Housing Problems and Needs of Native Hawaiians

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EXECUTIVE SUMMARY

INTRODUCTION

This study of Native Hawaiian housing needs complements a companion Department of Housing and Urban Development (HUD) sponsored "Assessment of American Indian Housing Needs and Programs" conducted for HUD by the Urban Institute. The companion Assessment, initiated in 1993, was designed to evaluate the housing problems and needs of American Indians and Alaska Natives as well as the effectiveness of HUD's Indian housing programs.

The key objectives of this adjunct study are to assess the housing problems and needs of Native Hawaiians given the particular housing conditions and market circumstances that exist in Hawaii. The tasks include defining and analyzing the extent of housing needs of Native Hawaiians living in various environments using existing data sources. The analysis focusses on housing quality, overcrowding, and affordability, using data drawn principally from existing data sources, such as the 1990 Census.

The research on Native Hawaiian housing needs has drawn heavily upon published and unpublished tabulations from the U.S. Census, as the most comprehensive, reliable source of information on housing and population characteristics. To supplement Census data, information was gathered in Hawaii from knowledgeable professionals and housing organizations about local housing characteristics and concerns. This information also permits an examination of the housing conditions and needs of Native Hawaiians living in the continental United States as well as those living on Hawaiian Home Lands and in other urban and rural areas of the state.

BACKGROUND

The 1990 Census for the state of Hawaii reports a population slightly over 1.1 million persons, of which approximately 140,000 persons, or 13 percent, reported that they were of Native Hawaiian ancestry. Other surveys indicate that Census data may undercount people of Native Hawaiian ancestry and this population may be as large as 200,000. Native Hawaiians live throughout the state, in Honolulu as well as in rural communities in less populated islands.

Because the Native Hawaiian population has intermarried with non-Native Hawaiians, there has been a decline in the share of Native Hawaiians with high proportions of Hawaiian ancestry. Census data do not, however, distinguish different sub-groups of Hawaiians based on their ancestry, so it is not possible to determine from the data whether Hawaiians with different degrees of Native Hawaiian ancestry have different housing needs.

The 1990 Census enumerated approximately 356,000 occupied housing units in Hawaii, of which about 43,600, or 12 percent, were occupied by a Native Hawaiian householder or spouse. Approximately 75 percent of the state's population, and 67 percent of Native Hawaiians, lived on the island of Oahu, which includes the City of Honolulu. The remainder of the population is distributed
among six other islands, from Hawaii (also called the "Big Island"), Hawaii's largest at 4,000 square miles, to Niihau, Hawaii's smallest inhabited island at 3.3 square miles. These islands are less urbanized than Oahu, with a combined population density of 47 persons per square mile, compared to a density of 2,458 for Oahu. The trend over the last two decades, according to Census figures, shows a slight increase in relative distribution of the population from Oahu to the neighbor islands.

Of particular importance in assessing housing needs for Native Hawaiians is housing provided on Hawaiian Home Lands for Native Hawaiians with indigenous ancestry. The State Department of Hawaiian Home Lands administers about 203,000 acres of trust land and provides low-cost land leases and other

direct benefits such as infrastructure, direct housing loans, and loan guarantees to Native Hawaiians. Relatively few of the qualifying beneficiaries have received assistance to date.

Much of the lands originally set aside for Home Lands appear to be some of the most remote and difficult to develop sites in the state. As of 1990, there were approximately 3,200 housing units on the Home Lands. Sixty percent of these families lived on Home Lands located on Oahu, which represents only 3 percent of total Home Land acreage. The socio-economic characteristics of the Home Land population are somewhat different than those of Native Hawaiians living elsewhere in the state. According to the 1990 Census data, the Home Land population's is slightly older, less educated, and poorer compared to Native Hawaiians living in other areas of Hawaii.

MAIN FINDINGS

Nearly half of Native Hawaiian households experience a problem of affordability, overcrowding and structural inadequacy. Overall, 20,500 Native Hawaiian households experienced one or more housing problems in 1990. The incidence of housing problems was much greater for Native Hawaiian households (49 percent) than for non-Natives (38 percent). As expected, low income Native Hawaiians experience the highest incidence of housing problems (68 percent).

All households residing in Hawaii face extremely high housing costs. This problem affects Native Hawaiians in particular because of their lower earnings. In response to high housing costs, Native Hawaiians are more likely than non-Natives to live with subfamilies and with multiple wage earners.

- The Native Hawaiian population is younger, has lower average education, higher unemployment, and lower incomes than the non-Hawaiian population.

The median age in 1990 of the Native Hawaiian population is 25.8 years compared to the non-Native population's median age of 32.6 years. Native Hawaiians over 25 are somewhat less likely than others in Hawaii to have a high school education (77 percent compared to 81 percent) and much less likely to have received four years of college education (9 percent versus 24 percent). Unemployment rates are also much higher for the Native Hawaiian population: in 1990, the Native Hawaiian unemployment rate was twice as high as for non-Native Hawaiians throughout the state. Furthermore, per capita income for Native Hawaiians in 1989 was $10,700, compared to $16,000 for non-Natives.

Native Hawaiian households are more likely to be very low-income than

non-Native Hawaiians. Just over 27 percent of all Native Hawaiian households have incomes less than 50 percent of the regional (county) median compared to 22 percent of non-Native Hawaiian households. For renter households the disparity is even greater: over 40 percent of all Native Hawaiian renter households have incomes less than 50 percent of the median compared to 34 percent of non-Native households.

As a result, Native Hawaiians' participation rates (over 24 percent) for federal, state, and local housing programs are higher than their share of the total population. Homelessness is also more common among Native Hawaiians than expected based on their representation in the state. A recent study by SMS Research concluded that, on any given day, over 20 percent of all homeless persons in Hawaii are Native Hawaiians.

þ The unavailability of affordable housing leading to high rates of overcrowding is the major housing issue for Native Hawaiians living in the state with the country's highest housing costs.

Although the share of Native Hawaiian households with affordability problems (28 percent) is virtually the same as the share for non-Native Hawaiians (29 percent), newly formed Native Hawaiian households and those who wish to relocate face high housing costs, especially in the Honolulu metropolitan area. Honolulu has a median single family home price of more than $360,000 in 1994, while median monthly rent for a two-bedroom apartment in 1993 was $1,100. Vacancy rates, which are frequently used as indicators of unmet housing demand, are historically lower in Hawaii than in any other state.

To reduce overall housing costs, Native Hawaiians sacrifice space for affordability. Indeed, the high incidence of subfamilies for Native Hawaiian households in an urban setting (17 percent for owner households compared to 5 percent for non-Native owner households residing in Honolulu) appears to help explain why Native Hawaiian households do not have greater affordability problems.

Affordability problems often lead directly to overcrowding. Over one-third (35 percent) of Native Hawaiian households who rent were overcrowded in 1990 compared to 16 percent for non-Native Hawaiian households. Homeowners also experience overcrowding: 21 percent of Native Hawaiian owners, compared to 11 percent of non-Natives, reported being overcrowded.

þ The condition of housing for Native Hawaiians living in rural areas is of lower quality than for non-Native Hawaiians.

While only 3,700 Native Hawaiian households, compared to 20,000 non-Native Hawaiian households, reside in rural areas of the state, a high percentage

of rural Native Hawaiians live in older, less structurally sound housing. Over 30 percent of all rural Native Hawaiians live in housing built before 1949. Six percent of rural Native Hawaiian households lack complete kitchen or plumbing facilities.

Access to sewage disposal is a related housing concern, with Native Hawaiians twice as likely to dispose of sewage by using a septic tank or other non-traditional means than are non-Native Hawaiians. The use of non-traditional means to dispose of sewage is also evident in rural Hawaii, where only 21 percent of Native Hawaiian housing units are connected to a public sewage system compared to 30 percent of non-Native units.

- The housing needs of Native Hawaiians living on Hawaiian Home Lands are different than those for Native Hawaiians living elsewhere throughout the state.

Housing needs differ on the Home Lands from other areas for Native Hawaiians in part because the average cost of housing on the Home Lands tends to be less than in other areas of Hawaii. This difference is due to, in part, various forms of housing loans and subsidies available for home construction and repairs on Home Lands. Affordability problems are therefore lower for Homeland owner residents (9 percent) than for other Native households who own housing.

Overcrowding is experienced by 37 percent of the households living on the Home Lands where the presence of subfamilies (28 percent) is also higher than it is for Native Hawaiians living in other areas of the state. Also, only 1.5 percent of Home Land housing units had facility problems compared to 4 percent of rural Native Hawaiian homeowners.

- Homeownership opportunities for Native Hawaiians have always been limited and have decreased due to rapid increases in housing costs.

The state of Hawaii's low homeownership rate (54 percent compared to 64 percent for the nation as a whole) is largely attributed to low household incomes but also to housing supply considerations, including high land costs, government building regulations, and settlement patterns typical of an archipelago with a single major city.

Lower income Native Hawaiians are, of course, especially susceptible to diminishing homeownership opportunities when home prices increase. The mean value of a single family housing unit in Honolulu county increased, for example, from $159,000 in 1986 to more than $360,000 in 1991. The estimated probability of a Native Hawaiian household (not living on the Home Lands) with income less than 80 percent of regional median income owning a home in 1990 was only 29 percent.

Moreover, it appears that high rents and high house prices are inducing

many Hawaiians to emigrate to the mainland to seek more affordable housing opportunities. The Native Hawaiian population on the United States mainland grew rapidly in the 1980s. Between 1980 and 1990, the Native Hawaiian population on the mainland grew by 33 percent to 72,000 persons, while the Native population in Hawaii grew at a more modest rate of 17 percent to reach 138,000, according to the 1990 Decennial Census.

A survey of housing needs in Hawaii, conducted in 1992, revealed that 76 percent of Native Hawaiian householders who planned to move out of the state were influenced by housing prices. The importance of housing prices in the decision to migrate is not surprising given the affordability problem for young householders. While Native Hawaiian households on the mainland tend to be younger than Native Hawaiians in Hawaii, they were just as likely (50 percent) to own their homes. Furthermore, mainland Native Hawaiians were much less likely to experience overcrowding (12 percent compared to 28 percent) and facility problems (1.1 percent compared to 2.2).

- Housing for Native Hawaiians is likely to be in short supply in the foreseeable future due to expected population growth and current housing production trends.

In July 1994, the U.S. Census Bureau estimated the population for the state of Hawaii at 1,178,564 or a 1.5 percent annual increase from the 1990 Census figure. Projecting this growth rate to the year 2000 produces an estimate of 431,000 households, for an increase of 16 percent over a ten-year period.

Because of its younger age structure, the number of Native Hawaiian households in Hawaii is likely to increase at a more rapid rate than that for the population at large. It is expected that the 43,000 households in 1990 with a Native Hawaiian householder or spouse will increase to 56,000 by the year 2000, an increase of 30 percent over a ten-year period.

The actual number of Native Hawaiian households formed in the 1990s and remaining in Hawaii will depend in large part on the availability of affordable housing for them. One possibility is that the continued shortage of affordable housing will translate into greater rates of overcrowding throughout the 1990s. Moreover, it is unlikely that the number of affordable new units will be enough to adequately meet the needs of low-income households, including those of Native Hawaiian ancestry.

POLICY SUMMARY

Given the extent of housing needs among Native Hawaiians, basic policy implications emulate those for Native Americans residing on the mainland.

- The unique housing needs of Native Hawaiians require unique solutions.

- The diversity of Native Hawaiian housing needs requires flexible responses so that limited available public funding assistance may be used with maximum efficiency.

- Public policy should support an environment in which public and private sector resources are used to address the housing needs of Native Hawaiians, as appropriate.

As with policy prescriptions for American Indian and Alaskan Native housing needs, it is vitally important that programs be administered flexibly, with program assistance tailored to the particular needs of the locality, and with necessary levels of training and technical assistance provided. Home Lands will not solve all housing needs of Native Hawaiians. Most Native Hawaiians are likely to have to look to the private housing market to meet their needs. It is important, therefore, not only that the Home Lands be used to provide housing as efficiently and equitably as possible, but that Native Hawaiians with serious housing needs be matched with appropriate public or private housing services. Indeed, there is need to link housing, infrastructure, and economic development options in the local planning effort to address the diverse housing needs of Native Hawaiians.

Section 1

PURPOSE AND APPROACH

This study of Native Hawaiian housing needs complements a companion Department of Housing and Urban Development (HUD) sponsored Assessment of American Indian and Alaskan Native Housing Needs and Programs. The companion study, initiated in 1993, was designed to evaluate the housing problems and needs of American Indians and Alaska Natives as well as the effectiveness of HUD's Indian housing programs.

The key objectives of this adjunct study are to assess the housing problems and needs of Native Hawaiians given the particular housing conditions and market circumstances that exist in Hawaii. The tasks include defining and analyzing the extent of housing needs of Native Hawaiians living in various environments using existing data sources. The analysis focusses on housing affordability, overcrowding, and quality, using data drawn principally from existing data sources, such as the 1990 Census.

The research on Native Hawaiian housing needs has drawn heavily upon published and unpublished tabulations from the U.S. Census, which is the most comprehensive, reliable source of information on housing and population characteristics. To supplement Census analysis, information was gathered in Hawaii from knowledgeable professionals and housing organizations about local housing characteristics and concerns. This information also permits an examination of the housing conditions and needs of Native Hawaiians living in urban and rural areas of the state.

One of the purposes of the study was to examine the housing needs of Native Hawaiian households on Hawaiian Home Lands. The Hawaiian Home Lands are trust land established by an act of Congress in 1921 for homesteading by Native Hawaiians with 50 percent or more Hawaiian ancestry. This trust is now
administered by the Department of Hawaiian Home Lands of the state of Hawaii.

Approach: The Overall Study

The approach of this evaluation mirrored the one used for the companion AIAN study, with three major differences. First, this Native Hawaiian Housing Needs Study did not include an evaluation of housing programs that serve Native Hawaiians. Second, it did not include primary data collection activities such as the household and Indian Housing Authority surveys conducted for the larger study of the AIAN population. Finally, the Native Hawaiian study drew on data from the Census public-use microdata file to supplement information available for the Census special tabulations.

For the Native Hawaiian housing assessment, Urban Institute researchers:

- Conducted an extensive literature review of published material on the socioeconomic and housing circumstances of Native Hawaiians.

- Consulted with Hawaii-based experts on Native Hawaiian housing. One of two site visits was made to Hawaii at the onset of the study to access material on Native Hawaiians and conduct interviews with knowledgeable persons about Native Hawaiian housing. A second site visit took place later to conduct additional interviews and verify information derived from 1990 U.S. Census and other sources.

- Analyzed special tabulations of 1990 U.S. Census data for the state of Hawaii, and census microdata for Native Hawaiians in 1980 and 1990. These data allowed the study team to assess housing conditions for non-Natives as well as Native Hawaiians.

- Convened an informal advisory panel of knowledgeable housing experts to review and comment on the draft report resulting from the study.

Data Sources

The U.S. Bureau of the Census prepared a special tabulation of 1990 decennial Census data explicitly for this study. This tabulation amasses a comprehensive set of indicators on social, economic, and housing characteristics. An unique feature of these data is the way it designates a Native Hawaiian household. For this purpose, the Census Bureau used the self-identification question related to "race" for head of household or spouse to identify a Native Hawaiian household. All other households were identified as non-Native. In addition, these data allow the user to cross-tabulate various Census indicators by income grouped in the same manner that HUD determines housing program eligibility.

Because Census-supplied tabulations for this study were available on different levels of Census defined geography, data could be assembled for various portions of the state, including the city of Honolulu, the Honolulu Metro Area, and other urban and rural portions of the state. Moreover, these data could also be assembled for the Hawaiian Home Lands to give a profile of the housing conditions of Native Hawaiians living on the Home Lands in 1990.

The research team also used Census data in another form, the 1980 and 1990 Public Use Census Microdata (PUMS) files. These files contain the same variables found in the special tabulations, since they rely on information gathered during the decennial Census. However, the microdata files are based on information about individual households, permitting the researcher more flexibility to study relationships among several variables. Because the PUMS is based on households as the unit of analysis, it can be used to examine areas and groups not identified in the special tabulations. In particular, the study team used this file to examine housing needs of non-Natives since this information was not available from the special tabulations.

Limitations of Census Data

Though the Census is a rich source of data about both housing needs and social and economic characteristics, it has a number of limitations, as explained below.

Ethnic Classification. The primary ethnic groups for which the Census Bureau publishes data are those identified by what is commonly called the "race" question though most scholars believe that the term race has little scientific meaning and that the groups identified using this question may be better described by ethnicity or culture. After 1970, the Census questionnaire was

redesigned so that individuals identify their own race. It is assumed that people with mixed ethnic heritage including the majority of Native Hawaiians will identify with only one of the groups of which they are a part. Information from the questionnaire used for the decennial Census is also unable to supply information about the characteristics of Hawaiians with different degrees of ancestry. Thus, for the purposes of this report, Native Hawaiians are those persons who report Native Hawaiian "race," regardless of degree of ancestry in the 1990 decennial Census.

Confusion over this definition of Native Hawaiian arises from the multiple purposes for which a specific definition of "Hawaiian" is created. For example, Chapter 10 of Hawaii's Revised Statutes defines a Hawaiian as "any descendent of the aboriginal peoples inhabiting the Hawaiian Islands which exercised sovereignty and subsisted in the Hawaiian Islands in 1778, and which peoples thereafter have continued to reside in Hawaii." In contrast, the Hawaiian Homes Commission Act of 1920 restricted eligibility for homesteads on the Hawaiian Home Lands to Native Hawaiians defined as "any descendent of not less than one-half part of the blood of the races inhabiting the Hawaiian Islands previous to 1778."

The Native Hawaiian population identified using the Census coincides with neither of these important definitions of "Native Hawaiian." Because it relies on self-identification, the Census Native Hawaiian population may include some people who do not qualify by any of these definitions for example, persons born in Hawaii may report themselves as "Native Hawaiians" even though they do not meet the test of aboriginal descent. On the other hand, the Census may exclude other Native Hawaiians because the requirement to choose one race leads to an underenumeration of Hawaiians with mixed ancestry.

Population Sampling. A second limitation of Census data on personal and housing characteristics is that the detailed socioeconomic data are based on a sample of the population. Estimates from a sample are less precise than a full enumeration of the population. When a sample is large such as is the case for all Native Hawaiians living in Hawaii sampling is not a significant source of error. However, when studying smaller sub-groups, such as Native Hawaiians living on Hawaiian Home Lands, small sample sizes reduce the precision of estimates. For the same reason, estimates prepared from the Census PUMS are less precise than estimates from the special tabulations for the same populations, because the PUMS contain a smaller sample of households.

Identification of Home Land Areas for Special Tabulations. A related problem is due to U.S. Census Bureau's new method to protect the confidentiality of individuals. In 1990 the Census altered data in small populations and sparsely populated areas to protect confidentiality of data about individuals. Because of this data substitution, ALU LIKE research staff chose to suppress information about households living in certain sparsely populated Home Lands areas to

preserve the integrity of the Home Lands profiles. Therefore, ten "study areas" were deemed sufficiently populated to generate reliable data for profiling the Home Land population. Special tabulation data used the same ALU LIKE method to identify the Home Land population. (ALU LIKE, Inc 1993: p. 2-6).

Despite these limitations, the 1990 Census data give an accurate view of Native Hawaiian housing needs that is consistent with first-hand reports. In many cases, reported characteristics of Native Hawaiians derived from the Census and elsewhere were verified using supplemental data from other sources. With these types of consistency checks, our profile of Native Hawaiian housing needs is based on the best information available to the study team and was limited only by the parameters of our mandate.

Other Data Sources

A large number of supplementary data sources were obtained during the course of this study from various public and private agencies in order to complement the information provided in the decennial Census files. Each of these data files was carefully examined to verify their validity, sampling error, and specific relevance to this study.

For example, the Health Surveillance Survey conducted by the Hawaii Department of Health in 1992 collected more complete information about the ethnic background of Hawaii's residents. The Survey also provided more accurate estimates of the Native Hawaiian population living in Hawaii (as defined for purposes of eligibility for state programs) than estimates derived from the Census. In addition, surveys of the Department of Hawaiian Home Lands (DHHL)
applicant population conducted by Mattson, Inc. in 1992, and of applicants and lessees of the Department of Hawaiian Home Lands in 1995, provided some information about the socioeconomic and demographic characteristics of the beneficiary population of the Home Lands Trust. The Housing Demand Survey conducted by SMS Research, Inc. provided a useful portrait of Hawaii's housing market in 1992.

Each of these data sources has its own limitations; none supplies the detailed indicators of housing conditions available from the Census. The 1992 Housing Demand Survey and the 1992 Health Surveillance Survey were administered to relatively small samples of Hawaii's general population, and thus do not provide precise estimates of characteristics for the Native Hawaiian sub-population. Data from the applicant surveys are likely to be biased due to response selectivity, which occurs when those who choose to return a completed survey have different characteristics from those who do not. Moreover, data from special surveys like these are not completely comparable to data derived from the Census because of differences in the wording of questions and in methods of survey administration. Data from such surveys are, therefore, less useful for the

purpose of comparing the needs of Native Hawaiians to those of other groups.

This study also drew on data about economic conditions and housing programs in Hawaii, including construction reports from the Bank of Hawaii; published administrative data of the Department of Hawaiian Home Lands and the Hawaiian Housing Authority; extensive databases and statistical reports maintained by the Hawaii Department of Business and Economic Development, and Tourism, and by the Comprehensive Housing Affordability Strategy (CHAS) of
the state of Hawaii and the city and county of Honolulu; the State Functional Housing Plan; the Military Family Housing Market Analysis conducted for the United States Army; the Hawaii Housing Policy Study conducted by Locations, Inc.
and SMS Research, Inc.; and the SMS Research, Inc. study of Hawaii's homeless. These data sources provide useful supplementary and issue specific data which, in conjunction with Census data, offer a comprehensive assessment of the range, diversity, and depth of Native Hawaiian housing needs.

Structure of the Report

This report is divided into six sections with additional annexes (A through E). It begins by discussing the study's purpose, scope, and approach. In addition, it defines "Native Hawaiian" for the purposes of this report, and draws comparisons to other definitions in use. In this first section we outline limitations of Census based data used for these analyses. Throughout the report we draw comparisons of conditions for Native Hawaiians to those of Native Americans residing on the mainland (drawn from the companion study of housing problems and needs of Native Americans and Alaska Natives).

The next two sections of the report set the context for the following sections which address Native Hawaiian housing needs the focus of this study. Section 2 examines demographic trends and spatial distribution of Native Hawaiians over time. This section highlights population growth and trends with added emphasis on the spatial distribution of the population in Hawaii. Section 3 summarizes key features of relevant economic trends for Hawaii. This section further discusses socioeconomic indicators to lay the foundation for the context of the housing conditions for both Native Hawaiians and non-Native Hawaiians.

Section 4 and 5 of this report address the housing problems and needs of Native Hawaiians living in urban and rural portions of the state (Annex D provides a summary of housing problems and needs of Native Hawaiians residing on the mainland). Section 4 describes the current housing conditions of Native Hawaiians and compares them to those for non-Natives. Section 5 analyzes the housing problems of Native Hawaiians. It begins with a discussion of the best measures of housing needs, and then identifies the extent of housing problems in different environments including Honolulu, other urban areas, and rural portions of

the state.

Section 6 of the report summarizes key findings and draws lessons from the companion study of American Indian and Alaska Native housing problems and needs as to which policy approach may be appropriate to address the housing needs of Native Hawaiians.

Section 2

DEMOGRAPHIC CONTEXT AND SPATIAL PATTERNS

The Native Hawaiian population was profoundly transformed during the period of contact with the Europeans and Americans in the nineteenth and twentieth centuries. The current housing needs of Native Hawaiians have been shaped by the changes experienced in this period. To set the stage for subsequent analysis of housing needs, this section describes changes in demographic composition and settlement patterns that affect current housing needs.

POPULATION TRENDS: DECLINE AND RESURGENCE

Native Hawaiians experienced population changes after European penetration that were similar to those of other Native Americans. The size of Hawaii's indigenous population before Western intrusion is not known exactly, though many scholars estimate a population between 200,000 and 400,000 persons (Nordyke 1989). Native Hawaiian population declined rapidly throughout
the nineteenth century. Visiting foreign vessels brought with them diseases, weapons, and alcohol that were unfamiliar to Native Hawaiians. A census taken in the 1830s enumerated only 130,000 Native Hawaiians; at the low point in 1900 there were fewer than 40,000 Native Hawaiians (Schmitt 1968).

After 1900 the Native Hawaiian population began to recover. Census counts of Native Hawaiians increased more than five-fold between 1900 and 1990, to reach a U.S. total of 210,000 persons, including about 138,000 persons living in Hawaii. Of Native Hawaiians living on the U.S. mainland, half live in California, and the remainder are distributed among other states.

Figure 2.1 shows the growth of the Native Hawaiian population in Hawaii. Through 1920, the Native population grew slowly, with annual growth rates below 1 percent. From 1920 to 1960, the Native population grew at an annual rate of

more than 2.3 percent a year, reaching about 102,000 in 1960.

Part of the reason for the growth of the Native Hawaiian population was extensive intermarriage between Native Hawaiians and individuals from other ethnic backgrounds. As Figure 2.1 shows, the Native Hawaiian population as recorded in the Census has become a population with mixed ethnic ancestry. This mixture of ancestry introduces some uncertainty about the ethnic classification of persons.

The effects of this uncertainty on Census population counts become apparent in some inconsistency in the data series after 1960. The Census count of Native Hawaiians decreased by 30 percent between 1960 and 1970 to about 70,000. This change occurred because the Census Bureau eliminated the distinction between unmixed ancestry Hawaiians (full-Hawaiians) and mixed ancestry Hawaiians (part-Hawaiians) in 1970, and stopped the practice of automatically reporting children with one Hawaiian parent as Hawaiians with mixed ancestry. Between 1970 and 1980 the population grew at an annual growth rate of almost 5 percent to reach a total of 115,000 in 1980 (Nordyke 1989). This rapid growth exceeds plausible natural increase and must reflect, in part, a greater likelihood to report Native Hawaiian racial identity by part-Hawaiians in 1980 than in 1970. The growth rate moderated in the 1980s to 1.8
percent per year.

The amount of inconsistency in Census population totals for Native Hawaiians has not been nearly as great as that in the data series for American Indians and Alaska Natives. Between 1960 and 1990, population totals for American Indians and Alaska Natives grew by more than 250 percent, in large measure because of changes in reported identity (Passel 1992). In the same period, Native Hawaiian population totals increased by only a total of 35 percent. From 1970 to 1980, when the Native Hawaiian population increased by 50 percent, American Indian and Alaska Native population counts increases even more rapidly (70 percent).

The Native Hawaiian Population Count

As reported in Section 1, the Census definition of the Native Hawaiian population diverges from the definitions used by the state of Hawaii. For many purposes, the state defines as Native Hawaiian all persons with any Hawaiian ancestry. For access to housing on Hawaiian Home Lands, the Hawaiian Homes Commission Act established eligibility for benefits to Native Hawaiians with 50 percent or more Hawaiian ancestry. These definitions are important for program administration, because they are written into state law and, in the case of eligibility rules for access to Home Lands, into federal law and the state constitution.

The Hawaii Department of Health produces estimates of the Native

Hawaiian population of Hawaii, using the designation "Hawaiian" for those with full
ancestry and "part-Hawaiian" for persons with any Hawaiian ancestry. These estimates are prepared from a Health Surveillance Survey that has been periodically administered in the state. This Survey collects information about up to three ancestries for each respondent and the parents of each respondent, and then codes as Native Hawaiian any person with any reported Hawaiian background. These coding practices yield much higher Native Hawaiian population totals than those derived from the self-reporting method used by the Census. As a result, in 1990 the Department of Health estimated the Native Hawaiian population of Hawaii to be about 205,000 persons.

There is less information about the size of the population with at least 50 percent Hawaiian ancestry. This population is important because it constitutes the group of "potential beneficiaries" who may be served by the Hawaiian Homes Commission and other federal and state trusts for Native Hawaiians with this degree of ancestry. The Department of Hawaiian Home Lands reports a provisional, current estimate that this population is about 45,000, using data from a recent survey. A 1984 survey conducted on behalf of the state Office of Hawaiian Affairs (OHA) yielded an estimate that 39 percent of state identified Native Hawaiians met or exceeded this threshold. A U.S. Congress, Office of Technology Assessment (OTA) 1987 staff paper reports projections of the ancestry distribution for descendants of this population. By using a "middle" series, OTA estimates Native Hawaiian population with at least 50 percent ancestry would have declined to about 70,000 persons in 1989, using the Native Hawaiian population estimate from the state Department of Health as a base for computation.

While the survey results and projections show that Native Hawaiians with 50 percent or more of Hawaiian ancestry remain a minority of the Hawaiian population, it must be emphasized that these estimates are approximations and that the exact number of Native Hawaiians with 50 percent or more ancestry is not known with certainty. No systematic study has yet been conducted that has verified the ancestry reported in these surveys, and no survey has systematically sampled the Native Hawaiian population living in Hawaii, the U.S. mainland, and elsewhere, for a comprehensive estimate of the number of Hawaiians with different degrees of Hawaiian ancestry.

The state definitions of Native Hawaiian population are important because they determine program eligibility. However, as discussed in Section 1, little systematic data are available to assess whether the housing needs of the Native Hawaiian population by state definitions differ from those of the population enumerated as "Hawaiian" in the Census. There has also been little research

about the extent to which the Hawaiian population that is technically eligible for benefits from targeted state programs is able to access those programs.

Growth of the Non-Native Population in Hawaii

While the low point for Native Hawaiian population was recorded at the 1900 Census, the low point for the total population of modern Hawaii (57,000 persons) was recorded at a census taken in 1872. Beginning in the 1870s, large-scale immigration to Hawaii dramatically changed the demographic composition of
Hawaii's islands.

The signing of a Reciprocity Treaty between Hawaii and the United States in 1876 opened the U.S. market to exports of Hawaiian sugar. The demand for plantation workers triggered the recruitment of Chinese and Portuguese contract laborers. Later periods saw large immigration flows from Japan and the Philippines. Immigration contributed to population growth at an annual rate exceeding 2.2 percent per year throughout the twentieth century. The Census Bureau estimated that the total population of Hawaii in mid-1994 was 1,180,000 persons (U.S. Bureau of the Census 1995).

As a result of multi-source immigration to Hawaii, its population has become ethnically diverse. Figure 2.2 illustrates the distribution of principal ethnic groups based on classifications used by the Census. Native Hawaiians now represent 13 percent of the population of Hawaii. No individual group dominates. About half of Hawaii's residents are of Asian ancestry, though this conventional aggregation includes very diverse peoples.

SPATIAL DISTRIBUTION OF NATIVE HAWAIIANS

Where are Native Hawaiians located? In which locations do Native Hawaiians seek housing, and what are recent trends in the location of Hawaiian populations and households? Answering these questions is important to understanding the differences in needs for Native Hawaiians in different environments, and to targeting housing policies to areas of current and expected need.

Geographic Setting

The Hawaiian archipelago of shoals, reefs, and 132 islands extends 1,523 miles from Kure Atoll and Midway Islands in the northwest to the island of Hawaii in the southeast. Hawaii comprises eight major islands: Oahu (including the city of Honolulu), Hawaii (also called the "Big Island"), Maui, Kauai, Molokai, Lanai, Kahoolawe, and the privately owned island of Niihau. The total land area of

Hawaii is 6,400 square miles, or 4.1 million acres. The Big Island of Hawaii, with 2.6 million acres, contains 63 percent of the state's land area. The more populous island of Oahu forms less than a tenth of the state's land area (see Map 1).

Hawaii is organized into four primary counties. Honolulu county is co-terminus with the island of Oahu, and Hawaii county is co-terminus with the island
of Hawaii. Maui county comprises the islands of Maui, Molokai, Lanai, and Kahoolawe the last of these is uninhabited and until recently was held by the U.S. Navy. Kauai county includes the islands of Kauai and Niihau, as well as several smaller and uninhabited islands.

Differences in County Growth Patterns

Differences in environment in the different counties that comprise the state have emerged with sharp disparity in the trajectory of growth of population across counties. Figure 2.3 charts population growth by county in the twentieth century. Rapid growth has turned Honolulu county into a populous metropolitan area, with about 840,000 residents in 1990. Three-quarters of the population of the state now live in Honolulu county.

In contrast, the other counties' pace of growth has been much more moderate. In fact, after experiencing rapid growth in the early decades of the twentieth century, the population of Hawaii, Maui, and Kauai counties each declined from 1930 to 1960. Though moderate growth began again in the 1960s, these counties did not regain their population totals for 1940 until well into the 1970s.

In the 1970s, Hawaii's Land Use Commission instituted policies to redirect growth away from increasingly congested Honolulu to the other counties (Hitch 1992). The rate of growth of other counties has outstripped that of Honolulu since
1970. Maui county has experienced particularly rapid growth, more than doubling its population from 46,000 to 100,000 between 1970 and 1990. This trend continued after the 1990 Census. The Census Bureau estimates that the population of Maui and Hawaii counties grew by nearly 13 percent between 1990 and 1994, while the population of Honolulu county grew by only 5 percent (U.S. Bureau of the Census 1995).

In spite of the recent shift to more rapid growth, population densities remain far lower in other counties than in Honolulu county. In 1994, Maui had 97 persons per square mile, Kauai 89, Hawaii 34, and Honolulu 1,458. Honolulu city is a crowded metropolitan center that experiences many of the problems associated with dense urban settlements. Ninety-six percent of residents of Honolulu county live in areas classed as urban by the Census Bureau in 1990.

Other counties in the state are much less densely settled. These differences in density are associated with significant disparities in the labor and housing market conditions in various parts of the state that affect the housing needs of both Natives Hawaiians and non-Native Hawaiians.

Distribution of Native Hawaiians Across Different Environments in Hawaii

To examine the diversity of need in different environments, the special tabulations of Census data from 1990 presented in subsequent sections of this report show the rates of conditions and problems in different areas for Native Hawaiians and non-Natives. Table 2.1 presents the distribution of households across the areas used in the analysis.

The primary comparison made for this analysis is between Honolulu county, on the one hand, and the balance of the state, on the other. In 1990 there were more than 43,000 households with a Native Hawaiian householder or spouse according to Census counts based on the self-reporting of "race" in the decennial Census questionnaire. Of these, one-quarter were in central Honolulu; thirty-eight percent were elsewhere in Honolulu county. About one-third of Native
Hawaiian households were in other counties in Hawaii; 23 percent were in urban areas.

The distribution of Native Hawaiian households across different environments shown in Table 2.1 is quite different from the distribution of non-Native households. Native Hawaiians (32 percent) are more likely than non-Natives (24 percent) to live in counties other than Honolulu. Among residents of
Oahu (Honolulu county), Native Hawaiians are much more likely to live outside of the city of Honolulu than are non-Natives. Only 24 percent of Native Hawaiian households in the state reside in the city of Honolulu, compared to 40 percent of non-Native households.

Hawaiian Home Lands

One additional housing environment that is identified in Table 2.1 is the Hawaiian Home Lands. These lands were set aside for homesteading by Native Hawaiians of 50 percent or more ancestry by the U.S. Congress with the passage of the Hawaiian Homes Commission Act of 1920 (HHCA). They comprise approximately 203,000 acres on the five major islands. Hawaiian Home Lands represent a special housing situation because of their unique status as lands held in trust for Native Hawaiians under the federal mandate of the HHCA and the shared federal/state responsibility incorporated into the Hawaii statehood Admissions Act and the State Constitution.

Special tabulations from the Census identified 2,610 Native Hawaiian households on Home Lands in 1990. Three-fifths of Home Lands households in 1990 were in Honolulu county, one-fifth were in Hawaii county, 7 percent in Kauai county, and 13 percent in Maui county. While many undeveloped lands in the Home Lands inventory are in areas that are remote from centers of population and economic activity, most 1990 Home Lands residents live in or within commuting distance of principal urban centers.

Historically, demand for homesteads on the Home Lands has outstripped the supply of developed land suitable for construction of dwelling units. The poor quality and remote location of many of the Home Lands have limited the number of homesteads on these lands due to associated high infrastructure costs. Thus by late 1994 there were an estimated 3,698 completed houses on the Home Lands, while the number of applicants for a residential homestead was about 15,000 persons (DHHL tabulations 1995).

The relatively small fraction of Native Hawaiian households that currently live on Home Lands (about 6 percent of the total in 1990) is an important point of contrast to the situation for American Indians and Alaska Natives on the mainland. By comparison, 38 percent of American Indians and Alaska Natives lived on American Indian reservations or other federal trust lands (Kingsley, Mikelsons and Herbig 1995).

MIGRATION PATTERNS

A point to consider when assessing current and expected future housing needs for Native Hawaiians is the trajectory of recent change in the spatial distribution of the Hawaiian population. For example, in 1990 Honolulu county was the most populous county in Hawaii, though trends since 1970 show greater growth elsewhere. It is particularly useful to map recent population flows by Native Hawaiians to identify dynamics of future change.

The most recent information about migration for Native Hawaiians comes from the 1990 Census, which collected information about where each person who was at least five years old lived in 1985. Census microdata (PUMS) allow the study of patterns of migration between areas. We can see where the Native Hawaiians lost or gained population in each of four areas: Honolulu county, Hawaii county, Kauai and Maui counties (combined), and the U.S. mainland.

Figure 2.4 shows the net gain or loss in each area. The data reported are net subtracting out those households who left the area and adding those that moved to the area rather than gross migration flows. Net migration flows for an area are important because they show the population redistribution that occurs when moves by individuals in each direction are totaled. Individuals move

between different places for shorter or longer periods of time for many reasons. Thus, net migration data provide valuable information about what areas are gaining and losing population.

There are three significant trends in the movement of the Native Hawaiian population between 1985 and 1990: first, the state of Hawaii lost Native Hawaiian population to the mainland; second, Honolulu county lost population to the mainland and to other counties in Hawaii, and; third, Hawaii county gained population through migration.

The net loss of Native Hawaiian population from the state to the mainland was about 1,800 persons. This figure is about 1.5 percent of the Native Hawaiians who were at least 5 years old in 1990. Honolulu county lost a larger number and proportion of Native Hawaiians 2,600 persons, or about 3 percent of its Native Hawaiian population. In contrast, Hawaii county gained almost 1,200 Native Hawaiians because of migration from other islands or from the mainland. This is an especially high migration rate, pointing to a 6 percent gain in population due to migration in a five-year period.

The flows are most important if they reflect a long term dynamic of movement of Native Hawaiian people. The data point to a small drift of Native Hawaiians away from the state of Hawaii to the U.S. mainland that may gradually lead to a substantial increase in the number and proportion of Native Hawaiians who live outside of the state of Hawaii. They also point to a rapid growth of the Native Hawaiian population in Hawaii county, which will lead to increasing demand
for housing.

Section 3

NATIVE HAWAIIAN SOCIAL AND ECONOMIC CHARACTERISTICS

To provide context to the housing characteristics and needs of Native Hawaiians, which will be described in sections 4 and 5, we first define the economic environment in which Native and non-Native Hawaiians live, then explore the specific socioeconomic characteristics of Native Hawaiians. We examine these characteristics of Native Hawaiians living in different environments in Hawaii, and compare them to the characteristics of non-Native Hawaiians. We draw further comparisons of socioeconomic conditions of Native Hawaiians to Native Americans residing on the mainland.

HAWAII'S ECONOMIC TRENDS

Hawaii's Economic Structure

Hawaii's islands require a different economic development strategy than that found in geographically contiguous areas. With over three-quarters of its population residing in the primary city of Honolulu, Hawaii's is one of the most urbanized states in the country. Not surprisingly, Hawaii's economic development is orientated toward the type of industries found in urban areas. Economic activity is spatially concentrated in Honolulu, and also heavily concentrated among a few dominate industries, relying on the service sector to generate income more than any other state.

Hawaii is heavily dependent on exports, which constitute 35 percent of Gross State Product (GSP), making the state especially vulnerable to external shocks caused by economic conditions elsewhere. Another factor contributing to Hawaii's economic vulnerability is its reliance on imports, now amounting to about 50 percent of GSP. For these reasons, Hawaii's economy is shaped by the two dominant contributors to its GSP the U.S. mainland and Japan.

Tourism, a component of the state's exports, has a strong impact on Hawaii's economy. Tourism alone contributed about $10 billion to the economy in 1990. The magnitude of this figure has particularly strong impact on four domestic sectors: services; finance, insurance, and real estate; construction; and state government. Combined, these sectors accounted for about 56 percent of the Gross Domestic State Product (GDSP) in 1990. The financial and service sectors have increased their relative contribution to GDSP over the last two decades, and accounted for 42 percent of GDSP in 1990.

Table 3.1 shows the distribution of economic activity by sectors in Hawaii for 1977 and 1990. The amount of economic activity generated by each sector is in real (1985) dollars while the share of each sector's contribution towards GDSP is shown in percentage terms.

One sector with a historically large claim on Hawaii's GDSP is government spending. Though between 1977 and 1990 total federal and state spending decreased as a share of GDSP, in absolute amounts state and local government spending increased dramatically (188 percent in nominal terms and 29 percent in real terms), while federal civilian and military spending increased at a much slower rate (1.2 percent in real terms).

Some sectors saw real decreases in economic activity from 1977 to 1990. Farming and manufacturing, in particular, declined by 30 percent and 13 percent,

respectively, over this 13 year period. Alternatively, most other sectors of the economy grew at real positive rates. Table 3.1 shows that the services and finance/real estate sectors grew by almost a factor of two over this period (98 percent and 99 percent). Increases in both commercial and residential real estate prices helped to contribute to the overall increase in real GDSP from about $14.1 billion in 1977 to $20.7 billion in 1990.

In the 1980s, investment in construction grew at a tremendous rate, partially fueled by foreigners whose dollar-denominated investments ballooned due to a decreasing yen-to-dollar exchange rate. Construction spending in Hawaii nearly tripled in real terms between 1985 and 1991. The value of nonresidential permits increased from about $300 million in 1985 to $700 million in
1991. Increases in residential construction were even more dramatic, rising from $562 million in 1985 to $1.5 billion in 1991. The construction sector now accounts
for about 7 percent of GDSP.

In contrast the agricultural sector, which greatly influenced Hawaii's early development and contributed to its unique land tenure system, has sharply declined. Decreasing returns to plantation crops such as sugar and pineapple caused the agricultural sector's share of GDSP to plunge over the last four decades. In 1977, about 2 percent of economic activity was attributed to agriculture, a figure that dropped to 1 percent in 1990. Recently, diversified agriculture ventures have increased employment opportunities in this sector, though it is doubtful that agriculture will regain its former preeminence as a source of employment for Hawaiians.

Changes in State Income

As Figure 3.1 shows, Hawaii's real per-capita income a measure that factors in both income and population rose dramatically in the 1980s. Partially fueled by spectacular investment levels, Hawaii experienced unprecedented real per-capita growth through 1990, a recessionary year for the U.S. mainland. However, from 1990 on, Hawaii experienced a drop in real per-capita income due to a recession on the mainland and a decrease in tourism and investment from Asia.

Partially due to Hawaii's reliance on imports for many of its primary inputs, the state experiences higher rates of inflation than most other areas of the country. Hawaii's consumer price index (CPI) increased by 60 percent between 1982 and 1992, compared to a 45 percent increase for the U.S. as a whole. Housing, in particular, helped to contribute to this rise. Housing experienced greater growth than any other component of the CPI, increasing from 100 in 1983 to 173 in 1993. Exceedingly high state tax rates, value-added costs, transportation costs, and cumbersome regulations also contribute to a high

inflation rate.

SOCIAL AND ECONOMIC CHARACTERISTICS

Having established the economic environment of Native Hawaiians in Hawaii, we now turn to indicators that measure household social and economic characteristics. Studies (Barringer and Liu 1994) have shown that there are differences between Native Hawaiians and other ethnic groups living in the state and elsewhere. Such social and economic differences have an impact on housing conditions and needs. For example, age structure and household composition determine housing consumption, while education, mobility, and labor market characteristics affect income which, in turn, determines the type of housing a household can afford. Below we examine the social and economic characteristics of Native Hawaiian households, both for the state as a whole and for different environments, comparing them to those of non-Native households.

Age Structure

One major difference between Native Hawaiians and non-Natives is disparity in the age structure (Table 3.2). Native Hawaiians are considerably younger than non-Natives living in all environments. Overall, some 37 percent of the Native population is below the age of 18, compared to 24 percent of the non-Native population. High birth rates might explain this phenomenon for Native Hawaiians. At the other end of the age distribution, shorter life spans, indicative of higher mortality rates, help to explain why only 8 percent of Native Hawaiians are 62 years and older compared to 14 percent for the non-Native population. Native Hawaiians living on the Home Lands do not appear to have a markedly different age distribution compared to Native Hawaiians living elsewhere in the state.

Household Composition

Household composition is, in part, determined by the type of housing circumstances. Household composition in turn affects housing need. Housing analysts have found that family size influences the rate of household formation. For example, large nuclear families living in extremely overcrowded housing have a greater propensity to break up and form discrete households. Given that Native Hawaiians form large families, their need for larger housing is greater than that of non-Natives.

As shown in Table 3.3, there are considerably more family households among Native Hawaiians (86 percent) than among non-Natives (73 percent). Type of family household is also different. Over half of Native Hawaiian families are married couples with children, compared to 37 percent of non-Native families.

This disparity is partially explained by strong kinship ties among Native Hawaiians, which result in earlier family formation than that occurring among other groups. Native Hawaiians living on Home Lands are even more likely than other Native Hawaiians to live in family households 91 percent compared to 86 percent for all Native Hawaiians.

One sign of social stress among groups with strong kinship ties is the extent of single- parent households. Over 13 percent of Native Hawaiian family households are female headed with children, in contrast to 5 percent of non-Native family households. Over 17 percent of Native Hawaiian family households are headed by a single parent, compared to only 7 percent of non-Native Hawaiians. Over 21 percent of Native Americans who reside on Tribal Areas are single parent. This is the same rate as that of Native Hawaiian households on Home Lands.

Given shorter life spans among the Native Hawaiian population, only 10 percent of households are elderly (62 years and older) compared to 16 percent for non-Natives. Barringer and Liu (1994) attribute this phenomenon to poor adult health among the Native Hawaiian population, especially for males. It is not surprising that only 8 percent of all Native Hawaiian households living in the city of
Honolulu are elderly. The age distribution of Native Hawaiians is almost identical to that of Native Americans living on the mainland.

Households by Size and Age

Family composition may also be described by size and age of the householder or spouse. HUD has developed a categorization of households for Comprehensive Housing Affordability Strategies (CHAS) using four categories: Elderly (one or two member families with a household head and/or spouse 62 years of age or over); Small families (other family households with two or four members); Large families (family households with five or more members); and Other households (non-family households). These categorizations of family composition were the ones used by the Census Bureau to generate the special tabulations.

As Table 3.4 shows, Native Hawaiians tend to have large families, particularly in owner households, of which 35 percent are large, compared to only 18 percent for non-Native owner households. Twenty-eight percent of Native Hawaiian renter households are large families, compared to 13 percent of non-Native renters. Seven percent of Native Hawaiian households are elderly households, compared to 11 percent of non-Native households. For both groups, the elderly are over-represented among owner households. Half of all Home Lands households are large family households a far larger proportion than for Native Hawaiian households living in other environments.

Subfamilies

One reason that Native Hawaiian households are larger than others is that Native Hawaiian households are much more likely to include other families. Table 3.5 shows the percent of subfamilies in Hawaii for Natives and non-Natives. Over 17 percent of all Native Hawaiian owner households live with a subfamily compared to only 5 percent of non-Natives. This contrast is less striking for renters: 8 percent of Native renter households live with subfamilies compared to 3 percent of non-Native households. Moreover, a particularly striking difference that
has important implications for housing needs is that 28 percent of Home Lands households include subfamilies an astonishingly high rate compared to other populations in Hawaii, whether Native Hawaiian or non-Native.

Aside from the Home Lands, the tendency to live with subfamilies is highest for Native Hawaiians living in Honolulu county. The much higher prevalence of subfamily households in the most densely settled area in Hawaii suggests that this household type may be a response to the environment rather than simply the result of a cultural preference to maintain extended kin relationships. This response may also be suggested by the large difference in the percentage of Native Hawaiian households living with subfamilies in Hawaii (9 percent) versus this percentage for Native Hawaiian households living on the mainland (3 percent), where housing costs are lower and the need to live with subfamilies may be less compelling.

There are two possible explanations cultural and economic for the large proportion of Native Hawaiian households that include multiple families living together under one roof. One cultural reason is the continuing desire to live among extended families. In this case, parents are not necessarily separated out from the families of adult children, so two or three generation households including grandparents and their children and grandchildren are more common than for the non-Native households. The other explanation may point to the scarcity and price of housing in Hawaii, and thus to the need to share a housing unit to reduce housing costs.

Education

Levels of education are particularly important because it is a major determinant of social and economic status in the U.S. today. The twentieth century has seen a remarkable rise in levels of formal schooling. In recent decades, the difference between income levels of graduates on the one hand, and persons with low levels of education on the other, have been increasing.

Table 3.6 shows that Native Hawaiians have lower levels of formal schooling than non-Natives. Although they are almost as likely to have completed high school as non-Natives (77 percent compared to 81 percent), the largest

difference is in the proportion of Hawaiians who have graduated from college just 9 percent of Native Hawaiians, compared to 24 percent of non-Natives. This difference in college completion is reflected in significantly lower
personal incomes for Native Hawaiians compared to non-Natives, as is discussed below. Educational attainment for residents of the Home Lands, where only 3 percent of the persons have higher education, is the lowest of all areas.

Labor Force and Employment

Labor force participation rates and employment have always been high in Hawaii relative to other states due to a large service sector economy and high rate of economic growth. About 70 percent of all adults statewide participate in the labor force 7 percentage points more than for the U.S. as a whole.

Native Hawaiians have labor force participation rates (69 percent) similar to those of Native Americans living in metropolitan areas on the mainland, but much higher rates than for Native Americans living in Tribal Areas. Native Hawaiians who live on Home Lands have a slightly lower labor force participation rate (64 percent) than do all Native Hawaiians this rate is much higher than the participation rate of AIAN population residing in Tribal Areas.

As seen in Table 3.7, though the overall unemployment rate is relatively low (and traditionally has been for the state), the rate for Native Hawaiians (6 percent) is twice as high as that for non-Natives (3 percent). This has a negative impact on Native Hawaiians' ability to generate income. Native households living in rural areas of the state, other than Honolulu county, experience unemployment rates similar to Native Hawaiians living elsewhere in the state, while the unemployment rate for non-Natives is also quite uniform regardless of location within the state. Overall, unemployment rates in Hawaii are low relative to those on the mainland because of a thriving service sector and high rates of employment in the government sector.

Employment by Type of Worker and Industry

When looking at employment categories, the greatest difference between Native Hawaiians and non-Natives is found in the percentage self-employed. Only 4 percent of Native Hawaiians are self-employed compared to 7 percent of non-Natives (almost double). Not surprisingly, given their longer tenure in Hawaii,
Native Hawaiians work in government jobs at a slightly higher rate (22 percent) than do non-Natives (20 percent).

Table 3.8 shows the distribution of employed Native and non-Native persons by industry. The agricultural sector employs the smallest proportion of employed persons in Hawaii only about 3 percent of Native Hawaiians and

non-Natives, a rate mirroring that on the mainland for all persons. At the other extreme, the service industry employs over 45 percent of Native Hawaiians and 56 percent of non-Natives. This difference can partially be explained by the fact that proportionally more Native Hawaiians than non-Natives live in rural areas, while the service sector is more concentrated in the cities (especially Honolulu).

A large service sector promotes the growth of other industries, such as construction, trade, and communications. The employment rate for Native Hawaiians in the construction sector (10 percent) is higher than that for non-Natives (6 percent). Similar gaps in employment rates apply to the manufacturing
and trade sectors. Employment characteristics for Native Hawaiians living on Home Lands do not seem to vary dramatically from those of Native Hawaiians living elsewhere. Proportionately more Native Hawaiians are employed in the service industry than are Native Americans residing on the mainland, especially when rates of service sector employment in metropolitan areas are compared (49 percent for Native Hawaiians versus 43 percent for Native Americans on the mainland).

POVERTY AND INCOME MEASURES

Poverty

Poverty thresholds are set by the government according to age and size of family. The standard poverty threshold does not take into account differences in living costs across the states except for families residing in Hawaii and Alaska. To adjust for unusually high disparities between costs on the mainland and Hawaii, the poverty thresholds used elsewhere in the United States were inflated by a factor of 1.15 for all age groups and family sizes. For example, for a family of four the poverty threshold is $14,800 on the mainland but rises to $17,020 on Hawaii.

Barringer (1989) and Barringer and Liu (1994) report poverty rates for Native Hawaiians. Using the Census PUMS file, they compute an overall figure of 14 percent for Native Hawaiian families in 1990, a figure that is about 4 percentage points higher than that of non-Natives in Hawaii, and 2 percentage points higher than that of the nation as a whole. By using the computed 14 percent figure for families, approximately 6,200 Native Hawaiian families are living in poverty.

Cost of Living Indexes

Though the cost of living in Hawaii is much higher than almost anywhere else in the country, poverty rates do not reflect that disparity. For example, the overall American Indian and Alaskan Native (AIAN) population's poverty rate (24

percent) far exceeds the one for Native Hawaiians (14 percent). Nonetheless, Native Hawaiians' affordability problems for all items exceed those found for the AIAN population. As pointed out in the companion study of the AIAN population,
subpopulations may have high rates of poverty by national standards but a much larger share of them might live in low-cost areas. The opposite is true in Hawaii. Native Hawaiians have relatively low incomes but live in an extremely high-cost area.

The cost of living in Honolulu, in particular, is extremely high compared to other cities. Of all U.S. cities, Honolulu ranks as the most expensive to live in using an indicator that measures expenditures for a "typical" family of four. By this measure, Honolulu's index of living costs in 1990 was 135 compared to 124 for Los Angeles and 86 for Casper, Wyoming. When the same index was applied to costs exclusive of housing, Honolulu ranked second from the top, following New York City. Overall, residents of Honolulu pay about 40 percent
more for living costs than do families residing in other U.S. urban areas (Hawaii DBEDT 1994).

Hawaii's cost of living has also increased over time. Based on data from the Bureau of Labor Statistics, the cost of living for a typical family of four increased from $13,600 in 1972 to $58,374 in 1992, representing a 350 percent increase over a 20-year period. The acceleration of the cost of living in Hawaii can be explained by higher price growth relative to growth in household incomes.

Incomes

Income is the most difficult indicator to measure for any survey or census. Misreporting of income on survey questionnaires occurs at higher rates among lower and higher income households, a phenomenon that also occurs in Hawaii. Recent surveys that measure income indicate that Hawaii's household income distribution is more skewed than that of the country as a whole. Measuring income inequality is difficult using aggregate statistical measures such as the mean. Measures of income that take into account dispersion are better suited for this purpose since they reveal the extent of variation.

To avoid the pitfalls of using a measure of well being that ignores area costs, HUD uses an approach for program eligibility purposes that compares household incomes by taking variations in living costs into account. Under HUD's method, household income is related to the median income of the local labor market area. In the case of Hawaii, counties are used to define local labor market area. By using median income as a proxy for differences in living costs, the HUD measure better defines eligibility and therefore is a more equitable mechanism for distributing scarce program resources.

Households are generally eligible for HUD programs if their incomes fall below 80 percent of the regional median. A more restrictive definition of need incomes below 50 percent of the median is used for priority housing assistance. HUD computes regional incomes by using decennial Census data and adjusts the median annually by using the CPI.

Table 3.9 shows household incomes for Native Hawaiians and non-Natives related to area median by location. One feature of the data is the extent of income variation among Native Hawaiian households. A greater share of Native Hawaiian households have low-incomes than do non-Natives. This is especially true for renter households. Over 58 percent (11,900 households) of all Native Hawaiian renters are low-income households (below 80 percent of the median), compared to only 54 percent (77,600 households) of non-Native renter households. The contrast is almost as large among very low-income households: 40 percent (8,200 households) of Native Hawaiian renter households have very low-incomes (below 50 percent of median), compared to 35 percent (50,300 households) of non-Native renter households.

There is considerable income variation across different areas for Native Hawaiians as well as for non-Natives. The area with the greatest share of low-income Native Hawaiians is the "Balance State Rural" portion of the state, where
over 64 percent of all Native Hawaiian renter households have low-incomes. Though still high, the figure for non-Native households is 60 percent. The greatest disparity between the share of low-income renter households for these two groups is found in the "Balance State Urban" area. Over 59 percent of Native Hawaiians have low incomes in urban areas outside Honolulu county, compared to 51 percent of non-Native renters.

Owner households, both Native and non-Native, have higher incomes than do renter households. Among owner households, Native household incomes are slightly lower than those of non-Natives, regardless of location. Statewide, about 25 percent (5,800 households) of all Native Hawaiian owner households have low incomes, compared to 22 percent (37,140 households) for non-Native owners. Owner residents on the Home Lands are among the poorest of all Native Hawaiians who own, with about 25 percent of the households having income lower than 50 percent of the area median a figure matched only by Native Hawaiians living in rural portions of the state.

Problems with Income Measures

One limitation of comparing ethnic populations using income measures for households is that such measures obscure differences in the size and composition of households for different groups. Native Hawaiian household income levels are deceptive because of the relatively large average size of households and the large proportion of households with multiple families.

Household earnings of a given amount are derived from a greater number of workers and supply the needs of greater numbers of household members.

Tabulations from Census Microdata shows that 64 percent of Native Hawaiian households in Hawaii pooled income from two or more workers in 1989, and that 24 percent gained income from three or more workers. Comparable figures for non-Natives were lower 55 percent and 17 percent, respectively. Larger differences occurred in Hawaii county, where 60 percent of Native households relied on multiple workers (20 percent relied on three or more), compared to 47 percent of non-Native households (11 percent relied on three or more). It appears from these data, as well as from data about the large proportion of Native Hawaiian households with subfamilies, that income pooling is one strategy adopted by Native Hawaiians to address Hawaii's high cost of living.

Another way of measuring income differences to adjust for household size is to compute total income for a group and divide it by the total population to arrive
at per capita income. Per capita income is a better gauge for determining household purchasing power because household expenditures are in part determined by the number of household members. In 1989, per capita income was $10,700 for Native Hawaiians and $16,000 for non-Natives.

Summary

Native Hawaiian household and economic characteristics set the context for their housing conditions and needs. Two particularly important points to emerge from this section are: Native Hawaiian personal incomes are lower than that for other groups, while household sizes are larger. Moreover, Native Hawaiian households are much more likely than non-Native households to live with subfamilies.

Incomes are lower than those for non-Natives living in Hawaii for several reasons, including lower rates of higher education attainment and somewhat higher rates of unemployment than for others. The extent of the differences between income levels of Native Hawaiians and non-Native Hawaiians is significant regardless of location. However, the difference should not be overstated neither Native Hawaiians living throughout the state nor those living on the Home Lands experience economic disadvantages of the same magnitude as American Indians and Alaska Natives living in Tribal Areas.

The large household size and particularly the large proportion of Native Hawaiian households that include subfamilies have several important implications. One of these is that Native Hawaiian's lower personal income is masked at the household level by pooling income from more than one source. The combined effect of lower incomes, large household sizes, and more than one family residing in the housing unit can impact on housing conditions leading to higher likelihood

of
affordability and overcrowding problems. Whether this is true for Native Hawaiians households is explored in the sections that follow.

Section 4

HOUSING CHARACTERISTICS IN 1990

With a better understanding of the historical, demographic, and socioeconomic context in which Native Hawaiians secure their housing, we now turn to the central purpose of this assessment: the analysis of their housing conditions and needs. To better assess housing needs, we first describe the housing market and discuss factors that influence the relatively high housing costs in Hawaii. Following a brief market analysis, this section reviews basic characteristics of Native Hawaiian housing conditions using data from the 1990 Census special tabulations. We compare these conditions to those of non-Natives living in Hawaii, and to those of American Indians and Alaska Natives on the mainland. Section 5 defines more direct measures of housing need and examines the extent and magnitude of housing problems experienced by Native and non-Native households living in different environments.

HOUSING MARKET CHARACTERISTICS

A key characteristic of Hawaii's housing market is relative prices of housing. Hawaii is one of the most expensive housing markets in the United States: in metropolitan Honolulu county, the 1994 median sale price of a house was about $360,000 and the median price of a condominium about $190,000 (Hawaii Real Estate Indicators). One study estimates that in Honolulu, rent for a two-bedroom apartment in 1993 was $1,100 a month (Hawaii DBEDT 1994). The
increase of housing prices in the period between 1986 and 1990 was extraordinary. In this period, the median sale price of a house in Honolulu county rose by 9 percent per year (Hawaii Real Estate Center 1995).

Though sale prices for houses on other islands in the state are less costly, they still are high compared to mainland prices. Locations, Inc. estimated that median sale prices in 1994 for single-family homes on the islands of Maui and Kauai were over $250,000, and on the island of Hawaii about $150,000 (Hawaii Real Estate Indicators 1994).

Pressures on both supply and demand influence the high housing costs

found in Hawaii. On the supply side, foremost among these pressures are the geographical, political, and economic factors that constrain the availability of land that can be developed for housing. On the demand side, pressures include income growth, an increase in household formation resulting from a relatively young age structure, and demand for housing by immigrants from the mainland and foreign investors.

Natural limitations on the supply of land in Hawaii, particularly in metropolitan Honolulu, are obvious. Rose (1986) and Rose and LaCroix (1989) estimated that the surrounding ocean and mountains comprising the island of Oahu limit the supply of land to just 44 percent of what would be available in a hypothetical urban area on a featureless plain, compared to a figure of 87 percent computed for 40 urban areas in the United States. Some analysts also point to the high concentration of land ownership in Hawaii as a constraint on land supply. Approximately 40 percent of land area is owned by government and a third or more of all privately held land is owned by just six landowners.

The restrictive regulatory policies of the state and county governments further limit developable land. In 1991, a state land use commission designated only 5 percent of all land in Hawaii as "urban" and hence available for residential development. Urban land uses must also receive the approval of county zoning boards. Informal estimates provided by the Hawaii Finance Development Corporation (1991) suggest that the regulatory process can delay residential developments by as much as seven years, effectively limiting the supply of housing. The Bank of Hawaii estimated that in 1992 the cost of the lengthy review process added at least $35,000 to the cost of a house (Bank of Hawaii 1992).

There is another cause of high housing costs attributed to restrictive regulatory policies. Often, land is purchased without the intent to develop housing. After acquiring a permit to build, speculators can auction-off the land to the highest bidder at higher inflation-adjusted prices. This practice often drives up the end-cost of the housing unit and adds delay to the home construction process.

It appears that a number of interests come together in Hawaii to support a regulatory process that slows residential construction. One factor commonly cited is a desire to restrict development to prevent environmental degradation. The state master plan that was developed in the early 1970s mandated a policy of slow development on Oahu in order to direct development to the less densely settled islands (Hitch 1992). Restrictive regulatory practices that slow residential construction favor the interests of current property owners who capture the benefits of rising prices for land and housing.

Another factor affecting the supply and demand for housing in Hawaii between 1985 and 1990 was the so-called "Japanese Bubble." During this period the Japanese invested $15 billion in Hawaii property. This had the effect of dramatically increasing the price of supply inputs such as land, while Japanese buyers were purchasing much of the supply (Ordway et al 1995). Ground rents

during this period increased rather dramatically causing the price to convert from land leases to (fee simple) ownership to increase at extremely high rates relative to past periods. Additional factors that appear to increase the cost of housing development in Hawaii include high labor and construction costs, transportation costs for building supplies, and the high cost of on-site and off-site infrastructure for new housing developments.

HOUSING CHARACTERISTICS IN 1990: NATIVE HAWAIIANS AND NON-NATIVES

This sub-section shows how Hawaii's unique housing market influences key housing characteristics for Native Hawaiians and non-Natives as we describe housing for Native Hawaiians on Hawaii including tenure and vacancy, age of housing, number of units in housing structures, unit size, and sewage and source of water.

Tenure

Homeownership is promoted in the United States through various measures. Many households realize equity by purchasing a house. Just as important, homeownership also promotes investment at the building stage and afterward through investment and by building collateral. Therefore, the extent of homeownership is an important distinction in any economic market.

Table 4.1 shows that about an equal proportion of Native Hawaiian (53 percent, 23,000 households) and non-Native Hawaiian households (54 percent, 169,000 households) own their home. We might expect lower homeownership rates given the extent of urbanization and high house prices in Hawaii. Relative to other counties, Natives and non-Natives are least likely to be owners in Honolulu county, where just half of each group own their home. Within Honolulu county, homeownership rates are lowest for those living in central city Honolulu, especially for Native Hawaiians. Only 38 percent of Native Hawaiians own their home in central city Honolulu compared to 48 percent of non-Natives. Homeownership rates in urban areas elsewhere in the state ("balance state urban") also diverge between Native Hawaiians and non-Natives. There the difference is 9 percentage points (51 percent versus 60 percent).

Native Hawaiians are much less likely to own their homes than American Indians and Alaska Natives residing in Tribal Areas (68 percent). AIAN homeownership rates in metropolitan areas (50 percent) are almost the same as those for Native Hawaiians living in Honolulu. Nonetheless, for the majority of Native Hawaiians as well as the AIAN population, homeownership is less prevalent than it is for the population as a whole (64 percent) in the U.S.

Vacancy rates in Hawaii have been traditionally low and rank among the lowest of any state for sale and rental housing. The overall vacancy rate for sale units is 0.7 percent and for rental units 5.5 percent. The vacancy rate for sale units varies little across different areas, while the rental vacancy rate varies more. The vacancy rate for rental units is highest in rural areas outside of Oahu at 11.1 percent, and drops to 4.4 percent in Honolulu county.

Age of Housing

Age of housing stock is important because it may be an indication of the structural condition of the housing. Housing analysts using national and local data bases have revealed that older housing has, on average, inferior amenities and greater need for repairs. In Hawaii, where much of the housing is constructed of wood, older structures are prone to experience termite damage.

Data in Table 4.2 shows that in 1990 the majority of housing units occupied by Native Hawaiians and non-Natives alike were built between 1960 and 1979. Native Hawaiians, however, are generally more likely to live in older housing than non-Natives across all areas. This is especially true for renters in the "Balance Rural" portion of the state. However, Native Hawaiians are most likely to own older housing in Honolulu. In the central city about 22 percent of Native Hawaiians own housing built before 1949, compared to 9 percent of non-Natives. Over 45 percent of Native Hawaiian owners who live in Honolulu proper
live in housing built before 1959, compared to about 29 percent of non-Native owners who live in the central city. The purchase of older, inferior housing may be one way that Native Hawaiians manage to house larger families with lower per capita income.

Native Americans on the mainland also live in older housing than does the non-AIAN population. Overall, about 35 percent of all AIAN households live in units built before 1949 compared to 22 percent for non-AIAN population. In Hawaii, only 15 percent of Native Hawaiians live in housing built before 1949, which is about 20 percentage points below the share attributed to American Indians and Alaska Natives. Given that the stock of housing in Hawaii is younger than the one found in any other state this sharp contrast is not surprising.

Number of Units in Structure

How many units are in the housing structures that a particular group occupies? Do Natives and non-Natives tend to live in single-family homes or in multi-unit condominium or apartment complexes?

As seen in Table 4.3, about 90 percent of Native Hawaiian owners live in single-unit structures compared to about 79 percent of non-Native owner households. Native Hawaiian owners are much less likely to live in multi-unit

structures with 5 or more units (7 percent) than are non-Natives (18 percent). In Honolulu, about 22 percent of Native Hawaiian owner households live in multi-unit structures with 5 or more units compared to 34 percent of non-Natives.

Even among renters, Native Hawaiians tend to live in single-unit structures at higher rates than do non-Natives, regardless of area. Overall, 53 percent of Native Hawaiian renters live in single-unit structures compared to 42 percent of non-Native renters. In other rural areas, approximately 86 percent of Native Hawaiian renters live in single-unit structures compared to 80 percent of non-Native renters. In the more urban area of central city Honolulu, roughly equal proportions of Native Hawaiian (65 percent) and non-Native (66 percent) renter households live in multi-unit (5 or more) structures. In the city there are fewer housing type choices for renters, because renter units tend to be multi-unit structures.

Size of Unit

Housing unit size is a good gauge of household size if one controls for income effects. Native Hawaiian households tend to live in somewhat larger housing units than non-Native households, regardless of area. Overall, 22 percent of Native Hawaiian households live in efficiencies or 1 bedroom units deemed large enough for one or two persons (Table 4.4). The percentage of non-Hawaiians who live in these type of housing units is somewhat larger (24 percent).
Among renter households only, these proportions are greater. Approximately 35 percent of Native Hawaiian renter households and 39 percent of non-Native renter households live in small units.

There is very little difference between the share of Native Hawaiian (31 percent) and non-Native (30 percent) households who rent larger units with 3 or more bedrooms. Conversely, Native Hawaiians who own tend to live in larger units. Approximately 70 percent of Native Hawaiian owners live in a housing unit with 3 or more bedrooms compared to 64 percent of non-Natives. In other rural areas ("balance state rural"), 72 percent of Native Hawaiians live in large units in contrast to 64 percent of non-Native owners. Given the propensity for large families among Native Hawaiians, this result is not surprising.

Native Hawaiian households who live on the Home Lands tend to live in large units. About 72 percent of all Home Land residents own a three bedroom or larger housing unit while only 11 percent own a zero or one bedroom unit. This is in sharp contrast to housing units built on tribal lands where only 53 percent of the units have three or more bedrooms. Overall, Native Americans on the mainland live in slightly smaller housing units than Native Hawaiians. These distributions reflect the historical policies of the Department of Hawaiian Home Lands to construct housing of this type, as well as the reported preferences of applicants on the waiting list for a homestead lease, as revealed in applicant surveys

(tabulations reported by SMS Research).

Sewage and Source of Water

Attachment to a public sewer and to a public water main is often found to be associated with good health conditions. In Hawaii many households have individual septic tanks and wells that are generally adequate. Other types of systems such as for rain catchment and storage are somewhat common in Hawaii but pose health risks (such as lead contamination), and if not adequately maintained cease to function properly.

Table 4.5 shows type of sewage system for Native Hawaiian and non-Native households in 1990. Virtually all housing units occupied by Native Hawaiian households are either attached to a public sewer or have a private septic tank. Only about 1 percent rely on "other" means of sewage disposal. There is generally little difference between Natives and non-Natives in these respects. There is an appreciably higher rate of use of "other" sewage disposal systems for both Natives and non-Natives living in rural areas outside of Honolulu county than for those living in Honolulu or other urban areas.

As shown in Table 4.6, 10 percent of Native Hawaiian households lack access to either a public water supply or a well a figure more than twice as high as that for non-Natives (4 percent). Use of some other source varies little by tenure and area, except that the rate is somewhat higher for both Natives (17 percent) and non-Natives (14 percent) in rural areas off of Oahu. The high rate of use of "other" sources of water by Native Hawaiian households living in Honolulu proper is striking. Non-Natives in central city Honolulu have the highest rate of hookup to a public system (97.8 percent), and the lowest rate of reliance on other sources (1.7 percent). In contrast, Native Hawaiians in this area experience a high likelihood of using other sources such as rain catchment (12 percent).

Native Hawaiians residing on the Home Lands are much less likely to be connected to a public sewage system than Native Hawaiians living elsewhere. Only about 33 percent access public sewage systems since the greater majority use septic tanks to dispose sewage. Nearly all (96 percent) of the housing units are connected to a public water system, while the remainder access water using an individual well. Few Home Lands houses are reported to draw water from a source other than a well or a public system reflecting the policies of the Home Lands to supply housing in community developments that are served by modern utilities.

Summary

In Section 3 we showed that Native Hawaiians purchase their housing with lower per capita income than do non-Natives. In this section we described how, other things being equal, Native Hawaiians prefer larger units and single family

units typically more expensive housing. How are they able to afford this more expensive kind of housing? Part of the answer is that they do not purchase equal housing.

Native Hawaiians tend to live in older housing units that are cheaper and may be structurally inferior. The distribution of Native Hawaiian households in different areas (reported in Section 2) also suggests that they are more likely to live in parts of the state where housing tends to be slightly cheaper: outside central city Honolulu, if on the island of Oahu, and on other islands. Indeed, the median value of Native Hawaiian housing, state-wide, is about 68 percent below that of housing occupied by non-Natives for single-family structures. (This difference in house value holds up across all areas except for Hawaii county.) Does this imply that the structural quality of Native Hawaiian housing is of a lower standard than non-Native housing? This question and ones similar to it will be answered in the section that follows.

Section 5

HOUSING PROBLEMS AND NEEDS OF NATIVE HAWAIIANS

The preceding section discussed the amount of variation in housing characteristics for Native Hawaiians and non-Natives living in different environments. Those data are indicative of problems for the housing stock but do not measure housing needs directly. Other types of measures are needed for this task. In this section, we identify Native Hawaiian housing problems using standard measures of housing needs defined by affordability, overcrowding, and facility problems.

In this section we explain measures of housing needs, explore housing problems by geographic area and tenure, discuss trends since 1980, and take a special look at housing needs of Native Hawaiians on Hawaiian Home Lands. More importantly, we compare the housing needs of Native Hawaiians to those of non-Natives living in the same environment to discern a difference based on market factors or characteristics unique to the Native Hawaiian population. In addition, we calculate the affordability gap the difference between what households are paying for housing and what they can afford for Native Hawaiians living in different environments to show the depth of the affordability problem. Finally, we show how estimated household formation rates for Native Hawaiians will impact housing needs through the year 2000.

DEFINING HOUSING PROBLEMS AND NEEDS: A FRAMEWORK

As stated in the companion study on AIAN housing needs and programs, housing problems have been assessed along various dimensions relating to:

- Affordability. Affordability problems are central to housing needs. Shortages of housing caused by inadequate supply of inputs (such as land, labor, materials, and regulations) have a severe impact on price. As housing demand outstrips supply, prices rise, affecting the ability of households to afford housing appropriate for their needs.

- Overcrowding. Overcrowding has long been recognized as a major contributor to stress-related health problems and is often related to other housing problems such as affordability and quality. Overcrowding can occur for several reasons. Housing units in any given area can be, on average, too small for the typical household or, because of market-level supply constraints, may have to accommodate more than one household. And, affordability problems can lead to doubling up with multiple families residing in a single unit as a way to share housing expenses.

- Structural Quality. Structural quality is the most controversial measure because of the variation in measures of housing quality standards. These standards vary due to the impact of environmental and cultural factors. Nonetheless, there are basic measures that can be used as a proxy to assess structural quality to measure facility, condition, and design problems.

- Availability. Availability of shelter for protection from the environment is the most fundamental housing need. The plight of the homeless has focused considerable attention on this need.

In order to assess housing needs for Native Hawaiians, this study used standard indicators of affordability, overcrowding, and quality. Below we discuss each of the methods used to measure Native Hawaiians' housing problems and needs.

Affordability

From the early 1960s to the early 1980s, HUD's standard of affordability for program purposes was based on a family paying more than 25 percent of its income for housing expenses. Later, this standard was changed to 30 percent; a measure still in use today. If a household pays over 30 percent of its gross income toward housing costs, it is identified for the purpose of these analyses as

having an affordability problem. Because the Census special tabulations used this measure of affordability, we are able to provide an estimate of this type of housing problem for all the areas identified in Hawaii, including the Home Lands. Further, this measure lends itself to comparison with other population groups for which this affordability measure has been computed, including the American Indian and Alaska Native households living on the mainland.

Overcrowding

Housing analysts today commonly use a measure for overcrowding that is based on whether a housing unit houses more than one person per room (1.01). For the purpose of this report, this measure is deemed an appropriate indicator of overcrowding, though analysts also evoke a more restrictive measure of more than 1.5 persons per room.

Quality

Housing quality is difficult to define and measure reliably. Past indicators have relied on subjective criteria such as "not needing major repairs" or "dilapidated." These measures lack precision. The American Housing Survey (AHS) uses a composite measure of housing conditions that assesses quality using a categorical indicator (severe or moderate inadequacy). Housing analysts promote this measure because it can capture many structural defects in a single measure, including interior and exterior housing conditions. However, one limitation of using this indicator is that it relies on many composite measures, restricting its use to AHS or primary survey analysis that collects information on composite indicators. The U.S. Census Bureau relies on a more straightforward measure of housing quality that records whether the housing unit is equipped with a kitchen or plumbing facility.

For the purpose of this report, we use the Census measure of housing condition. Given the tremendous improvement in housing conditions over the last four decades in the United States (including Hawaii), the study team was satisfied with a simple measure that is based on the presence or lack of basic kitchen and plumbing facilities.

Availability

Homelessness is a growing concern for many communities in America. Hawaii is not exempt from this acute manifestation of housing need. Counts of the homeless are frequently subject to debate because of the difficulty in assuring that all the homeless have been identified and because there are many different definitions of homelessness (Burt 1994). For the purpose of assessing the extent of homelessness found in the Native Hawaiian population, we relied on A Study of Hawaiians and Native Hawaiians Who are Homeless in Hawaii, conducted by SMS Research (1990) for the Department of Hawaiian Home Lands and the

Hawaii Housing Authority. For purposes of this study, an individual was defined to
be homeless if he or she "lacked a fixed, regular and adequate night time residence," or was a resident of a temporary shelter, or of a place "not designed for, or ordinarily used as a regular sleeping accommodation for human beings" (SMS Research 1990:3).

HOUSING PROBLEMS OF NATIVE HAWAIIANS AND NON-NATIVES

Native Hawaiian experience housing problems at a greater rate than non-Natives living in the same environment. The principal findings of housing needs
for Native Hawaiians are:

- Nearly half of all Native Hawaiian households in Hawaii (20,464 households)experience a housing problem of some type, compared to 38 percent of non-Native Households.

- The problems with the greatest impact on Native Hawaiians are affordability and overcrowding: 28 percent of all Native Hawaiian households (11,684 households) experience an affordability problem; in the same proportion, 28 percent (11,568 households) experience a crowding problem.

- Approximately 8 percent of all Native Hawaiian households experience both an affordability and another type of problem. This points to a high incidence of both affordability and overcrowding.

Table 5.1provides percentage estimates of housing problems for Native Hawaiians and non-Natives by area and tenure (owner or renter). Table 5.2 shows the absolute number of Native Hawaiian households with a housing problem. The rows in these tables show estimates of affordability problem alone, affordability and some other problem, affordability regardless of whether there is another type of problem, overcrowding regardless whether there is another problem, facility problems regardless of whether there is another type of problem, and having one or more housing problems of any kind.

The data for Native Hawaiians are from the special tabulations of the 1990 Census; the data for non-Natives are computed from the PUMS. Unfortunately, because of limitation of geographic detail in the PUMS file, data are not available separately for non-Natives in urban and rural areas outside of Honolulu county.

These measures show that Native Hawaiians experience acute housing

problems. Nearly half of all Native Hawaiian households (20,464 households) experience a housing problem of some type. Across all environments, Native Hawaiians experience one or more housing problems at rates greater than non-Natives.

The two problems that most impact Native Hawaiians are affordability and overcrowding. Approximately 28 percent (11,684 households) of all Native Hawaiian households experience an affordability problem, in comparison to 29 percent of non-Natives. Eight percent (3,337 households) of all Native Hawaiian households experience both an affordability and some other housing problem.

The overcrowding rate for Native Hawaiians is double that of non-Native Hawaiians. About 28 percent (11,568 households) of all Native Hawaiians experience a problem of crowding. The overcrowding rate is much lower for non-Natives, at 13 percent. Facility problems appear to be much less prevalent than
other problems for both Native Hawaiians and non-Natives: only 2 percent of all housing units lack complete kitchen and plumbing facilities.

Housing Problems by Tenure

Renters, in general, are impacted by housing problems much more than owners for both Native Hawaiians and non-Natives. Sixty percent (11,741 households) of all Native Hawaiian renter households have at least one housing problem, compared to 39 percent (8,723 households) of owners. The disparity between these rates for non-Natives is not as great between tenure groups (48 percent for renters versus 31 percent for owners). Native Hawaiian renters experience higher levels of both affordability problems (36 percent) and overcrowding problems (35 percent) than do owners.

Housing Problems by Area

The incidence of housing problems for Native Hawaiians is similar in central Honolulu, in other areas of Oahu, and in urban areas on other islands. About half of all Native Hawaiian households in these areas experience one or more housing problem. About 30 percent of all such households experience an affordability problem, and about one-quarter experience a crowding problem. This pattern of housing problems by area is also found for non-Native households. For non-Natives, about 40 percent of all households in Honolulu city and the remaining balance of Oahu have one or more housing problem.

The rate of affordability problems for Native Hawaiians in rural areas outside of Oahu (14 percent) is lower than in more urban areas, though overcrowding problems (27 percent) are just as high as in other areas of Hawaii. Native Hawaiian households residing in rural areas also have a higher incidence of facility problems (6 percent) than that found in urban areas of the state.

Non-Natives Hawaiians experience slightly lower rates of affordability problems in areas other than Honolulu county.

Housing Problems on the Home Lands

Data for Native Hawaiian households living on Hawaiian Home Lands show that the percentage of households with one or more housing problems is nearly the same as for other Native Hawaiians, but that the mix of problems is much different. Forty-seven percent of all households on the Home Lands have a housing problem of some kind. The incidence of affordability problems for these households is much lower than that for other Native Hawaiian households (11 percent versus 28 percent), but the incidence of crowding (36 percent versus 27 percent) is much higher.

It is not surprising that Native Hawaiians' affordability problem as defined by the fixed share standard is somewhat lower on the Home Lands than on other parts of the state. Homestead households pay only a nominal fee for an improved house lot. In addition, Native Hawaiians residing on the Home Lands can access loan programs for home improvement administered by the Department of Home Lands at subsidized lending rates. Their primary expense is a mortgage to pay for the construction of the physical dwelling unit. This subsidy would be expected to be reflected in significantly lower affordability problems for these households.

The presence of high rates of crowding on the Home Lands points to continued high levels of needs for these residents. It is striking that overcrowding occurs even though dwelling units on Home Lands are much more likely to be larger than dwelling units in other areas of Hawaii 71 percent of units on Home Lands had three or more bedrooms in 1990. A likely explanation for this crowding is the extraordinarily high percentage of households in Home Lands that include subfamilies 28 percent, compared to just 9 percent for all Native Hawaiians and 3 percent for non-Natives living in Hawaii.

The data show that access to a homestead does help to reduce the incidence of unaffordable housing, but does not completely solve the housing needs of homesteaders. It appears that many homesteaders share their Home Land houses with others, so that until the needs of the Native Hawaiian population as a whole are met, many homesteaders may continue to share part of the burden of the high rate of housing problems among all Native Hawaiians.

Housing Problems of Very Low and Low Income Native Hawaiians

As one expects, very low (income less than 50 percent of area median income) and low-income (income less than 80 percent of area median income) Native Hawaiian households represent the largest share of total Native Hawaiian housing problems. As shown in Table 5.3, three-quarters (2,325 households) of all very low-income households have a housing problem of some kind. About 68

percent (3,592 households) of all low-income households have a housing problem. Among very low-income households, about 60 percent have an affordability problem and 34 percent have an overcrowding problem. Among low-income households, about 50 percent have an affordability problem and 33 percent have an overcrowding problem. Lower income renter households are more severely impacted by housing problems than are owners.

Housing problems seem to be more pronounced in urban areas for lower income Native Hawaiian households. In Honolulu city, about 80 percent of all very
low-income households experience one or more housing problem. The rate decreases to 65 percent for very low-income households residing in rural areas of the state other than Oahu. Surprisingly, overcrowding is more prevalent in areas where housing units are larger outside of Honolulu city on Oahu. There over 42 percent of all very low and 39 percent of all low-income Native Hawaiians experience an overcrowding problem. The rate of overcrowding drops for those households living in rural areas.

Homelessness

The most severe form of a housing affordability problem is homelessness. In 1989, SMS Research conducted a survey of the homeless population in Hawaii (SMS 1990). This study found that, on any given day, about 2,300 Native Hawaiians are homeless in the state, representing about 28 percent of the total homeless population. Of these, about 1,300 persons are Native Hawaiians with 50 percent or more Hawaiian ancestry. About a third of the Native Hawaiian homeless are located in Honolulu county.

Trends Since 1980

Comparison of 1980 and 1990 data indicates very little change in the rate of housing problems for Native Hawaiians in this ten-year period (Table 5.4). However, the affordability problem appears to have worsened over the decade: 28 percent of households experienced an affordability problem in 1990 compared to 25 percent in 1980. Most of the difference is accounted for by increased housing problems among owner households. Rates of problems were nearly identical over this ten-year period by type of problem for renters.

Affordability problems for Native Hawaiians in 1990 are partially masked. As our earlier analysis revealed, Native Hawaiians are much more likely to live in households with multiple wage earners than are non-Natives living in similar areas of Hawaii. Further, Native Hawaiian households in 1990 were much more likely to
live with subfamilies than were non-Natives living in the same environment (9

percent versus 3 percent). Similar data for 1980 reveal that Native Hawaiians experienced a lower likelihood of living with subfamilies in 1980 than in 1990 (6 percent versus 9 percent). This phenomenon was even more pronounced for owner Native Hawaiian families over the decade (9 percent in 1980 versus 17 percent in 1990).

The opposite is true for non-Natives. The incidence of subfamilies for non-Natives actually dropped from 1980 to 1990, decreasing from 4 percent in 1980 to
3 percent in 1990. Though the difference between years for non-Native renters and owners is not significant, the rate of subfamilies formation for non-Natives is still well below that of Native Hawaiians. These data provide strong evidence that the incidence of affordability is understated for Native Hawaiians. It seems that their high incidence of subfamilies is not only due to cultural preferences for co-habitating with extended kin, but also is a way of coping with increasing housing costs.

NATIVE HAWAIIAN HOUSING NEEDS COMPARED TO THOSE OF OTHER POPULATIONS

How do the levels of housing problems of Native Hawaiians compare to those of other populations? As has already been shown, Native Hawaiians experience higher rates of housing problems, particularly crowding, than non-Natives living in Hawaii. Figure 5.1 summarizes comparisons in the distribution of
the types and levels of housing problems for Native Hawaiians, all households in the United States, Native Hawaiian households residing on the Home Lands, and non-Natives. In addition, further comparisons are shown for Native Americans on the mainland living in two different environments: tribal lands and mainland metropolitan areas.

Comparison to the United States Population

Data from the 1989 American Housing Survey for all U.S. households show that the primary housing problem that most Americans experience is affordability. About 6 percent of American households experienced a crowding or facility problem in 1989, or some combination of the two. Twenty-three percent of
American households had some affordability problem: about 2 percent experienced this together with some other problem, and 21 percent experienced only a problem of affordability.

Overall rates of housing problems were far higher for Native Hawaiians than for the U.S. population as a whole. Forty-eight percent of all Native

Hawaiian
households experienced a housing problem of some type. While the incidence of facility problems was slightly lower than for the United States as a whole, the incidence of other problems was higher. In particular, Native Hawaiian households experienced dramatically higher rates of overcrowding than was the case for all U.S. households (27 percent versus 3 percent).

Comparison to Native Americans Residing on the Mainland

A comparison of Native Hawaiians to American Indians and Alaska Natives shows that if each type of housing problem is weighted equally, Native Hawaiians have more housing problems than those experienced even by AIAN households in Tribal Areas. This finding is striking, because the comparison is to a group that is commonly perceived to be among the most economically disadvantaged of American sub-populations.

The types of housing problems that Native Hawaiian and AIAN households in tribal areas experience are somewhat different. Native Hawaiians are more likely to experience an affordability problem (28 percent versus 16 percent) and an overcrowding problem (27 percent versus 14 percent), but less likely to experience a facilities problem (2 percent versus 14 percent).

It may be more appropriate to compare the problems experienced by generally urban-dwelling Native Hawaiian households to those experienced by AIAN households in urban areas. Here again, comparison to data for AIAN households in a sample of 15 urban areas with large AIAN populations reveals a greater total incidence of housing problems among the Native Hawaiian population in Hawaii. Forty percent of American Indian households in these areas experience one or more problems. A larger percentage of AIAN than Native Hawaiian households experience an affordability problem (28 percent versus 20 percent). Facility problems are equally common for the two groups (2 percent), but the incidence of crowding is much lower for urban AIAN households (8 percent) than for urban Native Hawaiian households (25 percent).

AFFORDABILITY GAP FOR NATIVE HAWAIIANS BY AREA

It is possible to quantify the affordability problem by calculating the gap between what households can afford to pay (based on the fixed share of 30 percent of gross income) and what they actually paid in 1990 for housing. These aggregated sums can be further broken down by tenure and area. We had to rely on the PUMS to compute the gap since these data are available on the household level and therefore the gap calculation was done for Honolulu city, the balance of Honolulu county, Hawaii county, and Maui and Kauai counties combined. Figure

5.2 shows these distributions.

For Native Hawaiians, there is an overall gap of $43.5 million per annum between what they were paying for housing in 1990 and what they could afford to pay. Given their lower incomes, the amount of the gap is much greater for renter households than for owner households. This phenomenon is true in all environments but especially in Honolulu city, where about 70 percent of the total gap is attributed to renter households.

Surprisingly, given the lower price of housing on the Big Island of Hawaii, Hawaii county households account for a rather large share of the affordability gap (17 percent). The gap for Native Hawaiian households living in central Honolulu is
relatively small ($9.4 million or $900 per Native Hawaiian) given that 24 percent of
all Native Hawaiian households reside in the capital. The largest gap ($21.5 million or $1,280 per Native Hawaiian) is among owners and renters in Honolulu county outside of central Honolulu, representing about half of the total amount needed to make up the difference between what Native Hawaiian households paid for housing and what they could reason ably afford to pay.

FUTURE PROSPECTS FOR NATIVE HAWAIIAN HOUSING

In order to understand the implications of future demand for housing, some assumptions need to be made about future growth of households. In this manner, policymakers can determine where growth is most likely to be.

Native Hawaiian Household Formation in the 1990s

One useful way to assess emerging areas of housing needs is to project the future growth of households based on assumptions about components of change. A common technique used to project household formation is the headship method, which involves two steps: projecting the adult population by age, then projecting the number of households that will be formed by estimating the percentage of the population of a given age who will become the head of a household.

Table 5.5 reports estimates of changes in the number of Native Hawaiian households through the year 2000 for the four areas for which it was possible to compute migration data from the PUMS: Honolulu county, Hawaii county, Maui and Kauai counties, and the U.S. mainland. The projections assume that the headship rate for Native Hawaiians will remain unchanged from 1990 to 2000, and that, in each five-year period in the 1990s, Native Hawaiians will migrate between areas at the same rate that they did between 1985 and 1990.

By modeling household formation in this way, we estimate that Native

Hawaiian households will increase by 30 percent between 1990 and 2000. The fastest rates of growth will be in Hawaii county and the U.S. mainland. In absolute terms, among the three areas identified within the state, the highest growth is still projected for Honolulu county. However, it is estimated that in the year 2000 Honolulu county will produce a smaller share of the growth of new Native Hawaiian households than it held in 1990 (57 percent versus 65 percent). During the 1990s, Hawaii county will account for about a quarter of new Native Hawaiian households.

Housing Prospects

Our estimate of household formation by Native Hawaiians between 1990 and 2000 shows that Native Hawaiians will be especially affected by the continuing shortage of housing in Hawaii. Because of their relatively youthful age structure, the Native Hawaiian population is in a period where rapid household formation would ordinarily be expected. However, actual household formation will
probably not occur as expected if suitable housing (that is affordable and provides enough space) remains in short supply. The fact that a large proportion of Native Hawaiian households include subfamilies is one indication that this slowdown in new household formation may already be taking place.

If we estimate the share of overcrowded Native Hawaiians in 2000 by using the same share of households found to have an overcrowding problem (28 percent) applied to the number of projected households, we arrive at 15,800 households. This figure is indicative of a growth rate of about 500 households per year. Section 3 of this report showed that about 27 percent of all Native Hawaiian households were low-income. Of these low-income households, about 68 percent or 7,800 households experienced one or more housing problem in 1990. If we apply these shares to our projections of Native Hawaiian households, we find that the number of low-income households with one or more problem in the year 2000 will increase to 10,300 households, or an increase of 32 percent.

The study team also projected the total population of Hawaii through the year 2000. The Census Bureau estimates that the population for the state of Hawaii on July 1, 1994 was 1,780,000, a 1.48 percent annual increase from the 1990 Census (U.S. Bureau of the Census 1995). Assuming that household size remained constant from 1990 to 1994, this means that the number of households in Hawaii increased from 356,000 to 379,000. Projecting this same growth rate to the year 2000 yields 413,000 households, an increase of 16 percent.

The implication of these factors is that the supply of housing units in Hawaii affordable and large enough to house Native Hawaiian families will not keep up with demand. According to our estimates, Native Hawaiians growth rate will outpace the one for all households in Hawaii through the year 2000 by almost a factor of two. This implies that more and more Native Hawaiian

households will compete with other groups with similar needs for access to affordable, safe, and appropriately large housing. Unless there is an increase in the supply of housing, the housing problems of Native Hawaiians will grow at greater rate than for non-Natives in the 1990s.

Summary

Clearly, Native Hawaiian housing needs are severe, with half of all such households experiencing some type of problem. Problems are greater than those of non-Natives who reside in the same environments. While the incidence of affordability is approximately the same for both groups, the incidence of overcrowding is much higher among Native Hawaiian households. Structural problems are low for both groups.

The finding that Native Hawaiian housing needs are fundamentally different than that for non-Natives is important because it should impact policy. Since we can discern a difference in housing problems based on characteristics of the population rather than on market factors alone, policies to meet Native Hawaiian housing need must take this finding into consideration.

Section 6

POLICY IMPLICATIONS

There are two main limitations of this discussion of policy implications. First, in contrast to the companion study of Housing Problems and Needs of American Indians and Alaska Natives, the scope of work for this study did not include an analysis or evaluation of existing housing programs addressing housing needs of Native Hawaiians or other populations in Hawaii. Rather, the study team's mandate was to draw on the policy recommendations and findings of the companion study when they were relevant to the needs identified in this report. Second, the Census data used for this study do not identify Native Hawaiians according to degree of Native Hawaiian ancestry, therefore, it was not possible to address the specific needs of Native Hawaiians who are potential beneficiaries of the Home Lands trust.

Summary of Native Hawaiian Housing Needs

Native Hawaiians experience a disproportionate share of housing problems among Hawaii's households. Approximately 28 percent of Native Hawaiian households (11,700 of them) pay more for housing than they can afford. Because of high housing costs, some Native Hawaiians in all environments are forced to share their housing with other families in order to meet the cost of

housing. This leads to overcrowding the most acute (28 percent) housing problem experienced by Native Hawaiians. Many Native Hawaiians suffer from both problems affordability and overcrowding.

High housing costs impact on the ability of younger households to access housing; Census data reveal that a large portion (42 percent) of Native Hawaiian households with a householder below the age of 30 experiences an affordability problem (versus 28 percent for the all Native Hawaiian households). During the late 1980s, in particular, median house prices increased dramatically, increasing from $159,000 in 1986 to $360,000 in 1991. The estimated probability of a Native
Hawaiian household with income less than 80 percent of the regional median owning a home in 1990 was only 29 percent.

A survey of housing needs in Hawaii, conducted in 1992, revealed that 76 percent of Native Hawaiians householders who planned to move out of the state were influenced by housing costs. The importance of high housing costs in the decision to migrate is not surprising given the affordability problem for young householders.

Comparisons of standard measures of housing need for populations outside of Hawaii confirm relatively high rates of need for Native Hawaiians. Native Hawaiians experience rates of housing problems far in excess of those of the general American population. Native Hawaiians are also more likely to experience a housing problem than are American Indian and Alaska Natives living in either Tribal Areas or metropolitan areas, though the problems of these groups are somewhat different. AIAN households are less likely to have an affordability or crowding problem, but are more likely to experience a facilities problem.

Existing state and federal housing and development programs currently appear not to serve Native Hawaiians in accord with their needs. Hawaii Housing Authority (HHA) data for June 1994 show that 25 percent of households served had a Native Hawaiian household head. The 2,285 Native-headed households served by the HHA in 1994 represent only about one-seventh of the almost 17,000 Native Hawaiian-headed households with at least one housing problem in 1990.

These needs differ in both kind and degree depending on location and ownership type. For example, while one-fifth of Native Hawaiian households living in Maui or Kauai counties have an affordability problem only, almost 30 percent of Native Hawaiian households living on the Big Island of Hawaii have such problems. There are also marked differences between housing needs of renters and owners. The share of Native Hawaiian renters on the Big Island of Hawaii with an affordability problem is nearly twice the rate for Native Hawaiian renters on Maui and Kauai. The share of Native Hawaiian owners with an affordability problem on Hawaii is actually a bit smaller than that of similar Native

Hawaiians living in the other two counties.

Policy Implications of Identified Housing Needs

Given the extent of housing needs among Native Hawaiians, many of the basic policy implications emulate those for Native Americans on the mainland.

- The unique housing needs of Native Hawaiians require unique solutions.

- The diversity of Native Hawaiian housing needs requires flexible responses so that limited available public funding assistance may be used with maximum efficiency.

- Public policy should support an environment in which public and private sector resources are used to address the housing needs of Native Hawaiians, as appropriate.

Unique Solutions for Diverse Needs

Native Hawaiian housing needs in Hawaii reflect important differences from non-Natives. Native Hawaiians are less likely than non-Native residents to migrate away from Hawaii in response to a housing problem, more likely to share their households among more than one family, more likely to be supported by the earnings of high school rather than college graduates, more likely to have low or very-low incomes, and more likely to use their income to pay the expenses of a large number of household members.

Given the unique needs and conditions of Native Hawaiians in Hawaii, an optimal housing policy for Hawaii should incorporate the special situation of Hawaii's indigenous peoples in allocating resources to address critical housing needs. For example, the extent of affordability problems found among Native Hawaiian households could be alleviated through community development programs. In this regard, the Office of Hawaiian Affairs has advocated community development in conjunction with increasing the availability of affordable housing. An equally large group of Native Hawaiian households who are impacted by overcrowding could be helped by reducing or eliminating constraints such as a cumbersome regulations and permitting processes, and land use zoning. Some Native Hawaiians may draw on the resources of the Hawaiian Home Lands Trust, which might be used to leverage other assistance more efficiently.

Maximize Flexibility of Government Assistance

An important finding from the companion study of Native American and Alaska Native housing needs is instructive. The two principal HUD programs for

assisting Indians are the Rental and Mutual Help programs. Although these programs have been very valuable in helping meet the housing needs of Native Americans and Alaska Natives, their efficiency has been limited by lack of flexibility. Targeted at low-income households living on trust lands and frequently requiring adherence to regulations more appropriate to urban than to rural housing, these programs have often resulted in inflexible and inefficient requirements.

Despite HUD's recent easing of the regulatory rules for administering its AIAN programs, statutory restrictions remain. Consequently, the study of American Indian and Alaska Native housing needs recommends consolidating and reducing the restrictions of federal programs providing housing assistance to American Indians and Alaska Natives and moving in the direction of relatively unrestricted block grants. The objective is to accord local recipient agencies maximum discretion in using federal funds, enabling them to tailor the form and amount of assistance to specific local household need. Similarly, public funds federal, state, or local can be used to address the housing needs of Native Hawaiians if appropriate housing agencies (new or existing) are allowed flexibility. It appears that local self-determination of needs may lead to more efficient allocation of resources.

In urban environments such as metropolitan Honolulu, programs that promote homeownership may not be the most efficient way to use housing subsidies. Here the private sector can play an important role because of the presence of both Native and non-Native housing. Housing will become available within the private sector in response to subsidy-augmented demand by low-income households. The obvious policy implication is that direct demand-side assistance through housing vouchers or certificates is likely to be the most efficient approach to addressing housing needs in these areas.

In areas such as the Big Island of Hawaii and the island of Molokai, the problem of housing affordability may be less related to housing cost housing on those islands is relatively inexpensive compared to housing on Oahu and Maui than to the need for economic development to generate income to pay for housing construction and infrastructure. In this respect, Native Hawaiians, like Native Americans on the mainland, may find it profitable to use housing construction programs to stimulate other economic activities for Hawaiian communities that are isolated from the state's principal growth centers.

Special needs (disabled, homeless, etc.) populations will require assistance that often cannot be found within the limitations of existing programs. For example, the 6,800 Native Hawaiian renter households (16 percent of all Native Hawaiian households) that are very low income and have one or more housing problems may not be well served by ordinary policies to promote homeownership, even those households that are able to secure a lease on an improved Home Lands homestead. Similarly, most of the 800 elderly Hawaiian

renter households are probably not good candidates to assume long-term mortgage obligations, and may need to have housing needs supplemented by social or medical services. For these households, programs for Native Hawaiians need the flexibility to consider alternative models of housing assistance.

For example, the proposed construction of a Kupuna (elderly) housing project on Department of Hawaiian Home Lands in Waimanalo on the island of Oahu may, if its potential is realized, better serve the needs of Home Lands beneficiaries than the typical single-family home that has generally been produced on Home Lands in the past. Creative experimentation with alternative construction materials and building standards may, in some cases, reach populations that would ordinarily be foreclosed from participation in most housing production programs. Though experience in AIAN areas suggests that programs like Mutual Help have many limitations, they may be the most effective or only way to serve some populations.

Along with program flexibility, however, must come technical assistance, planning, and accountability. Local administrative entities must have the capacity to develop and operate their own programs, particularly if they are expected to tailor those programs to specific local housing needs. In many cases, this will mean added staff and other resources, added staff training, or added technical assistance.

Identifying local needs, especially long-term need, is not always straightforward and planning is essential. In addition to helping local entities to identify local needs and develop programs to address those needs, a housing assistance/development plan also provides an accountability reference point for assessing how well needs are being addressed. In sum, at the same time that local administrative entities are being provided public financial assistance with minimal restrictions on their use, they must also be given assistance to ensure that they have the necessary capacity to create and operate the programs, and that there are systems to ensure accountability.

Relying on Local Market Intermediaries

An important need in AIAN areas is for local entities to develop and operate effective housing assistance programs with public funds. This need appears to be equally important in meeting the needs of Native Hawaiians. For both the AIAN and the Native Hawaiian populations, local entities are key to linking the public and private housing sectors and to help create a more supportive private housing environment.

Nonprofit housing producers in the U.S. have become important partners in the production of affordable housing, accounting for more than 30,000 units and almost 20 percent of federally assisted housing units constructed each year in the early 1990s. Nonprofits are playing a growing role in leveraging financing from

multiple public and private resources, and are increasingly assuming the broader roles of community developers and social service providers, as adjuncts to their roles as developers of affordable housing. Nonprofits can often serve usefully as intermediaries linking otherwise reluctant private and public financiers and equally wary borrowers.

Using Home Lands More Efficiently

The land trust established for Native Hawaiians with 50 percent Hawaiian ancestry has not lived up to its promise as a source of housing for the beneficiary population. One reason is the poor quality and remote location of many of the lands assigned to the Home Lands inventory. Much of the land inventory is unsuitable for settlement, and costs of infrastructure development are high. In addition, neither the federal government, which established the Home Lands Trust, nor the state of Hawaii, which assumed primary responsibility for the Trust under the terms of the Admissions Act and the State Constitution, has financed the Act with adequate funding.

Recent actions by the state have, however, put significant new resources at the disposal of the Department of Hawaiian Home Lands. The state of Hawaii has recently added 16,000 acres of public land to the inventory of the Department of Hawaiian Home Lands (DHHL). These lands are said to be of significantly better quality and more conveniently located for access to major economic centers than the remaining undeveloped land in the Home Lands inventory. The state has also committed to settle claims about past misuse of Home Lands resources by promising to appropriate $600 million over a twenty year period to the DHHL. These commitments represents a substantial block of resources for potential development. However, how the reallocated resources are used will also have a substantial effect on both the efficiency and the equity by which housing is made available to meet the needs of Native Hawaiians.

The supply of housing in Hawaii for eligible Home Land applicants will be significantly augmented if the 16,000 transferred acres are subdivided into building lots and made available at below-market rates to individual households at the top of the DHHL waiting lists for a homestead lot. Yet, there are inefficiencies and inequities in this system of allocation. Certain homesteaders receive deep subsidies implied in access to an improved house lot, while others do not. Because the numbers of households in need will far exceed the numbers that can be housed on Home Lands, only a relatively lucky few will benefit from the program. Further, targeting of this subsidy is implicitly dependent on ability to make a mortgage payment on the dwelling unit rather than on need for housing.

For many Native Hawaiians, Hawaiian Home Lands stand for more than simply an affordable housing program for currently underhoused Hawaiians. There are legal and political constraints on what the DHHL can do with its resources. It is useful nonetheless to consider alternative ways in which the

Home Lands could be used to maximize efficiency and equity. The DHHL could continue to consider plans to devote a certain portion of its resources to other types of development than the large single family home that has historically been supplied on the Home Lands. For example, development of rental and other multi-family housing may be a more efficient means to meet the needs of some of its beneficiary population. It may also be equitable to adopt a means-test for infrastructure subsidies, in order to target available resources most effectively.

Homestead leases and DHHL infrastructure subsidies constitute a significant potential asset for many Native Hawaiians with unmet housing needs. Yet, because of the high costs of house construction in Hawaii, many low and very low income Native Hawaiians will still face enormous difficulties in financing the construction of a home. State and federal housing assistance targeted to needy populations might be used most effectively if there were maximum flexibility to use them in combination with Home Lands resources, and other trust resources designated for Native Hawaiians through the Office of Hawaiians Affairs and the Department of Hawaiian Home Lands. Channeling resources through one or more locally based institutions with the capacity to administer funds may be the most effective way to accomplish this purpose.

Summary

This report has documented a unique set of Native Hawaiian housing needs. These needs differ by location and intensity. The foremost need that this report identified unique to the Native Hawaiian population is severe overcrowding. Remedies to address this type of housing problem are different than the ones used to address other problems. The burden of addressing this need is unlikely to come from one single source.

As with policy prescriptions for AIAN housing, it is vitally important that programs be administered flexibly, with program assistance tailored to the particular needs of the locality and necessary levels of training and technical assistance. Home Lands will not solve all housing needs of Native Hawaiians. Most Native Hawaiians are likely to have to look to the private housing market to meet their immediate needs. It is important, therefore, not only that the Home Lands be used to provide housing as efficiently and equitably as possible, but that Native Hawaiians with serious housing needs be matched with appropriate public and private housing services. Indeed, there is a need to link housing, infrastructure, and economic development options in the local planning effort to address the diverse housing needs of Native Hawaiians.

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ANNEX A

TECHNICAL DOCUMENTATION

CONFIDENCE INTERVALS AND SIGNIFICANCE TESTS

This annex describes the method of computing confidence intervals for the data presented in tables of this report, and for computing tests of the statistical significance of the difference between two proportions for two different groups. The annex also includes two tables which report confidence intervals for the data presented in Tables 5.1 and 5.2, which report the number and proportion of households that experience housing problems in Hawaii. These tables are presented so that the reader can judge the precision of the estimates that are presented throughout the report.

The discussion draws on the methods for calculating approximate confidence intervals and testing the significance of differences in proportions that are recommended by the Census Bureau for use with Census data. U.S. Bureau of the Census (1992: Appendix C) describes these methods, and contains the equations used to calculate the confidence intervals and significance tests, as well as tables with information necessary for calculations for data for the state of Hawaii.

Confidence Intervals

This report presents numerous tabulations of data from responses to the United States Census by a random sample of households in Hawaii in 1990. Because the data are from a sample of a population, the estimated proportions and totals may vary because of sampling error. While data are reported as a single point estimate (absolute number) for ease of presentation, it is better to think of the point as the center of a range of values in which it is likely that the true value that is being estimated falls. It is possible to use statistical theory to estimate the size of this range, which is called a confidence interval.

Confidence intervals vary in size for a number of reasons. The most important factor affecting the size of a confidence interval is the size of the sample from which the estimate is made. Where a sample is large, confidence intervals are small and estimates are precise. When a sample is small, confidence intervals can be quite large, and estimated proportions and totals may be misleading. Therefore conclusions based on sample data must take into consideration how large a sample was surveyed.

The Census surveys containing information about social, economic and housing characteristics contain data from a very large sample about 1 in 7 people who lived in Hawaii in 1990 responded to each question. However,

because the analysis is presented for some small sub-groups and geographic areas, some estimates may be imprecise. For example, estimates are more precise for non-Natives than for Natives, and are more precise for Honolulu city than for the Home Lands.

Some of the data included in this report were derived from a Census PUMS (what the report sometimes refers to as microdata) file rather than from the special tabulations prepared by the Census Bureau. The PUMS is a smaller random sample drawn from the same datafile that was used to prepare the special tabulations. Because of the smaller sample size, estimates from the PUMS are somewhat less precise than are estimates from the special tabulations.

Table A.1 shows values that can be used to construct 95 percent confidence intervals (or the statistical reliability), for the data in Table 5.1, which reported the incidence of housing problems for Natives and non-Natives by area and tenure. "Ninety-five percent" refers to the level of confidence that the data user can feel that the interval identified contains the true value.

The way to use this table is to add and subtract the value in the table to the value in the corresponding cell in Table 5.1. The two resulting values are the two end points of the confidence interval. This use may best be illustrated by an example. The first cell in Table 5.1 shows that 17 percent of owner Native Hawaiian households in the state of Hawaii experienced an affordability problem. The corresponding cell in Table A.1 shows a value of 1.3. Thus the confidence interval for this estimate is from 15.7 to 18.3. This is a very narrow interval, suggesting that the estimate of 17 percent is probably quite close to the true value.

Inspection of the table shows that intervals tend to be quite narrow for most cells in the table. For most cells in the table, the confidence interval lies within +/- 3 percentage points of the estimated values. Intervals are larger for Native Hawaiians living in two environments the Hawaiian Home Lands and "balance state rural". The relatively small population bases in these areas mean that estimates for these populations are necessarily a little less precise.

Confidence intervals for most tables in the report are of the same order of magnitude as those that appear in Table A.1. for Native Hawaiians. Interval values for non-Natives from the special tabulations are extremely narrow, rarely exceeding 2.

Confidence intervals can be constructed for population totals as well as for estimates of proportions. Table A.2shows values to be used to construct 95 percent confidence intervals for the estimates of the number of Native Hawaiian households who have a housing problem of various kinds. Again, the table confirms that the intervals are relatively narrow.

Testing for the Significance of the Difference Between Proportions

This report frequently compares two groups to see whether the they are different with respect to some variable or characteristic, such as the proportion of households that experience a housing problem. In making such comparisons using sample data, the data user must be concerned about the possibility that differences that appear in the data are a result of sampling variability rather than real differences between the two groups.

It is possible to adapt the logic used to construct confidence intervals to test to see whether it is likely that sampling variability alone is the reason for a difference between two proportions. Table A.3 illustrates the method by testing for the statistical significance of the differences in the proportion of Native Hawaiian and non-Native households in Hawaii that experience each kind of housing problem.

The first row of the table compares the differences in the proportion of households that experience an affordability problem only. In this case, the difference between the two groups is 5 percentage points. A 95 percent confidence interval for this difference is computed. This interval ranges from -6.3 to -3.7 percentage points. The interval does not include "0", so we can be confident that sampling variability is not the reason for this difference.

Again, the confidence intervals that appear in this table are quite narrow, because of the relatively large size of the Census sample. When all Native Hawaiian households in the state are compared to all non-Native households in the state, a difference as small as two percentage points may be statistically significant. This is the case even when the data for non-Natives are taken from the Census PUMS rather than the special tabulations, as in this example. For most comparisons involving Natives and non-Natives, very small percentage differences prove to be statistically significant, except when the comparison is drawn to small populations, such as Native Hawaiians living on Home Lands.

ANNEX B

HOUSING CHARACTERISTICS OF NATIVE HAWAIIANS ON THE MAINLAND

Access to the Census microdata file (PUMS) allowed us to identify Native Hawaiians households who lived on the mainland in 1990. About 32,000 households who identified themselves as Native Hawaiians (either head of household or spouse) on the Census questionnaire lived on the mainland. A little less than half of these households lived in the state of California.

It is worth noting the housing characteristics of those Native Hawaiians who chose to migrate to the mainland. Are their housing circumstances any better than are those of Hawaiians who live in Hawaii? From the analysis presented in Section 3 of this report, we noted the relative youth of the Native Hawaiian population living in Hawaii. Tabulations of Census data (tables not shown) reveal that households who chose to migrate to the mainland are even younger than those who stay in Hawaii. They are also slightly better educated, choosing employment opportunities among the white collar professions. Mainland Hawaiian households form smaller households than Native Hawaiians in Hawaii.

Table B.1 shows housing problem indicators for Native Hawaiians residing on the mainland in 1990. These indicators are similar to the ones available in the special tabulations for Hawaiians residing in Hawaii used by this report to identify housing need. About 42 percent of all mainland Native Hawaiians have one or more housing problems compared to about 49 percent for Native Hawaiians in Hawaii. These rates also differ by tenure. For mainland owner Hawaiians, the incidence of housing problems is considerably less than for renter households. Compared to Native Hawaiians residing in Hawaii who own their homes, mainland owners are less likely to experience housing problems. There is about a 10 percentage point difference in the incidence of one or more housing problems between owner households of mainland Hawaiians and Native Hawaiians in Hawaii. The disparity in the incidence of having one or more housing problems among renter households is even greater about 12 percentage points separate these two groups.

We would also expect to see differences in the type of housing problems between mainland Hawaiians and Native Hawaiians on Hawaii given that their household characteristics are different. Data presented in Table B.1 clearly show that the mainland Hawaiians are not nearly as likely to live in overcrowded housing conditions. About 28 percent of Native Hawaiians who live in Hawaii experience overcrowding while only 12 percent of mainland Hawaiians experience overcrowding. Similar disparities exist for each tenure type between the two groups for the overcrowding indicator. On the other hand, mainland Hawaiians are more likely to
experience affordability problems than are Native Hawaiians in Hawaii (30 percent versus 28 percent). For renter households, in particular, the affordability problem is severe; about 36 percent experience an affordability problem. Though facility problems are not much of a problem in ether living environment, Native Hawaiians in Hawaii experience them slightly more than those on the mainland.

Table B.1 also shows the number of households with a housing problem by type and tenure for Hawaiians on the mainland. About 13,300 households on the mainland experience one type of housing problem compared to 20,500 Native Hawaiians living in Hawaii. There are about twice as many owner households in Hawaii (8,700 households) with one or more housing problems than there are on the mainland (4,600 households). As discussed earlier, there are proportionately

fewer households on the mainland with an overcrowding problem than there are in Hawaii. When these proportions are applied to the Native Hawaiian population base, we find that about 3,700 households live in overcrowded housing on the mainland compared to 11,580 Native Hawaiian households who live in Hawaii.

Summary

Housing conditions differ for those Native Hawaiians who chose to migrate to the mainland. The market conditions found in Hawaii are not the same as the ones on the mainland. Therefore, housing problems for Native Hawaiians are also different. Native Hawaiians on the mainland experience greater affordability problems than those living in Hawaii and have fewer overcrowding problems.

ANNEX C

VARIABLE THRESHOLD INDEX OF AFFORDABILITY

The analysis of the housing problems of Native Hawaiians presented in section 5 of this report uses a conventional fixed-share of income measure to determine housing affordability for households. This annex reports the results of an analysis using an alternative variable threshold index to measure affordability problems. We begin by discussing the reasons that a variable threshold index is useful to help understand Native Hawaiian housing needs, describe the variable index itself, and then discuss our findings.

PURPOSE FOR USING THE VARIABLE THRESHOLD INDEX

In recent years, housing analysts have used a method that computes a fixed share of income deemed adequate for housing costs to measure an affordability problem. A household that spends more than 30 percent of its gross income on housing is said to have an affordability problem. This index has a number of virtues. Most importantly, it is relatively easy to compute and understand. Another advantage is that some HUD and local housing assistance programs use a fixed-share threshold to determine eligibility and set benefit limits. Therefore, by using a fixed-share affordability measure access to housing programs is easily measured.

However, the method of applying a fixed percentage of income to measure affordability has limitations. Expenditure patterns vary by households, as do incomes. Therefore, not all households have the same ability to spend a given

percentage of income toward housing and meet other basic consumption needs.

Two factors in particular affect housing affordability: the amount of household income, and the size of the household. As household income goes up, a household is better able to afford to spend a given portion of its income on housing costs. For example, it might reasonably be suggested that a 30 percent-of-income burden for renter costs for a household with $25,000 yearly income should pose more of a public policy concern than a similar fixed share of income burden for a household with an annual income of $100,000. Similarly, it seems reasonable to suggest that a fixed share of income is more burdensome for large households than for small. For example, a married couple with three children will tend to have higher non-shelter expenses for basic necessities than a single individual with the same income.

Two substantive findings about the economic context of housing need in Hawaii led the study team to explore the implication of these concerns using a variable threshold measure of affordability. One of these was simply the high cost of housing in Hawaii. It seemed likely that the fixed-share measure classified some higher income households as having an affordability problem. It also seemed a plausible hypothesis that this might affect comparisons between groups, because non-Natives were over-represented at high incomes levels compared to Native Hawaiians. The other relevant finding was that Native Hawaiians had larger household sizes and were more likely to pool income from multiple workers, as discussed in section 3. If the argument that large households are more burdened by spending equal shares of income on housing at given income levels is accepted, then it is a likely that Native Hawaiians are more burdened by high housing costs that are non-Natives in ways that were not captured by the fixed-threshold measure.

COMPUTING A VARIABLE THRESHOLD AFFORDABILITY MEASURE

These considerations led the study team to explore these issues further by computing a second, variable threshold measure of a housing affordability problem developed by Stone (1989 1993). This measure uses a sliding scale to define a household as having an affordability problem when its housing expenses leave the household unable to pay for other basic needs based on a frugal standard of consumption. Calculating such a sliding scale of affordability requires estimates of a household's non-shelter budget requirements. The steps in the computation are as follows:

- Estimate each household's after-tax income by applying federal and state tax tables to reported income.

- Estimate a summary standard of consumption needs for all items other than housing, as a function of household size and type, for the market area in which the family lives.

- Subtract the cost for these "non-shelter" needs from after tax income. The remaining sum is what the household can afford to pay for shelter. A household is said to have an housing affordability problem when its spending on housing exceeds this threshold, leaving it unable to pay for the estimated non-shelter needs.

To estimate consumption, Stone proposes using updated estimates from hypothetical family budgets that were formerly prepared by the Bureau of Labor Statistics (BLS) for a number of market areas in the United States, including Honolulu county. The BLS estimated a lower, intermediate, and high budget series. Using the lower series gives a conservative estimate of what a family with a limited income might spend in a year. The family budget program was ended in 1981, but the estimates can be updated using detailed components of the consumer price index, which is the same method the BLS used when it maintained the series.

The BLS prepared estimates of consumption for two family types: a non-elderly family of four, and a two person elderly family. Table C.1-C.3 shows the
expenditure patterns that the BLS estimated for these family types in 1981, and the updated estimates of expenditures in 1990 using the CPI.

The last step in computing the affordability thresholds is to use the estimated consumption needs for the two family types for which the BLS prepared budgets to estimate the needs of other household types. This is done using a set of equivalency factors developed by the BLS. This creates an estimate of non-housing budget needs for each household. This variable figure is the threshold that is used to define a housing affordability problem. A household is said to be unable to afford what it pays for housing when its housing costs leave it unable to meet these minimal non-shelter needs.

NATIVE HAWAIIAN HOUSING PROBLEMS USING THE VARIABLE THRESHOLD INDEX

Our analysis using the fixed threshold index reported in Section

5 showed that Native Hawaiian households experience both relatively high rates of affordability problems and very high rates of overcrowding. As explained earlier, a high percentage of Native Hawaiian households live with subfamilies and pool income from multiple workers in response to housing affordability problems. Tabulations of Census microdata (PUMS) also show that 41 percent of Native Hawaiian households with one worker have a housing affordability problem, compared to only 8 percent of households that pool income from three or more workers. In addition, it was revealed that the incidence of subfamilies among Native Hawaiian households actually increased from 1980 to 1990, while the incidence of subfamilies for non-Natives decreased.

Together, these analyses showed a close connection between the high costs of housing in Hawaii, the tendency of Native Hawaiians to form large multi-generational households, and the resulting problems of both affordability and crowding. Use of the variable threshold indicator amplifies this finding, and shows that because of its limitations the fixed threshold index may be understating the problem of affordability experienced by Native Hawaiian households, as well as the extent of overlap between crowding and affordability problems.

Table C.4 shows the distribution of housing problems according to both the variable threshold method and the fixed share method. Applying the variable threshold method does not drastically increase the overall incidence of housing problems for either Native Hawaiians or non-Natives. Based on the variable threshold method, about 51 percent of all Native Hawaiians and 37 percent of all non-Natives experience a housing problem. The incidence of housing problems drops slightly for non-Natives and increases by only 2 percentage points for Native Hawaiians.

The key housing problem that the variable threshold method is intended to address is affordability. Under this method, the affordability problem for Native Hawaiians increases to 35 percent for a difference of 8 percentage points from the one reported for Native Hawaiians using the fixed share method. For non-Natives the incidence of affordability problems is lower than for Native Hawaiians but almost the same as the one calculated using the fixed share method. However, for renter households the differences are greater. Under the variable threshold method, about 50 percent of Native Hawaiian renters experience an affordability problem, in contrast to 36 percent under the fixed share method. The difference is not so pronounced for non-Natives.

By contrast non-Native Owners have a significantly lower incidence of the affordability problem using the variable threshold measure (17 percent) instead of the fixed share measure. This may be because the fixed share measure classifies some high income non-Native homeowners living in expensive housing as being unable to afford their housing, while the variable threshold measure discerns that these households have sufficient remaining income to pay for non-shelter needs.

The variable threshold affordability indicator calls particular attention to the dual problems of overcrowding and affordability. Using the variable threshold scale, 13 percent of all Native Hawaiian households are classified as having both an affordability problem and some other problem most often, a crowding problem. What appears to be happening is that large households with pooled income are treated under the fixed share affordability measure as if they have exchanged affordability for overcrowding. In contrast, because the variable threshold method uses a sliding scale based on household size, the shelter poverty measure identifies many of these larger households as having an affordability problem as well as an overcrowding problem. The primary implication of this analysis is that the conventional fixed-threshold measure of the housing affordability problem understates the true incidence of this problem because of the tendency of Native Hawaiians to form large, multi-family households.

ANNEX D

HOUSEHOLD PROJECTIONS

Projections of Native Hawaiian household formation from 1990 to the year 2000 were made using cohort components and the headship method. The model to make these projections included assumptions about the redistribution of the population by migration in order to assign household formation to one of four sub-areas: Honolulu county, Hawaii county, Maui or Kauai Counties, and the United
States mainland. These regions were chosen to correspond to areas for which migration patterns for the 1985 to 1990 interval could be studied using Census PUMS.

The steps in the projection were:

- Survive the 1990 Census Native Hawaiian population by 5-year age cohort to 1995 and to 2000.

- Redistribute the population among the four areas according to migration rates calculated from Census PUMS for 1985 to 1990 by age and area.

- Assign householder status as a function of age cohort within area. Also assign status of Native Hawaiian spouse of non-Native householder, to maintain equivalence to Native Hawaiian household definition used throughout the

study.

- Compute household counts as the total of householders and qualifying spouses.

The data about the age-by-region distribution of the Native Hawaiian population in 1990 were taken from complete count data published by the U.S. Bureau of the Census (1992).

Rates of survival by age cohort were taken from those found in the United States, all races, taken from vital registration data for 1990. (U.S. National Center for Health Statistics 1994: Table 6.1). Gender differences were ignored and no attempt was made to assign differential mortality by race or ethnicity. Estimates of different survival rates for this relatively young population over a short time period make little difference to the projections.

Migration and distribution to householder (or qualifying spouse status) were calculated from an extract from the 1990 Census PUMS-A (U.S. Bureau of the Census 1993). This extract included a sample of all persons living in a household with a Native Hawaiian (by race or ethnicity) regardless of location.

Migration flows can vary sharply from period to period, so 1985 to 1990 period assumptions may not be appropriate for the decade of the 1990s. However, it seemed plausible that gross migration flows would continue as they had in this period, because these flows to regions in Hawaii in this period mirrored known patterns of long-term growth that have continued after 1990. It was also assumed that age structure in conjunction with ecological differences between regions would create a certain stability in migration rates in the face of short term fluctuation of economic conditions. For example, it seemed likely that there would be continuing relatively large migration flows of young persons in their late teens and twenties from the other islands of Hawaii to the metropolitan county of Honolulu. It also appeared to be likely that a small net migration balance favoring gradual redistribution of Hawaiians to the U.S. mainland would continue. The 1985-1990 data, in spite of their limitation, captured many such patterns that seemed reasonable on the basis of previous research about migration (Long 1988; Fuguitt, Brown and Beale 1989). No ready alternative set of assumptions about migration patterns presented itself.

Assumptions about headship rates by age were drawn from the observed rates for 1990. This is a critical assumption, and one that may well be unrealistic. It is likely that the headship rate for Native Hawaiians changes over time in response to continuing changes in family structure, as it has recently for other populations (Sweet 1990). The direction of this change is not easy to predict. In Hawaii, the supply of housing may well be an important determinant of the headship rate. For this reason, we assumed a constant headship rate would create a useful baseline projection of future growth based on observed current

patterns of demand for householder status.

Implications of the Model

By using these simple assumptions, the model projects relatively rapid growth for the Native Hawaiian population between 1990 and 2000 about 13,000 new households in Hawaii from an observed base of about 43,000 in 1990. This result implies for a growth rate that was much higher than that observed between 1980 and 1990 (13 percent). More rapid growth is projected to occur between 1990 and 1995 than later in the decade.

Part of the reason for the rapid projected growth rate is the youthfulness of the age pyramid for Native Hawaiians in 1990. This implied that in the 1990s many Hawaiians would be moving into a part of the life cycle in which many individuals marry and form new households. Another factor is that high intermarriage rates for Hawaiians imply steady growth of the number of households with a Native Hawaiian spouse. Finally, assumptions about regional redistribution of population led to projections of movement to places were age-specific headship rates for Hawaiians were higher, such as the U.S. mainland and
Hawaii county, and away from places where these rates were lower, such as Honolulu county. The high growth rate projected by the model may prove unrealistic, in part, because the supply of appropriate housing units in Hawaii may not be sufficient to meet the demand. Many Native Hawaiians may be led to postpone marriage, live with a parent after marriage, or move to the mainland, because of the unavailability of affordable housing in Hawaii.

ANNEX E

PROBABILITY OF HOMEOWNERSHIP FOR NATIVE HAWAIIANS

Data about tenure type in Hawaii indicate that Native Hawaiians have a preference for homeownership. Certainly, their preference for single-unit structures seems to indicate a strong desire to become homeowners. Home-ownership can be an attractive investment, particularly in an environment of rapid
house appreciation that like experienced in Hawaii in the 1980s.

Housing analysts have always viewed household tenure choice in the context of a broader market. Tenure choice can be best understood as a household's demand for housing. There are many reasons why a household

chooses homeownership over renting. Researchers have empirically tested many of these through a tenure choice model. Tenure status is determined by both household characteristics and external factors. Researchers have tested different theories by specifying tenure choice models that estimate the demand for homeownership.

To better understand the patterns of homeownership by Native Hawaiians, it is useful to understand the relationship between the characteristics of group members and the decision to own rather than rent a home. Most empirically tested tenure choice models have estimated the probability of homeownership based on key characteristics of households and external factors that relate to costs of owning and renting.

The data we used to estimate the relationship between homeownership and household characteristics and relative prices came from the 1990 PUMS file. These data were ideally suited for this estimation process because since they contain a comprehensive set of household and housing characteristics. One equation was estimated using sample data from the PUMS for all residents of Hawaii. Specification of the variables that entered in the model relied on previously tested explanations of tenure choice. The following tenure choice model was specified:

Probability of Homeownership = f(Households: Size, Age, Marital Status, Income, Mobility, Relative Price of Owner
Occupied and Renter
Occupied Housing, and
Whether Household was
Native Hawaiian)

The relationship between each variable and tenure status was estimated using the LOGIT methodology. LOGIT is a multivariate regression technique that measures the strength of the relationship between a variable of interest such as tenure choice, and other variables believed to explain the occurrence of the variable of interest. This method is employed when the dependent variable is a matter of choice between two distinct alternatives. Once the relationship is estimated using the LOGIT, one obtains coefficients with which to estimate the probability of homeownership for a household for any specified set of characteristics.

Table E.1 shows the distribution of Native Hawaiian and non-Native households on the variables that are used to predict homeownership. All variables that entered into the equation except for age of head and relative price ratio were coded with a 1 if the trait was present and 0 otherwise. The variable persons per household was used to measure the size of the households broken into four discrete groups (one, two-three, four-seven, and eight or more). Mobility
was defined by the Census question that asks if the respondent had moved within

the past five years. The relative price variable was defined as the ratio of the average house price in the area to the average rent for the area where the household resided. A dummy variable was used to specify if the head or his/her spouse self-identified themselves as Native Hawaiian status (2,125 households out of 15,943 households).

Distributions in Table E.1 show that both Native Hawaiians and non-Natives have some characteristics that make them more likely to be owners, and other characteristics that make them more likely to be renters. For example, income is usually associated with homeownership because the tax incentives that are associated with mortgage borrowing are more valuable with increasing income. As people get older they are more likely to want to be homeowners as long as they have a growing interest in building equity. Non-Natives have higher incomes and are older, and thus should be more likely to own than Natives. On the other hand, Natives are more likely to live in large family households and are much more likely to have a long-term commitment to residence in Hawaii (indicated by whether they lived in Hawaii in 1985). The effect of these variables is to increase the probability of homeownership for Natives compared to non-Natives.

Table E.2 shows the estimated models predicting probabilities of homeownership. Results are converted to probabilities for households that have a given characteristic, and these are compared to those for households that are otherwise the same but which lack the characteristic in question, at the average value for other variables in the model. For example, the model predicts that 67 percent of married-couple households will own a home, while only 48 percent of all other household types will be owner households.

All effects in the model are in the expected direction: having income above the median, having greater numbers of persons in household, being a married-couple household, being older, and maintaining residence in Hawaii since 1985 are all associated with owning a home. As the cost of owning rises relative to the cost of renting, the probability of homeownership goes down. Many of the effects are large. Particularly noteworthy is the much higher probability of homeownership for households that lived in Hawaii in 1985 compared to those that did not. The model suggests that there is a difference of 33 percentage points in the probability of homeownership between these two groups.

The results of this logistic regression equation show that when the effects of each characteristic were controlled for, a Native Hawaiian household is much less likely (by 11 percent) to be homeowner than a non-Native household. This finding may well reflect further economic differences between the two groups that were not controlled for in the model, such as the amount of savings and expected lifetime earnings.

ANNEX F

FEDERAL, STATE, AND LOCAL HOUSING PROGRAMS IN HAWAII

- Shared Appreciation Equity Program - (used in conjunction with FHA mortgage insurance program) Homeownership is offered to eligible persons at the cost of construction. Program is sustained through provisions which are based on long gain from house price appreciation.

- General Excise Tax Exemption - State of Hawaii offers an exemption of 4 percent excise tax to qualified persons and firms involved with planning, design, construction, financing, sale, or lease of housing projects which are financed under the sponsorship of housing authorities, HFDC, or counties.

- Dwelling Unit Revolving Fund - Fund monies used to acquire, develop, sell, lease, or rent residential, commercial and industrial properties; and providing mortgage, interim construction.

- Hawaii Development Revolving Fund - Provides seed money loans to non-profit entities for planning, development, and other feasibility activities associated with low- and moderate-cost housing.

- Hula Mae Multi-Family Program - Provides private developers/owners of rental housing with interim and permanent financing at below-market interest rates through issuance of tax-exempt revenue bonds.

- Rental Assistance Program - Promotes private sector participation in the development and preservation of rental housing projects.

- Subsidized Housing Finance - HFDC administers programs that provide below-market rate mortgage loans for first-time homebuyers. Programs include Hula Mae Single Family Program, Mortgage Credit Certificate Program, Taxable Mortgage Securities Program.

- Low Income Housing Tax Credit Programs - Provides incentives for the development and preservation of privately-owned affordable rental housing.

- Farmers Home (FmHA) Housing Administration Programs - Provides subsidized financing for home purchase to eligible families for rural settlement.

Hawaii Housing Authority - Manages federal and state-assisted rental housing projects. As public housing agency (PHA) it is also authorized to develop publicly-owned rental housing projects.

- Federal Low Rent Housing Program - Rental program with subsidies for construction, modernization, and operation of public housing.

- State Public Housing Program - Rents units for no more than 30 percent of eligible families income.

- Section 8 - Existing (Certificate and Voucher Program) - Federally funded program to subsidize rents for eligible families in the private housing market.

- Rent Supplement Program - State funded program to subsidize rents for eligible families.

Source : HFDC, Overview of Affordable Housing Targets, December 1991