's "person-density" (residents plus workers per square mile), (2) median age of the tract's housing stock, and (3) the tract's distance from downtown, in this case proxied as Los Angeles City Hall. We collapsed these seven classes of urbanization into two primary groups – urban (including four categories of urbanization, such as traditional older downtowns and high-rise redevelopment areas) and suburban (collapsed from three original classes).[3]

Figure 2 Immigrant Neighborhoods in Southern California

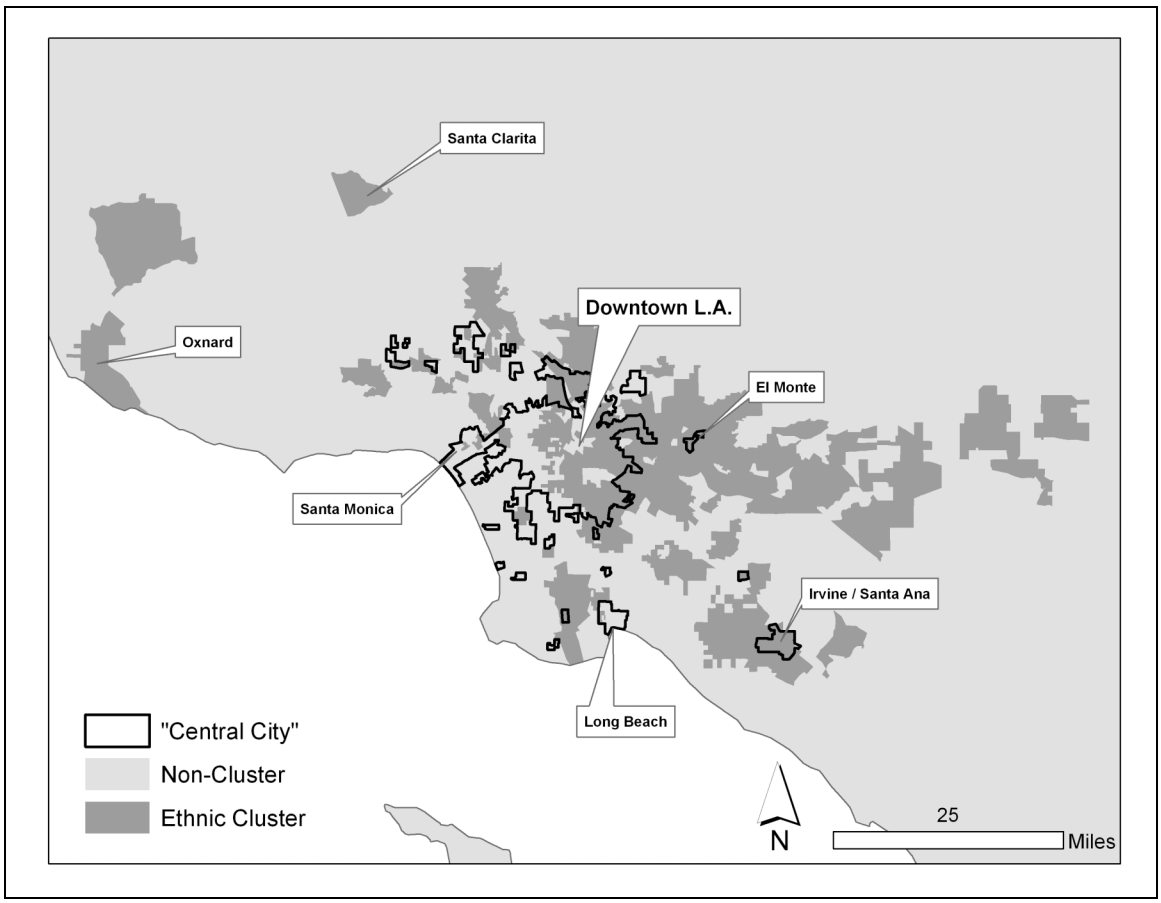


Figure 2 shows immigrant neighborhoods or clusters in Southern California (areas in dark gray); the black boundaries identify census tracts that are located in urban parts of the metropolitan area. Table 1 provides detailed descriptive data on cluster and non-cluster tracts. There are 3,432 census tracts in the region, of which one third (1,121) are part of ethnic clusters and 22 percent (763) are located in urban areas. Some of the

[3] In a few suburban tracts (such as those consisting entirely of parks or cemeteries), the classification was switched manually to reflect the urban setting surrounding it.

clusters overlap and serve as clusters for multiple ethnicities. There are 23 contiguous cluster areas and 125 census tracts that are part of ethnic clusters for two or more ethnicities.

TABLE 1 Characteristics of Census Tracts, Los Angeles 2000

Characteristics	**N**	**%**
Contiguous Cluster Areas	23	
Cluster Tracts Land Area (sqmi)	5,039	14.6%
Non Cluster Tracts		
Urban	329	9.6%
Suburban	1,982	57.8
Cluster Tracts		
Urban	434	12.7
Suburban	687	20.0
Total	*3,432*	*100%*
Ethnic Cluster Overlapping		
Tract is Non-Cluster	2,311	67.3%
Cluster for 1 Ethnicity	996	29.0
Cluster for 2 Ethnicities	112	3.3
Cluster for 3 Ethnicities	10	0.3
Cluster for 4 Ethnicities	3	0.1
Total	*3,432*	*100%*
Source: U.S. Census, Authors		

We use ordinary least squares regression to predict geographic variation in the percentage of workers who commute by carpool and public transit in Southern California. We focus in these models on the relative contribution of ethnic clusters, controlling for other confounding determinants of mode choice. The models take the following specification:

$$\text{Mode}_i = a_i + x_i\beta + \varepsilon_i \quad \text{for } i=1\ldots n \text{ tracts}$$

where "mode" is either the percentage of workers (16+ years) who commute by transit or carpool, x_i is the vector of observed values for the listed independent variables for tract *i*, β is a vector of coefficients and ε_i is the stochastic term which is assumed to have an expected value of 0 and a normal distribution. We weight the models by the number of workers in the tract, and the descriptive statistics by the population, number of workers, or number of households, depending on the variable.

The variables of primary interest are a binary term for ethnic clusters, a binary term for the urban/suburban distinction, and the interaction of these two variables. Additionally, we include other control variables derived from standard mode-choice models predicted to influence mode choice. We use these same explanatory variables in both models. They include geographic variables (distance from Los Angeles City Hall as

a measure of centrality, and residential and employment density), demographic characteristics (racial/ethnic composition of the tract and median household size), and an economic variable (median household income). Drawing on data from the metropolitan planning organization (the Southern California Association of Governments), we include public transit service density measured as bus stops per square mile within the tract and within a quarter-mile buffer surrounding the tract.

In addition to these standard control variables, we include a measure of job accessibility. We use employment data by census tract obtained from the private firm American Business Information to develop an accessibility measure using an empirically-derived exponential distance decay function. We obtain the accessibility measure by dividing, for each tract, the distance-weighted number of jobs available within 15 miles of that tract by the number of distance-weighted number of workers within 15 miles. Thus, the measure accounts not only for job density within a commute distance, but also accounts for individuals' would-be competition for these jobs. We expect that, all else equal, job accessibility will have a negative effect on the use of carpools, as the increasing diversity of available jobsites decreases the likelihood that multiple commuters will share the relatively proximate trip origins and destinations necessary for carpooling. In contrast, we expect that greater job accessibility will be positively related to public transit use, as commute origins and destinations are more likely to be proximate (especially for low-wage workers for whom multiple potential jobsites are essentially interchangeable), thereby minimizing the time costs of public transit.

4. CHARACTERISTICS OF ETHNIC NEIGHBORHOODS

Having thus identified ethnic clusters and defined an urban/suburban classification scheme, we examine the between-group differences in travel behavior, demographics, job accessibility, and other important variables. Table 2 provides descriptive statistics for the four location types: non-cluster and cluster tracts in urban and suburban locations. In general, tracts in suburban locations and those not located in ethnic clusters are wealthier, better educated, less racially/ethnically diverse, and far less dense. On other important variables, the tracts differ significantly.

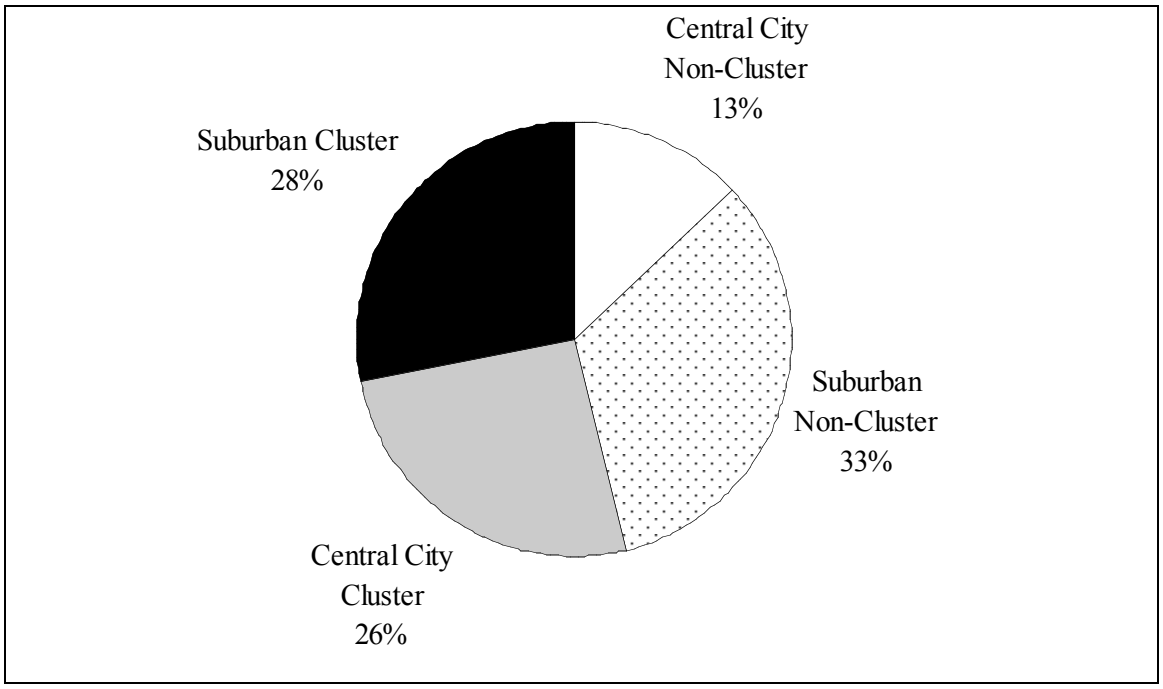
TABLE 2 Mean Values of Descriptive Statistic, Non-Clusters and Ethnic Clusters, Los Angeles, 2000

	Non-Cluster		**Ethnic Cluster**	
	Urban	Suburban	Urban	Suburban
Worker-Weighted				
Journey-to-Work Mode				
Car	78.9%	90.2%	75.8%	89.9%
Drove alone	65.3	76.8	56.5	71.3
Carpool	13.6	13.4	19.2	18.7
Transit	10.2	2.2	15.2	3.8
Non-motorized	5.9	2.6	5.3	2.7
Worked from home	5.0	5.0	3.8	3.5
Total	*100%*	*100%*	*100%*	*100%*
% Commute at peak hours	29.5%	23.4%	23.4%	21.2%
Person-Weighted				
% Foreign-Born	36.7%	21.0%	54.1%	39.6%
% Entering U.S. 1990-2000	14.9	6.5	21.9	13.4
% Speaking English only	39.4	54.2	15.9	29.6
% with Some College	23.7	26.7	12.5	17.7
% Poverty	25.6	11.1	28.0	15.7
% in multifamily housing	66.9	24.7	55.6	25.4
Residential density (pers/sqmi)	19,509	5,911	23,668	8,919
Job density (pers/sqmi)	7,397	1,738	5,621	2,116
Jobs-to-workers (w/ dist. decay)	1.11	0.91	1.09	0.95
Distance to L.A. City Hall (mi)	10.2	37.5	8.0	25.3
Median income	$32,965	$56,276	$30,180	$48,132
Race/Ethnicity				
White	41.6%	65.8%	38.3%	44.4%
Black	20.1	7.0	5.5	4.5
Asian	8.8	7.7	10.5	17.0
Other	29.5	19.5	45.7	34.1
Total	*100%*	*100%*	*100%*	*100%*
Hispanic	41.4%	28.2%	68.8%	52.9%
Household-Weighted				
Homeownership rate	24.6%	64.4%	25.5%	59.7%
Median rent	$719	$922	$661	$832
Median home value	$234,059	$235,815	$196,892	$203,570
Median housing age (yrs)	40.8	29.3	40.6	34.8
Household size (persons)	2.6	2.9	3.5	3.6
N	329	1963	434	687
Total population	1,520,372	9,169,428	2,078,207	3,730,828
Source: Census 2000				

Importantly for this study, the journey-to-work travel behavior of workers living in these tract types is quite divergent. Workers living in central-city locations are more likely to use alternative (carpool, transit, non-motorized) modes than are workers living in the suburbs. Similarly, workers in ethnic clusters are more likely to use alternative modes than are residents of non-cluster tracts. Residents of urban ethnic clusters are the least likely to commute by single-occupant vehicle, with just over half (56.5%) choosing this mode; by contrast, over three-quarters of suburban non-cluster residents (76.8%) commute by single-occupant vehicle.

Ethnic clusters have (essentially by definition) more foreign-born residents that non-cluster tracts; moreover, for both cluster and non-cluster tracts, presence in urban areas is associated with a larger foreign-born population. The newest immigrants (in the country 10 years or less) are most prevalent in urban clusters, where they make up 21.9 percent of the population; however, they are nearly equally represented in urban non-clusters (14.9%) as they are in suburban clusters (13.4%). However, because the population bases of these four location types are different (for example, over 9 million people live in suburban non-clusters, while only 1.5 million live in urban non-clusters), we separately consider the probability of new immigrants choosing each location type, and find a different story. As Figure 3 shows, 33 percent of new immigrants in the Los Angeles CMSA in 2000 lived in suburban non-clusters, while a roughly equal smaller share lived in urban clusters (26%) and suburban clusters (28%), and only 13 percent lived in urban non-clusters.

FIGURE 3 Distribution of New Immigrants (<10 years in the U.S.) by Residential Location, Los Angeles CMSA, 2000



Cluster locations also have significantly higher population densities than non-cluster locations of the same location type, though non-cluster tracts in urban areas have

higher employment densities on average than urban clusters. The employment accessibility of tracts (jobs-to-workers ratio calculated using a distance-decay function) is roughly equal for clusters and non-clusters by location type, and urban tracts in general have higher jobs accessibility than suburban tracts. However, the top 10 tracts with the highest job accessibility are suburban non-cluster tracts, and the top 20 tracts are all non-clusters (either suburban or urban).

Median income levels are moderately higher in suburban and non-cluster tracts, and the differences are statistically significant. Similarly, median rents and median home costs are higher in non-cluster tracts and in suburban locations, though the difference in home values between urban and suburban non-clusters is not statistically significant. Finally, households in suburban tracts tend to be comprised of slightly more people than is the case in urban areas, and ethnic cluster tracts have, on average, much larger households than non-cluster tracts.

5. ETHNIC NEIGHBORHOODS AND COMMUTE MODE

To examine the relationship between ethnic clusters and the use of alternative modes of transportation, we estimate two models; in the first, we model the tract-level propensity to use carpools for commuting, and in the second, we model the propensity to use public transportation. Table 3 shows the results of our models. We report standardized coefficients and, due to heteroskedasticity in the errors of both models, heteroskedasticity-robust t-statistics.

Among the control variables in our model, the strongest determinants of carpooling are the racial/ethnic makeup of the tract (betas of 0.11 to 0.31), distance to city hall (0.24), average household size (0.20), and the log-transformed median income of the tract (-0.17). The strongest determinants of transit use were residential density (beta=0.32) and distance to city hall (-0.24). In general, the estimated effects of the control variables coincided with expectations. For example, as the median income of tracts increases, we find that the propensity to use both alternative transportation modes decreases. Similarly, controlling for other factors, as transit density (transit stops per square mile) increases, use of transit increases, while use of carpools decreases. These modes often function as direct substitutes for one another; therefore, as the relative utility of transit increases, we expect the use of carpools to decline.

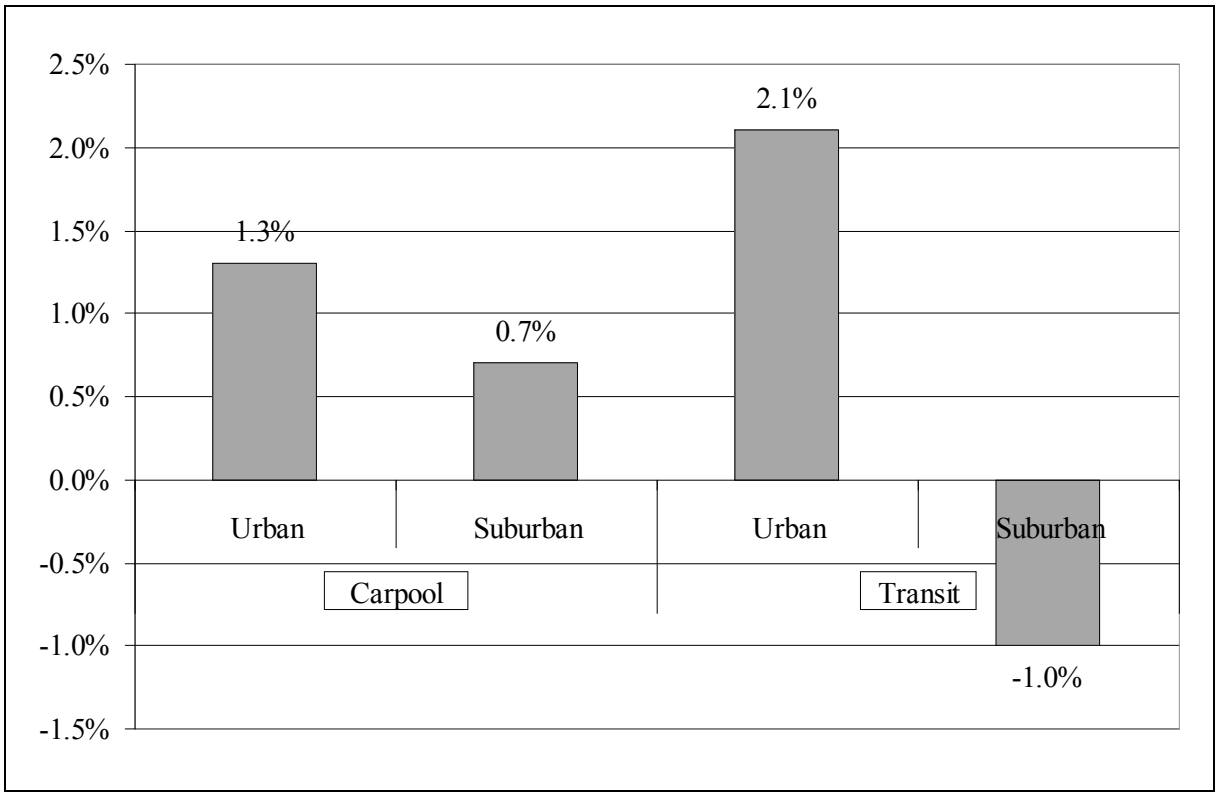
TABLE 3 Standardized Regression Coefficients for Models Predicting Carpool and Transit Mode Share by Worker-Weighted Tract, Los Angeles, 2000

	Carpool			Transit		
Dependent Variables	Beta	Robust t		Beta	Robust t	
Ethnic Cluster (binary)	0.050	3.32	***	-0.074	-5.64	***
Urban (binary)	0.008	0.47		0.006	0.25	
Ethnic Cluster * Urban	0.021	1.25		0.141	5.84	***
ln Distance to LA City Hall	0.225	12.28	***	-0.241	-12.43	***
ln Median Income	-0.162	-5.86	***	-0.178	-7.59	***
Residential Density (pers/sqmi)	-0.049	-2.60	***	0.317	8.20	***
ln Jobs-to-Workers (dist. decay)	-0.074	-4.70	***	0.011	0.97	
Transit Density (stops/sqmi)	-0.038	-2.98	***	0.122	3.27	***
Average Household Size	0.192	4.79	***	0.079	3.20	***
Percent Black	0.137	10.18	***	0.024	1.78	*
Percent Hispanic	0.309	5.36	***	-0.012	-0.21	
Percent Asian	0.105	7.29	***	-0.056	-3.86	***
Percent Other Non-White	0.292	5.47	***	0.122	2.27	**
White test for heteroskedasticity	925	0.00	***	1848	0.00	***
N	3,394			3,394		
R^2	0.71			0.68		
Source: Census 2000, American Business Information/InfoUSA						

We now turn to the variables of primary interest. In both models, status as an ethnic cluster, presence in an urban area, and the interaction of these two variables are jointly highly statistically significant, though the magnitude of the coefficients is modest. The model results suggest that, even after controlling for relevant factors, presence in an ethnic cluster is positively associated with the use of carpools, especially when the cluster is located in an urban area (beta=0.08 for central-city clusters, 0.05 for suburban clusters). However, for the use of public transit, presence in an ethnic cluster has contrary effects depending on the location of the ethnic cluster. Workers living in census tracts located in central-city clusters have an increased propensity to use public transit (beta=0.08), while those working in tracts in suburban clusters show a significant and negative impact of roughly the same magnitude (beta=-0.07) on the use of transit.

Figure 4 summarizes the estimated effect of a tract's presence in a cluster for urban and suburban locations, converting standardized coefficients shown in Table 3 into raw effects. The strongest observed effect is for transit usage in urban clusters, where the model predicts a 2.1 percent bonus in transit ridership, controlling for other relevant factors. Suburban ethnic clusters, however, are predicted to have one percent less transit usage than would be the case for other similarly situated suburban non-cluster tracts. Both urban and suburban clusters are associated with an increased usage of carpools, though the effect is nearly twice as large (1.3% increase) for central-city clusters compared to suburban cluster tracts (0.7% increase).

FIGURE 4 Estimated Effect of Tract Location in Urban and Suburban Ethnic Clusters on Mode Choice (Carpool and Transit)



6. CONCLUSION

Our findings show that neighborhoods matter. Residential location in an ethnic neighborhood is associated with particular travel patterns independent of other determinants of mode choice. However, the reasons for these relationships are only suggestive. In urban areas, residence in an ethnic neighborhood is positively related to the use of carpools *and* public transit. For carpooling, the finding is supportive of the notion that social relationships among kin and friends—highly associated with ethnic neighborhoods—influence the likelihood of sharing transportation resources and, in this case, a car. The results for public transit, however, are less clear, particularly since the employment accessibility variable is not significant. While the strong positive association between urban clusters and transit is supportive of our initial hypothesis (proximate ethnic jobs increase the attractiveness of public transit), we had anticipated an additional positive relationship between employment accessibility and use of public transit. The aggregate data—data for all residents in the census tract—may mask the particular travel behavior of ethnic residents living in the neighborhood or, perhaps, variation in employment accessibility across different types of ethnic neighborhoods. These relationships need further study.

With respect to the suburbs, residence in ethnic neighborhoods is associated with a greater propensity to commute by carpool, perhaps also for the aforementioned reasons.

However, residing in a suburban ethnic cluster is negatively associated with public transit use. It is possible that the economic and spatial assimilation that motivates residential relocation in the suburbs is associated with longer than average commutes (for example, to older urban ethnic clusters); these trips are difficult to make on public transit. As Table 2 shows, the average income of residents in suburban ethnic neighborhoods is 1.6 times that of residents in ethnic central-city neighborhoods. Anecdotal evidence also supports this conclusion. A recent article in the *Los Angeles Times* tells the story of Jung-In Lee who moved from Koreatown in Los Angeles to the suburban City of Walnut where she found better schools and lower crime rates [36]. The author reports "Lee often spent three hours a day commuting to and from her Koreatown job in publishing." Certainly, this commute would be nearly impossible using public transportation.

Overall, these findings underscore the importance of neighborhood-level characteristics—and in particular ethnic clustering—in influencing travel behavior. In the urban areas, where workers living in immigrant neighborhoods are more likely to use both alternative modes of travel, ethnic neighborhoods may serve as models for successful and sustainable urban development.

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Sources

1. Banister, D., S. Watson, and C. Wood, *Sustainable cities: transport, energy, and urban form.* Environment and Planning B: Planning and Design, 1997. **24**(1): p. 125-143.
2. Newman, P. and J. Kenworthy, *Sustainability and Cities: Overcoming Automobile Dependence*. 1999: Island Press.
3. Duany, A., E. Plater-Zyberk, and J. Speck, *Suburban nation: the rise of sprawl and the decline of the American Dream*. 2000: New York: North Point Press.
4. Calthorpe, P., *The Next American Metropolis: Ecology, Community, and the American Dream*. 1993: Princeton Architectural Press.
5. Cervero, R. and R. Gorham, *Commuting in Transit versus Automobile Neighborhoods.* Journal of the American Planning Association, 1995. **61**(2).
6. Friedman, B., S. Gordon, and B. John, *"The Effects of Neotraditional Neighborhood Design on Travel Characteristics".* Transit Oriented Development Impacts on Travel Behavior, edited by Calthorpe Associates, 1992.
7. Crane, R., *On Form versus Function: Will the New Urbanism Reduce Traffic, or Increase It?* Journal of Planning Education and Research, 1996. **15**(2): p. 117.
8. Allen, J. and E. Turner, *Ethnic residential concentrations in United States metropolitan areas.* The Geographical Review, 2005. **95**: p. 267-285.
9. Edin, P., P. Fredriksson, and O. Aslund, *Ethnic Enclaves and the Economic Success of Immigrants-Evidence from A Natural Experiment*.* Quarterly Journal of Economics, 2003. **118**(1): p. 329-357.
10. Funkhouser, E., *Changes in the Geographic Concentration and Location of Residence of Immigrants.* International Migration Review, 2000. **34**(2): p. 489-510.
11. Logan, J., *The new ethnic enclaves in America's suburbs. A report by the Lewis Mumford Center for Comparative Urban and Regional Research*. 2001, Lewis Mumford Center: Albany, NY.
12. Logan, J., R. Alba, and B. Stults, *Enclaves and Entrepreneurs: Assessing the Payoff for Immigrants and Minorities.* International Migration Review, 2003. **37**(2): p. 344-388.
13. Blumenberg, E. and K. Shiki. *Transportation Assimilation: Immigrants, Race and Ethnicity, and Mode Choice (Paper #07-2475)*. in *Transportation Research Board Annual Meeting*. 2007. Washington, D.C.
14. Myers, D., *Changes over Time in Transportation mode for Journey to Work: Effects of Aging and Immigration"*, in *Decennial Census Data for Transportation Planning: Case Studies and Strategies for 2000.* 1997, Transportation Research Board: Washington, DC.
15. Alba, R.D., et al., *Immigrant groups in the suburbs: A reexamination of suburbanization and spatial assimilation.* American Sociological Review, 1999. **64**(3): p. 446-460.
16. Logan, J.R., R.D. Alba, and W.Q. Zhang, *Immigrant enclaves and ethnic communities in New York and Los Angeles.* American Sociological Review, 2002. **67**(2): p. 299-322.

17. U.S. Census Bureau, *Foreign-Born Population of the United States. Current Population Survey, Detailed Tables*. 2003: Washington, D.C.
18. Casas, J., C. Arce, and C. Frye, *Latino Immigration and Its Impact on Future Travel Behavior*. 2004, Transportation Research Board: Washington, D.C.
19. Heisz, A. and G. Schellenberg, *Public transit use among immigrants.* Canadian Journal of Urban Research, 2004. **13**(1): p. 170(22).
20. McGuckin, N. and N. Srinivasan, *Journey to Work Trends in the United States and its Major Metropolitan Areas 1960-2000, Publication FHWA-EP-03-058*. 2003, U.S. Department of Transportation.
21. Rosenbloom, S., *TCRP Report 28: Transit Markets of the Future: The Challenge of Change.* Transit Cooperative Research Program, TRB, National Research Council, Washington, DC, 1998: p. 40.
22. Alba, R., J. Logan, and K. Crowder, *White Ethnic Neighborhoods and Assimilation: The Greater New York Region, 1980-1990.* Soc. F., 1996. **75**: p. 913.
23. Li, W., *Los Angeles's Chinese ethnoburb: From ethnic service center to global economy outpost.* Urban Geography, 1998. **19**(6): p. 502-517.
24. Massey, D.S., *Ethnic Residential Segregation - a Theoretical Synthesis and Empirical Review.* Sociology and Social Research, 1985. **69**(3): p. 315-350.
25. Singer, A., *The Rise of New Immigrant Gateways.* Washington: Brookings Institution, 2004.
26. Portes, A. and R. Bach, *Latin Journey: Cuban and Mexican Immigrants in the United States*. 1985: University of California Press.
27. Boyd, M., *Family and Personal Networks in International Migration: Recent Developments and New Agendas.* International Migration Review, 1989. **23**(3): p. 638-670.
28. Choldin, H., *Kinship Networks in the Migration Process.* International Migration Review, 1973. **7**(2): p. 163-175.
29. Charles, K.K. and P. Kline, *Relational costs and the production of social capital: Evidence from carpooling.* Economic Journal, 2006. **116**(511): p. 581-604.
30. Catanzarite, L. and M. Aguilera, *Working with Co-Ethnics: Earnings Penalties for Latino Immigrants at Latino Jobsites.* Social Problems, 2002. **49**(1): p. 101-127.
31. Tilly, C., *Transplanted Networks*, in *Immigration Reconsidered: History, Sociology, and Politics*, V.Y. McLaughlin, Editor. 1990, Oxford University Press. p. 79-95.
32. Wilson, F., *Ethnic niching and metropolitan labor markets.* Social Science Research, 2003. **32**(3): p. 429-466.
33. Kaplan, D.H., *The creation of an ethnic economy: Indochinese business expansion in Saint Paul.* Economic Geography, 1997. **73**(2): p. 214-233.
34. Light, I., et al., *Beyond the Ethnic Enclave Economy.* Social Problems, 1994. **41**(1): p. 65-80.
35. Zhou, M., *Revisiting ethnic entrepreneurship: Convergencies, controversies, and conceptual advancements.* International Migration Review, 2004. **38**(3): p. 1040-1074.

36. Kang, K.C., *An ethnic center's new pull; Koreatown was once the place one left. Now, focused on a shiny strip of Wilshire, it's a mecca for suburbanites and wealthy immigrants*, in *Los Angeles Times*. Dec 15 2004: Los Angeles, CA.