

Population Estimates and Projections

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Estimates of the Population of Puerto Rico and the Outlying Areas: 1970 to 1978

(Estimates in this report supersede those for 1970 to 1976 published in Current Population Reports, Series P-25, No. 731)

This report presents estimates of the population for July 1, 1970 to 1978 and the components of change for the Commonwealth of Puerto Rico, the Virgin Islands of the United States, American Samoa, Guam, and the Trust Territory of the Pacific Islands.¹ These areas had an estimated population of 3.7 million in 1978. Excluded are small areas of American jurisdiction scattered in the Pacific Ocean such as Midway, Wake, and Canton Islands, and Johnston Atoll, the populations of which numbered 4,874 in the 1970 census.

Shown also are estimates for the Northern Mariana Islands, which will eventually separate from the Trust Territory and become a Commonwealth in political affiliation with the United States. This area is coterminous with the former Mariana Islands District of the Trust Territory.

The report also presents the components of population change for these areas for the period 1970-78—natural increase (the number of births minus deaths) and net migration (the number of persons migrating into a particular area minus the number migrating from the area). In some of the areas shown, net migration is not estimated directly but is derived as the difference between the total amount of change and natural increase.

METHODOLOGY

In developing the estimates for the Commonwealth of Puerto Rico and each of the outlying territories, rarely were the same data or a uniform method used. The availability of data relating to population change varies from territory to

territory. The concentration of special population groups in some of the areas makes it difficult to rely on certain kinds of symptomatic data or standard methods.

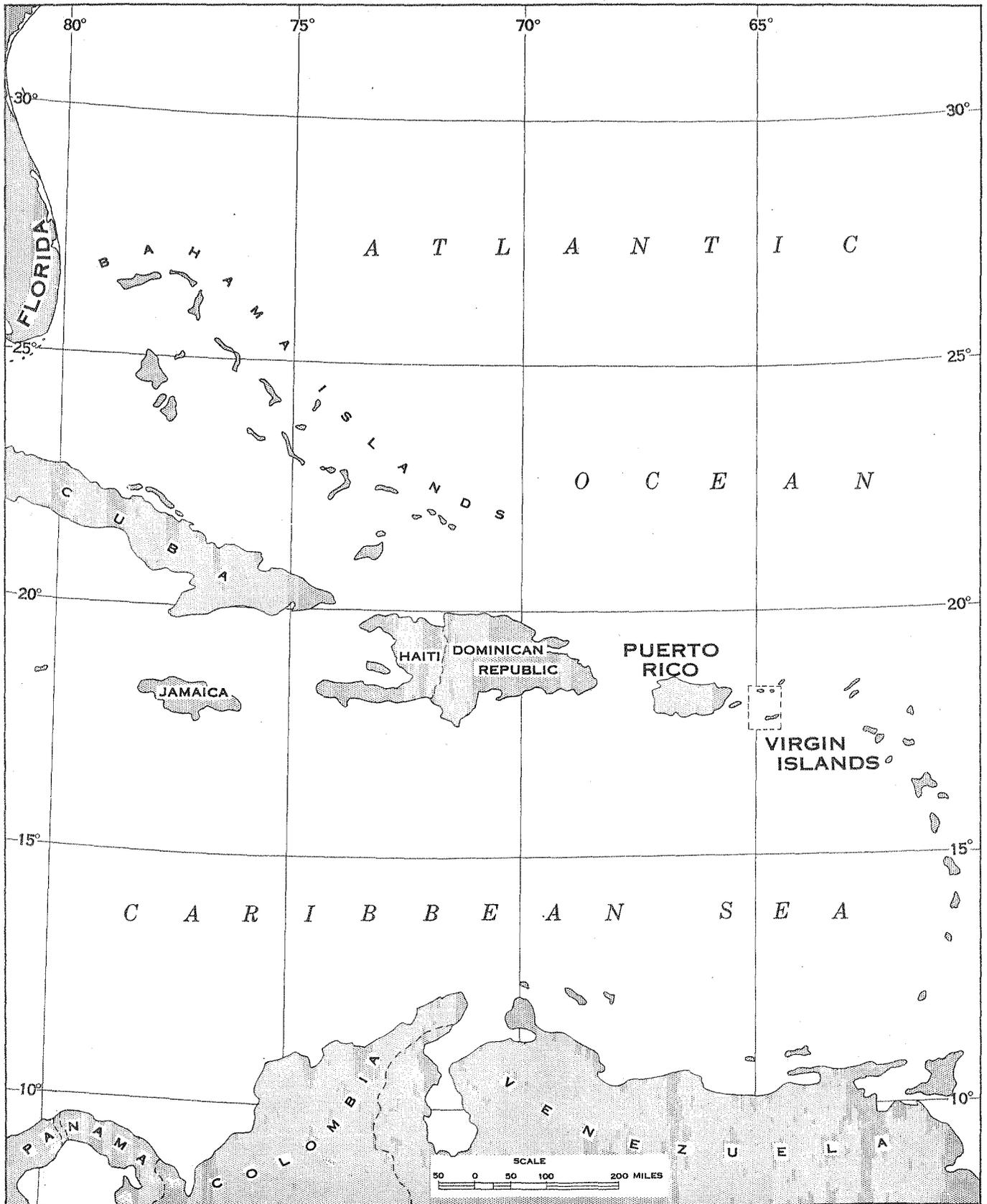
An explanation of the procedure used for each of the areas is as follows:

Puerto Rico. The estimates for Puerto Rico were based on reported statistics for each of the components of population change. Because of the incomplete reporting of births and deaths, each of these components has been corrected by the Commonwealth government for underregistration. The migration component was derived from monthly passenger statistics on arrivals to and departures from Puerto Rico as compiled by the Commonwealth government. The migration estimate for Puerto Rico is the sum of centered 12-month moving averages of the reported monthly data. This compensates for bias introduced by short-term fluctuations in passenger data which reflect the seasonal movement of transients (tourists and other visitors) rather than the movement of migrants to a new residence. The movement of transients will tend to cancel out over longer periods. Net movement between the civilian population and the Armed Forces is based on the reported number of inductions, enlistments, and separations in Puerto Rico, through 1975. The 1974-75 level was assumed to continue for the following years.

Virgin Islands. The estimates for the Virgin Islands were based on Component Method II, a component method variation developed by the Bureau of the Census. In this method, net migration is estimated on the basis of school enrollment or school census data using the difference between the actual population of elementary school age and the population of school age expected on the basis of the most recent census and births since the census.

¹ As of October 1, 1979, the Canal Zone ceased to be under the "jurisdiction, control, or sovereignty" of the United States. Therefore, population estimates are no longer shown for this area. For estimates through 1976, see Current Population Reports, Series P-25, No. 731.

CARIBBEAN AREA



American Samoa. The estimates for American Samoa were based on the 1970 census and a special census of the territory, taken September 26, 1974, under the auspices of the Samoan government, which showed a population of 29,190. Net migration for the period between the censuses was calculated by subtracting reported natural increase from the net population change. This migration was prorated back over time from July 1, 1970 to 1974. The estimates for July 1, 1970 to 1974 were then obtained by adding the components of population change to the 1970 population base. For July 1, 1975 through 1978, the average annual amount of net migration between the 1970 and 1974 censuses was estimated to continue, and this figure was combined with reported natural increase and added to the 1974 census to obtain a current population estimate. The estimates are consistent with the results of a 10-percent sample survey conducted in February of 1977 which yielded a population estimate of 30,600.

Guam. The estimates of the population of Guam were developed by adding the following to the 1970 census count of the population excluding those persons born in the United States or born abroad of American parents:

1. Natural increase. The excess of births over deaths to the population based on reported birth and death statistics. Excluded are the births and deaths occurring in the U.S. Naval Hospital, which should be accounted for in step 4.
2. Change in alien contract workers. This category is composed primarily of contract workers brought in from the Philippines by the Department of Defense. The estimate is obtained from the Department of Defense.
3. Net alien immigration. These are persons accepted for permanent residence in the United States. The estimate is based on Immigration and Naturalization Service figures on immigrants who reported on their visa application that they intended to live on Guam. It is assumed that 20 percent of the immigrants each year either leave Guam or inaccurately reported their intention of living on Guam.
4. Federally affiliated population. Number of Federal civilian employees, Armed Forces, and their dependents, also obtained from the Department of Defense.

No data are available on the movement of the nonfederally affiliated population who are not covered above, but this component of net migration is probably not large.

Trust Territory of the Pacific Islands. Population estimates for the Trust Territory and for the Northern Mariana Islands for 1970 to 1973 were made by using the annual "census" of residents taken by the Territorial High Commissioner, adjusted when necessary to be consistent with the apportionment census taken by the Territory on September 18, 1973. The estimates for 1974 to 1977 were based on an interpolation between the 1973 census and the September 1977 Skill and Occupation Survey conducted by the Office of Planning and Statistics of the Government of the Trust Territory of the Pacific Islands. Preliminary results of the

survey yielded a population count of 109,644 as of September 1977 for the Trust Territory excluding the Northern Marianas. The estimate for 1978 was derived by assuming a constant amount of growth for 1977 to 1978 equal to that for the preceding year. Since the Northern Marianas were not covered by the Skill and Occupation Survey, population estimates were based on figures prepared by the Trust Territory Government using a cohort-component method of population projection based on the 1973 census.²

LIMITATIONS OF THE ESTIMATES

The areas for which estimates are presented in this report are unique in terms of size, location, and composition. This creates difficulty in developing appropriate estimating procedures, much less standard procedures that are applicable for all the areas. The poor quality or absence of adequate data make it difficult to prepare accurate estimates. The estimation techniques used in this report were selected insofar as possible on the basis of a test of methods against the 1970 census for three of the areas.³ On the basis of past experience for these areas, however, it should not be assumed that the best procedure for 1970 will necessarily continue to be effective.

For Puerto Rico the estimating technique now used remains essentially unchanged from that used for the 1960's. The accuracy of the estimate depends very heavily upon canceling out in the migration statistics the large number of visitors who move between Puerto Rico and the mainland of the United States. Since gross arrival and departure data obviously contain a large number of tourists, net monthly figures are computed and smoothed using a 12-month moving average. This process provides rough approximations of net migration for Puerto Rico. However, the 1970 test suggests an overstatement of the population of approximately 3 percent, presumably as a result of weaknesses in the migration data.

In the case of the Virgin Islands where Component Method II is employed, the difference using that method in tests for 1970 was less than 1 percent. In the past, an average of the results of Component Method II and the Composite Method⁴ was used in generating the estimate, augmented by a separate allowance for the immigration of aliens. The percentage difference for the two methods was 4 percent, and the further allowance for aliens increased the difference from the census to 12 percent. Consequently, this procedure was abandoned.

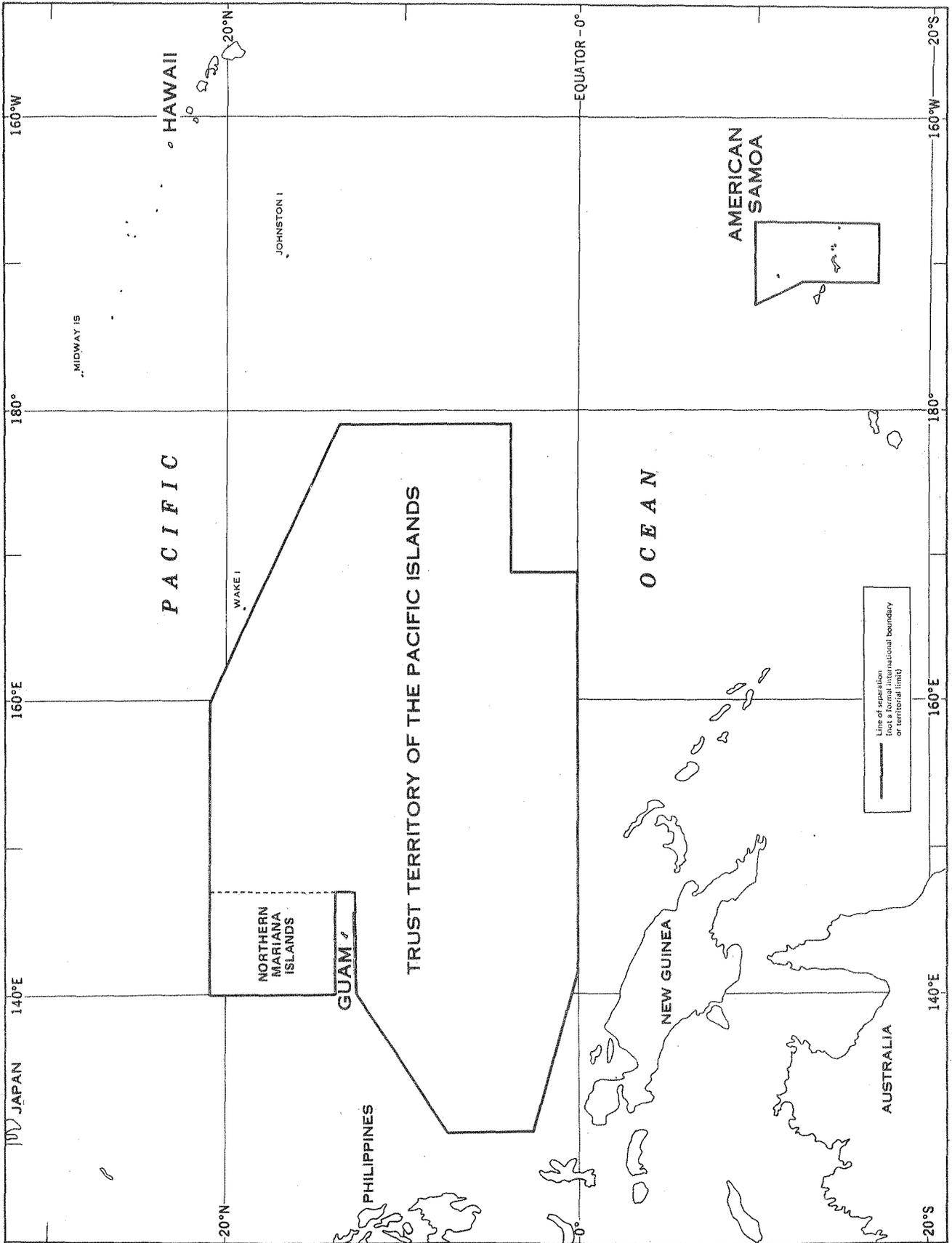
For American Samoa, there are still many shortcomings to the migration component derived from reported data from the Samoan Office of Immigration which was used for estimating the population in the 1960's. It appears that the passenger data greatly understate outmigration. Between 1960 and 1970, the reported passenger data indicated a net

²Office of Planning and Statistics, Office of the High Commissioner, Trust Territory of the Pacific Islands, Annual Report, 1978.

³For more information on the 1970 test, see Current Population Reports, Series P-25, No. 731.

⁴Current Population Reports, Series P-25, No. 427.

PACIFIC AREA



immigration of 9,972 while the Bureau of the Census estimates of residual migration yielded a figure of nearly 2,000 net outmigrants. Other areas of uncertainty include the movement of tourists and Western Samoans as they enter and leave the country. Consequently, the component procedure used for estimating the territory in the 1960's has been abandoned until some improvement in the migration series can be obtained.

The estimating procedure used here is a means of bridging a period when no possible independent migration estimates can be developed. The 1970 and 1974 censuses provide two points in time which, in combination with reported vital statistics, can be used to yield an acceptable estimate of net migration for the period between those points. The actual migration for each year in the period is unknown, however. In the absence of any other information concerning the annual migration pattern, it has been assumed that there was a smooth annual net outmigration between 1970 and 1974 and that this net out-flow continued beyond the 1974 census at the same magnitude through mid-1978. The 1977 survey conducted by the Territorial government lends support to the assumption of a continuation of the trend.

Recent inquiries to the Office of the Governor indicate that birth and death registrations in American Samoa are complete and that they seem to be reasonably accurate. Most of the births occur in either the Lyndon B. Johnson Memorial Hospital or in dispensaries, and birth certificates are prepared on all births.

For Guam, as indicated earlier, the estimates are based on a special population method, which yields point estimates of the various subcategories of the population. The test of this method for the 1960-70 period showed a high bias of about 10 percent. For the 1970's there is some possibility of understatement of population growth since there is no allowance for the net movement into the Territory of Americans not affiliated with the Federal government. Movement of Americans into and out of Guam since 1970 has been very heavy due to the effects of the Vietnamese War, and the annual changes of military personnel and dependents have often been quite large.

For the Trust Territory of the Pacific Islands (TTPI), the High Commissioner's office maintains an annual census of the Territory which is an informal reporting of the current population supplied by each of the Territorial districts. However, these counts vary both in accuracy and coverage among Districts and from one year to the next. The Trust Territory took an apportionment census in September 1973 which showed a population of 114,982 plus 269 persons

with residence not specified. This number was somewhat lower than the level of the High Commissioner's series but still appreciably higher than the 1970 census would lead one to expect. From what can be determined, it appears that the 1970 census of TTPI substantially undercounted the population. Consequently, the 1973 Territorial apportionment census, rather than the 1970 Federal census, has been used as the reference point in developing the population time series for TTPI and the Northern Mariana Islands. The annual High Commissioner's census numbers have been used for the years preceding 1974 with some adjustments for apparent population overstatements in Truk and Ponape Districts in 1970 and 1972.

SOURCES OF DATA

Most of the statistics used to prepare the area estimates presented in this report were obtained from the local governments of the outlying areas. Data on births and deaths were obtained from the local governments for Puerto Rico and the outlying areas. Births and deaths were adjusted for underregistration for Puerto Rico only.

Armed Forces data are based on figures provided by the Department of Defense. The Puerto Rico Planning Board supplied figures on the balance of inductions, enlistments, and discharges for 1970 through 1975 in order to compute the net loss of civilians to the Armed Forces.

School enrollment data for the Virgin Islands were supplied by the Virgin Islands Department of Education. For Puerto Rico, data on migration were supplied by the Puerto Rico Planning Board. The number of Federal civilian employees on Guam was obtained from the Air Force and Navy commanders on Guam.

RELATED REPORTS

Estimates for Puerto Rico and the outlying areas for 1960 to 1969 appear in Current Population Reports, Series P-25, No. 603. Estimates for 1950 to 1959 for these areas are contained in Series P-25, No. 336. Estimates for Puerto Rico, the Canal Zone, and the Virgin Islands for 1940 to 1949 are shown in Current Population Reports, Series P-25, No. 80.

ROUNDING OF ESTIMATES

Each estimate in this report has been rounded independently to the nearest thousand (Puerto Rico) or hundred (other areas) from figures computed to the last digit. Hence, the sum of the parts may differ from the total shown. Percentages are based on unrounded numbers.

Table 1. Estimates of the Resident and Civilian Populations of Puerto Rico and the Outlying Areas of the United States: July 1, 1970 to July 1, 1978

(Puerto Rico rounded to nearest thousand, all outlying areas to nearest hundred)

Type of population and area	1978	1977	1976	1975	1974	1973	1972	1971	1970
RESIDENT POPULATION									
Caribbean Areas									
Puerto Rico.....	3,358,000	3,321,000	3,217,000	3,123,000	3,030,000	2,945,000	2,864,000	2,766,000	2,718,000
Virgin Islands.....	95,900	93,200	96,200	94,500	90,000	84,100	76,300	70,900	63,500
Pacific Areas									
American Samoa.....	31,100	30,700	30,200	29,600	29,100	28,600	28,200	27,700	27,300
Guam.....	113,800	110,700	108,500	107,100	105,300	108,700	98,700	93,300	86,700
Trust Territory of the Pacific Islands ¹	128,000	125,300	122,600	119,800	117,100	114,100	110,800	107,100	101,500
Northern Mariana Islands ¹	16,700	16,200	15,700	15,200	14,700	14,200	13,400	13,100	12,300
CIVILIAN POPULATION									
Caribbean Areas									
Puerto Rico.....	3,355,000	3,316,000	3,212,000	3,119,000	3,025,000	2,937,000	2,857,000	2,761,000	2,708,000
Virgin Islands.....	95,900	93,100	96,200	94,500	89,900	84,100	76,300	70,900	63,500
Pacific Areas									
American Samoa.....	31,100	30,700	30,200	29,600	29,000	28,600	28,200	27,700	27,200
Guam.....	104,200	100,900	97,800	96,200	93,500	90,500	86,400	82,000	72,700
Trust Territory of the Pacific Islands ¹	127,800	125,100	122,500	119,600	116,900	113,800	110,600	106,800	101,200
Northern Mariana Islands ¹	16,700	16,200	15,700	15,200	14,700	14,200	13,400	13,100	12,300

¹Estimates consistent with the Apportionment Census of September 1973. See text for further explanation.

Table 2. Estimates of the Components of Change in the Resident and Civilian Populations of Puerto Rico and the Outlying Areas of the United States: 1970 to 1978

(Resident population includes persons in the Armed Forces stationed in each area. Each estimate has been rounded to the nearest thousand for Puerto Rico and to the nearest hundred for the outlying areas)

Type of population and area	July 1, 1978	April 1, 1970 (census)	Net change, 1970-78		Components of change, 1970-78			
			Number	Percent	Births	Deaths	Net migration	
							Number	Percent ¹
RESIDENT POPULATION								
Caribbean Areas								
Puerto Rico.....	3,358,000	2,712,033	646,000	23.8	607,000	157,000	196,000	7.2
Virgin Islands.....	95,900	62,500	33,500	53.6	22,300	4,100	15,200	24.4
Pacific Areas								
American Samoa.....	31,100	27,159	4,000	14.6	8,800	1,200	-3,600	-13.3
Guam.....	113,800	84,996	28,800	33.9	25,500	3,400	6,700	7.9
Trust Territory of the Pacific Islands.....	² 128,000	² 100,700	27,300	27.1	32,500	4,800	(³)	(³)
Northern Mariana Islands...	² 16,700	² 12,200	4,500	36.9	4,400	700	(³)	(³)
CIVILIAN POPULATION								
Caribbean Areas								
Puerto Rico.....	3,355,000	2,701,000	653,000	24.2	607,000	157,000	203,000	7.5
Virgin Islands.....	95,900	62,500	33,500	53.6	22,300	4,100	15,200	24.4
Pacific Areas								
American Samoa.....	31,100	27,100	4,000	14.6	8,800	1,200	-3,600	-13.3
Guam.....	104,200	71,300	32,900	46.1	25,500	3,400	+10,800	15.1
Trust Territory of the Pacific Islands.....	² 127,800	² 100,500	27,300	27.2	32,500	4,800	(³)	(³)
Northern Mariana Islands...	² 16,700	² 12,200	4,500	36.9	4,400	700	(³)	(³)

¹Base is 1970 population.

²Estimates consistent with the Apportionment Census of September 1973. That census showed a total of 14,333 for the Marianas and 114,982 for TTPI, excluding 4,462 in Kwajalein Missile Range Facility and 269 with usual residence not specified as TTPI. The Federal census of 1970, which showed a population count of 90,940 for TTPI (plus 3,960 on Kwajalein Island) and 9,640 for the Marianas, appears to have been incomplete.

³Because part of the residual migration reflects underregistration of vital statistics, migration figures are not shown.