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Report to Congress on the Indian Health Service with Regard to Health Status and Health Care Needs of American Indians in California

University of California, San Francisco, California.

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REPORT TO CONGRESS

ON

THE INDIAN HEALTH SERVICE

WITH REGARD TO

HEALTH STATUS AND HEALTH CARE NEEDS
OF AMERICAN INDIANS IN CALIFORNIA

IN RESPONSE TO

PUBLIC LAW 100-713 (SECTION 709)

NOVEMBER 1991
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NOVEMBER 1991

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Assistant Surgeon General
Director, Indian Health Service
A REPORT ON THE HEALTH STATUS AND HEALTH CARE NEEDS
OF AMERICAN INDIANS IN CALIFORNIA

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The Executive Summary will describe briefly the way the investigation was done and give highlights of the results. Readers are encouraged to read and use the full report where these highlights and many more findings are presented in detail.

**How Was the Investigation Done?**

In consultation with a Tribal Advisory Committee and the California Department of Health Services, the IHS developed a two-part strategy for the investigation. Existing sources of secondary data in California were used to assess the health status and health care needs of California Indians, and to estimate the number of Indians living in California. Because these datasets do not distinguish federally recognized from non-federally recognized California Indians, inferential measures were used to assess the health status and health needs of these two groups. This part of the investigation was accomplished through a contract with the Institute for Health Policy Studies, School of Medicine, University of California, San Francisco.

In addition, the California Tribal Health Programs provided information about individual California Indians' access to health care services. Information was obtained to determine current sources of health care, resources for payment of health care, and the availability and accessibility of alternatives outside of care supported by IHS. The Indians contacted consisted of a random sample of California Indians who were coded as non-federally recognized in the IHS patient registration files. This part of the investigation was accomplished with the invaluable assistance of the California Department of Health Services.

**Key Findings**

Many important pieces of information about the health status, health care needs, and access to care of California Indians are presented in the 91 tables and 48 charts in this report. This information is compiled in this way for the first time and is designed for use especially by the IHS, California Tribal Health Programs, and the California Department of Health Services. Five of the most notable findings are discussed here.

1. **By many measures, the health status of California Indians is very similar to that of American Indians and Alaska Natives in the 32 other reservation states.**

- American Indians and Alaska Natives in the United States (U.S.) are much more likely to die prematurely than persons in the general U.S. population (Table 24). In a disturbingly similar way, deaths occur to California Indians at much younger ages compared with the total California population (Table 24 and Charts 34-37). For example, in 1986-88 Indian deaths were more than twice as likely as
deaths statewide to occur before the age of 45 years (28% vs. 13%), or before the age of 25 years (11% vs. 5%). During this time period, Indian men were particularly likely to die before the age of 45 years (33% vs. 18% for all races).

o The 10 leading causes of death for American Indians in California in 1986-88 were the same as the causes for American Indians in the U.S. Within California, a greater proportion of Indian deaths compared with total deaths was caused by accidents, chronic liver disease and cirrhosis, homicide, and suicide. (Tables 27-29)

o The proportion of deaths because of injury is much higher for American Indians and Alaska Natives in the U.S. (16%) and for California Indians (13%) than for the total population in California (5%) (Tables 27-29). For California Indian boys and men, injury deaths are particularly prominent (16% of all male deaths). Motor vehicle deaths alone accounted for 9% of all deaths to California Indian males in 1986-88.

o In 1988, only 12% of the California Indian and U.S. American Indian and Alaska Native hospital discharges were to persons aged 65 and over, compared to 27% of all California hospital discharges (Table 49).

2. The maternal and child health risk profile for California Indians presents a troubling picture that demands public health action.

o Several very important risk factors for adverse outcomes for mothers and babies are disproportionately high for California Indian women (Tables 7 and 13 and Charts 5 and 17). For example, in 1986-88 17% of California Indian live births were to women under the age of 20; and 8% of California Indian live births had late (third trimester) or no prenatal care. These risk factors are especially prominent in counties with primarily non-federally recognized Indians.

o Although mothers of Indian children compared to all mothers in California were less likely to be uninsured (6% vs. 13%), they were much more likely to rely on Medi-Cal (46% vs. 28%) and much less likely to have private insurance coverage (40% vs. 53%) (Table 18 and Chart 25). Geographic availability of Medi-Cal providers and delays in Medi-Cal eligibility determination must be examined for Indian women in California.

3
While the infant mortality rate for California Indian births in 1984-86 (10.3 deaths per 1,000 live births) was only slightly higher than the Statewide rate (9.3), the postneonatal death rate for California Indians was alarmingly high (5.1 for Indians vs. 3.4 for the total population) (Table 21 and Chart 30). Aggressive efforts are needed to prevent injuries, treat medical conditions, and support mothers and infants throughout the first year of life and beyond.

3. Tobacco and alcohol use are having a devastating impact on the health of California Indians.

- In 1986-88, 42% of deaths among California Indian women and 37% of deaths among California Indian men were attributable to smoking (Table 25). These proportions contrast sharply with those for women and men in the total California population (12% and 18%, respectively).

- During the same time period, 34% of deaths to California Indian women and 42% of deaths to California Indian men were alcohol-related (Table 26). The contrast with deaths for all races in California is stark; the comparable proportions for the total population were 4% for women and 8% for men.

4. For non-federally recognized California Indians, there are substantial limitations on access to health care services outside the California Tribal Health Programs.

- Non-federally recognized California Indians are poorly insured. One-third of those Indians sampled by the Tribal Health Programs in 1991 reported no health insurance coverage at all, and only 24% reported coverage by private health insurance (Table 88).

- Of those non-federally recognized California Indians who had a usual source of care, 60% identified a Tribal Health Program (Table 89). Alternate sources of care reported by respondents were primarily public programs such as emergency rooms and county health clinics, while 7% of respondents said they did not know what alternate source of care they could use.

- When choosing health care, non-federally recognized California Indians place very high value on cultural sensitivity. Among the most important features these Indians seek in health care staff are treatment with respect and kindness, and understanding of American Indian ways (Table 91).
In California counties where Indians are primarily non-federally recognized, three of the leading causes of hospitalization for Indians in 1988 were not among the leading causes for the total population in those counties, nor for Indians Statewide (Table 66). These causes were disorders relating to short gestation and birthweight, cellulitis/abscess, and acute bronchitis. Hospitalizations resulting from these causes probably relate to problems with prenatal care access, substance abuse and/or diabetes, and lack of preventive outpatient care, respectively. Access to a wide range of health care services will be needed to begin to combat these problems.

5. The health status of non-federally recognized California Indians is no better (and is in some ways more compromised) than that of federally recognized California Indians.

Important risk factors for adverse outcomes for mothers and babies are even more prominent for Indian women in California counties where Indians are primarily non-federally recognized or in counties without access to IHS contract clinics. For example, in 1986-88 21% of Indian births in non-federally recognized counties were to women under age 20, compared to 17% of Indian births throughout the State (Table 7 and Chart 5). An extremely high percentage (14%) of Indian births in the counties without access to an IHS contract clinic had delayed prenatal care, compared with 8% of Indian births Statewide (Tables 13 and 15).

The youthfulness of hospitalized Indians is especially striking for residents in California counties where Indians are primarily non-federally recognized (Table 50). For example, among Indian residents in these counties, 41% of hospital discharges in 1988 were under age 15, 57% were under age 25, and only 10% were age 65 and over. Over half (51%) of hospitalizations for Indian males in those counties were for boys under age 15.

In 1986-88, deaths to Indians in California counties where Indians are primarily non-federally recognized were more likely to be because of heart disease and injuries than were deaths to Indians Statewide. In the former counties, nearly one-quarter (23%) of deaths to Indian boys and men were caused by injury.

One-third of non-federally recognized California Indians reported at least one unmet health care need during 1990 (Table 90). The most frequently mentioned need was dental care (22%), followed by need for supplies (19%), such as diabetic supplies, and prescription medications (18%).
Conclusions

Evidence presented in this report suggests strongly that there are many unmet health care needs for both non-federally recognized and federally recognized California Indians. Health risks for Indian mothers and babies, disease and death caused by tobacco and alcohol use, and the disproportionate occurrence of preventable health problems all deserve aggressive public health action. At the current time, the health status of non-federally recognized California Indians appears to be no better than that of federally recognized California Indians. Since California Tribal Health Programs are the primary source of health care for non-federally recognized California Indians and many of these Indians have very limited access to other sources of care, continued access to the Tribal Programs is essential to maintaining even the current level of health status for this group.

This study documents the need for further research to improve the quality of data on California's American Indian population, to assess their health status more accurately, and to evaluate the effectiveness and appropriateness of specific interventions and modes of health care service delivery. Additional research on the availability, accessibility, and acceptability of alternative resources is also needed to assess the potential impact of IHS eligibility changes. Barriers to access must be evaluated in the context of current fiscal conditions and policy trends.

The current fiscal situation implies decreased availability of alternate resources for people who depend on services supported by the IHS. Various proposals are currently being fielded to create universal health coverage in California, but the timing and nature of future programs are uncertain. The immediate need to maintain coverage for non-federally recognized California Indians is urgent, but financial coverage alone will not ensure appropriate and acceptable care for the Indian population. Recent expansion of clinical services in California's tribally-operated programs has led to a higher level of utilization, indicating both unmet need and a desire to obtain services in an Indian-specific environment.
INTRODUCTION

Purpose of Report

The purpose of this report is to provide the United States (U.S.) Congress with information on the number, location, tribal membership, health status, health care needs, and availability and accessibility of alternate resources for the following two classes of California Indians made eligible for IHS services by Section 709 of the Indian Health Care Improvement Act:

- any descendant of an Indian who was residing in California on June 1, 1852, but only if such descendant--
  (A) is living in California,
  (B) is a member of the Indian community served by a local program of the Service, and
  (C) is regarded as an Indian by the community in which such descendant lives;

- any Indian who holds trust interests in public domain, national forest, or Indian reservation allotments in California.

These two classes of eligible Indians will be referred to as "non-federally recognized California Indians" in this Report.

The Indian Health Care Amendments of 1988, Public Law (P.L.) 100-713, codified the existing practice of providing the Indian Health Service (IHS) services to non-federally recognized California Indians who might otherwise be ineligible for such services. The same legislation mandated a report documenting the number, location, tribal membership, health status, and health care needs of such persons and assessing the alternate health care resources that would be available to them if the extended coverage were discontinued. This report was prepared to fulfill that mandate under the guidance of California Area IHS staff and a California Tribal Advisory Committee.

Background

The U.S. Supreme Court has interpreted the basis of governmental programs serving American Indians to be historical treaty relationships between the Federal Government and particular Indian tribes, rather than a categorical entitlement to individuals based on race. Thus, eligibility for services provided by the IHS has traditionally been targeted, though not entirely restricted, to members of federally recognized tribes. Federal recognition is the standard criterion for receipt of most government benefits, but other criteria for health benefits have
been established out of equity considerations because of the arbitrary and changing nature of Federal recognition. In California, the status of tribes has undergone drastic changes over time because of Federal Indian policy. Enrollment patterns within tribes also vary significantly because of differences in tribal membership requirements.

The IHS does not provide direct services in California. Health services in California are provided by tribally-operated health programs funded by IHS. The only IHS hospital within California's boundaries is administered by the Phoenix Area to serve the Quechan Tribe along the Colorado River. The 38 counties which make up the California Service Area have been designated as a contract health service delivery area (CHSDA). Within that CHSDA, 22 tribally-administered programs facilitated by the Indian Self Determination Act (P.L. 93-638) provide health care services. These programs are referred to in this report as IHS contract clinics.

Eligibility requirements for contract care have traditionally been more stringent than those for direct services. IHS regulations published in September 1987, expanded eligibility in some cases and would have made requirements more uniform for direct and contract care. This would have drastically changed eligibility practice in California. However, the stipulation was added that recipients of both direct and contract services must be members of federally recognized tribes. Subsequently, P.L. 100-713 (Section 709) made the following provisions specific to California Indians:

"(b) Until such time as any subsequent law may otherwise provide, the following California Indians shall be eligible for health services provided by the Service:

"(1) Any member of a federally recognized Indian tribe.
"(2) Any descendant of an Indian who was residing in California on June 1, 1852, but only if such descendant--

"(A) is living in California,
"(B) is a member of the Indian community served by a local program of the Service, and
"(C) is regarded as an Indian by the community in which such descendant lives.

"(3) Any Indian who holds trust interests in public domain, national forest, or Indian reservation allotments in California."

The focus of this report was on those persons described in (b)(2) and (b)(3), i.e., those California Indians currently eligible for IHS services although they are not members of federally recognized tribes. An impact analysis of eligibility changes conducted by IHS in 1989, estimated that 6,959 current California IHS registrants were not federally recognized but 90 percent of those would retain eligibility under P.L. 100-713. The study
assumed that one-third of all those who were not enrolled in federally recognized tribes were actually eligible and would become enrolled within a designated 6 month transition period if they were threatened with losing eligibility. Limitations of the data from the IHS patient registration system did not permit further testing of these estimates and assumptions or comparisons of health status or utilization based on eligibility criteria.

Little is known about the health effects of tribal status or eligibility for the IHS. In 1969, the Final Report of the State Advisory Commission on Indian Affairs reported to California's governor and legislature that "Since 1955, when the federal Indian health program was terminated in the state, the health of California Indians has deteriorated in communicable diseases, as well as in chronic diseases." A recent study suggests potential consequences resulting from the dual loss of Federal recognition and health services. In 1954, the Klamath Tribe in Oregon lost their federally recognized status and associated health, education, and welfare benefits. Over 30 years later, in 1985, approximately 200 tribal members aged 40 years and over were surveyed about their health status, health care needs, and health care utilization. The Klamath findings were compared with a national sample of Indian elders and a sample of non-Indian elders. This generation of terminated Klamaths suffered from high unemployment and social isolation. They were more likely to lack health insurance coverage and to have unmet needs for health care than the comparison groups. Even though they were a younger group than the national Indian sample, their health problems were similar; and their health status compared poorly with non-Indians aged 65 and over.
METHODS

Scope

Data sources on California Indians have generally been considered inadequate for analysis by IHS, and many previous reports on Indian health have excluded California for that reason. While allowing for limitations and problems with data quality, this report sought to utilize fully the existing sources of secondary data in the State of California. Because so little is known about the health status and health care utilization of California Indians, the goal of the report was to provide descriptive information about all Indians living in California as well as Indians of California (i.e., "all Indians who were residing in the State of California on June 1, 1852, and their descendants now living in said State"). Whenever possible, the report includes all persons identified as American Indian or Alaska Native (Eskimo or Aleut), though the text generally refers to the total group as "Indians" or "American Indians." For the sake of clarity, the racial/ethnic terms most consistently found in the data sources are used with the understanding that other terms are sometimes preferred by the persons to whom they refer and may be more accurate (e.g., Native American rather than Indian, Latina/Latino rather than Hispanic, and African-American or Afro-American rather than Black).

While addressing the concerns of P.L. 100-713, the report suggests further steps are needed to monitor the health status and health care needs of American Indians in California. The need for ongoing surveillance exists in other geographic areas as well, and the proposed methods could be applied to other regions of the U.S. The report assesses issues of data quality and problems in racial/ethnic classification of data on American Indians. It summarizes available health status measures and indicators of health care utilization and effectiveness of services. It attempts to demonstrate the utility of such information and the implications for policy and program planning, and to suggest how these findings bear on the need for collection of new information.

Secondary Data Sources

With the active cooperation of many agencies within the State of California Department of Health Services and other State programs, key health status measures were obtained from two sources of secondary data: vital statistics and hospital discharge records. California State birth certificates, linked birth and infant death records, death certificates, and hospitalization records were made available. An emphasis was placed on maternal and child health measures because of the availability of population-based data and the importance of perinatal outcomes in predicting the future health of a population.
Use of birth and death records allowed comparisons of health status measures of California Indians with the total State population, with other racial/ethnic groups in California, and with Indians and others throughout the U.S. Since there are no in-patient facilities in the IHS California Area, the Statewide hospital discharge database provided the only means of comparison with IHS hospitalizations elsewhere. Additional sources of secondary data included records maintained at IHS contract clinics, case reports on infectious diseases, client and financial information from Medi-Cal (California's Medicaid program), and program data from selected State and Federal health and welfare programs.

County Groupings

Because county-specific data were available in the major data sources, geographic comparisions were made for relevant county groupings. The Tribal Advisory Committee to Study the Impact of California Indian Eligibility (P.L. 100-713) devised a system which classified counties according to (1) inclusion in IHS Service Area (Indian vs. non-Indian counties), (2) whether or not Indian residents were primarily members of federally recognized tribes, (3) whether counties were indisputably rural or indisputably urban, and (4) whether at least 80%, 50%-80%, or none of the American Indian residents had access to an IHS contract clinic within 30 minutes driving distance. All of the groupings in categories (2), (3), and (4) are subsets of Indian counties except for the indisputably urban group, which contains both non-Indian and Indian counties. One Indian county on the California border, Alpine County, was not classified according to accessibility of IHS contract clinics because an unknown proportion of its Indian residents are served by a clinic operated by the Phoenix Area of the IHS. (See Appendix 1 for the names and affiliations of members of the Tribal Advisory Committee and Appendix 2 for listings of California counties in each of the above groupings.)

The definition of federally recognized vs. non-federally recognized counties was especially important in estimating the impact of eligibility regulations. Not all Indian residents of the counties classified as non-federally recognized are members of unrecognized tribes, but use of the county grouping provides an approximation of the State's non-federally recognized population. As of December 1990, the status of 25 California Indian tribes petitioning for Federal recognition remained unresolved (See Appendix 3). A low estimate of the total enrollment of those tribes was 7,771. One tribe, the Death Valley Timbi-Sha Shoshone Band, recently succeeded in becoming recognized. The California Tribal Status Act (H.R. 2144), reintroduced in the U.S. Congress by George Miller (D-Martinez) in April 1991, is a recent legislative effort to restore the status
of unrecognized tribes in California and to guarantee health, education, legal, and other benefits to their members.

Other Data Collection

Finally, a collaborative effort of the IHS, the State of California Indian Health Program, the California Rural Indian Health Board, and the California Tribal Health Programs allowed for additional data collection and analysis. Information on a selected sample of non-federally recognized Indians was collected by the Tribal Health Programs to determine current sources of health care, resources for payment of health care, and the availability and accessibility of alternatives other than care supported by the IHS. While preliminary in nature, this effort was the first attempt to collect information specifically on non-federally recognized California Indians in order to develop estimates of access to care and the prevalence of health needs among this segment of the IHS-eligible population in California.

CHARACTERISTICS OF THE CALIFORNIA INDIAN POPULATION

Population Size and Distribution

Based on the preliminary 1990 Census figures released for California, Table 1 indicates an estimated California Indian population increase of 20.3% statewide from 1980 to 1990 (from 201,360 to 242,164). The 1990 estimate represents 0.8% of the total California population and 12.4% of the American Indian and Alaska Native population of the entire U.S. Growth was concentrated in the Indian counties, implying a potentially large increase in the service population for the IHS. The latest estimates calculated by IHS before the 1990 Census data became available projected a 30.5% increase in the California Area service population from 65,757 in 1980 to 85,818 in 1990.

According to Census figures, the increase appeared to be greater for residents of primarily non-recognized counties (54.0% vs. 35.9% increase for primarily federally recognized counties). Residents of non-federally recognized counties represented 8.5% (17,054) of all California Indians in 1980 and 10.8% (26,264) in 1990. Relatively little gain was recorded in the Indian population of the indisputably urban counties (7.4%), but a 36.8% increase was noted for Indians in the indisputably rural counties. A similar rate of growth occurred in counties in which IHS contract clinics are available within 30 minutes for at least 50% of the Indian population, but the increase in counties without accessible IHS contract clinics was nearly 50% (48.7%). These population figures suggest that members of non-federally recognized tribes compose a substantial and increasing proportion of the California Indian population, and that an increasing number of Indian persons may not be served by existing IHS contract clinics.
Table 2 presents parallel population figures for American Indians after excluding persons identified as Hispanic. The purpose of this table is to illustrate the extent to which Indian and Hispanic identities overlap in California, and to emphasize the importance of including all identifiable Indians when evaluating the California Indian population. In the 1990 Census, 58,099 persons in California identified as both American Indian/Alaska Native and Hispanic. Excluding self-reported Hispanics in 1990 would lead to an Indian population count of 184,065, an overall reduction of 24.0%. With Hispanics excluded, the proportion of the total state population represented by Indians drops from 0.8% to 0.6%. The greatest discrepancy in population figures, i.e., the highest percentage of American Indians identifying as Hispanic, appears to be in urban areas.

Limitations of Census Data

Increases in American Indian population figures in the 1970 and 1980 Federal Census were thought by demographers to be much greater than the possible level of natural increase (births minus deaths).43,44 Several explanations were offered, primarily an enhanced desire of persons to self-identify as Indian motivated by social and political changes. Additionally, accuracy was probably improved by new procedures used on reservations and by universal self-identification. Unlike previous years, all persons counted in the 1980 Census were given the opportunity to identify their own race/ethnicity as they chose. Self-identification is particularly important for Indian people; in one study of a nationally representative sample, 70% of survey respondents who identified themselves as American Indians were coded by interviewers as white or black and not identified as Indian.49

A lawsuit mounted by the State of California and several California cities, among other plaintiffs, challenged the 1990 Census figures cited above. As a result, the Census Bureau conducted a post-enumeration survey to assess the accuracy of the original count. According to that survey, 5.2 million U.S. residents and 1.1 million Californians were missed by the Census. In the U.S. as a whole, the undercount of American Indians was thought to be 5.0% overall (5.6% for males with a 2.2% margin of sampling error, and 4.4% for females with a 2.0% margin of error). In spite of these findings in the post-enumeration survey, the U.S. Department of Commerce announced on July 15, 1991, that no statistical adjustments would be made. Unless that decision is reversed by future legal actions, the figures stated in this report will remain the official Census counts. Commerce Secretary Robert Mosbacher stated that an adjustment of the Census undercount would "abandon a 200-year tradition of how we actually count people."41 That tradition, however, has been continually challenged as under-representing American Indians and other people of color.
Numerous aspects of Census methodology, in combination with certain characteristics of minority and low-income groups, contribute to potential undercount and error. Of all groups in the U.S. population, American Indians have been counted with the least reliability. Some estimates of urban Indian undercounts are as high as 60%. Multiple factors influence the location and self-identification of Indians in California, where the majority of Indian people live in urban areas and not in large concentrations on reservation lands. A recent study of issues relating to the undercount of Bay Area Indians noted that Indian households were characterized by mobility between urban and rural/tribal areas, frequent moves within urban areas, fluidity in household composition, and residence in non-standard housing. All of these characteristics increase the likelihood of being missed in the Census, either via mailed questionnaires or household visits. Urban Indian families tend to live dispersed among other groups, rather than clustered together in homogeneous neighborhoods. Thus the Census' assumption that an uncounted household will be similar in race/ethnicity to the previously counted household does not hold true for urban Indians.

Mistrust resulting from the historical relationship of Indian people to the Federal Government erects a barrier to participation in the Census process. Additional factors contributing to the undercount of California Indians are the prevalence of foster care and boarding school placements; institutionalization in medical, rehabilitative, and criminal justice facilities; homelessness; households and individuals of mixed ancestry; literacy deficits; and limited English language skills, especially among elders. Cultural insensitivity and misunderstanding of Indian norms of privacy lead to inappropriate design and misinterpretation of Census questionnaires. Confusion is compounded for persons of mixed ancestry, and some persons responding to a request for information from the Federal Government might logically assume that Federal recognition is implied by the Census category of "American Indian." Numerous sources of confusion might lead to over-representation of Indians in the "Other-not specified" racial category, which was chosen by 9.8 million respondents in the 1990 Census.

Funds were not allocated for a 1991 supplementary Census survey of American Indians, yet many questions remain concerning the quality of Census data on Indians. Important areas for future research include social, demographic, and economic factors influencing the enumeration of American Indians; biases in traditional Census methodology that may influence the accuracy of Indian data; and methods of involving Indian leaders in improving the Census count. In the future, consultation from Indian community leaders and academic experts should result in culturally-specific modifications in the process of gathering, analyzing, and interpreting Census data. Meanwhile, adjusted
county-level data for American Indians based on the 1991 post-
enumeration survey should be made available for research and
planning purposes.

The Tribal Advisory Committee for this study advised caution in
the use of Census data for the California Indian population. Not
only is the quality of Census data questionable for the reasons
discussed above, but inconsistencies in methodologies between the
Census and other government data sources present additional
problems. Most research relies upon Census figures for
denominator data in calculating measures such as rates of
mortality or hospitalization. However, these indicators may be
seriously misleading because of inaccuracies and inconsistencies
in the data. Our evaluation of data quality issues led to a
decision not to calculate population-based rates in this study.
The exception is infant mortality rates, with denominators based
on numbers of live births recorded in vital statistics rather
than Census records. For other outcomes, we applied different
techniques and made recommendations for improving the collection
and classification of data. Census data are reported as the best
available estimates of population trends and indicators of social
and economic characteristics of Indian people relative to the
general population.

Social and Economic Characteristics

In general, the socioeconomic status of California Indians
appears to be higher than that of Indians in the U.S. as a whole,
but lower than that of the total population in California.
Conditions in California seem to be more favorable both for
Indians and for persons of all races compared to the U.S.
overall, and the discrepancy between Indians and others is
generally smaller in California. Nonetheless, the social and
economic profile of California Indians raises concerns about
health risks linked to poverty and demographic considerations.
Eligibility for IHS benefits is not linked to income or other
means testing, but socioeconomic characteristics are important
indicators of need and should be taken into consideration in many
aspects of health planning.

Information from the 1980 Census verifies that the American
Indian population differs substantially from U.S. residents
overall. The Indian population is younger. Families are larger,
more likely to include children, and more likely to be maintained
by a female householder. Educational attainment is considerably
lower, and Indians are less likely to participate in the labor
force. Those who do are less likely to be in professional and
managerial occupations. Median income is lower, and Indian
families have higher rates of poverty.
Table 3 and Chart 1 present 1980 Census data on age, family size, income, education, and employment for California Indians and persons of all races in California. The median age of California Indians was 25.8, compared to 30.0 for all races in California and the U.S and 22.6 for Indians in the 33 Reservation states. Indian families were larger than the average family in California, with mean family size of 3.5 for Indians compared to 3.2 for all races. This family size was actually somewhat smaller than that of the average family in the U.S. (3.8 persons), and considerably smaller than the average Indian family size nationwide (4.6 persons).

The median income of Indian families in California in 1979, was $16,548, with a mean family income of $19,621 and per capita income of $6,030. These income figures were consistently lower than for the total California population, though higher than for Indians in all the Reservation states. About two-thirds (65.7%) of California Indians aged 25 and over completed four years of high school, approximately the same percentage as the U.S. average. However, only 9.8% completed four or more years of college, compared to 19.6% of the total California population. Labor force participation of California Indians, both men and women, was on a par with that of all races in California, and compared favorably with the participation of Indians and others in the U.S. However, rates of unemployment were much higher for Indians than for Californians of all races (11.8% vs. 6.5%). Unemployment was particularly high for Indian men, at 12.6%.

These economic and educational disadvantages, coupled with larger family size, would be expected to result in health risks for California's Indian population. More detailed comparative statistics from the 1980 Census are currently available on Indians' social and economic conditions, classified within the State by counties, census tracts, urban areas, Indian reservations, and other geographic divisions. It was beyond the scope of this study to analyze such data in greater detail. However, the comparable 1990 data can be used in the future to compare Indians living in primarily federally recognized counties and primarily non-federally recognized counties on measures relating to education, employment, occupation, housing, income, English language proficiency, family size and composition, nativity, citizenship, immigration, poverty status, and receipt of Social Security and public assistance. The social and economic conditions specific to non-federally recognized Indian people in California have never been systematically documented. Primary data collection on the quality of life of non-federally recognized Indians is essential for a true needs assessment of this population, but further utilization of existing Census data could fill important gaps and lay the groundwork for the design of primary data collection strategies.
MATERNAL AND CHILD HEALTH

Background

Maternal and child health outcomes provide general indicators of the health status and well-being of a population group, and help predict the health resources that will be needed for the coming generation. In addition, birth certificates provide a uniform source of information for the whole population. The live births in a given time period can be used as a reliable denominator for important measures of health status and health care utilization. Although the data quality is variable for particular items on birth certificates, and the potential exists for misclassification of race/ethnicity, information is more likely to be solicited from the families themselves and more likely to be verified than in many other data sources. The demographic data obtainable from birth certificates is also more current and more frequently updated than Census information. For these reasons, discussion of maternal and child health of American Indians is central to this report.

Definitions and Methods

In part because of the tendency for American Indian statistics to be under-reported, an inclusive definition was used for Indian births. The criterion was that either or both parents be recorded as American Indian/Alaska Native on the birth certificate; Hispanics were not excluded. Any child so identified could potentially be eligible for IHS benefits, and could share the social and health risks that have been historically prevalent among American Indians. The sample was restricted to California residents (defined by mother's zip code), since the relevant eligibility issues pertain to State residents only. Utilization of prenatal care was studied among the mothers of these children, whether or not the woman herself was American Indian. Non-Indian spouses of eligible Indians are granted eligibility for health services at the discretion of individual tribes, according to P.L. 100-707. That law also states that the health needs of such persons "shall not be taken into consideration by the Service in determining the need for, or allocation of, its health resources." However, the health outcomes and future needs of all Indian children are linked to the availability of maternity care services for their mothers.

Starting with births occurring in 1989, the National Center for Health Statistics (NCHS) now equates a newborn's race with the race of its mother. The traditional NCHS algorithm, adopted by the California State Department of Health Services, weights the classification of infant's race towards the father's identity in the case of mixed parentage (Appendices 4-A and 4-B). Heuser (1989) has shown using 1987 data from the NCHS National Vital Statistics System that American Indian mothers are more likely to
be teenagers, to have completed less than 12 years of education, to be unmarried, to have late or no prenatal care, to have low birthweight infants, and to have infant deaths compared with non-Indian mothers of children classified as American Indian. Similar trends were found in the California data. Thus, the information presented here may understate the childbearing problems faced by American Indian women. Further investigations of Indian women's health issues should focus on the causes of these problems, as well as the health status of Indian children.

In studying American Indian births, the data were aggregated for a 3 year period from 1986-88 when comparable data were available for all 3 years. Using aggregated data improved the validity of our findings; it increased the number of births studied and reduced the effects of random variation occurring in events of a single year. Certain variables were introduced into the California birth certificates beginning on January 1, 1989. In order to make use of these newly available data, information was analyzed on mother's educational status and payer source for prenatal care for the single year of 1989. The payer source information is a unique resource; only one other State, Massachusetts, includes these data in birth certificates. Validation studies of new birth certificate items, particularly payer source, need to be conducted; methodologies should be sensitive to the Indian population. For example, questions on payer source may be confusing to persons who are eligible both for IHS services and for Medi-Cal; this issue should be clearly addressed when it is relevant.

**Number and Distribution of Births**

Table 4 and Chart 2 show that the 16,935 infants defined as American Indian made up 1.1% of the State's total newborns in 1986-88. This percentage is slightly higher than the percentage (0.8%) of the California population of all ages identified as American Indian in the 1990 Census. This discrepancy may be accounted for by the method of defining Indian births, differences in data quality in the two data sources, relatively higher birth rates for American Indians than the total population, and/or lower life expectancy for the Indian population. Table 5 and Chart 3 indicate that only slightly more than half (51.3%) of Indian newborns resided in the Indian counties composing the IHS service area. A little less than a third (30.3%) of Indian newborns were residents of primarily federally recognized counties, and 9.4% or 1,596 of the newborns resided in primarily non-federally recognized counties. Slightly over a third (34.1%) of Indian births were to residents of Indian counties with the easiest access to an IHS contract clinic; 1,081 births (6.4%) were to residents of counties without access to a contract clinic.
Maternal Age

Mothers giving birth to Indian newborns are younger than the Statewide norms, as demonstrated by Tables 6-8 and Charts 4-6. A smaller percentage of Indian births than total births (6.4% vs. 9.3%) in 1986-88 were to women aged 35 and over, a group considered to be at risk for adverse health outcomes. However, the high proportion of Indian births to teen mothers is cause for concern. In 1986-88, 16.7% of Indian births compared to 11.0% of all births were to women under age 20. As shown in Table 7 and Chart 5, the proportion was especially high in the primarily non-federally recognized counties (20.7%) and the indisputably rural counties (22.0%). The pattern for the counties rated by access to IHS contract clinics indicates that teen births are most common in the areas where Indian clinics are least available. Of special concern are births to school-age women under age 18, who are known to be at risk for social and economic reasons (Table 8 and Chart 6). Among Indian births, 6.6% were to women under 18 compared to 4.0% of total births. In Indian counties without access to an IHS contract clinic, 10.2% of Indian births were to women under 18. These findings indicate a need for further information on the availability of family planning services, appropriate maternity services for teenage women, and educational and employment opportunities for young Indian women.

Maternal Education

Among Indian births in California, mothers' educational level was found to be lower than for the state as a whole, and especially low for births in the primarily non-federally recognized counties (Table 9 and Charts 7-12). Statewide, Indian births were no more likely than total births to occur among women with less than a high school education. However, 5.6% of Indian births compared to 15.2% of total births were to women who had completed college. More than two-fifths (41.0%) of Indian births in the primarily non-federally recognized counties were to women without a high school education, and only 2.9% were to college graduates. These figures reflect in part the likelihood of teen births in the non-federally recognized counties; early childbearing is a predictor of low educational attainment and restricted economic opportunities.

Fertility

Table 10 and Charts 13-14 indicate that fertility among American Indians in the U.S. is quite high relative to the total population. While only 3.8% of total live births in the U.S. in 1987 were to women having at least their fifth child, 9.5% of American Indian births in 1986-88 were of the fifth or higher order. This pattern was less marked in California, where fertility rates appear to be lower than nationally for American Indians. Six percent (6.0%) of Indian births compared with 5.0%
of total births in California were of the fifth or higher order. Nearly two-fifths (39.0%) of Indian births in California in 1986-88 were to primiparous women (i.e., first births), compared to a third (33.3%) of Indian births in the U.S.

**Birthweight**

Low birthweight, related to premature delivery and/or small size for gestational age, is the most important predictor of infant mortality and a critical health status indicator. Infants weighing 2,500 grams (5 1/2 pounds) or less are almost 40 times more likely to die in the first month of life than heavier babies. Those low birthweight babies who survive have increased risks of congenital anomalies, mental retardation, growth and development problems, respiratory problems, blindness, autism, cerebral palsy, epilepsy, and other conditions. In *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*, issued by the U.S. Public Health Service, one of the maternal and child health objectives is to "Reduce low birthweight to an incidence of no more than 5 percent of live births." The baseline for this objective is the national rate of 6.9% low birthweight in 1987.

Tables 11-12 and Charts 15-16 demonstrate that the percentage of low birthweight among American Indians in California in 1986-88 was 6.4%; this was lower than the U.S. rate for all races but higher than the rate for all races in California (6.0%) and considerably higher than the rate of 5.2% for whites and Hispanics (excluding Indians). Low birthweight among infants in California also exceeded the rate for Indians nationwide (6.1%). In California, as in the U.S., Indian women have lower rates of low birthweight than women of all races in the younger age groups but the pattern reverses among older women. The reason for the increasing relative risk among older Indian women is not understood and requires further study. Potential explanations to be explored are the effects of high parity, the cumulative effects of poverty, and the influence of diabetes and gestational diabetes on birthweight among older Indian women. Social support for young mothers in the Indian community, which could offset the risks associated with teen childbearing, is another area that needs to be examined.

Low birthweight is known to be associated with a number of predisposing factors including demographic characteristics, medical conditions before and during pregnancy, behavioral and environmental risks, and health care. The effects of physical and psychological stress are currently under investigation. Birth certificates provide limited but suggestive information on potential perinatal risk factors; the effects of maternal age, education, and fertility patterns on California Indian births require further investigation.
Future studies should also explore medical, behavioral, and environmental risks that may be particularly relevant for Indian women, and especially prevalent among women in non-federally recognized tribes. For example, an assessment of housing, nutritional, and employment conditions among non-federally recognized women could shed light on specific childbearing risks they may face.

Substance Use

Substance use is an important area for research related to patterns of usage and effective strategies for prevention and treatment. Research in Washington State, where maternal smoking behavior is recorded on birth certificates, revealed that Indian women were significantly more likely to smoke during pregnancy than white women. A striking finding was that white women drastically reduced their smoking behavior as they got older, but smoking during pregnancy was consistently high for Indian women in all age groups. Since smoking cessation programs are often targeted to teenagers, the Washington State study was valuable in demonstrating the need to include Indian women of all ages in educational and treatment efforts to reduce smoking. Studies of this kind would be valuable for California Indian communities to consider. Alcohol consumption and use of other drugs during pregnancy are highly predictive of adverse birth outcomes, but prevention programs must be guided by knowledge of the usage patterns of specific populations and the effectiveness of particular strategies and treatment modalities.

Prenatal Care Utilization

Tables (13-17) and Charts (16-23) present birth certificate information on utilization of prenatal care for Indian births. The Healthy People 2000 objective pertaining to prenatal care is to "Increase to at least 90 percent the proportion of all pregnant women who receive prenatal care in the first trimester of pregnancy" (Baseline: 76 percent of live births in 1987). Though the 1987 baseline for American Indian/Alaska Native women was considerably lower, 60.2%, the same target of 90.0% for the year 2000 was set for American Indians as a special population. In California in 1986-88, prenatal care was initiated in the first trimester for 68.3% of Indian births vs. 74.4% of total births. Late (third trimester) or no care was received for 7.9% of Indian births and 5.8% of total births. For Indian births, prenatal care was somewhat more delayed in the IHS service area than in the non-Indian counties. This pattern was similar but less marked for the total population in the two county groupings.

Among the Indian counties, delayed prenatal care appears to be a severe problem in the primarily non-federally recognized counties. Late or no care was received for 9.1% of the Indian
births in those counties, compared to 5.7% of total births in the same counties and 7.6% of Indian births in primarily federally recognized counties. For all races combined, receipt of care was better in the non-federally recognized counties. Furthermore, an extremely high percentage (14.4%) of Indian births in the counties without access to an IHS contract clinic had delayed prenatal care. Although most of the contract clinics do not currently provide prenatal care services, they may serve a gateway function to facilitate entry into care. Table 17 and Chart 24 show that late or no care was received for 11.2% of Indian births ≤2,500 grams, compared to 7.9% of all Indian births in the state. Women who enter care late are likely to have various risk factors that could be ameliorated by timely intervention.

Insurance Status

Tables 18-20 and Charts 25-29 document the insurance status of childbearing women in California for prenatal care. Mothers of Indian children were less likely to be uninsured than all mothers (6.4% vs. 12.9%). However, the former were much more likely to rely on Medi-Cal (California's Medicaid program) (45.5% vs. 27.6%) and much less likely to have private insurance coverage (39.7% vs. 52.7%). For Indian births, Medi-Cal coverage for prenatal care was much higher in Indian than non-Indian counties (58.1% vs. 36.2%). In primarily non-federally recognized counties, approximately two-thirds (66.2%) of Indian births were covered by Medi-Cal. Correspondingly, private insurance coverage for Indian births was lower in Indian vs. non-Indian counties (24.9% vs. 48.3%), with only 22.7% of Indians privately insured in primarily non-federally recognized counties compared with 31.7% in the primarily federally recognized area. The lack of private insurance for Indians is not surprising due to low socioeconomic status, high rates of unemployment, and concentration of employment in non-professional/non-managerial occupations. Since California contract clinics do not generally offer prenatal care on-site, the reliance on Medi-Cal to finance care from other providers would be expected even where contract clinics are accessible.

Medicaid has been credited with major improvements in utilization of prenatal care for under-served groups. During the period of initial implementation of Medi-Cal in California from 1968 to 1978, increases in early prenatal care were greater for Medi-Cal than for non-Medi-Cal births in all racial/ethnic groups. However, Medicaid's accomplishments have been constrained by a mixture of administrative and financial factors, and receipt of prenatal care by Medicaid clients is far from optimal. In 1986-87, the U.S. General Accounting Office conducted a national survey on prenatal care among the general population of Medicaid recipients and uninsured women. Poor care (defined as entry in the last trimester or completion of less than four physician.
visits) was reported for 24% of the uninsured and 16% of the women on Medicaid in that study, compared to 2% among a comparison group of privately insured patients. Other studies have found worse utilization among Medicaid patients than among uninsured women.39,48

The relationship between insurance status and utilization appears to vary across racial/ethnic groups18 and needs to be better understood for the Indian population. In particular, geographic availability of Medi-Cal providers and delays in Medi-Cal eligibility determination must be examined for Indian women throughout California. The impact of recent Medi-Cal maternity eligibility expansions and enhanced Medi-Cal maternity benefits should be evaluated with attention to the special needs of California Indians.

Access

A review of the literature on access to prenatal care for women of all races in an Institute of Medicine 1988 report10 grouped common barriers into the following categories: financial barriers; inadequate system capacity; organization, practices, and atmosphere of prenatal services; and cultural and personal barriers. Financing is the major perceived barrier. Women also commonly report problems with transportation and child care, inadequate understanding of the importance of prenatal care, lack of awareness of pregnancy, institutional practices, lack of available providers and dissatisfaction with providers, and a variety of personal fears. The extent to which these various factors contribute to poor utilization of care among American Indian women has not been studied in California. A comprehensive maternal and child health needs assessment of American Indians in California could identify special risks and access barriers for non-federally recognized groups, and could inform the IHS regarding the potential benefits of expanding prenatal care services in the contract clinics for all IHS-eligible women.

Infant Mortality

The most widely used indicator of maternal and child health is the rate of infant mortality. Infant deaths in the first year of life correlate with many risk factors shared by vulnerable populations. These factors include poor maternal health and nutritional status, inadequate health care, poverty, low levels of education, and unfavorable environmental conditions. Infant mortality is also sensitive to the uneven distribution of income and social resources and the organization of health and welfare systems. Some innovative research in California has recently revealed that Indian infant mortality may be a problem of much greater magnitude than has previously been recognized.56
The national objective set by the U.S. Public Health Service (PHS) for the year 2000 is to "Reduce the infant mortality rate to no more than 7 per 1,000 live births" (Baseline of 10.1 per 1,000 live births in 1987). Because of racial variation in infant mortality, special population targets were set in the PHS objectives. For American Indians and Alaska Natives, the objectives are 8.5 per 1,000 live births for infant mortality, i.e., deaths in the first year of life (1987 Baseline: 12.5) and 4.0 per 1,000 live births for postneonatal mortality, i.e., deaths from 28 days until the end of the first year (1987 Baseline: 6.5).

California's reported Indian infant death rates have appeared to be extraordinarily low in recent years, representing vast improvement over the last three decades. According to calculations by the IHS and the NCHS, the California death rate for American Indians/Alaska Natives in 1984-86 was 3.3-3.9 per 1,000 live births, compared with a rate of 9.2-10.3 for Indians in the U.S. The numerator data for these rates were taken from infant death certificates, and denominators were drawn from birth certificates. Using a Birth Cohort File containing linked birth and infant death certificate data, Watson and Oreglia recalculated California's Indian infant mortality rate for the same time period and found that the rate roughly tripled. They classified infants as Indian if either parent was recorded as Indian on the birth certificate and separately according to the NCHS algorithm. Using either method, they obtained an infant mortality rate of 10.3 deaths per 1,000 live births. A similar Centers for Disease Control (CDC) effort using a national Linked Birth-Death File altered the U.S. Indian rate for 1983 from 10.7 to 14.4.

The 1989 California study by Watson and Oreglia offers convincing proof of severe under-reporting of American Indian/Alaska Native identity on infant death certificates, and cautions against complacency in relation to the problem of Indian infant mortality. Tables 21-23 and Charts 30-33 present analyses of infant death rates for California Indians using the state's linked cohort files. In all of these analyses, Indian infants were defined as those with mother and/or father recorded as Indian on the birth certificate, including Hispanics. It is proposed that these methods present the truest approximation of Indian infant mortality in California.

It can be seen in Table 21 and Chart 30 that Indian infant mortality (10.3 deaths per 1,000 live births) in California in 1984-86 was higher than the Statewide rate (9.3), and higher than in any other racial subgroup except for blacks (17.0) and the poorly defined "Other" group (infant mortality rate of 10.4). The latter category contains an unknown proportion of American Indians. Neonatal deaths (under 28 days of age) were somewhat lower for Indians than for all races (5.3 vs. 5.9), but the
postneonatal death rate for Indians was alarmingly high.
Postneonatal mortality for California Indians was 5.1 deaths per
1,000 live births, compared to 3.4 for the total population. The
only group exceeding the Indian rate was blacks with 6.5 death
per 1,000 live births. Table 22 and Chart 31 reveal that once
the California Indian rates are adjusted, they are higher than
the published U.S. Indian rates for infant and neonatal deaths
and comparable for postneonatal deaths. Presumably, these U.S.
rates are under-estimated and will achieve greater accuracy with
the use of linked files. Comparisons between California and the
U.S. should thus be deferred, and public health officials should
be alerted to the likelihood of under-calculations of Indian
infant mortality in vital statistics.

The heightened importance of postneonatal mortality highlights
the social and economic causes of Indian health problems, since
environmental factors are most critical in the postneonatal
period.25 Table 23 and Chart 32 show that nearly half (45.9%) of
infant deaths to California Indians were to babies in the normal
birthweight range (2,500-3,999 grams). Deaths to infants of all
races were more concentrated among low birthweight babies; the
normal range accounted for 36.8% of deaths (Chart 32). This
provides further evidence that preventable deaths may be
occurring to medically low-risk Indian infants because of adverse
socioeconomic conditions. Aggressive follow-up of mothers and
infants during the postpartum period and throughout the first
year of life appears critical for reducing infant mortality among
Indians. A comprehensive range of medical and non-medical
services is indicated, including economic and social support as
well as education.

Analysis of the causes of infant deaths was beyond the scope of
the current study, since the absolute number of yearly deaths is
relatively small and the death certificates provide limited
information. Systematic review of Indian infant deaths is
required in order to supplement existing information. For
example, a national study indicated that the rate of infant
deaths because of birth defects was higher for American Indians
than for other racial/ethnic groups.37 It is known that
congenital anomalies are poorly reported on California birth
certificates.25 Accuracy is greater in reporting by the
California Birth Defects Monitoring Program, but their most
recently available data on American Indians covers less than half
of California counties and fewer than 4,000 Indian births in a 4
year period. A specially focused effort would be necessary to
study birth defects in the Indian population, particularly if
characteristics such as federally recognized status were of
interest.

25
MORTALITY

Methods and Data Issues

Because of the limitations of Census data for the American Indian population discussed above, and the lack of availability of detailed 1990 Census data at this time, analyses were conducted of the age distribution and causes of Indian deaths in California rather than calculations of mortality rates for particular ages or diseases. Indian mortality rates based on Census denominator data in California and other states are implausibly low. By examining proportions of deaths in particular age groups and proportions of deaths attributable to various causes, this study avoided biases that would have resulted from the use of unreliable population counts to calculate rates. However, data drawn from death certificates are also subject to certain limitations.

The likelihood of California Indians having Hispanic surnames and not living on reservations increases the chances of racial/ethnic misclassification in death certificates. Based on Watson and Oreglia's evidence of under-reporting of Indian identity in California's infant death certificates, special studies are justified to assess the under-reporting of Indian deaths at all ages. California Senate Bill No. 2660 mandated the California State Department of Health Services to contract with an appropriate Indian organization to conduct a study to establish "more valid statistics regarding the death rate for American Indians." The research plan proposed in the legislation involved acquisition of population data from tribal, Federal, State, and county sources and matching the names of identified American Indians with the state's death records for a selected 2 year period. The final phase of the study would involve dissemination of findings "including the provision of training and the development of educational materials for morticians and coroners operating within the state." Unfortunately, the appropriation to fund that important study was never made, and the research has been delayed by the need to find alternative resources.

Problems with the reliability and validity of death certificate data have been a cause of concern at the national level. The National Committee on Vital and Health Statistics convened a workshop in 1989 to assess the quality of cause-of-death data on death certificates and to make recommendations for future improvements. To improve the accuracy and utility of death certificates for research purposes, racial/ethnic coding should be examined in conjunction with evaluations of causes of death.

Research has revealed that causes of death are reported inconsistently, and that particular causes are likely to be over- or under-reported. Particular causes of death may be differentially reported for American Indians or other groups.
based on cultural assumptions and biases. For example, specific traumatic conditions such as homicide, suicide, and accidents tend to be under-diagnosed for the general population; this may not be the case for American Indians who have disproportionate numbers of diagnoses for those causes. Mortality data provided to IHS by NCHS contain only underlying causes of death, and not additional contributing causes. For that reason, this study only examined underlying causes. However, if the underlying causes of death are inaccurately or differentially reported, it would be important in future studies to analyze information on contributing causes and to review medical records as well as death certificates.

Age Distribution

The age distribution of reported deaths is a useful indicator of health status and can be easily compared between different populations. Table 24 and Charts 33-36 provide stark evidence of premature death among the California Indian population. Following the pattern for the U.S., deaths occur to American Indians in California at much younger ages compared with the total California population. In 1986-88 in California, only 43.3% of Indian deaths occurred at age 65 or over vs. 68.3% of total deaths. Indian deaths were more than twice as likely as deaths statewide to occur before the age of 45 (28.4% vs. 13.3%), or before the age of 25 (11.2% vs. 5.3%). Over three-quarters (76.6%) of total female deaths in California were to women age 65 or over, while fewer than half (49.3%) of Indian female deaths were in that age group. Indian boys and men in California were particularly likely to die before the age of 45 (32.7% vs. 17.6% for all races), and only 38.8% of Indian male deaths were at age 65 or over.

Causes of Death

The age distribution of Indian deaths implies that causes of death are different than among the general population; causes of death vary by age and early death eliminates the possibility of dying from causes related to aging. The skewing of mortality towards earlier age groups is a distressing commentary on the life experience of American Indians in the U.S.; it indicates great need and opportunity for intervention activities to address preventable mortality. Causes of death were investigated from California death certificates for deaths occurring to California residents during 1986-88. The effects of tobacco and alcohol on Indian mortality were investigated using methodologies published by the CDC to calculate smoking-attributable and alcohol-related mortality. Further study of these issues is recommended, since the numbers of Indian deaths involved were small but the findings were alarming.
Table 25 shows that 41.7% of deaths to Indian women and 37.4% of deaths to Indian men were attributable to cigarette smoking in those years, compared to 12.4% and 17.8% of deaths to females and males of all races. The higher proportion of smoking-attributable deaths to women vs. men is notable among Indians, given the reverse among the total population. This implies that smoking prevention and cessation programs in the Indian community must equally, and appropriately, target women as well as men. Alcohol-related mortality for California Indians was found to be comparable to mortality because of smoking, although the effects appear to be greater for men (Table 26). About a third (33.6%) of deaths to Indian women and more than two-fifths (42.1%) of deaths to Indian men in 1986-88 were alcohol-related. The contrast with deaths for all races is stark; the comparable proportions for the total population were 4.3% for women and 8.4% for men. The startling dimension of alcohol- and smoking-attributable deaths among California Indians surely represents a serious problem, but may also indicate some differential reporting of selected causes of death.

All causes of death were analyzed for this study using California death certificates and published U.S. data from the IHS and the NCHS. The classification system of diagnostic codes from the International Classification of Diseases, 9th Revision (ICD-9) which is routinely used by the Office of Planning, Evaluation, and Legislation, IHS, was applied to the California data for the sake of consistency and comparability (Appendix 5). The State of California uses a different methodology, and the IHS method excludes certain diagnoses as potential causes of death. In this study, only the causes considered by IHS were used in the rankings; but other causes were noted if they were equally prevalent.

In Tables 27-28 and 30-45, the 10 leading causes of death in 1986-88 are displayed for California residents statewide and in the separate county groupings in which Indians are primarily members of federally recognized tribes and non-federally recognized tribes. Table 29 provides comparable data for American Indians in the U.S. California data are presented separately for females (infants/girls/women) and males (infants/boys/men), in spite of small numbers in the county groupings, because causes of death vary considerably by sex.

Tables 27-29 indicate that the 10 leading causes of death in 1986-88 were identical for Indians in California, Indians in the U.S., and all races in California. In ranked order for California Indians, these causes were: diseases of the heart; malignant neoplasms; accidents (motor vehicle and all other); chronic liver disease and cirrhosis; cerebrovascular disease; homicide and legal intervention; diabetes mellitus; pneumonia and influenza; suicide; and chronic obstructive pulmonary diseases.
The rankings of these causes vary somewhat for the three populations. California Indians appear to be more similar to U.S. Indians than to the total population of California. Over half of all Indian deaths in California (54.2%) and the U.S. (52.9%) are caused by diseases of the heart, malignant neoplasms, and accidents; in the total California population, 55.6% of deaths are attributable to heart disease and cancer alone, without considering accidental deaths. The proportion of deaths due to accidents is lower for California Indians than for U.S. Indians (12.6% vs. 16.1%), but much higher for Indians in general than for all races in California (5.1%). Chronic liver disease and cirrhosis, which are alcohol-related causes of death, account for a higher proportion of Indian deaths in California (6.7%) compared with U.S. Indians (4.3%) or California all races (1.9%). Within California, homicide and legal intervention, diabetes mellitus, and suicide account for a higher proportion of Indian vs. total deaths. Cerebrovascular disease, pneumonia and influenza, and chronic obstructive pulmonary disease are all somewhat more prominent as causes of death among the total population than among California Indians.

Because of small numbers, causes of Indian mortality could not be analyzed separately for different age groups in California. The IHS has identified the following causes as having higher age-adjusted mortality rates for Indians than for the total U.S. population: accidents (Indian vs. all races ratio: 2.3), chronic liver disease and cirrhosis (ratio: 3.4), diabetes mellitus (ratio: 2.6), pneumonia and influenza (ratio: 1.3), suicide (ratio: 1.3), homicide (ratio: 1.6), and tuberculosis (ratio: 5.0). Although all of these causes are not ranked more highly for Indians than for all races in California, and tuberculosis is not a frequent cause of death, the risks of these conditions among California Indians need to be examined more closely in future studies.

Tables 30 and 32 show the heightened prominence of accidents as a cause of death among Indian boys and men in California (15.1% of male deaths vs. 8.4% of female deaths). Motor vehicle deaths alone accounted for 9.4% of deaths to Indian males. Homicide and legal intervention was the cause of 8.3% of all Indian male deaths in California, but did not rank in the top 10 causes for Indian women. Higher proportions of female (vs. male) Indian deaths were due to cancer, cerebrovascular disease, and diabetes mellitus. Nephritis, nephrotic syndrome and nephrosis appears as the 10th leading cause of death for Indian women, but does not rank as a leading cause for Indian men. Acquired Immune Deficiency Syndrome (AIDS) was among the top 10 leading causes of death for men of all races but not for Indians, male or female, in California.
Deaths to Indians in primarily non-federally recognized counties were more likely to be because of heart disease and accidents, and less likely to be caused by cancer, than Indian deaths in primarily federally recognized counties (Tables 34 and 40). Compared to their counterparts statewide, Indian females in primarily non-federally recognized counties had higher proportions of deaths because of heart disease, cerebrovascular disease, diabetes, homicide, nephritis, and congenital anomalies (Tables 30 and 42). Heart disease, accidents, pneumonia and influenza, chronic obstructive pulmonary diseases, congenital anomalies, and conditions originating in the perinatal period account for a higher proportion of deaths to Indian males in primarily non-federally recognized counties compared with Indian males statewide (Tables 33 and 44). In the primarily non-federally recognized counties of California, nearly a quarter (22.7%) of deaths to Indian boys and men were caused by accidents.

These analyses of proportionate mortality are suggestive rather than definitive. Proportionate mortality is a relative, not an absolute measure, and its interpretation can be complex. However, these findings have broad implications for health promotion and disease prevention among California Indians. Strategies for accident prevention, education and prevention programs to lower rates of heart disease, and cancer screening programs appear to be urgent priorities. For Indians in the primarily non-federally recognized counties, these data suggest extremely high risk of accidental death for boys and men, elevated risk of diabetes and violent deaths among women, and high risk of perinatal conditions for both male and female infants.

This information also highlights the need to improve the quality of data required to calculate mortality rates for the California Indian population. Better data and additional resources would facilitate research into the causes of death for infants, children, adolescents, and adults and to study the major causes of mortality in greater detail. More information is needed on the specific sites of cancer, the types of motor vehicle and other accidents, the particular diseases of the heart that claim Indian lives prematurely, the relationships between alcohol and tobacco and the major causes of death, and the interactions between different conditions common to Indian people.

HOSPITALIZATIONS

Office of Technology Report

The 1986 Office of Technology (OTA) report, "Indian Health Care," used the IHS patient registration database and the NCHS National Hospital Discharge Survey to analyze in-patient care as a measure of Indian health status, while acknowledging that utilization of
care may be determined by access factors rather than need. The findings excerpted below summarize the authors' interpretation of hospital discharge rates for IHS direct and contract general hospitals and U.S. short-stay non-Federal hospitals:

Given the poor health status reflected in Indian mortality statistics, it is striking that the overall 1984 hospital discharge rate in IHS areas (1,210 per 10,000 population) was lower than that in U.S. non-Federal short-stay hospitals (1,585 discharges per 10,000 population). In general, using data from U.S. non-Federal short-stay hospitals as a benchmark, IHS total hospitalization rates (excluding two tribally run hospitals) were lower than would be expected from mortality rates for accidents and violence, circulatory system diseases, malignant neoplasms, alcohol-related conditions, diabetes, and congenital anomalies. While Indian death rates from accidents, suicide, homicide, and other external causes substantially exceeded U.S. mortality rates in the 3-year period centered in 1981, the IHS hospitalization rates for injuries and poisonings in 1981 only slightly exceeded the U.S. rates.

Part of the reason for low hospitalization rates for certain diagnoses can be explained by the relative youth of the Indian population. For example, diseases of the circulatory system are the leading cause of hospitalization in U.S. non-Federal short-stay hospitals, but are the eighth leading cause of hospitalization in IHS direct and contract general hospitals (hospitals to which IHS service-eligible patients are sent when care is not available in IHS-run facilities). This can be partially explained by the fact that individuals age 65 and over account for 11.3 percent of the U.S. all races population and 60 percent of discharges for circulatory system diseases in U.S. non-Federal short-stay hospitals. In IHS hospitals, Indians 65 and over account for 5.3 percent of the IHS service population and 41 percent of such discharges.

But the relative youth of the Indian population cannot explain all the variation among health status indicators; the disparity between services provided and need is also apparent from a comparison of health care utilization and mortality rates by age. ... the ratio of IHS to U.S. non-Federal short-stay hospital inpatient discharges is lower than the ratio of Indian to U.S. all races mortality rates in all age groups 16 and above. Thus, there is a discrepancy between apparent need and the use of health care. (pp. 105-6)
California Data

The IHS analyses of in-patient care have always excluded California because of the absence of IHS hospitals. In order to provide some comparative data on hospitalizations, we utilized the hospital discharge database of California's Office of Statewide Health Planning and Development (OSHPD). The OSHPD collects in-patient discharge data from all licensed hospitals in California, excluding Federal hospitals. Repeated admissions of an individual patient cannot be distinguished from admissions of multiple individuals, so the focus is on hospitalizations rather than patients. Among the hospitals' reporting requirements for each discharge is the racial/ethnic identity of the patient, coded in the following categories: White, Black, Hispanic, Asian, Native American/Eskimo, Other, and Unknown. We utilized data classified as Native American/Eskimo to represent the American Indian and Alaska Native population.

Caution must be taken in interpreting findings from the OSHPD Hospital Discharge Database, since race/ethnicity is not self-reported and attribution of Indian identity by hospital personnel results in significant under-reporting. Hispanic and Indian are mutually exclusive choices in the racial/ethnic coding for these data, which increases the likelihood of under-reporting for Indians. A study conducted by OSHPD to evaluate the reliability of items in their hospital database provides evidence of both under-reporting and misclassification of American Indian patients. Discharge records from 30 randomly selected California hospitals were re-abstracted for the second half of 1988. Since Indian health was not a focus of the study, the sample was not drawn with the intent of representing the Indian population. Only 10 (or 0.4%) of the 2,579 cases reviewed were classified as American Indian. The study concluded that two of those cases should have been reported as Hispanic and two as Asian, leaving a total of six reported Indian discharges. None of the other records were reclassified as American Indian in the study.

Of the 3,596,669 hospital discharges occurring in 1988, 6,672 or 0.2% were coded as Indian (Table 46). Since Indians made up 0.8% of the state's Census population in 1990, it appears that they are greatly under-reported and/or under-represented among hospitalizations. Asians and Hispanics also appear to be under-represented. Further evidence of under-reporting is shown in Table 47, which compares newborn hospital records with birth certificates coded as American Indian. In 1988, 5,764 California certificates of live births had mother and/or father identified as American Indian; among the newborn hospital records, which exclude out-of-hospital births, only 908 were coded as American Indian. Birth certificates are not a "gold standard" for race/ethnicity but can be assumed to be more accurate than hospital records since they allow for self-identification.
It is notable that the greatest discrepancy in reporting of Indian births was found in the counties without access to a tribally-operated clinic. This may indicate that referrals from Indian clinics enhance identification of persons as Indian. Based on comparison with population data in Table 1, information displayed in Table 48 suggests that Indians are better represented among hospitalizations if they live in Indian counties, especially federally recognized counties, and if they have access to a nearby Tribal Health Program. Access to primary health care, via IHS eligibility and availability of Indian clinics, would be expected to facilitate referrals for hospitalization.

The age and sex distribution of California Indian hospitalizations is examined in Table 49 and Charts 38-40. Men are under-represented among hospitalizations, in large part because obstetric causes dominate hospital admissions. Males constitute 43.8% of California Indian discharges, 41.0% of total California discharges, and 37.3% of U.S. Indian discharges. Indian hospitalizations occur at younger ages than hospitalizations for all races in California, among both females and males. Only 12.4% of Indian discharges, compared with 27.0% of total discharges and 32.6% of white discharges, are persons age 65 and over. Persons under 25 represented 40.2% of California Indian hospitalizations, compared with 24.8% of the State's white discharges. California Indian discharges were more likely to be under age 15 and less likely to be 15-24 than U.S. Indians in IHS direct and contract facilities, but California Indians closely resembled U.S. Indians in the proportion of hospitalizations for age groups 25-64 and 65 and over.

The youthfulness of hospitalized Indians is especially striking for residents of the primarily non-federally recognized counties (Table 50 and Charts 41-44). Among Indian residents of those counties, 40.5% of hospital discharges in 1988 were under age 15, 57.4% were under age 25, and only 10.3% were age 65 and over. Over half (50.7%) of the male discharges were under age 15, compared to 29.5% in the primarily federally recognized counties. This startling finding may be because of a combination of factors, including the age distribution of the population; excessive rates of illness and accidents among Indian male infants, children, and adolescents; lack of primary care for children, which could prevent hospitalizations; and early death and inadequate access to hospital care for the elderly. Future studies of non-federally recognized Indians in California should examine causes of hospitalization and access to preventive ambulatory care in a more thorough manner. Record review, patient and community surveys, and case studies of tribes and counties would be required; small numbers limit the utility of secondary data for such purposes.
Causes of Hospitalization

The 6,672 American Indian discharges from California hospitals in 1988 predominantly represented acute-care patients; only 29 (0.4%) had a length of stay of 100 days or more. However, the causes of hospitalization included chronic conditions as well as obstetric admissions and substance abuse and other psychiatric diagnoses. Tables 51-58 codify all the major diagnostic categories using ICD-9 classifications and show the relative proportion of hospitalizations in each category for California Indians and all races. No striking differences were seen in the ranking of causes for either women or men, and the profile for the primarily non-federally recognized counties did not appear to be distinctive. However, differences may be submerged with the use of such general diagnostic categories.

Table 59 displays the mean age and mean charges for Indian vs. total discharges in each of the major diagnostic categories. Consistent with the younger age distribution of the Indian population, the mean age of Indian hospitalizations was lower in every category. Differences were most striking for diseases of the nervous system, the respiratory system, and the digestive system, as well as for injury and poisoning. Mean charges were generally higher for the all races population, but notably higher for Indian hospitalizations in three categories: neonatal conditions, congenital anomalies, and infectious and parasitic diseases. If mean charges are an index of severity for these conditions, these data may reflect lack of access to adequate prenatal and other preventive care. Further studies of hospital charges would need to control for hospital characteristics, since allocation of resources might vary by hospital ownership type and teaching status.

More detailed analyses of causes of hospitalization were conducted by ranking individual three-digit ICD-9 diagnoses. Tables 60-67 list the 15 leading hospital diagnoses for relevant groups. Some tables contain more than 15 diagnoses because frequencies were identical for multiple causes that would have ranked fifteenth. Because of small numbers of cases and questionable data quality, all ages were combined in these analyses and only principal diagnoses were studied. Age-specific studies of hospitalizations involving both principal and secondary diagnoses should be developed in the future. The importance of co-morbidities is demonstrated by investigation of diabetes as a secondary diagnosis. The proportion of Indian hospitalizations with diabetes mellitus as a principal diagnosis was 1.6% for boys and men and 1.2% for girls and women; however, the additional proportion with a secondary diagnosis of diabetes was 7.0% for males and 9.2% for females.
For women, diagnoses that appeared as leading causes among Indians but not among the total population were abnormality of forces of labor, diabetes mellitus, and other cellulitis and abscess. The greater importance of diabetes is notable since the Indian group should be at lower risk of diabetes by virtue of being younger. The prevalence of cellulitis/abscess may be an indicator of low socioeconomic status, alcohol and other substance abuse, and diabetes. Obstetric diagnoses are somewhat more dominant among Indian discharges, which may reflect poor access to care for conditions whose treatment is more discretionary. Cardiac diagnoses are ranked among the leading causes of hospitalization for women of all races, but not for Indian women. This may be a function of the different age distributions, though heart disease is the leading cause of death for Indian women. An alternative explanation would be lack of preventive and diagnostic treatment for heart disease, and displacement of cardiac problems by diabetes and diabetes-related illnesses as principal diagnoses.

Among male hospitalizations statewide, leading diagnoses unique to Indians (vs. all races) were other cellulitis and abscess, alcoholic psychoses, chronic liver disease and cirrhosis, and diseases of the pancreas. The dominance of alcohol-related diagnoses among Indian men mirrors the severely high proportion of alcohol-related mortality among California Indians. The urgent need for substance abuse education, prevention, and treatment cannot be over-emphasized, along with the necessity of improving educational and employment opportunities and socioeconomic conditions for California Indians.

Hospitalization data for the primarily non-federally recognized counties were sparse, and could not be disaggregated by sex. Three diagnoses which appeared in the leading causes of hospitalization for residents of those counties were not found for all races in the same counties or for Indians residing in primarily federally recognized counties. The first of these diagnoses was disorders relating to short gestation and unspecified low birthweight, reflecting problems with prenatal care access as well as low socioeconomic status. The second cause was cellulitis/abscess, implicating problems with substance abuse and diabetes in addition to poverty. The third diagnosis was acute bronchitis and bronchiolitis, suggesting lack of preventive out-patient care.

**Payer Source**

Finally, hospitalizations were analyzed by expected principal source of payment. Little is known about the health insurance coverage of American Indians obtaining services outside of the IHS or the cost of care for Indians reimbursed by other public and private payers. The IHS payment is residual by law, meaning that other sources (e.g., Medicaid, Medicare, private insurance).
must be utilized before IHS is obligated to provide coverage. The residual role of IHS is most strictly enforced in the case of contract care.

In California, all in-patient care for eligible Indians is on a contract basis and must be reimbursed out of the area's allocation for contract care. The California Area IHS sets priorities each year and essentially must ration hospital care, deferring services when allocated funds are depleted. In fiscal year (FY) 1988, the total amount spent by IHS for in-patient contract health services in California (including medical-surgical adult and pediatric admissions, obstetric admissions, and newborn admissions) was $1,000,754. This represented 2.4% of total hospital charges for American Indian discharges in California hospitals and 3.6% of the subtotal for Indian discharges charged to all government payers in calendar year 1988 (Table 68). If the small proportion of identified Indian discharges in California hospitals partly reflects financial and other access barriers to in-patient care, this level of funding may be inadequate to supplement the alternative resources available to California Indians for necessary hospitalizations.

The Survey of American Indians and Alaska Natives (SAIAN) of the 1987 National Medical Expenditure Survey (NMES) included questions on supplementary sources of insurance coverage for a national sample of IHS-eligible Indians. The survey did not distinguish between coverage for out-patient versus in-patient care. The SAIAN findings indicate that the majority of Indians currently covered by the IHS have no other public or private health insurance. Of the Indians surveyed, 54.9% had no other coverage supplemental to IHS; 28.1% were privately insured (compared to 74.5% of the U.S. population), 21.0% had any other public coverage (11.4% Medicaid, 6.3% Medicare, 3.3% other). Although Indians working full-time were more likely than other Indians to have private insurance, job-related coverage was lower for Indians than for all workers regardless of wage levels or employer size. Some IHS-eligible workers may choose not to participate in employment-based insurance plans because of co-payments and deductibles. These findings illustrate the importance of IHS benefits in guaranteeing coverage for large numbers of Indian persons who might otherwise be uninsured. The alternative resources of IHS-eligible persons also determine the level of resources available to IHS-operated and supported facilities via third-party reimbursement from private or public sources.

Unlike the SAIAN data, this information is not population-based; it is based only on coverage of hospitalized persons identified as American Indian. The extent to which inadequate insurance serves as a barrier to hospitalization cannot be estimated from these data. Both financial factors and lack of routine involvement in primary care may decrease the likelihood of receiving non-crisis hospital care. Insurance for hospitalizations is not always identical with out-patient coverage, which is likely to be more restricted and to involve higher levels of self-payment. Sources of public coverage in California include Medi-Cal (California's Medicaid program) and Medically Indigent Services (MIS), a State-funded program that compensates county hospitals for care of uninsured persons meeting specified income criteria. The combined proportion of MIS and self-pay discharges provides an indicator of uninsured hospitalizations.

It can be seen in Table 69 that American Indian hospitalizations in 1988 were more likely to be covered by government payers (54.7% vs. 48.6%) and less likely to be privately insured (33.5% vs. 43.5%) than discharges for all races in California. Presumably, the "other government" category accounting for 3.6% of Indian hospitalizations included IHS contract care payments. The overall difference in public coverage, however, was less significant than the differences in type of public payer. Indian hospitalizations were only half as likely as all discharges to be covered by Medicare (12.5% vs. 25.4%) and nearly twice as likely to be reimbursed by Medi-Cal (31.4% vs. 17.3%). The low proportion of Medicare reflects the younger age distribution of Indian discharges and possibly lower eligibility levels among Indian elders due to limited labor force participation. The importance of Medi-Cal coverage for Indians signals high poverty rates; another marker of low socioeconomic status is the proportion of Indian discharges covered by MIS (6.1% vs. 2.4% of all discharges). The percentage of self-pay (uninsured) discharges was also considerably higher for Indians (10.8% vs. 6.6%). By combining the MIS and self-pay categories, we see that Indian discharges were nearly twice as likely to be uninsured (16.9% vs. 9.0%).

Table 70 indicates that coverage was quite similar for Indian females and males except for a higher proportion of female discharges reimbursed by Medi-Cal. This would be explained by the likelihood of women's Aid for Families with Dependent Children (AFDC) participation, the predominance of obstetric hospitalizations for women, and the broadened eligibility criteria for Medicaid maternity coverage. Indian men's greater coverage under MIS corresponds to their lack of Medi-Cal coverage; slightly higher coverage of men by Medicare parallels the relative proportions of hospitalizations age 65 and over.
Table 71 confirms that Indian women are heavily dependent on Medi-Cal for pregnancy-related hospitalizations (40.6% of discharges), though they are somewhat more likely to have private coverage during pregnancy than during hospitalizations for all causes (cf. Table 70).

Principal source of payment for hospitalizations is examined for American Indians and all races within age groups in Tables 72 and 73 and Charts 45-48. Among the non-elderly, Indians consistently relied more on government sources and less on private insurance. For infants, children, and adolescents under age 15, Indian discharges were much more likely to be covered by Medi-Cal (44.0% vs. 31.5%). Among older teens and young adults ages 15-24, only 30.8% of Indian discharges were privately covered and 20.9% lacked insurance. The most marked differences between Indians and all races were evident in the 25-64-year-old group; 49.4% vs. 30.9% with government coverage, 38.1% vs. 60.2% with private coverage, and 22.0% vs. 11.9% uninsured. This age group benefits the most from employment-related insurance coverage; however, California Indians do not benefit nearly as much as the California general population. Among elders 65 and over, similar proportions of Indian and total discharges were covered by government payers. However, Indian hospitalizations are less likely to be covered by Medicare (78.2% vs. 87.4%) and more likely to qualify for Medi-Cal (9.9% vs. 3.2%) based on low income and lack of other coverage.

These findings on a sample of the elderly who do get hospitalized highlight the need to study the conditions and resources of all older American Indians, who may have poor access to hospital care because of lack of insurance. For all age groups, population-based studies are needed to assess unmet need for both in-patient and out-patient care. Such studies could be expensive to conduct, given the dispersion and mobility of the Indian population and the difficulty in identifying Indian persons outside of reservations. Research strategies need to be carefully planned with central involvement of the Indian community and agencies.

OUT-PATIENT CARE

Statewide Clinic Database

Limited information is available on statewide utilization of out-patient care by American Indians in California. Non-hospital-based clinics are required to submit data, including patients' race/ethnicity, to OSHPD on an annual basis. Licensed clinics of the following types are included in the OSHPD Annual Report of Clinics: community clinic, free clinic, psychology clinic, surgical clinic, chronic dialysis clinic, and rehabilitation clinic. Community clinics should include the tribally-operated 638 clinics and the urban Indian clinics, but the completeness of
reporting for these and all other clinics in the State is unknown. In 1988, 43,636 Indian patients (2.3% of total patients) were reported in this database of clients making clinic visits. This appears to be a good representation of Indians in California. However, IHS-eligible and other low-income Indians would be expected to seek care from clinics more often than from private providers. Overall utilization of out-patient care cannot be evaluated, since no comparable source of data is available to estimate use of non-clinic services.

**IHS California Area Office (CAO) 1990 Profile**

Information on the status of the IHS-funded 638 clinics is integral to this report, since the Tribal Health Program operations define the quality of care available to IHS-eligible persons and require adequate funding to serve the entire population defined as eligible. Following are excerpts from the report prepared by the Area Planning Branch, "California Area Office (CAO) 1990 Profile," which indicate some of the needs for additional resources in a system already stressed by growing demands:

... With a U.S. Census population of over 200,000 Indian people, less than fifty (50) percent of these Indian people are currently registered and/or utilize the health care delivery system as provided by the Tribal 638 Contracted Programs and Consortiums, Urban Health Programs, and the Indian Alcoholism Programs. The use of the State's Medi-Cal system with non-IHS/Tribal providers, under-sized, understaffed, under-equipped, and under-funded Tribal programs and facilities, and poor accessibility in some rural areas have contributed to the low numbers served.

As of December 1989, there were 94 federally recognized Indian Tribes in California with many others in the process of seeking federal recognition. The majority of the tribal populations are too small to operate full fledged health stations, health centers and hospitals and therefore by necessity, they have formed health consortiums with neighboring tribes to provide their much needed health care services and programs. There are presently 21 rural tribal health program operating units, 8 urban health programs and 14 alcohol programs.

The delivery of health care to the State's Indian population presents a unique challenge to the IHS. First, unlike other Areas of the IHS, California is a total 638 contract state where the tribes have established and maintain full responsibility for the development and operation of their own health care facilities, programs and services.
Secondly, no tribal health facility or program in California has been designed, built, staffed, equipped or funded even at the minimum requirements of the IHS health facility planning criteria and therefore 638 is merely a funding mechanism and not an IHS takeover or start-up facility or program as is the case in most other IHS 638 contracts. Thirdly, IHS service units have never been officially sanctioned in California, but instead, service areas have evolved over time which reflect demographic concentrations and political negotiations by the Indian tribes themselves and the subsequent health consortiums.

Finally, individual tribes and/or tribal consortiums who contract under the 638 contracting or Buy-Indian mechanisms for the most part, have become incorporated in the State of California as non-profit corporations with boards of directors governing the service area program. Health program staff are employees of the individual corporations and recruitment and retention of quality staff remains a continual problem as well as the financing of such employees.

There are no IHS inpatient facilities in California, and patients who require hospitalization utilize ... facilities that are located nearby. In some cases, tribal physicians have privileges at the local hospitals and follow their patients through the system. Otherwise the patients are referred to private physicians using contract health services funding and/or alternative resources.

The lack of direct IHS operations and the underfunding of the tribal programs has resulted in a greater reliance on outside agencies such as Housing and Urban Development (HUD) Community Development Block Grant Program, State Indian Health Branch, and other funding sources to supplement IHS funding. A vital role of IHS in California is to provide technical assistance to tribal clinics in such areas as preparation for accreditation by the Joint Commission on Accreditation of Health Care Organizations (JCAHCO), development of clinic protocols, development of Quality Assurance (QA) Plans, facility planning, health board training, development of a usable patient database and MIS systems. The Area Office also provides monitoring and contract compliance.

The majority of IHS planning is concentrated on efforts for the rural workload. In nearly all of the programs, the registered user count reveals that the threshold population[s] necessary for comprehensive service development are not met. This is indicative of the small size and remote character of service area programs.
All Rural and Urban programs provide dental care to the eligible Indian population within their service areas. These dental programs vary in size from a part-time dentist and dental assistant working at a two chair dental clinic to a program with four full-time dentists, one full-time dental hygienist and eight full-time dental assistants utilizing thirteen dental treatment rooms.

The primary mission of CAO is to raise the health status of American Indians to the highest possible level by supporting a comprehensive health care delivery system and by increasing the capability of tribal health contractors in meeting their health needs.

Major Health Problems

The pattern of acute and chronic otitis media, diabetes, and hypertensive disease is similar to the pattern found throughout the IHS. Trauma from homicide, suicide and accidents account for 23% of the major causes of death. California Indian communities are heavily impacted by substance abuse and the many disruptive consequences attendant to these problems.

The provision of maternal and child health services has been impacted by the rising cost of malpractice insurance premiums. The infant mortality rate statewide is 10.3 [deaths per 1,000 live births]. With changes in the extension of Federal Tort Claims protection it is now possible for tribal contractors to begin to develop comprehensive prenatal services. Obstetrics/Gynecology (OB/GYN) specialists, however, are not available in most rural areas.

Sanitation & Environmental Health

Statewide there are 70 Community Water Systems, 10 Community Sewer Systems and 17 Solid Waster Disposal Systems operated and maintained by Tribes. There are approximately 500 Indian homes that are on individual water systems and 2,910 homes on individual wastewater disposal systems. The need for new water and sewer hookups and upgrades [is] shown in the following table:

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<th>Number Needed</th>
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<tbody>
<tr>
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<tr>
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<td>340</td>
</tr>
<tr>
<td>Individual Wastewater System upgrades</td>
<td>610</td>
</tr>
</tbody>
</table>
Some of the individual facility needs will be funded in conjunction with HUD Housing or HUD Community Development Block Grant projects.

Substance Abuse Program

The number one health problem facing California Indians is related to alcohol and substance abuse. A high percentage of clinic visits, deaths from accidents and homicides, and mental health problems are alcohol-related. For these reasons, the Area office has placed emphasis on activities related to prevention and on providing outreach to a greater number of Indian people. In FY 1989 there were 33 Indian alcohol programs in California with 7 more planned for the coming year. ... A need within the tribal programs is additional funding necessary to hire full-time mental health counselors in 19 tribal programs, including masters level health/social workers for data coordination and children's services.

Health Education

Few of the tribal 638 programs in California have Health Education Programs. The historical lack of comprehensive health programs within California with its resultant lack of funding has resulted in few health educators among the staffs of tribal health programs. One goal of the area health education program is to develop tribal health education programs based on identified needs. This will include the development of a California Area and Tribal Education Program Plan. ... The workload and identified need for health promotion and disease prevention activities will require at least one or more full-time area health educators and at least seven full-time health educators within the tribal programs.

The California Area Office experiences a disparity of health education funding in comparison with other comparable Areas in the IHS. California tribes have realized this disparity and are increasingly looking to the IHS for guidance and technical assistance in order to provide more comprehensive programs.

Area Dental Program

For the most part, the dental program was the first health component to be developed within the various tribal 638 programs and has proven to be a solid foundation for expansion into medical and other health service components.
Several concerns of the CAO dental program include the slow turn around of dental data received from the Division of Data Processing Services (DDPS) in Albuquerque, the growing number of non-Indian patients receiving dental services in California, the ever present broken appointments and the overflow from neighboring tribal program areas.

[In findings from an Oral Health Survey of Native Americans published in January 1985, the number of dental services required for the IHS service population in California was 507,226. The number of dental services provided to Indians in rural and urban programs in fiscal year 1988 was 156,481, or 30.9% of the estimated need in that survey.]

Pharmacy

The majority of the tribal clinics in California do not have a pharmacy or pharmacist(s) and thus have to rely on purchasing expensive drug prepacks for physician dispensing or use CHS money to buy drugs from local pharmacies. Tribal clinics cannot utilize the government depot system to gain economies of scale. Tribal clinics are not able to educate the patient on how to properly take their medications, provide in-service to the clinic staff on drug issues, aid the physician in monitoring drug therapy and minotor drug utilization. There are no pharmacists to ensure that true generic equivalents are being substituted. Those few clinics that do have pharmacists have trouble recruiting and retaining these professionals.

The Area has assigned duties to a part time Area Pharmacy Officer to help address pharmacy issues. A pharmacy needs assessment has been completed and a plan outlined to address the issues of cost containment, patient safety and legal requirements including the notion of an area or regional dispensary. A full-time pharmacy officer will be required to fully meet the needs of California tribal clinics . . . .

Planning Assumptions

Population sizes and dispersion of tribal groups in the California Area makes it unlikely that a hospital-based service program will develop within the area. Because of this, tribal programs will continue to rely upon the private and other public sector hospital facilities to meet inpatient and emergency needs. Since the majority of the programs have not developed expertise in laboratory, pharmacy and x-ray specialties, these services will continue to be purchased from the private sector. The further erosion of funding for public assistance programs, including the Medi-Cal system and the spiraling costs of health care
Urban Indian Clinics

Urban Indians are generally not eligible for IHS services, and little is known about their health status and needs. In an urban Indian needs assessment conducted by Gerald Hill, M.D., in the San Francisco Bay Area in 1986, 30% of the respondents reported fair or poor health. This contrasts with 12% of the general U.S. population reporting similar health status in 1976-78. Over a third of Bay Area Indians (34%) had no public or private health insurance coverage, compared to 9% of the general population in a 1982 national access survey. Forty-one percent reported that they had not received needed medical care within the previous six months, compared to only 6% of total families in the national survey. Utilization of preventive out-patient care was also poor compared to the general population. Data on tribal affiliation and Federal recognition were not collected, but reservation-based services remained an important source of care for this urban population. Five percent named IHS facilities outside of the Bay Area as their usual source of care, and another 15% stated that someone in their household had sought medical or dental care on a reservation in the previous year.

A report prepared for IHS by the American Indian Health Care Association summarized data from eight California urban Indian health clinics for FY 1988, though reporting appeared to be incomplete. Total encounters reported were 18,313 for medical visits and 13,798 for dental visits. The number of Indian users was reported to be 2,605 for medical services and 2,119 for dental care. According to the survey findings discussed above, the number of American Indians lacking health insurance in the Bay Area alone may total more than 6,000. A significant number of urban Indian people lacking other resources may rely on rural health care supported by the IHS.

Reportable Infectious Diseases

One of the important historical achievements of the IHS has been the decline in mortality for reservation Indians because of tuberculosis and other infectious diseases. However, it appears that Indians are still more vulnerable than other groups to communicable diseases because of poverty, substandard housing, and other socioeconomic disadvantages. The quality of race/ethnicity data for 1987 in the CDC National Notifiable Diseases Surveillance System was found to be incomplete and variable, though the reported incidence of infectious diseases was considerably elevated for racial minorities. Reported incidences of gonorrhea, hepatitis A, and shigellosis were highest for American Indians and Alaska Natives; Indian rates were also quite high for hepatitis B and tuberculosis, and could
not be calculated for the other diseases studied. Considering these and other findings, Indian cases of gonorrhea, syphilis, tuberculosis, and hepatitis B in California appear to be under-reported in Table 74.

The need for better racial/ethnic coding and more complete reporting of Indians in communicable disease surveillance is nowhere more clear than in the case of AIDS. A Los Angeles study indicated that up to 50% of American Indian AIDS cases may be racially misclassified in the Los Angeles County AIDS surveillance registry. The total number of Indian AIDS cases of all ages reported to the CDC through June 1991 was 273, but anecdotal evidence and the presence of numerous risk factors suggest that the actual number may be much higher.

Native Americans are in the lowest economic bracket, are less educated, die younger, suffer more health problems and substance abuse, go to prison more often, have far inferior access to health care, poor diets, high unemployment, higher rates of communicable diseases, otitis media, upper respiratory infections and more accidents, homicides and suicides than the population as a whole. The poor health of Native Americans may speed the development of AIDS in an HIV infected individual. Lack of access to technologically advanced health care and the means to pay for it will hasten death once ill. (Easthope and Asetoyer, pp. 2-3)

Provisional data from the CDC show a recent sharp upswing in the number of reported tuberculosis cases to American Indians in California: 41 cases in 1990, compared to 29 in 1988, and 27 in 1989. For 30 years prior to 1988, the trend was waning and the statistics were generally consistent. In California, as in the U.S., tuberculosis appears to be an increasing problem. Though reporting procedures and classification issues may cloud the meaning of the TB data, this may be another indicator of the impact of AIDS on California Indians.

**FEDERAL AND STATE HEALTH AND WELFARE PROGRAMS**

With the assistance of the Indian Health Program of the State of California Department of Health Services, available data on Indian participation in Federal and State health and welfare programs were surveyed. These programs are important as resources for health care, health-related and social services, and income support. Given the low socioeconomic status and significant health problems demonstrated for American Indians, access to a wide range of services appears to be essential.
Some government programs operate in conjunction with the tribally-operated clinics, while others must be accessed independently. It was beyond the scope of this study to thoroughly assess the needs for and utilization of various programs; instead, the representation of Indians among clients receiving selected services was reviewed. With adequate resources, a multi-agency database could be produced that would help to coordinate and ensure proper utilization of government programs by American Indians in California.

Table 75 presents 1987-90 data on participation of American Indians in the Food Stamp program and programs of the Department of Social Services, Medi-Cal, Office of Family Planning, Mental Health, Child Health and Disability Program, Department of Developmental Services, Department of Rehabilitation, and Preventive Health Care for the Aging. In the State as a whole, Indians appeared to be under-represented (less than 0.8%) among all clients receiving services except for Food Stamps, Aid to Families with Dependent Children (AFDC), and Greater Avenues for Independence (GAIN), which is an AFDC-related employment program. These estimates of representation in the service populations cannot be quantified in relation to actual need. One further indicator of extreme need, not shown in the table, is the number of Indian applicants (181 families) approved for AFDC Homeless Assistance, representing 1.6% of total approved applicants during May 1989. This information should prompt an investigation of the extent, causes, and consequences of homelessness among the Indian population in California.

Where data were available, the representation of Indian clients in the primarily federally recognized and non-federally recognized counties was also examined. In both subgroups of Indian counties, participation was extremely low in the Child Health and Disability Program (CHDP), California's Early and Periodic Screening, Diagnosis and Treatment program (EPSDT). Indian clients were under-represented among mental health and family planning clients in both federally recognized and non-federally recognized counties, and appeared to be better represented in the Food Stamp program in both areas.

More detail is presented in Tables 76-78 on services provided to and characteristics of Indian clients in some of these programs. Data shown in Table 76 indicate that American Indians received low levels of Medi-Cal funding in FY 1988 for all services except rural health and other clinic services, which may primarily represent services received in tribally-operated clinics. No Indian clients were identified in FY 1988 as Medi-Cal recipients of in-patient psychiatric services or mental health services for the aged in mental hospitals, skilled nursing facilities, or intermediate care facilities. Medi-Cal funding was also minimal for utilization by Indians of all intermediate care facilities, dental services, and home health services.
Data on State-funded family planning services indicate that Indian clients were younger than clients of all races in FY 1988 (Table 77). Among American Indian contraceptive clients in FY 1988, 31% were under age 19, compared with 19.2% of total clients. Although the numbers of all male clients were small, it is notable that Indian males represented a higher proportion of total clients than did Indian females. In spite of the high prevalence of teen childbearing among Indians, these data suggest that family planning programs may provide useful sites for a variety of health promotion and treatment programs targeting Indian teenagers. A higher percentage of Indian females using Office of Family Planning services did not receive any contraceptive method (8.8% vs. 5.7% of all clients). This may indicate that Indian clients were more likely to be pregnant or seeking pregnancy, to be dissatisfied with previous methods, not to be sexually active, or were unable to utilize available prescribed methods due to poor health status.

Table 78 compares the major disabilities of Indian and total clients in the State Department of Rehabilitation in FY 1989. The high proportion of Indian clients with alcoholism as their major disability (29.8% vs. 12.2% of total clients) reflects the severity of alcohol-related problems in the Indian community, but could also indicate a relative lack of needed services in other areas, especially mental health and other drug treatment. Characteristics of Indian clients served by state drug and alcohol programs in FY 1989 are shown in Table 79. Indian clients, especially in the primarily non-federally recognized counties, were more likely to be female than male. A small proportion of Indian clients (6.8% Statewide) were under age 18. Most services were provided on an out-patient basis; in the non-federally recognized counties, only 4.7% of Indian clients received in-patient treatment. The vast majority of Indian clients (100.0% in non-federally recognized areas) lacked private health insurance. Over 60% of Indian clients were being treated primarily for problems with heroin. Only 41 Indian clients Statewide (4 in federally recognized counties and 6 in non-federally recognized counties) were admitted to programs primarily for alcohol treatment. The availability and accessibility of alcohol and other drug programs for California Indians is an important topic for future study.

ASSESSMENT OF NON-FEDERALLY RECOGNIZED INDIANS OF CALIFORNIA

Introduction

Part (E) of P.L. 100-713 (Section 709) requires the IHS to provide an assessment of the actual availability and accessibility of alternative (non-IHS) health care resources for California Indians who are not members of a federally recognized tribe of California. The following section describes the design, implementation, and results of the assessment conducted by the
California Tribal Health Programs to obtain this requested information on health care needs, current utilization, and alternatives available to non-federally recognized Indians of California.

**Background**

According to IHS registration records, approximately one-fourth of currently registered American Indian individuals at California Indian Tribal Health Clinics are not members of a federally recognized Indian tribe of California. Eligibility for IHS-funded care for these persons is authorized currently under the 1988 Indian Health Care Amendments. The criteria for eligibility outlined in those amendments includes three categories: 1) descendants of a California Indian alive in 1852, 2) individuals who hold trust interests in a public domain, national forest, or Indian reservation allotment in California, or 3) individuals who are listed on the plan for distribution of the assets of California rancherias and reservations under the Act of August 18, 1958. Hereafter in this report, persons in these three categories will be referred to as non-federally recognized Indians of California (NRICA).

Three years ago, Congress requested in Section 709 of P.L. 100-713 that: "in order to provide Congress with sufficient data to determine which Indians in the State of California should be eligible for health services provided by the Service (IHS), the Secretary shall prepare and submit a report to the Congress . . . which sets forth . . . (E) an assessment of the actual availability and accessibility of alternative resources for the health care of such Indians that such Indians would have to rely on if the service did not provide for the health care of such Indians." The law further specifies that the report shall be prepared with the assistance of the Tribal Health Programs of California providing services to the Indians described (i.e., NRICA).

Determining the availability and accessibility of alternative resources for care of non-federally recognized Indians of California (NRICA) is a particularly difficult task. First, defining and locating the population of interest is difficult, because there is no central register of California Indians who do not belong to a federally recognized tribe. Second, no existing source of data is available on how many of the NRICA have alternate resources for health care, such as private health insurance or Medi-Cal coverage. Many of these individuals are low-income and would have to depend upon public programs for health care. However, the public programs currently available for low-income Californians vary greatly by county, making an overall assessment of alternative resources difficult.
Finally and most importantly, individuals generally do not explore alternatives until the time of actual need. Thus, any information obtained on health care alternatives would be at best speculative.

After consideration of the difficulties and limitations noted above, a subcommittee of the Tribal Advisory Committee decided that the most appropriate way to collect the necessary information would be through an assessment of the NRICA conducted by the California Tribal Health Programs. This would allow for the collection of information from this group on current and potential use of alternative health care sources not funded by IHS.

Survey of American Indians and Alaska Natives (SAIAN)

The 1987 SAIAN, which was developed and conducted by the Agency for Health Care Policy and Research (AHCPR) of the U.S. PHS, included many components relevant to the California survey. The SAIAN was designed to produce statistically unbiased estimates that were representative of the civilian population living on or near reservations and eligible for the IHS. The survey used a multi-stage probability sample design to identify almost 2,000 families, representing 6,557 civilian non-institutionalized persons eligible for IHS care. The SAIAN was conducted as a companion to a larger national survey, the 1987 NMES, which was designed to provide estimates representative of the total civilian non-institutionalized population of the U.S.

Both surveys collected information on health status, health care utilization, and health expenditures. In particular, the Access to Care Supplement to these surveys contained specific questions relevant to the legislative mandate for this report. The supplement was developed from prior surveys administered by the National Center for Health Services Research and Health Care Technology (AHCPR's predecessor) in 1977 and 1980 and was extensively piloted and validated with American Indian respondents. Several supplements were self-administered, but the majority of the surveys were administered by trained interviewers. Results from the NMES and SAIAN Access to Care Supplement have recently become available, and were used whenever possible for comparison in this report.

Population Assessed

There is no current list of California Indians who are not members of a federally recognized tribe. However, the Tribal Health Programs' registration information maintained by the California Area IHS since 1987, includes information on tribal membership and codes for NRICA. The classification system used by IHS was changed in 1988, and deserves a short discussion.
Prior to 1988, Indians were registered by either their tribe of affiliation or tribe of membership. Because of increasing concerns over eligibility issues, IHS began a nationwide effort to register all their patients by the tribe of enrollment. On August 23, 1988, the Director, IHS nationally issued a directive dictating that documentation of enrollment in a federally recognized tribe would determine eligibility for services as of October 1, 1988. The Federal Register of December 29, 1988, listed tribes that were federally recognized.

Before 1988, individuals in California who were considered American Indians but not members of a federally recognized tribe of California, i.e., NRICA, might be coded by the Tribal Health Facility according to the tribe of affiliation or as "000" (non-Indian). A memorandum dated September 29, 1988, directed the clinics to change the code for these Indians to "997 - Indian non-tribal member" (Appendix 6).

The Director, California Area IHS in conjunction with an advisory board, modified the classification system to better define NRICA who were eligible for IHS-funded services. The codes and definitions are listed in Table 80. If individuals live on or hold an interest in trust land or Indian allotments, they were to be assigned a code of 740. If they did not fit into code 740, but had received money from the distribution of California Indian Judgement monies in 1974, they were to be assigned code 741. If they did not fit into either category, but could verify that they were descendants of a California Indian who was alive in 1852 and that they were considered to be Indian by the Indian community, they were to be assigned a code of 742 (Appendix 7).

The Tribal Health Clinics have attempted to update their registers utilizing these new codes. As of November 1990, only 17% of the registered users in California had old codes. However, the rate of patients with old codes varied by clinic from less than 0.1% to over 50% in one large clinic (14,000 registered clients). In some clinics, the presence of old codes indicated an inactive patient who had not returned and thus had not had the registration updated. Old codes could also be found in clinics which had been lax in updating the registration information. Also, some of the clinics reportedly updated registrations into the new coding system based on information in their files, but did not confirm the information with the patient.

The IHS classification system for NRICA was used as the sampling frame for this assessment. Individuals registered under the 740, 741, 742, or 997 code in the IHS clinic registration system were included. It is important to note that these selection criteria do not include Indians who might be eligible, but have not registered at a California Tribal Health Program in the last 4 years. Non-federally recognized Indians registered only at urban
Indian health programs or registered under the code of "000" are also not included. While this choice of criteria does not include all NRICA, it does identify the population of greatest interest for this report: NRICA who utilize the California Tribal Health Programs for some portion of their health care. Further study to gather information about health status and access to care for non-federally recognized California Indians who are not currently clinic users would be a much more ambitious and expensive undertaking.

A random sample of adults 18 years and older were selected from patients who had registered as codes 740, 741, 742, and 997 on the IHS registration system in March 1991. The sample size \( n = 640 \) for women and \( n = 640 \) for men was selected, based on an estimated 60% response rate, to yield estimates of access measures that were accurate within \( \pm 5\% \). Individuals registered at more than one clinic were assigned to the clinic closest to their home address.

**Methodology**

Information was collected on current insurance status, current use of Tribal Health Programs and other providers, and financial and other barriers to receipt of care. Most important was information on the availability and accessibility of alternative sources of health care if the Tribal Health Programs were no longer available. Table 81 outlines the SAION sources for the California instrument (see Appendix 8). The majority of questions in California were taken from the Access to Care Supplement with minor modifications. Approval of the project was obtained from the California Tribal Health Council, the California Area IHS Research Committee and Institutional Review Board, and the IHS National Institutional Review Board (Appendix 9). Overall coordination of the assessment, including interviewer training and tracking, was undertaken by the California Rural Indian Health Board and the California State Indian Health Program with the cooperation of participating California Urban Health Programs.

California Tribal Health Programs which were not able to contact at least 85% of the sample or successfully complete at least 25% of the forms were eliminated from further analysis. If it was discovered that a person had died, that individual was removed from the sample. Completed forms from individuals who did not meet the eligibility criteria were eliminated from further analysis. The age and sex distribution of the respondents was compared to non-respondents, including those who declined to participate. Data from respondents were subject to univariate and bivariate analyses. Technical assistance was provided by IHS in the analysis of the assessment.
Results

A total of 1,288 forms were to be distributed to the 21 participating Tribal Health Programs based on the selection criteria described above. Of those, 1,120 forms were returned for data entry. After excluding non-participating clinics, 1,013 responses representing 12 clinics were retained for analysis. The nine excluded clinics included one fairly large clinic and eight small clinics.

Table 82 outlines the final disposition of the forms. The completion rate was 40%, based on 407 completed forms. Twenty-four (2.0%) of the patients were reported by the clinic staff to have died, and 38 (4.0%) declined to participate. Despite aggressive efforts of the Tribal Health Programs to locate all the individuals selected, over half of the sample (54%) could not be contacted for participation. Many in this group were noted to have moved to another part of the state or out of state. Sixty-nine of the forms (7%) were not returned for analysis and were considered part of the "unable to contact" group.

Table 83 profiles the age and sex distribution of the respondents and non-respondents. Respondents were more likely to be older and female. The Tribal Health Programs contacted 123 respondents (30%) by phone and 284 respondents (70%) in person. No significant differences were noted in the age and sex distributions between these two groups.

Fifty-nine (14%) of the respondents did not meet one of the three criteria of holding trust lands, Indian judgements, or descendant status (Table 80) and were eliminated from further analysis. This left 348 respondents who met the criteria for final analysis. The reported tribal status for these 348 eligible respondents is shown in Table 84. The first column displays the number of individuals who indicated they belonged in that category. The second column shows how the respondents should be categorized according to the IHS system outlined in Table 80.

A surprising finding was that almost half of the respondents that met the criteria also reported that they were enrolled in a federally recognized tribe. The analysis was conducted for the entire eligible group (n = 348) and separately for the group who did not claim to be enrolled in a federally recognized tribe (n = 184). The results were so similar for the two groups that only the results for the larger group are reported here.

Characteristics

The demographics of the NRICA population are shown in Table 85 compared to those American Indians reported in the SAIAN and the total U.S. population in the NMES. The NRICA and SAIAN populations both had fewer elderly individuals than the U.S.
population. Both Indian populations were also less likely than the general population to possess education beyond high school, but NRICA were less likely to have college education compared to the SAIAI population. The NRICA household size was more similar to the U.S. population than to the SAIAI population, in which larger family groupings were common. Although the NRICA families were smaller overall than the SAIAI population, they were more likely to have households with children under the age of 16. Over half of the NRICA respondents reported an annual household income under $12,000; comparable SAIAI or U.S. income data were not available.

Table 86 outlines the health status and utilization and access measures of the NRICA compared to those reported in the SAIAI and NMES. The perceived health status of the California NRICA respondents was similar to that of the SAIAI and U.S. population. Twenty-eight percent of the NRICA sample reported one or more chronic health problems such as diabetes, hypertension, renal disease, or respiratory disease. This contrasts with the 42% and 39% rates of one or more chronic conditions reported in the SAIAI and U.S. populations, respectively. However, this difference is explained by the inclusion of arthritis, rheumatism, and gall bladder disease in the SAIAI and NMES questions regarding chronic disease; the NRICA assessment did not include these conditions in the comparable question.

The travel time and waiting time reported by the NRICA were more similar to those reported for the U.S. population than to those reported for the SAIAI population. Three-quarters of the NRICA respondents reported that they had a usual source of medical care. This rate was lower than for the SAIAI population, in which 91% reported a usual source of care -- generally an IHS facility. The NRICA rate was also lower than the rate for the U.S. population overall, but similar to ethnic minorities such as blacks (77%) and Hispanics (73%) (Personal communication, AHCPR). Over half of the NRICA respondents reported three or more visits to a health care provider in the past year, with an annual average number of visits of 6.5 for the entire group. Thirty-six percent also reported a visit during 1990 by a Community Health Representative, a type of home health aide trained and utilized extensively in the IHS system. Over half of the NRICA respondents did not pay any out-of-pocket expenses for health care in 1990, but the average payment for 1990 for the entire group was $356.

The majority of NRICA respondents held some type of health care coverage, as shown in the first column of Table 87. The most common was Medi-Cal (28%), followed by private insurance (24%) and Medicare (14%). One-third had no form of health insurance.
The majority of individuals with health insurance coverage had used their insurance to pay for medical care in 1990, as shown in the second column. Respondents were also asked "If you applied, would you be eligible for any of the following health payment sources?" and presented with the same choices of coverage. Responses to this question are shown in the third column of Table 87. A small increase in coverage was indicated for both private and public insurance, but 29% of the NRICA could not identify any form of coverage for which they would be eligible.

Table 88 compares the NRICA's current insurance status with that reported in the SAIAN and with various U.S. subgroups from the NMES. Approximately a quarter of both the NRICA and the SAIAN populations had private insurance, which was much lower than any other ethnic subgroup in the U.S., and decidedly lower than the 75% rate of coverage for the U.S. population overall. The NRICA population was also four times as likely to have public insurance and twice as likely to be uninsured compared with the overall U.S. population.

The usual site of health care for those who reported a usual source of health care is detailed in Table 89. Currently, 60% of the NRICA respondent population identified the local Tribal Health Program as their usual source of care, compared to 24% reporting a doctor's office or group practice. The remainder reported various sources such as hospital outpatient clinics, emergency rooms, urgent care clinics, and community clinics.

In reporting on alternate resources for health care, 38% of the NRICA group indicated that they would use a Tribal Health Program (Table 89). The major expected shift in care was to county indigent programs, community clinics, and emergency rooms. Seven percent reported that they did not know where they would go. There was no anticipated shift to private physicians in the community. Results regarding travel time, ease of travel, and waiting time related to alternative sites were similar to those for the current sites and were not included in the tables.

One-third of the NRICA respondents reported at least one unmet health care need during 1990. The most commonly mentioned types of unmet health care needs are listed in Table 90. The most frequently mentioned need was dental care reported by 22%, followed by other types of supplies (e.g., diabetic supplies, orthopedic supplies, and eyeglasses) reported by 19%, and prescription medications reported by 18%. Factors in the choice of health care that were named as very important by more than 50% of respondents were: respect and kindness, dental care, affordability, help in obtaining other services, understanding of American Indian ways, and ease in getting to the clinic (Table 91).
**Populations of Special Concern**

There are a number of subpopulations that are of special concern to policy makers and health care providers. Statistically significant information cannot be derived from the small NRICA sample, but descriptive information on these subgroups is provided here:

**Pregnant women:** Twenty-three women out of the 122 women aged 18 to 45 reported a pregnancy during 1990. Nine of those women reported difficulties in obtaining prenatal care.

**Persons with chronic conditions:** More than a quarter of the respondents reported one or more chronic conditions. This group was generally older than the total sample and more likely to report unmet health care needs.

**Elders:** Increasing age was associated with poorer health status and more chronic conditions. Less than 5% of the elderly NRICA lacked health insurance, but half of those on Medicare were also on Medi-Cal.

**Uninsured persons:** One-third of the respondents had no health insurance. Compared to those with some form of health coverage, they were twice as likely to lack a usual source of medical care (a statistically significant difference). Of those who did report a usual source of care, 70% reported using the Tribal Health Program and the remainder used emergency rooms for their care. Ease of payment for care was an important factor in the choice of health care for the uninsured. Members of the uninsured group were more often young and male, reported fewer chronic conditions, and enjoyed better health status than the total group. Interestingly, none of the uninsured group reported an unmet health care need during 1990.

**Persons with no usual source of care:** Approximately one-fourth reported that they did not have a usual source of care. This group was more likely to be male than the total group, and reported finances as a major barrier to the receipt of health care.

**Discussion**

The results of this assessment of California NRICA are severely limited in a number of ways. The most obvious limitation is the low response rate, which resulted in a smaller-than-desired sample size. Because of this limitation, one should be very cautious about generalizing the results to the entire NRICA population. Informal notes made by the assessment team identified about half of the non-respondents as having moved away from the area or having been incarcerated. These observations are consistent with the finding that non-respondents were more
likely to be young males, who tend to follow seasonal work and to be very mobile. Thus, it is difficult for a clinic to maintain a current address for these clinic users. The remainder of the non-respondents could not be located for interviewing, despite three attempts by the clinic staff. Many of these latter individuals had post office boxes and did not have a phone. On the other hand, the group successfully contacted may accurately represent active users of the Tribal Health Programs; therefore, the low response rate may not seriously impair generalizability of the study findings to the active user population of non-federally recognized California Indians.

One half of the individuals currently coded as non-federally recognized reported they were enrolled in a federally recognized tribe. Federal recognition is such an important issue for California Indians that self-reported misclassification of this magnitude seems unlikely. However, several members of the Tribal Advisory Committee believe that California Indians often do not understand their complex and often confusing legal standing. An alternative explanation for this finding is that many of the clinics may have re-coded the records independently without consulting the individuals for confirmation. A third explanation is that some of the NRICA may have recently won Federal recognition, but had not yet been to the clinic to change their registration status.

The possible misclassification of NRICA as "enrolled" discovered in this assessment would have some important policy ramifications. If these individuals are indeed enrolled in a federally recognized tribe, the actual number of NRICA is much smaller than what is currently believed using the IHS registration system. Validation of tribal enrollment for these respondents has been requested from the Bureau of Indian Affairs. The California Area Office will continue to investigate the confusion about federally recognized status. If the original assumption is correct that none of the sample are federally recognized, these findings imply the need for an educational campaign in Indian communities that would lead to more accurate IHS registration files.

Despite its limitations, this assessment has a number of important findings. The NRICA population has a similar age distribution and health status but less college education compared with American Indians and Alaska Natives living on and near reservations. Their annual family income level is low, as is the rate of health care coverage. The NRICA possess the lowest rate of private health care coverage when compared with American Indians and other race/ethnic groups in the U.S.
Over one-third report unmet health care needs, especially for dental care, diabetic and orthopedic supplies (such as special shoes to prevent amputations), and prescription medicines.

The assessment indicates that the NRICA population of California depends heavily upon the Tribal Health Programs for their health care, with 60% reporting that as their usual source of care. That dependence is even greater for the uninsured. However, the Tribal Health Program was not viewed as the place of last resort for care by the NRICA. Over half of the individuals with private health insurance or Medicare, who presumably could have chosen the private practice community, indicated that the tribal health program was their usual source of care. Respondents indicated that having staff who are sensitive to American Indian ways is important in the choice of health care, and this feature was rated more important than financial considerations.

The alternative health care sites for this population are strongly influenced by the NRICA's financial resources and health care coverage. Only one fourth had private insurance, which would provide access to alternate sites in the private practice community. Almost half of the NRICA had some form of public insurance such as Medi-Cal; and a third had no insurance coverage at all, making their options severely limited. Reportedly few providers are willing to take new Medi-Cal and Medicare patients. The other alternatives these individuals were able to identify such as community health clinics, county health programs, and emergency departments, are already serving at or beyond capacity and are threatened by cutbacks and closures. Thus, accessible and acceptable alternative providers for this population outside the Tribal Health Programs seem to be very limited.

CONCLUSIONS AND RECOMMENDATIONS

Overall Observations

In spite of many limitations and data quality issues, consistent findings emerged from all of the sources of information used in this study. The review of secondary data and the results of the assessment of non-federally recognized Indians of California demonstrate convincingly that unmet need for a variety of health services exists among California's Indian population, and that any restrictions in eligibility or inadequate levels of funding for the currently eligible IHS population could have serious adverse health consequences. The consistency of findings provides strong evidence for the following general observations, illustrated by salient examples:

1. By many measures, the health status of California Indians is very similar to that of American Indians and Alaska Natives served by IHS in the other reservation States, and health risks
are much greater compared with the general population in California.

- Only 49.3% of deaths to American Indian women and 38.8% of deaths to American Indian men in 1986-88 occurred at the age of 65 or older, compared to 76.6% and 60.8% of deaths to women and men of all races.

- The 10 leading causes of death for American Indians in California in 1986-88 were the same as the causes for American Indians in the U.S. Within California, a greater proportion of Indian than total deaths were caused by accidents, chronic liver disease and cirrhosis, homicide, and suicide.

2. The maternal and child health risk profile for California Indians presents a disturbing picture that demands public health action.

- Access to prenatal care is worse for American Indian women, especially in California counties in which the Indian population is not likely to be federally recognized. Indian women are less likely to enter care early and more likely not to receive any care.

- The rates of low birthweight and infant mortality are higher for American Indians than for the total population and any other subgroup except blacks in California. Indian infant mortality is especially high in the postneonatal period, when the predominant causes are environmental and a high proportion of deaths should be preventable.

3. The health status of non-federally recognized Indians of California, based on information about counties in which American Indians are primarily not federally recognized, is not better than that of federally recognized Indians. Some findings suggest that the health status of the non-federally recognized may be worse and deserves special attention. No evidence exists that resources currently available outside of IHS are adequate to meet urgent needs for care.

- In the primarily non-federally recognized counties of California, nearly a quarter of deaths to Indian boys and men are caused by accidents.

- Causes of hospitalization for California Indians in primarily non-federally recognized counties indicate problems with access to prenatal and other preventive care, substance abuse, and diabetes, as well as low socioeconomic status.
4. American Indians in California generally lack private health insurance coverage and rely heavily on Medi-Cal.

- Prenatal care for Indian births compared to total births is much more likely to be covered by Medi-Cal (45.5% vs. 27.6%) and less likely to be covered by private insurance (39.7% vs. 52.7%). Two-thirds of Indian births in the primarily non-federally recognized counties are covered by Medi-Cal.

- Indian hospitalizations are only half as likely as total discharges in California to be covered by Medicare, and nearly twice as likely to be reimbursed by Medi-Cal or to be uninsured.

- Only 24% of non-federally recognized Indians registered in the Tribal Health Programs have private health insurance.

5. Tribally-operated health programs have central importance not only because of the lack of adequate alternative resources, but also because of the preference for Indian-specific and culturally competent services.

- Utilization of California's Tribal Health Programs has been increasing. The unduplicated registration count of active registered patients was 39,000 in FY 1988, 44,000 in FY 1989 (12.8% increase over previous year), and 52,000 in FY 1990 (18.2% increase over previous year).

- In the assessment of non-federally recognized Indians of California, over half of the individuals with private health insurance or Medicare chose to use a Tribal Health Program as their usual source of care.

6. Some findings deserve immediate attention because of their overwhelming impact on California American Indian health status and the evidence they provide of serious inequities.

- About 40% of all American Indian deaths in California are attributable to cigarette smoking, compared to 12.4% and 17.8% of deaths to women and men, respectively, in the total population. About one third of deaths to Indian women (vs. 4.3% for women of all races) and over 40% of deaths to Indian men (vs. 8.4% for men of all races) are alcohol-related.

Data and Research Needs

This study documents the need for further research to improve the quality of data on California's American Indian and Alaska Native population (both federally recognized and non-federally recognized), to assess their health status more accurately and routinely monitor their health needs, and to evaluate the
routinely monitor their health needs, and to evaluate the effectiveness and appropriateness of specific interventions and modes of health care service delivery. Additional studies will be necessary to obtain certain information directly from the Indian population, but further investigations utilizing secondary data sources could contribute useful knowledge for health promotion and disease prevention. One example is the possibility of linking the IHS patient registration files with other databases, such as death certificates to validate and expand the knowledge of mortality in the Indian community.

Other research on the availability, accessibility, and acceptability of alternative resources is needed to assess the potential impact of IHS eligibility changes. Barriers to access in specific geographic areas must be evaluated in the context of current fiscal conditions and policy trends. The changing capacity of the California health care system defines options for the State's citizens, depending on their location, needs, and resources. Twenty-one percent of California's non-elderly population lack public or private health insurance, and this crisis in health coverage coincides with a severe State budgetary crisis.

Impact of Realignment

The State of California is currently facing an estimated $14 billion budget deficit. As a result, legislation (AB 1288) has been passed that establishes a new system for the administration and funding of indigent health care and county health services programs. The process to establish this new system involved the repeal of current State statutes and a transfer of funding sources from the State general fund to newly established sources, specifically increases in selected taxes and fees. These new revenue sources will go directly to the counties via the newly established "Local Revenue Fund." Small counties (less than 40,000 population) will be able to contract back with the State. This process has been identified as "realignment."

As of this writing, there is no accurate way to assess the impact of these major changes on how the medically indigent population of California will benefit or suffer. It is likely, however, that the implementation of these major changes in the way local health care services will be funded and administered will take at least a year to accomplish and during this time may adversely impact the medically indigent population. Legislation has been passed (part of AB 1288) and signed by the governor (Chapter 89, statutes of 1991) to evaluate the implementation and impact of realignment. This report will be part of the "County Health Services Legislative Report" and is not expected until 1992.
For the Future

That report on the impact of the realignment policy will give one indication of how the State's deficit is affecting county health systems. The current fiscal climate implies decreased availability of alternative resources for people who depend on services supported by the IHS. Various proposals are currently being fielded to create universal health coverage in California, but the timing and nature of future programs are uncertain. The immediate need to maintain coverage for non-federally recognized California Indians is urgent. Finally, financial coverage alone will not ensure appropriate and acceptable care for the Indian population. Recent expansion of clinical services in California's tribally-operated programs has led to a higher level of utilization, indicating both unmet need and a desire to obtain services in an Indian-specific environment.
REFERENCES


10. Committee to Study the Prevention of Low Birthweight, Division of Health Promotion and Disease Prevention, Institute of Medicine, Preventing Low Birthweight (Washington, DC: National Academy Press, 1985).


32. Kleinman, JC, personal communication.


Table 1

**AMERICAN INDIAN/ALASKA NATIVE POPULATION, INCLUDING HISPANICS, BY TYPE OF COUNTY(1)**

**CALIFORNIA, 1980 AND 1990**

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
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<tr>
<td>All 58</td>
<td>201,360</td>
<td>100.0</td>
<td>0.9</td>
<td>242,164</td>
<td>100.0</td>
<td>0.8</td>
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<td>38.3</td>
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<td>107,825</td>
<td>44.5</td>
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<td>Non-Indian</td>
<td>124,294</td>
<td>61.7</td>
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<td>134,339</td>
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<td>Federally Recognized</td>
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<td>20.0</td>
<td>1.1</td>
<td>54,625</td>
<td>22.6</td>
<td>1.0</td>
<td>35.9</td>
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<td>6,255</td>
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<td>IHS Contract Clinic Accessible to 80% AI/AN</td>
<td>46,132</td>
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<td>1.3</td>
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<td>26.4</td>
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<td>16,792</td>
<td>6.9</td>
<td>1.7</td>
<td>48.7</td>
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(1) See Appendix 2 for definitions of county groups.

Source: U.S. Bureau of the Census.
Table 2

AMERICAN INDIAN/ALASKA NATIVE POPULATION, EXCLUDING HISPANICS, BY TYPE OF COUNTY(1)
CALIFORNIA, 1990

<table>
<thead>
<tr>
<th>TYPE OF COUNTY</th>
<th>Number</th>
<th>Percent of AI/AN Population</th>
<th>Percent of All Races Population</th>
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<tr>
<td>All 58</td>
<td>184,065</td>
<td>100.0</td>
<td>0.6</td>
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<td>Indian</td>
<td>87,007</td>
<td>47.3</td>
<td>1.0</td>
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<td>Non-Indian</td>
<td>97,058</td>
<td>52.7</td>
<td>0.5</td>
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<td>Federally Recognized</td>
<td>42,482</td>
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<td>Non-Federally Recognized</td>
<td>21,827</td>
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<td>1.2</td>
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<tr>
<td>Indisputably Rural</td>
<td>5,805</td>
<td>3.2</td>
<td>3.4</td>
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<td>Indisputably Urban</td>
<td>65,403</td>
<td>35.5</td>
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<td>IHS Contract Clinic Accessible to 80% AI/AN</td>
<td>52,406</td>
<td>28.5</td>
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<td>19,724</td>
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<td>IHS Contract Clinic Not Accessible to AI/AN</td>
<td>14,620</td>
<td>7.9</td>
<td>1.5</td>
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</tbody>
</table>

(1) See Appendix 2 for definitions of county groups.

Source: U.S. Bureau of the Census.