

Nutrition Assistance Program Report Series
The Office of Analysis, Nutrition and Evaluation

Special Nutrition Programs

Report No. WIC-02-NAM

The Characteristics of Native
American WIC Participants, On
and Off Reservations



United States
Department of
Agriculture

Food and
Nutrition
Service

May 2002

“The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA’s TARGET Center at (202) 720-2600 (voice and TDD)”

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.



United States
Department of
Agriculture

Food and
Nutrition
Service

May 2002
Special Nutrition Programs
Report No. WIC-02-NAM

The Characteristics of Native American WIC Participants, On and Off Reservations

Author:

Nancy Cole

Submitted by:

Abt Associates, Inc
55 Wheeler Street
Cambridge, MA 02138

Submitted to:

Office of Analysis, Nutrition and Evaluation
Food and Nutrition Service, USDA
3101 Park Center Drive
Alexandria, VA 22302-1500

Project Officer: Sheku G. Kamara, Ph.D.

This report is available on the Food and Nutrition Service web site:
<http://www.fns.usda.gov/oane>.

Suggested Citation:

U.S. Department of Agriculture, Food and Nutrition Service, Office of Analysis, Nutrition and Evaluation "The Characteristics of Native American WIC Participants, On and Off Reservations" Nutrition Assistance Program Report Series, NO. WIC-02-NAM, by Nancy Cole. Project Officer, Sheku G. Kamara, Ph.D., Alexandria, VA, 22302.

ACKNOWLEDGEMENTS

This report benefits from the review of several staff in the Office of Analysis, Nutrition and Evaluation (OANE) Food and Nutrition Service, U.S. Department of Agriculture. At Abt Associates, Mary Kay Fox provided thoughtful review and comments on drafts. The author thanks Dr. Sheku G. Kamara, the project officer, for guiding the report to completion.

Contents

Executive Summary	iii
1. Introduction.....	1
2. Native American Tribes and Their Role in the WIC Program	3
Locations of State WIC ITOs	3
Local Agency WIC ITOs	6
Distribution of Total Native American WIC Enrollment.....	6
3. Demography of Native Americans	10
Enumerating the Population	10
Geographic Distribution of Native Americans	11
Economic Conditions	12
Public Health Concerns.....	14
4. Characteristics of Native American WIC Participants, On and Off Reservations	16
WIC Caseload Trends	16
Geographic Distribution of Native American WIC Participants.....	18
Demographics of Native American WIC Participants	20
5. Prevalence of Nutrition Risks in Native American WIC Participants.....	26
Reporting of Nutrition Risks.....	26
Prevalence of Risks	28
Prevalence of Overweight in WIC Children.....	31
6. Conclusion.....	35
References.....	36
Appendix Exhibits	38

List of Exhibits

- Exhibit 1 Native American Enrollment at State WIC Programs Operated by Indian Tribal Organizations
- Exhibit 2 Locations of Federally Recognized American Indian Reservations
- Exhibit 3 Native American Population of States, 1990
- Exhibit 4 Distribution and Concentration of Native American WIC Enrollment by Tribal Affiliation of WIC Agencies, 1998
- Exhibit 5 Prevalence of Poverty in Decennial Census Years, By Race
- Exhibit 6 Selected Characteristics of Native American Pregnancies and Births, 1994-96
- Exhibit 7 Native American WIC Enrollment, 1992 - 1998
- Exhibit 8 Distribution of Native American WIC Enrollment by Tribal Affiliation of Certifying Agency
- Exhibit 9 Distribution of Native American WIC Enrollment by Proximity to Reservations
- Exhibit 10a Regional and Metropolitan Distribution of Native American WIC Enrollment, By Location on Reservation Lands, 1998
- Exhibit 10b Percent of Native American WIC Enrollment On or Near a Reservation, By FNS Region, 1998
- Exhibit 11 Distribution of Age at Certification of Native American WIC Enrollees, 1998
- Exhibit 12 Demographic Characteristics of Native American WIC Enrollees, 1998
- Exhibit 13 State Agency Policies for Recording Nutrition Risks at Certification
- Exhibit 14 Percent of WIC Enrollees with More than One Nutrition Risk Present at Certification
- Exhibit 15 Prevalence of Reported Nutrition Risks among Native American WIC Women and All WIC Women, 1998
- Exhibit 16 Prevalence of Reported Nutrition Risks among Native American WIC Women, By Certification Category, 1998
- Exhibit 17 Prevalence of Reported Nutrition Risks among WIC Infants and Children, 1998
- Exhibit 18 Percent of Native American WIC Children Measured Overweight, By Age and Gender, 1998

Appendix Exhibits

- Exhibit A.1 Geographic Jurisdictions of Indian Tribal Organizations Administering State WIC Programs
- Exhibit A.2 Geographic Jurisdictions of Indian Tribal Organizations Administering WIC Programs: East and Southeastern United States
- Exhibit A.3 Geographic Jurisdictions of Indian Tribal Organizations Administering WIC Programs: Midwest and Western United States
- Exhibit A.4 Geographic Jurisdictions of Indian Tribal Organizations Administering WIC Programs: Southwestern United States

Executive Summary

This study describes Native American participation in the WIC Program. The study is based on data collected by the biennial *WIC Participant and Program Characteristics Studies* in 1992, 1994, 1996, and 1998.

WIC is the Special Supplemental Nutrition Program for Women, Infants, and Children. This Federal program, administered by USDA, provides supplemental foods, nutrition education, and health care referrals to pregnant and postpartum women, infants, and children up to age 5.

Native American WIC Enrollment

In 1998, the WIC Program served 121,000 Native American women, infants, and children. Approximately 48 percent of all Native American infants and children under age 5, and 65 percent of all Native American pregnant women, were enrolled in WIC. Native American WIC enrollment increased 17 percent between 1992 and 1998, while overall WIC enrollment grew by more than twice that amount (40 percent).

Native American Tribes Operating WIC Agencies

Federally recognized Native American tribal governments may operate WIC agencies at either the State or local level. In 1998, 33 Indian tribes or Indian Tribal Organizations (ITOs) operated state WIC agencies (up from 30 in 1992), and an additional 56 tribes or ITOs operated local WIC agencies.

In 1998, 41 percent of Native American WIC enrollment was at state WIC agencies operated by tribal governments; an additional 17 percent was at tribal local WIC agencies administered by non-tribal States. The growth in Native American WIC enrollment, from 1992 to 1998, varied greatly by type of agency: enrollment at tribal state WIC agencies was virtually unchanged, enrollment at tribal local WIC agencies increased by 19 percent, and enrollment at non-tribal agencies increased by 40 percent (matching the growth in the overall WIC caseload). Tribal WIC agencies are located on or near reservations, whereas non-tribal local WIC agencies enrolling Native Americans are located, on average, 111 miles from the nearest American Indian reservation.

Characteristics of Native American WIC Participants

The regional and metropolitan/non-metropolitan distribution of Native American WIC enrollment corresponds to the overall distribution of the Native American population. Native Americans are highly concentrated in the West, Southwest, and Mountain Plains regions (which contain 82 percent of all Native American WIC enrollees); 62 percent of Native American WIC enrollees reside in non-metropolitan areas. In 1998, 63 percent of Native American WIC enrollees lived on or near reservations and 75 percent lived in areas served by tribal governments.¹

Compared to all WIC enrollees, Native American WIC enrollees have larger average family size (4.2 versus 3.9 persons) and are more likely to receive public assistance. The percentage of Native

¹ Location of WIC enrollees on or near tribal lands is based on the geographic service area of local WIC agencies; data from the *WIC Participant and Program Characteristics Studies* do not include individual WIC enrollee address information. Areas served by tribal governments include Oklahoma Tribal Jurisdiction Statistical Areas (TJSAs).

American WIC enrollees receiving TANF is 21.1 versus 17.0 percent of all WIC enrollees; 41.6 percent of Native American WIC enrollees receive food assistance from the Food Stamp Program or Food Distribution Program on Indian Reservations, compared to 26.6 percent of all WIC enrollees. The distribution of Native American WIC enrollees with respect to the poverty guidelines, however, does not differ substantially from all WIC enrollees.

Characteristics of Native American WIC Participants On Versus Off Reservations

In many ways, the 63 percent of Native American WIC enrollees located on or near Indian reservations differ substantially from Native American WIC enrollees residing off reservations. WIC enrollees located on or near reservations are highly concentrated in the West (61 percent) and Mountain Plains (20 percent), while those off reservation are most concentrated in the Southwest (44 percent). Those located off reservation are more likely to reside in metropolitan areas (45.7 versus 33.4 percent).

Compared to Native American WIC enrollees off reservations, those on or near reservations have larger average family size (4.4 versus 4.0) and are more likely to be in families of six or more persons (23.8 versus 14.0 percent). Those on or near reservations also have greater participation in public assistance programs (24.6 versus 15.2 percent receive TANF; 39.4 versus 29.5 receive food assistance) and more severe poverty (41.4 versus 34.9 are below 50% of the federal poverty level).

Prevalence of Nutrition Risks in Native American WIC Participants

Applicants to the WIC program must demonstrate nutritional risk, defined by detrimental or abnormal nutritional conditions detectable by biochemical or anthropometric measurements; nutritionally related medical conditions; dietary deficiencies; or conditions that predispose persons to inadequate nutritional patterns. The number of nutrition risks recorded in WIC information systems varies somewhat by agency. Native American WIC enrollees, in all participant categories, have a greater number of nutrition risks than the overall WIC caseload and exhibit higher risk prevalence in most of the major categories of risk.

Native American women enrolled in WIC have greater risk prevalence than all WIC women in all risk categories except biological risks. The comparison of Native American women on and off reservations, however, shows no clear pattern: those living on or near reservations have a higher recorded prevalence of anthropometric risks and some clinical risks, while Native American women living off reservations have a higher recorded prevalence of biological risks and some clinical risks.

Native American infants have greater risk prevalence, compared to all WIC infants, in each of the major risk categories. Infants living on reservations, compared to those off reservations, have higher prevalence of clinical risks (22.2 versus 12.5 percent) and dietary risks (19.2 versus 12.3 percent), while infants off reservations have a slightly higher rate of anthropometric risks (28.9 versus 27.5 percent).

Native American children have greater risk prevalence than all WIC children in all risk categories except biological risks and show much the same pattern as infants in risk differences according to location on or near reservations. In addition, Native American WIC children have higher rates of overweight prevalence than all WIC children: overweight prevalence is 20 percent for Native American children on or near reservations, 16 percent for Native American children off reservations, and 13 percent for all WIC children.

1. Introduction

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is designed to prevent the occurrence of health problems and improve health status for pregnant women, postpartum women, infants, and children up to age five. WIC acts as an adjunct to good health by providing supplemental foods, nutrition education, and health care referrals.² Throughout its history, the WIC program has served a large percentage of Native American women, infants, and children. This report examines the characteristics of Native Americans enrolled in the WIC Program, compares the characteristics of Native American WIC enrollees to the overall population of WIC enrollees, and compares Native Americans residing on or near reservations with those not near reservations.

Researchers contend that we know less about the current demographic and health situation of Native Americans than that of other racial or ethnic groups (Sandefur, 1996). This lack of knowledge is primarily due to the fact that the Native American population is the smallest of the major racial groups counted by the U.S. Census: in 1990, 1.9 million Native Americans accounted for less than one percent of the U.S. population.³ Because of the small size of the Native American population, national population surveys do not yield sufficient samples for study. Moreover, the geographic dispersion of many small Native American tribal entities makes targeted surveys of Native Americans costly.⁴

The WIC program currently serves 120,000 Native American women, infants, and children. In 1998, approximately 48 percent of all Native American infants and children under age 5, and 65 percent of all Native American pregnant women, were enrolled in WIC.^{5,6} With a high percentage of Native Americans participating in the WIC program, it is clear that WIC data can contribute to our understanding of the characteristics of low-income Native Americans.

² The purpose and role of the WIC Program, as stated here, is taken from federal regulations (7 CFR 246.1).

³ Native Americans include American Indians, Eskimos, and Aleuts. The 1990 Census counted 1.88 million American Indians; 57,000 Eskimos; and 24,000 Aleuts. Census 2000 results are presented in section 3 of this report.

⁴ See Erickson, Eugene. "Problems in Sampling the Native American and Alaska Native Populations." Chapter 6 in Sandefur (1996).

⁵ In 1998, the number of Native American infants and children enrolled in WIC was 95,697 (PC98); the estimated number of Native Americans under age five years in the United States was 200,000 (US Bureau of the Census. *Projections of the Total Resident Population by 5-Year Age Groups, Race, and Hispanic Origin with Special Age Categories: Middle Series, 1999 to 2000*). The number of pregnant women in WIC in April 1998 was 12,506; the number of live births to Native American women in 1997 (the most recent data available) was 38,572; assuming an average WIC participation spell of six months for pregnant women yields the estimated 65 percent participation rate.

⁶ These figures are *gross* participation rates measured by the number of WIC enrollees as a percent of the total population, not as a percent of the income-eligible population. The income-eligible population of Native Americans can be accurately measured only in Census years.

On a biennial basis, since 1992, the WIC program has collected administrative data for nearly all persons enrolled in WIC during the reference month of April. These data, known as "PC" data, include much of the information collected during the WIC certification process: demographic information, economic indicators determining WIC income eligibility, and indicators of health and nutrition status.⁷ While WIC data cannot provide a comprehensive base for studying the overall population of Native Americans, it provides detailed data for examining the geographic distribution, demographic characteristics, and health status of low-income Native American women and children.⁸

The next section of this report reviews the role of Native American tribes in administering the WIC program and provides information about the numbers and locations of Native American tribes in the United States. Section three provides an overview of American Indian demography and public health concerns. Section four describes the demographic characteristics of Native American WIC enrollees and compares characteristics of subgroups of Native Americans according to residence on or off reservation lands. Characteristics of Native American WIC enrollees are also compared with overall WIC enrollment. Section five examines the health status of Native American WIC enrollees as reflected in the nutrition risks observed at the time of WIC certification, and section 6 concludes the report.

⁷ The U.S. Department of Agriculture, Food and Nutrition Service (FNS) administers the WIC Program. The PC data are collected and tabulated for the biennial reports: *WIC Participant and Program Characteristics*.

⁸ Applicants to WIC must be income eligible and have nutritional need. Income eligibility is defined by income below 185 percent of the federal poverty guidelines or participation in the Food Stamp, TANF, or Medicaid programs. Nutritional need may be indicated by presence of nutritional risk in one of five major categories (anthropometric, biochemical, clinical/medical, dietary, and predisposing).

2. Native American Tribes and Their Role in the WIC Program

The WIC program is administered by the Food and Nutrition Service (FNS) of the U.S. Department of Agriculture (USDA). FNS provides cash grants to State agencies, which develop policies and procedures for administering the program within federal guidelines. In 1998, 88 State agencies operated WIC programs: the 50 US States, the District of Columbia, four outlying territories,⁹ and 33 Indian Tribal Organizations (ITOs).

Federal WIC regulations allow two types of Indian Tribal Organizations (ITOs) to operate as State agencies (7 CFR 246.2):

- An Indian tribe, band or group recognized by the Department of the Interior.
- An intertribal council or group which is an authorized representative of Indian tribes, bands or groups recognized by the Department of the Interior and which has an ongoing relationship with such tribes, bands, or groups for other purposes and has contracted with them to administer the Program.

The role of Tribal governments within the WIC Program is equivalent to State governments. Indian Tribal Organizations operate WIC agencies and administer the WIC program within tribal jurisdictions. This role of ITOs is not unique to the WIC Program; the Self Determination and Education Assistance Act of 1975 gave tribal governments authority to contract with the federal government to regulate federal programs within tribal jurisdictions.

Locations of State WIC ITOs

The 33 Indian Tribal Organizations (ITOs) operating as State WIC agencies in 1998 were all located in the mainland United States. State WIC ITOs consisted of 22 individual tribes, 4 inter-tribal councils, and 7 groups of tribes residing near each other. Together, the WIC ITOs represent nearly 100 tribes, from among the 385 federally recognized American Indian tribes or tribal organizations located in the mainland and identified by the United States Department of the Interior, Bureau of Indian Affairs.¹⁰ (The Bureau of Indian Affairs also recognizes 224 Alaska Native Villages.)

Exhibit 1 lists all Indian Tribal Organizations (ITOs) operating State WIC agencies at any time during the period 1992 to 1998. The number of WIC ITOs has remained relatively constant during the

⁹ The outlying territories are American Samoa, Guam, Puerto Rico, and the U.S. Virgin Islands.

¹⁰ The count of tribes is from the **Indian Lands and Native Entities in the United States** database obtained from the Geospatial Data Clearinghouse, United States Department of Interior, Bureau of Indian Affairs, 2000. All counts of American Indian tribes and tribal lands in this section are limited to the mainland United States and do not include Alaskan Native Villages.

Exhibit 1**Native American Enrollment at State WIC Programs Operated by Indian Tribal Organizations**

	WIC Participation				Percent Change 1992-98
	1992	1994	1996	1998	
Arizona					
Inter Tribal Council of Arizona (20)	6,223	8,332	8,177	8,156	31.1
Navajo Nation	17,856	19,379	18,221	15,844	-11.3
Colorado					
Ute Mountain Ute	180	174	166	165	-8.3
Florida					
Seminole Tribe	189	171	106	na	na
Maine					
Indian Township	71	99	100	91	28.2
Pleasant Point	115	98	82	79	-31.3
Mississippi					
Mississippi Choctaw	691	628	622	681	-1.4
Nebraska					
Nebraska Indian Inter-tribal Development Corp. (4)	611	641	742	243	-60.2
Omaha and Santee Tribes (2)	na	na	na	436	na
Nevada					
Inter Tribal Council of Nevada (24)	889	784	711	851	-4.3
New Mexico					
ACL: Acoma, Canoncita, Laguna Pueblos (3)	567	591	714	534	-5.8
Eight Northern Pueblos (8)	484	520	467	371	-23.3
Pueblo of Isleta	495	410	384	295	-40.4
Pueblo of San Felipe	339	326	252	344	1.4
Five Sandoval Pueblos (5)	425	541	418	369	-13.3
Santo Domingo	322	359	326	231	-28.3
Pueblo of Zuni	821	865	918	846	3.0
New York					
Seneca Nation	295	275	266	266	-9.8
North Carolina					
Eastern Band of Cherokee	734	510	723	632	-13.9
North Dakota					
Standing Rock Sioux	1,187	1,069	1,071	901	-24.1
Three Affiliated Tribes: Arikara, Hidasta, Mandan (3)	596	558	514	427	-28.4
Oklahoma					
Inter Tribal Council of Oklahoma	300	263	314	297	-1.0
Cherokee Nation	6,077	6,382	6,645	6,582	8.3
Muscogee Creek Nation	na	na	539	729	na
Otoe-Missouria	718	688	462	495	-31.1
Osage Nation	na	na	7	479	na
Citizen Band of Potawatomi	990	1,121	1,097	780	-21.2
Chickasaw Nation	1,147	1,312	1,633	1,593	38.9
Sac and Fox Nation	na	na	146	219	na
Choctaw Nation	1,790	1,772	1,632	1,737	-3.0
WCD: Wichita, Caddo, Delaware Tribes (3)	1,914	1,942	2,015	2,147	12.2
South Dakota					
Cheyenne River Sioux	712	686	729	723	1.5
Rosebud Sioux	1,576	1,520	1,479	1,380	-12.4
Wyoming					
Shoshone and Arapahoe Tribes (2)	822	858	800	763	-7.2
Total Native American enrollment at ITOs	49,136	52,874	52,478	49,686	1.1
Total Native American enrollment in WIC	103,245	116,916	122,849	121,140	17.3
Percent of enrollment at ITO State agencies	47.6	45.2	42.7	41.0	

NOTE: Numbers in parentheses are the number of tribes represented by the ITO, when more than one.

1990s. Only one ITO ceased operating as a State WIC agency (Seminole Tribe in Florida), while four tribes began WIC operations during this time period. Exhibit 1 shows WIC enrollment at each ITO for each year of WIC data collection, and the percentage change in enrollment from 1992 to 1998. Total Native American WIC enrollment grew 17.3 percent during this time period (see bottom of exhibit), but the change in enrollment at individual ITOs was highly variable.¹¹

WIC ITOs are among the largest tribal organizations in the United States, accounting for roughly two-thirds of Native Americans living on reservations and three-fourths of Native Americans living within tribal jurisdictions. (The geographic jurisdictions and population of tribes operating WIC ITOs is shown in Appendix Exhibit 1.) The Cherokee and Navajo Tribes account for 45 percent of Native American WIC participants enrolled through ITO State WIC agencies (see Exhibit 1). According to the 1990 Census, the Cherokee and Navajo account for 30 percent of American Indians (Bureau of Census, 1994).¹² The Cherokee tribe is the largest tribe with a population over 300,000. The greatest concentration of Cherokee (36 percent) resides in Oklahoma where two federally recognized Cherokee tribes reside without land bases.¹³ In contrast, nearly two-thirds of the 225,000 Navajo reside in the Southwest where the Navajo Nation maintains the largest Indian land base in the United States, spanning portions of Arizona, New Mexico, and Utah.

WIC ITOs are located in 13 States. All WIC ITOs, except those in Oklahoma, are associated with federally recognized American Indian Reservations. American Indian Reservations (AIRs) are recognized and established by federal treaty or statute as lands set aside for the use of Indians.¹⁴ The Osage Nation is the only WIC ITO in Oklahoma with a federally recognized AIR; the remaining Oklahoma WIC ITOs have trust lands (no formal reservation), or lack a land base but nonetheless provide benefits and services to members of their tribes.¹⁵

¹¹ There are no available data to explain the varying changes in enrollment across ITOs. USDA, Food and Nutrition Service conducts a survey of State WIC Programs in each year of biennial data collection, but survey questions focus on administrative procedures and do not capture information to explain fluctuating caseloads.

¹² In 1990, ten tribes accounted for 60 percent of American Indians residing in the United States, although the total population of these individual tribes may consist of several subtribes associated with different reservations. Tribal statistics from the Bureau of Census are based on self-reported tribal identification recorded on Census forms. These statistics do not necessarily coincide with statistics based on tribal membership rolls reported by tribal governments or the Bureau of Indian Affairs. Population totals include persons residing off reservations.

¹³ The two federally recognized Cherokee tribes in Oklahoma are the Cherokee Nation and United Band of Cherokee Indians of Oklahoma. (Federal Register, Vol. 65, No. 49, March 13, 2001.)

¹⁴ The Bureau of Census identifies 309 federally recognized American Indian Reservations in the year 2000 geographic TIGER data.

¹⁵ Trust lands are owned by the federal government and held in trust for the benefit of Indians. Many Oklahoma reservations were allotted to individual tribal members prior to Oklahoma statehood, with allotments eventually converted to individual ownership. Information about Indian lands is available in the compendium "American Indian

Exhibit 2 shows the locations of all federally recognized American Indian Reservations within mainland United States. Reservations are located in 35 States. The 13 States where WIC ITOs are located are shown with dark shading, and remaining States with reservations are shown with lighter shading. The heaviest concentrations of tribal lands are in the Southwest and West. (See Appendix exhibits for maps showing reservation boundaries of WIC ITOs.)

The distribution of the Native American population is shown in Exhibit 3. In 1990, 24 percent of Native Americans lived on reservations and trust lands, and a total of 37 percent lived within the boundaries of areas served by tribal governments (Snipp, 1996). A comparison of Exhibits 2 and 3 shows that the regional distribution of the Native American population coincides with locations of tribal lands, with the exception of Oklahoma. The similarity in the patterns of the maps shown in Exhibits 2 and 3 demonstrates that, even though only 24 percent of Native Americans reside on reservations, the largest concentrations of Native Americans are found in relative proximity to reservation lands.

Local agency WIC ITOs

In addition to the 33 ITOs administering WIC programs at the State agency level in 1998, 56 Indian tribes or tribal councils operated local WIC agencies. Local WIC agencies administer service sites where applicants are certified and program benefits are disbursed. Local agencies operate under the jurisdiction of State agencies. In the 50 US States, "State WIC agencies" are operated by State departments of health. Local agencies are often county departments of health, but may also be private non-profit health or human service agencies contracting with the State WIC agency, or Indian tribes or tribal councils.¹⁶

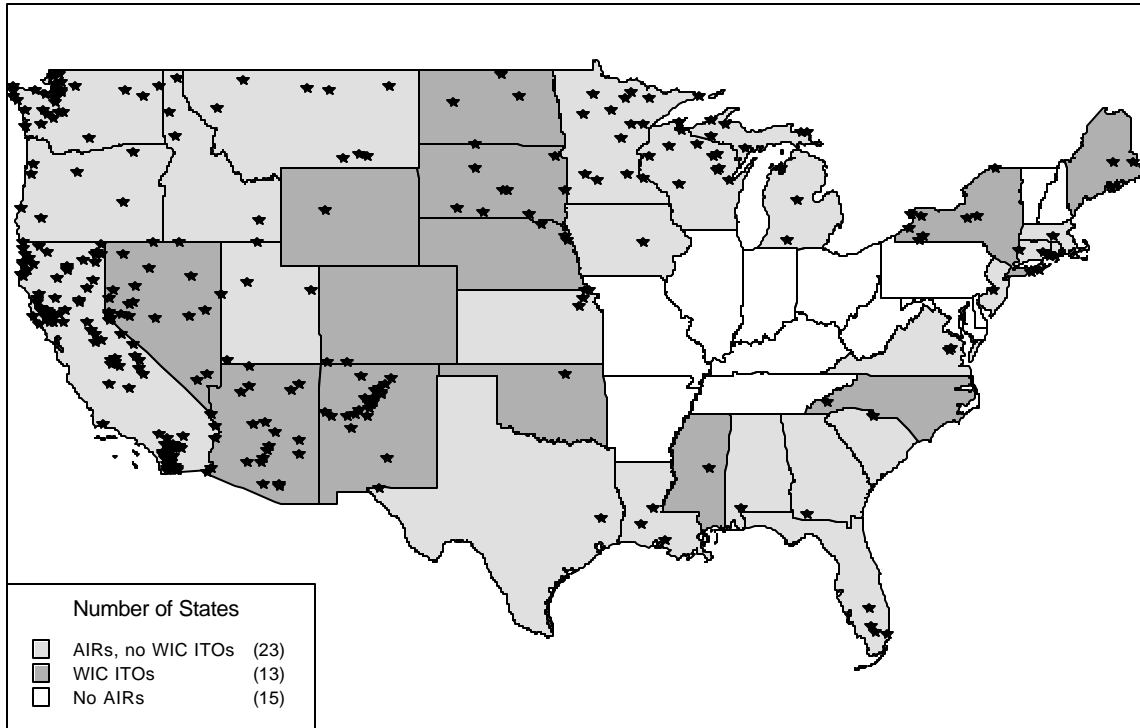
Distribution of Total Native American WIC Enrollment

Exhibit 4 summarizes the distribution and concentration of Native American WIC enrollment by tribal affiliation of WIC agency. In 1998, 41 percent of Native American WIC enrollment was at 59 local WIC agencies operated by 33 Indian Tribal Organizations (ITOs). An additional 17 percent of Native American WIC enrollment was at 56 local WIC agencies operated by tribal entities under the

Reservations and Trust Areas" compiled by the U.S. Department of Commerce, Economic Development Administration.

¹⁶ Tribal local WIC agencies were identified in WIC data by agency name; FNS does not collect data on the sponsorship of local WIC agencies.

Exhibit 2
Locations of Federally Recognized American Indian Reservations



NOTE: Stars represent centers of American Indian Reservations which vary in geographic size.

Exhibit 3
Native American Population Of States, 1990

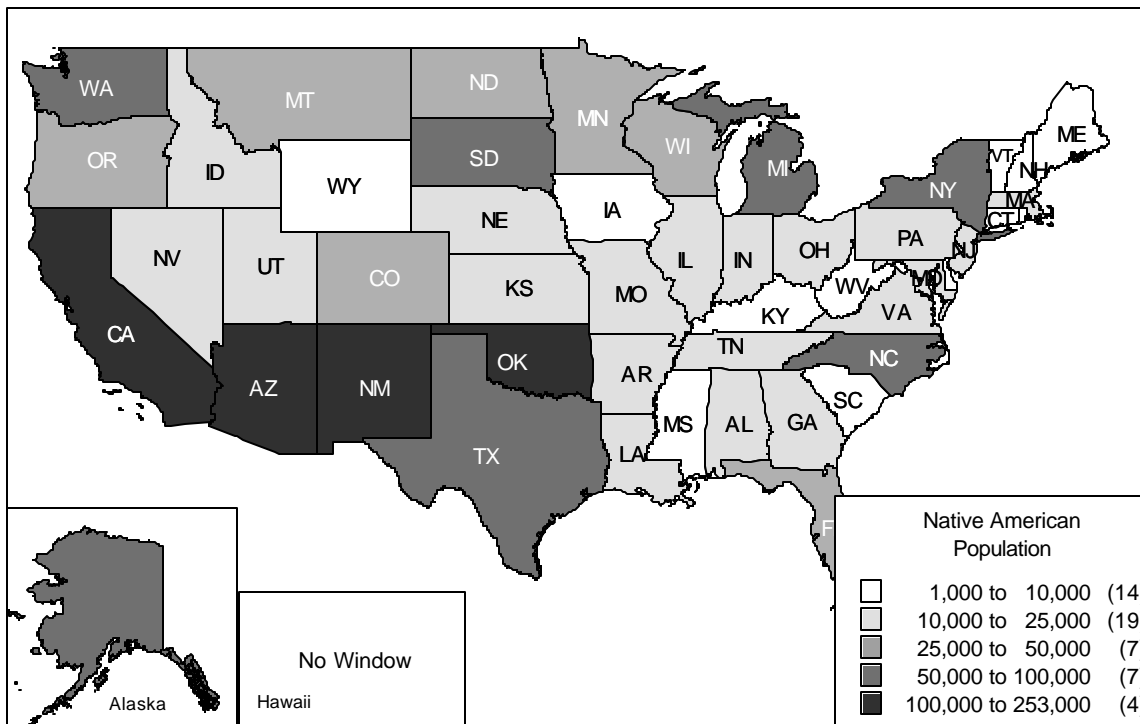


Exhibit 4
Distribution and Concentration of Native American WIC Enrollment, By Tribal Affiliation of Local WIC Agencies, 1998

Agency affiliation: State/ Local	Number Local WIC Agencies¹	Native American Enrollment	Percent of Total Native American Enrollment	Avg # Native Americans per Local Agency	Mean % Native American per Local Agency	Avg Distance to Nearest AIR² (miles)
ITO state agency						
Tribal local agency	59	49,686	41.0%	842	90.0%	-
State Department of Health						
Tribal local agency	56	20,986	17.3%	375	79.6%	23
Non-tribal local agency	1,520	50,402	41.6%	33	2.7%	111
Total Native American	1,635	121,074	100.0%	74	8.5%	104
Total WIC	2,201	121,074	100.0%	55	6.3%	NA

NOTES

Table excludes Puerto Rico, Guam, and the U.S. Virgin Islands.

1 The total number of local WIC agencies is 2,201; 1,635 have at least one Native American WIC enrollee and 21 percent of local agencies have no Native American WIC enrollees.

2 Average distance to the nearest American Indian Reservation (AIR) is calculated from the center of the local agency service area to the center of the nearest AIR. Distance to nearest AIR is not calculated for local agencies operated by Oklahoma tribes.

NA Minimum distance to the nearest American Indian Reservation was not determined for local agencies with no Native American WIC enrollment.

jurisdiction of 15 State departments of health.¹⁷ The remaining 42 percent of Native American WIC enrollment was spread across 1,520 agencies with no tribal affiliations.

As shown in Exhibit 4, most WIC agencies affiliated with tribes serve populations that are mostly Native American (although persons of other racial groups may reside within their service area). ITO State WIC agencies serve a caseload that is 90 percent Native American; tribal local agencies under the jurisdiction of State departments of health serve a caseload that is 79.6 percent Native American. The concentration of Native Americans at these WIC agencies reflects the fact that most tribal agencies are located on or near reservations, with only four tribal local agencies operated by urban Indian health centers.

Native Americans receiving WIC services from non-tribal WIC agencies are dispersed across the country and enrolled at 1,520 local WIC agencies, each serving a small number of Native Americans. Twenty-one percent of local WIC agencies have no Native American WIC enrollment. Among agencies with Native American enrollment, on average, only 33 Native Americans are enrolled at each agency, and they comprise 2.7 percent of the agency's WIC caseload. The average distance of a non-tribal WIC agency to the nearest reservation is 111 miles.

¹⁷ These tribal local agencies are located in the following 15 States: Alaska, Arizona, California, Idaho, Michigan, Minnesota, Montana, New Mexico, New York, North Dakota, Oregon, South Dakota, Utah, Washington, Wisconsin.

3. Demography of Native Americans

Much of the research on the demography and health of Native Americans is based on U.S. census records, Vital Statistics data, Indian Health Service records, and tribal membership roles. This section summarizes some of that research, as background for understanding the characteristics of Native American WIC enrollees examined in the next section.¹⁸

Enumerating the Population

One of the central findings in the study of Native American demography is that Native American self-identification changed substantially between 1960 and 1990. Changing self-identification has been documented for American Indians – a subset of Native Americans, excluding Eskimos and Aleuts. The enumerated population of American Indians was 524,000 in 1960, 793,000 in 1970, 1.37 million in 1980, and 1.88 million in 1990. Researchers found, however, that population counts from each decennial census were substantially greater than population estimates based on rates of natural increase.¹⁹ Thornton (1996) reports that the percentages of population "growth" attributable to changes in self-identification were 25 percent from 1960-70, 60 percent from 1970-80, and 35 percent from 1980-90.²⁰ Passel (1996) reports that "with the exception of Oklahoma, most of the population increase attributable to changing self-identification has occurred in States that have *not* historically been major centers of the American Indian population."

Changes in self-identification make it difficult to study trends in the characteristics of Native Americans over long time periods because the denominator is unstable. In particular, increased self-identification by persons with marginal amounts of American Indian blood decreases the homogeneity of persons included in a study of Native Americans.

The United States Census 2000 implemented a revised method of collecting race information, allowing respondents to select more than one race category to indicate mixed racial heritage. The revised Census data provide a denominator from which future comparisons can be made, with less

¹⁸ In 1995, the National Research Council Committee on Population, with funding from the Public Health Service, convened a workshop on the demography of American Indian and Alaska Native populations, their major health problems, and their utilization of healthcare. This section relies heavily on the workshop papers, which were compiled in *Changing Numbers, Changing Needs: American Indian Demography and Public Health*.

¹⁹ Passel (1996); Passel and Berman (1986), Harris (1994).

²⁰ The census was conducted by enumerators in each year through 1950 and race was assigned by enumerators on the basis of observation or knowledge. Beginning in 1970, census collection was handled almost entirely through the mail, and race was self-determined and self-reported by respondents. The 1960 census was a transition year in which forms were sent through the mail but collected by enumerators; race was assigned by enumerators (Passel, 1996).

impact from changes in self-identification, because respondents are not forced to choose only one race category. Data from Census 2000, however, are not directly comparable with those from prior censuses due to the changed format of the race question.²¹

Census 2000 results show that 2.48 million persons reported American Indian and Alaskan Native as their only race; an additional 1.64 million persons reported American Indian and Alaskan Native in combination with one or more other race categories. While these data are not directly comparable to the 1990 census, the lower bound count of Native Americans in year 2000 (2.48 million) is consistent with population estimates based on rates of natural increase.²² This lower bound count of the Native American population in year 2000 is 26 percent greater than the 1990 census count.

While Census enumeration is based on self-reported racial and ethnic identification, an alternative count of Native Americans comes from tribal membership roles and is determined by ancestral lineage and degree of Indian blood.²³ Tribal membership as a percentage of the enumerated Native American population decreased over time as self-identification of Native Americans increased and intermarriage diluted Indian blood. Thornton (1996) estimates that two-thirds of American Indians in the 1980 Census, and about 60 percent of American Indians in the 1990 census, were enrolled members of Tribes. Only certified members of Indian tribes receive benefits from Tribal governments.

Geographic Distribution of Native Americans

According to the 1990 Census, the nation's 1.9 million Native Americans lived in all 50 States and the District of Columbia, but compared to the total US population, Native Americans were more highly concentrated in the West and in non-metropolitan areas. In 1990, the percentage of persons residing in Western States was 45.6 percent for Native Americans, and 21.2 percent for the total US population; the percentage residing in metropolitan areas was 30.8 for Native Americans and 79.7 for the total US population.²⁴ In 1996, over half (54 percent) of all Native American infants were born to

²¹ US Bureau of Census reports that data are not comparable "due, in large part, to giving respondents the option to report more than one race. Other factors, such as reversing the order of the questions on race and Hispanic origin and changing question wording and format, also may affect comparability" (<http://www.census.gov/Press-Release/www/2001/raceqandas.html>).

²² The Census Bureau estimate of Native Americans in year 2000 was 2.45 million, based on the 1990 census adjusted for births, deaths, and migration. (Source: Population Estimates of the United States by Sex, Race, and Hispanic Origin.)

²³ See Thornton (1987) for the membership requirements of individual tribes and changes in membership requirements over time.

²⁴ Sources of statistics are Census (1994) and Census (1999).

mothers residing in only six States –Arizona, Oklahoma, California, New Mexico, Alaska, and Washington. In contrast, only 20 percent of all U.S. births occurred in these States (NCHS, 1998).

Snipp (1996) notes that "the distribution of the American Indian population clearly bears the marks of historical events and especially the influence of federal policies." Two main federal policies influenced the location of Native Americans. During the nineteenth century, government removal policies pushed Native Americans from the east to the west onto reservations originally designed to quarantine them (Indian Removal Act of 1830). After World War II, Native American migration into urban areas began as a result of relocation programs aimed at enhancing Native Americans' economic opportunities and assimilation (Indian Relocation Act of 1956). Census data seem to support Snipp's hypothesis about the lasting influence of these policies. Today, the majority of American Indians reside in the West, and Native Americans residing in metropolitan areas are highly concentrated in areas targeted by the federal relocation programs of the mid-20th century.²⁵

As previously discussed, in 1990, 24 percent of Native Americans lived on reservation lands; an additional 10 percent lived in Oklahoma within tribal jurisdictions.²⁶ The number residing on tribal lands, however, does not fully reflect the number of Native Americans within close proximity to reservations who may participate in tribal life and receive services from tribal governments. In 1990, the Indian Health Service (IHS) reported that 58.5 percent of all Native Americans lived within IHS service areas, which are defined as areas *on or near reservations*.

Economic Conditions

It is no surprise that a large percentage of Native American women, infants, and children participate in the WIC program. WIC is designed to benefit low-income persons who are at nutritional risk, with an income-eligibility cutoff of 185 percent of the federal poverty level. According to the 1990 census, 27 percent of Native American families had incomes below the poverty level, and 66 percent of all Native American pregnant and postpartum women, infants, and children were estimated to be income-eligible for WIC (USDA, 1993).²⁷

²⁵ The cities designated as urban relocation centers or affected by urban relocation were Chicago, Cleveland, Dallas, Denver, Los Angeles, Oakland, Oklahoma City, San Francisco, San Jose, Seattle and Tulsa (Shumway et al., 1995).

²⁶ Reservation lands include American Indian Reservations, Alaskan Native Villages, and State recognized reservations. (Snipp, 1996).

²⁷ The following percents of Native Americans were estimated to be income-eligible for WIC in 1990: 59% of pregnant women, 67% of breastfeeding women, 53% of postpartum women, 66% of infants, and 69% of children (USDA, 1993).

Sandefur and Liebler (1996) sum up the economic status of American Indians as follows:

"The U.S. Indian population is younger, poorer, more likely to be unemployed and has larger families on average than the U.S. population in general. This is especially true of the reservation population, whose median age is over 10 years younger than that of the general U.S. population, whose poverty and unemployment rates are close to four times higher, and whose average family size is one full person larger."

Perhaps the most disturbing trend for the Native American population is that poverty is not steadily decreasing over time. Exhibit 5, taken from Trosper (1996), shows that poverty among American Indians fell substantially from 1969 to 1979. But during the subsequent decade (1979 to 1989) poverty among American Indians increased, while whites and blacks experienced no change in poverty levels.

Exhibit 5**Prevalence of Poverty in Decennial Census Years, By Race**

Population	Percent of Families in Poverty		
	1969	1979	1989
Total U.S.	10.7	9.6	10.0
Whites	8.6	7.0	7.0
Blacks	29.8	26.5	26.3
American Indians	33.3	23.7	27.0

Sources: U.S. Bureau of the Census, General Social and Economic Statistics, 1972, 1983, 1993.
Table taken from Trosper (1996).

The trend in poverty on reservations was similar to the trend among all Native Americans – though at a much higher level. The percentage of families on reservations with income below the poverty threshold was 57 percent in 1969, 43 percent in 1979, and 51 percent in 1989 (Trosper, 1996).²⁸

Trosper (1996) provides a discussion of the factors contributing to increased poverty on reservations during the 1980s. These factors include migration off reservations, changes in self-identification, and

²⁸ Based on census data for 23 reservations for which comparable data were collected in each of the 1970, 1980, and 1990 censuses. The 1970 census collected data for a selection of reservations; subsequent censuses collect data for all reservations.

decreased federal expenditures (especially for Indian housing and economic development). Federal expenditures for Indian programs peaked in 1979 and then declined 44 percent by 1989.²⁹

While poverty for Native Americans is greater on reservations than off reservations, Troster (1996) also documents considerable variation in individual economic well-being across reservations. The factors accounting for variation in poverty across reservations include: differences in the amount and quality of land per person, variations in population change, variations in cultural values concerning the accumulation of wealth, and different rates of economic development following the adoption of tribal self-determination into Public Law in 1975. Gaming does not explain variation in income among reservations because it was not a significant source of income for Indian tribes until the 1990s, although a few reservations had significant bingo revenue prior to 1990.

Public Health Concerns

The WIC program is designed to combat a very specific set of public health concerns: the nutritional health of women during pregnancy and childbirth, and the nutritional health of infants and children up to age 5. WIC is designed to be an adjunct to good health care during these critical periods of growth and development, which are subject to influence by good overall nutrition.

Native American women and children face particularly difficult health issues, many related to nutrition. Compared with the overall population of U.S. women, Native American women are younger when they give birth, begin prenatal care at a later point in pregnancy, have higher rates of substance use (smoking and alcohol) during pregnancy, and are more likely to have diabetes during pregnancy. Their infants are less likely to have low birthweight (although more likely to die if they have low birthweight), more likely to have high birthweight, and more likely to die during the first year of life.³⁰

The health and health care utilization trends of American Indians are documented in annual publications of the Indian Health Service (IHS). The patterns noted above are shown in Exhibit 6. One of the noteworthy features of statistics from the Indian Health Service, however, is that they do not represent the entire population of Native Americans in the United States. The Indian Health Service provides health care services within *service areas* defined to be *on or near reservations*. IHS

²⁹ In 1990 dollars, total federal expenditures for Indian programs declined from \$4.45 billion in 1979 to \$2.5 billion in 1989 (Troster, 1996).

³⁰ These patterns are documented in IHS (1997a) and IHS (1997b). The higher rate of infant mortality among American Indian low-birthweight infants, compared with low-birthright infants of other races, is documented in Ventura (1998).

Exhibit 6**Selected Characteristics of Native American Pregnancies and Births, 1994-96**

	IHS Service Population	All Races
Percent of births with characteristic		
Mother's age at birth of first child less than 20 years ¹	45.2 %	24.2 %
Mother received prenatal care in 1st trimester	66.5	81.3
Mother smoked during pregnancy	20.4	13.9
Mother drank alcohol during pregnancy	4.5	1.5
Mother had diabetes during pregnancy	4.5	2.5
Low birthweight infant (under 2,500 grams)	6.0	7.3
High birthweight infant (4,000 grams or more)	12.7	10.3
Mortality rates per 1,000 live births		
Infant mortality rate ² (Under 1 year)	9.3	7.6
Neonatal mortality rate ² (Under 28 days)	4.5	4.9
Postneonatal mortality rate ² (28 days to 1 year)	4.8	2.7

¹ Age at first birth is based on 1992-94 births; all other statistics are based on 1994-96 births.

² IHS adjusts mortality rates to compensate for miscoding of Indian race on death certificates. Sources: IHS, *Regional Differences in Indian Health, 1998-99* and *Indian HealthFocus: Women, 1997*. NCHS, Report of Final Natality Statistics, 1997.

tracks the wellbeing of Indians only within IHS service areas, which contain approximately 60 percent of all self-identified Native Americans.³¹ Examination of Vital Statistics data for *all* Native Americans, however, shows almost no difference between all Native Americans and those in IHS service areas.³²

³¹ IHS statistics of vital events (births and deaths) are calculated from data from the National Center for Health Statistics (NCHS), using the subset of American Indians residing in IHS service areas as defined by county of residence (IHS, 1997a).

4. Characteristics of Native American WIC Participants, On and Off Reservations

As stated earlier, the WIC program provides benefits to a large percentage of Native American women, infants, and children. The program is designed to combat nutritional deficiencies, improve birth outcomes, and assure proper early childhood growth through provision of supplemental foods, nutrition education, and referrals to health and social services. These goals are directly aimed at some of the health problems prevalent among Native Americans – delayed prenatal care, prenatal incidence of diabetes and substance use, and infant mortality.

This section examines the characteristics of Native Americans who enroll in the WIC Program, trends in WIC enrollment of Native Americans over time, and differences in characteristics of Native American WIC enrollees according to location on and off reservations.

WIC Caseload Trends

The WIC program grew enormously in the 1990s, with enrollment increasing from 5.75 million in 1992 to 8 million in 1998. Most of this growth occurred from 1992 to 1996 and has been attributed to three factors: funding increases which extended service to more lower-priority individuals, increases in the number of individuals income-eligible for the program, and an increase in the number of eligible persons who applied (USDA, 2000).³³

In contrast to the overall caseload trends, WIC enrollment by Native Americans has undergone only modest growth during the 1990s. Exhibit 7 shows the growth in WIC enrollment from 1992 to 1998 by participant category, for Native Americans and all races (bottom panel). WIC enrollment by Native Americans grew by 17 percent from 1992 to 1998, in contrast to 40 percent growth in WIC overall. Growth in Native American enrollment varied by certification category, with the greatest increase among postpartum women (44.9 percent) and very little increase among pregnant women (4.2 percent). In contrast, during the same period, the overall US caseload of breastfeeding and postpartum women nearly doubled, and the total number of children enrolled in WIC increased by slightly more than 50 percent.

The modest growth in Native American WIC enrollment during the 1990s was accompanied by a shift in the distribution of enrollment at tribal and non-tribal agencies. Exhibit 8 shows that

³³ The WIC Program is not an entitlement program. Funding increases during the 1990s enabled WIC agencies to steadily increase the number of eligible persons served by the program. The program is currently close to full funding.

Exhibit 7
Native American WIC Enrollment, 1992 - 1998

	1992	1994	1996	1998	Percent Change 1992-98
Pregnant	11,997	12,045	12,449	12,506	4.2%
Breastfeeding	5,101	5,501	5,773	5,996	17.5%
Postpartum	4,790	5,655	6,618	6,940	44.9%
Total Women	21,889	23,201	24,839	25,442	16.2%
Infants	23,824	27,071	27,431	27,656	16.1%
Children	57,532	66,645	70,579	68,041	18.3%
Total Native American WIC Enrollment	103,245	116,916	122,849	121,140	17.3%
Total WIC	5,754,003	6,907,848	7,747,441	8,042,758	39.8%

Percent Change in WIC Enrollment, 1992 to 1998: Native Americans and All WIC

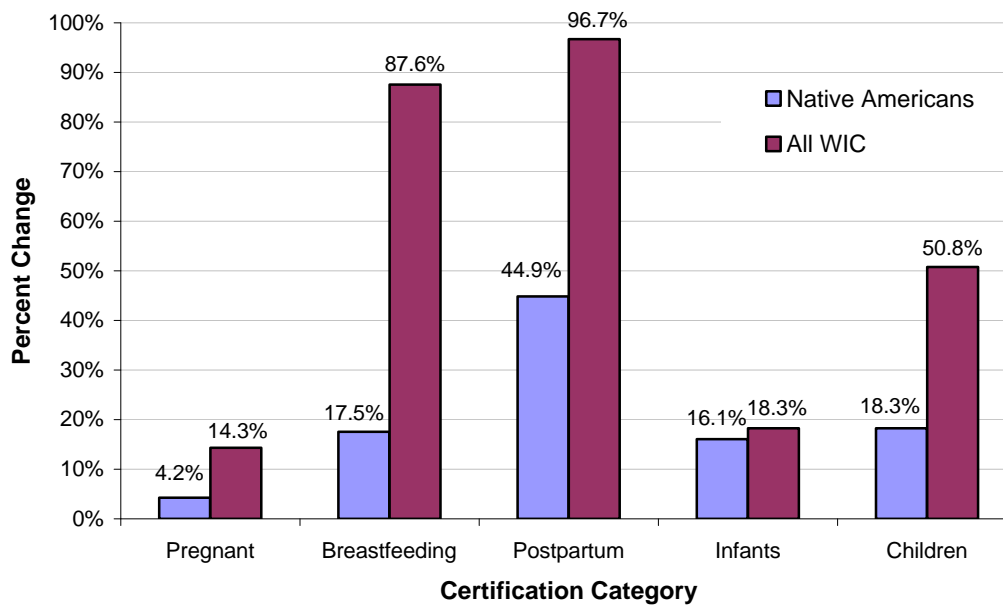
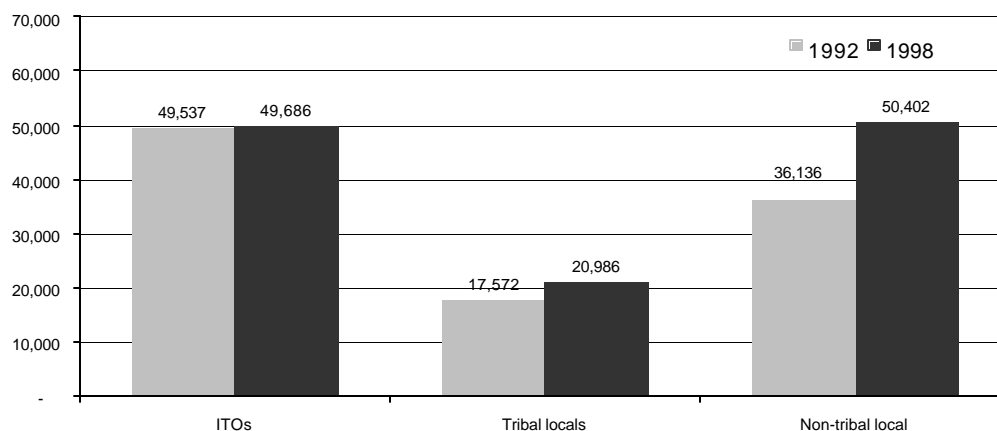


Exhibit 8**Distribution of Native American WIC Enrollment by Tribal Affiliation of Certifying Agency**

total enrollment through Indian State WIC agencies (ITOs) was virtually unchanged over the period (0.3 percent growth). Enrollment of Native Americans at Tribal local agencies increased by 19 percent and enrollment at non-tribal WIC agencies increased by 40 percent (matching the growth in the overall WIC caseload).

The shift in the distribution of enrollment at tribal and non-tribal agencies cannot be attributed to the number of Tribal agencies administering WIC programs. From 1992 to 1998 the number of ITOs operating State WIC agencies increased from 31 to 33; the number of tribal local agencies under the jurisdiction of State departments of health increased from 54 to 56.³⁴ The differential growth in WIC enrollment at tribal versus non-tribal agencies may be due to population movement off reservations, or to increased self-identification of Native Americans off reservations. However, these hypotheses cannot be examined until the detailed Census 2000 data are released.³⁵

Geographic Distribution of Native American WIC Participants

The regional and metro/non-metro distribution of Native American WIC enrollment corresponds to the overall distribution of the Native American population. Census data (1990) show that 46 percent of Native Americans live in the West and 59 percent live in non-metropolitan areas; 1998 WIC data

³⁴ The increase from 54 to 56 tribal local agencies includes a loss of 9 agencies in existence in 1992 and an addition of 11 new agencies by 1998.

³⁵ Some non-tribal local agencies are located near reservations as discussed in the next section.

show that 44 percent of Native American WIC enrollees live in the West and 62 percent live in non-metropolitan areas. WIC enrollees, however, appear to be more concentrated on or near tribal lands. The 1990 Census data showed that 37 percent of Native Americans reside on tribal lands and, in 1998, IHS estimated that 60 percent of Native Americans lived in IHS service areas (which include areas on or near tribal lands). The 1998 WIC data, which can not be mapped to IHS service areas, show that 63 percent of Native American WIC enrollees live on or near reservations and 75 percent live on or near tribal lands.

For this paper, residence of WIC enrollees on or near a reservation was determined by the proximity of each local WIC agency's service area to the nearest American Indian Reservation (AIR).³⁶ Local agency service areas were defined by county boundaries (or by the boundaries of a group of counties) according to documentation provided by each State agency.³⁷ Distance was measured from the center of each of the 2,200 local WIC agencies' service areas to the center of each AIR. All persons enrolled through a local WIC agency within 20 miles of a reservation, or whose service area contained part of a reservation, were determined to reside "on or near a reservation." This definition of "on or near a reservation" is not directly comparable to Indian Health Service areas. In particular, IHS includes all of Oklahoma in its service area while we have categorized much of Oklahoma as off-reservation.

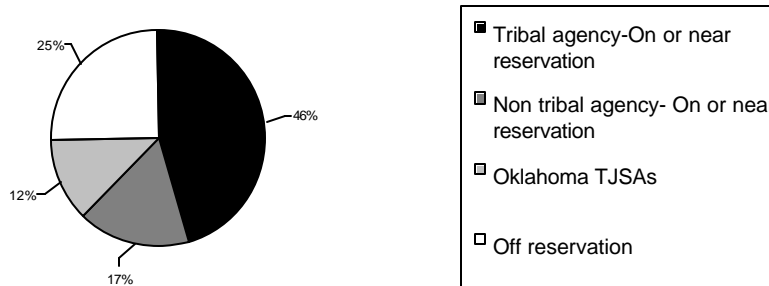
Exhibit 9 shows the distribution of Native American WIC enrollment by proximity to reservations. Overall, 75 percent of Native American WIC enrollees live in areas served by tribal governments, or within relative proximity to tribal lands, and 63 percent live on or near reservations. Of the Native American WIC participants located on or near reservations, most are enrolled in WIC through tribal agencies. Persons are shown as residing in Oklahoma Tribal Jurisdiction Statistical Areas (TJSAs) if they enrolled in WIC through Oklahoma tribes that do not have reservations.³⁸ TJSAs are boundaries defined by the US Bureau of Census and identify the geographic areas in which Oklahoma tribes provide benefits and services to tribal members

Native American WIC enrollees are more highly concentrated on reservation lands than the overall Native American population. This is not surprising because the WIC program provides benefits to low-income individuals and poverty among Native Americans is concentrated on reservations. We should note, however, that our measure of proximity is likely to overstate the number of WIC

³⁶ The place of residence of individual WIC enrollees is not captured in the PC data.

³⁷ A small number of local agencies are municipal agencies but we defined all boundaries at the county level.

³⁸ TJSAs were used to tabulate population data for the 1990 census; the boundaries correspond to the approximate boundaries of Oklahoma reservations as they existed prior to Oklahoma statehood. The mapping of Oklahoma tribal jurisdictions was revised for the year 2000 census, replacing 17 TJSAs with 29 Oklahoma Tribal Statistical Areas.

Exhibit 9**Distribution of Native American WIC Enrollment by Proximity to Reservations**

enrollees residing near tribal lands because it is **not** based on the residence of individual WIC enrollees relative to tribal lands, but on the proximity of WIC agency service areas to tribal lands. (WIC agency service areas are typically one or more counties.)

The regional distribution of Native American WIC enrollees is shown in Exhibit 10. WIC enrollees are highly concentrated in three regions where American Indian Reservations are located: the Southwest, Mountain Plains, and Western regions contain 82 percent of all Native American WIC enrollees. The exhibit shows the regional distribution of WIC enrollees overall and according to residence on or near reservations. WIC enrollees living on or near reservations are located primarily in the Western and Mountain Plains regions; WIC enrollees living off reservations are somewhat more distributed across regions, but the largest concentrations are in the Southwest and in Oklahoma, where tribes do not have formal reservations. The bottom panel of the exhibit shows the distribution between reservation and non-reservation within regions.

Demographics of Native American WIC Participants

US Census data (1990) show differences between the Native American population and other racial and ethnic groups, and difference within the overall Native American population by proximity to reservations. (The reservation population is younger, poorer, and has larger families than the non-reservation population.) These Census findings cannot necessarily be generalized to the WIC population, however, because WIC serves a group that is economically homogenous: all WIC enrollees have income below 185 percent of the poverty level.

Exhibit 10

Regional and Metropolitan Distribution of Native American WIC Enrollment, By Location on Reservation Lands 1998

	Native American WIC Enrollment			Total WIC
	On or Near Reservations	Off Reservations	Total	
FNS Region				
Northeast	1.5%	5.1%	2.8%	10.0%
Mid-Atlantic	0.3	3.6	1.6	12.2
Southeast	2.2	12.8	6.2	19.0
Midwest	9.0	4.8	7.4	14.2
Mountain Plains	17.9	15.8	17.1	14.3
Southwest	7.9	43.5	21.3	6.4
Western	61.1	14.6	43.6	23.8
Total	100.0	100.0	100.0	100.0
Metro/Non-metro Area				
Non-metropolitan	66.6	54.3	62.0	19.4
Metropolitan	33.4	45.7	38.0	80.6
Total	100.0	100.0	100.0	100.0
Total	75,395	45,679	121,074	8,042,758

NOTE: Enrollment of Indian state agencies operated by federally recognized Oklahoma tribes which do not have a reservation are counted as "on or near reservations" because tribal governments exercise self-government within Oklahoma "Indian country."

Percent of Native American WIC Enrollment On or Near a Reservation, By FNS Region, 1998

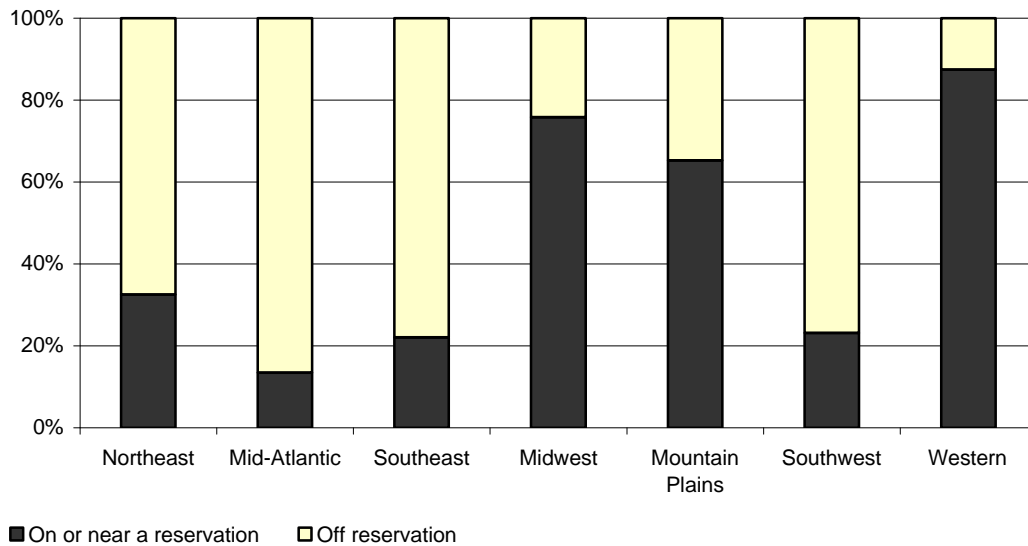


Exhibit 11 shows the age distribution of Native American WIC enrollees (by location on or near a reservation and overall), and the age distribution of all WIC enrollees. For the most part, the age distribution of all Native American WIC enrollees is not very different from that of the overall WIC population, although this comparison is somewhat hampered by a greater incidence of missing age for Native Americans. Compared to all WIC enrollees, Native American WIC women are somewhat more likely to be under age 20 (24.4 versus 22.8 percent); Native American infants are slightly less likely to enroll in WIC at 1-3 months of age (86.7 versus 88.4 percent); and Native American WIC children are less concentrated in the 1-3 year-old age groups (53.9 versus 60.7 percent).

The comparison of Native American WIC enrollees by location on versus off reservations shows that Native American WIC women off reservations are more likely to be under age 20 (26.2 versus 23.2 percent); Native American infants off reservations are slightly less likely to enroll in WIC at 0-3 months of age (85.9 versus 87.2 percent); and Native American WIC children off reservations are more concentrated in the 1- and 2-year-old age groups (57.8 versus 51.8 percent). Compared to Native Americans off reservations, the age distribution of Native American women and infants **on** reservations more closely resembles that of all WIC women and infants; in contrast the age distribution of Native American children **off** reservations more closely resembles that of all WIC children.

Exhibit 12 shows the distributions of Native American WIC enrollees and all WIC enrollees by certification category, family size, public assistance receipt, and poverty status. For these measures, there are some large differences between Native American WIC enrollees and all WIC enrollees, as well as between Native Americans on and off reservations.

Compared to total WIC enrollment, Native American WIC enrollment is more concentrated in the children category (56.2 versus 51.2 percent) reflecting the fact that Native American families have more children. Mean family size is 4.2 persons for Native American WIC enrollees and 3.9 persons for all WIC enrollees; a greater percentage of Native Americans are in families of more than 4 persons (37.7 versus 29.6 percent).

Native American WIC enrollees have higher rates of public assistance receipt than all WIC enrollees. Native Americans are more likely to receive TANF (21.1 versus 17.0 percent) and more likely to receive food assistance from the Food Stamp Program (FSP) or the Food Distribution Program on Indian Reservations (FDPIR) (41.6 versus 26.6 percent). Native Americans are slightly less likely to have Medicaid (47.1 versus 48.3 percent) but this probably understates Medicaid

Exhibit 11**Distribution of Age at Certification of Native American WIC Enrollees, 1998**

	Native American			Total WIC
	On or Near Reservations	Off Reservations	Total	
<i>Pregnant women</i>				
Under 15 years	1.4	1.3	1.4	0.8
15 - 17 years	10.6	10.9	10.7	10.1
18 - 19 years	13.9	16.3	14.8	15.3
20 - 34 years	67.0	66.2	66.7	67.9
35 or more years	7.0	5.3	6.3	5.8
Age not reported	0.5	0.7	0.5	0.2
<i>Breastfeeding women</i>				
Under 15 years	1.2	2.3	1.6	0.2
15 - 17 years	6.3	4.3	5.7	4.1
18 - 19 years	10.5	9.6	10.3	8.5
20 - 34 years	71.1	74.2	72.1	76.0
35 or more years	10.8	9.7	10.5	10.7
Age not reported	0.9	2.0	1.3	0.5
<i>Postpartum women</i>				
Under 15 years	1.8	2.3	2.0	0.5
15 - 17 years	8.9	11.0	9.8	8.9
18 - 19 years	12.6	15.1	13.7	14.6
20 - 34 years	68.7	65.9	67.5	69.4
35 or more years	8.0	5.6	6.9	6.0
Age not reported	1.0	1.9	1.4	0.6
<i>Total women</i>				
Under 15 years	1.5	1.8	1.6	0.6
15 - 17 years	9.0	9.7	9.3	8.5
18 - 19 years	12.7	14.7	13.5	13.7
20 - 34 years	68.5	67.6	68.2	70.0
35 or more years	8.3	6.2	7.5	6.9
Age not reported	0.7	1.3	0.9	0.4
<i>Infants</i>				
0 - 3 months	87.2	85.9	86.7	88.4
4 - 5 months	3.8	3.1	3.5	2.7
6 - 8 months	6.8	5.4	6.2	6.3
9 - 11 months	1.6	2.4	1.9	2.4
Age not reported	0.5	3.2	1.6	0.2
<i>Children</i>				
1 year	29.0	33.5	30.6	35.6
2 years	22.8	24.3	23.3	25.1
3 years	21.2	20.8	21.1	22.3
4 years	16.8	14.7	16.1	16.2
Age not reported	10.1	6.7	8.9	0.8
Total	75,394	45,680	121,074	8,042,758

Exhibit 12
Demographic Characteristics of Native American WIC Enrollees, 1998

	Native American			Total WIC
	On or Near Reservations	Off Reservations	Total	
Certification category				
Pregnant	10.0	10.9	10.3	11.1
Breastfeeding	5.5	4.1	4.9	4.8
Postpartum	5.2	6.6	5.7	7.3
Infants	21.5	25.0	22.8	25.5
Children	57.8	53.4	56.2	51.2
Family size¹				
1 person	2.1	2.6	2.3	2.1
2 persons	11.1	12.4	11.6	14.2
3 persons	21.1	26.4	23.1	27.1
4 persons	23.7	27.8	25.2	27.1
5 persons	18.1	16.8	17.6	16.2
6 or more persons	23.8	14.0	20.1	13.4
Total	100.0	100.0	100.0	100.0
Size not reported	0.6	0.7	0.6	0.9
Mean family size	4.4	4.0	4.2	3.9
Public Assistance				
TANF	24.6	15.2	21.1	17.0
Food Stamps	39.4	29.5	35.7	26.5
FDPIR ²	6.2	5.5	5.9	0.1
Medicaid	47.3	46.9	47.1	48.3
Percent migrant	0.1	0.2	0.2	0.7
Mean annual income	12,442	12,144	12,322	12,479
Median annual income	11,110	11,280	11,180	11,440
Poverty Status¹				
1-50%	41.4	34.9	38.9	36.1
51-100%	34.1	36.7	35.1	33.6
101-130%	12.4	14.4	13.2	14.6
131-150%	5.8	6.4	6.0	7.1
151-185%	5.7	6.7	6.1	7.7
186-200%	0.3	0.4	0.3	0.4
201-225%	0.2	0.2	0.2	0.2
226-250%	0.1	0.1	0.1	0.1
Over 250%	0.1	0.2	0.2	0.1
Total	100.0	100.0	100.0	100.0
Poverty not reported	16.6	11.4	14.7	14.6
Total WIC enrollment	75,394	45,680	121,074	8,042,758

NOTES:

¹ Percent distributions are calculated over records with non-missing data.

² Native Americans not living on Indian reservations may receive FDPIR if they live in an approved near-reservation area and the household meets the eligibility standards.

eligibility among Native Americans because certified members of Native American tribes receive health care from the Indian Health Service and may not apply for Medicaid.

Mean and median family income is not substantially different for Native Americans, compared to all WIC enrollees, but on average, Native American family income is a lower percentage of the federal poverty guidelines because Native American families are larger. Compared to all WIC enrollees, more Native Americans have income below 100% of the poverty level (74.0 versus 69.7 percent).

There are large differences between Native American WIC enrollees on and off reservations with respect to family size, public assistance receipt, and income. Among Native Americans on or near reservations, 23.8 percent have family size of 6 or more persons; this is ten percentage points greater than the groups of Native Americans off reservations and all WIC enrollees. Greater poverty on reservations is evident from higher rates of participation in TANF and food assistance.³⁹ The difference in TANF receipt between Native Americans on and off reservations is 9.4 percentage points and the difference in food assistance is 10.6 percentage points. Rates of Medicaid receipt are comparable for Native Americans on and off reservations and all WIC.

Mean and median family income is not substantially different for Native Americans on and off reservations, but due to larger family sizes on reservations, poverty is somewhat greater on reservations. The percentage of Native Americans with income below 100% of the poverty level is 75.5 on reservations and 71.6 off reservations.⁴⁰

³⁹ Tribal organizations may choose to participate in either the Food Stamp Program or the Food Distribution Program on Indian Reservations.

⁴⁰ Differences in poverty status should be viewed with caution because poverty level is not reported for 16.6 percent of Native American WIC enrollees on reservations and 11.4 percent of Native American WIC enrollees off reservations.

5. Prevalence of Nutrition Risks in Native American WIC Participants

In addition to income eligibility, all WIC applicants must be at nutritional risk to qualify for WIC benefits. WIC identifies nutritional risk in five major categories: anthropometric, biochemical, clinical/medical, dietary, and predisposing. This section examines the prevalence of nutrition risks among Native Americans and compares the risks reported for Native Americans on or near reservations with risks reported for Native Americans off reservations.

The WIC program screens for nutrition risks during the application process and the presence of nutritional risk is recorded in certification files. Anthropometric risks are determined from height and weight measurements; biochemical risks are determined from blood tests for iron deficiency; dietary risks are determined from information collected through twenty-four hour recalls or food frequency checklists; and clinical and medical risks are determined from information obtained from authorized medical personnel. State WIC agencies, when submitting data to the biennial PC studies, include information on up to three nutritional risks for each WIC enrollee.

Reporting of Nutrition Risks

One potential difficulty in examining the prevalence of nutritional risks is that all risks may not be recorded during the certification process because one risk is sufficient for certification. State agencies generally set guidelines for the number of risks to be recorded. Exhibit 13 summarizes State agency policies. As shown in the exhibit, in 1998, 92 percent of all WIC enrollment was in States requiring that nutrition information be recorded for every identified nutrition risk, or a set number of risks that equaled or exceeded three. Six percent of WIC enrollment was in States allowing local certifiers to determine the number of criteria to record; less than one percent of enrollment was in States allowing that the most easily and quickly identified risk(s) be recorded.⁴¹

Compared with total WIC enrollment, Native Americans were more likely to be enrolled at State WIC agencies that give local certifiers discretion in determining the number of nutrition risks to record on certification records. Exhibit 13 shows that local discretion leads to fewer reported risks on average, so the prevalence of risks among Native Americans may be understated relative to the prevalence of risks among all WIC enrollees. Similarly, a higher percentage of Native American WIC enrollees on or near reservations are enrolled through agencies with local discretion, so

⁴¹ Based on author's tabulations of data from the *PC98 Survey of State WIC Agencies*.

Exhibit 13**State Agency Policies for Recording Nutrition Risk at Certification**

State Policy	Number State Agencies	Percent of WIC Enrollees	Avg Number Risks in PC data ¹	Percent American Indian WIC		
				Total	On or near reservations	Off reservations
All risk criteria are recorded	56	62.4	1.93	63.6	60.2	69.2
A set number of the more important criteria are recorded ²	21	29.2	1.69	16.0	12.8	21.3
The most easily and quickly identifiable criteria are recorded	3	0.4	1.90	1.9	0.1	4.9
Local certifiers decide which criteria and how many criteria to record	7	5.9	1.58	14.0	20.6	3.2
Other	1	2.1	1.8	4.5	6.3	1.4
Total	88	100.0	1.83			

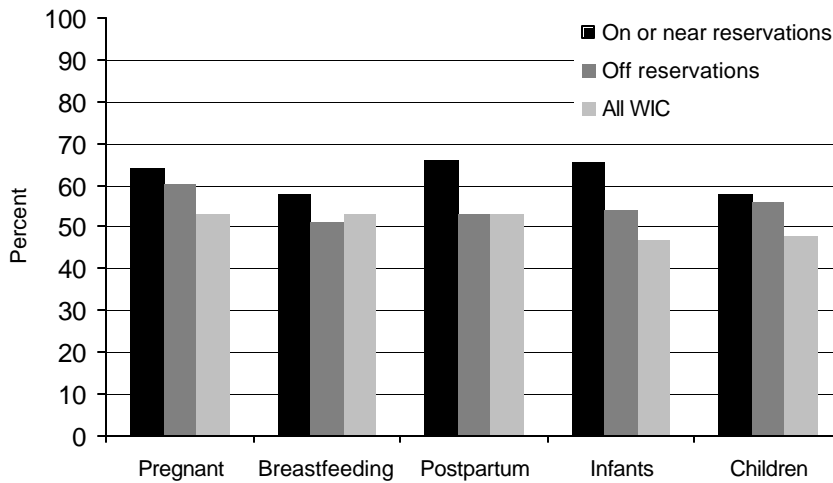
¹ The average number of risks recorded in the PC data understates the total number of risks recorded in State systems that provide for more than three risks.

² All States with this policy specify three or more risks be recorded.

Source: PC98 Summary of State Programs.

prevalence of risks among Native Americans on or near reservations may be understated relative to prevalence of risks among Native Americans off reservations.

Despite the limitations imposed by variation in State policies regarding the documentation of risks, PC98 data show that, in all participant categories, Native Americans on reservations have more reported risks than Native Americans off reservations. (Native Americans on reservations account for 63 percent of total Native American WIC enrollment.) Exhibit 14 shows the percent of enrollees with more than one reported risk, with percentages measured over those with non-missing risk data. Both on and off reservations, the majority of Native American WIC participants enroll in the program with multiple nutritional risks present at certification. With the exception of breastfeeding and postpartum women, Native Americans on and off reservations are more likely to have multiple risks than all WIC enrollees — even though the policies of State agencies in States where Native Americans reside may result in relatively more underreporting of risks for Native Americans.

Exhibit 14**Percent of WIC Enrollees with More than One Nutritional Risk Present at Certification**

Prevalence of Risks

Exhibits 15 and 16 show the prevalence of nutrition risks for Native American WIC women (by location on or off reservations and overall) and for all WIC women. Exhibit 15 shows that among all women, and for all risk categories except biological risks, Native American women have greater risk prevalence than all WIC women. The comparison of Native American women on and off reservations, however, shows no clear pattern: Native American women living on or near reservations have a higher prevalence of anthropometric risks and some clinical risks, while Native American women living off reservations have a higher prevalence of biological risks and some clinical risks.

The specific risks that are more prevalent for Native American WIC women on reservations, compared to women off reservations, are: high weight-for-height (44.5 versus 36.7 percent), nutrition-related risks (23.5 versus 7.9 percent), and breastfeeding mother/infant dyad (16.6 versus 7.8 percent). The greater prevalence of breastfeeding mother/infant dyad risk may reflect different WIC agency policies with respect to use of this risk category; all breastfeeding mothers may be certified for WIC on the basis of this risk alone but the risk may not be recorded when other risks are present. Exhibit 16 (which repeats the information in Exhibit 15, broken out by WIC participant category) clearly shows that a greater percentage of breastfeeding women on reservations are assigned the breastfeeding risk (60.4 versus 38.8 percent).

Exhibit 15**Prevalence of Reported Nutrition Risks among Native American WIC Women and All WIC Women, 1998**

	Total Native American Women			Total Wic
	On or Near Reservations	Off Reservations	Total	
Anthropometric	62.1	56.4	59.8	55.1
Low weight-for-height	2.9	7.1	4.6	6.1
High weight-for-height	44.5	36.7	41.4	32.3
Short stature	0.4	0.4	0.4	0.9
Inappropriate growth	20.4	20.7	20.6	24.6
Other anthropometric risk	0.7	0.8	0.8	1.7
Biological	16.6	25.9	20.3	27.3
Hematocrit/hemoglobin < state std	16.6	25.8	20.3	27.2
Other biochemical risk	0.0	0.2	0.1	0.1
Clinical Risk	72.4	68.7	70.9	58.3
Pregnancy induced conditions	4.0	6.9	5.2	3.2
Delivery of low birthweight or premature infant	1.8	1.6	1.7	2.2
Prior stillbirth, miscarriage, etc	2.3	7.1	4.2	4.2
General obstetrical risks	42.5	48.0	44.7	39.2
Nutrition-related risks	23.5	7.9	17.3	7.8
Substance abuse	13.4	14.9	14.0	10.9
Other health risk	4.9	2.7	4.0	5.5
Dietary Risk	48.3	50.4	49.1	46.6
Inadequate/inappropriate nutrient intake	47.2	48.0	47.5	45.2
Other dietary risk	1.5	2.5	1.9	2.2
Other risks	19.1	9.3	15.2	11.3
Regression	0.2	0.2	0.2	0.1
Transfer (risk is unknown)	0.3	0.9	0.5	1.6
Breastfeeding mother/infant dyad	16.6	7.8	13.0	8.4
Infant of a WIC-eligible mother	0.1	0.1	0.1	0.1
Homelessness/migrancy	2.3	0.6	1.7	1.3
Other nutritional risks				
Number of reported risks				
One	9.1	11.3	10.0	20.3
Two	33.9	35.0	34.3	33.0
Three	56.4	53.3	55.1	46.2
None reported	0.7	0.4	0.6	0.5
Number WIC participants	9,637	6,452	16,091	1,873,116

NOTES

For PC98, WIC agencies could report up to three nutritional risks for each participant. This table includes all risks reported for every participant so that column and row percentages sum to more than 100 percent.

Exhibit 16**Prevalence of Reported Nutrition Risks among Native American WIC Women, By Certification Category, 1998**

	Pregnant women		Breastfeeding women		Postpartum women	
	On or Near Reservations	Off Reservations	On or Near Reservations	Off Reservations	On or Near Reservations	Off Reservations
Anthropometric	64.3	60.5	60.1	52.8	60.0	51.7
Low weight-for-height	3.8	9.0	2.2	4.9	1.7	5.3
High weight-for-height	38.4	33.8	50.7	39.8	49.2	39.7
Short stature	0.7	0.8	0.2	0.1	0.0	0.0
Inappropriate growth	33.0	31.1	8.5	11.5	9.5	8.9
Other anthropometric risk	0.7	0.6	0.2	0.5	1.3	1.3
Biological	11.8	23.6	15.1	21.5	27.4	32.6
Hematocrit/hemoglobin < state std	11.8	23.4	15.1	21.4	27.4	32.6
Other biochemical risk	0.0	0.2	0.1	0.1	0.0	0.2
Clinical Risk	27.0	10.8	32.0	10.7	26.9	10.3
Pregnancy induced conditions	4.6	8.8	3.0	4.8	3.9	5.2
Delivery of low birthweight or premature infant	1.8	1.2	1.0	1.3	2.6	2.4
Prior stillbirth, miscarriage, etc	3.5	8.3	0.2	4.0	2.1	7.2
General obstetrical risks	47.5	51.3	35.3	39.2	41.0	48.1
Nutrition-related risks	20.9	9.1	29.0	5.9	22.6	7.3
Substance abuse	15.3	15.3	8.9	11.9	14.5	16.2
Other health risk	6.2	1.7	3.1	4.9	4.3	3.1
Dietary Risk	49.5	50.5	39.7	53.1	55.2	48.3
Inadequate/inappropriate nutrient intake	49.3	48.4	39.6	51.5	51.4	45.1
Other dietary risk	0.6	2.2	0.6	1.8	4.2	3.3
Other risks	3.9	1.2	1.7	2.8	2.2	2.2
Regression	0.2	0.0	0.2	0.6	0.2	0.2
Transfer (risk is unknown)	0.2	0.3	0.4	1.3	0.5	1.5
Breastfeeding mother/infant dyad	0.2	0.1	60.4	38.8	0.4	1.1
Infant of a WIC-eligible mother	0.0	0.0	0.0	0.0	0.0	0.0
Homelessness/migrancy	0.1	0.1	0.0	0.0	0.1	0.1
Other nutritional risks	3.5	0.7	1.1	0.8	1.4	0.4
Number of reported risks						
One	34.1	37.2	38.7	44.6	32.4	42.7
Two	46.7	44.4	48.9	39.4	47.4	38.6
Three	13.9	11.9	4.9	7.3	15.5	9.7
None reported	5.3	6.5	7.6	8.7	4.6	9.0
Number WIC participants	4,599	3,278	2,614	1,236	2,424	1,938

NOTES

For PC98, WIC agencies could report up to three nutritional risks for each participant. This table includes all risks reported for every participant so that column and row percentages sum to more than 100 percent.

The specific risks that are more prevalent for Native American women off reservations, compared to those on reservations, are: low hematocrit or hemoglobin (25.8 versus 16.6 percent), prior stillbirth or miscarriage (7.1 versus 2.3 percent), and general obstetrical risks (48.0 versus 42.5 percent).

Exhibit 17 shows the prevalence of nutrition risks for Native American infants and children on reservations and off reservations. Native American infants on or near reservations have a greater number of reported risks than infants off reservations (bottom of Exhibit 17). Infants living on reservations have higher prevalence of clinical risks (22.2 versus 12.5 percent) and dietary risks (19.2 versus 12.3 percent). Nutrition-related risks are reported for nearly 18 percent of infants on or near reservations and 9 percent of infants off reservations; inadequate or inappropriate nutrient intake is reported for 18 percent of infants on reservations and 11 percent of infants off reservations. Infants off reservations have a slightly higher rate of anthropometric risks compared to infants on reservations, particularly low weight-for-height, low birthweight or premature birth, and inappropriate growth; while infants on reservations are more likely to have short stature (7.3 versus 5.5 percent).

Native American children show much the same pattern as infants in risk differences according to location on or near reservations. Children on or near reservations have higher prevalence of clinical and dietary risks and lower prevalence of biological risks. An additional difference for children is that high weight-for-height (overweight status) is reported for 25 percent of children on or near reservations and for 20 percent of children off reservations. These figures compare to a prevalence of 16 percent for all WIC participants.

Prevalence of Overweight in WIC Children

The prevalence of overweight among children has become an increasingly important public health concern. Over the past 30 years, the percentage of overweight children aged 6-17 has doubled (Troiano and Flegal, 1998). Furthermore, recent research has shown that 60 percent of overweight 5- to 10-year-old children have at least one risk factor for heart disease (Freedman, 1999). The prevalence of overweight in WIC children is examined in a separate report to FNS, which shows that, among WIC children, Native Americans have the highest rate of overweight prevalence of all racial/ethnic groups.⁴²

Exhibit 18 separately shows the prevalence of overweight among Native American WIC children on or near reservations and off reservations. Overweight status is identified by measured weight-for-

⁴² Cole, Nancy. *The Prevalence of Overweight Among WIC Children*. July 2001.

height or weight-for-length above the 95th percentile of published growth charts.⁴³ These data show that the difference in prevalence of overweight among Native American children and all WIC children is largely (although not completely) attributable to different rates of overweight on and off reservations. Native American children on reservations have overweight prevalence that is 29 percent greater than overweight prevalence off reservations (20.2 percent overweight versus 15.7 percent overweight). Compared to all WIC children (13.2 percent overweight), overweight prevalence is 19 percent greater for Native American children residing off reservations and 53 percent greater for Native American children residing on reservations.

⁴³ Weight-for-length is measured for children under age 36 months; weight-for-height is measured for children 36 months and older. The CDC Revised Growth Charts (released May 2000) were used to determine overweight status. Prevalence of overweight in Exhibit 18 is below the prevalence indicated by reported nutrition risks due to use of the revised CDC charts, and also due to use of different overweight standards at different WIC agencies.

Exhibit 17**Prevalence of Reported Nutrition Risks among WIC Infants and Children, 1998**

	<u>Native American Infants</u>			<u>Native American Children</u>		
	On or Near Reservations	Off Reservations	Total WIC Infants	On or Near Reservations	Off Reservations	Total WIC Children
Anthropometric	27.5	28.9	23.7	37.7	36.5	33.6
Low weight-for-height	1.7	4.5	3.3	2.1	5.1	4.3
High weight-for-height	11.0	11.5	4.1	24.8	20.2	15.7
Short stature	7.3	5.5	7.0	8.5	8.1	7.7
Inappropriate growth	2.2	3.5	4.2	5.0	4.1	9.0
Low birthweight/premature birth	7.1	8.6	9.0	0.3	0.4	0.5
Other anthropometric risk	2.7	4.1	2.8	0.7	7.7	0.9
Biological	3.8	4.6	3.8	12.0	16.0	24.4
Hematocrit/hemoglobin < state std	3.8	4.6	3.8	12.0	15.9	24.3
Other biochemical risk	0.0	0.0	0.0	0.0	0.1	0.2
Clinical Risk	22.2	12.5	11.3	29.8	22.5	19.0
Nutrition-related risks	17.6	9.0	3.7	24.8	19.7	9.3
Substance abuse	5.5	4.4	3.9	5.7	4.2	4.1
Other health risk	4.6	3.7	4.2	5.4	3.3	7.3
Dietary Risk	19.2	12.3	13.2	82.5	77.5	68.3
Inadequate or inappropriate nutrient intake	18.1	11.4	9.4	81.4	74.3	64.2
Other dietary risk	1.5	1.0	4.2	3.5	4.9	8.1
Other risks	84.7	85.7	82.9	3.2	5.5	5.9
Regression	0.2	0.2	0.1	1.3	4.5	3.0
Transfer (risk is unknown)	0.2	0.8	2.2	0.1	0.2	1.4
Breastfeeding mother/infant dyad	28.5	20.6	23.5	0.1	0.1	0.1
Infant of a WIC-eligible mother	76.9	79.2	73.7	0.3	1.2	0.8
Homelessness/migrancy	0.1	0.1	0.1	0.1	0.1	0.1
Other nutritional risks	0.4	0.4	0.5	1.8	0.7	0.6
Number of reported risks						
One	34.0	45.7	53.0	41.4	43.3	51.7
Two	38.5	34.5	32.7	42.2	39.1	33.1
Three	26.2	19.4	13.8	15.3	15.9	14.6
None reported	1.3	0.4	0.5	1.1	1.7	0.6
Number WIC participants	10,082	7,562	2,048,626	27,741	17,082	4,121,017

NOTES

For PC98, WIC agencies could report up to three nutritional risks for each participant. This table includes all risks reported for every participant so that column and row percentages sum to more than 100 percent.

Exhibit 18**Percent of Native American WIC Children Measured Overweight, By Age and Gender, 1998**

	----- Native American WIC Children -----						Total WIC Children
	On or Near Reservations		Off Reservations		Total		
	Number Children	Percent Overweight	Number Children	Percent Overweight	Number Children	Percent Overweight	
All Children ¹	42,524	20.2	22,988	15.7	65,512	18.6	13.2
Age 1	12,428	22.8	7,604	20.1	20,032	21.8	15.6
Age 2	9,742	21.4	5,547	16.2	15,289	19.5	14.2
Age 3	9,114	15.9	4,970	11.6	14,084	14.4	11.1
Age 4	7,236	14.1	3,495	10.0	10,731	12.7	9.9
Boys ¹	21,273	20.4	11,448	16.9	32,720	19.1	13.9
Age 1	6,300	23.3	3,753	22.6	10,052	23.0	17.1
Age 2	4,873	20.5	2,755	16.1	7,628	18.9	13.9
Age 3	4,547	16.0	2,500	12.8	7,047	14.9	11.5
Age 4	3,567	15.1	1,734	10.1	5,301	13.5	10.6
Girls ¹	21,251	20.0	11,540	14.6	32,791	18.1	12.6
Age 1	6,128	22.4	3,851	17.6	9,979	20.5	14.1
Age 2	4,869	22.3	2,792	16.3	7,661	20.1	14.4
Age 3	4,567	15.7	2,470	10.4	7,037	13.9	10.7
Age 4	3,669	13.1	1,761	9.8	5,430	12.0	9.3

NOTES

Overweight is determined by weight-for-height (age \geq 24 months) or weight-for-length (age < 24 months) above the 95th percentile of the Revised CDC Growth Charts (May 2000).

Overweight status could not be determined for 3.6 percent of Native American children and 4.7 percent of all WIC children due to missing weight, height, or gender information. These children are not reflected in the table.

Total WIC children excludes the U.S. Territories.

¹ Children with missing age are included in the totals but are not shown separately. Most of the missing age data are due to non-reporting of age by Alaska in 1998.

6. Conclusion

This report reviews the role of Native American tribes in administering the WIC program and provides a description of the characteristics of Native American WIC enrollees, comparing Native American WIC enrollees residing on or near reservations with those residing off reservations.

Native American tribes play a significant role in administering WIC programs at both the State and local levels. A majority (58 percent) of Native American WIC enrollment is through tribal agencies, with the greatest Native American WIC enrollment (41 percent) through State WIC agencies operated by tribal governments. The growth in Native American WIC enrollment during the 1990s, however, has occurred primarily in Native American enrollment at non-tribal agencies.

WIC enrollment data largely confirm Census reports that there are substantial differences in the demographic and economic circumstances of Native Americans residing on or near reservations compared with Native Americans residing off reservations. Native Americans enrolled in WIC on or near reservations have larger families, rely more on public assistance, and are more highly concentrated at the lowest levels of poverty.

WIC data add to our knowledge of the health and nutrition status of Native Americans, particularly with respect to differences in the health status of Native Americans on and off reservations. WIC enrollees on or near reservations have higher prevalences of anthropometric and nutrition-related risks than Native Americans off reservations. Native Americans off reservations have higher reported prevalence of biological risk. It is often cited that Native American children have higher rates of overweight than other racial or ethnic groups. Native American WIC children, regardless of residence on reservations, have higher overweight prevalence (based on reported height and weight data) than all WIC children. On-reservation children have overweight prevalence nearly 30 percent greater than off-reservation children.

References

- Freedman DS, Dietz WH, Srinivasan SR, Berenson GS. "The Relation of Overweight to Cardiovascular Risk Factors Among Children and Adolescents: The Bogalusa Heart Study," *Pediatrics*, 103: 1175-1182, 1999.
- Indian Health Service (1998). *Regional Differences in Indian Health, 1998-99*. U.S. Department of Health and Human Services, Indian Health Service, Office of Public Health.
- Indian Health Service (1997b). *Trends in Indian Health, 1997*. U.S. Department of Health and Human Services, Indian Health Service, Office of Public Health.
- Indian Health Service, U.S. Public Health Service (2000). *American Indian and Alaska Native population estimates by State for each year 1980 to 2000 (for service and non-service portions of each State)*. U.S. Department of Health and Human Services, Indian Health Service, Office of Public Health, Statistical Database.
- Kuczumski RJ, Ogden CL, Grummer-Strawn LM, et al. *CDC Growth Charts: United States. Advance data from vital and health statistics; no. 314*. Hyattsville, Maryland: National Center for Health Statistics. 2000.
- National Center for Health Statistics, U.S. Department of Health and Human Services (1998b). *1996 Natality Data Set*. CD-ROM Series 21, No. 7.
- Passel, Jeffrey S. (1996). "The Growing American Indian Population, 1960-1990: Beyond Demography," Chapter 4 in *Changing Numbers, Changing Needs: American Indian Demography and Public Health*. Washington, D.C.: National Academy Press.
- Sandefur, Gary D. and Carolyn A. Liebler (1996). "The Demography of American Indian Families," Chapter 9 in *Changing Numbers, Changing Needs: American Indian Demography and Public Health: Introduction*. Washington, D.C.: National Academy Press.
- Sandefur, Gary D., Ronald R. Rindfuss, and Barney Cohen (1996). *Changing Numbers, Changing Needs: American Indian Demography and Public Health: Introduction*. Washington, D.C.: National Academy Press.
- Shumway, J. Matthew and Richard H. Jackson. "Native American Population Patterns," *The Geographical Review*, April, 1995.
- Snipp, C. Matthew (1996). "Size and Distribution of the American Indian Population," Chapter 3 in *Changing Numbers, Changing Needs: American Indian Demography and Public Health*. Washington, D.C.: National Academy Press.
- Thornton, Russell (1987). "Tribal history, tribal population, and tribal membership requirements: The cases of the Eastern Band of Cherokee Indians, the Cherokee Nation of Oklahoma, and the United Keetoowah Band of Cherokee Indians in Oklahoma. *Towards a Quantitative Approach to American Indian History*, Occasional Paper Series No. 8, Chicago Illinois.

Thornton, Russell (1996). "Tribal Membership Requirements and the Demography of 'Old' and 'New' Native Americans." Chapter 5 in *Changing Numbers, Changing Needs: American Indian Demography and Public Health*. Washington, D.C.: National Academy Press.

Troiano RP, Flegal KM. Overweight children and adolescents: Description, epidemiology, and demographics. *Pediatrics* 1998;101:497-504.

U.S. Census Bureau (1994). *1990 Census of Population, Characteristics of American Indians by Tribe and Language* (1990 CP-3-7).

U.S. Census Bureau (1999). *Statistical Abstract of the United States: 1999*.

U.S. Department of Agriculture, Food and Nutrition Service (1993). Estimates of Persons Income Eligible for the Special Supplemental Food Program for Women, Infants and Children (WIC) in 1989: National and State Tables. Produced by Sigma One Corporation. August 1993.

U.S. Department of Agriculture, Food and Nutrition Service, Office of Analysis, Nutrition and Evaluation (2000). *WIC Participant and Program Characteristics 1998*, WIC-00-PC, by Susan Bartlett, Melanie Brown-Lyons, Douglas Moore, and Angela Estacion. Alexandria, VA.

Ventura SJ, Martin JA, Curtin SC, Mathews TJ (1998). "Report of Final Natality Statistics, 1996," *Monthly Vital Statistics Report*. Vol 46 no 11, supp. Hyattsville, Maryland: National Center for Health Statistics.

Exhibit A.1**Geographic Jurisdictions of Indian Tribal Organizations Administering State WIC Programs**

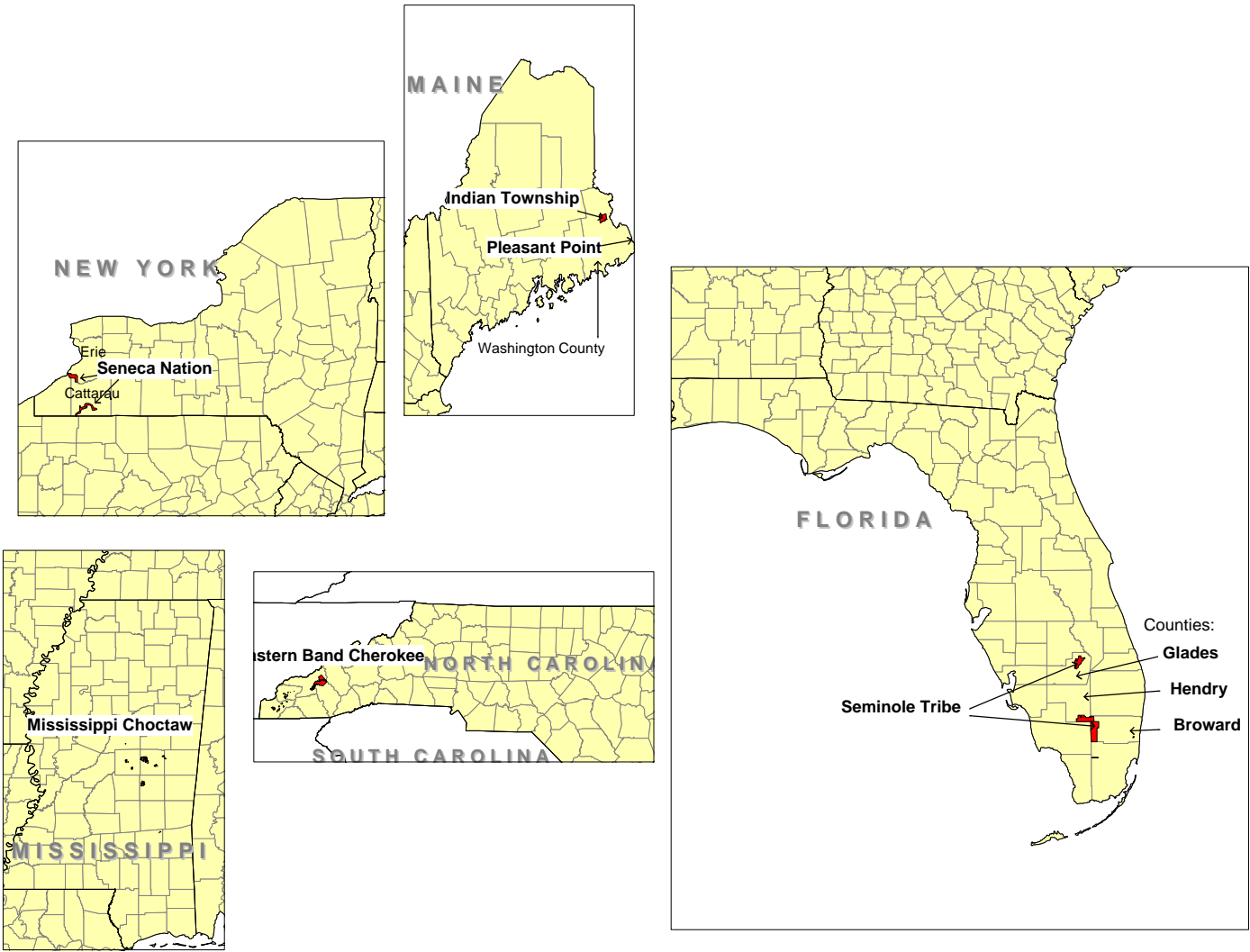
	Number AIRs	Land Area (sq miles)	1990 Population		
			Total	Native American Number	Percent
Arizona					
ITC-Arizona	20	15,726	64,284	55,017	85.6
Navajo Nation	1	24,426	148,451	143,507	96.7
Colorado					
Ute Mountain Ute	1	901	1,320	1,299	98.4
Florida					
Seminole Tribe	4	267	2,496	1,411	56.5
Maine					
Indian Township	1	37	617	542	87.8
Pleasant Point	1	1	572	514	89.9
Mississippi					
Mississippi Choctaw	1	33	4,073	4,056	99.6
Nebraska					
NIITDC	3	658	6,527	5,287	81.0
Nevada					
ITC-Nevada	20	1,973	7,956	4,872	61.2
New Mexico					
ACL	3	1,299	5,395	3,054	56.6
Eight Northern Pueblos	8	411	8,326	3,517	42.2
Pueblo of Isleta	1	328	7,510	7,398	98.5
Pueblo of San Felipe	1	79	28,183	5,015	17.8
Five Sandoval Pueblos	5	550	2,915	2,723	93.4
Santo Domingo	1	107	2,434	1,884	77.4
Pueblo of Zuni	1	654	8,293	4,060	49.0
New York					
Seneca Nation	3	76	2,992	2,721	90.9
North Carolina					
Eastern Band-Cherokee	1	81	7,412	7,094	95.7
North Dakota					
Standing Rock Sioux	1	3,567	7,046	5,736	81.4
Three Affiliated	1	1,319	9,498	3,047	32.1
Oklahoma					
ITC-Oklahoma*	0	16,612	424,011	27,078	6.4
Cherokee Nation*	0	6,700	399,385	66,435	16.6
Muscogee Creek Nation*	0	4,648	635,250	45,190	7.1
Otoe-Missouria*	0	278	2,775	475	17.1
Osage Nation	1	2,243	41,299	6,100	14.8
Citizen-Potawatomi*	0	1,115	91,166	6,129	6.7
Chickasaw Nation*	0	7,304	257,858	21,013	8.1
Sac and Fox Nation*	0	770	51,042	4,575	9.0
Choctaw Nation*	0	10,612	209,339	28,245	13.5
WCD (OK)*	0	647	8,195	599	7.3
South Dakota					
Cheyenne River Sioux	1	4,265	7,743	5,092	65.8
Rosebud Sioux	1	1,975	9,696	7,998	82.5
Wyoming					
Shoshone-Arapahoe	1	3,471	21,851	5,717	26.2
Total			2,485,910	487,400	19.6
Approximate total population on all AIRs				438,000	
Approximate total population of AIRs and TJSAs				638,000	

Notes

Geographic jurisdictions are defined by the American Indian Reservations (AIRs) associated with each Indian Tribal Organization.

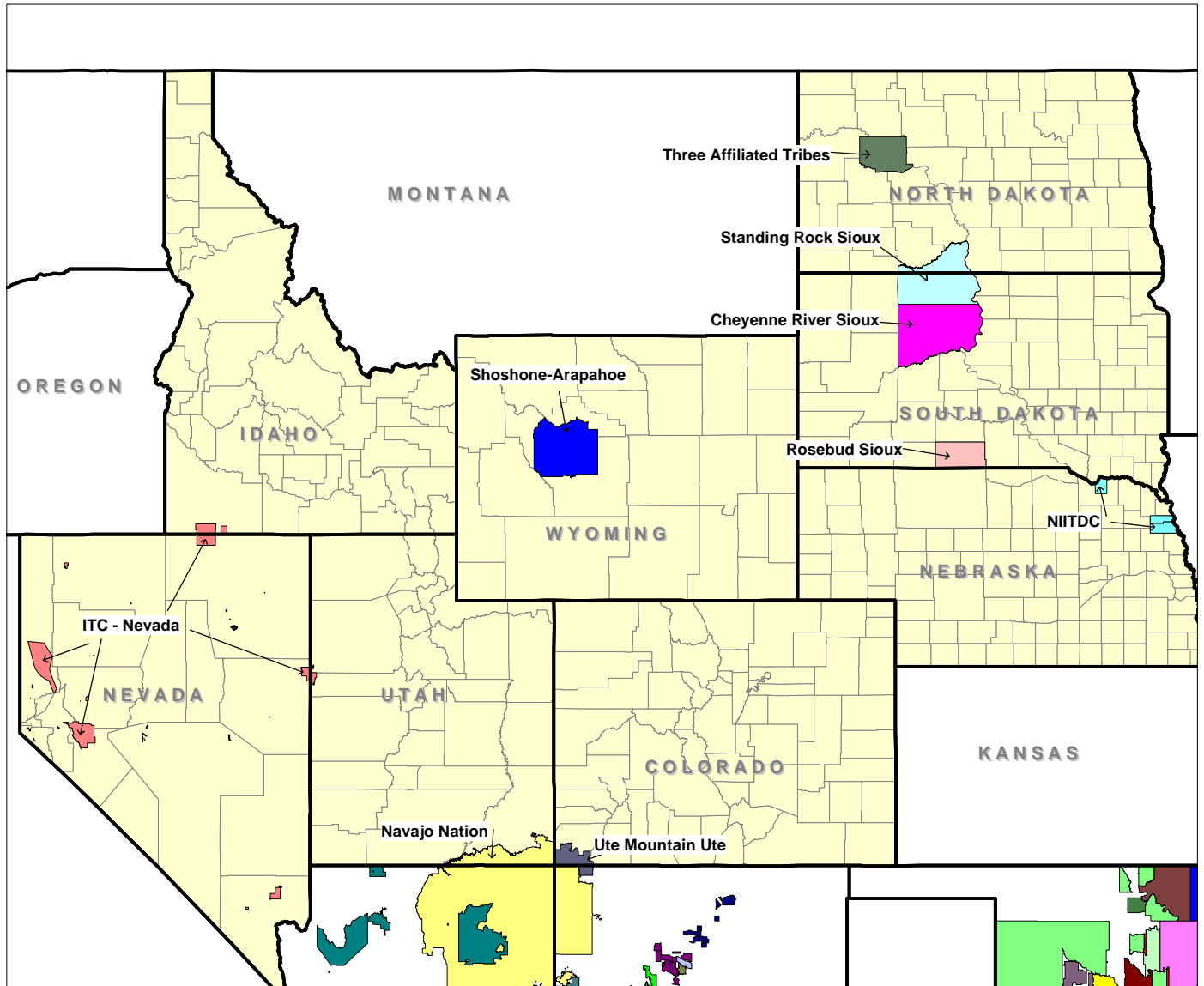
* Denotes ITOs in Oklahoma that do not have legally defined reservations; their geographic jurisdiction is measured according to the Tribal Jurisdiction Statistical Area (TJSA) defined U.S. Bureau of Census, for the 1990 census.

**Exhibit A.2
GEOGRAPHIC JURISDICTIONS OF INDIAN TRIBAL ORGANIZATIONS ADMINISTERING
WIC PROGRAMS: East and Southeastern United States**



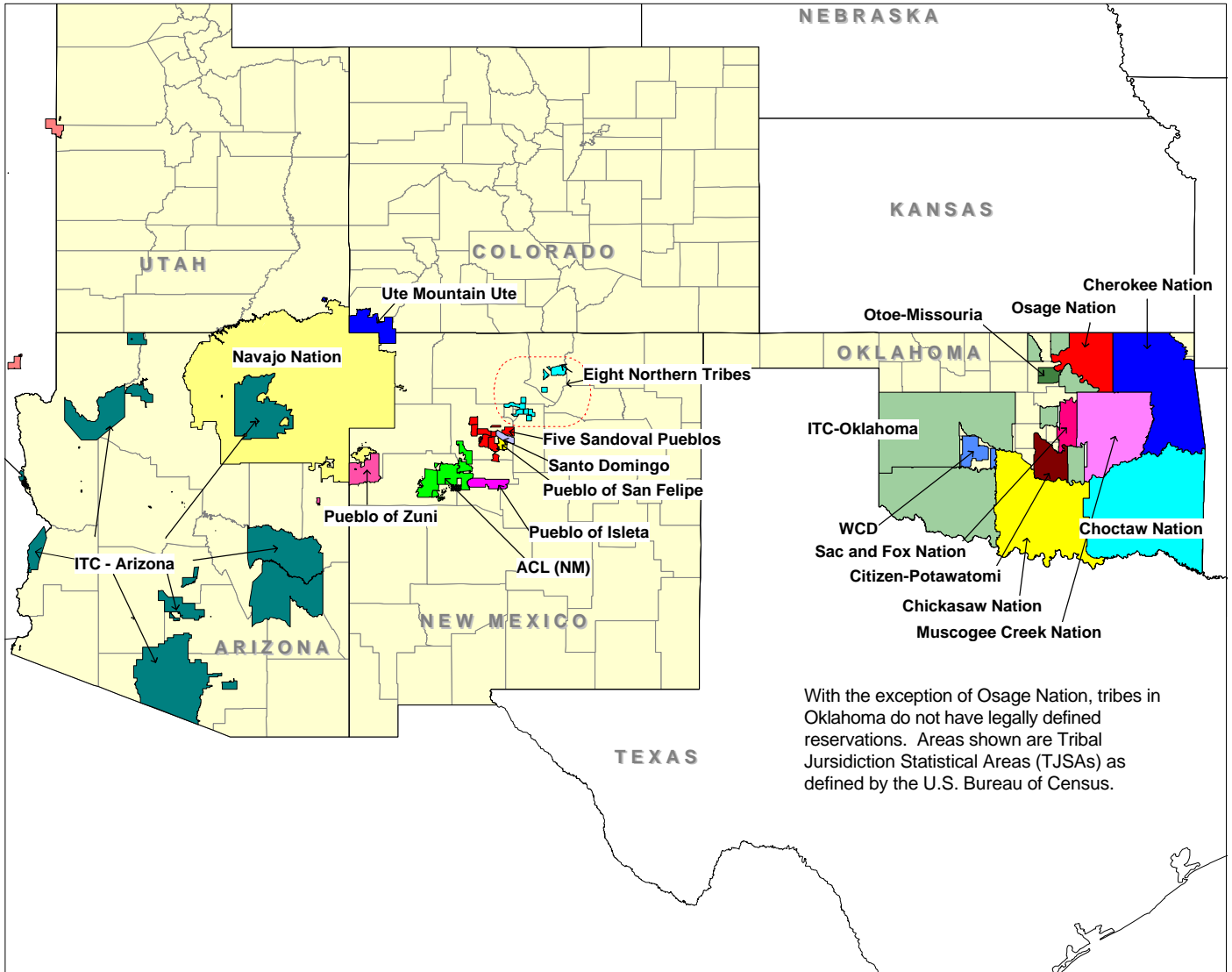
State boundaries displayed with bold; county boundaries displayed with dotted lines.

Exhibit A.3
GEOGRAPHIC JURISDICTIONS OF INDIAN TRIBAL ORGANIZATIONS ADMINISTERING
WIC PROGRAMS: Mid-West and Western United States



State boundaries displayed with bold; county boundaries displayed with dotted lines.

**Exhibit A.4
GEOGRAPHIC JURISDICTIONS OF INDIAN TRIBAL ORGANIZATIONS ADMINISTERING
WIC PROGRAMS: Southwestern United States**



State boundaries displayed with bold; county boundaries displayed with dotted lines.