

Asian and Pacific CENSUS FORUM

How Many Samoans? An Evaluation of the 1980 Census Count of Samoans in the United States

by Geoffrey R. Hayes and Michael J. Levin

One of the most persistent fantasies that haunts the human mind is the fantasy of certainty.

Thus in a sense the estimate of the population is actually the creation of the process set in motion for measuring it.

Mitroff, Mason, and Barabba 1983

In 1983, the United States Congress commissioned the Department of Labor to conduct a study to determine why Samoans in the United States were experiencing high rates of poverty and unemployment. One of the first tasks of the inquiry was to ascertain the size of the population that any remedial programs that might be developed would have to reach. Although the 1980 census counted 41,948 Samoans in the United States (U.S. Census Bureau 1983:125), this figure was much lower than many members of the Samoan community had expected, and attention was drawn to previous estimates made by social scientists and others (table 1). Some of these sources (e.g., Steele 1981) suggested that the Samoan population of the United States could be as high as 100,000—almost two and a half times the number counted by the Census Bureau.

Table 1. Estimates of the Samoan Population of the United States, 1929-83

United States	Hawaii	California	Source	United States	Hawaii	California	Source	
1929	125		Pierce 1956:20	1976	68,000	37,000	Emery 1976:10	
1950	463		U.S. Census Bureau 1953:18		16,000		McGarvey and Baker 1979:463	
1956	1,000-2,000		Hirsh 1956:1	1977		20,000 ^b	Shu and Satele 1977:7	
1964-67	2,420		Schmitt 1977		5,648		Hawaii Dept. of Health 1979	
1966	7,500		Alailima and Alailima 1966:1	1978		6,000	Markoff and Bond 1980:189	
1970	5,000-18,000		McCormick 1972:9			90,000	Macpherson et al. 1978:247-49	
		15,000-20,000	Ablon 1971:329	1979		11,520	Hawaii Dept. of Planning 1980	
	20,000		Park 1979:27	1980	40,000-60,000	10,000-12,000	36,000-41,000	Shore 1980
	5,500-11,000		Schmitt 1972		100,000		Steele 1981	
1971	6,544		Hawaii SISC 1972	1981		9,357	Hawaii Dept. of Health n.d.	
1972	12,000		Selle 1972:48	1982		8,000-18,000	Alailima 1982:105	
	48,000	23,000 ^a	Chen 1973:41			12,556	Hawaii Dept. of Health n.d.	
		15,000-30,000	Lewthwaite et al. 1973:133	1983	73,000	30,000	Takeuchi 1983	
1975	7,030		Hawaii OEO 1976			60,000 ^c	Andersen 1983	
	70,000	21,000	Rolff 1978:58					

a. For Southern California only.

b. Los Angeles area only.

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HOW MANY SAMOANS? (continued)

An examination of the sources of these figures suggested that many of the estimates are probably guesses, while in other cases it is not clear how the numbers were obtained. Two exceptions are the 1964–67 and 1971 estimates for Hawaii, which were based on surveys conducted by the State of Hawaii Health Surveillance Program (Schmitt 1977) and the Hawaii State Immigrant Services Center (Hawaii ISC 1972). None of the other figures appear to have been derived from an actual count of the Samoan population, but at least one study (Park 1979) was based on sound demographic procedures, and another (Lewthwaite, Manzer, and Holland 1973) made good use of secondary statistics available at the time. In general terms, the more systematic the methodology employed, and the larger the supply of secondary statistics (as in Hawaii), the closer the estimates were to what might be expected on the basis of the 1980 census results. Where historical statistics were largely lacking (as in California) the range of estimates was wide and deviated substantially from what would be expected if the census were correct.

This paper reports the results of applying demographic methods, in combination with assumptions about vital rates and migration, to estimate the total Samoan population of the United States in 1980. Because of the wide range of error in many of the statistics and the assumptions used, the methods employed do not permit an exact measure of the census coverage of Samoans. They do, however, provide a basis for comparing the relative accuracy of the census count and informal estimates. The results of our analysis show that a census undercount of the magnitude implied by some of the figures cited in table 1 is demographically implausible.

Evaluation Methods

An evaluation of the accuracy of the census count of a small minority group raises all the technical problems associated with the measure of census coverage in general. The Samoan case is complicated by the fact that the 1980 census was the first U.S. census since 1930 in which Samoans were reported as a distinctive ethnic group (both the 1920 and 1930 censuses counted Samoans). Furthermore, Hawaii is the only state to report Samoan vital statistics separately, so it is impossible to determine the total number of Samoan births and deaths in the country as a whole. These two conditions rule out the use of an intercensal comparison using a conventional demographic balancing equation. Moreover, migration statistics on Samoans entering or leaving the United States are almost nonexistent. Although immigrants from the independent state of Western Samoa are included in U.S. Immigration and Naturalization Service statistics, American Samoans are "nationals" and therefore may enter the United States without restriction. The supply of migration statistics from the Samoa end of the migration stream is limited to a few years and is quite inadequate to the task of checking the census count.

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The other methods used by demographers to evaluate the coverage of a census can be placed in five categories: (1) post-enumeration surveys, (2) reenumeration, (3) consistency checks within a single census, (4) matching against individual records, and (5) checks against independent aggregates (Shryock and Siegel 1975:105). All of these methods raise practical and statistical problems in the case of the Samoan population in the United States.

The U.S. Census Bureau has, of course, carried out post-enumeration sample surveys to test the accuracy of the count of some racial groups and urban areas (Passel, Cowan, and Walter 1983), but the Samoan population is too small to be represented in them. The reenumeration of the entire Samoan population is obviously ruled out for practical reasons. There appear to be no gross inconsistencies in the age and sex distribution of the 1980 census data on Samoans (Hayes and Levin 1983), but further tests are necessary. The final two methods raise the question of whether other sources of data are less error-free than the census itself. Matching studies might have been possible shortly after the census in parts of Honolulu, where independent survey data are available, but this would not help evaluate the coverage of Samoans in the country as a whole. Comparison with independent aggregates such as church records may be a plausible procedure in areas of high Samoan concentration, but the high rates of circular mobility between Samoa, Hawaii, and the United States mainland would make this method highly unreliable unless extremely severe statistical controls were maintained. It would not be practical to employ this method on a national basis.

Given the difficulties associated with conventional demographic procedures, an unorthodox method was called for. In this paper we have applied a variant of the intercensal comparative method in combination with demographic analysis and statistical estimation to make a range of estimates of the Samoan population in 1980. As will become clear, the method requires that assumptions be made where empirical data are weak or nonexistent.

The General Procedure

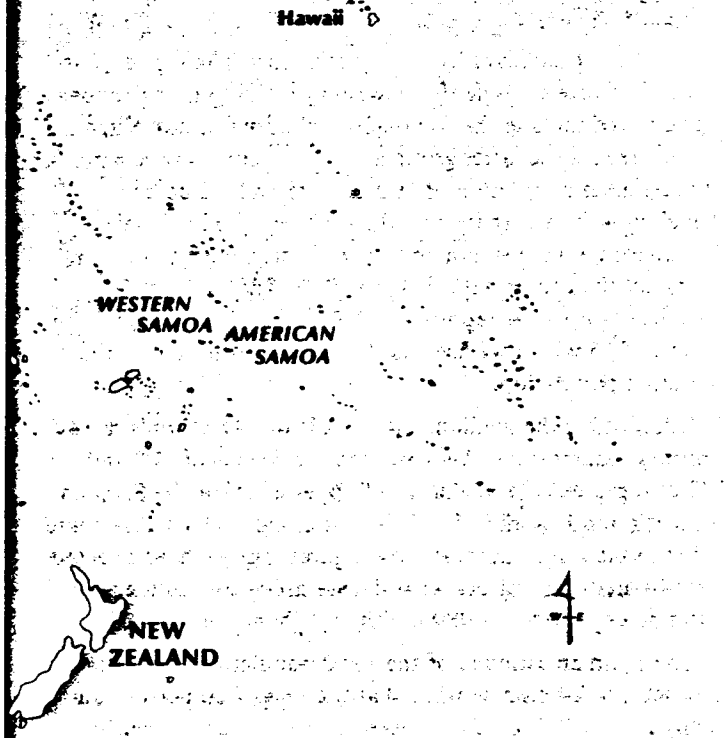
Although Samoans were not reported in United States censuses from 1940 to 1970, they have been counted in American Samoa, Western Samoa, and New Zealand (the other centers of Samoan population) since the early 1900s. Few Samoans live outside these four locations, but small numbers are likely in Tonga, Fiji, and Australia. If a base population in the United States can be established for some period before major immigration to the United States began, census data from the other three locations, in combination with vital statistics (or demographic estimates) and migration statistics, would provide a means of estimating the "expected" Samoan population in the United States in 1980. In order to reveal the degree to which the expected population is sensitive to different assumptions about demographic rates and the size of the base population, we have made four separate estimates of the expected population.

Establishing the Base Population

The first difficulty is determining the size of the base population. The 1920 census of the United States counted six

MAJOR SAMOAN COMMUNITIES

UNITED STATES



Samoans, all of whom were in California and all but one foreign-born (U.S. Census Bureau 1933:59). The 1930 census also reported six Samoans, two of whom were in Utah and four in California. All were listed as native-born. The category Samoan did not appear again in a U.S. census until 1980.

Although we know from the 1920 census that at least six Samoans had reached the United States mainland by that year, the migration history of Samoans prior to World War II is poorly documented. Movement to Hawaii and California started during World War I (Lewthwaite et al. 1973:134), but adventurous sailors were probably visiting Pacific ports as early as the 1840s and those who stayed most likely became absorbed into local populations. The nucleus of the Samoan population of Hawaii was formed in the 1920s from three groups: five or six families numbering 33 persons in 1925 who settled in Laie village on the island of Oahu; an unknown number of entertainers who stayed in Hawaii after touring the United States; and between 50 and 60 Samoan prisoners who were sent to serve their time in Hawaii jails and decided to remain in Hawaii on their release (Alailima 1982:105; Born 1968:456). It is not known how many of these persons eventually returned to Samoa or continued on to California or other places. If the strongest assumption of no subsequent return or onward migration is made, there could have been between 100 and 200 Samoans in Hawaii by the mid 1920s. There is reason to be-

lieve, however, that many of the Samoans in Hawaii at this time intermarried with Hawaiians (Alailima 1982:108) and may have lost their Samoan identity. Samoan immigration to Laie slowed down in the 1930s and, according to Stanton (1978:273), "totally ceased" during World War II.

Between November 1947 and March 1950, letters of identity were issued to 474 Samoans intending to travel to the United States (Lewthwaite et al. 1973:134), but it is not known how many actually made the journey. The 1950 census reported 463 persons in Hawaii who had been born in American Samoa (U.S. Census Bureau 1953:18) but did not indicate the number of Samoans by race or ethnicity. The figure of 463 would therefore exclude the Hawaii-born children of previous migrants and include the Samoa-born children of non-Samoans. If we disregard the latter group as insignificant, assume a minimum Samoan population of 100 in 1925 and a 2 percent annual growth rate, there would have been an additional 63 Hawaii-born Samoans, not counting children born to new migrants, by the census date, 1 April 1950. Adding these Hawaii-born Samoans to the reported 463 Samoa-born, we obtain the figure of 526 which we have used as the lower bound of the estimated population.

Establishing the medium and upper bounds requires rather arbitrary assumptions. We have used the figures of 300 and 500 to represent the medium and upper limits of the Samoan population in Hawaii in 1925. No historical evidence has come to light that would support these figures, but we have selected them in order to indicate what demographic consequences could be expected by 1980 if either of them was correct.

To obtain an estimate of the 1950 population, we assumed that net immigration continued at the rate of 10 persons annually from 1925 to 1930, slowed to 5 per year during the Depression and World War II, and increased again to 40 per year from 1946 to 1950. These estimates were obtained simply by assuming that 60 percent of the 463 American Samoa-born enumerated in Hawaii in 1950 had immigrated between 1925 and 1950. The actual period of migration was determined subjectively on the basis of comments by Stanton (1978:273) and others. Although these sources indicated that immigration stopped completely during World War II, we have allowed for a small inflow, which seems more realistic.

Furthermore, we assumed that the natural growth rate of

Samoans in Hawaii was as reported for American Samoa by Park (1979:15-20), namely, 1.8 percent per year from 1925 to 1930, and 2.4 percent per year from 1930 to 1950. These calculations result in a medium estimate of about 900 and an upper limit of about 1,200 Samoans in Hawaii in 1950 (table 2, column 1).

Apart from the 1920 and 1930 census figures already mentioned, little is known about the pre-World War II Samoan population on the U.S. mainland. According to Lewthwaite et al. (1973:134), a Samoan "community" was "seemingly" established in California during World War I, but they cite no numbers, location, or historical sources. Here again, it is necessary to make assumptions. We were unable to find any information that would suggest a larger migration flow to the mainland than to Hawaii prior to the 1950s, so Samoans in Hawaii were probably the majority at least until 1950. For the sake of argument, however, we have assumed two separate distributions for 1950: the first assumed that three-quarters of all Samoans in the United States were in Hawaii and the balance on the mainland; the second assumed an equal distribution between the mainland and Hawaii.

When these two distributions are combined with the low, medium, and high estimates of the Samoan population of Hawaii in 1950, the result is six separate estimates of the total Samoan population in the United States (table 2, column 5). Since the two middle pairs are relatively close to each other, they have been averaged to produce four estimates as shown in table 2, column 6. Note that in effect all six estimates are represented in the analysis, depending on which interpretation of the table is made. That is, the estimate of 1,114 can be interpreted to mean either that the Hawaii base population was 526 with an equal distribution between Hawaii and the mainland, or that the Hawaii population was 882 with 25 percent of the total on the mainland. Two similar interpretations are possible with the estimate of 1,698.

Reconciliation of Census, Natural Growth, and Migration Data

To establish a starting point from which all subsequent changes could be measured, we used migration and natural increase data from the other three locations for which we have statistics on Samoans (American Samoa, Western Samoa, and New

(continued on page 10)

Table 2. Estimates of the Samoan Population of the United States in 1950 and 1951

Assumption	Base Population Hawaii, 1950 (1)	Ratio Hawaii/Mainland (2)	Population 4/1/50			1950 Revised (6)	Natural Increase ^a (7)	Migration (8)	Population 9/25/51 (9)
			Hawaii (3)	Mainland (4)	Total (5)				
Low	526	75/25	526	175	701	701	37	462	1,200
		50/50	526	526	1,052				
Medium	882	75/25	882	294	1,176	1,114	58	462	1,634
		50/50	882	882	1,764				
High	1,224	75/25	1,224	408	1,632	1,698	89	462	2,249
		50/50	1,224	1,224	2,448				

a. Natural increase based on annual rate of 3.5 percent (see text).

Rele, J. R. 1967. *Fertility Analysis Through Extension of Stable Population Concepts*. Berkeley: Institute of International Studies, University of California. Republished in 1977 by the Greenwood Press, Westport, Connecticut, as Population Monograph Series, no. 2.

Smith, Peter C. 1978. Indexes of Nuptiality: Asia and the Pacific. *Asian and Pacific Census Forum* 5(2): 1.

Spiegel, Murray R. 1961. *Schaum's Outline of Theory and Problems of Statistics*. New York: Schaum Publishing Company.

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Zealand). For convenience we chose 25 September 1951, the date of the Western Samoa census, as the starting date.

In order to adjust the American Samoa population and the Samoan population of the United States from 1 April 1950 to 25 September 1951, two further operations were necessary. First, natural increase during the intercensal period was added to both populations at the rate of 3.5 percent per year. This is the rate of growth observed in American Samoa during the 1950-56 period (Park 1979:15-20), and in the absence of vital statistics for Samoans in the United States at this time we have applied the same rate to them as well (see table 2, column 7). Secondly, emigration from American Samoa to the United States during the same intercensal period was subtracted from the 1950 census figure for American Samoa and added to the estimated population of Samoans in the United States (table 2, column 8). The net migration figure of 462 was obtained from McArthur (1968:144-45), who estimated that approximately 3,000 persons emigrated from American Samoa between 1 April 1950 and 25 September 1956. Of these, about 1,000 went to Western Samoa and fewer than 2,000 emigrated from the Samoan Islands. This figure appears to be corroborated by the estimates of the Naval Administration, which indicated that 1,987 Samoans left American Samoa between 3 May 1950 and 30 June 1956 (Lewthwaite et al. 1973:136). If emigration was evenly distributed throughout the 1950-56 period, the net outflow from American Samoa to the United States during the intercensal period 1950-51 would have been 462.

Column 9 of table 2 shows four estimates of the Samoan population in the United States adjusted to 25 September 1951. The range is from a low of 1,200 to a high of about 3,000.

Estimating the Expected Population

Estimates of the "expected" population of Samoans in the United States for successive periods were obtained by means of the basic balancing equation:

$$P_t = P_0 + B - D + M$$

where P_t is the population at the end of the period, P_0 is the population at the beginning of the period, B is births, D is deaths, and M is net migration.

For P_0 (1951) we used the four estimates of table 2, column 9. In order to obtain estimates of the population in subsequent years, statistics on Samoan births, deaths, and net migration were required, ideally by single year. Since birth and

death statistics for the total Samoan population in the United States were not available, it was necessary to use estimates. For the period 1951 to 1965, we applied the same birth and death rates as were reported for American Samoa (Park 1979: 15-20) during the same period. From 1965 onwards, fertility estimates derived from the application of the own-children method (Levin and Retherford 1983) to 1980 census data for Samoans in the United States were used. The crude birth rate (CBR) for the period 1965-67 was 37 per 1,000. While it was clear from the own-children analysis that the total fertility rate (TFR) of Samoans declined by about one third between 1966 and 1979 (from 5.9 to 4.0), the CBR remained at about 35 per 1,000 in 1979 because of the large proportion of women in the childbearing ages. Consequently this rate was applied throughout the 1968-80 period on the assumption that declining total fertility is yet to be reflected in the CBR.

From 1965 through 1980, we applied a constant crude death rate (CDR) of 5.0 per 1,000. This rate was simply an average of the reported CDR of 4.9 per 1,000 in American Samoa during the 1973-75 period (Park 1979:20), the Nordyke (1979) estimate of 4.8 per 1,000 for Samoans in Hawaii, and our estimate of 5.2 per 1,000 from 1980 census data (Hayes and Levin 1983).

Deriving migration estimates was a much more complicated process. A continuous series of annual migration statistics (arrivals and departures) for the 1951-80 period was unavailable, either from the Samoan or United States end of the migration stream. Consequently, net migration had to be estimated using indirect methods. If American Samoa were the only source of Samoan migrants to the United States this would be a relatively straightforward calculation. But many migrants originate from the independent state of Western Samoa, spending various periods of time in American Samoa before moving on to the United States. Even if few Western Samoans emigrated on to the United States, their continuous inflow to American Samoa would tend to conceal the outflow of Samoans from American Samoa as indicated by indirect methods.

To allow for the flow of Samoans in and out of American Samoa from Western Samoa, it is necessary to treat the total population of Samoans in the United States, American and Western Samoa, and New Zealand as a closed system. That is, other than internal movement between these locations, no other migration was permitted. If this closed system is assumed, then all Samoans who emigrated from Western Samoa but did not go to New Zealand must have either emigrated to American Samoa or the United States. By the same token, all Samoans who emigrated from American Samoa but did not go to Western Samoa or New Zealand must have entered the United States.

Because some Samoans probably do migrate to other parts of the Pacific and elsewhere in the world, the above assumptions are not absolutely realistic, but the error they produce will likely be small. In order to allow for some Samoan emigration elsewhere, and to simplify our calculations, we have ignored the inward movement of other Pacific Islanders to American Samoa during the 1951-80 period (probably in the order of 800 persons).