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Accounting for Regional Migration Patterns and Homeownership Disparities in the Hmong-American Refugee Community, 1980–2000

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Accounting for Regional Migration Patterns and Homeownership Disparities in the Hmong-American Refugee Community, 1980–2000

By Michael Grover and Richard M. Todd[1]

Abstract: Hmong refugees began arriving in significant numbers in the United States in the late 1970s. Compared to typical immigrants, Hmong-Americans came with few financial, labor market, or co-ethnic support factors in favor of their economic success in the United States. Focusing on homeownership as an indicator of economic assimilation, we show that indeed the overall Hmong-American homeownership rate was initially very low but had converged, by 2000, to a level typical for U.S. immigrants of equivalent time in country. Over the same period, however, wide regional gaps in Hmong-American homeownership emerged. By 2000, most of these gaps had also disappeared, except that Hmong-American homeownership rates in the metropolitan areas of the Central Valley of California remained very low. We present evidence that selective migration patterns related to state differences in public assistance policies were important in the emergence of regional homeownership differences in the 1980s, and that changes in these policies were among the factors that closed most of the gaps in the 1990s. Then, taking location in 2000 as given, we adapt the method of Coulson (2002) to statistically account for the gap between the Hmong-American homeownership rate in the Central Valley and elsewhere. Using probit regressions on data for individual Hmong-American household from the 2000 Public Use Microsample (PUMS) from the U.S. Census, we find that both personal traits of the household head (age, English ability, and residential locational stability) and household financial variables (total income, public assistance income, and the relative cost of owning versus renting) significantly affect the odds that a given Hmong household owns its residence. Nonetheless, we find that the Central Valley's persistent lag in Hmong-American homeownership is mostly accounted for by regional differences in the financial variables and hardly at all by regional differences in the Hmong-American personal traits we measure. A caveat to this conclusion is that one of our financial variables, public assistance income, may proxy for unmeasured regional differences in personal attributes.

I. Introduction

Hmong people began arriving in the United States in the late 1970s, when their status as American Vietnam War allies made many of them refugees from the new communist government in Laos. It was noted at the time that the vast majority of Hmong-Americans arrived with few economic advantages—

[1] The authors have benefited from suggestions by Ron Feldman, Ed Coulson, Andreas Moro, and participants in seminars at the University of Minnesota and two Hmong National Development conferences. The authors also benefited from data obtained from the Integrated Public Use Microdata Series at the University of Minnesota. Steven Ruggles, Matthew Sobek, Trent Alexander, Catherine A. Fitch, Ronald Goeken, Patricia Kelly Hall, Miriam King, and Chad Ronnander. Integrated Public Use

little financial wealth, limited formal education, low levels of literacy in their own language and limited knowledge of English, few job-specific skills relevant to the American labor market, limited experience with urban life, and no established community of co-ethnics to assist them.[2] Their reliance on public assistance programs such as Refugee Cash Assistance was initially very high, and some informed observers worried that they would remain dependent on public assistance for generations.[3]

Although public assistance programs have indeed remained an important factor in the Hmong-American experience (partly because new refugees continued to arrive through 2005), the community has achieved an overall degree of economic success far beyond what pessimistic observers in the 1980s feared. For example, according to Census 2000, 41percent of Hmong-American households owned their own home, up sharply from 11percent in the 1990 census and even more so from the minimal levels of the early 1980s. Their rate of homeownership in 2000, adjusted for number of years in the United States, was in line with typical immigrant homeownership rates[4], despite the atypically high degree of disadvantages faced by Hmong-Americans upon initial arrival.

Although impressive, the overall rise in Hmong-American homeownership obscures some sharp regional homeownership disparities. This paper analyzes the history of those disparities and presents both old and new evidence associating them with regional economic and public policy differences. In the following section, we present a more detailed account of the rise in overall Hmong-American homeownership and economic success since the early 1980s. Next, we summarize evidence linking the strong regional disparities in Hmong-American homeownership that emerged during the 1980s to selective interstate

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Microdata Series: Version 4.0 [Machine-readable database]. Minneapolis, MN: Minnesota Population Center [producer and distributor], 2008.

[2] Office of Refugee Resettlement (1985).

[3] Daniels (1990) concluded a bleak assessment of the status of many "New Asian" immigrants by noting "Even poorer, as groups, are the Laotians, the Cambodians, and such premodern peoples as the Hmong. Few Laotians and Cambodians and no Hmong were really equipped to cope with modern urban society before they left Southeast Asia, and the transition has been quite painful and difficult. If the isolated success stories become more representative is something that only time can tell, but many of those most directly involved with these refugees fear that they, or most of them, will become a permanent part of that other America where poverty and deprivation are the rule rather than the exception."

[4] As calculated by Borjas (2002).

migration patterns that were motivated in part by state differences in public assistance programs. We then document the closing of most of the regional disparities by 2000, which left the Central Valley of California as the primary remaining region of low Hmong-American homeownership rates. Adapting the method of Coulson (2002), we show that this remaining disparity is not well explained by regional Hmong-American demographic differences but can be statistically well accounted for by regional differences in three potentially causal financial variables—Hmong-American household income; the relative cost (including capital gains) of owning versus renting; and the rate of public assistance receipt in the Hmong-American community. We close by raising some questions about the nature of federal versus state roles in refugee assistance.

II. A successful transition overall

A. Initial Disadvantages. The early years of Hmong-American settlement were chronicled in a series of studies done for the federal Office of Refugee Resettlement (ORR). Reder et al. (1985) summarizes these studies. It notes that the first Hmong to arrive in the U.S. were a "very select group of high school and college students" in the late 1960s and early 1970s. They are described as a "handful of students scattered across the United States."[5] Although the report implies that the American ties these students developed helped to seed some of the subsequent Hmong-American settlements and even that some of these students were sent by Hmong leaders to facilitate resettlement in the event of a communist takeover in Laos, their numbers were very small. Thus, it is fair to say that when Hmong refugees began arriving in the U.S. in large numbers in the late 1970s, there was no established American co-ethnic community to whom they could turn for assistance.[6]

The flow of post-Vietnam War Hmong refugees began arriving in the United States in late 1975. By 1976, about 3,500 refugees from Laotian hill tribes had arrived, most of whom were Hmong. 5,500 more

[5] Reder et al. (1985).

arrived in 1977 to 1978, and then the flow surged to over 11,000 in 1979 and over 27,000 in 1980 before subsiding for a few years. By mid-1983, the United States had admitted about 54,000 Laotian hill tribe individuals, most of them Hmong, as refugees.[7]

Some of the disadvantages faced by the early Hmong-Americans must be inferred from the nature of their background and circumstances, as we are not aware of any usable data. For example, it seems reasonable that most refugees fleeing a remote region of a very poor country and spending an extended period in a refugee camp before arriving in the U.S. would arrive with very limited financial wealth.[8] This inference is corroborated by the high rates of receipt of means-tested public assistance by Hmong-Americans after arrival, which is discussed below. Except for a small elite, most Hmong refugees came from a background of subsistence farming, guerilla fighting, and refugee camps that provided them with limited exposure to urban life in Western societies.

The education deficit of the early Hmong-Americans was also documented. The first wave of about 3500 Hmong-American refugees in 1975 to 1976 "tended to be relatively educated, literate, and experienced with urban life, often having had "extensive contact with American military and support personnel" during the war that gave them "higher priority for immigration."[9] The much larger waves that followed were significantly less educated than the Hmong-American elite or typical U.S. immigrants. According to Borjas (1999), in 1980 over 60 percent of recently arrived (within 5 years) U.S. immigrants had at least a high school education, and about 30 percent had a college education. Education levels were much lower for most of the newly arrived Hmong-Americans.[10] A survey of four Hmong-American communities in 1982 found that those over 18 years old averaged less than two years of formal education.

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[6] Hatton and Leigh (2007) present evidence that lack of co-ethnic predecessors constitutes an economic disadvantage for new immigrants.
[7] Reder et al. (1985), 36-37.
[8] Among numerous accounts of the Hmong flight from Laos, Lo (2001) addresses this issue directly, stating that Hmong refugees arriving in Thailand "had lost everything." See Lo (2001), 69.
[9] Reder et al. (1985), 37.
[10] Reder et al. (1985), 9-10.

A 1981 survey of another settlement revealed that 80 to 95 percent of Hmong-American women had received no formal education in Laos. Only two-thirds of young Hmong-American men had some formal education in Laos, and the rate fell to 50 percent or less for men 30 years old and older.

Hmong-American rates of literacy and English proficiency were also very low initially.[11] Although a system of writing the Hmong language was developed in the 1950s and was spread by missionaries and through self-teaching in Laos, as late as 1970 Hmong in some remote areas "had never seen use of reading or writing." Passage through refugee camps and the immigration bureaucracy presumably exposed almost all Hmong to writing before their U.S. arrival, but "most Hmong adults could not read or write upon their arrival in the United States." Surveys suggested that between 40 and 60 percent of Hmong-American adults had achieved literacy in some language by 1982 or 1983. However, knowledge of English was uncommon in the early years as "only 5 percent of Hmong adults who entered the U.S. between July 1979 and July 1981 received some English training in the [refugee] camps."[12] In short, early Hmong-American arrivals had, by American immigrant standards, very limited formal education and low levels of literacy and English proficiency.

Lack of education, literacy, English language proficiency, and American job experience left the early Hmong-American arrivals less suited for the U.S. labor market than typical immigrants. Borjas (1999) reports that in 1980 wages for recent U.S. immigrants were 25 to 30 percent below those of non-immigrants. By contrast, a comparison of spring 1983 Hmong-American wages[13] to the March 1983 average hourly earnings rate ($8,10) for American nonfarm production and nonsupervisory workers implies that most Hmong-Americans earned 45 to 60 percent less than typical American workers. And this wage gap understates the earnings gap, for only about a third of Hmong-American household heads

[11] Reder et al. (1985), 10-11.
[12] Reder et al. (1985), 28.
[13] Reder et al. (1985), 67.

were employed in 1983.[14] Not surprisingly, given their generally low earned income, ORR reported that "it is fairly clear that well over half of the Hmong population in this country relies on some form of public assistance." [15]

Finally, all of these disadvantages contributed to a very low rate of homeownership in the early years of Hmong-American settlement. We have aggregated the data from Reder et al. (1985) on many individual Hmong-American communities and made assumptions about missing data for a few larger settlements (e.g., Minneapolis and St. Paul, Minnesota and Merced, California) to estimate that the overall rate of homeownership was about 5 percent in 1983, the earliest year with reasonably comprehensive data. (See Appendix 1.) Thus after about 5 years in the U.S., Hmong-Americans had achieved only about a third of the 14.5 percent homeownership rate that Borjas (2002) calculated as the average for immigrants in the first 5 years of U.S. residency (based on Census 2000).

B. Limited economic progress by 1990. Although experts have questioned whether the 1990 census accurately captured data on Hmong-Americans[16], we accept these data as providing at least a broad measure of their economic and demographic condition 15 years after the first wave of settlement. As a practical matter, the 1990 census data[17] are also the only even nearly comprehensive source of information on Hmong-Americans between the ORR studies of the mid 1980s and Census 2000. The 1990 census suggests that the Hmong-American community had made only small economic gains since the early 1980s. This partly reflects that new refugees continued to arrive throughout the 1980s, generally with the familiar disadvantages of limited wealth, education, and skill. However, the numbers also suggest that even the earlier arrivals had made only limited progress by 1990.

[14] Authors calculations based on data from Reder et al. (1985), 39, 65..
[15] Reder et al. (1985), 91.
[16] For example, see Miyares (1998).
[17] We calculate Hmong household statistics for 1990 using a Census Public Use Microsample file obtained through the Integrated Public Use Microdata Series (IPUMS) at the University of Minnesota. See Steven Ruggles, Matthew Sobek, Trent Alexander, Catherine A. Fitch, Ronald Goeken, Patricia Kelly Hall, Miriam King, and Chad Ronnander. Integrated Public Use Microdata

Basic social and economic indicators for the Hmong-American population as of 1989 and 1990 are presented in Table 1. Socially, the median Hmong-American household was large (7 persons) and headed by a 36-year-old married man who had lived in the U.S. for 10 years. Time in the U.S. had probably contributed to skill acquisition, as 41 percent of household heads reported speaking English "well" or "very well", 35 percent had graduated high school, and almost 9 percent reported holding at least a two-year college degree. Despite more time in the U.S. and somewhat better skills, labor force participation and earned income remained low. Only 28 percent of household heads worked. Mean earned income was under $10,000 (in year 2000 dollars), and the income of almost 58 percent of Hmong-American households fell below the poverty line. Mean public assistance income was still a bit higher than earned income, and almost 70 percent of Hmong-American households received some. Finally, the rate of homeownership, the focus of our analysis, had roughly doubled since the early 1980s but remained at a very low 11 percent. This is only about 40 percent of the 26.4 percent homeownership rate that Borjas (2002) calculated as the average for immigrants with 6 to 10 years of U.S. residency based on Census 2000.

C. Rapid overall economic progress by 2000. As also shown in Table 1, indicators of Hmong-American skills and economic success improved markedly in the 1990s. However, basic social indicators changed little. Compared to 1990, the median Hmong-American household in 2000 was one person smaller, and its household head was typically only one year older than in 1990 and still highly likely to be married. By contrast, a longer tenure in the U.S. (a median of 18 years in 2000) meant that the skill level of household heads had markedly improved, with English proficiency and high school graduation rates up about 45 percent, and college graduation (two-year degree or more) rates up 85 percent. Experience in the U.S. and better skills presumably contributed to the much-improved labor market outcomes. So did the steady

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expansion of the U.S. economy after 1991, which boosted overall employment and real wages for low-skilled workers. The percentage of Hmong-American household heads working more than doubled, and Hmong-American households' average earned income more than tripled. In combination with a decade of change in U.S. public assistance programs, the extra earned income cut Hmong-American public assistance participation by 57 percent and public assistance income by 80 percent. With earned income up but public assistance income down, the median total income of Hmong-American households rose 72 percent between 1989 and 1999, cutting their poverty-rate by 40 percent.

Many Hmong-American households used their rising income to buy a home. As shown in Figure 2, homeownership rates rose between 1990 and 2000 for Hmong-American household heads of all ages, with the biggest gains below age 55. Over the decade, the youngest cohorts experienced the steepest rise, and the highest Hmong-American homeownership rate was in the relatively young (by American standards) 35 to 44 year-old group. Overall, about 41 percent were homeowners in 2000. Although this rate of homeownership is far below the U.S. average, it had increased 380 percent in 10 years. Furthermore, as shown in Table 2, the Hmong-American population no longer significantly lagged behind the average immigrant in homeownership adjusted for time in country. This was a big change from 1990 and strong evidence that the overall Hmong-American population could in time fare at least as well as typical U.S. immigrants.

III. Secondary migration in the 1980s and the emergence of regional homeownership disparities

The ORR studies of the early to mid 1980s provide rich documentation on the early years of Hmong-American settlement. They provide estimates of the number of households and homeowners for almost 60 Hmong-American communities as of the spring of 1983, and in Appendix 1 we describe the additional assumptions we made to fill in data for the balance of the 60 areas listed in Table 3. Although the estimated overall homeownership rate was very low, just 4.5 percent, as early as 1983 it varied

considerably among the settlements, ranging from 100 percent in Orem, Utah, to zero in several areas. Most of the settlements with high homeownership rates were small. Among the communities with at least 100 Hmong-American families, only two had homeownership rates over 10 percent. Being mostly small, the Hmong-American communities with double-digit homeownership rates had only a small impact on the overall Hmong-American homeownership rate. Nonetheless, they showed that even at this early date the Hmong-American homeownership experience differed widely from one area to another.

It is tempting to relate these 1983 regional differences to local variations in the economy or social programs, as in Duchon (1997). Indeed, some have argued that refugee populations are especially useful for such analysis, as their sites of initial settlement are often somewhat exogenously assigned by governmental and nonprofit agencies so that regional differences can be regarded as treatment effects. [18] For Hmong Americans, however, location should not be treated as even approximately exogenous. The ORR studies and a variety of other sources make clear that Hmong-Americans were very mobile across cities and states from very early on in their U.S. history.

As we outline in more detail below, these sources strongly suggest that regional economic and policy differences influenced location decisions beginning at an early stage of Hmong-American settlement and contributed to regional differences in homeownership rates. Net intercity and interstate migration patterns were strongly influenced by, among other factors, housing prices and the availability and quality of services, notably including public assistance. As a result, Hmong-American homeownership rates tended to be higher in communities with high net out-migration. In these areas, factors such as high rental costs and limited public assistance often induced most Hmong-American families without good jobs to leave. Those who stayed were much more likely to have satisfactory employment, and this enhanced the odds that they would buy a home. By contrast, those who left often arrived in their new communities without

[18] Borjas (2002), 32.

having a job lined up.[19] It is possible that they also had lower job aptitudes or health and family circumstances that made working difficult, but the limited demographic data available show few measurable demographic differences between shrinking and growing Hmong-American settlements in the 1980s. In the 1980s, Hmong-American migrants mostly headed to states with generous refugee support services, including public assistance. In those states in the 1980s, public assistance could easily seem economically superior to work as a strategy for the economic maintenance and advancement of a large, low-skilled family, such as was typical in the Hmong-American population. However, reliance on public assistance made it much less likely that a household would buy a house.

As a first step toward more fully explaining and documenting the effects outlined just above, we note the very rapid rate of Hmong-American secondary migration in the 1980s. In 1981, just after the 1979-80 peak in immigration, about half of the Hmong-American households lived in California, Minnesota, and Wisconsin, with California alone accounting for a quarter of the population, primarily in Orange County. See Figure 1. Then, in less than two years, over a third of the Hmong-American population switched urban areas.[20] As a result, in 1983 about half of Hmong-American households lived in California, with another quarter in Wisconsin and Minnesota. This process of migration and concentration slowed but continued after 1983, so that by 1990 89 percent of the Hmong-American population, and 83 percent of Hmong-American households, lived in California, Minnesota, and Wisconsin. This 1990 three-state concentration ratio was far higher than for any other large Southeast Asian refugee population that had arrived in the U.S. at about the same time as the Hmong.[21]

These state data also obscure another important aspect of Hmong-American secondary migration—the emergence of the Central Valley as a center of Hmong-American settlement. The initially significant Hmong-American communities in California were primarily in the large southern metropolitan areas,

[19] The Hmong-American community in Dallas was an exception. Local leaders discouraged in-migration without employment. Partly as a result, this community had a relatively high homeownership rate but remained small. See Downing (1984).

mainly Orange County. As late as 1981 only a few Hmong-American families were living in the Central Valley. By 1983, however, many southern California Hmong-Americans had departed to the Central Valley, partly because of its lower housing costs. They became part of the 20,000 Hmong-Americans from across the U.S. moving to Fresno, Stockton, Modesto, Merced and the other Central Valley cities. Of the 3,965 California households that Table 3 tabulates in 1983, two-thirds lived in three Central Valley cities new to Hmong-Americans. Between 1981 and 1983, Fresno emerged as the largest Hmong-American settlement in the country. By 1990, 87 percent of California's Hmong-Americans lived in the Central Valley.

The ORR studies show significant regional economic differences among Hmong-American communities beginning in mid 1983, about 18 months into this period of extensive secondary migration. For 60 cities, Table 3 estimates the percentage of Hmong-American households with no one working. Even ignoring cities with very few Hmong-American households, the percentages range from 0 to the high 90s. In the Central Valley cities, about 93 percent of Hmong-American households included no workers, and the corresponding figures were 83 percent for all of California, 81 percent for Wisconsin and 71 percent for Minnesota. Outside of these three states, the employment situation of Hmong-American households was quite different in 1983; only a third included no workers.

Using different measures, Table 4 shows that in 1990 a similar pattern of regional economic disparity persisted among Hmong-American households. Despite no obvious regional demographic or educational differences to account for it, the Central Valley, Wisconsin, and Minnesota settlements lagged far behind the other Hmong-American communities in workforce participation and earned income. Not surprisingly, these economic differences were associated with parallel regional disparities in Hmong-American

[20] Finck (1986).
[21] Bulk (1996), 14.

homeownership rates, from a low of 3.7 percent in the Central Valley to an average of 31 percent in the communities outside of the Central Valley, Wisconsin, and Minnesota.

What factors led so many Hmong-Americans to the Central Valley, Wisconsin, and Minnesota in the 1980s? The ORR studies provide a wealth of contemporary information. One source cautiously notes that "A variety of factors have contributed to Hmong secondary migration, including: economic betterment, family reunification, interest in farming, access to better training and schools, and warmer climate."[22] We agree, but we downplay factors that do not point especially to the three areas of concentrated Hmong-American settlement. For example, we accept that extended family reunification was a strong motivation in Hmong location choice, but because families can agree to reunify essentially anywhere, we do not focus on it. Similarly, farming is possible in many places, and personal experience leads us to believe that warm climate was an unlikely explanation for settlement in Minnesota and Wisconsin in the 1980s. Accordingly, we mainly consider economic betterment, which we interpret as including access to good training and schools as well as access to other social services, employment, and especially public assistance.

Since Hmong-American education and job skills were quite low in the early 1980s, an understanding of state-by-state differences in public assistance is important. Until about 1981 these differences mattered relatively little. At that time, most Hmong-Americans still qualified for, and often heavily relied on, federal Refugee Cash Assistance (RCA), which was available to refugee households, married or single, for 36 months. Then in 1981, news spread in Hmong America of a federal policy change, effective in 1982, which would cut eligibility to just 18 months. Most Hmong-Americans adults still lacked the skills to earn enough money to support their often-large families, and this problem was compounded by lingering high unemployment rates in the U.S. after the deep recession of 1981. These factors made state

[22] We have found no information on the liberality of eligibility requirements in Minnesota at that time. Reder et al. (1985), 42.

public assistance programs, especially Aid to Families with Dependent Children (AFDC), suddenly very important to Hmong-American well-being.

From a Hmong-American perspective, states' AFDC programs differed in two key dimensions—eligibility and benefit levels. Eligibility was an issue for two reasons. First, a high percentage of Hmong-American household heads are married (over 80 percent in 1990 and 2000), but in 1983 barely half of the 50 states provided AFDC to married couples (under the AFDC-UP program). Second, even states with AFDC-UP varied in the criteria used to determine eligibility and in the strictness with which these criteria were administered. The importance of benefit levels is obvious. Borjas (1999) argues that immigrants are especially likely to concentrate in states with generous welfare systems, because their cost of relocating is low relative to native-born households. The assertion by Thao (1982) and others that Hmong traditions facilitate periodic coordinated relocation of entire communities can be viewed as implying that Hmong-Americans had low relocation costs even relative to other refugees, perhaps partly explaining why they became more spatially concentrated by 1990 than the Lao, Cambodians, and Vietnamese.

Based on these factors, California, Minnesota, and Wisconsin became attractive locations for many Hmong-Americans in the 1980s. All three offered AFDC-UP throughout the 1980s, and two states (California and Wisconsin) were singled-out for enrolling a high proportion of refugee families.[23] By 1989, all three also ranked in the top ten in purchasing-power-adjusted benefit levels[24] and Borjas (1999), states that "by 1990, California's AFDC benefit package was (almost) the most generous in the nation."[25] Borjas further observes that "immigrants on welfare do indeed cluster in California," and his Table 2 suggests that the effect is even stronger among refugees. A few other states also offered AFDC-UP with relatively high-benefits in the 1980s, but we lack information on how these states administered eligibility and what other economic advantages they offered. So we cannot validate that only California, Wisconsin,

[23] See Bach (1988), 50-53; Fass (1991), 15; and Reder (1984), 20.
[24] Winkler (1993), 5-6.

and Minnesota were attractive to Hmong-Americans with poor job prospects. However, they were among a small group of potentially attractive states. Perhaps factors such as how AFDC-UP eligibility was administered (favorably in California and Wisconsin at least), the availability of training, schools, and social services[26], stories (apparently much exaggerated) of success in farming in the Central Valley[27], or simply a history of early Hmong-American settlement (California and Minnesota) tipped the balance. Once Hmong-American families began congregating in these states, family reunification could lead to additional in-migration there.

Within California, movement from Orange County and other early settlement locations to the Central Valley was significantly driven by relatively low shelter costs in the Central Valley.[28] In addition, the Central Valley started attracting additional Hmong-American families from other California cities due to family reunification and the Central Valley's growing cultural importance in Hmong America.

Hmong-American secondary migration in the 1980s was not highly selective in terms of demographic characteristics or educational and skill levels that were measured.[29] It is possible, but for obvious reasons hard to verify, that the migration was selective with regard to personal characteristics that were not measured well, such as more subtle skill differences, attitudes about life in the U.S., overall psychological condition, or desire to work.[30] However, even if secondary migration also was not selective in these dimensions, it nonetheless contributed to a clear regional divergence in the 1980s in the percentage of Hmong-American families supporting themselves without public assistance, especially AFDC-UP, for at least two reasons. First, Hmong-American families not moving to California, Wisconsin, and Minnesota

[25] Borjas (1999), 616.
[26] This observation is noted by Downing, et al. (1984).
[27] See Reder (1984), 20.
[28] Cohn (1984), 7; Reder et al. (1985), 46.
[29] See Bach (1988), 50; Table 1.
[30] Borjas (1999) suggests that from the 1980s "less skilled immigrants are disproportionately drawn to California." Borjas (1999), 618, 623, 625.

often stayed put because they were already economically viable without AFDC-UP.[31][32] In the settlements experiencing net population loss (and hence outmigration), 16 percent of Hmong-American households received public assistance, compared to 70 percent in the growing settlements, whose population was primarily in California, Wisconsin, and Minnesota. Second, those moving to California, Wisconsin, and Minnesota often found that benefit levels and program rules made it disadvantageous to exchange public assistance for fulltime work in those states in the 1980s.[33] For example, the "100-hour rule" limited heads of households receiving AFDC-UP to 100 hours of work per month, regardless of how much they earned.[34] In states with low or no AFDC-UP benefits, the 100-hour rule was not a significant factor, since the earnings from even low-wage employment were similar, if not better, than the benefits of maintaining AFDC-UP eligibility.

The situation was very different in states with high AFDC-UP benefits, such as California, Wisconsin, and Minnesota. A family that switched from 90 hours to 120 hours of low-wage work could easily find that their forgone AFDC-UP benefits would exceed their increased earnings. Work incentives were further weakened because AFDC-UP eligibility was the key to access to public health insurance and rental assistance for many refugee families, and these forms of assistance were especially important to the large families typical of Hmong-Americans.[35] The ORR site report on Fresno underlined its conclusion that "There is no provision to support what often must be a gradual transition from welfare dependence to economic self-sufficiency."[36] Accordingly, Hmong-American households in California, Wisconsin, and Minnesota tended to remain unemployed or to combine public assistance with only limited part-time

[31] The primary documentation for this conclusion comes from Reder et al. (1985), 42-55, and the related case studies of settlements experiencing outmigration, such as Portland (Sweeny (1984), 17-20), Orange County (Cohn (1984), 19), and Providence (Finck (1984), 33). Bulk (1996) also reviews this material (Bulk (1996), 20-21) and compares public-assistance usage in 1988 between cities that lost Hmong-American population during 1983-90 and those that gained.
[32] As noted in the case studies summarized in ORR 1985, employed Hmong-Americans sometimes also migrated to the emerging centers of Hmong-American population for family or cultural reasons. We accept this but focus on the employment status of those who did not migrate to these three areas.
[33] Bach (1988), 52; Reder et al. (1985), 97, 100; Fass (1991), 17.
[34] The rules were even more discouraging of self-employment, including in farming, which was of interest to many Hmong-Americans. In California, even starting a small farming business could result in complete loss of cash and medical benefits. See ORR (1985),100 and Reder (1984), 34.
[35] Reder (1984), 62;Yang et al. (1985), 6.

work. The fact that AFDC-UP benefits in California, Wisconsin, and Minnesota were relatively high and accessible probably contributed to the very high percentage of families in these three states with no one working in 1983 (Table 3) and for their continued relatively high rate of welfare usage in 1990 (Table 4).

These regional Hmong-American disparities in welfare usage in the 1980s parallel the disparities in homeownership rates. Table 4 shows that total Hmong-American household income was not too different among California, Wisconsin, Minnesota and the other Hmong settlements. However, use of public assistance was higher and earned income was much lower in the three states where Hmong-Americans were concentrated. Hmong-American homeownership rates were much lower—about 4 to 12 percent—in these three areas, compared to the 31 percent Hmong-American homeownership rate in the rest of the country.

IV. A new pattern of regional homeownership disparities by 2000.

We have noted above that the 1990s were a period of economic progress for Hmong-Americans generally. Their skills and incomes rose, their likelihood of living in poverty or using public assistance fell, and their rate of homeownership rose from 11 percent in 1990 to 41 percent in 2000. Since the majority (75 percent) of Hmong-Americans households still lived in Wisconsin, Minnesota, and the Central Valley of California in 2000, this degree of overall progress could not have occurred without significant gains in those communities. However, Table 5 shows that the 1990s gains in the areas of concentrated Hmong-American settlement were not uniform. Overall prosperity and homeownership increased rapidly in Minnesota and Wisconsin, bringing Hmong-Americans there to parity with Hmong-Americans in most of the rest of the country by 2000. Progress in skills, incomes, poverty reduction, and public assistance exit was evident but significantly slower in the Central Valley. This was paralleled by a

[36] Reder (1984), 62.

significant gap in Hmong-American homeownership rates between the Central Valley and the rest of the country, including Minnesota and Wisconsin.

Below, we more formally analyze factors associated with this disparity in homeownership rates, but it may be useful to quickly dispel a commonly assumed but incorrect explanation—prohibitive housing prices in the Central Valley. In 2000, the median price of a home in Fresno was not much different than the median price of a home in Minneapolis-St. Paul (where most of Minnesota's Hmong-Americans lived) and only a bit higher than the median price in most Wisconsin cities with significant Hmong-American populations. See Table 6.

We also think the disparities are not likely due to a disproportionate degree of anti-Asian or anti-refugee discrimination in the Central Valley. Figures 3-6 display regional homeownership rates by household income brackets for four groups of young (head under 45) Southeast Asian-American refugee households. For Hmong-Americans, Figure 3 again shows the large lag in homeownership in the Central Valley. By contrast, Central Valley homeownership rates are similar to those in most other regions for the young Vietnamese-American households shown in Figure 4, and the Central Valley's gap is relatively small or negligible for the Lao-Americans and Cambodian-Americans shown in Figures 5 and 6, respectively. The nonexistent or small disparities for these other groups are not consistent with a disproportionate degree of anti-Asian or anti-refugee discrimination in the Central Valley. Understanding the regional disparities in Hmong-American homeownership in 2000 requires looking beyond anti-Asian housing discrimination and the regional differences in the price level for owner-occupied housing, a task to which we now turn.

Regional economic differences may partly explain why indicators of Hmong-American economic success increased more rapidly in Wisconsin and Minnesota in the 1990s than in the Central Valley. The relatively weak labor market in the Central Valley was probably important. As illustrated in Figure 7, unemployment rates there were consistently among the highest in the country in the 1990s, while

unemployment rates were generally low in Wisconsin and Minnesota. As we discuss in the next section, the Central Valley housing market was also weak in the 1990s, with housing prices declining or stagnant for much of the decade. By comparison, housing prices in many other Hmong-American settlements rose on average in the 1990s, possibly contributing to expectations of further appreciation.

Of course, this raises the question of why Hmong-Americans stayed in the Central Valley when economic conditions were often better elsewhere. Part of the answer is that many did not. The Hmong-American population of the Central Valley grew an impressive 72 percent from 1990 to 2000, but the overall Hmong-American population rose even faster, by 124 percent. California's share of Hmong-American households fell from 43 in 1990 to 32 percent in 2000. This suggests net out-migration from the Central Valley to other Hmong-American settlements in the 1990s.

We have argued that net out-migration in the 1980s tended to leave the exporting region with a remaining population of relatively high-earning Hmong-Americans with a high homeownership rate. We do not think that was true in the 1990s, at least not for the Central Valley. Both logic and census data suggest that the nature of Hmong-American net migration changed in the 1990s. Since California continued to offer relatively high public assistance benefits in the 1990s[37], the main economic reasons to leave the Central Valley and its high unemployment rate would have been to seek work, not public assistance. If anything, this would tend to draw relatively skilled and work-ready individuals out of the Central Valley, the reverse of the likely bias of out-migration in the 1980s. Table 7 provides numerical support for this logic, using data on California, not just the Central Valley. It shows that Hmong-Americans who left California between 1995 and 2000 were different from those who remained in or moved to California during that period. Those who left tended to be younger, more educated, proficient in English, and more

[37] See Borjas (1999) and Passel and Zimmerman (2001).

likely to work.[38] Their total income was not much different, but a much greater share of it was earned income rather than public assistance income. Despite their youth and the disruption of moving to a new community, Hmong-Americans who left California between 1995 and 2000 were also much more likely to own a home in their new location than those who stayed in or moved to California.

Changes in public assistance policies may also have contributed to rapid Hmong-American economic gains in Wisconsin and Minnesota. Fass (1991) stresses the importance of the Key States Initiative (KSI), a program that funded ORR to work with states with high refugee public assistance usage on interventions designed to "reduce the welfare dependency of refugee families."[39] Eight states were eligible, based on their dependency rates, and five—Wisconsin, Minnesota, New York, Pennsylvania, and Washington—chose to participate. The Wisconsin and Minnesota KSI programs included many Hmong-Americans and eventually developed a focus on job placement and retention that seemed effective in transitioning Hmong-Americans into employment. Although KSI began in late 1987, the positive effects on employment and income reported for Wisconsin and Minnesota by Fass (1991) and ORR (1995) continued at least into the early 1990s and perhaps longer. By the early 1990s, broader "welfare reform" initiatives were taking shape. Both Wisconsin and Minnesota piloted work-oriented alternatives to AFDC several years before the program was replaced at the federal level in 1996 (by the more time-limited and work-oriented Temporary Assistance for Needy Families, or TANF). These programs may also have helped reduce Hmong-American usage of public assistance while raising family earnings and income.

This discussion suggests that many factors affected Hmong-American location choice and economic success in the 1990s, thereby also affecting regional homeownership differences. In this paper, we do not attempt to analyze all these factors, in part due to data limitations. In the next section we take Hmong-

[38] The possibility of selective out-migration of young, educated Hmong-Americans was predicted by Hmong-American college students interviewed in the early 1980s as part of ORR's site study of Fresno. See Reder (1984) 62. Our evidence of selective out-migration from California of more educated Hmong-Americans is at least somewhat at odds with the analysis of Passel and Zimmerman (2001), who discuss the general tendency for immigrants to move out of California in the late 1990s but find little evidence of selectivity and discount the influence of California's generous welfare benefits on location decisions.

American location choices in 2000 as given. Conditioning on them, we estimate a statistical model that can approximately replicate and shed some light on the observed regional disparities in Hmong-American homeownership.

V. Statistically accounting for the regional disparities in Hmong-American homeownership.

We have described some of the key factors that have affected the location, economic status, and homeownership rates of Hmong-Americans since the early 1980s. In this section we take the location decision as given and try to find regional economic and demographic differences that can statistically account for the regional disparities in Hmong-American homeownership rates in 2000. We find that regional differences in three Hmong-American financial variables—total household income, household public assistance income, and a somewhat broad measure (i.e., including capital gains) of the relative price of owning versus renting—can be used to predict most of the regional homeownership disparities.

To conduct our analysis, we adapt the method of Coulson 2002 for analyzing regional homeownership differences.[40] The basic idea is simple—find a statistical model that fits the regional disparities well, and use it to analyze which variables account for most of the regional variance. More specifically, the model is fit to observations on individual households living in different regions, with homeownership, a zero-one variable, as the dependent variable. For each household observed, the model's explanatory variables are a mixture of individual household data (e.g., income, age) and local economic variables (e.g., the unemployment rate or the relative cost of homeowning versus renting), but no regional dummy variables. Since the dependent variable is binary, Coulson uses a probit or logit specification for the probability that each individual household owns. The model's fit is judged by averaging the fitted probability of owning over all of the households in each region. If these regional averages of fitted probabilities are sufficiently

[39] ORR (1995), I-1.
[40] Coulson (1999) discusses the pros and cons of this method as compared to other methods of accounting for group disparities.

close to the regions' observed homeownership rates, the model is judged to account for the regional differences.

A model that fits well can be used to shed light on the extent to which regional homeownership differences correlate with regional differences in each of the model's individual variables. Assessments of a variable's contribution are calculated by re-estimating two alternative models for each variable, one that omits only the variable in question and one that omits all the other variables and includes only the variable in question. For both of these alternative models, the amount of regional disparity explained is compared to the amount explained by the full model, to estimate upper and lower bounds for the variable's contribution to the overall statistical explanation of the regional homeownership differences.

We modify Coulson's method to avoid potential problems that could arise due to the limited degree of local economic variability in some of our regions. We are interested in accounting for disparities in Hmong-American homeownership among four regions—the Central Valley, Wisconsin, Minnesota, and the rest of the U.S. We need to consider local economic variables, such as the rate of unemployment. This creates a potential problem for our cross-sectional regressions for year 2000. In Minnesota, for example, the vast majority of the Hmong-American population lives in the Minneapolis-St. Paul metropolitan statistical area (MSA), with the remainder in three other MSAs and some rural locations. If we use the Minneapolis-St. Paul unemployment rate as the value of the local unemployment rate variable for observations on Hmong-American households in Minneapolis-St. Paul, then almost all the values of "local unemployment rate" in Minnesota will be the same number. This means that "local unemployment rate" would be very close to a Minnesota dummy variable that would provide a statistically nearly perfect but substantively meaningless explanation of Minnesota's regional homeownership rate. We have this problem acutely in our Minnesota region, but it is also a concern in the Central Valley, because our observations there are in 10 MSAs where economic conditions in the 1990s appear to have been highly

correlated. The same is true in Wisconsin, where our observations come from just 9 MSAs and some rural locations.

Although only about a third of Hmong-American households lived in our Other region (the U.S. other than the Central Valley, Wisconsin, or Minnesota) in 2000, they were scattered among 66 MSAs and additional rural locations, providing much more variability in local economic conditions within this region. Thus, to avoid creating regional pseudo-dummy variables, we adopt an "out-of-sample" variation on Coulson's method. We estimate our models using only observations on individual Hmong-American households living in our "Other" region. We then use its coefficients (fitted only to data from the Other region) and data on the right-hand side variables for individual households in the Central Valley, Wisconsin, and Minnesota to estimate the probability of owning for each individual household observation in the Central Valley, Wisconsin, and Minnesota. We average the resulting out-of-sample predicted homeownership probabilities over all of the household observations in the Central Valley to get a predicted homeownership rate for that region. We do the same for Wisconsin and Minnesota. If these out-of-sample predictions of homeownership rates in the three regions are close to the actual homeownership rates in the three regions, we consider the model good enough to use for the subsequent assessments of each variable's statistical contribution to our ability to predict the regional differences.

For 2000, we apply our modified Coulson method to data on 1,115 Hmong-American-headed households in the public use micro-sample (PUMS) of Census 2000.[41] These observations include 296 households in 37 states that make up our Other region (including 60 households living in California outside the Central Valley), 428 households in the Central Valley, 223 households in Minnesota, and 168 households in Wisconsin.

[41] We thank the IPUMS center of the University of Minnesota for providing convenient access to these data.

The explanatory variables we either include or have assessed for inclusion are similar to those in other studies of immigrant homeownership.[42]. They fall into two broad categories—demographic and financial. The demographic variables that help explain individual household homeownership in the Other region include age of the household head (AGE), English language proficiency (ENGLISH), a categorical variable for the number of years living in current residence (YRMOVED), and a dummy variable for whether the household head did not live in his or her current state of residence in 1995 (NEWSTATE). Homeownership rises with age in almost all populations, but because the effect moderates with age we also include age squared (AGESQ). Likely correlates of cultural adaptation and skill, such as years in the U.S., are often found to correlate with immigrant homeownership[43] and in our case English proficiency seems to capture this effect well enough to make other acculturation variables redundant. NEWSTATE captures whether a Hmong-American household was relatively newly arrived in the area where it lived in 2000. We presume that households are more likely to own the longer they have lived in a given area.

We have misgivings about including the variable YRMOVED, because the causal relationship between length of time in current residence and homeownership is ambiguous at best. We include it primarily to ensure that one of our results, that demographic variables account for very little of the regional differences in Hmong-American homeownership, is not caused by exclusion of a demographic variable whose coefficient is significant (and positive) in our baseline regressions. We also fit a model that adds the Hmong-American percentage of the local area population (HMONGCONC) to measure ethnic concentration effects, whose impact on immigrant housing has been widely discussed. [44] See Section IV for a brief discussion of these effects. We evaluated other demographic variables that are not presented here because they added little explanatory power to our Other region regressions, including, but not limited to, household head's gender, years in the U.S., education, marital status, and citizenship.

[42] For example, see Alba and Logan (1992); Krivo (1995); Myers and Lee (1998); Coulson (1999); and Painter, Yang, and Yu (2003).
[43] See Borjas (2002) and Coulson (1999).

Our financial variables measure characteristics of both the household and the local area. The individual household data we obtained from the PUMS include homeownership (yes or no), total household income in 1999 (which we divide by 1,000 and log to create HINCLOG) and public assistance income in 1999 (divided by [1,000], to create PUBASST).[45] We include public assistance income for three reasons. First, we view it as a partial offset to total household income, since either the household itself or a potential lender may consider public assistance income as qualitatively different from current earned income as a predictor of the household's ability to meet mortgage payments. Second, receipt of public assistance comes with strings attached that can impede the accumulation of assets, such as for a down payment or perhaps a home. Finally, receipt may also be a signal of underlying human capital issues, such as lack of job skills, which other variables do not capture.

In addition to data on individual households, we also used economic data on each MSA or rural county containing one of the Hmong-American households in our sample. These market data include the median price of a home divided by the median rent (PRICE_RENT) from the 2000 Census and an estimate of the cumulative real rate of home-price appreciation (HPA) from the second quarter of 1994 to the second quarter of 1999 (HPA_9499).[46] The Census 2000 median home price to median rent ratio captures the current relative cost of owning versus renting. The appreciation variable, HPA_9499, captures two further effects. For all Hmong-American households, it partly captures the effects of expected housing appreciation on the decision to own or rent as of spring 2000, when Census 2000 was conducted. Admittedly, a more sophisticated estimate of expected post-2000 appreciation would be ideal for this

[44] See Appendix II for a discussion of how ENGLISH, HMONGCONC, and the economic variable PRICE_RENT (discussed below) were defined and some of their values were imputed. YRMOVED was taken directly from Census 2000, with move-in-year values of 1 for 1999-2000, 2 for 1995-1998, 3 for 1990-1994, 4 for 1980-1989, 5 for 1970-1979, and 6 for 1969 or earlier.
[45] It is common in the homeownership literature to use the log of household income to capture nonlinear effects. We also tried raw income and a combination of raw income and its square. The squared variable was not significant when fitted to observations in the Other region. Neither of these alternative specifications for household income caused a material change in our results. We have not logged public assistance income because its range of variation is much smaller.
[46] This calculation is based on the five-year percentage change in the area's repeat-purchase index published by the Office of Federal Housing Enterprise Oversight divided by the five-year rate of change in the U.S. core (excluding food and energy prices) personal consumption expenditures deflator.

purpose, but autoregressive estimators of the type used in Coulson (1999) are likely to correlate highly with our home-price appreciation variable. In addition, Mayer and Sinai (2007) present evidence that five-year averages of actual house price appreciation appear to work well for capturing appreciation's contribution to the perceived cost of ownership. Our measure also captures some of the home equity gains Hmong-American households accrued in the late 1990s, reflecting the fact that greater wealth is associated with greater ability to sustain homeownership. We also considered the local area unemployment rate, partly because unemployment was much higher in the Central Valley in the 1990s than in most other areas of Hmong-American settlement. However, it was not significant in our Other region regressions and is omitted from the results presented here. Appendix II discusses how we imputed missing data or estimated the housing and ethnic concentration variables for rural areas.

Table 8a shows the mean values of the key included variables for the full sample and each of our regions. The mean values for Wisconsin, Minnesota, and the Other region are generally close. The Other region has a lower percentage of Hmong-Americans in the local population, reflecting the fact that the Other region is made up of many small, widely dispersed Hmong-American settlements. The Other region also has many more households who have moved from another state since 1995, consistent with the tendency for Hmong-American migration in the 1990s to be, on net, away from the three dominant Hmong-American population centers. The means for Central Valley are the most singular among the four regions, including low values for income, housing appreciation, English ability, and in-migration from other states; and high values for public assistance income, age, and Hmong-American ethnic concentration. Table 8b shows that most of the bivariate correlations among our explanatory variables are not particularly high, so that each may be bringing relatively independent information to the model.

We estimate our models using a probit specification fit to observations in the Other region. The results for a baseline model omitting ethnic concentration effects, summarized in Table 9a, show that all variables are significant (at a two-percent level) and that their coefficients have signs that are easy to

interpret in light of the discussion above. For example, the probability of owning is positively related to the log of income, age (but not age squared), English ability, housing appreciation, and length of time in current residence. The positive and significant relationship with appreciation differs from the result in Coulson (1999). The probability of owning is negatively related to public assistance income, the cost of a home relative to renting, and not living in one's current state of residence five years earlier.

The marginal effects of each variable, evaluated at the variable's mean, seem plausible. For example, ignoring the nonlinearity of the probit specification for simplicity, a 10 percent increase in household income (i.e., a 0.1 percentage point increase in HINCLOG) would be associated with about a 2.7 percent point increase in the probability that a household owns its residence. Similar calculations for 10-percent increases above the mean for PUBASST, AGE (including AGESQ), PRICE_RENT, and HPA_9499 imply that the predicted probability of homeownership would change by, respectively, -0.6, 6.3, -5.3, and 1.9 percent percentage points. For YRMOVED, an increase from its average category (2, signifying the household moved to it current residence in 1995-1998) to the next higher category (moved in 1990-1994) raises the probability of ownership by 12.9 percentage points. The coefficients on the dummy variable NEWSTATE (-0.19977) and the mostly zero-one variable ENGLISH (0.248086) can be read as the effect on the probability of ownership of, respectively, having moved to a new state since 1995 (as opposed to not moving) and being proficient in English (as opposed to not).[47]

Table 10 shows that the baseline model meets an important objective; it accounts for most of the homeownership disparity in 2000 between the Central Valley and the other regions. The model automatically gives an accurate "prediction" of the average homeownership rate in the Other region, because it is fit to data from that region. Also, since the mean Hmong-American homeownership rates from Census 2000 for Minnesota and Wisconsin are within the 95-percent confidence interval associated

[47] For an alternative measure of marginal effects and as an overall check on our results, we also display linear regression results for the same specification in Table 9c. The marginal effects are similar in magnitude.

with the mean homeownership rate for the Other region, even a model with just a constant term would give reasonably accurate predictions of the Hmong-American homeownership rate in Minnesota and Wisconsin. As a result, the challenges for the baseline model are twofold. First, the variables that help the model explain homeownership in the Other region should not lead it to make out-of-sample predictions of homeownership in Minnesota and Wisconsin that are very different from homeownership in the Other region. Second, the same variables should help it correctly predict that the homeownership rate in the Central Valley is much lower. We think it meets these challenges fairly well. The forecast of 23 percent homeownership in the Central Valley is above the area's 16 percent average rate from Census 2000 as well as outside of the 95-percent confidence interval for that Census average rate. Nonetheless, the model correctly predicts that homeownership in the Central Valley is much lower than elsewhere. It accounts for 26 percentage points of the 33-percentage point gap between mean homeownership rates in the Other and Central Valley regions. The baseline model's predicted homeownership rates for Minnesota and Wisconsin are within 3 percentage points of the actual Census mean rates in those regions, putting these predictions well within the 95-percent confidence intervals associated with the respective state's mean rate.

The table also shows results for an alternative model that includes the HMONGCONC measure of ethnic concentration. Estimation results for the alternative model are shown in Table 9b. This model implies that a higher percentage of Hmong in the local population is associated with a lower probability of homeownership in the area's Hmong-American population. Incorporating this effect helps the alternative model predict a low Hmong-American homeownership in the Central Valley. In fact, the predicted 11.7 percent rate of homeownership in the Central Valley is slightly below the lower end of the 95-percent confidence interval around the region's mean homeownership rate. This model also underpredicts Hmong-American homeownership in Wisconsin and Minnesota. Apparently, a negative ethnic concentration effect pertains in the Central Valley, Minnesota, and Wisconsin but not quite to the degree

that we estimate across the smaller Hmong-American communities in the Other region.[48] We regard both models as fitting well enough to provide useful frameworks for assessing how the individual variables contribute to fitting the regional disparities in Hmong-American homeownership. However, we will focus on results from the basic model, without ethnic concentration, in large measure because it is simpler and fits and predicts well.[49]

We begin assessing our variables' contributions by contrasting two groups, the demographic variables and the financial variables. Table 11 shows the effects on our ability to account for regional Hmong-American homeownership differences of omitting each group while re-estimating the model and re-doing the regional forecasts with just the other group of variables. When the financial variables are omitted (column 5), the demographic variables alone explain very little of the regional differences. Our prediction of Hmong-American homeownership in the Central Valley rises from 23 percent to 53 percent. In fact, with only demographic variables, we predict hardly any regional variation. Our regression statistics have shown that the demographic variables are significant individually and as a group in fitting the homeownership status of individual households in the Other region. However, as in Coulson (2002), some (AGE, YRMOVED) do not seem to vary enough from one region to the next to make an important

[48] The question of whether a high concentration of co-ethnics nearby speeds or slows an immigrant's economic and homeownership progress has been widely discussed and analyzed. Borjas (2002) and Painter, Yang, and Yu (2004) summarize some of the thinking on both sides of the question. Alba and Logan (1992) hypothesize that discrimination against minority homeownership rises as the percentage of the minority in an area rises, but their empirical results are mixed, supporting the hypothesis for several Asian ethnic groups but not for other minorities. Krivo (1995) constructs an "immigrant context" index of four ethnic concentration measures and finds that it has a significant negative relationship to Hispanic homeownership. Borjas (2002) finds the opposite. Using cross-sectional census data for 1980 and 1990 on immigrants from multiple countries and a concentration measure for each country of origin that is analogous to our HMONGCONC variable, he finds a "numerically strong and statistically significant positive relation between the probability of homeownership and the relative size of the ethnic enclave in the metropolitan area." See Borjas (2002), 30. Our result that HMONGCONC has a negative but at most marginally statistically significant relationship to the probability of homeownership for a Hmong-American household in our Other region adds to the already conflicting literature on this topic. We note that this negative relationship is a weak multivariate correlation and is not robust. When we omit the financial variables from our model, for example, the coefficient on HMONGCONC remains insignificant but becomes positive.

[49] We downplay our Hmong concentration results for additional reasons. First, partly because Hmong ethnic concentration is mostly low in the Other region, we cannot get precise estimates of the coefficients for this variable, as indicated by its lack of significance in Table 9b. Second, there is no obvious way to compute an ethnic concentration measure in rural areas, and the results of our procedure were rather sensitive to the alternative methods we tried. See Appendix II for a more detailed account. Third, we were concerned that the effects of ethnic concentration might be nonlinear, but attempts to allow for this made our results very unstable. The relationship between ethnic concentration and immigrant homeownership rates is interesting, but our dataset and model provide little reliable evidence about it.

contribution to explaining regional homeownership disparities, and AGE varies in the "wrong" direction. Others differ more noticeably by region (ENGABIL, NEWSTATE) but may be sufficiently correlated with the remaining economic variables such as household income that their omission does not have a large effect on the model's predictions.

Not surprisingly, the results are very different when we omit the demographic variables and rely solely on the financial variables. See column 4 of Table 11. In this case, our predicted homeownership rates in the Central Valley, Wisconsin, and Minnesota fall one, 5, and 7 percentage points, respectively. This indicates that the demographic factors in these regions are collectively mildly favorable to homeownership and contribute moderately to the accuracy of our Wisconsin and Minnesota predictions. Nonetheless, we largely account for the regional disparities using only the financial variables.

More detailed assessments of the individual contributions of each demographic and financial variable are presented in Tables 12 and 13. Panel A of Table 12 shows what happens as we drop each individual demographic variable and repeat our procedure while retaining all the other variables. This is a somewhat conservative estimate of each variable's contribution, since part of its full effect will shift to the remaining explanatory variables with which it is correlated. By this measure, the effects of NEWSTATE are somewhat less negligible than other variables since its omission drops the three predicted homeownership rates by 3 to 5 percentage points. This reflects the fact that recent interstate Hmong-American migrants may be less likely to be homeowners. Thus, in the full basic model, the inclusion of NEWSTATE helps push up predicted homeownership rates in the Central Valley, Minnesota, and Wisconsin, where new migrants were less common than in the Other Region in 2000.

Panel B of Table 12 shows what happens when we fit univariate models for each demographic variable to data on the Other region and then predict the other regions.[50] This procedure tends to overestimate a variable's role by attributing a variable's own contribution and a portion of the contribution of other correlated variables. However, most of these univariate models imply hardly any regional difference in homeownership rates, so even this upwardly biased measure indicates that the demographic variables make small contributions. NEWSTATE generates more regional variation, but not altogether in the right direction. In isolation, it correctly predicts that homeownership rates in Wisconsin and Minnesota are somewhat higher than in the Other region, because Wisconsin and Minnesota have fewer recent arrivals. However, the same logic leads NEWSTATE to predict that homeownership rates are highest in the Central Valley. More constructively, the results in Table 12b also show that the lower level of English ability in the Central Valley may play at least a small role in explaining the low homeownership rate there.

Table 13 shows the results for the individual financial variables. Although these variables are very important as a group, their individual contributions are less clear. As shown in Panel A, when each is omitted while all the other variables are retained, the re-estimated model's ability to account for the regional disparities usually declines only slightly to moderately, indicating that the remaining variables are sufficiently correlated with the omitted variables to substitute for its effects. By this conservative measure, the individual financial variables contribute between zero (Price_Rent) and 14 (HPA_9499) percentage points to the model's overall ability to account for the low homeownership rate in the Central Valley. The large effect for HPA_9499 reflects the Central Valley's negative rate of housing appreciation from the second quarter of 1994 to the second quarter of 1999. The next most important variable, by this table's measure, was household income, which was low in the Central Valley. Omitting HPA_9499 slightly boost the model's prediction of homeownership in Wisconsin (by removing the small drag associated with Wisconsin's relative slow rate of housing appreciation) but cuts three percentage points

[50] The model for age is actually bivariate, including AGE and AGESQ.

from the prediction for Minnesota (where appreciation was more rapid). Omitting household income increases the prediction of homeownership in Wisconsin, because it leaves out the effects of Hmong-American households earning less there than in the Other region or Minnesota. By contrast, omitting PUBASST lowers Wisconsin's predicted homeownership rate by three percentage points, reflecting the omission of Wisconsin's relative low level of Hmong-American public assistance income in 2000.

Panel B of Table 13 shows how well the regional disparities can be predicted with univariate models using the financial variables.[51] Three of the variables—HINCLOG , PUBASST, and HPA_9499—can individually generate much of the actual regional disparities among the three predicted regions. They each individually account for 12 to 15 percentage points of the true 33-percentage point homeownership gap between the Other region and the Central Valley, or about half of the 26 percentage points that the full model explains. These three variables, even in isolation, correctly predict that the homeownership rate in Wisconsin and Minnesota is much higher than in the Central Valley. Overall there is no strong reason to rate one of these three variables as more influential than the other two. By contrast, the fourth financial variable (PRICE_RENT) is less influential. When used alone, it fails to generate significant regional differences, perhaps because the majority of Hmong-Americans live in areas with somewhat similar values of this variable. Alternatively, the median rent figure we use to construct this variable may not adequately reflect regional variation in Hmong-American access to rent subsidies such as public housing or Section 8 vouchers.[52]

These results indicate that the striking regional disparity in Hmong-American homeownership rates in 2000 can be statistically associated with concomitant regional disparities in housing market appreciation and prices along with Hmong-American income and public assistance usage. Regional demographic differences within the Hmong-American population play at most a very small role in statistically

[51] The model for income is actually bivariate, including HINC and HINCSQ.
[52] See Miyares (1998), 77.

accounting for the disparity. These basic conclusions are robust to a number of model modifications. These include the addition of an ethnic concentration variable (HMONGCONC), fitting the baseline model to either a broader (Other plus Wisconsin) or narrower (Other minus California Other) set of observations, adding variables (such as local unemployment rate), including a rural dummy variable, or minor changes to specific variables (such as measuring appreciation from 1995 to 2000, omitting observations with missing values for English ability, or replacing the dollar-valued public assistance income variable PUBASST with a dummy variable for receiving public assistance income).[53]

VI. Concluding remarks

We have summarized and partly analyzed the first 25 years of Hmong-American homeownership, including its slow but ultimately successful overall growth as well as its sharp regional disparities. We have reviewed evidence linking the emergence of these disparities to a high rate of secondary migration in the 1980s that concentrated over 80 percent of the Hmong-American population in three states (California, Minnesota, and Wisconsin) that offered Vietnam War refugees generous access to public assistance while imposing some barriers and disincentives to their transition to employment. We have suggested that additional regional economic and policy differences in the 1990s, along with a moderate reverse flow of secondary migrants from California, helped close all but one of the regional homeownership disparities by 2000. The remaining disparity—the low rate of Hmong-American homeownership in the Central Valley—we have statistically linked it to three financial factors influencing Hmong-American housing tenure choices as of 2000, including total household income, reliance on

[53] The linear version of the basic model, displayed in Table 9c, also corroborates our findings. Applying its coefficients, fitted in the Other region, to the means of the explanatory variables in Minnesota, Wisconsin, and the Central Valley gives estimated Hmong-American homeownership rates of, respectively, 53.6, 57.1, and 27.2 percent. This simple calculation based on the linear model thus accounts for 22 percentage points of the 33-percentage point homeownership gap between the Central Valley and the Other region. The difference in housing appreciation accounts for most of the 22 percentage points explained, and public assistance income and household income also make large contributions. Together they more than account for the 22 percentage points that the model explains, as most of the demographic variables make a negative contribution (i.e., they act to raise the predicted homeownership rate in the Central Valley). English ability is the only demographic variable that makes a sizeable contribution (about 4.5 percentage points) toward the 22 percentage points of the homeownership gap that these linear calculations account for.

public assistance income, and the relative cost of owning versus renting (mainly the portion due to home price appreciation). Our statistical analysis helps explain the lagging homeownership rate in the Central Valley but falls short of providing a complete and fundamental explanation, which would require analysis of both Hmong-American location choice and the underlying determinants of the regional differences in Hmong-American income and public assistance usage.

We leave such further analysis to others and conclude with some observations on the role of public policies designed to assist refugees, especially financial assistance, as they related to the Hmong-American experience. On the one hand, the wide differences in state public assistance programs available to refugees in the 1980s and 1990s were useful, in that they led to innovations that ultimately boosted Hmong-American prosperity, such as an increased emphasis on job placement efforts. On the other hand, providing assistance for a Vietnam War refugee population that arrived with few marketable skills and a very low level of education seems to us to have been a clear and significant federal responsibility. The fact that, after 1982, this responsibility was largely shifted to just three states seems to us to have been unduly onerous both to those states (even though they were ultimately repaid at least in part by the growing economic contributions of their Hmong-American workers and entrepreneurs) and to the refugees who had to contend with sometimes overburdened local support systems. The resulting hyper-concentration of Hmong-American in these states undercut the stated federal policy goal of promoting dispersed settlement, which had prompted ORR to set up many widely separated, small Hmong-American communities in the first place. Public policy regarding refugee resettlement and assistance is not our area of expertise, but we hope that the Hmong-American experience, as portrayed here and elsewhere, will contribute to clearer thinking about how to combine appropriate federal financial responsibility for refugees with incentives to maintain effective local programs and ongoing innovation that will accelerate future refugees' transitions to economic success.

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Table 1: Overall Hmong-American Demographic and Economic Profiles, 1990 and 2000		
Hmong Household Characteristics	**1990**	**2000**
Number of households	14,694	26,293
Median age of household head (years)	36	37
Married (household head)	81%	82%
Median household size	7	6
English able (head speaks it well or very well)	41.4%	59.9%
High school graduate (household head)	35%	51%
College graduate (household head with 2-year degree or more)	9%	16%
Median years in U.S. (household head)	10	18
Workforce participation (household head)	28%	60%
Median household income (2000 dollars)	$19,335	$33,520
Mean wage/salary income (2000 dollars)	$9,927	$32,335
Households using public assistance	69%	30%
Mean public assistance income (2000 dollars)	$10,330	$2,045
Poverty rate	58%	34%
Homeownership rate	11%	41%
Median value of house, if owned (in 2000 dollars)	$85,927	$95,000

Source: 1990 PUMS, IPUMS, and 2000 PUMS, U.S. Census. Statistics calculated with household weights applied to individual household-head records.

Table 2: Homeownership Rates in Immigrant and Hmong Households, 2000		
	Homeownership Rate	
	All Immigrants	**Hmong***
All households	47.4	40.7
Households by year of migration		
1995-99	14.5	26.1
1990-94	26.4	24.2
1985-89	35.3	43.1
1980-84	46.0	42.8
1975-79	56.4	52.9
1970-74	60.0	69.5
1965-69	68.2	-----
1960-64	72.8	-----
1950-59	77.8	-----

Sources: George Borjas (2002), 37 and Author's calculations using 2000 PUMS, U.S. Census, where the statistics are calculated with household weights applied to individual household-head records.

Table 3: Hmong-American Families, Homeowners, and Labor Force Participation in 60 Settlements, 1983					
State	City	Families	Homeowners	Homeownership	Households with No One Working
AL	Mobile	2	1	50.0%	0.0%
AR	Fort Smith	55	2	3.6%	3.6%
AR	Little Rock	11	5	45.5%	0.0%
CA	Stockton	450	0	0.0%	92.5%
CA	Merced	506	2	0.4%	96.7%
CA	Sacramento	350	0	0.0%	90.7%
CA	Richmond	42	0	0.0%	32.9%
CA	Banning	100	32	32.0%	85.7%
CA	San Diego	200	1	0.5%	75.0%
CA	Long Beach	116	1	0.9%	72.5%
CA	Orange County	500	5	1.0%	80.0%
CA	Fresno	1,667	0	0.0%	60.3%
CO	Denver	200	17	8.5%	20.0%
CT	Manchester	6	1	16.7%	0.0%
GA	Decatur	35	12	34.3%	5.7%
IA	Des Moines	90	5	5.6%	14.4%
IL	Hanover Park	6	0	0.0%	0.0%
IL	Chicago	64	2	3.1%	25.0%
IL	Park Forest	1	0	0.0%	100.0%
IN	Greenfield	5	2	40.0%	0.0%
IN	Ft. Wayne	4	2	50.0%	25.0%
IN	Indianapolis	7	4	57.1%	0.0%
KS	Kansas City	115	2	1.7%	94.8%
KY	Louisville	6	0	0.0%	16.7%
MA	Boston	20	3	15.0%	0.0%
MI	Petosky	2	1	50.0%	0.0%
MI	Detroit	127	6	4.7%	68.5%
MI	Grand Ledge	3	1	33.3%	33.3%
MI	Lansing	118	4	3.4%	70.3%
MI	Saginaw	50	8	16.0%	60.0%
MN	Minneapolis-St. Paul	1,455	61	4.2%	70.8%
MT	Missoula	50	3	6.0%	50.0%
NC	Marion	10	3	30.0%	40.0%
NC	Morganton	24	12	50.0%	20.8%
NV	LasVegas	20	2	10.0%	0.0%
NY	Syracuse	29	2	6.9%	48.3%

Table 3: Hmong-American Families, Homeowners, and Labor Force Participation in 60 Settlements, 1983					
OH	Columbus	17	2	11.8%	52.9%
OH	Toledo	114	0	0.0%	89.5%
OH	Akron	36	4	11.1%	41.7%
OK	Lawton	2	0	0.0%	0.0%
OK	Tulsa	100	0	0.0%	40.0%
OK	Okla.City	8	0	0.0%	0.0%
OR	Salem	13	1	7.7%	2.9%
OR	Portland	144	8	5.6%	23.1%
RI	Providence	252	53	21.0%	25.0%
SC	Spartanburg	9	6	66.7%	11.1%
TN	Memphis	30	3	10.0%	16.7%
TX	Dallas	65	16	24.6%	9.2%
UT	SaltLkCity	130	11	8.5%	11.5%
UT	Ogden	10	1	10.0%	10.0%
UT	Orem	35	35	100.0%	0.0%
WA	Seattle	160	10	6.3%	17.5%
WA	Spokane	65	5	7.7%	NA
WI	Milwaukee	270	5	1.9%	88.9%
WI	Sheboygan	105	4	3.8%	80.0%
WI	Manitowoc	60	1	1.7%	83.3%
WI	LaCrosse	115	1	0.9%	82.6%
WI	EauClaire	119	1	0.8%	74.8%
WI	Appleton	150	15	10.0%	80.0%
WI	Madison	48	2	4.2%	58.3%
TOTAL		**8,503**	**386**	**4.5%**	**67.9%***
Select Regional and State Totals					
CA	California	3,931	41	1.0%	82.9%*
CV	Central Valley	2,973	2	0.1%	92.8%*
MN	Minnesota	1,455	61	4.2%	70.8%*
WI	Wisconsin	867	29	3.3%	81.4%*
All Other	Not CA-WI-MN	2,250	255	11.3%	33.3%*

* Excludes Spokane
Source: Office of Refugee Resettlement.

Table 4: Regional Hmong-American Demographic and Economic Statistics, 1990				
1990 Hmong Household Characteristics	Minnesota	Wisconsin	Central Valley MSAs	All other areas
Number of households	3,049	2,747	6,344	2,554
Median age of household head	37	36	35	37
Married	68.0%	81.4%	87.7%	77.1%
Median household size	6	6	7	6
English able	43.9%	35.7%	39.7%	48.9%
High school graduate	31.4%	37.8%	37.9%	31.1%
College graduate	5.0%	12.6%	10.3%	5.7%
Median years in U.S.	10	10	10	10
Workforce participation	27.0%	29.1%	18.3%	52.2%
Median household income (2000 dollars)	$17,481	$15,785	$20,409	$21,641
Mean wage/salary income (2000 dollars)	$13,170	$7,267	$5,847	$19,052
Households using public assistance	67.6%	74.4%	75.4%	48.9%
Mean public assistance income (2000 dollars)	$7,239	$8,244	$14,368	$6,237
Poverty rate	62.3%	76.9%	52.9%	43.3%
Homeownership rate (weighted)	12.1%	6.6%	3.7%	31.0%
Median value of house (2000 dollars)	$85,927	$66,832	$108,204	$85,927

Note: Statistics for this table are calculated using household weights applied to individual household records.
Source: IPUMS 1990.

Table 5: Regional Hmong-American Demographic and Economic Statistics, 2000				
2000 Hmong Household Characteristics	Minnesota	Wisconsin	Central Valley MSAs	All other areas
Number of households	6,725	4,792	8,314	6,462
Median age of household head	36	38	39	35
Married	76.5%	83.0%	82.1%	85.3%
Median household size	6	6	7	6
English able	64.4%	58.5%	48.7%	70.8%
High school graduate	58.2%	47.6%	38.5%	60.6%
College graduate	17.5%	18.6%	12.5%	18.4%
Median years in U.S.	16	16	17	20
Workforce participation	62.5%	61.6%	47.1%	73.0%
Median household income	$44,100	$33,197	$33,764	$45,802
Mean wage/salary income	$37,027	$33,197	$23,455	$38,236
Households using public assistance	26.6%	12.2%	51.1%	17.8%
Mean public assistance income	$1,731	$439	$4,043	$992
Poverty rate	33.1%	23.8%	51.5%	20.6%
Homeownership rate (weighted)	54.8%	51.9%	16.2%	49.5%
Median value of house	$95,000	$85,000	$85,000	$112,500

Note: Statistics for this table are calculated using household weights applied to individual household records.
Source: 2000 PUMS, U.S. Census.

Table 6: Median Home Values and Hmong-American Homeownership Rates in Selected MSAs, 2000		
Metropolitan Area	Median Home Value	Homeownership Rate
Fresno, CA	$106,800	16.8%
Merced, CA	$111,100	13.0%
Modesto, CA	$125,300	10.5%
Sacramento-Arden-Arcade-Roseville, CA	$159,700	21.7%
Stockton, CA	$142,400	15.7%
Visalia-Porterville, CA	$97,800	13.2%
Yuba City, CA	$110,500	16.1%
Minneapolis-St. Paul-Bloomington, MN-WI	$141,200	54.3%
Eau Claire, WI	$93,300	51.1%
Green Bay, WI	$116,100	33.7%
La Crosse, WI-MN	$95,700	47.6%
Madison, WI	$146,900	39.6%
Milwaukee-Waukesha-West Allis, WI	$131,900	58.2%
Appleton-Oshkosh-Neenah, WI	$102,600	n.a.
Sheboygan, WI	$106,800	48.0%
Wausau, WI	$95,800	43.5%
Atlanta-Sandy Springs-Marietta, GA	$135,300	68.7%
Charlotte-Gastonia-Concord, NC-SC	$123,300	62.0%
Chicago-Naperville-Joliet, IL	$159,000	53.5%
Detroit-Warren-Livonia, MI	$132,600	70.4%
Hickory-Lenoir-Morganton, NC	$93,500	54.1%
Kansas City, MO-KS	$104,700	67.1%
Providence-New Bedford-Fall River, RI-MA	$135,100	38.5%

n.a. = Not available
Note: Statistics for this table are calculated using household weights applied to individual household records. Source: 2000 PUMS, U.S. Census.

Table 7: Evidence of Selective Migration from California, 1995 to 2000						
	Location Information					
Characteristic	All	Did not live or migrate to CA	Stayed in the same house in CA	Migrated from another state or county to CA	Migrated within CA	Migrated from CA to a different state
Households	26,293	14,866	4,009	866	4,526	2,026
Mean Age	38.8	37.9	43.5	36.7	40.2	34.1
High School Graduate	51%	55%	35%	54%	42%	63%
English Ability	60%	65%	49%	52%	51%	71%
Labor Force Participation	60%	66%	44%	59%	51%	69%
Number of Workers in Family	1.61	1.73	1.39	1.44	1.35	1.74
Wage/Salary Income	$32,335	$37,450	$21,465	$25,036	$26,672	$32,074
Public Assistance Income	$2,045	$1,037	$5,003	$2,500	$3,100	$1,041
Household Income	$40,379	$44,814	$33,512	$32,037	$35,707	$35,438
Homeownership Rate	41%	56%	25%	15%	12%	39%

Note: Statistics for this table are calculated using household weights applied to individual household records. Source: 2000 PUMS, U.S. Census.

Table 8a: Means of Variables, by Region					
Variable	Full Sample	Other Region	Wisconsin	Minnesota	Central Valley
Ownership	41%	49%	52%	55%	16%
(95% conf. interval)	37.8-43.6%	43.7-55.2%	44.2-59.5%	48.2-61.4%	12.7-19.7%
Hinclog (and in $)	3.35 ($40,737)	3.54 ($45,802)	3.37 ($39,323)	3.44 ($44,100)	3.11 ($33,764)
PubAsst	$2,045	$992	$439	$1731	$4,043
Price_Rent	220	230	214	219	218
HPA_9499	11%	16%	15%	20%	-4%
Age	38.8	36.7	39.8	37.0	41.5
English	0.60	0.70	0.59	0.64	0.48
Newstate	20%	43%	11%	21%	7%
Yrmoved	2.10	2.05	2.19	2.13	2.07
Hmongconc	1.17%	0.16%	1.14%	1.36%	1.82%
Note: Statistics for this table are calculated using household weights applied to individual household records. Source: 2000 PUMS, U.S. Census.					

Table 8b: Correlation Coefficients Among Variables										
(Full sample)										
Ownership	1.00									
Hinclog	0.34	1.00								
PubAsst	-0.21	0.00	1.00							
Price_Rent	0.01	0.06	-0.03	1.00						
HPA_9499	0.32	0.16	-0.23	0.10	1.00					
Age	-0.02	-0.09	0.14	-0.04	-0.14	1.00				
English	0.26	0.25	-0.23	0.06	0.14	-0.49	1.00			
Newstate	-0.08	-0.03	-0.08	-0.01	0.18	-0.19	0.11	1.00		
Yrmoved	0.16	0.08	0.11	0.05	-0.02	0.31	-0.07	-0.27	1.00	
Hmongconc	-0.16	-0.10	0.16	-0.33	-0.38	0.13	-0.15	-0.26	0.03	1.00
(Other Region only)										
Ownership	1.00									
Hinclog	0.40	1.00								
PubAsst	-0.21	-0.11	1.00							
Price_Rent	-0.07	0.06	-0.02	1.00						
HPA_9499	0.17	0.08	-0.15	0.04	1.00					
Age	0.19	0.10	0.13	0.05	-0.09	1.00				
English	0.15	0.16	-0.24	0.07	0.08	-0.47	1.00			
Newstate	-0.21	-0.16	-0.12	-0.18	0.00	-0.18	0.11	1.00		
Yrmoved	0.26	0.16	0.20	0.12	-0.13	0.36	-0.08	-0.35	1.00	
Hmongconc	0.00	0.08	-0.10	-0.24	0.16	-0.06	-0.02	-0.02	-0.02	1.00
Note: Statistics for this table are calculated using household weights applied to individual household records. Source: 2000 PUMS, U.S. Census.										

Table 9a: Probit for Basic Model Fitted to Other Region, with Marginal Effects Displayed			
Variable	DF/DX*	Z-score	P-value
Hinclog	0.2733	4.10	0.000
PubAsst	-0.5612	-2.95	0.003
Age	0.0680	4.41	0.000
AgeSq	-0.0007	-3.95	0.000
English	0.2481	2.46	0.014
Price_Rent	-0.0023	-2.74	0.006
Hpa_9499	0.0118	3.24	0.001
Newstate	-0.1998	-2.53	0.011
Yrmoved	0.1289	2.53	0.011

N= 296 ; Pseudo-R2 = 0.3502

* DF/DX: The derivative (i.e., rate of change) of the probability of homeownership, measured at the mean value of all variables.
Note: Statistics for this table are calculated using household weights applied to individual household records. Source: 2000 PUMS, U.S. Census.

Table 9b: Probit for Model with Hmongconc Fitted to Other Region, with Marginal Effects Displayed			
Variable	DF/DX*	Z-score	P-value
Hinclog	0.2773	4.20	0.000
PubAsst	-0.0604	-3.19	0.001
Age	0.0668	4.28	0.000
AgeSq	-0.0007	-3.85	0.000
English	0.2319	2.35	0.019
Price_Rent	-0.0027	-2.98	0.003
Hpa_9499	0.0129	3.42	0.001
Newstate	-0.2011	-2.56	0.010
Yrmoved	0.1380	2.89	0.004
Hmongconc	0.1706	-1.63	0.104

N= 296 ; Pseudo-R2 = 0.3569

* DF/DX: The derivative (i.e., rate of change) of the probability of homeownership, measured at the mean value of all variables.
Note: Statistics for this table are calculated using household weights applied to individual household records. Source: 2000 PUMS, U.S. Census.

Table 9c: Linear Regression for Basic Model Fitted to Other Region			
Variable	Coefficient	T-statistic	P-value
Constant	-1.0376	-4.21	0.000
Hinclog	0.1297	4.90	0.000
PubAsst	-0.3001	-4.95	0.000
Age	0.4975	5.21	0.000
AgeSq	-0.0005	-4.75	0.000
English	0.2009	2.97	0.003
Price_Rent	-0.0016	-2.82	0.005
Hpa_9499	0.0072	3.02	0.003
Newstate	-0.1503	-2.46	0.014
Yrmoved	0.0852	2.63	0.009
N= 296 ; R2 = 0.3694 Note: Statistics for this table are calculated using household weights applied to individual household records. Source: 2000 PUMS, U.S. Census.			

Table 10: Models' Abilities to Predict Regional Hmong-American Homeownership (HO) Rates Using Weighted Means			
Region	Actual HO Rate (95% confidence interval)	Predicted HO Rate, Basic Model	Predicted HO Rate Model w. HMONGCONC
Central Valley	16% (12.7%-19.7%)	23.2%	11.7%
Minnesota	55% (48.2%-61.4)	52.9%*	40.3%
Wisconsin	52% (44.2%-59.4%)	55.5%*	44.2%
Other	49% (43.7%-55.2%)	49.5%*	49.4%*
MN+WI+Other	52% (48.3%-55.8%)	52.4%*	44.6%
All	41% (37.8%-43.6%))	43.1%*	34.2%
* 95% confidence interval around the regional mean includes the predicted homeownership rate. Note: Statistics for this table are calculated using household weights applied to individual household records. Source: 2000 PUMS, U.S. Census.			

Table 11: The Role of Demographic vs. Financial Variables in Accounting for Regional Hmong-American Homeownership (HO) Differences Using Weighted Means Without Hmongconc

Region	Actual HO Rate	Predicted HO Rate, Full Basic Model	Predicted HO Rate, Financial Variables Only	Predicted HO Rate, Demog. Variables Only
Central Valley	16%	23.1%	21.9%	52.5%
Minnesota	55%	52.9%*	47.7%	53.1%*
Wisconsin	52%	55.5%*	46.9%*	54.8%*
Other	49%	49.5%*	49.8%*	49.3%*
MN+WI+Other	52%	52.4%*	48.2%	52.2%*
All	41%	43.1%*	39.9%*	52.3%

* 95% confidence interval around the regional mean includes the predicted homeownership rate.
Note: Statistics for this table are calculated using household weights applied to individual household records. Source: 2000 PUMS, U.S. Census.

Table 12a: The Impact of Omitting Individual Demographic Variables on the Basic Model's Predicted Rates of Regional Hmong-American Homeownership (HO)

Region	Actual HO Rate	Predicted HO Rate, Full Model	Predicted HO Rate w/o Age, Age^2	Predicted HO Rate w/o English	Predicted HO Rate w/o Newstate	Predicted HO Rate w/o Yrmoved
Central Valley	16%	23.1%	22.0%	22.7%	19.5%*	26.3%
Minnesota	55%	52.9%*	52.5%*	53.4%*	49.5%*	52.8%*
Wisconsin	52%	55.5%*	53.9%*	56.3%*	50.3%*	56.0%*
Other	49%	49.5%*	49.7%*	49.5%*	49.4%*	49.5%*
MN+WI+Other	52%	52.4%*	51.9%*	52.8%*	49.7%*	52.5%*
All	41%	43.1%*	42.4%*	43.3%*	40.1%*	44.2%

* 95% confidence interval around the regional mean includes the predicted homeownership rate.
Note: Statistics for this table are calculated using household weights applied to individual household records.
Source: 2000 PUMS, U.S. Census.

Table 12b: The Ability of Demographic Variables, When Used Alone, To Predict Rates of Regional Hmong-American Homeownership (HO)

Region	Actual HO Rate	Predicted HO Rate, Full Model	Predicted HO Rate w. Age, Age^2 alone	Predicted HO Rate w. English alone	Predicted HO Rate w. Newst. alone	Predicted HO Rate w. Yrmoved alone
Central Valley	16%	23.1%	52.3%	45.6%	57.0%	49.7%
Minnesota	55%	52.9%*	50.8%*	48.4%*	54.2%*	50.5%*
Wisconsin	52%	55.5%*	51.4%*	47.5%*	56.4%*	51.1%*
Other	49%	49.5%*	49.3%*	49.5%*	49.5%*	49.3%*
MN+WI+Other	52%	52.4%*	50.4%*	48.5%*	53.1%*	50.2%*
All	41%	43.1%*	51.0%	47.6%	54.3%	50.0%

* 95% confidence interval around the regional mean includes the predicted homeownership rate.
Note: Statistics for this table are calculated using household weights applied to individual household records.
Source: 2000 PUMS, U.S. Census.

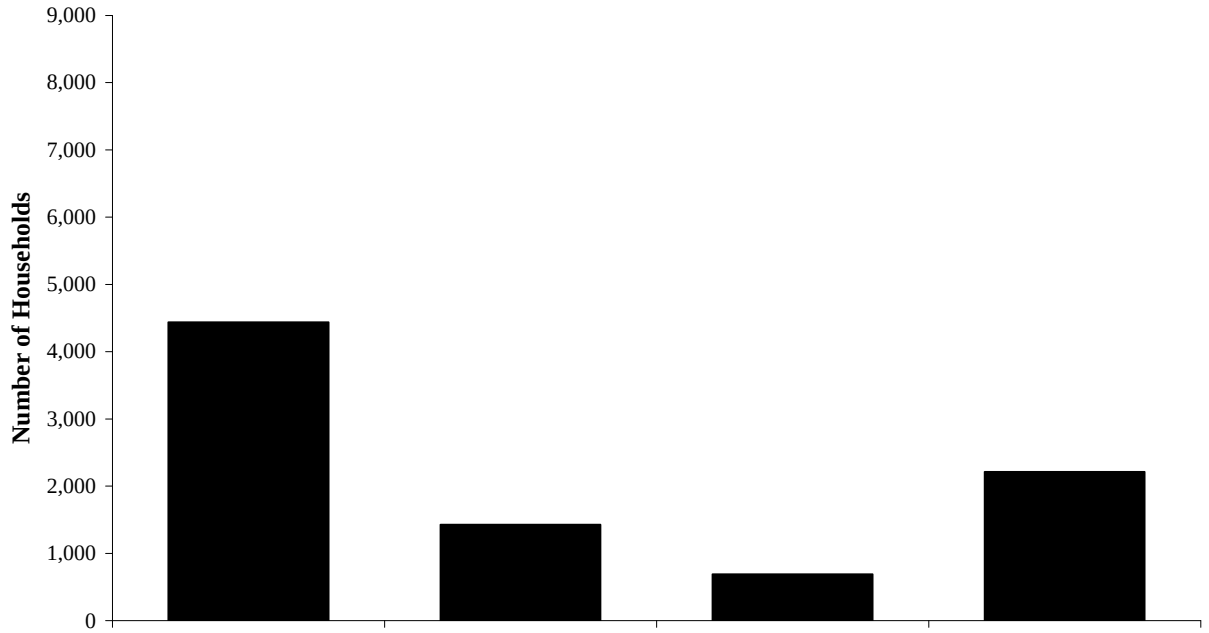
Table 13a: The Impact of Omitting Individual Financial Variables on the Basic Model's Predicted Rates of Regional Hmong-American Homeownership (HO)						
Region	Actual HO Rate	Predicted HO Rate, Full Model	Predicted HO Rate w/o Hinclog	Predicted HO Rate w/o PubAsst	Predicted HO Rate w/o Price_Rent	Predicted HO Rate w/o HPA_9499
Central Valley	16%	23.1%	30.2%	26.0%	22.9%	36.7%
Minnesota	55%	52.9%*	55.9%*	54.0%*	51.0%*	50.2%*
Wisconsin	52%	55.5%*	61.1%	51.6%*	52.5%*	57.3%*
Other	49%	49.5%*	49.2%*	49.5%*	49.5%*	49.5%*
MN+WI+Other	52%	52.4%*	54.9%*	51.7%*	50.8%*	51.8%*
All	41%	43.1%*	47.1%	43.6%*	42.0%*	47.0%

* 95% confidence interval around the regional mean includes the predicted homeownership rate.
Note: Statistics for this table are calculated using household weights applied to individual household records.
Source: 2000 PUMS, U.S. Census.

Table 13b: The Ability of Financial Variables, When Used Alone, To Predict Rates of Regional Hmong-American Homeownership (HO)						
Region	Actual HO Rate	Predicted HO Rate, Full Model	Predicted HO Rate w. Hinclog alone	Predicted HO Rate w. PubAsst alone	Predicted HO Rate w. Price-Rent alone	Predicted HO Rate w. HPA-9499 alone
Central Valley	16%	23.1%	36.7%	38.1%	50.3%	33.8%
Minnesota	55%	52.9%*	45.9%	46.7%	50.2%*	52.5%*
Wisconsin	52%	55.5%*	45.3%*	52.1%*	50.6%*	48.4%*
Other	49%	49.5%*	49.7%*	49.5%*	49.5%*	49.5%*
MN+WI+Other	52%	52.4%*	47.1%	49.2%*	50.0%*	50.3%*
All	41%	43.1%*	43.8%	45.7%	50.1%	45.1%

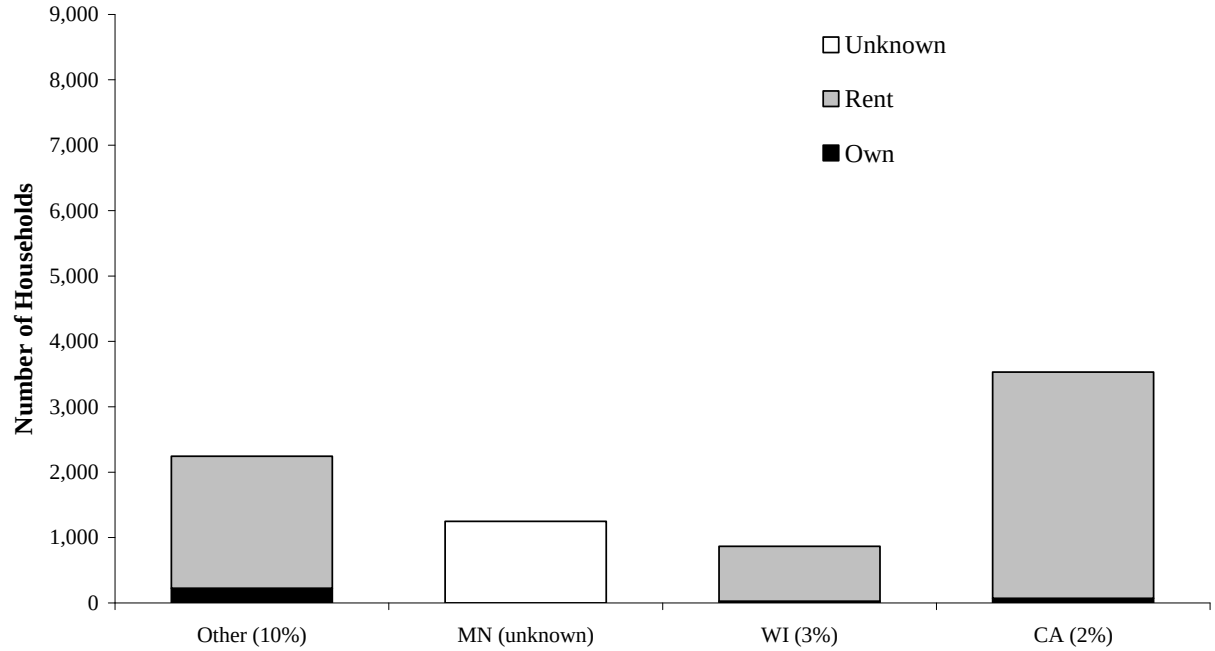
* 95% confidence interval around the regional mean includes the predicted homeownership rate.
Note: Statistics for this table are calculated using household weights applied to individual household records.
Source: 2000 PUMS, U.S. Census.

Figure 1a: Regional Hmong-American Settlement Patterns, 1981



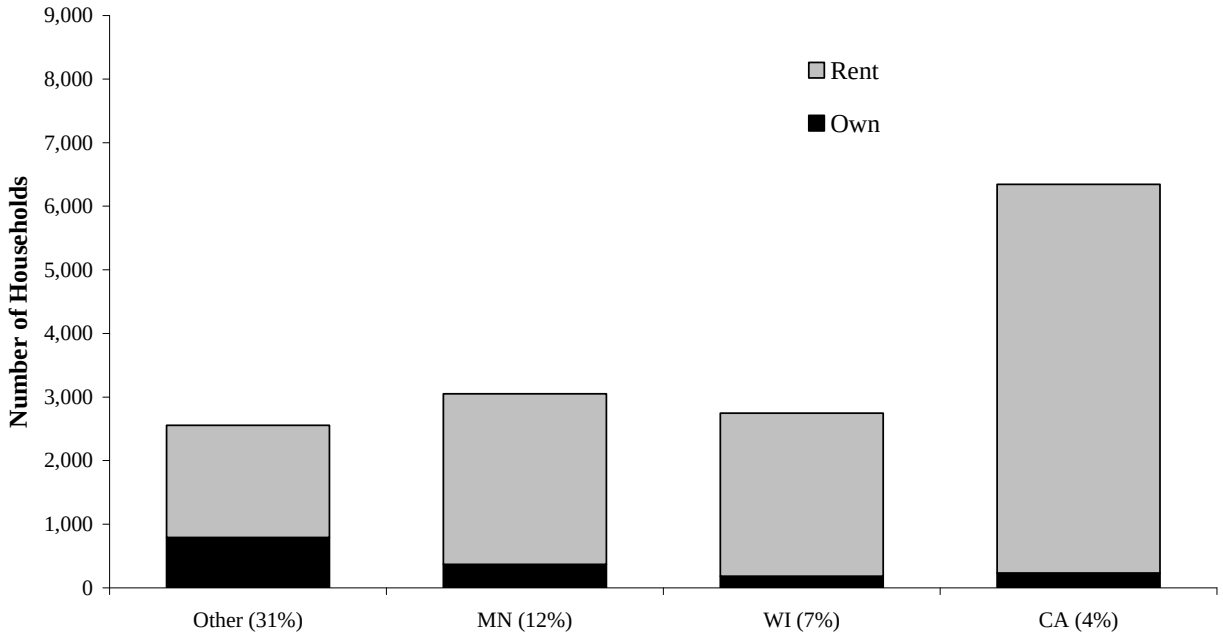
Source: Office of Refugee Resettlement.

Figure 1b: Regional Hmong American Settlement and Homeownership Patterns, 1983



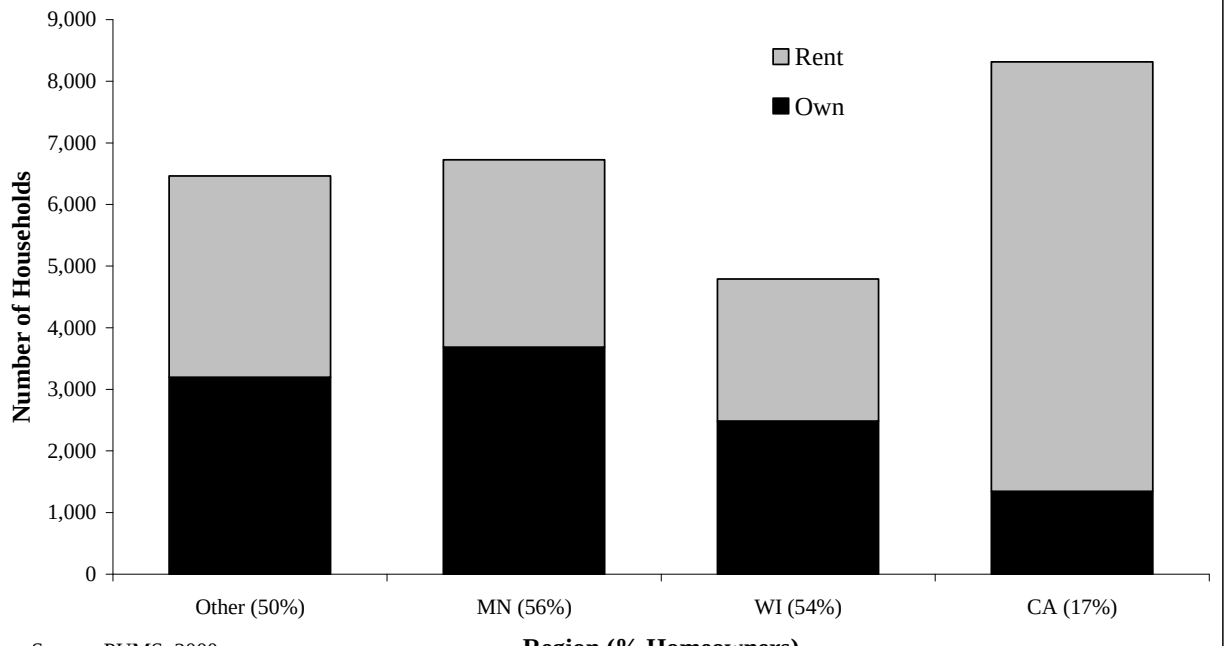
Source: Office of Refugee Resettlement.

Figure 1c: Regional Hmong-American Settlement and Homeownership Patterns, 1990



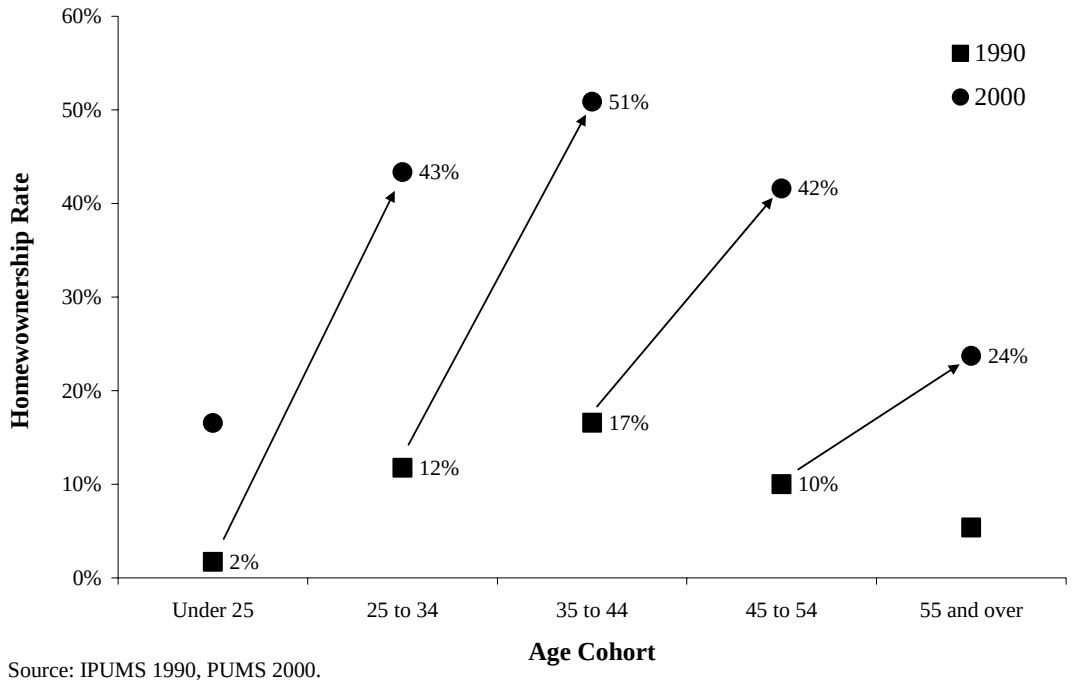
Source: IPUMS, 1990.

Figure 1d: Regional Hmong-American Settlement and Homeownership Patterns, 2000



Source: PUMS, 2000.

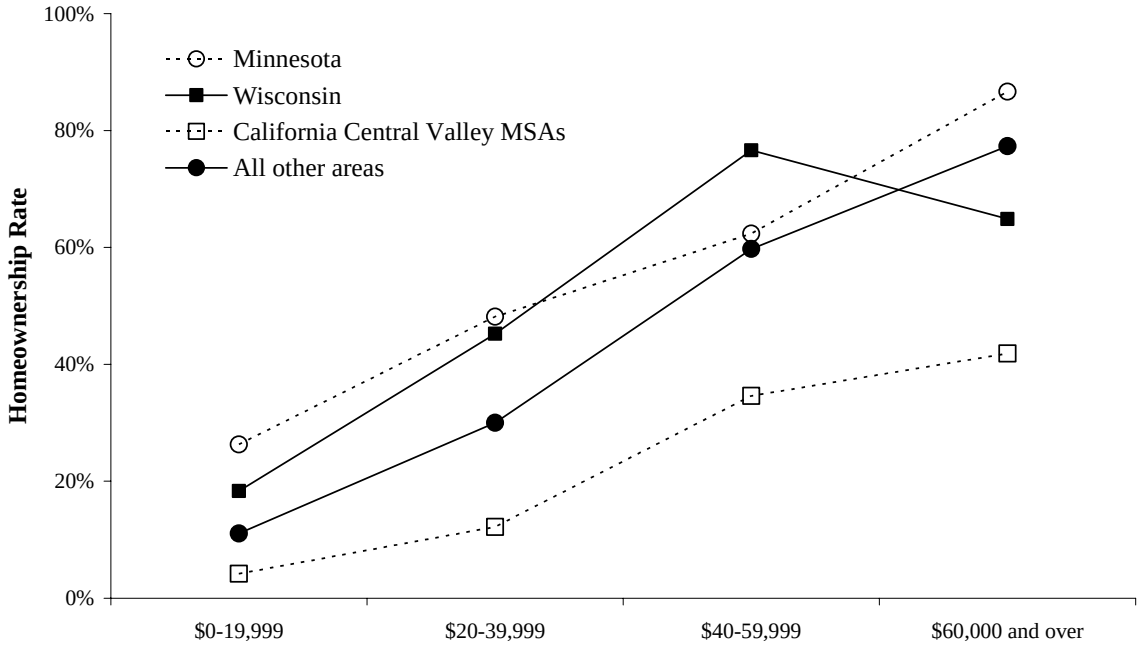
Figure 2: Homeownership Change by Age Cohort, All Hmong-American Households, 1990 and 2000



Source: IPUMS 1990, PUMS 2000.

Figure 3: Regional Homeownership Disparities Among Young Hmong-American Households, 2000

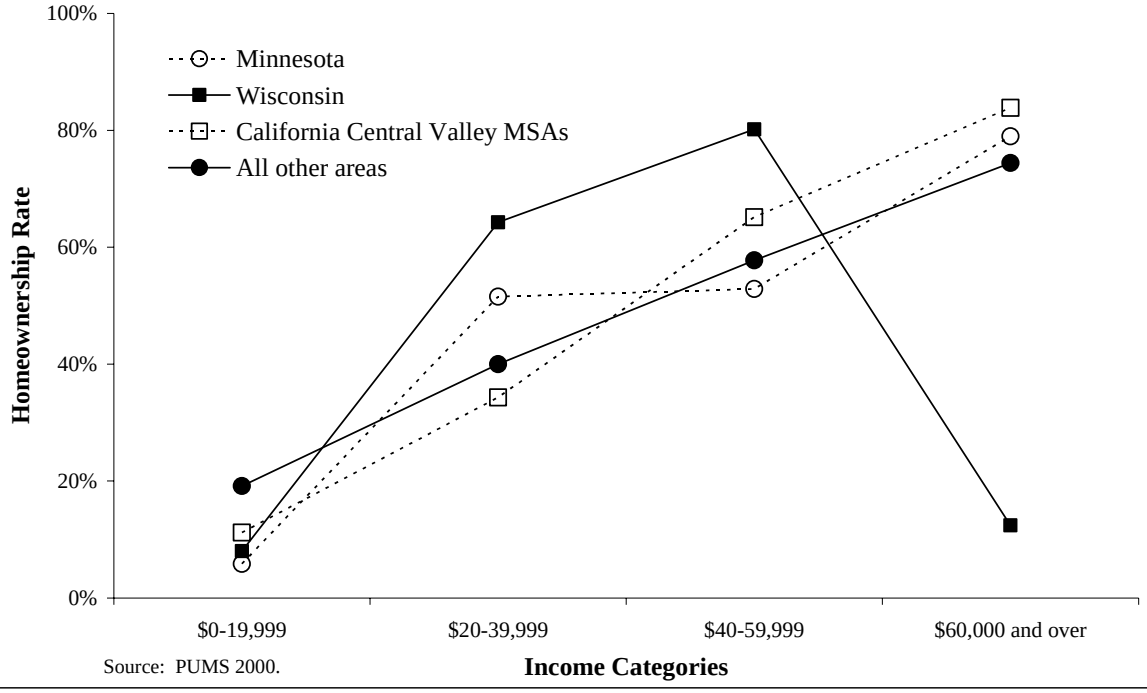
Hmong Homeownership Rates by Household Head (less than 45 years of age) and Income



Source: PUMS 2000.

Figure 4: Regional Homeownership Disparities Among Young Vietnamese-American Households, 2000

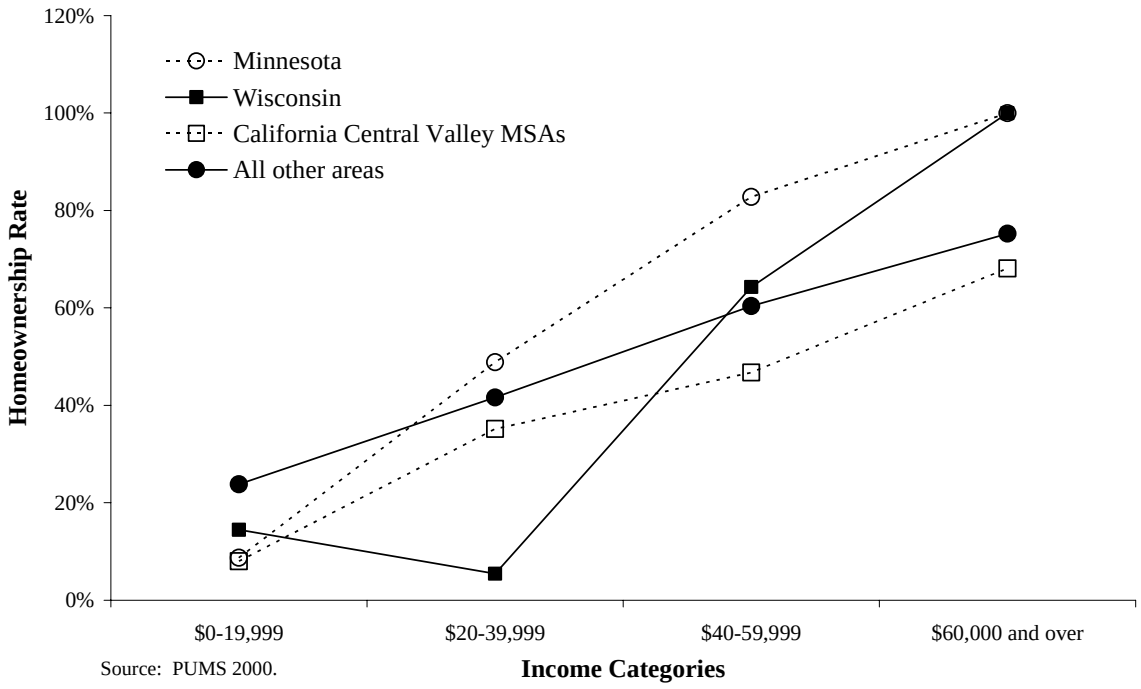
Vietnamese Homeownership Rates by Household Head (less than 45 years of age) and Income



Source: PUMS 2000.

Figure 5: Regional Homeownership Disparities Among Young Lao-American Households, 2000

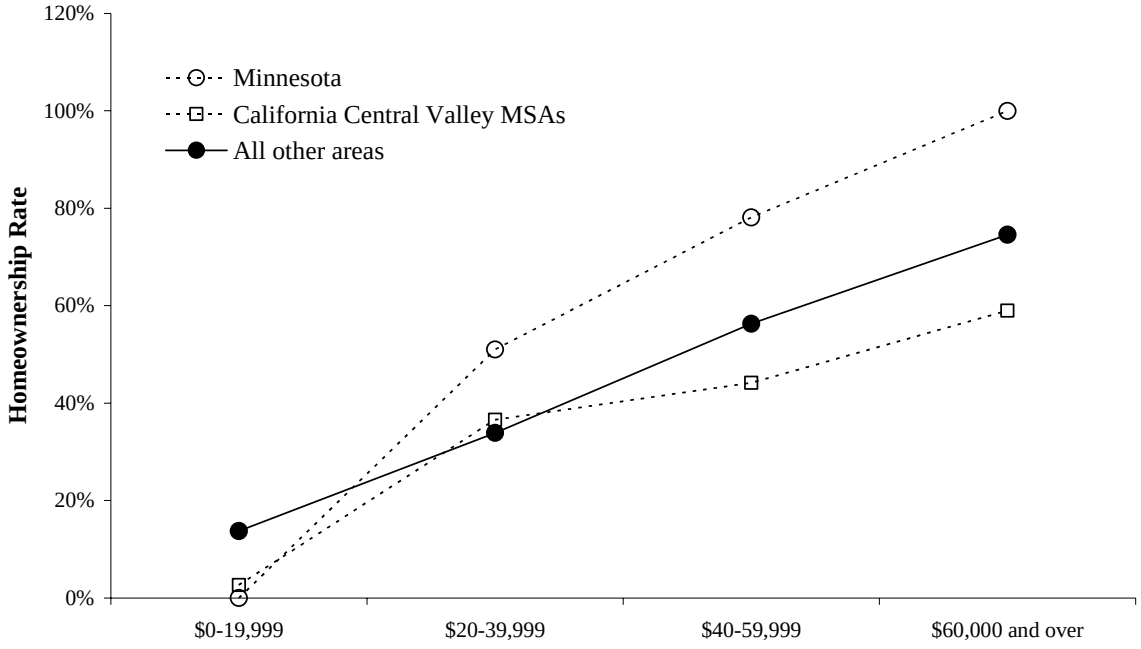
Lao Homeownership Rates by Household Head (less than 45 years of age) and Income



Source: PUMS 2000.

Figure 6: Regional Homeownership Disparities Among Young Cambodian-American Households, 2000

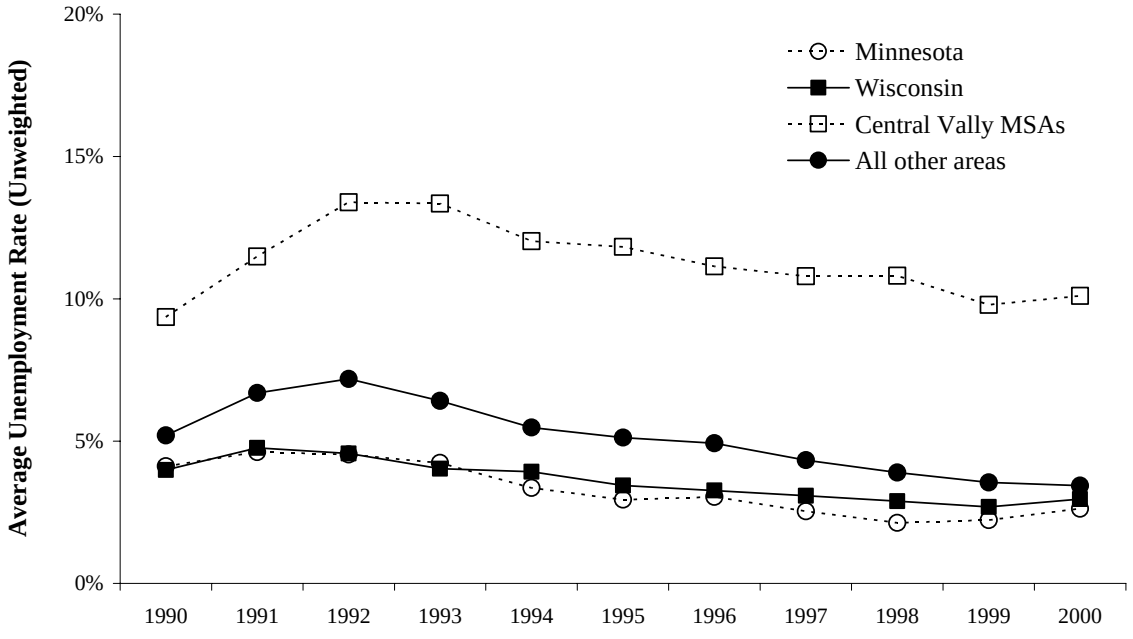
Cambodian Homeownership Rates by Household Head (less than 45 years of age) and Income



Source: PUMS 2000.

Figure 7: Regional Unemployment Rate Disparities, 1990 to 2000

Average Unemployment Rates, 1990 to 2000
(Unweighted)



Source: Local Area Unemployment Statistics, Bureau of Labor

Appendix 1: Data and assumptions used to estimate Hmong homeownership in 1983

Most of the data on the numbers of families and home-owning families by Hmong-American settlement area can be found in Appendix 2B of Reder (1985). However, this source omits data on the seven sites studies in more detail by ORR and also fails to estimate the number of households in Merced (California). (The number of home-owning families in Merced is given as two.) To estimate the number of families in Merced, we multiply the number of families in Stockton (California) by the ratio of the Merced-to-Stockton Hmong-American population (or 4500/4000), from Appendix 3 (p. 5) of Reder (1985). For the other seven sites, we consulted the ORR case studies. Precise figures on the number of families and home-owning families are given for Fort Smith (Arkansas, pp. 12-13), Portland (Oregon, p. 14 and p. 8), and Providence (Rhode Island, pp. 7-8, although the home-owning figure is for 1984, not 1983). The Dallas (Texas) case study reports a total of 65 families, of which 45 have resided in Dallas for over a year. Of these longer-term residents, 16 families own homes. We assume that the home-ownership rate among the 20 more recently arrived families is zero. For Orange County (California), Fresno (California), and Minneapolis-St. Paul (Minnesota), the case studies provide estimates of the Hmong-American population but omit estimates of the number of families and homeowners. For the figures we report, we assumed 6 persons per household to convert population estimates to estimates of the number of families. (We also checked that the overall results are not very sensitive to assuming 7 persons per household or, in Minneapolis-St. Paul only, using the number of households in Appendix 3 of Reder (1985), which implies between 3 and 4 persons per household there.) In Orange County, we noted that the case study reported the cost of housing as "prohibitive" and accordingly assumed that the homeownership rate there was the same as the rate Reder (1985) reports for Long Beach (California). For Fresno, the ORR case study (p. 24) reports a very low level of employment, comparable to other Central Valley settlements with essentially zero homeownership and well below the employment rate reported for Sacramento, another nearby settlement with a zero Hmong-American homeownership rate in 1983. Accordingly, we set Fresno's homeownership rate to zero. For Minneapolis-St. Paul, the ORR case study fails to discuss homeownership rates. We assumed a rate of 5 percent, a bit above the rate for Madison, Wisconsin, which had the highest Hmong-American homeownership rate among the larger Hmong-American sites in Wisconsin in 1983.

Appendix 2: Background on Selected Explanatory Variables

Some variables used in our models include imputations of missing values.

To impute the 32 missing values of English ability we first fit a probit model over the 1085 households for which English ability of the household head is available from Census 2000. For these observations, we code this variable as 1 if the household head reports knowing English "well" or "very well" and 0 otherwise. With that dummy as the dependent variable, our explanatory variables, in addition to a constant term, are the following:

- a dummy variable equal to 1 for households in California's Central Valley
- a dummy variable equal to 1 if household head has graduated from high school
- the number of years the household head has resided in the U.S.
- a dummy variable equal to 1 if the household head is a U.S. citizen
- age (of household head) and age squared
- a dummy variable equal to 1 if the household head is male
- a dummy variable equal to 1 if the household head is married
- a dummy variable equal to 1 if the household head is linguistically isolated
- household income and household income squared
- a dummy variable equal to 1 if the household head is employed as a civilian[*]

All the explanatory variables are highly significant and have sensible signs, and the pseudo-R^2 is 0.44. We then replace each missing value of English ability with its fitted value from the probit. Thus the English variable we use to explain Hmong homeownership is a mixture of zeros and ones obtained directly from Census 2000 and intermediate imputed values for the initially missing observations.

For the Hmong concentration variable, the desired denominator is the local Hmong population and the desired denominator is the local total population. For all but 136 households, "local" means the MSA where the household resides. However, for 53 metropolitan statistical areas, the SF3 file of Census 2000 does not provide an estimate of the local Hmong-American population. In these cases, we have arbitrarily assumed a value of 100 Hmong-Americans in the metro area, and our results are not very sensitive to choosing smaller values. In addition, it is not clear how to define Hmong-American concentration for the 83 households living in wholly or partly nonmetropolitan (rural) areas. In the results shown, we set HMONGCONC in rural areas to the minimum value for the nonrural concentrations. We also tried alternatives such as setting rural values to the average of the concentrations for nonrural observations or setting rural values to zero and adding a rural dummy variable to the model. Neither changed the basic patterns of our results.

For the price-rent ratios in rural areas, for the 83 rural households where median house value and median rent aren't available from Census 2000, we chose the dominant county in the household's PUMA and used that county's median house value and median rent as reported in Census 2000 SF3.

[*] Only two household heads were employed by the military, and neither had a missing entry for English ability.