

**Who Is Hmong?
Questions and Evidence from the U.S. Census**

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Abstract

This paper explores the boundaries of the Hmong community as measured by different categories in 2000 U.S. census data. Following careful assessment of detailed Census data, the authors conclude that the usual criterion used to identify a person in the data as Hmong is too narrow, and that a broader, more inclusive definition more accurately delineates the Hmong ethnic group. The authors propose that anyone who reported in the Census that his or her race, ancestry, or language was Hmong should be included in the Hmong community. This more inclusive method provides evidence that the Hmong population enumerated by the 2000 U.S. census was about 18% larger than the figure that is usually reported.

Introduction

According to the U.S. Census, the nation's Hmong population grew sharply from 94,439 in 1990 to 169,428 (counting those who said their race was only Hmong) or 186,310 (counting those who said their race was Hmong or a combination of Hmong and another race) in 2000.¹ But under closer examination, these figures raise a number of questions. Many Hmong-Americans and scholars have suggested that the Census significantly undercounted the Hmong.² More fundamentally, it is difficult to determine where we should draw the line between the Hmong community and the rest of the population or, indeed, between any two ethnic communities.³ Our purpose here is to explore the boundaries of the Hmong community. After careful examination of detailed Census data, we have concluded that the usual criterion used to identify a person in the data as Hmong is too narrow, and that a broader, more inclusive definition more accurately delineates the Hmong ethnic group. In particular, we propose that anyone who reported in the Census that his or her race, ancestry, or language was Hmong should be included in the Hmong community.⁴ This broader definition implies that the Census count of the Hmong population in 2000 might have been as large as 204,948.⁵

In this article we explain why identification of ethnic groups in the Census data can be ambiguous, review the possible sources of relevant Census evidence, and describe our methodology. The standard definition of the Hmong community is based only on the Census race variable, but race is not the only way for an individual to identify his or her ethnicity. Three other items in the Census also provide evidence of ethnic identity: birthplace, ancestry, and language. The definition of an ethnic group can be based on any one or more of these characteristics. We report the number of individuals who identified their ethnicity as Hmong in all four of these items in the 2000 Census, as well as the number who identified themselves as Hmong under each possible combination of one, two, or three items. Using our summary of the data, one can calculate the Hmong population estimates that would be implied by alternative definitions. After a detailed investigation of the Census data for hundreds of individuals, we have concluded that the most accurate approach is to include in the Hmong ethnic group all who identify themselves as Hmong on at least one of the four characteristics. While we believe that this broad

definition of the Hmong community is most appropriate in statistical studies, our results also can be used to study the merits and implications of other definitions.

The problems addressed here differ subtly from the broader Census undercount issue. It is estimated that the 2000 U.S. Census failed to count over three million individuals, among whom a disproportionate share were low-income or members of ethnic minority groups. An important study⁶ completed in 2001 for the U.S. Census Monitoring Board estimated that states and counties would lose more than \$400 million in federal funds through 2012 as a result of this undercount, since funding in many programs is tied to communities' total decennial population counts.

In contrast, the individuals discussed in this article were indeed counted in the 2000 Census; but we show that their ethnic identification (based on Census data) is ambiguous.⁷ To the extent that funding for certain social service programs depends on race-specific Census counts, our results imply that inaccuracies in ethnic identification will cause the funding to be misallocated. But funding for such programs (especially at the state or local level) usually is based on data from sources other than the decennial Census, so this problem is of a smaller magnitude than the Census undercount. Nevertheless the Census data often play a more informal role in program planning, such as school staffing decisions, so our results have some policy implications.

Identification of Ethnic Identity in the U.S. Census

The U.S. Census questionnaires⁸ in 2000 included questions on four characteristics that might be used to identify an individual's ethnic identity: race, ancestry, language, and birthplace. Questions on race were included on both the Census long form (completed by about one-sixth of the nation's population) and the short form (completed by the remainder of the population), while the questions on the other three characteristics only appeared on the long form. Figures on the nation's Hmong population (or populations of other ethnic communities) are usually based solely on responses to the race questions,⁹ but we have found that the other three characteristics provide valuable (although sometimes contradictory) information.

The Census questions regarding race proceed in a series of steps. First, respondents are asked whether they are Spanish/Hispanic/Latino. Next they are given an opportunity to check one or more boxes indicating that they are White, Black, or American Indian. This is followed by additional check boxes including a number of Asian “races” such as Asian Indian, Chinese, Filipino, Vietnamese, and Japanese – but not Hmong. A final check box indicates that the respondent’s race is Other Asian, and the question invites the respondent to “Print race” in a space provided below the question. An individual who wishes to be counted as having the race “Hmong” must write in this option (as “Hmong,” “Laohmong,” “Mong,” or a similar response¹⁰). The race questions end by giving the respondent an opportunity to write in “Some other race” if he or she identifies with more than one race.

The Census Bureau often refers to the races that must be written in (such as Hmong) as “detailed races,” and we will use this term here. Tabulations of responses classified by detailed races are provided in only a subset of the Census products, so it is not as easy to study the Hmong as it is to study Whites, Blacks, or Hispanics. Certain Census sources (including those used here) classify data into Hmong and about two dozen other Asian detailed-race categories.

On the Census long form an additional question asks about each individual’s ancestry: “What is this person’s ancestry or ethnic origin?” As in the detailed race item the ancestry response must be written in. As data below show, members of the Hmong community usually confirmed their Hmong ancestry. The Census also provides results for about 700 other ancestry options.

Since a majority of Hmong still speak the Hmong language, the Census questions regarding language can help to identify their ethnic origins.¹¹ The long form asks “Does this person speak a language other than English at home?” If the “Yes” box is checked, then the next question asks “What is this language?” The language (if it is other than English) must be written in. Over eighty percent of the Hmong responded to this question by saying that they spoke Hmong at home. Finally, after the language is written in, another question asks “How well does this person speak English?” Check boxes are provided for the responses “Very well,” “Well,” “Not well,” and “Not at all.”

Many Hmong are multilingual, possibly speaking Laotian, Thai, or English. Therefore we were not surprised to find that many Hmong reported that they speak a language other than Hmong at home. But if someone identifies Hmong as the language spoken in the home, we interpret this as fairly strong evidence that the individual's ethnic identity is Hmong.

The fourth Census question that provides evidence on ethnic identity asks about each person's birthplace: "Where was this person born?"¹² The birthplace must be written in. Of course, no particular birthplace makes someone Hmong; but if the first three indicators are ambiguous, then a birthplace in Laos or Thailand can add to our confidence that a respondent is Hmong.

Sources of Ambiguity in the Census Data

Most members of the Hmong community are identified unambiguously in the 2000 Census, with "Hmong" chosen as their race, ancestry, and often language. (In addition, a large share of the Hmong population reported that they were born in Laos or Thailand, as we would expect.) But in a significant number of cases the Census responses are inconsistent, incomplete, or otherwise ambiguous. In most of these cases the respondents indicated in some of their answers that they were Hmong but gave ambiguous answers to other questions. In a few cases the respondents said that their race was Hmong, but their other answers strongly suggested that this might be an error. Reliance on any single indicator (such as race) to measure the Hmong population clearly leads to a figure that both excludes some individuals who are truly Hmong and mistakenly includes a few who are not.

There are many possible sources of ambiguity here.¹³ First, respondents are allowed to describe themselves in any way they wish in their race, ancestry, and language answers. It was not uncommon for members of the Hmong community to identify their race or ancestry as Laotian, Thai, or Asian, which all make perfectly good sense for an individual who was born (or whose parents were born) in that region.

Individuals also could identify themselves in the 2000 Census as having more than one race, so a member of the Hmong community who chose both "Hmong" and "Laotian" would be included in the category "All combinations of Asian races only." However, the Hmong are less likely than members of many other ethnic groups to view themselves as being of multiple races, since many Hmong lived in

relative isolation until fairly recently. By contrast, it would be much more likely that someone identifying his or her race as Chinese might also choose a second race, since people of Chinese ethnicity have been migrating throughout Asia and other continents for hundreds of years.

We suspect that since many Hmong are fairly new to the U.S., some have not yet embraced the clear-cut ethnic labels implicit in the Census classifications. Many American Whites, Blacks, or Hispanics clearly recognize how their ethnicity is regarded by society, and they reflexively identify themselves accordingly in their Census responses; but perhaps many Hmong do not yet identify themselves as Hmong to the exclusion of any other descriptors.

Another common source of ambiguity in the Census data is error in completing the forms. The Census forms can be confusing even for majority-race individuals born and educated in the U.S. This is particularly true for the Census long form, which in 2000 included fifty-three questions spread over nine pages for just a single household and individual, and another thirty-one questions on five pages for each additional member of the household. It must have been difficult for many Hmong households, especially those that included nobody who spoke or read English at all, to complete the forms accurately.¹⁴

The clearest evidence of this problem in the Census data is that a significant number of individuals who identified themselves as having Hmong ancestry, speaking Hmong, and having been born in Laos or Thailand identified their race as Asian Indian. This is most likely explained by the fact that the Asian Indian check box has a prominent position in the race question, so it would be easy for a Hmong respondent (and doubtless many others of Asian ethnicity) to overlook the word “Indian” and check that box in error.

We believe that errors in completing the Census forms can account for some puzzling inconsistencies in the data. For example, some respondents reported Hmong race, ancestry, or language, but their birthplaces were quite unexpected (such as islands in the South Pacific). The Census Bureau’s efforts to protect respondents’ confidentiality are another possible source of ambiguity in the data. The Census data that we used do not include names or addresses; but individuals are identified in such complete detail that one can imagine matching them with their flesh-and-blood counterparts outside the

data file. In order to eliminate this possibility the Census Bureau uses two procedures they refer to as disclosure limitation and data swapping.¹⁵ In the former, “the Census Bureau modifies or removes the characteristics that put confidential information at risk for disclosure.... [The] Census Bureau has taken steps to disguise the original data while making sure the results are still useful.” Data swapping involves switching details between individual records in neighboring areas. It is not clear how significantly these procedures affect the data on ethnic identification, but they might account for some of the puzzling or inconsistent cases.

The Census Bureau also edits data to eliminate missing observations. If a respondent did not answer a question, the Census Bureau generally “assigned an acceptable value... that was consistent with entries for people with similar characteristics.” It is possible that some ambiguities observed in the data could be a result of this imputation procedure.¹⁶ The data we used include allocation flags that indicate whether particular values were imputed. These flags show that for some fields a significant share of the observations result from imputation. For example, the race field was imputed for about ten percent of the individuals in the PUMS for whom the race is listed as Hmong. This percentage is higher than the imputation rate for most other fields and for most other responses to the race question, suggesting that the race question was especially problematic for Hmong respondents.

Alternative Census Data Sources

Our work uses the U.S. Census Bureau’s 5% PUMS (Public Use Microdata Samples) data,¹⁷ which include a broad range of detailed information at the individual and household levels for a 5% sample of the nation’s population. The PUMS file includes detailed race data as well as responses to all the questions on the Census Bureau’s long-form questionnaire. The complete PUMS file is very large, with observations on about fourteen million individuals in 2000. Over 7500 Hmong individuals are included in the PUMS.

Since our PUMS file is a 5% sample of the population, each individual or household in the data on average represents about twenty in the total population. However, the PUMS file is not a random sample of the population, so the interpretation of the individual records is a bit more difficult. In creating

the PUMS file, the Census Bureau selects individual files that will capture the broad range of detail found in the entire population. In order to do this, they over-sample records that are more unusual (for example, Hmong families living in rural areas) and under-sample more “typical” records (such as Hmong families living in St. Paul or Sacramento). Each record is then assigned a “person weight” or “household weight” indicating how many individuals or households in the broader population are represented by that record in the PUMS. While the weights average out to about twenty, they range widely from 2 to over 100. In the results we display later, we report both the number of individuals in each category and their weighted sum. The weighted sum provides an estimate of the total number in the entire population who would be in that category.

Since the PUMS file includes only a sample of the population (albeit a very large sample), our estimates of numbers in the entire population differ from figures that can be found in other Census sources. For example, the 2000 Hmong population total of 169,428 (“Hmong alone”) cited above is based on short-form data from the entire population, while the PUMS file provides an estimate of 173,841 (the weighted sum based on 7523 individuals in the PUMS who said their race was Hmong). Differences between figures in alternative Census sources are either due to statistical sampling errors (which are very small for such a large sample) or differences in how the data are classified. Both factors help to explain the variation among these figures for the total Hmong population.

Data on the Hmong and other detailed races are also provided in the Census Summary Files. Summary File 2 includes data from questions on the Census short form (regarding race, for example), so these data are based on a 100% enumeration of the population. Responses on the long form (regarding ancestry, birthplace, and so forth) are the basis for data in Summary File 4. (As a result, the figures provided in Summary File 4 are estimates based on a sample, like the weighted sums obtained from the PUMS.) Data from both Summary Files can be obtained through the Census Bureau’s American Fact Finder at www.census.gov. However, the Summary Files only provide tables of data, not complete individual or household records. For example, Summary File 4 gives an estimate of the number of people claiming Hmong ancestry, but it does not allow us to study their individual responses to the race or

language questions. Our work relies on the PUMS so we can observe the detailed data at an individual level.

Results

In our work we focus primarily on adult recent immigrants to the U.S. (More specifically, we include those aged eighteen or older who were foreign-born and arrived in the U.S. in 1975 or later.) We adopted this narrower focus because in future work we plan to compare this segment of the Hmong population with their counterparts in other recent immigrant groups. By excluding from present consideration all children and any adults born in the U.S., for whom the issue of ethnic identification might be even thornier, we can more clearly display the problems that arise in the Census.

As noted earlier, people had three chances to identify themselves as Hmong in the 2000 Census: in response to the race, ancestry, and language questions.¹⁸ We created a database including every adult recent immigrant in the PUMS file who identified himself or herself as Hmong in at least one of these characteristics, and then we counted how many times each person chose the Hmong identification. In addition, if a person was born in Laos, we counted that as a fourth piece of evidence that he or she might be Hmong. (While we deemed the first three criteria to be potentially definitive, we used birthplace only as additional evidence to support conclusions based on the first three.) Finally, we calculated the number of criteria (out of these four) on which each person in the sample could be identified as Hmong.

Table 1 (at end of paper, p.18) presents a summary of our close examination of the data. The first column lists several categories into which individuals could fall, based on how many of the four criteria they satisfied and which criteria those were. The second column shows the number of individuals in the PUMS file who were in each category. As shown at the bottom of this column, there were a total of 2,875 adult recent immigrants in the PUMS who identified themselves as Hmong according to at least one of our three primary criteria. The last column shows the weighted sum of the individuals in each category, which is an estimate of each category's representation in the total U.S. population. The figure at the bottom of the last column shows that the people in our PUMS subsample represent a total of 70,009 individuals.

Enumerations of the Hmong population found elsewhere are based solely on the race variable, so they would imply that the number of Hmong adult recent immigrants includes only the 2,415 individuals in this table (representing 59,631 people in the entire population) who identified their race as Hmong. This narrow definition of who is Hmong is analogous to the figure of 169,428 for the total Hmong population cited earlier. The table shows that if we were to adopt the broadest definition, counting as Hmong all individuals who reported a Hmong identification for at least one of our three main criteria, the number of Hmong adult recent immigrants would be about 18% higher than under the narrow definition.

Everyone included in the first table identified themselves as Hmong on at least one of the three definitive questions on the Census long form. But where should the line be drawn between those who are Hmong and those who are not? There can be no doubt about the ethnic identification for most of the individuals in the table. Over half reported that their race, ancestry, and language were all Hmong, and that in addition they were born in Laos; these are the people who fall in the “All four criteria” category.

The second category in Table 1 (“3 criteria: Hmong ancestry, language, and born in Laos”) provides persuasive evidence that the definition of Hmong ethnic identity in the 2000 Census should be extended beyond the narrow criterion. People in this category reported the races shown in Table 2 (at end of paper, p. 18). It is somewhat surprising that such a large number reported races in “two or more major race groups.” The six “major race groups” in the 2000 Census are White, Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, and Some Other Race. This means that individuals in Category 2 who are listed as reporting “two or more major race groups” might have indicated that they were both Hmong and White, for example. (We presume that it is not the case that the White Hmong chose to identify themselves as both White and Hmong, although that would provide a tidy explanation for this.) But it is not surprising that many identified their “race” as Laotian, nonspecific Asian, or a combination of Asian races, particularly since (as noted earlier) many Hmong respondents would not be attuned to the more specific notion of race that predominates in the U.S. Also note here that a few members of this category chose the Asian Indian option, which is the

easiest mistake to make in reporting race. (In Table 2 the category “others” includes other specific Asian races such as Vietnamese.)

A closer look at the third category (“3 criteria: Hmong race, ancestry, language”) provides some insight into the birthplace variable and, more generally, the wide range of responses that can be found in all the categories after the first. This category includes people who we can confidently conclude are Hmong. Most were born in Thailand, as we would expect. But the reported birthplaces of the others are far-flung, as shown in Table 3 (at end of paper, p. 18). A significant number in this category were born in France, which is typical of the other categories as well. This is not surprising, since France has probably been the second most common destination in the West (after the U.S., of course) for Hmong refugees.¹⁹ Some of the other birthplaces in the table are harder to explain, such as countries in the Balkans, Central Asia, and the Middle East. Of course, these outliers might be accurate; but it seems likely that some might instead represent errors in reporting or coding.

The ancestry question in the PUMS offers additional information (not reflected in Table 1) that tends to reinforce the Hmong identification of individuals in this sample. Respondents could write in more than one answer for both the race and ancestry questions. The PUMS does not list multiple answers to the race questions, but it does list a second ancestry if one was reported. Only about 4% of all respondents wrote in a second ancestry; but among those who did, many identified Laotian as their primary ancestry and Hmong as their second. In particular, about 18% of those who claimed Laotian ancestry also chose to report their Hmong ethnicity this way.

Should the definition of Hmong ethnic identity in the Census also include those who only identified themselves as Hmong on one or two of our four criteria? After a case-by-case consideration of many of the more unusual combinations of responses, we have concluded that the remaining individuals in the first table should also be counted as Hmong. Our reasoning rests on three pillars. First, since the Hmong have historically been (in relative terms) such a small group and so isolated, it is not likely that people identified themselves as Hmong in error. Second, if someone identifies with two or more ethnic groups, one of which is Hmong, he or she should be counted as a member of the Hmong community.

Finally, it makes sense to include among the Hmong anyone who could likely share the distinctive experience of the Hmong diaspora in the U.S., and we believe that this would include virtually all who would identify their race, ancestry, or language as Hmong.

Several problematic cases are of the following form: a man identifies his race as Laotian but says that his ancestry is Hmong, his language spoken at home is Thai, and he was born in Vietnam. If he had to be assigned to only one ethnic group, it would be difficult (or impossible) to choose the one that would be most appropriate. Our proposed method would define the Hmong more broadly, and this individual would be counted as Hmong.

Any empirical definition of ethnic groups will result in both false positives and false negatives. Table 2 shows that the narrow, race-only definition of the Hmong results in too many false negatives; that is, it excludes too many individuals who are in fact Hmong. Our broader definition raises the danger of creating too many false positives. There are several individuals in Table 1 whom it would be tempting to exclude. For example, there are some who identified themselves as Hmong under only one of our three primary criteria who appeared to be European (not French), Chinese, or African in their other characteristics. But there are relatively few of these puzzling cases in Table 1, so we are confident that our broader definition of the Hmong ethnic group corrects the significant number of false negatives in the narrow, race-only definition while creating a much smaller number of false positives.

In summary, our careful consideration of the PUMS data leads us to conclude that the file includes 2,875 Hmong individuals, and that these represent an estimated 70,009 Hmong adult recent immigrants in the U.S. population, or about 18% more than would be included under the narrow, race-only definition.

Implications for Total Population Counts

If our argument for enumerating the Hmong community more broadly is extended to all ethnic groups, it implies that the whole is less than the sum of the parts. For example, we propose that many people who chose Laotian as their race should also be counted as Hmong (as indicated in Table 2), but the same argument would lead to a broader definition of who is Laotian as well (since some respondents in

the Census reported that they were of Laotian ancestry but a different race). In the aggregate, this would imply that the total population is less than the sum of the counts for all ethnic groups.

However, the same sort of subadditivity arises even within the race-only categories in the 2000 Census, since respondents then were allowed to report two or more races for the first time. If a respondent reported that she was both Hmong and Laotian, the Census would place her in both the “Hmong alone or in combination” category and the “Laotian alone or in combination” category in the Census Summary File 2 tables, and she would be counted twice if these categories were summed.²⁰ The Census Bureau acknowledges that in the 2000 Census there is a distinction between a “response count” and a “respondent count.” The total population is equal to the total number of respondents, but the total number of responses is larger.

Our broader definition of ethnic groups based on the Census data extends the multiple-race alternative introduced in 2000 one step further, and it is consistent with the modern view of “race” that was embodied in the Census Bureau’s decision to allow multiple races. While our approach would lead to difficulties if we were summing the counts of various ethnic groups, it promises to provide a more accurate definition of ethnic groups for studies of individual groups like the Hmong.

Does It Matter? A Statistical Comparison of the Narrow and Broad Definitions

Our broader definition would include thousands of additional people in the nation’s Hmong population. Does this significantly change the picture of the Hmong community that we obtain from the Census data? A preliminary investigation shows that it does not. This section presents results from a comparison of our broad group of adult recent-immigrant Hmong (numbering 2875 in the PUMS) with the narrower race-only group (which includes 2415 individuals in the PUMS).

In order to compare the characteristics of the Hmong community under the narrow race-only definition and the broader definition, we separated from the broader group those individuals who were not included in the narrower group. These 460 people will be denoted the “added” group. We compared the narrow group and the added group in terms of several important population characteristics: English fluency, total family income, age, family size, the number of years since arrival in the U.S., and labor

force status. English fluency was measured on a five-point scale ranging from zero (“Does not speak English”) to four (“Speaks only English”); labor force status was indicated by a one (“Not in the labor force”) or two (“In the labor force”), and the other characteristics were measured in their natural units.

Table 4 (at end of paper, p. 19) summarizes the sample means for the two groups. The mean value for the English fluency indicator for both groups is 1.72, which falls between “Speaks English, but not well” and “Speaks English well,” and is closer to the latter. We should note that the group means for total family income are considerably higher than the group medians, as is usually the case in income data. The median total family incomes for the narrow group and the added group are \$35,000 and \$32,000, respectively. The labor force status measure shows that about half of the respondents in each group were in the labor force.

Table 5 (at end of paper, p. 19) displays the results of t-tests for equality of the sample means. The difference between the mean numbers of family members is almost significant at the 5% level, but none of the other differences in means is statistically significant. These results have two important implications. First, they suggest that by adopting the broader definition of the Hmong ethnic community, we do not introduce significant bias into measures of the group’s characteristics, as we would if the added group differed sharply from the narrow group. Second, the results reinforce the case for believing that the individuals in the added group – who would not be included in the Hmong community under the usual, race-only definition – are statistically similar to the narrow group and should be included.

Conclusions

The definition of ethnic groups has bedeviled scholars and policy makers for decades, so it is not surprising that a close inspection of the 2000 Census data reveals many ambiguities. Our study of the Census PUMS data shows that the usual definition of the Hmong ethnic group – based only on the respondents’ answers to the race questions – excludes a large number of people who identified themselves as Hmong elsewhere in the Census. If instead we include all people who identified themselves as Hmong on at least one of the race, ancestry, or language questions, we obtain a more accurate picture of the Hmong community.

Using the data in Table 1, one can compare the implications of alternative definitions of the Hmong ethnic group. The broader definition that we favor implies that the Hmong population is about 18% larger than the figure that is usually reported. Our measure probably accords more closely with the perceptions of many in the Hmong community, so it can explain at least some of the apparent undercount of the Hmong in the 2000 Census.

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Tables

Table 1: Who Is Hmong? Results from the PUMS for Adult Recent Immigrants

Categories	PUMS frequency	Estimated Population Frequency
All 4 criteria	1,482	36,504
3 criteria: Hmong ANCESTRY, LANGUAGE, and born in Laos	188	4,511
3 criteria: Hmong RACE, ANCESTRY, LANGUAGE	198	4,524
3 criteria: Hmong RACE, ANCESTRY, and born in Laos	79	1,891
3 criteria: Hmong RACE, LANGUAGE, and born in Laos	502	12,906
2 criteria: Hmong ANCESTRY and born in Laos	15	301
2 criteria: Hmong LANGUAGE and born in Laos	181	3,904
2 criteria: Hmong RACE and ANCESTRY	18	509
2 criteria: Hmong LANGUAGE and ANCESTRY	37	794
2 criteria: Hmong RACE and born in Laos	48	1,099
2 criteria: Hmong RACE and LANGUAGE	70	1,733
1 criterion: Hmong ANCESTRY	8	127
1 criterion: Hmong LANGUAGE	31	741
1 criterion: Hmong RACE	18	465
Total	2,875	70,009

Table 2: Reported Races in the Second Category

Reported Race	PUMS frequency	Estimated Population Frequency
Two or more major race groups	95	2225
Laotian	37	921
All combinations of Asian races only	23	546
Asian, not specified	24	534
Asian Indian/Hindu	3	130
Others	6	155
Total	188	4511

Table 3: Reported Birthplaces in the Third Category

Reported Birthplace	PUMS frequency	Estimated Population Frequency
Thailand	164	3,927
France	9	202
Other Indochina	10	159
Other Asia	4	81
Africa and Middle East	2	37
Latin America	7	103
Other	2	15
Total	198	4,524

Table 4: Sample Means					
	Group	N	Mean	Std. Deviation	Std. Error Mean
English fluency	Added	460	1.72	1.065	.050
	Narrow	2415	1.72	1.099	.022
Total family income	Added	460	\$46529.44	84560.864	3942.671
	Narrow	2415	\$50921.33	98269.299	1999.674
Age	Added	460	36.41	15.011	.700
	Narrow	2415	36.89	14.738	.300
Family size	Added	460	6.53	2.999	.140
	Narrow	2415	6.82	3.006	.061
Years in the United States	Added	460	13.68	5.406	.252
	Narrow	2415	13.94	5.643	.115
Labor force status	Added	460	1.55	.498	.023
	Narrow	2415	1.53	.499	.010

Table 5: Results of t-tests for Equality of Means							
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
English fluency	-.030	2873	.976	-.002	.056	-.111	.107
Total family income	-.897	2873	.370	-4391.896	4894.444	-13988.873	5205.082
Age	-.643	2873	.520	-.483	.752	-1.958	.991
Family size	-1.904	2873	.057	-.291	.153	-.591	.009
Years in the United States	-.909	2873	.364	-.259	.285	-.818	.300
Labor force status	.778	2873	.436	.020	.025	-.030	.070

Endnotes

¹ The 1990 Census total is from Pfeifer and Lee (2004), and the 2000 figures are from the Census Bureau's online American Fact Finder, Summary File 2. Summary File 4 gives alternative figures of 170,049 ("Hmong alone") and 184,842 ("Hmong alone or in any combination") for 2000. The nation's Hmong population has continued to grow significantly since the 2000 Census with the arrival in 2004 of about 15,000 refugees from Wat Tham Krabok in Thailand (Mydans (2004)).

² The Hmong undercount issue is discussed in Pfeifer and Lee (2004) and Williams (2000).

³ Given the "indefinite and variable boundaries" between ethnic groups, Petersen (1997, p. 1) concluded that "in a general enumeration a reasonably true classification and accurate count are impossible."

⁴ Goldstein and Morning (2000) used race and ancestry data from the 1990 Census PUMS to estimate the multiple-race population of the U.S. Harris (2002) explored the determinants of multiracial identifications and the implications of alternative racial classifications for the statistical characteristics of ethnic groups.

⁵ As we will explain later, this figure is the weighted sum of the individuals in the 2000 PUMS who identified themselves as Hmong in at least one of the following characteristics: race, ancestry, or language.

⁶ See Price Waterhouse Coopers (2001).

⁷ Our results indirectly shed some light on the nature of the Census undercount. Our evidence of reporting errors reflects the fact that it was often difficult for respondents to complete the Census long form, and this helps to explain why many others – especially recent immigrants with poor English skills – did not complete the form at all. Our study suggests that the Census undercount could be expected to be a more significant problem among groups (like the Hmong) who on average have less formal education, poorer English skills, and less experience with Western bureaucratic requirements.

⁸ Copies of the 2000 Census short form and long form can be found at www.census.gov/dmd/www/pdf/d20ap0.pdf and www.census.gov/dmd/www/pdf/d20bp0.pdf.

⁹ For example, see Reeves and Bennett (2004).

¹⁰ See <http://www.census.gov/acs/www/UseData/Def/Race.htm>.

¹¹ Petersen (1997, p. 41) noted that language is "probably the second most prevalent indicator of ethnicity," but he acknowledges that its use to identify a person's ethnic group "is as ambiguous as that of race."

¹² Perlmann and Waters (2002, p. 7) noted that "birthplace has been the criteria used most continuously over the years for collecting ethnic information."

¹³ The Census Bureau provides careful, lengthy explanations of possible sources of error in the 5% PUMS data in U.S. Census Bureau (2003), which can be found at www.census.gov/prod/cen2000/doc/pums.pdf. Statistical sampling errors are discussed starting on p. 4-2, and non-sampling errors (such as errors in completing the forms) are discussed starting on p. 4-15.

¹⁴ Of course, the Census Bureau worked to make it easier to complete the forms. For example, a helpful Census notice in Hmong can be found at www.census.gov/dmd/www/pdf/hmnghand.pdf, and a document providing Hmong translations and transliterations of common terms that could be used to promote participation in the Census is at www.census.gov/dmd/www/pdf/HmongGlossary.pdf.

¹⁵ Disclosure limitation and data swapping are described in U.S. Census Bureau (2003), p. 4-1.

¹⁶ U.S. Census Bureau (2003), p. 4-17.

¹⁷ Ruggles, *et al.* (2004).

¹⁸ More precisely, people who filled out the long form had three chances, but those who completed the short form only had a single opportunity (in response to the race question) to say they were Hmong.

¹⁹ Cf. p. 197 in Dunnigan, et al. (1996), which notes that 7,000 Hmong had resettled in France by 1983. Others had settled in French Guiana, Canada, Australia, Argentina, China, and Japan by that year.

²⁰ This is discussed in the "Tabulations for Individual Race Categories" section at factfinder.census.gov/home/en/epss/race_ethnic.html.