



PHASE II HOUSING NEEDS ASSESSMENT AND DEMOGRAPHIC ANALYSIS

Prepared for:



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Analysis, Assessment & Report



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INTRODUCTION TO THE REPORT

The purpose of this report is to determine both current and future housing needs on the Navajo Nation. The conclusions of this analysis are based upon varied data sources¹ but rely heavily on an extensive and comprehensive custom survey that was conducted by the Navajo Housing Authority in 2008.

Thorough analysis of all factors relating to existing housing conditions including but not limited to: existing markets, population histories and projections, preference data, affordability, demographic characteristics and other elements were taken into consideration to develop final calculations (found in Part 2 Chapter 3 of this report) to yield the number and type of repair, replacement, and expansion of housing units needed on the Navajo Nation.

The scale and quality of information developed by the NHA Survey allows an unprecedented examination of housing conditions and needs in the Navajo Nation. This is currently the best source of information so we consider the results of this analysis definitive except where noted.

The methodological approach to this analysis was tiered, beginning with basic demographic data and a gradual deductive approach to ever higher levels of detail and precision. In practice this required a description of basic characteristics of the population and their basic housing conditions, followed by more precise descriptions of specific population classes and their housing types. This analysis was then followed by a number of additional examinations including conditions such as crowding, affordability, and housing preference information.

Finally the report focuses on developing criterion for determining need. All properties were run through criteria to determine whether the housing was adequate or in need of repair, replacement, relocation, or expansion. Further, these units were analyzed for needs arising from the population in terms of other factors, particularly crowding. Lastly, all

¹ See Bibliography for all sources used to supplement survey data.

housing unit needs were described in terms of type based on the demographic information and preference data.

The final result is a clear and concise description of housing needs on the Navajo Nation.

Although significant additional work needs to be completed, as outlined in Part 2 Chapter 4 of this document, this report serves to define the scale, type, and basic costs of providing standard quality housing to the citizens of the Navajo Nation.

EXECUTIVE SUMMARY

In 2009 the Navajo Housing Authority undertook a massive survey effort of over 31,000 individuals living on the Navajo Nation. This report is the culmination of that effort and aims present the size and scope of housing issues facing the Navajo Nation.

The report is broken into two parts. Part 1 examined the integrity of the survey data and determined that the survey was correctly administered, is statistically significant and is composed of valid data. Part 2 analyzes existing housing needs and issues on the Navajo Nation. This section includes demographic analysis of the survey data, factors conditioning housing need on the Navajo Nation, calculation of existing need, and presents short and long term recommendations and strategies.

There are distinct demographic differences between the population living on the Navajo Nation and the US as a whole. The Navajo Nation population is relatively younger, poorer and unemployed. Houses on the Navajo Nation are in relatively worse condition, generally smaller, have less access to basic utilities and experience larger rates of overcrowding.

There are a number of factors that affect housing need on the Navajo nation, including: spatial patterns and geographic dispersal across the reservation, affordability of housing, existing housing conditions and inventory, the state of the existing real estate market, and housing type preferences among Navajo Nation citizens.

Results from the preference survey indicate a majority of residents prefer to live in a single family home but 18% would like to live in a mobile home or other moveable housing type. Most residents prefer a house slightly larger than their current home, live in a home of three rooms or less; a majority of these homes are considered crowded, and most citizens would prefer to own a home on their historic/ancestral lands.

Housing need was analyzed in terms of condition and capacity; remedies for condition related issues include new unit replacement and repairs. Remedies for overcrowding include new unit construction and unit expansions.

The results of the needs analysis are summarized in the following figure:

Table ES. 1. Combined Remedy Total

	Condition Related	Capacity (overcrowding) Related	Total
Total New Units/Replacements	18,900	15,200	34,100
Total Potential New Units/ Repairs	4,400	0	4,400
Total Repairs	34,300	0	34,300
Total Expansions	0	8,500	8,500

It is expected that the cost of new units, repairs and expansions will total between \$7.9 and \$8.9 billion. The majority of costs are a result of constructing new units to alleviate overcrowding and dilapidated physical structures

Chapter 4 contains extensive narrative and detail regarding next step recommendations, and prioritized both long and short terms goals. The top three short and long term goals are presented below:

Short-term-

- Identify the key interests and participants of an Interagency Housing Task Force, begin initial meetings and establish joint/cooperative mission
- Conduct an enhanced housing preference survey
- Close information gap through survey or other mechanism regarding houselessness/homelessness and seasonal workers/migration

Long-term-

- Finalize Housing Master Plan documents
- Develop community outreach/public relations campaign to assist with citizen recruitment into home ownership/construction programs and increase awareness of the programs long-term goals
- Develop loan fund strategy and capitalize loan fund

REPORT SUMMARY

The following sections summarize the findings from Part 1 and Part 2 of this report.

PART 1. CHAPTER 1. NAVAJO NATION IN-HOUSE SURVEY: METHODOLOGY AND QUALITY

In 2009 the Navajo Housing Authority undertook a massive survey effort of over 31,000 individuals living on the Navajo Nation utilizing a survey instrument similar to the long form US Census. Our analysis determined the following:

- The survey instrument itself was sound
- The administration and distribution of the survey was valid
- The sample size and statistical significance of the survey were valid – yielding over 3 million individual items of information
- Data validation techniques yielded that the database is reliable
- Key demographic, economic, and social characteristics from the NHA Survey are congruent with the American Community Survey 2(ACS) and other data

The following list highlights additional key findings from Part 1:

- The sample size undertaken in the 2009 Navajo Nation Survey for both individuals and households exceeds accepted statistical validity standards, providing a confidence interval of 95% with a margin of error of 1%. In total, NHA Surveyed 11,466 households composed of 31,166 individuals, far more than the sample size of 8,471 households and 9,550 individuals needed to achieve the best statistical validity standards.
- Data validation of the NHA’s survey database were tested with the following validation techniques: cross system consistency analysis, batch total analysis, uniqueness analysis, cardinality analysis, range/limit analysis, data type analysis, consistency analysis, format analysis, spelling and grammar analysis, and physical record inspection. The results of these validity analyses confirmed that the databases were within standard compliance parameters as documented in Chapter 1.

² 2009 United States Census American Community Survey

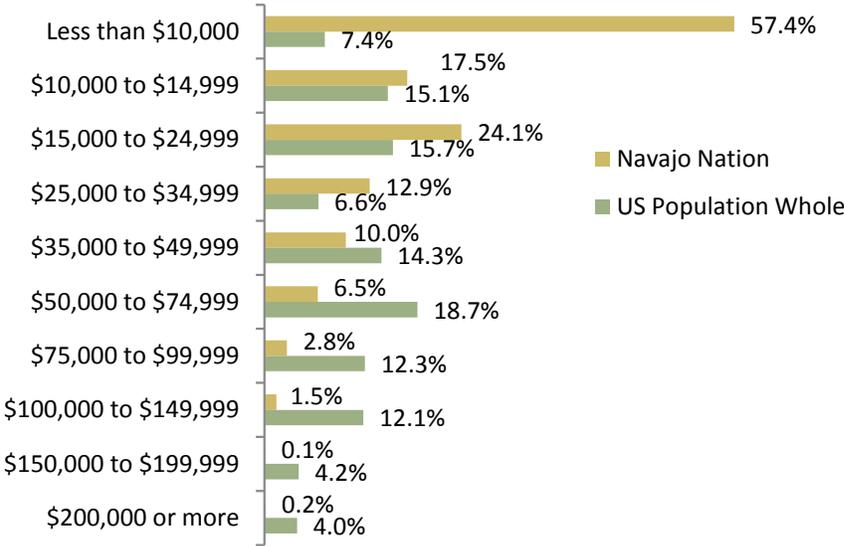
- Examination of the survey instrument and process/administration yielded results that met or exceeded all expected minimums of professional surveying industry standards.
- The spatial distribution analysis of the NHA Survey confirms that (excepting some minor variations that were corrected for) that the survey was distributed appropriately throughout the reservation territories with no single geographic area being favored or inappropriately weighted.
- Results of the NHA Survey were compared with other available data sources, primarily the United States Census Bureau's 2009 American Community Survey (ACS). Key indicators were selected (e.g. age, sex, household type, income, etc.) in order to gauge the consistency of the two sampling/survey processes. The results were as follows:
 - Gender comparisons were nearly identical.
 - Age spreads were similar although the NHA Survey indicated a somewhat higher percentage in the older demographic particularly in the oldest age cohort of 65 + years. This is likely due to a number of reasons, including the US Census sampling error for older Navajo populations.
 - The NHA Survey indicated a higher percentage of non-family households than the ACS. This may be due to the rural and resulting bias in the NHA Survey.

PART 2. CHAPTER 1. SURVEY RESULTS OVERVIEW AND ANALYSIS

Over the last 30 years, the Navajo Nation has averaged an annual population growth rate of nearly two percent. The population is relatively young compared to the United States average. There is an extremely low percentage of divorced people, while the percentage of married Navajos is almost half that found in the United States as a whole. 15% of the Navajo population reports itself as disabled. Slightly over 52% of persons are unemployed. Income on the Navajo Reservation, with the exception of two categories, is near the low-middle of the spectrum. Just over 70% of Navajo Nation individuals report making less than \$15,000 annually,

while less than 3% report earnings over \$50,000. In contrast, 51% of the US population has an individual income over \$50,000 per year.³

Figure ES. 1. Individual Income on the Navajo Nation



The majority (59%) of Navajo Nation housing structures are single family homes, 17% are mobile homes and 11% are traditional Hogan’s – the remainder are made up of multi-family attached housing units and a variety of “other” nonstandard housing units.⁴ 5% of all children on the reservation live in housing classified as “available shelter,” which is defined as non-typical and non-standard housing of the lowest quality. This housing is lower quality than tents or shacks and may be interpreted to indicate a possibly desperate housing situation.

The ownership rate of Navajo Nation residents is significantly higher than the national rate. 90% of applicable households reported paying no monthly mortgage or rent, which is much higher than the United States as a whole rate. The majority of homes on tribal land are heated by wood or pellet stoves. Electricity is provided by a public utility while water is either publicly provided or transported from an off-site source. Half of all individuals living on Navajo tribal lands have incomplete bathroom

³ Ibid
⁴ A significant portion of respondents classified their dwelling simply as a house; these responses were considered to be single family homes.



facilities and more than half have incomplete kitchen facilities. Homes on the Navajo Nation are generally smaller than the average home in the United States. The Navajo Nation overcrowding rate is 39%. The rate of overcrowding in the US as whole is around 6%.⁵ More than half of individuals living on the Navajo Nation live in structures that are either dilapidated or require serious repairs.

The following list highlights additional key findings from Part 2. Chapter 1:

- The population of the Navajo Nation over the last 30 years has averaged an annual growth rate of nearly two percent. Over the same period, the United States as a whole had a growth rate close to one percent. The Navajo Nation is a demographically young population, with significantly more children and teenagers than the United States as a whole.
- Females on the Navajo Nation outnumber males by 4%. In the United States the spread is 2%. This disparity may be due to a number of possibilities: longer than average life expectancy among Navajo women, higher mortality rates among males, or the seasonal out-migration of males to find employment. If the numbers are broken down further, the differences between males and females become somewhat more pronounced. Females make up 58% of the over-65 population, and females over 65 make up 11% of the total population.
- The Navajo Nation has a divorce rate five times lower than the United States average. However, the percentage of currently married Navajos is 24%, less than half that of the United States, where 59% are married.
- Approximately 10% of US citizens are military/service veterans. Among Native Americans as a whole, 12% are veterans; for Navajos living on reservation lands only 4 -7% are veterans.⁶
- 15% of the Navajo population reported itself as disabled. Children comprise 5% of the disability group.

⁵ This report uses the conservative persons per bedroom (at 2 persons per bedroom) whereas the US census uses the liberal persons per room standard.—Functionally this means that if this report utilized the persons per room standard, the reported overcrowding rate would be higher than 39%.

⁶ US Census Bureau

- On the Navajo Nation, survey participants most commonly describe themselves as individuals rather than as a member of a family or other group. However, this category represents only a quarter of the population, with the next highest categories being “parents with children”, “adult children” and “parents living together”.
- The number of homes where the primary household description is “grandparents with children” is 4.2%. This is close to, but lower than, the national average, in which approximately 5-6% of children live primarily with their grandparents.
- The survey revealed a large percentage of persons reporting themselves as unemployed, slightly over 52%. This is congruent with other research, including internal Navajo documents, Bureau of Labor statistics, and 2009 US Census data. Approximately 12% of survey respondents reported part-time, self-, or other employment. Additionally, 2.5% reported working only seasonally with about 11% of the population reporting being retired. 22% reported being employed full-time.
- The percentage of Navajo Nation earners making between \$15,000 and \$35,000 per year exceeds the US population as a whole. But dramatic disparities are found at the low and high ends of the spectrum. Over 70% of Navajo Nation residents report making less than \$15,000 annually, while less than 12% report earnings over \$50,000. In contrast, 51% of the US population as a whole has an individual income over \$50,000 per year.
- The household income data suggests that while there are still a significant number of households (24%) reporting an annual income of less than \$10,000, there are also a considerable number of households in the mid-range income brackets. Approximately 33% of households earn between \$25,000 and \$99,000 per year.
- Individuals in the 20-44 age cohort comprise the largest segment of the population. Since 1990 the 45-64 age cohort has experienced the largest relative growth, indicating that the Navajo general population is aging.

- The majority (59%) of Navajo Nation housing structures is single-family homes, 17% are mobile homes, and 11% are traditional Hogan's.
- 80% of homes are occupied by owners; the remaining 20% are occupied by non-owners (but not necessarily renters). The ownership rate of Navajo Nation residents is significantly higher than the national rate where only about 66% of the population owns a home.
- 90% of applicable households reported paying no monthly mortgage or rent, which is much higher than the national rate of 23%.
- 89% of households on the Reservation are heated by wood or pellet stoves. Only 2% of homes nationwide use on-site heating.
- 80% of homes are powered by a public electric utility whereas contrasted with 98% of US homes serviced by public utility electricity.
- Over half of households in the Navajo Nation have access to a public water supply, while nearly one third of households require water transportation/hauling for domestic purposes.
- Half (51%) of all individuals living within Navajo tribal lands reported having incomplete bathroom facilities and more than half (55%) reported incomplete kitchen facilities. In the United States as a whole, 99% of housing units possess complete bathroom and kitchen facilities.⁷
- Homes within the Navajo Nation are generally smaller than the average home in the United States. Navajo Nation homes have a median of 3 rooms, while the U.S. median is 5.4 rooms. 24% of homes in the Navajo Nation have only one room, compared with the US in which one-room homes account for only 1% of housing stock.
- With regard to housing condition, more than half of individuals residing in the Navajo Nation live in structures reported to be dilapidated or requiring serious repairs. Only 44% of the population lives in a dwelling that needs no repairs or minor

⁷ The survey questionnaire defined complete plumbing facilities as having hot and cold piped water, a flush toilet, and a bathtub or shower. Complete kitchen facilities were defined as having hot and cold piped water, a range or cook stove, and refrigerator.

repairs. The Census Bureau's 2009 American Home Survey shows only 5% of US homes require serious repairs.

- 10% of individuals reported needing household improvements for handicapped access and 54% reported needing some basic safety improvements.
- Hogan's were in generally worse condition than other housing types but had a relatively higher percentage of complete bathrooms and kitchens than other types.
- On the Navajo reservation, 20% of elders live alone while another 15% live in crowded dwellings. Overall, the percentage of elders living alone is considerably lower than the national average, which is closer to 30%.
- 5% of all children on the reservation live in housing classified as "available shelter," which is defined as non-typical and non-standard housing of the lowest quality. This housing is lower quality than tents or shacks and may be interpreted to indicate a possibly desperate housing situation.
- The rate of unemployment among single men and women is lower than the Navajo Nation's average as whole.

PART 2. CHAPTER 2. FACTORS CONDITIONING HOUSING NEED

There are a number of factors that affect housing need on the Navajo nation, including: spatial patterns and geographic dispersal across the reservation, affordability of housing, existing housing conditions and inventory, the state of the existing real estate market, and housing type preferences among Navajo Nation citizens.

After examining over 11,000 data points concerning housing conditions it was concluded, with one exception, that there were no distinct patterns to housing conditions on the Reservation. That is, dilapidated homes, homes needing major repairs, and housing in good condition were found throughout the reservation with no distinct pattern emerging, except that generally there were more homes in good condition in and around urban/municipal areas.

Because the federal government uses a relatively rigid and uniform standard for defining affordability (30% of Area Medium Income (AMI)) that fails to take into account unique local economic, fiscal, and cultural

conditions, this report developed a customized affordability index for the Navajo Nation that more closely reflects actual conditions on the Reservation. This customized index accounts for wealth accumulation, existing wages, the local real estate market, unique expenditure patterns of Navajo citizens living on the Reservation (e.g. high transportation and utility costs), cultural factors, and special land ownership conditions. The resultant table (below) suggests that the federal standards for affordability may not be appropriate for the Navajo Nation.

Table RS. 1 – Mortgage potential under revised affordability index

	Family of 4 (18% Threshold)	Family of 4 (30% Threshold)
Low Income (25th percentile)		
Household Income	\$11,150	\$11,150
Affordable Monthly Shelter Payment	\$166	\$279
Mortgage Potential	\$24,900	\$41,900
Median (50th percentile)		
Household Income	\$19,180	\$19,180
Affordable Monthly Shelter Payment	\$285	\$479
Mortgage Potential	\$42,900	\$72,100
High Income		
Household Income	\$31,510	\$31,510
Affordable Monthly Shelter Payment	\$469	\$788
Mortgage Potential	\$70,500	\$118,400

After affordability, the state of the local real estate market is considered. Real estate transfers on the Navajo Reservation are rarely of the same kind as those that take place off of the reservation. The transactions take considerable amounts of time, involve multiple agencies, are difficult to get banks to participate in because values are difficult to establish due to a dearth of transactions and sometimes involve trust land which is hard to collateralize. Although inroads are being made through various programs to facilitate standard financing of, the market on the reservation is still considered unique.

Another condition affecting housing need is the actual preference of the citizens themselves. To determine these preferences, the consultant team employed two sources. The first is recently completed

ethnographic surveys discussing housing preference and family configurations (included in the appendices). The second is an on-site preference survey the team conducted at regular Chapter meetings at four locations. Results from that survey effort indicate a majority of residents prefer to live in a single family home but 18% would like to live in a mobile home or other moveable housing type. Most residents prefer a house slightly larger than their current home. Most Navajos currently live in a home of three rooms or less; a majority of these homes are considered crowded. Just over 50% of Navajo citizens would like to live either in the same home or on a lot very nearby their extended family. Most citizens would prefer to own a home on their historic/ancestral lands.

The following list highlights additional key findings from Part 2. Chapter 2:

- The median home value within the Navajo Nation (\$63,500) is roughly one-third of the national median (\$185,000). 70% of homes in the Navajo nation are valued at less than \$100,000, whereas 76% of US homes are worth more than \$100,000.
- NHA manages 8,493 housing units, 4,421 of which require extraordinary maintenance or modernization.
- The majority of respondents prefer to live in single-family dwellings. Additionally, 18% of respondents indicated they would prefer to live in a mobile home. Only 4% of individuals want to live in multi-family homes and 4% want to live full-time in a traditional Hogan-style home.
- On average there were 1.3 people per room, which is 0.5 higher than the preferred average ratio of 0.8. The survey showed that 84% of individuals preferred a home that was larger than their current home. Individuals preferred to have an average of 2.3 additional rooms. 75% of surveyed individuals lived in homes containing four or less rooms, while 57% of respondents preferred homes with five or more rooms. The vast majority of individuals prefer to live on their own land and in a home that they own. Only 10% indicated they did not want to live on their own land, and only 7% preferred to rent or own in common.

- 42% of respondents prefer to live in close proximity to their extended family, either in the same dwelling or on the same lot. 27% preferred to live in the same area as their extended family but would like to have their own dwelling and lot. 31% indicated it did not matter where their extended family lived.
- One quarter of the individuals surveyed indicated they would not or could not sustain increased housing payments for better housing. 43% would be willing to pay more if it meant better housing for their immediate family and 10% would pay more if it would help disadvantaged members of their community.

PART 2. CHAPTER 3. HOUSING NEED ON THE NAVAJO NATION

The methodological approach to determining housing need in the Navajo Nation Reservation required a three step process. First, existing housing stock was considered by condition (physical conditions analysis). A criteria matrix was developed to determine whether existing housing units needed to be repaired, replaced, and/or relocated. The results are as follows:

Table RS. 2. Remedy for Existing Housing

Remedy Type	Number of Remedies ⁸
Replace	14,000
Replace and Relocate	4,900
Potential Repair / Relocate	4,400
Repair	34,300
No Action – Standard Condition	6,500

Second, the analysis considered existing housing units in terms of capacity – that is, how many persons units can hold without being overcrowded. The standard for overcrowding was relatively high – the persons per bedroom approach (PPB) was used so that the overcrowding threshold was reached in a home if there was more than 2 persons per bedroom. This analysis revealed that approximately 70% of homes do not require a remedy for overcrowding. However, the remedy required on the other 30% of housing units is significant. The results are presented in the following table:

⁸ Figures have been rounded to the nearest 100

Table RS. 3. Definition of additional Housing units needed due to overcrowding

Remedy Type	Number of Remedies
1 New Housing Unit	7,500
2 New Housing Unit	5,900
3 New Housing Unit	1,800
Room Expansions	8,500
No Action	44,500

The combined results of the physical and capacity analyses are as follows:

Table RS. 4. Combined Remedy Total

	Condition Related	Capacity (overcrowding) Related	Total
Total New Units/Replacements	18,900	15,200	34,100
Total Potential New Units/ Repairs	4,400	0	4,400
Total Repairs	34,300	0	34,300
Total Expansions	0	8,500	8,500

The third and final tier of the analysis considered the type of units that should be produced. Demographic information and special population consideration were used to determine three basic housing unit styles (elderly units, family units, and flexible units), as well as the number of bedrooms needed by category type. The results are as follows:

Figure RS. 5. Housing Unit Type Preferences by Household Composition

Style Preference	Home Type			
	Single Family	Mobile	Hogan	Multi-Family
Elderly	32%	18%	25%	29%
Family	48%	45%	75%	43%
Flexible Units	20%	36%	0%	29%

The data was then used to examine the preferences of the elderly and families in order to determine adequate home size.

Table RS. 6. Housing Unit Size by Household Composition

Number of Bedrooms	Percent of Units by Number of Bedrooms				
	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom	5 Bedroom
Elderly	24%	28%	4%	4%	40%
Family	20%	18%	24%	25%	14%
Flexible Units	22%	33%	19%	11%	15%

In total about 90% of the existing housing stock on the Navajo Reservation requires some form of remedy ranging from minor repairs to complete replacement. Added to that, is need for another 15,200 new units and 8,500 expansions to alleviate overcrowded conditions.

In total, this analysis estimates transforming the Navajo housing stock from its current condition to an overall satisfactory level for every citizen living on the Navajo Reservation will cost between \$7.9 and \$8.9 billion dollars.

The majority (88%) of costs are a result of constructing new units to alleviate overcrowding and dilapidated physical structures (i.e. homes that are beyond repair and need to be replaced). Repairs and expansions occupy a relatively small portion of the total costs at only about \$1 billion. But the construction of single family, detached housing units is the largest contributor to estimated construction costs, at \$5.8 billion, comprising three quarters of the total costs. The following table clearly outlines the gross cost estimates.

Table RS. 7. Estimated Total Construction, Repair and Expansion Costs

New Units	Total Costs
Single Family	\$5,880,470,000
Mobile/Manufactured	\$836,420,000
Hogan	\$32,000,000
Multi-family	\$184,660,000
Total New Units	\$6,933,550,000
Repairs	\$600,250,000
Expansions	\$340,000,000
Potential Repairs/Replacements	\$77,000,000 - \$1,109,680,000
Grand Total	\$7,950,800,000 - \$8,983,480,000

The following list highlights additional key findings from Part 2. Chapter 3:

- 63% of the dilapidated homes are older than 30 years, and 75% of homes older than 30 years require at least one major repair. Only 15% of 30 year or older homes do not require any major or minor repairs
- Over 18,000 units need to be replaced, nearly 5,000 of which may also require relocation due to lack of nearby infrastructure. 34,000 units are in need of significant repairs. Only 6,500 units are in good enough physical condition to warrant no action.
- 70% of homes do not require a remedy to correct an overcrowding issue. To remedy overcrowding, 12% of homes would require the construction of another new housing unit, 5% of homes would require two new housing units, and a small percentage would require three new housing units to accommodate all of the people that are currently living in a single structure. 13% of homes simply need additional rooms built onto an existing structure.
- Combined, the need analysis shows that the Navajo Nation is in need of 34,100 new units, 4,400 potential new units or repairs, 34,300 repairs and 8,500 unit expansions. 45% of the demand for new units originates from overcrowding and the remaining 55% is due to the poor physical condition of the homes.

PART 2. CHAPTER 4. RECOMMENDATIONS

Chapter 4 contains extensive narrative and detail regarding next steps and recommendations, but a summary list of those goals ranked in short and long term follows:

Short-term goals and activities

- Identify the key interests and participants of an Interagency Housing Task Force, begin initial meetings and establish joint/cooperative mission
- Conduct an enhanced housing preference survey
- Close information gap through survey or other mechanism regarding houselessness/homelessness and seasonal workers/migration
- Develop a scope of work for Housing Master Planning Project
- Identify specific fields for staff training (e.g. project management, and inter-agency cooperation)
- Develop in-house scholarship program for organizational development professionals
- Conduct field architectural/condition analysis of repairable housing (sample)
- Initiate policy inventory to better understand what existing policies may facilitate or impede the Master Planning Effort
- Conduct a workforce readiness assessment – that is, what construction and other professional resources are currently available on the Reservation. What is their capacity?
- Begin a community/public relations and outreach effort to increase awareness of the Housing Needs Assessment and brand the upcoming Master Planning project and increase community awareness
- Conduct a technology audit – to determine whether existing technology platforms have the capacity to manage large scale housing remediation efforts
- Identify and attend relevant workshops and conferences – e.g. the Community Land Trust
- Analyze organizational capacity for construction delivery
- Research items
- Initiate an existing construction pace and organizational capacity audit
- Conduct comprehensive Reservation-wide market study
- Explore alternative programs for financing including community land trusts
- Finalize and codify the customized affordability standard introduced in this report

Long-term goals and activities

- Finalize Housing Master Plan documents
- Develop community outreach/public relations campaign to assist with citizen recruitment into home ownership/construction programs and increase awareness of the programs long-term goals
- Develop loan fund strategy and capitalize loan fund
- Implementation of ownership/lending training programs for NHA and other agency staff as appropriate
- Categorically define housing style and type categories, create architectural inventory
- Create Individual development
- Finalize a construction pace schedule
- Design and administer full homeownership training program
- Full construction workforce training programs in place
- Full organizational and staff development training programs in place
- Development of full policy inventory for managing private property including eviction and foreclosure, taxing, easements, and title security
- Building a successful mortgage and payment history
- Achieve federal agency adoption of a customized affordability standard
- Produce comprehensive policy category
- Housing being built at pace and prioritized for those in greatest need – e.g. special populations groups, those currently living in hazardous or dilapidated housing.
- Optimize internal process to support operational effectiveness to meet capacity.

PART 1.

INFORMATION INTEGRITY

PART 1. INTRODUCTION

The purpose of Part 1 of this report was to conduct a comprehensive investigation of the data and survey conducted by the NHA in 2009 and 2010. What follows is a technical analysis of the information quality and information integrity. Although some of the survey information referenced in Part 1 of this report may be of interest, the primary purpose of Part 1 is to vet and validate the quality and reliability of the information itself. The analysis of population characteristics and housing need data is thoroughly undertaken in Part 2 of this report.

PART 1.

CHAPTER 1.

NAVAJO NATION IN-HOUSE SURVEY;
METHODOLOGICAL QUALITY REVIEW

CHAPTER 1. INTRODUCTION

In 2008 the Navajo Housing Authority determined to undertake a demographic and housing survey (NHA Survey) of Navajo Nation households. After project startup and training was completed, the survey was conducted from January through March 2009. Neither the millions of points of data collected in this survey nor the survey methodology itself had been thoroughly analyzed prior to the effort demonstrated by this report. Accordingly, the purpose of this section is to thoroughly analyze the quality and integrity of the survey instrument, delivery, and resultant databases. This analysis is done to assure that results drawn from the NHA Survey can be considered reliable and that the assessment of housing needs flowing from the findings in Part 2 of this report can be considered accurate and credible.

QUALITY ASSURANCE PLAN

A quality assurance plan is a data management program that encompasses all aspects of data analysis within a scope of work for the purpose of ensuring sound data interpretation. The quality assurance plan combines technical analysis, qualitative methods and human analytics, and incorporates multiple software tools, analysis techniques and visual inspection to ensure that outlying or illogical values are not included in the analysis.

The quality assurance plan for this project incorporates the following:

- Analysis and inspection of data from numerous sources including, the primary data source of the NHA Survey contained in the People Data Systems (PDS) database, U.S. Census Bureau (Census Data, American Community Survey Data, and American Housing Survey Data), GIS layers and shapefiles, Navajo Housing Authority, and Navajo Partnership for Housing.
- Standard statistical and database validation techniques.
- Visual inspection and cross-referencing of information from primary data sources.
- Error identification and tracking.
- Multiple additional levels of analysis and comparison, including but not limited to:
 - Supplementary, targeted survey sampling.
 - Internal data integrity cross-tabulations.
 - Key indicator cross referencing.
 - Geographic and remote sensing analysis, where possible and appropriate.

VALIDITY OF SAMPLE SIZE

There are two typical methods to gaining information about a population of people: taking a census and taking a survey. The goal of a census is to count the entire population; a survey captures a portion of a population as a representative selection for the entire population. Using survey results to draw conclusions about an entire population requires that the survey size be large enough to accurately represent that population. For example, collecting one hundred surveys from a city of one million would not be adequate to represent that population, but one hundred surveys from a town of one thousand might be enough. The number of people from whom we want to get survey responses is referred to as the sample size.

It should be noted that an adequate sample size does not necessarily equate to a valid survey. Validity is dependent upon the amount of data gathered as well as the quality of that data. Survey size considerations are discussed in this section while the quality of the Navajo Housing Authority (NHA) Survey is discussed in later sections of this report.

There are a number of different methods for determining if the NHA Survey sample size will accurately represent the population. Sample size determination for a given population is influenced by two factors: the desired confidence interval and the desired margin of error. The confidence interval refers to the estimated range of values being calculated from a given set of data. The margin of error is a measurement of the accuracy of the survey results; the +/- numbers that follow the confidence interval.

The general formula for determining an unknown sample size is:

$$n = \frac{Z^2 pq}{e^2}$$

where Z^2 is abscissa of the normal curve, p is estimated proportion of an attribute in a population, q is $1-p$, and e is the desired level of precision (margin of error).

Assuming a 95% confidence interval and a +/-% margin of error, the simplified formula for finding a valid sample size is:

$$n = \frac{N}{1 + N(e)^2}$$

where N is the known population and e is the desired precision level.

For large unknown populations, statistical validation requires a minimum sample of 385 records assuming a desired confidence interval of 95%, a +/- 5% margin of error and 50% response variability. The NHA Survey exceeds this size. If a population is known, the sample size calculation changes to ensure that enough responses are generated to create a statistically valid survey. The Navajo Office of Economic Development estimates that the 2010 population is 212,216. Sampling for a correct proportion assumes a 95% confidence interval and maximum variability within the population ($p=0.5$). Using the standard sample size equation, the household survey sample size needed to achieve a 5% margin of error would be 398. The survey sample size would need to be over 8,471 to achieve a more rigorous margin of error of 1%. The individual survey sample size would need to range between 400 and 9,550 given the same desired margin of error.

The following table outlines the required sample size for the 2010 population estimate of 212,216 for the Navajo Nation.

Table 1.1 Required Sample Size by Margin of Error

Margin of Error	Required Household Sample Size	Required Individual Sample Size
+/- 1%	8,471	9,550
+/- 3%	1,090	1,106
+/- 5%	398	400

In conclusion, the sample size undertaken in the NHA Survey for both the individual and households exceeds the validity standards, providing a confidence interval of 95% with a margin of error of 1%. In total, NHA surveyed 11,466 households composed of 31,166 individuals, far more than the sample size of 8,471 households and 9,550 individuals needed to achieve the best statistical validity standards.

DATA VALIDATION

RPI extracted and combined the entire universe of responses from the 2009 Navajo Housing Authority Survey and performed the following data validation techniques:

CROSS-SYSTEM CONSISTENCY ANALYSIS

Cross-system consistency checks ensure that the integrity of the data contained in the database is maintained across software platforms. This type of analysis is relevant when transferring data from one database program to another. Database programs are often designed with different end uses, and it is sometimes necessary to transfer data between programs to accommodate a different use for the data. In this case the data was extracted from People Data Systems (PDS), a program that specializes in the storage and organization of housing program data, but which has a somewhat limited capacity for numerical and statistical analysis. To facilitate statistical analysis, the master database was imported into a Microsoft Access (.mdb) format file for further analysis.

Using the data extracted from the PDS database, RPI constructed a master database for statistical analysis. The master database shows strong cross-system consistency checks. Full names matched in all but 3 fields between the two databases, resulting in compatibility greater than 99%. Records with identical names could skew compatibility between the databases. For example John Smith age 65 needs to be differentiated from John Smith age 42. However, invalid double records between the two databases occurred in less than 50 instances, translating to an error margin of less than half of one percent. In other words, there were less than 50 instances where the number of times a name appeared in the PDS data base did not match the number of times it appeared in the extracted database.

Table 1.2 Cross-System Consistency Checks

Total Number Of Household Names in PDS	11,466
Total Number Of Household Names in Master DB	11,459
Difference	5
False Double Records	46
Total Records in Master DB	11,413
% False	0.40%

Because the original database is nearly identical to the RPI constructed database, all further analysis was performed using the RPI constructed database.

BATCH TOTAL ANALYSIS

Batch total analysis checks for blank or missing records in a database. Too many blank or missing records can affect the overall validity of either specific variables or an entire database. Batch total analysis weighs the blank records in any given field against the total number of survey responses to determine whether the number of blank records in a field will affect the statistical validity of an analysis using the field's contents.

After considering fields with blank or missing values, only three survey fields in the RPI constructed database for the household survey did not exceed a valid sample size (Homeless Last Stay, Individual Expenses, and Homeless Duration). This did not pose a significant challenge because analysts were able to work around them (utilizing other, similar, properly populated fields), although it will be noted that some additional analysis of homelessness on the Navajo Nation should probably be undertaken prior to finalizing a housing plan.

With a more rigorous 1% margin of error, 12 of the 95 household survey fields are under-responsive; these include: household description, vocation, safety needs and handicap needs. A negative response in the handicapped and safety needs fields indicates a lack of needed improvements. For safety needs, another parallel field is present from which safety need data can be culled. For the household description and vocation fields, a 1% margin of error is not achievable; if this level of rigor is required, additional surveys will need to be conducted. However if the widely accepted 5% margin of error is determined to be acceptable,

additional surveying is not required. It is our opinion that a 1% margin of error is unnecessary in these fields.

Important Note: Batch total analysis only counts responses to questions, and does not account for responses that fall outside of the range of normal and acceptable responses thus skewing the analysis results.

UNIQUENESS ANALYSIS

It is important to ensure that the database is not composed of many duplicate surveys. A large number of duplicate answers would skew a study because single responses would carry a larger weight. Because the Navajo Housing Authority Survey database does not assign a unique value to each survey, differing fields must be crosschecked against each other to ensure that responses with the same name are not discarded and there is not a large presence of potential duplicate responses. There are 876 households that have duplicate full names; however, in any given population, reliance on the full name alone is not enough to ensure uniqueness. There are 249 households that have both duplicate names and duplicate ages, and 90 records where name, age, latitude and longitude were duplicated. Thus potential duplicate records compose less than .01% of total records in the household database. Upon further investigation, not all fields for 90 duplicates were identical. For this reason these records were not eliminated from further analysis, and only records deemed to be absolute duplicates were omitted.

CARDINALITY ANALYSIS

Cardinality checks ensure that the responses to certain survey questions have a valid number of responses in other related survey questions. For example, if repairs are listed in the required repairs field, the housing condition field should have a corresponding value that expresses a general need for repairs.

The highest number of non-cardinal responses occurred when checking unemployed households against their reason for unemployment. For the purposes of this Housing Needs Analysis, this was not a concern because further analysis only relied on working status, not the reasons for being unemployed. Non-cardinal responses were only a concern for homes that indicated major repairs; since subsequent repairs were not listed.

Further analysis assumed that the nature of these repairs was unknown. These responses were not discarded because data contained in other fields was pertinent to other areas of analysis. This did not significantly hinder further analysis concerning housing conditions.

Table 1.3 Cardinality Checks

	Total Positive Responses	Non-Cardinal Responses	% Non-Cardinal
Unemployed/Reason for Unemployment	4,953	2,821	57%
Housing Condition/No Repairs Needed	1,425	0	0%
Housing Conditions/ Major Repairs Needed	4768	340	7%
Homeless/Last Stay	39	5	13%

RANGE/LIMIT ANALYSIS

Range checks and limit checks are performed on numeric fields to ensure that the answers given correspond to physical realities of the type of information the question is asking. Range checks ensure that responses fall into a predetermined range of values; limit checks only ensure that a response is not too high or too low. For example, a limit analysis on the head of household age should show that individuals are between 18 and 125; values outside of this are considered invalid.

Primary range checks on the NHA Survey data show that the majority of numerical data in the survey is valid, only 2% of age responses were invalid (typically entered as 999). There are enough acceptable responses to ensure statistically valid results. 22% of households reported an annual household income or net income of less than one thousand dollars. More than 95% of responses in the annual property insurance and mobile expenses fields were less than one dollar⁹. The low values reported in these fields are a product of the unique housing circumstances present on the Navajo Nation. The majority of homes do not pay any property taxes, with the potential exception of a few homes that are privately owned in land grant areas. The majority of the remaining fields contain numeric responses within valid ranges and limits. The following table highlights these issues.

⁹ This analysis is only applicable to population that would pay property insurance or mobile expenses, and does not include the portion of the population that rents.

Table 1.4 Range/ Limit Checks

	Maximum Value	Minimum Value	Accepted Range High Value	Accepted Range Low Value	Number of Responses Outside Range	Percent Valid
Age	999	1	125	18	226	98%
Household Expenditures	33,340	0	100,000	200	11,414	0%
Household Income	460,000	0	1,000,000	1,000	2,575	78%
Household Net Income	460,000	-2,536	1,000,000	1,000	2,577	78%
Mortgage	170,000	0	3,000	0	21	100%
Rent	1,400	0	2,000	0	0	100%
Property Insurance	20,000	0	5,000	25	9,102	2%
Mobile Expenses	230,000	0	30,000	25	11,363	1%
People in Dwelling	76	0	25	1	802	93%
Livable rooms	50	0	20	1	1,213	89%
# Bed Rooms	80	0	10	1	1,814	84%
Years in Unit	380	(1)	125	1	4	100%
Years in Community	940	0	125	1	6	100%

DATA TYPE ANALYSIS

Data type analysis ensures that fields recording answers to survey questions which require numeric responses contain only numerals entered, and fields recording answers to questions that necessitate text contain only text based responses. For example, this test ensures that the letter “o” did not get entered instead of the number zero. All fields in the PDS and RPI constructed databases were determined to hold the appropriate type responses.

CONSISTENCY ANALYSIS

Consistency analysis checks whether or not related records contain appropriate corresponding values. For example, records that list an individual as a renter should not have a value of “not applicable” listed in the monthly rent field. The PDS and RPI constructed databases were determined to have very strong consistency, with very few inconsistent responses. This suggests that the related survey questions were understood and appropriate corresponding answers were given to

related questions. The following table highlights the results of the consistency analysis:

Table 1.5 Consistency Checks

	Total Responses	Invalid Responses	Percent Valid
Owners Renting	9,094	0	100%
Renters with Mortgage	2,365	2	99%
Owners with Property Insurance	9,094	0	100%
Renters with Property Insurance	2,365	2	99%
Multi-Family with Family Size <1	4,516	0	100%
Owners with Rental Assistance	9,094	0	100%
Renters with Purchase Assistance	2,365	2	99%

FORMAT ANALYSIS

Format checks are similar to data type checks, however some questions require a higher level of scrutiny to ensure that the data can be analyzed. Instead of only checking for text or numerals, format analysis ensures that numerical and text data is in an appropriate format. For example, yes/no fields should only have yes or no as an entered response, and date fields should have proper date formatting.

All fields that required responses to be recorded in a percentage format contained values between 0% and 100%, establishing a response validity of 100%. All date fields in the extracted database required responses of either “not applicable” or a four digit year. The vast majority of records recorded a “zero” instead of “N/A” or a four digit year. Despite the incorrect format, this did not present a significant challenge to further analysis because there were very few records that necessitated a year. This problem is strictly a formatting issue in which values were recorded as “zero” instead of “N/A”. A statistically insignificant number of “Yes/No” answers were invalid, thus “Yes/No” fields were suitable for further analysis.

Formatting for longitude and latitude revolves around achieving a desired level of geographic accuracy that is expressed in the number of decimal places listed in each response. A latitude and longitude coordinate accuracy to four decimal places was determined adequate for mapping

and geographic analysis. An accuracy of four decimal places establishes a record’s geographic location to within an 11 meter radius (a margin of error in geographic terms); a three decimal place accuracy sets a location to within 111 meters. Using data with low accuracy can make it difficult to determine the location of specific households. For example a 111 meter radius is too wide because numerous homes could be within the exact same radius. An accuracy of five decimal places, or a one meter radius, is good, but unnecessary. All longitudinal responses in the PDS and RPI constructed databases contained four or more decimal places; however 5% of latitudinal responses did not have at least four decimal places, so these records were omitted from geographic analysis. However, the remaining records in the database provided an adequate number of acceptable geographic responses, with over 11,000 accurate and specific points. The analysis results are summarized in the table below.

Table 1.6 Format Checks

	Total Responses	Invalid Responses	Percent Valid
Percent Fields			
Income Standard 1	11,459	0	100%
Income Standard 2	11,459	0	100%
Date Fields			
What Year Government Home Repair	11,457	11,457	0%
What Year Government New Home	11,459	11,458	0%
What Year Housing Assistance	11,457	11,457	0%
What Year HUD ¹⁰ New Home	11,457	11,457	0%
What Year HUD Rehab	11,459	11,459	0%
Latitude/Longitude Fields			
Latitude	11,013	516	95%
Longitude	11,016	0	100%
Combined Yes/No Fields	302,748	14	100%

SPELLING AND GRAMMAR ANALYSIS

Fields containing data recorded as text were checked for proper spelling and grammar, and very few fields needed correction. The majority of

¹⁰ Fields pertaining to HUD homes were 100% invalid because the survey targeted NHA homes not HUD homes.

abnormalities were related to names and locations which are not recognized by spelling and grammar software, so these records were not altered. Additionally, abbreviations and question-specific answers did not often align with traditional spelling and grammar standards; however responses that were appropriate for the context of the survey question and the database were not changed.

PHYSICAL RECORD INSPECTION

Because all statistical analyses and data summarizations rely on the digital transcriptions of the physical survey records, it is necessary to ensure that the electronic records accurately represent the physical survey results. Fifty random physical surveys were checked directly against the electronic records as entered into the PDS database. Nearly all physical responses matched their corresponding entries in the PDS database; the discrepancy rate was less than 1%. Because the physical inspection returned complete and consistent results, a high degree of confidence could be ascribed to the method used to import the physical records into the digital format.

CONCLUSIONS

All of our tests and evaluations conclude that the survey sample size and the integrity of the data base are sound and the information reliable. The few minor errors found in the database were deemed to either be fixable or non-threatening to the consistency of the remainder of the analysis.

SURVEY ADMINISTRATION AND INSTRUMENT ANALYSIS

The purpose of this section is to evaluate whether the survey instrument itself (i.e. the questionnaire) and the administration of the survey were undertaken so as to meet generally recognizable standards of quality.

Beginning in 2008 the Navajo Housing Authority (NHA) contracted with Tribal Data Resources (TDR) for the purpose of training survey takers and providing a software/database platform to enter, store, and extract survey data. Efforts to recruit surveyors began in late 2008 as the NHA started advertising through local media outlets, including print and television. Although the number of hires fluctuated somewhat throughout the process, there was an average of 160 surveyors employed during the process.

PERSONNEL HIRING & TRAINING

Each surveyor underwent the following checks prior to being hired:

- Initial in-person applicant screening
- Criminal background check
- Navajo and English language proficiency assessment
- Valid driver's license and auto insurance check

Surveyors also participated in a two-day intensive training course prior to field deployment. The President of Tribal Data Resources, Chris Anderson conducted intensive training modules for newly hired surveyors in mid-January of 2009. The training included comprehensive information regarding the purpose and intent of the survey, directives to ensure the survey script is delivered consistently, and instructions regarding how to properly define and mark survey responses. Eventually every survey taker was issued a handheld geographic positioning system (GPS) unit so that they could add a spatial reference to each questionnaire.¹¹ After training, each newly hired surveyor was assigned to a Housing Management Office (HMO) Chapter within one of the five territorial

¹¹ For the first three weeks of surveying, surveyors failed to capture GPS coordinates. However, beginning in the third week and continuing for three additional weeks, surveyors returned to the locations of previously conducted surveys and acquired coordinates.

Agencies. Each HMO then allocated personnel resources to the various chapters for surveying. Surveying activity continued until the end of March 2009. The following table documents the Agencies, Chapters, HMO's, and initial geographic assignment of surveyors:

Table 1.7 Navajo Nation Territorial Agencies and HMO Chapters

Agency	Number of Chapters	HMO Chapters	Initial Number of Surveyors
Eastern Agency			
28 chapters			
Alamo Chapter	Nahodishgish Chapter	Crownpoint	22
Baahaali Chapter (Breadsprings)	Nageezi Chapter	Pinehill	4
Baca Chapter	Ojo Encino Chapter	Thoreau	12
Becenti Chapter	Pinedale Chapter	Tohajiilee	4
Canoncito Chapter	Pueblo Pintado Chapter		
Casamero Lake Chapter	Red Rock Chapter		
Chilchitah Chapter	Smith Lake Chapter		
Church Rock Chapter	Standing Rock Chapter		
Counselor Chapter	Torreon Chapter		
Huerfano Chapter	Whitehorse Lake Chapter		
Iyanbito Chapter	White Rock Chapter		
Lake Valley Chapter	Manuelito Chapter		
Chinle Agency			
16 chapters			
Black Mesa Chapter	Nazlini Chapter	Chinle	11
Blue Gap/Tachee Chapter	Rock Point Chapter	Pinon	12
Forest Lake Chapter	Rough Rock Chapter		
Hard Rock Chapter	Round Rock Chapter		
Low Mountain Chapter	Tsaile Chapter		
Lukachukai Chapter	Whippoorwill Chapter		
Many Farms Chapter			
Ft. Defiance Agency			
29 chapters			
Cornfields Chapter	Nahata Dzill Chapter	Dilcon	15
Coyote Canyon Chapter	Naschitti Chapter	Ft. Defiance	14
Crystal Chapter	Oak Springs Chapter	Ganado	16
Houck Chapter	Rock Springs Chapter	Navajo	11
Indian Wells Chapter	Sawmill Chapter	Tohatchi	26
Jeddito Chapter	St. Michaels Chapter		
Kinlichee Chapter	Steamboat Chapter		
Klagetoh Chapter	Teesto Chapter		
Lupton Chapter	Twin Lakes Chapter		
Manuelito Chapter	White Cone Chapter		
Mexican Springs Chapter	Wide Ruins Chapter		
Shiprock Agency			
18 chapters			
Aneth Chapter	Red Valley Chapter	Ojo Amarillo	11
Beclabito Chapter	Sanostee Chapter	Shiprock	26
T'iis Tsoh Sikaad Chapter	Sheep Springs Chapter		
Cove Chapter	Sweet Water Chapter		
Gadii' Ahi Chapter	Teec Nos Pos Chapter		
Tse Daa Kaan Chapter (Hogback)	Two Grey Hills Chapter		
Mexican Water Chapter	Upper Fruitland Chapter		
Nenahnezad Chapter	Newcomb Chapter		
Red Mesa Chapter			
Western/Tuba City Agency			
17 chapters			
Birdsprings Chapter	Lechee Chapter	Kayenta	12
Bodaway/Gap Chapter	Leupp Chapter	Tuba City	18
Cameron Chapter	Navajo Mountain Chapter		
Chilchinbeto Chapter	Oljato Chapter		
Coalmine Chapter	Shonto Chapter		
Coppermine Chapter	Tolani Lake Chapter		
Dennehotso Chapter	Tonalea Chapter		
Inscription House Chapter	Kaibeto Chapter		

At its conclusion, surveyors had collected responses from 11,466 unique households and 31,166 unique individuals. Prior to completion of the survey, the NHA hired eight data entry staff and conducted a two-day data entry and software system training session conducted by Tribal Data Resources. Data entry efforts continued until the first week of July 2009. NHA professionals were also required to cross-check and correct address abnormalities and determine the actual physical site addresses where only PO boxes were recorded on the survey.

After data entry was completed, the People Data Systems software platform was utilized as an information storage and retrieval software platform. This system was selected because it has numerous capabilities with regard to data storage, security, and mapping, and simplifies running basic and routine reports on the data.

Hardcopy survey instruments and other paper and electronic products associated with this survey effort are still in the process of being collected, bound, stored, and categorized. This process is approximately 20% complete as of this writing.

SURVEY INSTRUMENT

The survey instrument itself was initially modeled from the American Community Survey (ACS), formally known as the long-survey format) created by the US Census Bureau. The NHA Survey had several questions added/substituted from the ACS model, to better target specific Navajo Nation conditions. The instrument itself remained consistent throughout the process. It contained 52 categories of questions with 98 distinct data fields, yielding over 3 million individual pieces of information.

The survey instrument, having been modeled from an existing and widely tested device (i.e. the US Census) does not suffer from any profound errors. Nonetheless, the following criticisms can be taken into consideration and may account for some of the data discrepancies and omissions discovered during the validity analysis performed for this report.

- The survey instrument is extremely compact and in a small font, which may have increased the surveyor's difficulty in making correct entries, the possibility of accidentally checking the wrong box, and/or the likelihood of incorrectly following the question sequences during interviews.
- The survey instrument lacks adequate instruction and prompts, which may have increased the burden on survey interviewers to remember several categories of definitions, as well as the correct question sequencing.
- The survey instrument requires the survey interviewer to complete some calculations (e.g. HUD crowding). It may have been better to simply allow surveyors to enter these field responses separately and complete the necessary calculations after data entry.
- A number of blank or zero responses might have been avoided had open-ended questions been replaced with more structured multiple choice questions, e.g. income questions might have been structured into range categories such as: less than \$500 per month, between \$500 and \$1000, etc.

In conclusion the survey administration and instrument are considered to meet or exceed all expected minimums of professional surveying industry standards.

SPATIAL DISTRIBUTION OF NAVAJO HOUSING AUTHORITY SURVEY DATA

This portion of the analysis evaluates how well the Navajo Housing Authority household and individual survey (NHA Survey) responses were spatially distributed relative to the distribution of the population. It is important to evaluate whether geographic areas were under-represented or over-represented in the sample, because if either of these cases occur, the results of the NHA Survey could be skewed such that they are not representative of the Navajo Nation at large and may favor one or more areas of the nation at the expense of other areas. The spatial distribution analysis helps assess whether the results of the survey need to be weighted to correct for spatial inconsistencies, or whether additional analysis or corrections are necessary.

Ninety-five percent of the NHA individual survey responses contained geographic coordinates recorded in the field using a Global Positioning System (GPS) unit.¹² These coordinates were recorded so that the location of each survey response could be mapped to facilitate a spatial analysis of the distribution of these responses.

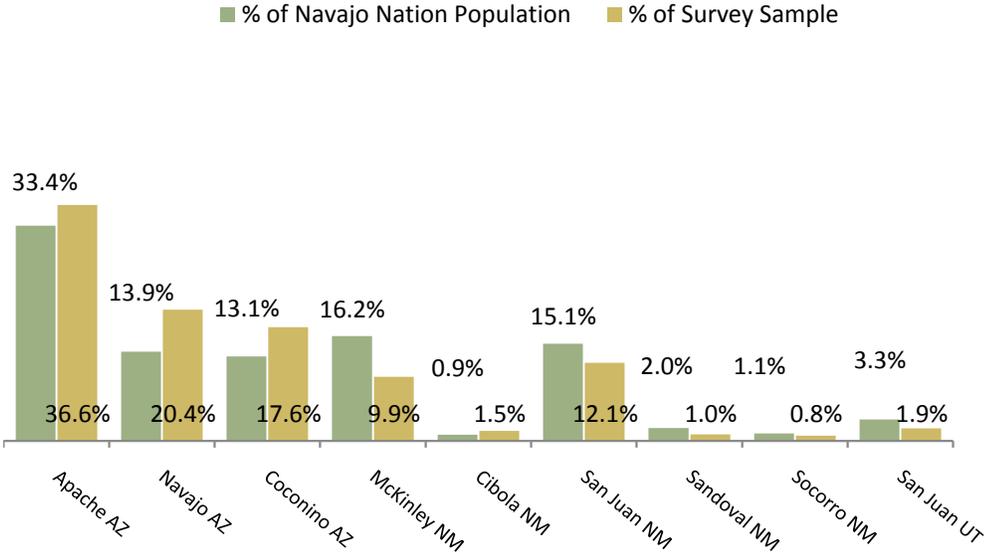
County boundaries were used to check how well the survey responses were spatially distributed according to geographic areas. In this case, county boundaries were deemed an appropriate geography because they align with state boundaries and divide the Navajo Nation into nine distinct areas. The use of county boundaries also allowed comparison of survey results with 2000 census data available for the Navajo Nation population in each county.

To check the spatial distribution of survey responses, we first calculated the percentage each county contributed to the total 2000 Census Navajo Nation population. Next, ArcGIS software was used to tabulate the number of survey responses in each county, thus determining the percentage of the total survey sample collected in each county. This

¹² For the first three weeks of surveying, surveyors failed to capture GPS coordinates. However, beginning in the third week, and continuing for three additional weeks, surveyors returned to the locations of previously conducted surveys and acquired coordinates.

which facilitated a side-by-side comparison of the spatial distribution of the 2000 population and the NHA Survey sample that is illustrated in the figure below:

Figure 1.1 2000 Navajo Nation Population and Survey Locations by County



Differences between the spatial distribution of the survey responses and the spatial distribution of the population from the 2000 census can be corrected by weighting the response data when doing calculations. Weighting factors are calculated according to the following formula

$$\text{weighting factor} = \text{population distribution} \div \text{survey distribution}$$

Table 1.8 State Scale Spatial Weighting Factors

State	Weighting Factor
Arizona	0.80
New Mexico	1.51
Utah	1.88

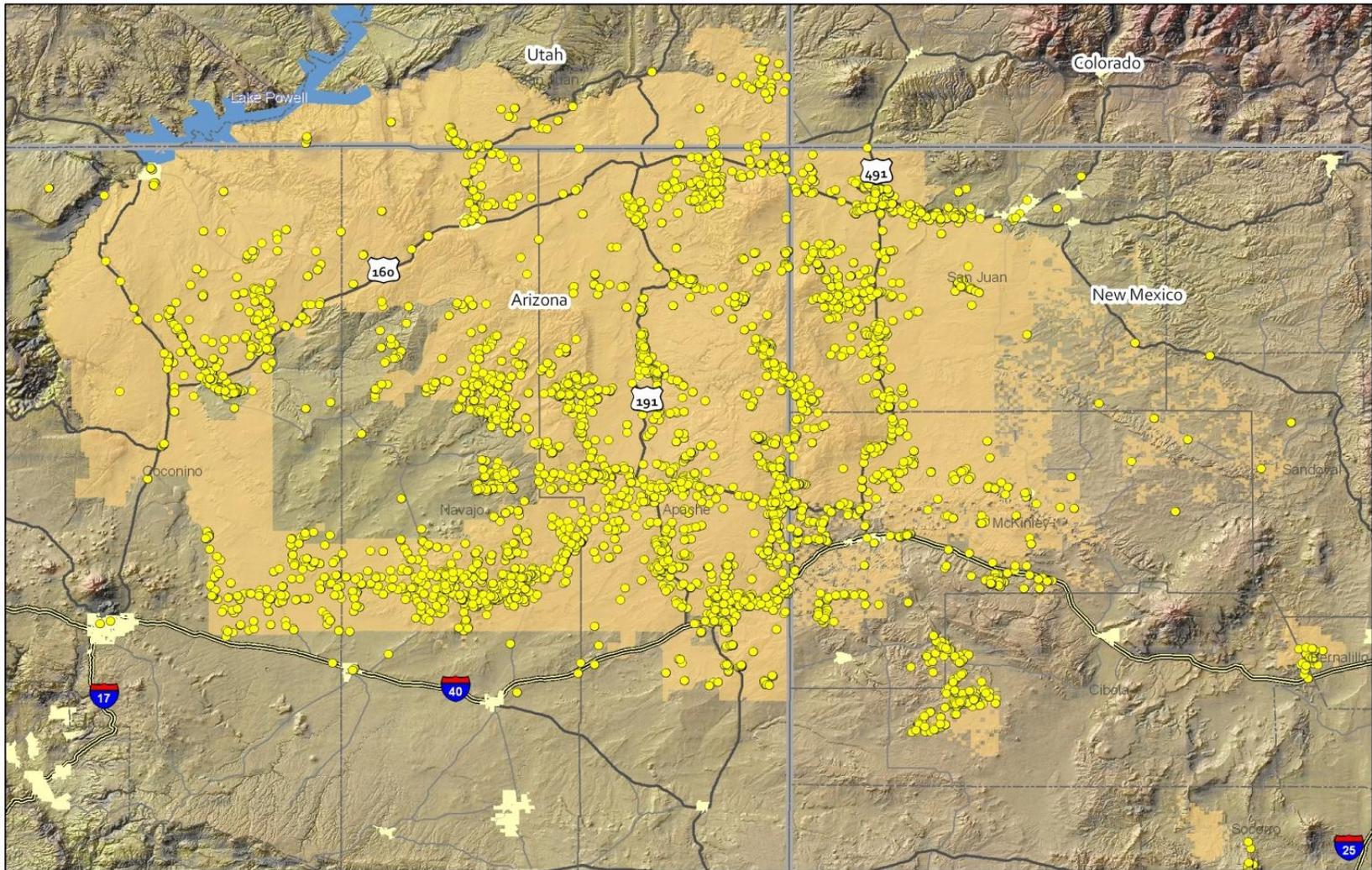
Table 1.9 County Scale Spatial Weighting Factors

State	Weighting Factor
Apache AZ	0.5
Navajo AZ	1.2
Coconino AZ	1.2
McKinley NM	1.0
Cibola NM	17.4
San Juan NM	1.1
Sandoval NM	8.2
Socorro NM	14.1
San Juan UT	4.8

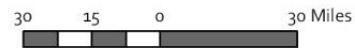
The findings from the spatial distribution analysis are summarized as follows:

- The NHA survey approximately represents the spatial distribution of the Navajo Nation population as a whole, meaning the survey is generally spatially representative.
- Because the survey sample focused on rural areas, not municipalities and population centers, the spatial distribution is not expected to perfectly mirror the distribution of the 2000 Census Navajo Nation population, which includes municipalities and population centers.
- The survey responses in the "checkerboard" areas of the Navajo Nation (in New Mexico) appear to have fallen short of representing the portion of the Navajo Nation population in New Mexico.
- Variability in the spatial distribution of survey responses can be further analyzed by correcting the census data to subtract the urban populations that were not included in the NHA Survey. Remaining imbalances in the spatial distribution of survey responses can be corrected by applying weighting factors to the calculation results.

Please note that the following map is shown at a very large scale and the locations of survey sites are only a gross approximation of the actual sites.



● Survey Locations ■ Towns and Cities ■ Navajo Nation □ Counties



KEY INDICATOR DATA SOURCE COMPARISON

In this section, key demographic, economic, and social characteristics from the NHA survey are compared with American Community Survey (ACS) data collected in Navajo urban areas and the Navajo Nation as a whole.¹³ **The purpose is to determine congruence with the Census Data, and also to explain possible deviations where they occur. Although the data presented in this section may be interesting in and of itself, the primary interest of this section is to further determine the validity of the NHA survey by cross checking it with other sources and rectify discrepancies between rural and urban data sets.** Additionally, results from ACS urban areas were cross-checked with the NHA survey, which may have skewed somewhat to rural populations. The ACS urban data presented in the following analysis contains data averages from Shiprock, Chinle, Tuba City, Kayenta and Fort Defiance. These cities were chosen because they represent the five largest population centers in the Navajo Nation.

By comparing the NHA survey data with ACS urban data, any inherent differences between urban and rural populations are highlighted. Comparing the NHA survey data with ACS data on the entire Navajo Nation can also bolster confidence in the NHA survey data, as well as highlight potential weaknesses in either of the data sources.

NHA survey data for gender differed very little from the ACS urban average and the ACS total nation. Both the ACS urban average and the ACS total nation show a slightly higher female population; the NHA survey data shows slightly higher female populations than both ACS metrics.

¹³ The US Census Bureau divides all areas into urban and rural. Urban areas are further divided into two subcategories – urban areas and urban clusters. Towns and cities in the Navajo Nation fall under the Urban Cluster definition. The Census Bureau defines Urban Clusters (UCs) as “densely developed territory that has at least 2,500 people but fewer than 50,000 people.” The Census Bureau first introduced the UC concept in order for Census 2000 to provide a more consistent and accurate measure of urban population, housing, and territory throughout the United States, Puerto Rico, and the Island Areas.

Table 1.10 Gender Comparison

	Navajo Urban Average	NHA Survey	Navajo Nation (ACS total Nation)
Male	49%	48%	49%
Female	51%	52%	51%

Age data from the NHA Survey shows that the Navajo Nation as a whole and its urban areas contain an older population than the ACS data presents. 68% of NHA Survey respondents were over the age of 20, whereas ACS data shows that 65% and of the urban and 62% of the total nation populations are over 20. The largest difference occurs in the 65 to 84 year age bracket, with the NHA Survey being 9 points higher than the ACS urban average and six points higher than the ACS total nation data.

Table 1.11 Age Cohort Comparison

Age Cohort	Navajo Urban Average	NHA Survey	Navajo Nation (ACS total Nation)
Under 5 years	9%	5%	9%
5 to14 years	15%	17%	18%
15 to 19 years	11%	10%	11%
20 to 44 years	36%	31%	32%
45 to 64 years	22%	23%	21%
65 to 84 years	5%	14%	8%
85 years and over	1%	<1%	1%

Potential explanations include:

- Employment opportunities are concentrated in urban areas, which is likely driving the concentration of working age populations in those areas.
- Lifestyle preferences. Older individuals desire homes in rural areas away from population centers.
- Cultural preferences. Older individuals may prefer to live in a more traditional manner in rural areas.

HOUSEHOLD TYPE¹⁴

NHA Survey data shows a higher percentage of non-family households in rural areas, seven points lower than the urban areas and four points lower than the ACS data. Here, too, the ACS data for the nation as a whole occupies a range between the urban and rural populations.

Table 1.12 Household Type Comparison

	ACS Urban Average	NHA Survey	Navajo Nation (ACS total Nation)
Family Households	78%	71%	75%
Non-Family Households	22%	29%	25%

Potential explanations include:

- Older individuals desire homes in more rural areas, and an older population may have a higher proportion of widowed individuals or households in which the children have moved to the employment centers or elsewhere.
- Households with families may prefer areas close to schools and other facilities that are present in urban areas.

HOUSEHOLD INCOME

Income data differs among the three data sources. Rural areas had higher percentages in the bottom three income categories and a significant difference from the urban average. Furthermore, only 21% of the NHA Survey population reported an income \$35,000 or greater, whereas over half of the urban population reported incomes greater than \$35,000. Census ACS data yields that in the Navajo Nation as a whole, 40% of the population has an income greater than \$35,000, which again presents a value between the urban and rural.

¹⁴ The US Census Bureau defines family as follows: A family is a group of two people or more (one of whom is the householder) related by birth, marriage, or adoption and residing together; all such people (including related subfamily members) are considered as members of one family. Beginning with the 1980 Current Population Survey, unrelated subfamilies (referred to in the past as secondary families) are no longer included in the count of families, nor are the members of unrelated subfamilies included in the count of family members.

Table 1.13 Household Income Comparisons

Income	ACS Urban Average	NHA Survey ¹⁵	Navajo Nation (ACS total Nation)
Less than \$10,000	19%	25%	24%
\$10,000 to \$14,999	6%	17%	9%
\$15,000 to \$24,999	15%	24%	16%
\$25,000 to \$34,999	11%	13%	12%
\$35,000 to \$49,999	16%	10%	14%
\$50,000 to \$74,999	17%	7%	13%
\$75,000 to \$99,999	8%	3%	7%
\$100,000 to \$149,999	6%	1%	4%
\$150,000 to \$199,999	2%	0%	1%
\$200,000 or more	2%	0%	1%

Potential explanations include:

- The lower incomes observed in rural areas could be driven by the predominance of rural areas being occupied by either retired or unemployed persons.
- Economic activity is generally concentrated in urban population centers, thus generating higher incomes for populations residing in urban areas.
- Income may be underreported in the survey for cultural and social reasons.

HOUSING UNIT TYPE

The rural portions of the Navajo Nation have a higher percentage of single-family homes and a lower percentage of multi-family dwellings than urban areas. Rural areas also have a much large portion of “other” dwelling units, which do not form a significant portion of the urban housing stock.¹⁶ In this instance total NHA data does not fall between the urban and rural ACS data.

¹⁵ Percentages differ from income figures presented earlier in this report, because income in Table 1.13 is household income as opposed to individual income as presented in other places in the report.

¹⁶ The other housing category includes tents, shacks, and other non-permanent, non-standard housing situations.

Table 1.14 Housing Unit Type Comparison

	Navajo Urban Average	NHA Survey	Navajo Nation (ACS total Nation)
Single Family	61%	59%	77%
Multi Family	12%	5%	4%
Mobile	27%	17%	19%
Hogan		11% ¹⁷	
Other	<1%	8%	<1%

Potential explanations include:

- Multi-family buildings are generally constructed in proximity to larger population centers with greater infrastructure.
- Hogan’s and dwelling units in the other category were found to be more likely to be constructed in rural areas, aligning with traditional lifestyle preferences of some Navajo’s who prefer living in low density population areas as opposed to municipal or urban areas.

HOUSING UNIT SIZE

Homes in rural areas are generally smaller than homes in urban areas. 75% of rural homes and 43% of urban homes have less than four rooms. The largest portion of urban homes have five rooms whereas the largest portion of rural homes have one room, and urban homes are more than twice as likely to have five rooms. Again, home size across the entire Navajo Nation is generally between rural and urban patterns.

¹⁷ Hogans are delineated as a specific housing category by the American Community Survey or US Census Bureau, only the NHA Survey makes this distinction

Table 1.15 Rooms per Housing Unit Comparison

Rooms	ACS Urban Average	NHA Survey	Navajo Nation (ACS total Nation)
1 room	11%	24%	26%
2 rooms	5%	14%	7%
3 rooms	7%	16%	8%
4 rooms	20%	21%	18%
5 rooms	42%	17%	26%
6 rooms	10%	5%	10%
7 rooms	4%	2%	4%
8 rooms	1%	1%	1%
9 or more rooms	0%	0%	0%

Potential explanations:

- Newer homes are more likely to be constructed in urban areas and are usually larger than older homes.
- Urban areas have a higher percentage of families and may desire larger homes.
- The generally wealthier urban population may exhibit a preference for larger homes.

HOUSING HEAT SOURCE

Rural homes are far more likely to rely on wood or pellet stoves for heating. Woodstoves heat 89% of rural homes, 54 points higher than urban homes, which rely on a greater variety of heating methods. 49% of urban homes rely on a centralized utility to provide heat, and only 9% of rural homes have access to centralized utility-based heating systems.

Table 1.16 Heat Source Comparison

	Navajo Urban Average	NHA Survey	Navajo Nation (ACS total Nation)
Utility gas	25%	3%	12%
Bottled, tank, or LP gas	14%	2%	14%
Electricity	24%	6%	11%
Fuel oil, kerosene, etc.	0%	-	0%
Coal or coke	1%	-	2%
Wood/pellet	35%	89%	59%
Solar energy	0%	-	0%
Other fuel	1%	-	1%
No fuel used	0%	-	0%

Potential explanations:

- Urban areas have a higher concentration of utility infrastructure that provides greater access to and easier expansion of existing utilities.
- It is cost prohibitive to develop significant utility infrastructure to service rural areas because of the dispersed nature of rural homes.
- Urban homes are generally newer and larger than rural homes, so they are more likely to require a more dispersed heating source than wood or pellet stoves can provide.
- Generally wealthier urban populations may exhibit a preference for the convenience of centralized utility-based heating options.

SAFE, DECENT & SANITARY

Rural homes have relatively fewer complete kitchens and plumbing facilities. ¹⁸ The rural populations have 37% more homes with incomplete plumbing and 41% more homes with incomplete kitchens than the rural areas

¹⁸ The survey questionnaire defined complete plumbing facilities as, hot and cold piped water, flush toilet, bathtub or shower, and complete kitchen facilities as, hot and cold piped water, range or cook stove and refrigerator.

Table 1.17 Complete Plumbing Comparison

	ACS Urban Average	NHA Survey	ACS Total Nation
Complete Plumbing Facilities	86%	49%	78%
Lacking Complete Plumbing Facilities	14%	51%	22%

Table 1.18 Complete Kitchen Comparison

	ACS Urban Average	NHA Survey	ACS Total Nation
Complete Kitchen Facilities	86%	45%	80%
Lacking Complete Kitchen Facilities	14%	55%	20%

Potential explanations:

- The increased access to centralized utility infrastructure that exists in urban areas facilitates the development of more complete kitchen and plumbing facilities.
- The newer homes in urban areas are more likely to have complete facilities.
- The relatively wealthier urban population is able to pay for complete facilities.
- Cultural or social norms could drive some preferences on whether complete facilities are important.

PART 2.

HOUSING NEEDS ANALYSIS

PART 2. INTRODUCTION

Part 1 of this report was exclusively interested in determining the quality and reliability of the NHA Housing Survey and its attendant data. Part 2 of this report makes a comprehensive analysis of the NHA Housing Survey results and other sources in order to ultimately determine housing need on the Navajo Nation. Part 2 is divided into four chapters: Survey Results Overview and Analysis, Factors Conditioning Housing Need, Calculating Housing Need, and Recommendations.

CHAPTER 1.

SURVEY RESULTS OVERVIEW & ANALYSIS

CHAPTER INTRODUCTION

The purpose of this section's analysis was to extract basic demographic and housing data from the NHA Survey in order to highlight where conditions so as to better understand the dynamics of people and housing on the Navajo Reservation. Total population histories and projections are also considered, with additional information on migration factors driving the population trends.

Also in this section is an investigation into special populations, with a particular emphasis on those populations that may require unique housing conditions.

Ultimately, the purpose of this section is to deliver an organized picture of the Navajo Nation as revealed by the NHA Survey and lay an empirical groundwork supporting the methodology and conclusions for Chapters 2, 3, and 4 of this study.

DEMOGRAPHIC CONDITIONS & FORECASTS

This section displays, highlights, and analyzes demographic trends of the Navajo Nation as revealed through the Navajo Housing Authority (NHA) Survey conducted in 2009. Where appropriate, comparisons are made with the 2010 American Community Survey data (ACS) as conducted by the United States Census Bureau.

POPULATION

The population of the Navajo Nation over the last 30 years has averaged an annual growth rate of nearly two percent. Over the same period, the United States as a whole had a growth rate close to one percent (and this rate is expected to decrease). Population change and future growth rates are explained in more detail in a later chapter in this section, entitled “Population Projections”.

Two demographics profiles are presented for 2010, the US Census Count and an estimate prepared by the Navajo Nation Division of Economic Development.¹⁹ Both numbers are presented because there is some dispute as to how accurate census counts are on Native American lands. The Census Bureau concedes that undercounting does exist. Their report, *As Simple as One, Two, Three: Census Under-enumeration Among the American Indians and Alaska Natives*²⁰, states:

“A number of hypotheses have been presented in an attempt to understand the undercount among American Indians and Alaska Natives. The three most common explanations given for undercounting Indians are (1) high mobility patterns among the Indian population, (2) resistance because of distrust of government and fear of losing government assistance, and (3) methodological problems such as inconsistent data collection procedures and culturally biased schedules.”

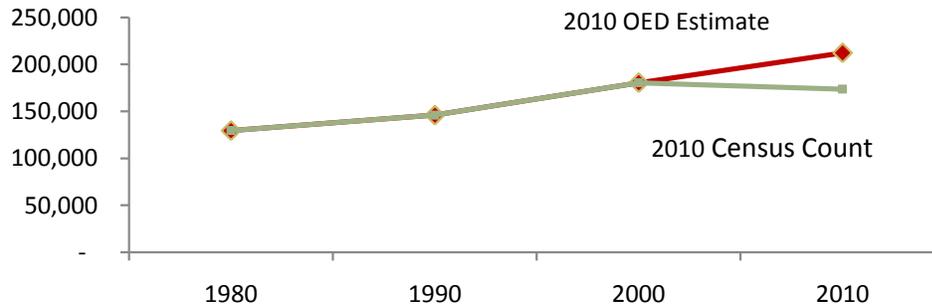
¹⁹ 2009-2010 Comprehensive Economic Development Strategy

²⁰ See appendix

Table 2.1.1 Navajo Nation Population 1980-2010

	1980	1990	2000	2010 (Office of Economic Developme nt)	2010 (Census)
Population	129,553	146,001	180,462	212,216	173,667
Ten year Population Change		16,448	3,446	31,754	-680
Previous Decade % Change		13%	24%	18%	-4%
Averaged Annual % Change		1.3%	2.4%	2%	-0.4%

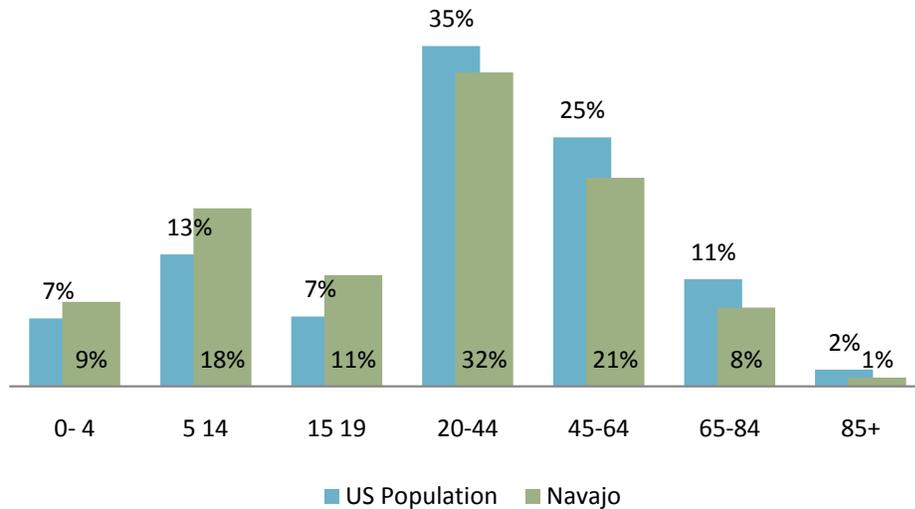
Figure 2.1.1 Navajo Nation Population 1980-2010



AGE

The Navajo Nation is a demographically young population, with significantly more children and teenagers than the United States as a whole.

Figure 2.1.2. Navajo Nation and US Age Composition



GENDER

Females on the Navajo Nation outnumber males by as much as 4%. This is different than the United States as a whole, where the spread is about 2%. This disparity may be due to one or more of the following possibilities: longer-than-average life expectancy among Navajo women, higher mortality rates among males, or the seasonal out-migration of males to find employment.

Table 2.1.2. Navajo Nation Gender Composition

Head of Household	NHA Survey	USA
Male	48	49
Female	52	51

If the numbers are broken down further, the differences between males and females become somewhat more pronounced. Females make up

58% of the over 65 population, and females over 65 make up 11% of the total population.

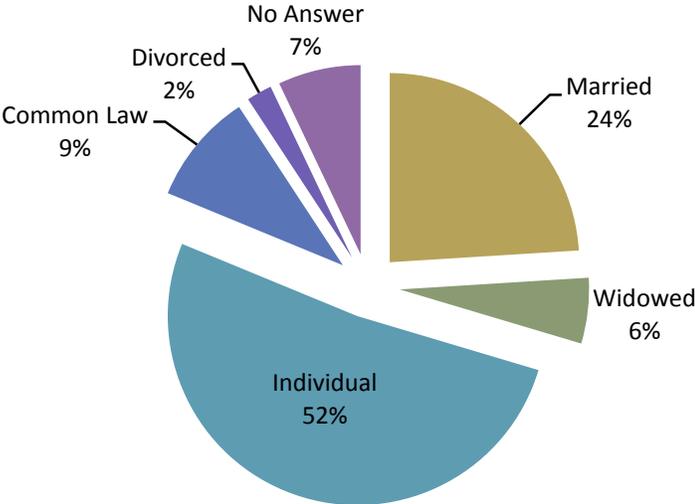
Table 2.1.3. Navajo Nation Over 65 Population by Gender

Persons	Percent of Over 65 Population	Percent of Total Population
Females over age 65	58%	11%
Males over age 65	44%	9%

RELATIONSHIP STATUS

What is most striking about the Navajo Nation relationship status is the extremely low percentage of divorced people compared with the United States as a whole. In the US population, the proportion of divorcees is 10%, approximately five times the Navajo Nation rate. At the same time, the number of currently married Navajos is almost half that of the United States as a whole, where 59% are married.

Figure 2.1.3 Navajo Nation Population by Relationship Status



Within the “individual” category there are several subcategories as listed in the table below. The majority are dependent children and/or adult children or grandchildren. The remainder likely composes individuals who are either lifelong singles, in a non-married relationship, or singles in a temporary or permanent separation with a spouse.



Table 2.4 Individual Status Demographics

Individual Status	Percent of Universe
Dependent Child	45%
Adult Child	18%
Grand child	6%
Other	31%

VETERANS

Approximately 10% of US citizens are military/service veterans. Among Native Americans as a whole, 12% are veterans; for Navajos living on reservation lands only 4 -7% are veterans. This does not mean that there are fewer Navajo Veterans total, only that a smaller percentage of them living on Reservation lands. 8% of veterans currently living on the reservation are women and just over 1% of those women are aged 65 or older.

DISABLED PERSONS

15% of the Navajo population reported itself as disabled. The survey does not completely reveal the severity or nature of reported disabilities, but it is possible to disaggregate subpopulations of the disabled. For example, 91% of those disabled persons are low-income (reporting less than \$15,000 per year). Men and women are disabled in the exact same proportions. Children comprise 5% of the disability group.

Table 2.5 Navajo Nation Disabled Population

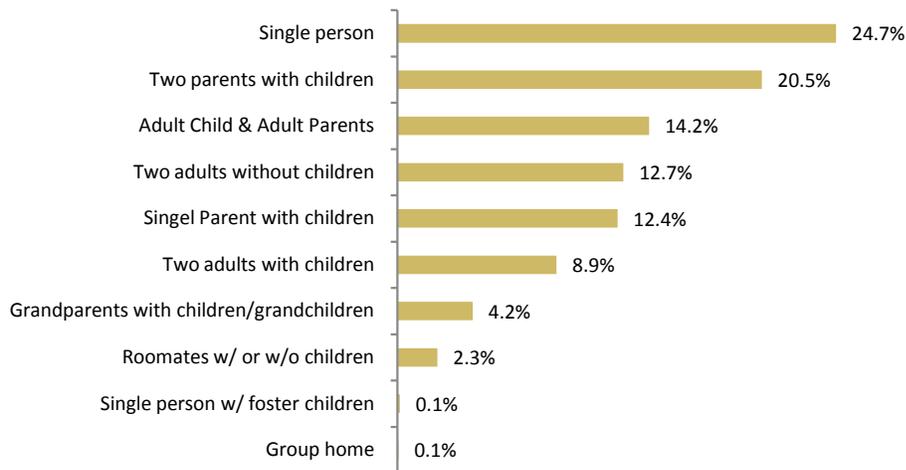
Percent of Population that is Disabled	15%
% Women	50%
% Men	50%
% Children	5%
% Veteran	7%
% Unemployed	51%
% Low Income	91%

The proportion of disabled persons in the US as a whole is at a similar to the proportion on the Navajo Nation, ranging between 12-18% depending on the definition of disability.

FAMILY DESCRIPTION

On the Navajo Nation it appears that individuals most commonly describe themselves as individuals rather than as a member of a family or other group. However, this category represents only a quarter of the population, with the next highest categories being “parents with children”, followed by “adult children” and “parents living together”.

Figure 2.1.4. Navajo Nation Population by Family Description



A closer investigation of single-person households reveals that the average age of these persons is relatively high at age 48. Men and women are split evenly, but high percentages of these households also include individuals over the age of 65 and/or with disabilities, 31% and 28% respectively.

Table 2.1.6. Single Person Breakout

Single Person	%
Women	50%
Men	50%
>65	31%
Disability	28%
Average age	48

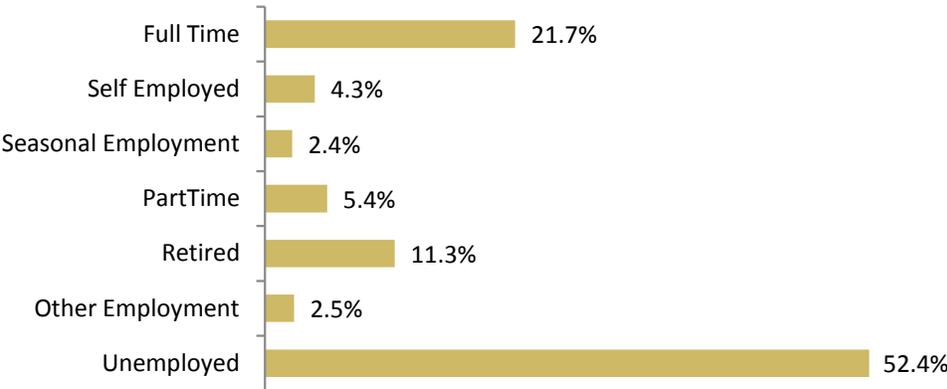
The number of homes where the primary household description is “grandparents with children” is 4.2%. This is close to, but lower than, the

national average, in which approximately 5-6% of children live primarily with their grandparents.

EMPLOYMENT STATUS

The survey revealed a large percentage of persons reporting themselves as unemployed, slightly over 52%. This is congruent with other research including internal Navajo documents, Bureau of Labor statistics, and US Census data. Approximately 35% of survey respondents reported part time, self or other employment. Additionally, 2.5% reported working only seasonally.

Figure 2.1.5. Navajo Nation by Employment Status



Women comprise a slight majority of the unemployed persons, while men report a slightly lower full time employment status and higher rates of retirement.

Table 2.1.7. Navajo Nation Employment Status by Gender

Employment Status	Men	Women
Unemployed	47%	53%
Retired	58%	42%
Full time	46%	54%

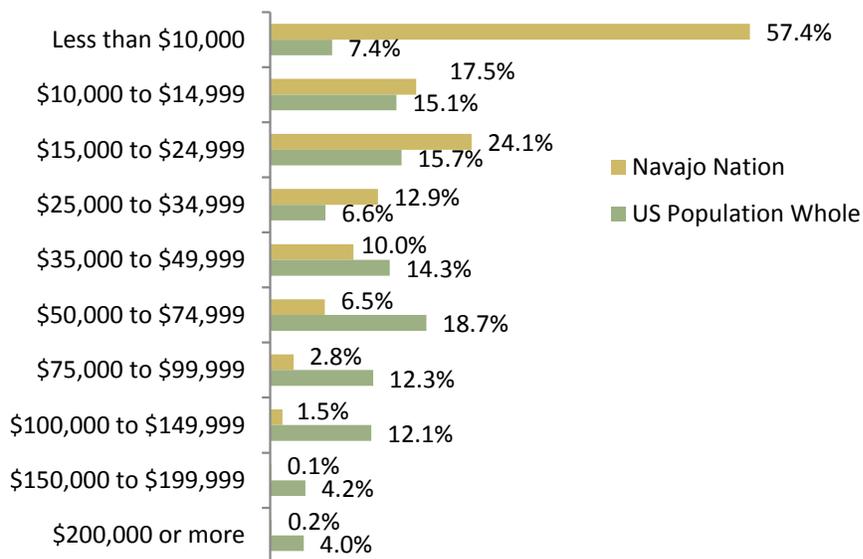


INCOME – INDIVIDUAL AND HOUSEHOLD

Individual income within the Navajo Nation is significantly different than that found in the United States as a whole, with the exception of two categories near the low-to-middle of the income spectrum. The percentage of Navajo Nation earners making between \$15,000 and \$35,000 per year exceeds the US population as a whole. The dramatic disparities are found at the low and high ends of the spectrum. Over 70% of Navajo Nation residents report making less than \$15,000 annually, while less than 12% report earnings over \$50,000. In contrast, 51% of the US population as a whole has an individual income over \$50,000 per year.

INDIVIDUAL INCOME

Figure 2.1.6. Navajo Nation and US Population by Individual Income

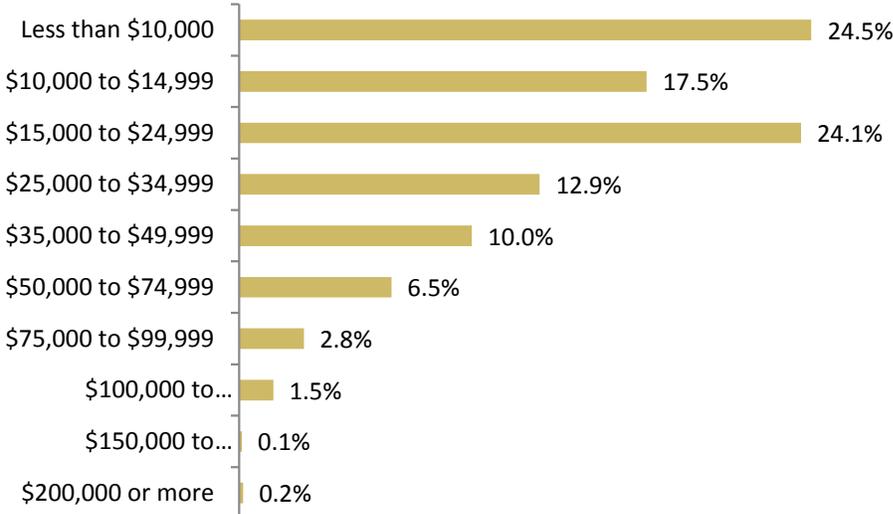


HOUSEHOLD INCOME

The household income data suggests that while there are still a significant number of households (24%) reporting an annual income of less than \$10,000; there are also a considerable number of households in the mid-range income brackets. Approximately 33% of households earn between \$25,000 and \$99,000 per year. Clearly, a number of factors

mitigate and influence these findings. These are discussed in later chapters of this analysis.

Figure 2.1.7. Navajo Nation by Household Income



POPULATION AND HOUSEHOLD PROJECTIONS

This report presents two population projections. The first is based on 1980-2010 decennial counts from the US Census Bureau. The second projection uses an annual average growth rate from the 2009-2010 Comprehensive Economic Development Strategy (CEDS) from the Navajo Nation Division of Economic Development. Both projection methodologies use a 2010 population estimate as the base projection year. Household projections were extrapolated from both sources using the historic 30-year average of 3.8 persons per household.

FOUNDATION FOR POPULATION PROJECTION RATE

Combined birth and death rates for the Navajo Nation from the period 1980-2010 yield a natural annual population increase of 1.99%. During the 1980's and the 1990's the Navajo Nation experienced growth rates consistent with this natural population growth. However, depending on which source is used (Census or CEDS) that growth rate is slightly or dramatically lower than the natural rate.

According to the US Census Bureau, in the decade 2000-2010, the total population on the Navajo Nation decreased by 3.7%. As previously mentioned, this may be a result of undercounting, or the declining population may be a result of out-migration as Navajo Nation residents leave in search of work and better economic opportunities in nearby economic centers such as Flagstaff, Phoenix, Farmington or Albuquerque. This trend may be temporary if the current economy recovers and significant economic development occurs in the future. In addition, many Navajos leave the Nation during their prime working years but return to the Nation later in life.

Table 2.1.8. 1980-2010 US Population Including Census & CEDS

	1980	1990	2000	2010	2010
Navajo Nation Population	129,553	148,648	180,462	173,667	212,216
Percent Change		14.7%	21.4%	-3.7%	17.6%

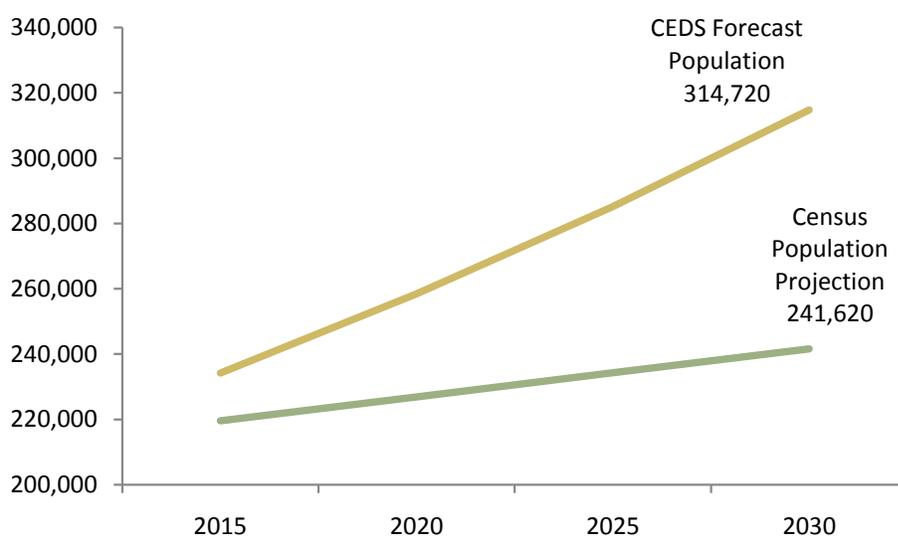
Source: US Census & CEDS

POPULATION PROJECTIONS - 2030

The two projections (US Census and CEDS) present a range for potential growth on the Navajo Nation. The Census based projections present slower growth, incorporating the previous decade's population decreases and the current economic status quo. The Comprehensive Economic Development Strategy (CEDS) growth rate of 1.82% is close to a natural population increase and is likely to occur if economic development occurs in the future.

The Navajo Nation Division of Economic Development lists three major development goals: tourism, industrial and commercial/real estate. The Division states, "Development in these areas will produce base industry growth and job creation." Increased employment opportunities will encourage younger generations to pursue careers within the Navajo Nation, causing population growth rates to increase.

Figure 2.1.8. CEDS & US Census Population Projections



The Census scenario assumes slower growth and economic stagnation. Consequently, by 2030 the Navajo population can be expected to increase by more than 29,000, with an additional 7,500 households. However, if economic development occurs, as projected by CEDS and population increases at the correspondingly higher rate, the Navajo population will increase by more than 102,000 and households by 26,000.

Table 2.1.9. Household and Population Projections 5 Year Increments

	2015	2020	2025	2030	Total Increase
Population					
CEDS Forecast Population	234,190	258,430	285,190	314,720	102,504
Census Base Population Projection	219,570	226,920	234,270	241,620	29,404
Households					
CEDS Household Projection	60,370	66,620	73,520	81,140	26,430
Census Household Projection	56,610	58,500	60,400	62,290	7,580

Individuals in the 20-44 age cohorts compose the largest segment of the population. Since 1990 the 45-64 age cohort has experienced the largest relative growth, indicating that the Navajo general population is aging, but still remains younger than the US as a whole.

The aging trend is expected to continue as the size of the older population cohort increases at a relatively faster rate than the middle age and young cohorts. This pattern is consistent with younger Navajos leaving the Nation for employment opportunities elsewhere, and then returning after some time of working off the reservation.

Table 2.1.10. Population by Age 1990-2009

	1990	2000	% Annual Change 1990-2000	2009	% Annual Change 2000-2009
0-4	13%	10%	-3.4%	9%	-1.1%
5 -14	23%	25%	1.2%	18%	-6.5%
15-19	10%	10%	0.3%	11%	0.9%
20-44	34%	32%	-1.6%	32%	-0.5%
45-64	13%	16%	2.5%	21%	5.1%
65-84	5%	6%	1.0%	8%	1.8%
85+	1%	1%	0.1%	1%	0.2%

Source: 1990 Census, 2000 Census, 2009 American Community Survey

FACTORS OF POPULATION CHANGE

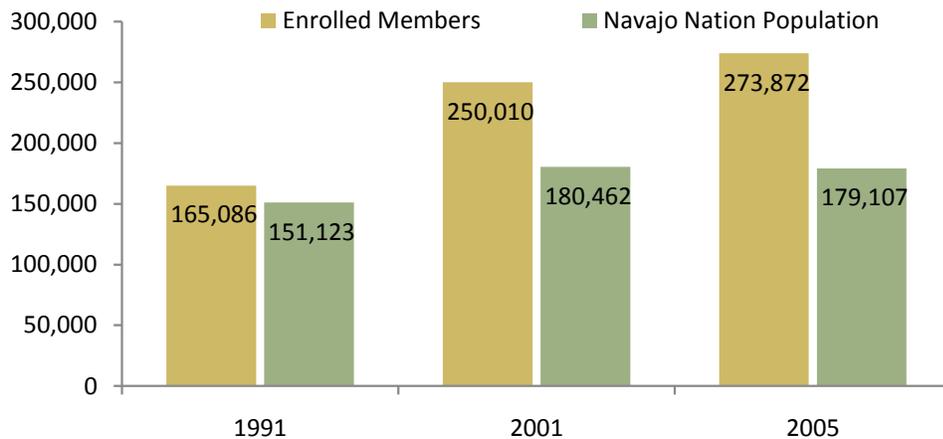
This section of the report considers the factors driving population change on the Navajo Nation.

OUT-MIGRATION

The difficult economic environment on the Navajo Nation appears to be contributing to out-migration, or Navajo tribal members moving off of the Navajo Nation. Calculating exact numbers or rates of out-migration requires a specialized analysis, but a couple of indicators inform the trend.

A comparison of enrolled tribal members and the population living on the Navajo Nation reveals a widening gap between tribal enrollment and the Navajo Nation population. During 2001, the enrolled membership exceeded the Navajo Nation population by about 70,000 people and by 2005 this gap had widened to about 76,000 people.

Figure 2.1.9. Navajo Nation Population vs. Enrolled Members 1991-2005

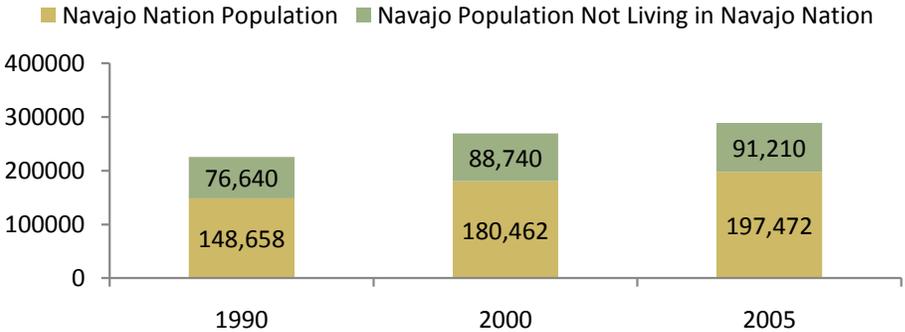


Source: Bureau of Indian Affairs, US Census Bureau

The gap between enrollment and population is due to a combination of factors but part of the explanation is that tribal members are moving off of the Navajo Nation.

Another way to view this trend is by comparing the number of people in the U.S. who report that they are Navajo compared to the Navajo Nation population. In 1990, the population living off of the Navajo Nation who reported that they are Navajo was almost 77,000 people, and by 2009 this increased to about 91,000 people. During the same time-span, the population living on the Navajo Nation increased by 48,000.

Figure 2.1.10 Navajo Nation Population vs. Enrolled Members 1991-2005



The gap between enrollment and population is due to a combination of factors but part of the explanation is that tribal members are moving off of the Navajo Nation.

This results from two factors:

- Navajos are moving off of the Navajo Reservation
- Navajo families living off of the reservation are growing

NATURAL GROWTH RATE: BIRTHS AND DEATHS

The natural birth rate within the Navajo reservation is 2.08% annually and the death rate is 0.09%, meaning that the natural growth rate is 1.99%. This growth rate is less than the overall population growth trend reported for persons identifying themselves as being Navajo, which grew at 1.1% annually from 1990-2010, according to the U.S. Census. The fact that the natural growth rate within the Navajo reservation is lower than the observed population growth rate among all Navajo persons also indicates that Navajos are moving off of the Navajo reservation.



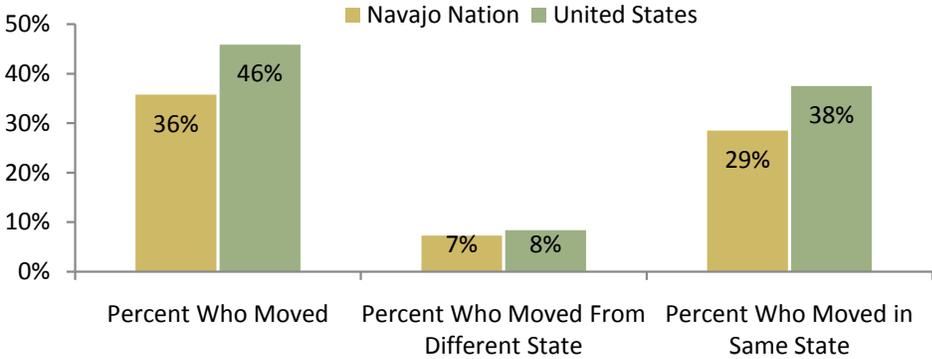
Figure 2.1.11. US Census Natural Population Growth Rate, Navajo Nation



MOBILITY

While the indicators above show a trend of migration off of the Navajo Nation, mobility among Navajo Nation residents is lower than the US average. This shows that the out-migration from the Navajo Nation is not a result of higher than average mobility characteristics of households. The out-migration may result from a combination of tangible push such as a lack of jobs and possible pull factors from off-reservation communities that are perceived to have stronger economies, higher living standards, better housing, or educational opportunities.

Figure 2.1.12. Mobility of Navajo Nation and US Residents²¹



²¹ US Census



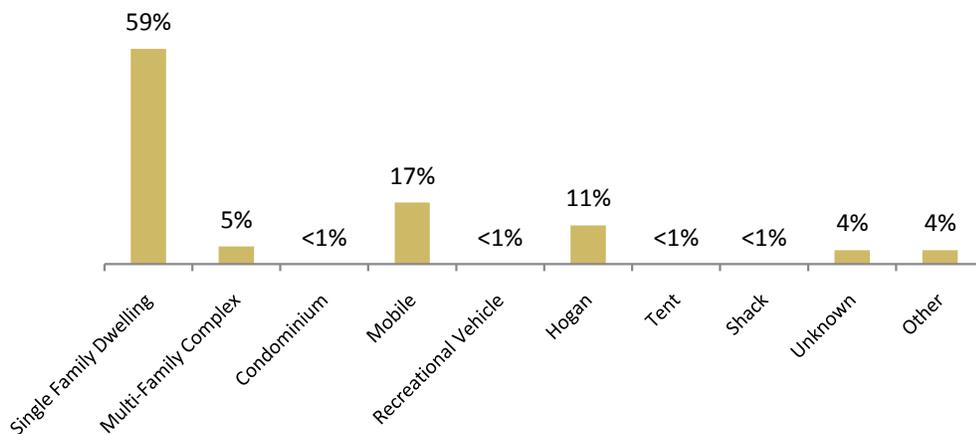
BASELINE HOUSING DATA

In this section general information regarding housing on the Navajo Nation is outlined utilizing NHA Survey data. This information is considered baseline information for the remainder of this analysis. However, where appropriate the information is augmented with additional, outside sources.

HOUSING TYPE AND TENURE

The majority (59%) of Navajo Nation housing structures are single-family homes, 17% are mobile homes and 11% are traditional Hogans.²² Multi-family and condominium housing types do not occupy a large portion of the housing unit stock.²³

Figure 2.1.13. Navajo Nation Housing Units by Type



80% of homes are occupied by individuals or families who own their home; the remaining 20% are occupied by non-owners (but not necessarily renters). The ownership rate of Navajo Nation residents is

²² A significant portion of respondents classified their dwelling simply as a house; these responses were considered to be single family homes.

²³ Note that a multi-family home is any "attached unit" and may be a duplex, triplex, fourplex, apartment complex, townhome, or any other form of housing where two or more domiciles share at least one wall.

significantly higher than the national rate where only about 66% of the population owns a home .²⁴

90% of applicable households reported paying no monthly mortgage or rent, which is dramatically higher than the US national rate in which only 23% of households do not pay a monthly rent or mortgage payment. The low number of households paying rent or a mortgage is likely due to the unique home financing and land ownership circumstances within the Navajo Nation. According to the Navajo Partnership for Housing (NPH), a non-profit that facilitates home ownership on the Nation, a conventional mortgage had never been issued on tribal lands prior to 1994. Homeownership rates are high because many of the homes are under leasing agreements held by the Mutual Help Program. According to the NPH the primary obstacles to development of conventional financing practices are traditional cultural values, unfamiliar legal procedures, land held in trust, and the lack of a private-sector building industry.²⁵

Of the households paying a mortgage, 76% have a payment less than \$500 per month. Nationally, 77% of households have a monthly payment more than \$1,000. The number of households that report paying rent is simply not high enough to draw statistically relevant conclusions from the NHA Survey. However, according to the American Community Survey (ACS) of the Navajo Nation, 23% of renting households pay less than \$300 per month, 31% pay \$300 to \$500 per month, and 40% pay \$500 to \$1,000 per month.²⁶ Only 5% of renting households pay more than \$1000 per month.

²⁴ U.S. Census Bureau, 2005-2009 American Community Survey, B25063, B25087

²⁵ Neighborhood Reinvestment Minority Home Ownership Case Study, Navajo Partnership for Housing Inc.

²⁶ U.S. Census Bureau, 2005-2009 American Community Survey, B25063, B25087

Table 2.1.11. Households with Mortgage by Monthly Amount

Monthly Payment	Percent of Navajo Nation Paying Monthly Mortgage	Percent of U.S. Population Paying Monthly Mortgage
Less than \$300	24%	0.3%
\$300 to \$499	52%	2%
\$500 to \$699	18%	6%
\$700 to \$999	3%	15%
\$1,000 to \$1,499	0.3%	28%
\$1,500 to \$1,999	0%	20%
\$2,000 or more	3%	30%

UTILITIES

The majority of homes on tribal land are heated by wood or pellet stoves. Electricity is provided by a public utility, and the water is either publicly provided or transported from an off-site source. 89% of households within the Navajo Nation are heated by wood or pellet stoves, while only 2% of homes nationwide rely wood based heating. Nationwide 84% of homes are heated with gas or electricity; only 9% of homes on the Navajo Nation are heated with natural gas or electricity.

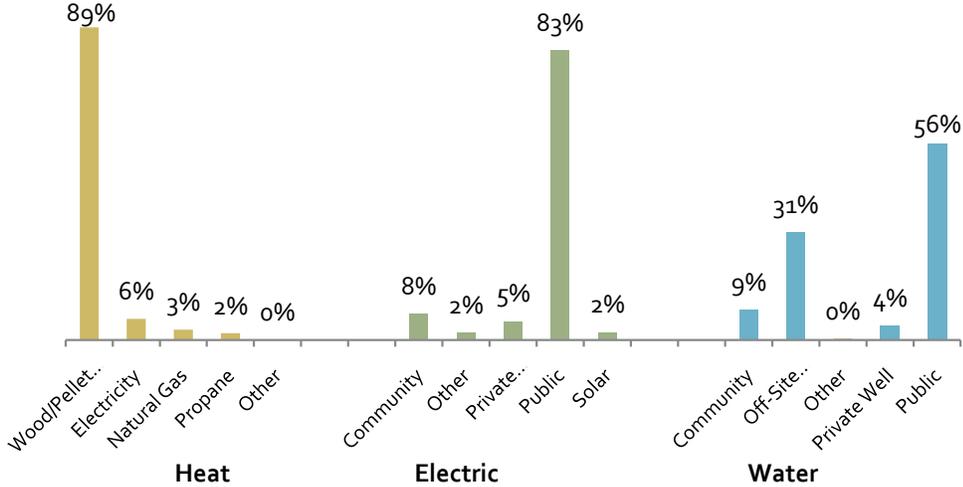
Compared to water and natural gas, centrally produced and distributed electric infrastructure appears to be widely available, with over 80% of homes powered by a public electric utility. However, this rate is still well below the national average. According to the U.S. Census and the Department of Energy, approximately 98% of homes in the US have publicly provided electricity.^{27 28} The disparity suggests a relative deficit of electric infrastructure present on the Navajo Nation.

Over half of households in the Navajo Nation do have access to a public water supply, but nearly one third of households are reliant on an off-site water source, requiring water transportation/hauling for domestic purposes. The remainder of homeowners utilize on-site wells.

²⁷ U.S. Census Bureau, 2005-2009 American Community Survey, B25040, B25048

²⁸ U.S. Energy Information Administration/Electric Power Annual 2009, Table 7.1

Figure 2.1.14. Navajo Nation Heat, Electric and Water Sources by Type



FACILITIES AND ROOMS

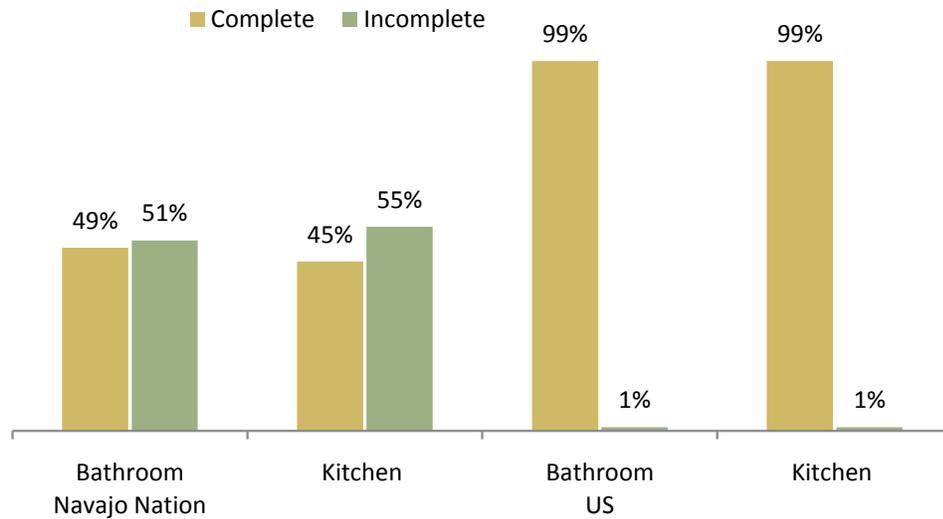
Half (51%) of all individuals living within Navajo tribal lands reported having incomplete bathroom facilities²⁹, and more than half (55%) reported having incomplete kitchen facilities. In the United States, 99% of housing units possess complete bathroom and kitchen facilities. The lack of complete facilities is likely related to the absence of overall infrastructure, along with the income constraints illustrated in previous sections of this report. However, for comparison and possible bottom-range of values, the Navajo Partnership for Housing suggests that only 32% of housing units have deficient plumbing, and 28% lack complete kitchen facilities.³⁰ Again, compared to the United States as a whole, this is still a high number.

²⁹ The survey questionnaire defined complete plumbing facilities as having hot and cold piped water, a flush toilet, and a bathtub or shower. Complete kitchen facilities were defined as having hot and cold piped water, a range or cook stove, and refrigerator.

³⁰ Neighborhood Reinvestment Minority Home Ownership Case Study, Navajo Partnership for Housing Inc.



Figure 2.1.15. Navajo Nation and US Housing with Complete Kitchen and Bathroom Facilities



Homes within the Navajo Nation are generally smaller than the average home in the United States, with Navajo Nation homes having a median of three rooms, while the U.S. median is 5.4 rooms. 24% of homes in the Navajo Nation have only one room, compared with the US in which one-room homes account for only 1% of housing stock.³¹ 93% of Navajo homes are composed of five or less rooms, whereas only 52% of U.S. homes have five or less rooms. 90% of Navajo homes and 79% of homes across the U.S. have less than four bedrooms.³²

Table 2.1.12. Household Rooms and Bedrooms

Number of Rooms	Navajo Nation		U.S.	
	Total Rooms	Bedrooms	Total Rooms	Bedrooms
1	24%	29%	1%	2%
2	14%	32%	3%	11%
3	16%	28%	9%	27%
4	21%	8%	17%	40%
5	17%	3%	21%	16%
6	5%		19%	
7	2%		12%	
8	1%		8%	
9+	0%		9%	

³¹ U.S. Census Bureau, 2005-2009 American Community Survey, B25017

³² U.S. Census Bureau, 2005-2009 American Community Survey, B25041

CROWDING

The Census and the Department of Housing and Urban Development (HUD) have differing definitions of what constitutes an overcrowded dwelling. The Census defines overcrowding as having 1.01 or more people per livable room. HUD has a complex formula based on the number of bedrooms and the relationship between dwelling residents. Another method utilized by the Census Bureau (and sometimes by HUD) is persons per bedroom. That method defines overcrowding as having 2 or more people per bedroom without distinction to relationship. The method preferred in this analysis is persons per bedroom (PPB). The persons per bedroom standard is utilized in this report as a conservative standard. That is, a PPB approach will yield the least number of crowded units. If either the persons per room or the HUD standard were used, there would be many more housing units classified as crowded than this report suggests using the PPB approach. The median individual on the Navajo Nation lives in a home with 1.3 persons per livable room and 2.35 persons per bedroom and thus exceeds crowding standards by both methods.

Table 2.1.13. Overcrowding by Definition Type

	Census	HUD	Persons Per Bedroom
Overcrowding Definition	1.01 People/ Livable Room	Varies	More than 2 persons per bedroom
% Overcrowded (Navajo Nation)	55%	27%	33%
% Overcrowded (U.S.)	N/A	1%-2.5%	N/A

In 2005, HUD reported nationwide overcrowding rates between 1% and 2.5%.³³ The Navajo Nation rate is significantly higher than overcrowding rates in the United States as a whole. The two measures of overcrowding, as reported by the NHA Survey, show between 33% and 55% of individuals live in overcrowded homes. All crowding calculations in this report utilize the persons per bedroom assumption.

³³ Measuring Overcrowding in Housing, U.S. Department of Housing and Urban Development

HOUSING CONDITION

With regard to housing condition, more than half of individuals residing in the Navajo Nation live in structures that were reported to be dilapidated or requiring serious repairs. Only 44% of the population lives in a dwelling that needs no repairs or minor repairs. The Census Bureau's 2009 American Home Survey shows that nationally only 5% of homes require major repairs.³⁴

Figure 2.1.16. Percent of Navajo Nation Individuals Living in Housing Conditions (by Type)

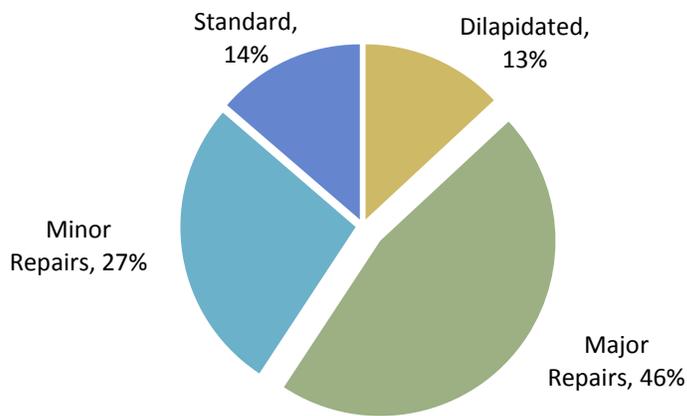


Table 2.1.14. Navajo Nation Housing Condition by Type (NHA Survey Households)

Housing Condition/Status	Percent	Number of Homes
Dilapidated	13%	8,700
Major Repairs	46%	2,900
Minor Repairs	27%	1,700
Standard	14%	8,700
2010 Total Housing Units ³⁵		63,998

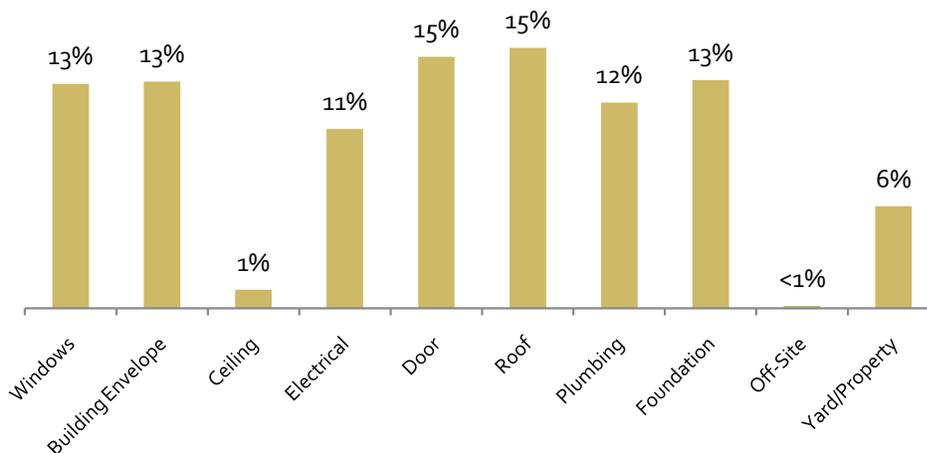
59% of individuals in the Navajo Nation reported living in a structure that needed at least one major repair or was completely dilapidated; the most frequently needed repairs were to resident's roofs, doors, foundations, and windows. Many homes requiring major repairs had more than one

³⁴ U.S. Census, American Housing Survey 2009, Table 2.2

³⁵ 2010 Census Bureau

deficiency; 32% of the Navajo Nation population reported living in a home that needed three or more major repairs.

Figure 2.1.17. Navajo Nation Necessary Major Home Repairs by Type



10% of individuals reported needing household improvements for handicapped access, and 54% reported needing some basic safety improvements. Carbon monoxide detectors, smoke detectors, and fire extinguishers are safety improvements most needed in Navajo homes. Overall, one third of the population lives in a dwelling with a safety or handicapped facility need.

Housing conditions by housing type show that multi-family complexes were reported to be in generally poorer condition than the rest of the housing stock. 57% of multi-family homes were reported to be dilapidated or requiring major repairs, 61% were reported to have incomplete bathrooms, and 65% had incomplete kitchens. Hogans were reported to be in generally worse condition than other housing types but had a relatively higher percentage of complete bathrooms and kitchens than other types.

Table 2.1.15. Primary Housing Type and Conditions

	% Dilapidated/ Major Repairs	% Incomplete Bathroom	% Incomplete Kitchen
Single Family Dwelling	55%	52%	55%
Multi-Family Complex	57%	61%	65%
Mobile	51%	54%	57%
Hogan	67%	18%	22%

SPECIAL POPULATIONS

For the purposes of this research, we have identified potentially unique categories of people who may require special housing considerations for a variety of reasons. These populations include the following categories:

- *Elders*: both men and women over the age of 64.
- *Children*: individuals under the age of consent (less than 18 years of age) and categorized as dependents.
- *Single women*: women between the ages of 18-64 who list themselves as widowed, separated, or individuals.
- *Single men*: men between the ages of 18-64 who list themselves as widowed, separated, or individuals.
- *Single parents*: single women or men between the ages of 18-64 who are the guardians of one or more children.
- *Elders caring for children*: men or women, singly or in partnership, over the age of 64 serving as the primary caretakers for children.

Broadly speaking, the factors that might contribute to differential housing needs within a population might include the following:

- Age may be a factor in one's ability to earn income or carry out routine repairs and/or maintenance.
- Persons with a mental handicap or other non-physical but debilitating psychological or social condition may require special housing configurations or assistance.
- Persons with low income levels may be particularly vulnerable to housing repair problems and financially unable to resolve those issues.
- Single-income families are possibly more vulnerable to external economic conditions and limited to certain housing types and/or conditions.

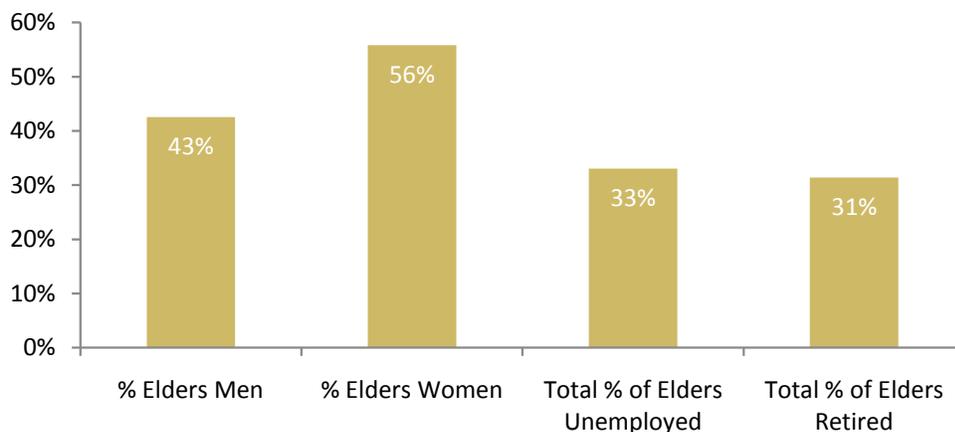
In addition to the above broad generalizations associated with these populations, each group possesses a number of sub-categorization factors.

ELDERS

Elders within the Navajo Nation occupy a unique demographic, economic, and cultural category. In an effort to better understand the unique current and future housing needs required by this population, this analysis has considered this group in an isolated manner, identifying variables relevant to their living conditions.

Within the Navajo Reservation elderly women outnumber elderly men by 13%. This may be due to the average lower life expectancy of Navajo men (approximately 59) – although it should be noted that if either men or women reach the age of 65 their life expectancy shifts to 85 and 88 respectively. Of all elders, roughly 31% consider themselves retired, that is, beyond working years. Another 33% consider themselves capable of working but are currently out of work, and so consider themselves unemployed. The remainder do not report themselves in either category.

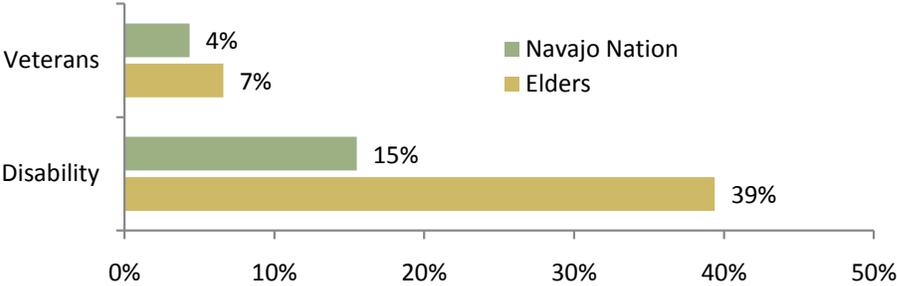
Figure 2.1.18. Navajo Nation Elderly by Sex and Employment



7% of elders are military veterans; this is somewhat lower than the percentage for both the Navajo Nation and the United States as a whole and is likely due in large part to lower-than-average lifespans of Navajo men. More closely related to potential housing needs, however, is the fact that 39% of elders list themselves as disabled. This is consistent with the United States as a whole, where approximately 37% of those aged 65

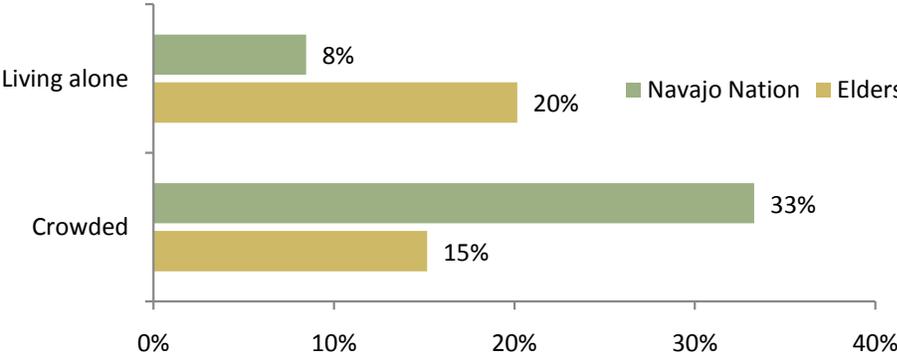
or older site a severe disability.³⁶ Disabilities can have consequences on daily life activities including bathing, eating, walking, using the toilet, and dressing. Consequently, disability is often a significant conditioning factor for housing.

Figure 2.1.19. Percentage of Disabled and Veteran Navajo Elders



Within the Navajo reservation, 20% of elders live alone while another 15% live in crowded living conditions; both facts have implications for housing needs. Overall, the percentage of elders living alone is considerably lower than the national average, which is closer to 30%. Nonetheless, this has implications for housing requirements, as elders living alone often need to be proximal to assistance. Those living in crowded conditions clearly do not lack nearby assistance, but instead have other concerns.

Figure 2.1.20 Percent of Navajo Nation Elders Living Alone or in Crowded Conditions

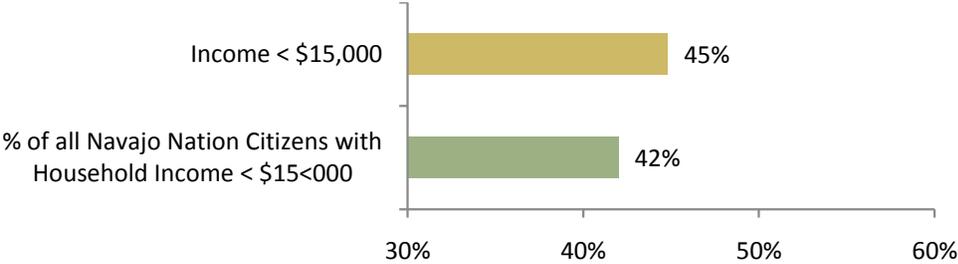


³⁶ U.S. Census, American Housing Survey 2009



Although 42% of surveyed Navajo households report an income less than \$15,000, the proportion of elders reported to be living at that income level is higher at 45%. Likewise, nationwide about 42% of persons 65 and older report household incomes of less than \$15,000 .³⁷ Low-income households are necessarily and dramatically limited in their housing choices and in their ability to execute repairs or improvements on their existing homes.

Figure 2.1.21. Percentage of Navajo Nation Elders with Annual Household Incomes Lower than \$15,000



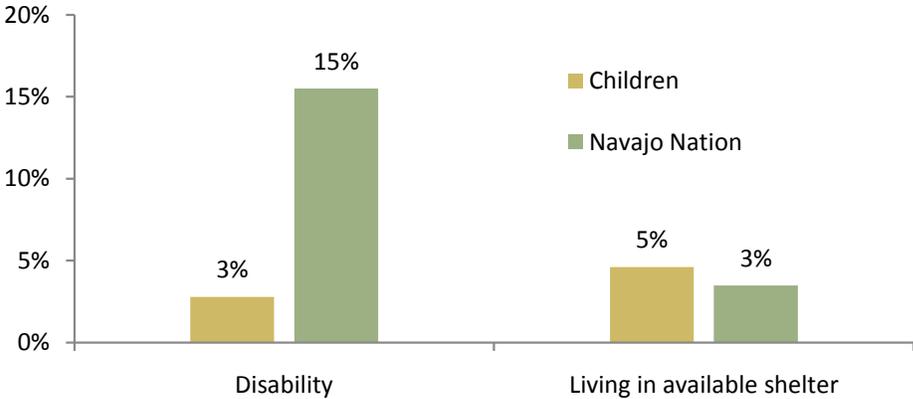
CHILDREN

At the spectrum opposite the elderly are children. Children impact, and are impacted by, housing decisions in a number of ways. Children, although not requiring much physical space, do require attention and care. They also typically consume income and other resources but do not often generate income. Also, children, like the elderly, often require higher health care expenditures.

³⁷ A Profile of Older Americans: 2008 Administration on Aging U.S. Department of Health and Human Services

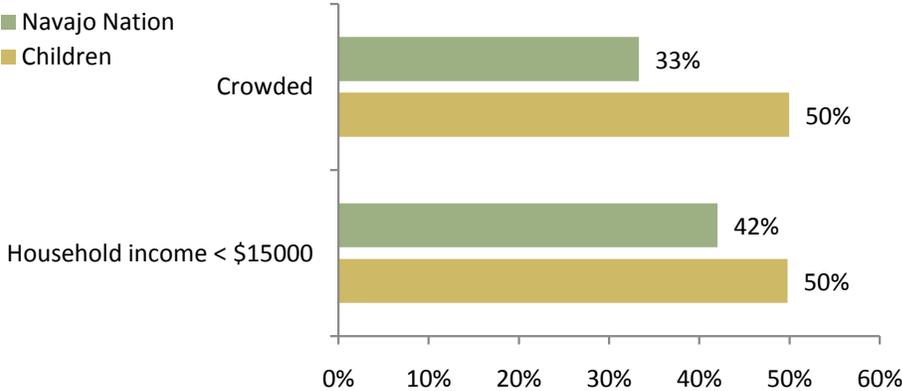


Figure 2.1.22. Percentage of Children who are Handicapped or Living in Available Shelter



5% of all children on the reservation are living in housing classified as “available shelter”. This is non-typical and non-standard housing of the lowest quality. This housing includes cars, tents, shacks and other lower quality enclosures and may be interpreted to indicate a desperate housing situation. 50% of all children live in overcrowded living conditions in households with an income less than \$15,000, both of which are higher percentages than the reservation as a whole. Finally, children may compound already present problems in overcrowding situations. For example, adult and child waking, working, and sleeping schedules are often incompatible when living quarters are occupied beyond their designed capacity.

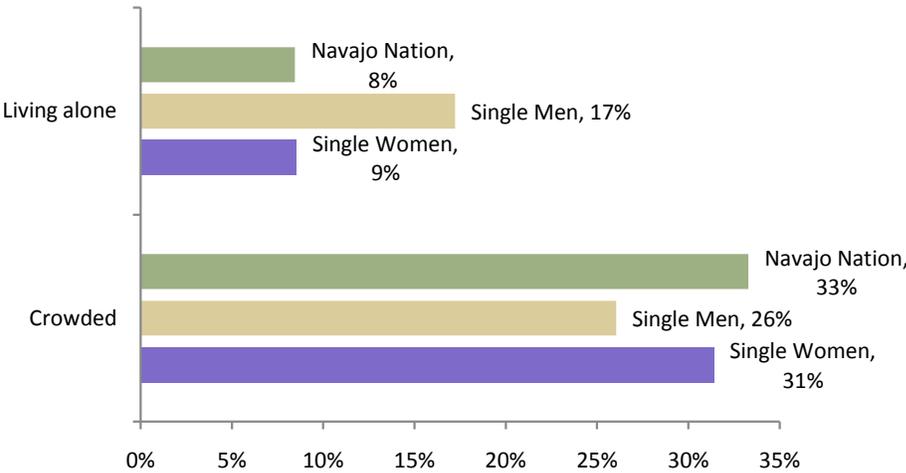
Figure 2.1.23. Children Crowded and Income Status



SINGLE WOMEN AND SINGLE MEN

Single men and single women between the ages of 18-64 make up 13% of the population in the Navajo reservation. The vast majority of these individuals are living with others, and a majority live in crowded conditions. A small but significant number live alone, and the quality of housing that these singles live in will be discussed in a later chapter of this report.

Figure 2.1.24. Percentage of Navajo Nation Single Women and Men Living Status



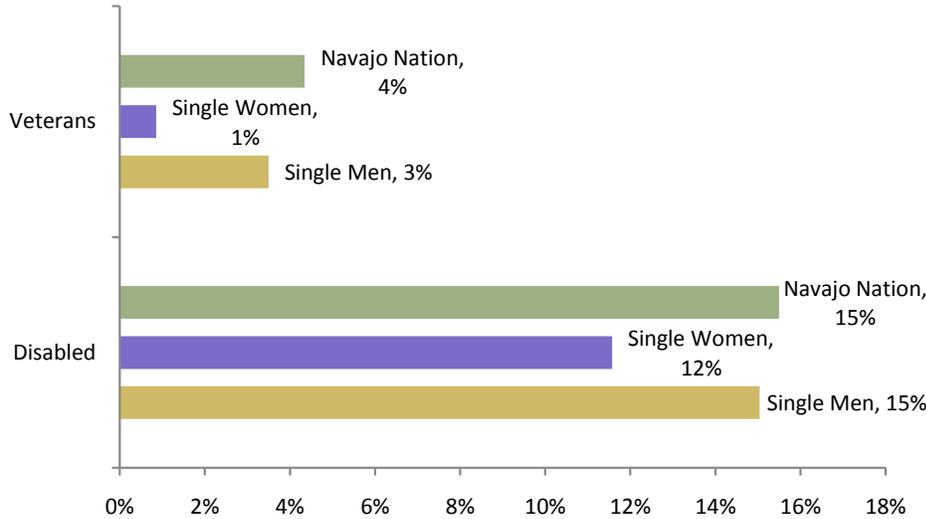
High numbers of single men and women are unemployed and in low-income households. However, it is important to note that the rate of unemployment among single men and women is lower than in the Nation as a whole

Figure 2.1.25. Unemployment, Income and Home ownership for Navajo Nation Single Men and Women



Veteran and disability status is similar to the Nation as a whole.

Table 2.1.26. Disability and Veteran Status of Single Women and Men



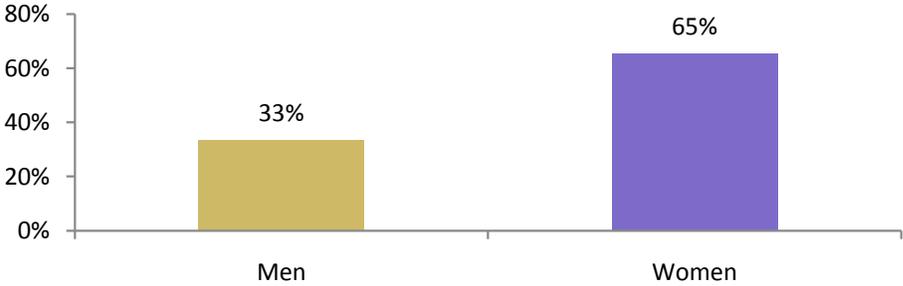
SINGLE PARENTS

Single parents are a special population group with unique housing needs. This group has the compounded problem of being responsible for



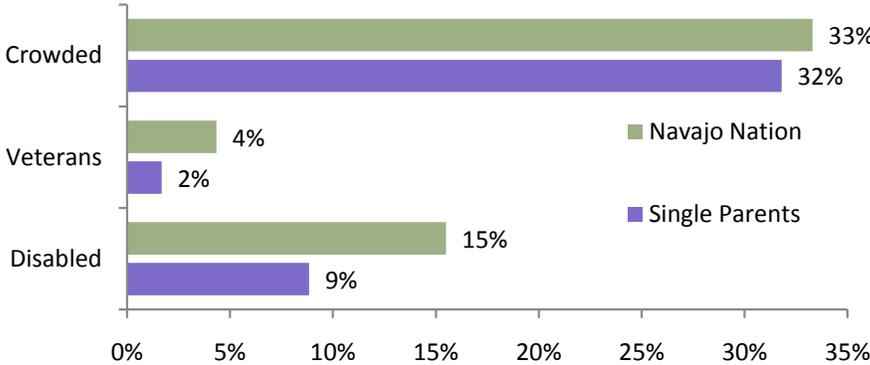
children while also lacking one of the two natural caregivers. On the Navajo reservation, single parents comprise a relatively small minority of persons, making up about 4% of the population. Nonetheless, it is an important group to consider in terms of housing needs, as the single income/single caregiver status makes the family unit potentially more vulnerable to income and housing condition shocks.

Figure 2.1.27. Proportion of Navajo Nation Single Parent Households by Gender



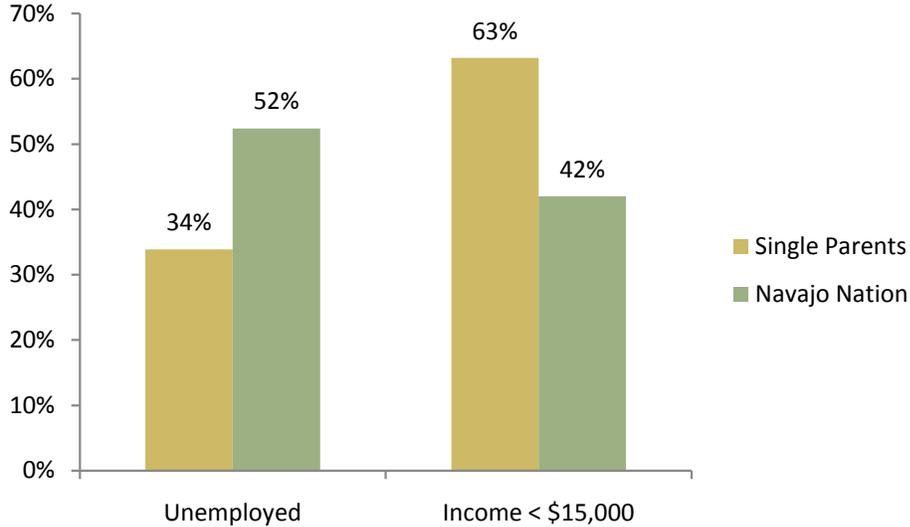
Single-parent women outnumber single-parent men nearly two to one. In the US approximately 20% of single-parent households are headed by men.

Figure 2.1.28. Single Parents Housing Conditions and Veteran Status



Single parent veteran status is lower among Navajos as a whole. The number of single parents living in crowded conditions is similar to the rest of the Navajo Nation, as is the rate of disability.

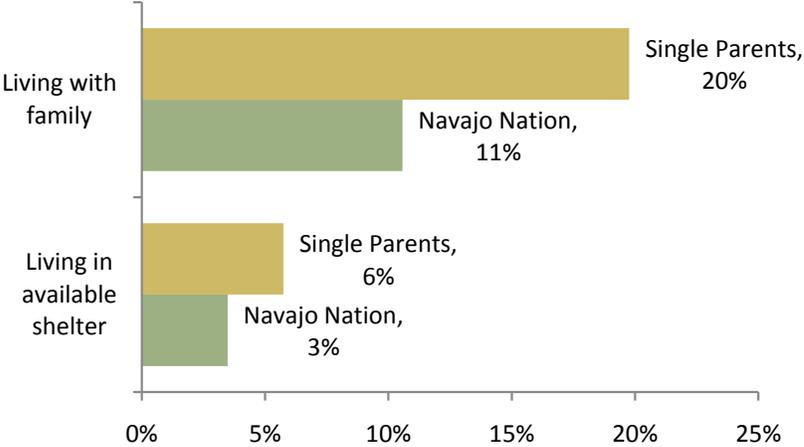
Figure 2.1.29. Single Parent Employment and Income



The number of single parents heading households with incomes below \$15,000 per year 63% is much higher than the number of low-income households on the reservation as a whole 42%. However, the unemployment rate for single-parent households is, seemingly paradoxically, much lower at 34%. This might be accounted for by the fact that single parents are highly motivated to work as a sole breadwinner for their children, but are also necessarily limited in the number of hours that they can work.

The percentage of single parents who are renters/boarders is higher than the reservation average. Of these renters/boarders, 20% are living with other family; in most of these situations the single-parent family is also living in crowded conditions. In 6% of these cases, the single-parent family is living in available shelter, which includes sheds, shacks, tents, and other unsatisfactory housing conditions.

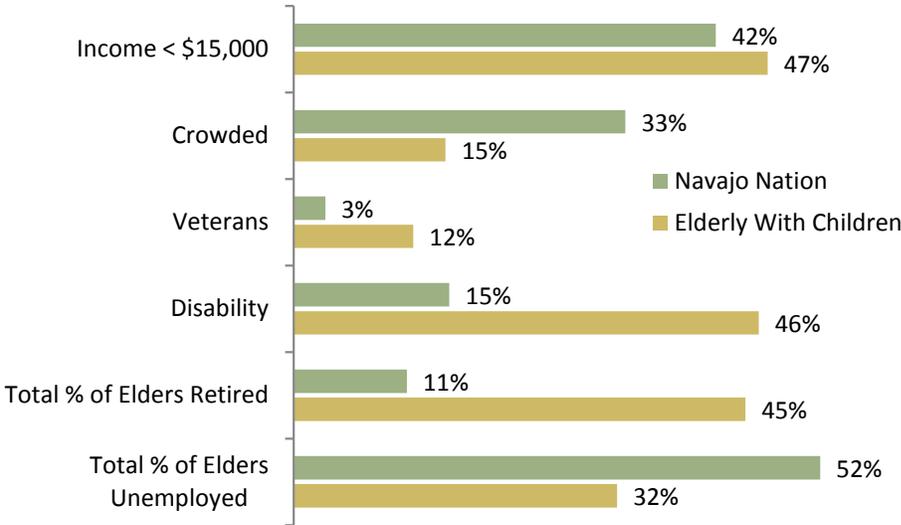
Figure 2.1.30. Proportion of Navajo Nation Single-Parent Households by Living Quarters



ELDERLY WITH OR RAISING CHILDREN

Nearly half of all households where the elderly are raising children have incomes below \$15,000 and contain a disabled or retired individual. The unemployment and crowding rates are lower than the nation as a whole, however low income rates, disability rates, and veteran rates are higher than the nation as a whole.

Figure 2.1.31. Elderly with or Raising Children Indicators



PART 2.

CHAPTER 2.

FACTORS CONDITIONING HOUSING NEED

CHAPTER INTRODUCTION

The purpose of this chapter is to consider factors that may condition the housing needs as they are calculated in Chapter Three of this report. To start we consider whether there are any spatial patterns with regard to housing conditions. For example, are higher-quality or dilapidated homes found clustered together or dispersed? Next we consider the existing real estate market on the Navajo Nation as well as an overview of existing housing programs.

This chapter is concluded with an extended discussion regarding what constitutes affordability on the Navajo Nation, how affordability differs from typical federal standards, what factors might more appropriately be considered in an affordability equation, and finally, a suggested affordability standard customized for the Navajo Nation.

SPATIAL PATTERNS OF HOUSING CONDITIONS

This section of the report examines whether or not housing conditions (standard, in need of repairs, dilapidated, etc.) follow any spatial patterns.

Survey response data combined with GIS (Geographic Information Systems) data allowed analysis of housing conditions by geographic area. Among respondents living near towns offering employment opportunities and goods and services, over 15% reported their homes were not in need of repair. The other 85% of respondents reported needing major or minor repairs, with 5% reported their homes dilapidated and needing to be replaced entirely. The Chinle area's housing stock appears to be in the best condition in the Navajo Nation, with over 20% of housing not in need of repairs. The housing near the employment center of Farmington/Shiprock is also in better condition, relative to other areas in the Navajo Nation

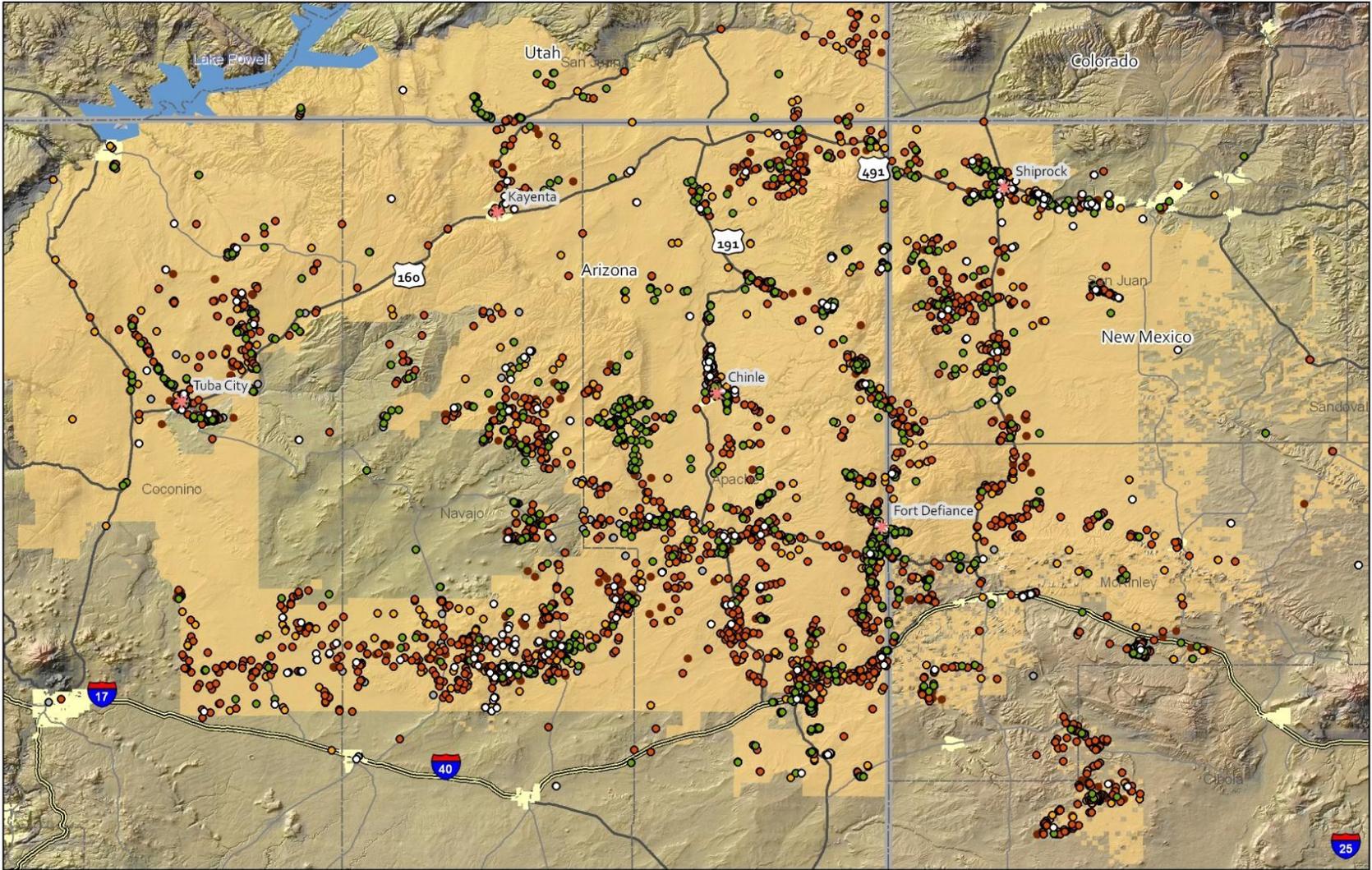
Areas that are more remote from Navajo Nation municipalities have a higher percentage of dwellings that are in disrepair. Remote areas such as the US 191 Corridor, the Ganado/Steamboat/I-70 area, and the region around the Hopi Reservation all reported that less than 10% of the household units are in standard condition not needing repair. The northern Navajo Nation area has a higher percentage of dwellings in good condition, in part because of Kayenta and the Monument Valley tourist economy. However, the housing in Utah is mostly in disrepair or in need of replacement.

Table 2.2.1. Percent of Homes in Good Condition by Area

	% Homes Not Needing Repair (in Standard condition)
Northern Navajo Nation West of Shiprock	14%
Shiprock-Farmington Corridor	18%
US 491 Corridor	7%
Window Rock, Fort Defiance, Lukachukia	15%
Ganado, Steamboat, I-70	8%
Chinle, Round Rock, Rough Rock	22%
Tuba City Area	17%
Hopi Periphery	9%

In many cases, homes that are in standard condition and do not need repairs are located near others in standard condition. Dispersed homes not tend to be in poorer condition. For example, the area due west of Chinle to the Navajo County line contains an obvious cluster of homes in standard condition, as well as the area around Monument Valley. Another cluster of homes in standard condition is found just north of Fort Defiance.

In conclusion the analysis suggests generally that homes nearer to municipalities are in somewhat better condition when compared to their rural and very rural counterparts. Also, it appears that homes in good repair tend to be clustered relatively near one another while the widely dispersed homes exhibit a pattern of a generally worse state of repair or condition.

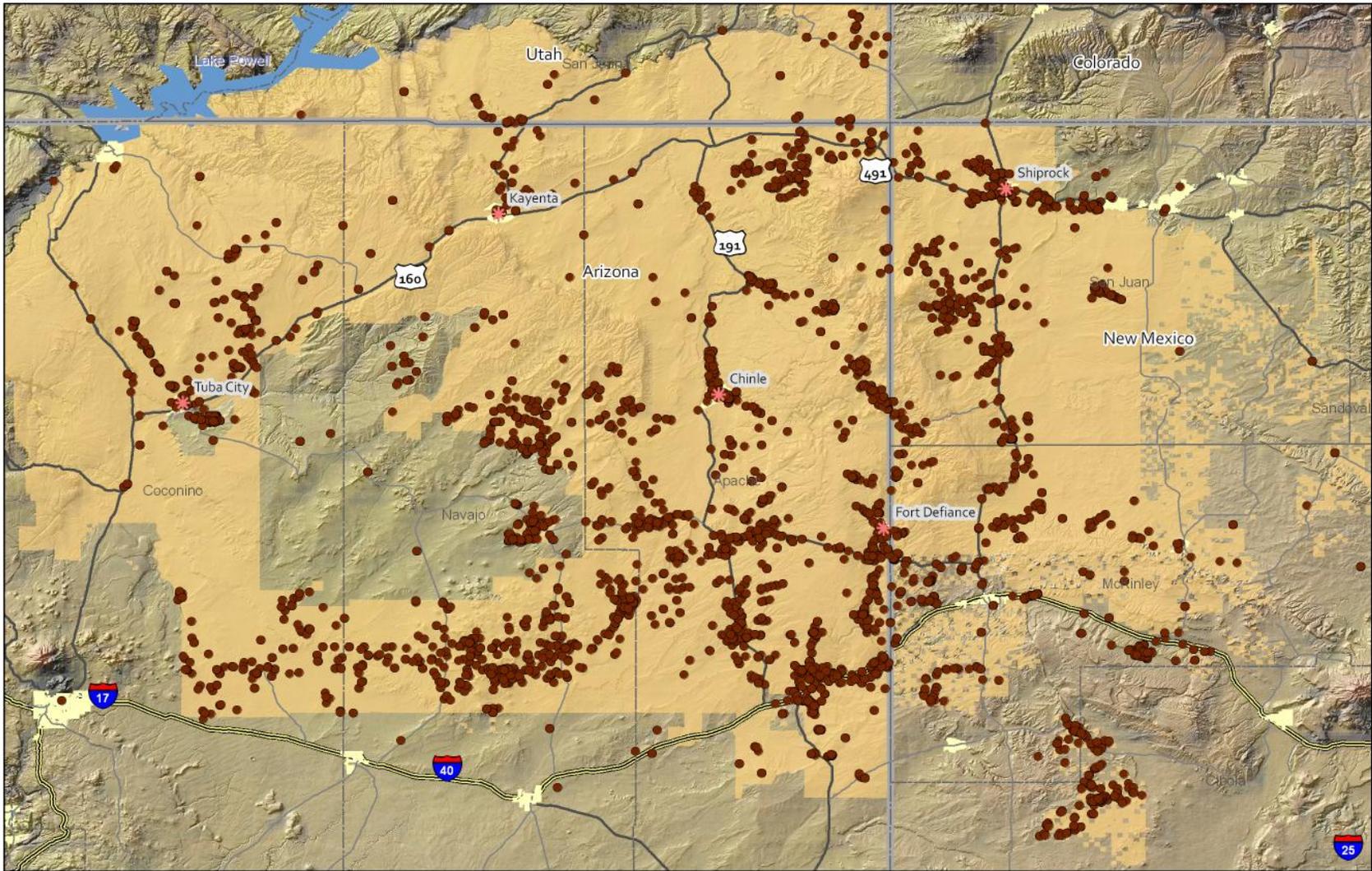


Housing Condition

- Good Condition - No Repairs
- Minor Repairs Needed
- Major Repairs Needed
- Dilapidated (Not Repairable)

- * Largest Towns
- Navajo Nation





● Housing Units Neeing Major Repairs or Dilapidated * Largest Towns ■ Navajo Nation



DEFINING AFFORDABILITY ON THE NAVAJO NATION

Because there is a demonstrable need for improvements to existing housing and construction of new units, this report undertakes an initial examination of what housing affordability means within the Navajo Nation. The primary limitation to assistance thresholds for any segment of the population is that group's ability to pay. Federal assistance qualifications are determined with a relatively simple formula based on Area Median Incomes (AMI). The federal formulas do not specifically delineate or examine local conditions to calculate a population's ability to pay.

Because the Navajo Nation does not have a real estate market that comparatively conveys market rates for homes and their relations to local wages and employment, affordability must be considered in terms beyond standard market valuations. For example, when jobs are scarce and incomes extremely low, it becomes commonplace for substandard housing conditions (e.g. crowding or/and dilapidated structures) to become normative and market pricing begins to deform to that standard. To some extent this has occurred in the Navajo Nation and affordability must be adjusted to apply to objectively recognized standard housing conditions rather than substandard norms that may exist locally.

The remainder of this chapter is dedicated to the development of a customized standard for affordability on the Navajo Nation.

FEDERAL AFFORDABILITY STANDARDS

The Department of Housing and Urban Development defines a low-income family as a household whose income does not exceed 80 percent of the median income for the area. In order to receive housing assistance from HUD under the Native American Housing Assistance and Self Determination Act (NAHASDA), a family must be a low income Native American family residing on tribal land. A few income exceptions are made for families providing essential services and for law enforcement officers. The area median income in the Navajo Nation is \$55,000 per year; families with household incomes less than \$44,000 per year qualify for housing assistance from NHA.

FACTORS AFFECTING AFFORDABILITY AND OWNERSHIP

Housing markets are highly regionalized and are directly related to the economic conditions of a given area. Affordability centers on the proportion of a household's income that can be used to pay for housing. Housing affordability, and therefore ownership, is affected by the

concentration and type of jobs available, accumulation of wealth, the financial environment, home values and cultural principles of the Navajo population.

HOME VALUES

In most markets home values are a product of supply and demand. Values combined with wage rates and employment opportunities determine affordability. The Navajo Nation does not have a typical real estate market and home values are not as important when examining affordability. The median home value within the Navajo Nation (\$63,500) is roughly one-third of the national median (\$185,000). 70% of homes in the Navajo Nation are valued at less than \$100,000, whereas 76% of US homes are worth more than \$100,000. The low values are likely related to the generally poor condition of housing across the Navajo nation. However, the lower home values are also aligned with the lack of employment and relatively lower wages found within the Navajo Nation.

Table 2.2.2. US and Navajo Nation Home Values³⁸

	Navajo Nation	US
Median Home Value	\$63,500	\$185,000
Home Value	Navajo Nation	US
Less than \$10,000	9%	1%
\$10,000 to \$50,000	31%	7%
\$50,000 to \$100,000	30%	15%
\$100,000 to \$200,000	19%	30%
Greater than \$200,000	11%	47%

Source: US Census

EMPLOYMENT

Affordable housing is dependent on the presence of a strong economy, allowing the local population to purchase or rent adequate housing. A lack of employment opportunities will decrease affordability. In 2009 the Navajo Nation had a jobs per capita ratio three times smaller than the national rate. Unemployment on the Nation is currently more than 40 points higher than the national rate with about half of the labor force unemployed. The lack of employment decreases the amount of earned income resulting in less money for local residents to spend on housing, effectively decreasing the affordability of housing on the Nation.

³⁸ Numerical values in this section were rounded to the nearest thousand and may differ slightly from other figures in this report.

Table 2.2.3. US and Navajo Nation Jobs per Capita 2009

	Total Navajo	US
Jobs	23,000	121,232,000
Jobs per Capita	0.13	0.40

Source: US Census

The following chart reiterates that unemployment on the Navajo nation is often higher than the United States as a whole by a factor of 5-10. The NHA Survey showed even higher rates than the Bureau of Labor Statistics (BLS), with unemployment at 52%.

Table 2.2.4. US and Navajo Unemployment Rates

	1990	2000	2009
US Unemployment Rate	5.6%	4.0%	9.6%
Navajo Nation Unemployment	27.9%	44.0%	50.5%
Difference	22.3%	40.0%	40.9%

Source: Bureau of Labor Statistics, Navajo Nation Division of Economic Development

WAGES

Jobs on the Navajo Nation pay relatively less than jobs nationwide. In 2009 the average US household earned income from wage and salary jobs was \$69,000, 38% higher than the wage and salary rates on the Navajo Nation. Lower wages generate less total income, limiting the amount of money households can spend on housing which decreases affordability. The NHA Survey shows an average household income of \$22,000. The disparity between the NHA Survey data and the Census data is likely due to the fact that the Census data only includes working household income (not including transfer payments) whereas the NHA Survey data average is pulled downwards by the inclusion of many households earning only transfer payments (i.e. very low incomes).

Table 2.2.5. US and Navajo Nation Wage and Salary Income

ACS DATA	1990	2000	2009 ³⁹
US			
Wage and Salary Income / Household	\$37,000	\$54,000	\$69,000
Navajo Nation			
Wage and Salary / Household	\$19,000	\$32,000	\$43,000
% Difference	-49%	-41%	-38%

Source: US Census

Households on the Navajo Nation have relatively fewer workers compared to the US as a whole. The combination of lower wages, reduced employment levels, and fewer earners per household significantly decreases the affordability of standard housing in the Navajo Nation.

Table 2.2.6. US and Navajo Nation Workers per Household

	US	Navajo Nation
No workers	13%	24%
1 worker	30%	36%
2 worker	45%	30%
3+ workers	12%	11%

Source: US Census

³⁹ Census Bureau data is used in this chart in order to provide a consistent source for comparison.

WEALTH ACCUMULATION

The lack of employment and relatively low-paying jobs has significantly impacted Navajo households ability to acquire and accumulate wealth. Purchasing a home typically requires a 10%-20% down payment, and mortgage payments are usually higher than area rents. Bank deposit records from the Federal Deposit Insurance Corporation (FDIC) show that the Navajo Nation has a per capita wealth concentration one fifth of the national level.

Table 2.2.7. FDIC Insured Bank Deposits per Capita

	Navajo Nation Area ⁴⁰	US
Total Deposits FDIC Insured Deposits	\$1,384,703,000	\$7,657,000,000,000
Population	244,500	301,462,000
Deposits Per Capita	\$6,000	\$25,000

Source: FDIC and US Census

FINANCIAL ENVIRONMENT

The Navajo Nation has a very low-functioning real estate market. Navajo Partnership for Housing (NPH) reports there were less than 25 housing sales between 1998 and 2003. The first commercial mortgage was issued in 1994. Consequently, the Navajo Nation lacks the necessary real estate infrastructure needed to facilitate a real estate market. Real estate activity data from the Census Bureau shows that in 2009 there were 8.1 homes for sale or sold for every 1,000 people. The Navajo Nation has a significantly smaller ratio of 2.9. The lack of real estate activity decreases affordability because of the significant obstacles facing individuals or families that have the resources to purchase a new home. Because most land on the Navajo Nation is held in-trust by the Bureau of Indian Affairs and title cannot be easily (if at all) separated from tribal lands, most banks are wary of making loans against property they cannot collateralize. NPH states:

“The peculiar form of land tenure in the Navajo Nation greatly extends the process of acquiring a home site and makes it easy for the parties to become discouraged and pull out. In most other locations the time between a purchase-and-sales agreement and the closing transaction is short (generally a month or two at most), but on the reservation the process can stretch out for as long as ten months or longer. Often the real estate transaction on the reservation comes to a halt while the purchaser seeks approval from the Bureau of Indian Affairs and the tribe to acquire the land.”

⁴⁰ Includes banking institutions and populations of metropolitan areas in close proximity to the Navajo Nation, including Farmington, NM, Gallup, NM and Page, AZ.

Table 2.2.8. US and Navajo Nation Real Estate Activity

	Navajo Nation	US
Total Homes For Sale or Sold 2009	620	2,437,000
Population	212,216	301,462,000
Real Estate Activity Per 1,000 Population	2.9	8.1

Source: US Census

In short, the lack of a typical financial environment puts considerable downward pressure on what may be considered affordable on the Navajo Nation.

COST OF LIVING

The cost of living can have a significant impact on the affordability of homes and therefore the ability of local residents to purchase homes. The 2009-2010 Comprehensive Economic Development Strategy for the Navajo Nation states:

Cost of living is quite low: Most of the Navajos own their own houses - trailers or Hogan; and so there is no monthly mortgage or rental to be paid; many of the houses do not have utility or telephone services, and so there are no utility bills or telephone bills either. Thus, incomes derived from various sources turn out to be sufficient to maintain the current standard of living, and so many people do not seem to have any motivation to find employment.

Residents of the Navajo Nation may not have high housing costs, however, overall living conditions can be considered below standard and residents pay relatively high amounts for other goods and services. Because of the dispersed nature of development on the Navajo Nation, many residents experience high transportation costs. Longer drives translate to increased gas and maintenance expenditures, as well as accelerated vehicle replacement costs. 18% of the Navajo working population commutes 60 minutes to work; nationally only 8% drive this distance.

Table 2.2.9. US and Navajo Work Commute Drive Times

	US	Navajo Nation
Less Than 5 Minutes	4%	5%
5 Minutes to 30 Minutes	61%	48%
30 Minutes to 60 Minutes	27%	29%
More Than 60 Minutes	8%	18%

Source: US Census

Compared with US families, Navajo families may experience relatively higher utility and communications costs. Due to the lack of infrastructure and dispersed development patterns, many Navajo homes rely on more expensive utility generation such as propane, solar, or wind.

Additionally, many homes must haul water for potable usages, thus increasing transportation costs.

INFRASTRUCTURE DEVELOPMENT

Communities with established natural gas, water, and wastewater infrastructure achieve an economy of scale that enables them to provide homes with access to less expensive basic services. In contrast, geographically isolated households do not enjoy these benefits and must rely on septic systems, propane, and hauled water for basic household utilities. These systems can carry high costs; for example, pricing data from the US Department of Energy reveals that over the past two decades natural gas costs 50% less than propane. *Energy Consumption and Renewable Energy Development Potential on Indian Lands*, a 200X study conducted by the Department of Energy's Information Administration, shows that even where infrastructure exists, Native households pay approximately 7% more for electricity.

According to a study conducted by the Bureau of Labor Statistics, in 1992 the US had a state and county public capital investment (meaning basic infrastructure) totaling \$2,900 per-capita. Updated for inflation, the public infrastructure investment totals \$4,500 per person, which translates to approximately \$11,800 per household. This number is likely higher when municipal infrastructure investments are included. Because many Navajo families do not have access to public water and wastewater and have limited access to transportation infrastructure, they must incur this personal cost or go without basic services. These expenses reflect a significant component of the average Navajo household's expenditure profile, thus reducing their net income and ability to afford other housing options.

Table 2.2.10. US Public Investment Per Capita⁴¹

1992 Per capita Public Capital Investment	\$2,900
Updated for Inflation (2009 Dollars)	\$4,500
Capital/Household	\$11,800
US Household Size	2.6

HISTORIC AND CULTURAL CONTEXT

In addition to economic realities, affordability and ownership on the Navajo Nation is affected by cultural traits. For example, according to Navajo Partnership for Housing (NPH):

⁴¹ source

To begin with, the traditional religious culture of the Navajo is foreign to the American system of financing and purchasing homes. The Navajo concept of the earth is that of a deity whose bounty is held in common. In the traditional way of thinking, the idea of buying and selling pieces of Mother Earth is a sacrilegious act. Accordingly, the Navajo language has no words for the capitalist terms used in financing and purchasing land and houses. The Navajo tongue has no way of expressing concepts—such as debt-to-income ratio—that are the commonly used to conduct the business of home lending and purchasing. Yet in the interior of the Navajo Nation, many people mainly speak the traditional language.

DEFINING AFFORDABILITY

The fairly rigid federal definition based on AMI, while useful for deciding who can receive assistance, do not specifically identify how much a household on the Navajo Nation can afford to pay for housing. Defining affordability requires a comprehensive approach that examines income, financial realities, and household spending patterns.

The Bureau of Labor Statistics (BLS) provides consumer expenditure data by household size; these surveys break down annual household expenditures into a variety of categories. The BLS spending patterns are accurate for large segments of the population, however they do not account for the unique geographic and economic circumstances of the Navajo Nation. In order to determine how much money Navajo households can spend on housing, it is first necessary to determine how much families are spending on other goods and services. The following method is not exact and is provided only to present an estimate of Navajo spending patterns. Further surveys and research could provide more tightly defined conclusions.

NAVAJO CONSUMER EXPENDITURE PROFILE

In order to capture rural economic conditions, spending adjustment factors were used to alter general population spending patterns. The Economic Research Service in the US Department of Agriculture has extensively studied rural expenditure patterns and concludes that rural households spend 7% less than their urban counterparts on food. Navajos have 28% longer commute times than other US residents; it is assumed there is a direct relationship between commute times and transportation expenditures. At the same time, retail expenditures may be less; of the counties where there is a significant portion of Navajo Nation residents, retail sales per capita are 20% less than the nation as a whole.

The average US household spends 27% of annual expenditures on housing; 16% of total expenditures are shelter payments (rent or mortgage), the balance of the 11% is maintenance

and interior appointments. The adjusted expenditure patterns show that Navajos can afford to spend 18% of annual income on shelter-related expenses.⁴² Housing affordability thresholds are typically calculated assuming a 30% shelter payment. For comparison purposes the 30% analysis is presented in the following table.

Table 2.2.11. US and Navajo Spending Patterns⁴³

	US	Relative Adjustment Factor	Navajo Nation
Food	11%	-7%	10%
Housing (Total)	27%	N/A	30%
Shelter	16%	N/A	18%
Transportation	12%	28%	16%
Personal/Misc/Retail/Services	28%	-20%	22%

Source: US Census, USDA Economic Research Service

The expenditure calculations were utilized in an income and expenditure algorithm to calculate total ability to pay on long term debt or rent based on income data. Because the majority of households cannot afford to purchase a home outright, ability to pay is often determined by the amount of money a family can afford to borrow. The 18% of Navajo income that could service debt or pay rent is critical in determining purchasing power, the results are demonstrated in the following two sections. Housing affordability thresholds are typically calculated assuming a 30% shelter payment and for comparison purposes the 30% figure is presented where appropriate.

NAVAJO ABILITY TO SERVICE LONG TERM DEBT OR RENT

Calculating affordability thresholds involves examining expenditure patterns, income data from the NHA Survey, and financing assumptions. For the purpose of mortgage calculation, this analysis assumes a 30 year fixed rate of 7%.

⁴² Adjustment factors were based on USDA rural expenditure patterns

⁴³ Percentages do not add up to 100% because a portion of household income is not classified as expenditures, i.e. taxes, savings, etc.

Table 2.2.12. Navajo Nation Housing Affordability by Household Size at 18% of Income

Household Size	1	2	3	4	5
Low Income (25th percentile)					
Household Income	\$7,800	\$8,980	\$9,600	\$11,150	\$12,000
Affordable Monthly Shelter Payment	\$116	\$134	\$143	\$166	\$179
Mortgage Potential	\$17,400	\$20,100	\$21,500	\$24,900	\$26,800
Median (50th percentile)					
Household Income	\$8,330	\$13,640	\$16,180	\$19,180	\$20,220
Affordable Monthly Shelter Payment	\$124	\$203	\$241	\$285	\$301
Mortgage Potential	\$18,600	\$30,500	\$36,200	\$42,900	\$45,200
High Income					
Household Income	\$13,200	\$22,000	\$26,000	\$31,510	\$36,000
Affordable Monthly Shelter Payment	\$196	\$327	\$387	\$469	\$536
Mortgage Potential	\$29,500	\$49,200	\$58,100	\$70,500	\$80,500

As shown in the table, households with incomes in the 25th percentile (low income) can afford monthly housing payments between \$116 and \$179. Mortgage affordability for these households is approximately \$17,000 to \$26,000. It should be noted that households of five or more individuals with incomes in the bottom quintile had comparatively lower household incomes than households with 2-4 individuals. Households with median incomes (50th percentile) can sustain monthly housing payments between \$124 and \$301, allowing for mortgages between \$18,000 and \$45,000. Households in the top income quintile (75th percentile) can afford monthly payments between \$196 and \$536 for mortgages between \$29,000 and \$80,000. By contrast the median monthly shelter payment in the US was \$1,500 for owned homes and \$425 for rented units. Housing affordability thresholds are much lower on the Navajo Nation and help explain why many Navajos live in substandard housing. Improving conditions will require additional housing subsidies, improvements in the local economy, and creative financing solutions.

Using 30% of total income as the affordability threshold yields higher monthly shelter payments and potential mortgages; low income households could afford mortgages between \$29,000 and \$45,000. Median households could afford monthly payments between \$200 and \$500, allowing these households to sustain mortgages between \$31,000 and \$76,000. Higher income households could potentially tolerate mortgages up to \$135,000.

It should be noted that because land may not factor into purchasing or building a home, the mortgage calculations may apply only to construction costs.

DOWN PAYMENTS AND AFFORDABILITY

An additional aspect of determining affordability is a purchaser's ability to make a down payment. Although the ability to make monthly payments is probably a more important criterion, the ability to make a down payment is illustrated here to demonstrate a potential problem area. According to the Bureau of Economic Analysis, the average household savings rate over the past two decades is 4.4%. According to HUD, the average family uses 3 years of savings for a down payment. Applying these figures, it is possible to examine potential down payments for Navajo Households and, assuming a 10% down payment, calculate potential mortgages.

Table 2.2.13. Household Potential Down Payments

Household Size	1	2	3	4	5+
Low Income					
Household Income	\$7,800	\$8,980	\$9,600	\$11,150	\$12,000
3 Year Savings	\$1,030	\$1,190	\$1,270	\$1,470	\$1,580
Mortgage Potential	\$10,300	\$11,900	\$12,700	\$14,700	\$15,800
Median Income					
Household Income	\$8,330	\$13,640	\$16,180	\$19,180	\$20,220
3 Year Savings	\$1,100	\$1,800	\$2,140	\$2,530	\$2,670
Mortgage Potential	\$11,000	\$18,000	\$21,400	\$25,300	\$26,700
High Income					
Household Income	\$13,200	\$22,000	\$26,000	\$31,510	\$36,000
3 Year Savings	\$1,740	\$2,900	\$3,430	\$4,160	\$4,750
Mortgage Potential	\$17,400	\$29,000	\$34,300	\$41,600	\$47,500

On average, the mortgage potentials in the preceding table - Household Potential Down Payments are 70% lower than the potential mortgages established in Table Navajo Nation Housing Affordability by Household Size at 18% of Income. This indicates many Navajo families do not have sufficient income to save for down payments. Accordingly, a down payment assistance program may be a crucial element in providing standard homes for Navajo families.

REAL ESTATE MARKET PROFILE

Housing needs analysis typically follows a standard supply and demand model, where factors such as past market sales, existing inventories, consumer's ability to pay, and preferences combine to create a housing unit demand profile. This profile is then referred to as the "need".

The Navajo Nation does not have a standard real estate market, and there are numerous obstacles preventing the formation of a standard housing market. Including the physical size and dispersed pattern of development on the Navajo Nation which makes it difficult for agencies to accurately inventory existing homes or monitor ongoing real estate activity. As well as, a significant portion of the housing stock is dilapidated or non-conventional, further complicating the housing supply.

The Navajo Partnership for Housing (NPH) is a non-profit agency tasked with creating a real estate market on the Nation, and is the foremost authority on the existing Navajo real estate market. According to interviews conducted by the Navajo Partnership for Housing, while there is definitely clear demand for homes (with evidence suggesting the large majority of families would prefer to own a home on their ancestral lands), it is currently very difficult to facilitate this demand. This section briefly and incompletely outlines the current real estate market within the Navajo Nation.

LAND TENURE

Tribal lands held in trust complicate the real estate process by adding additional regulations and complex forms of ownership that are unfamiliar to most lending agencies.

REAL ESTATE AND BUILDING INFRASTRUCTURE

Because traditional real estate transactions are rare, the necessary professional infrastructure is not in place to handle the legal, commercial and business functions required to transfer properties. According to the NPH, "the Navajo Nation also lacks the kinds of professionals who facilitate real estate transactions in the rest of the United States. The realtors, title insurers, mortgage insurers, mortgage brokers, and closing attorneys are absent from the reservation." Furthermore, there are few professional construction/contractors operating within the Navajo Nation; the majority of building that does take place is done by off-reservation contractors.

NAVAJO PARTNERSHIP FOR HOUSING EFFORTS

The NPH receives funding under NAHASDA to provide housing-related services to the Navajo Nation. NPH has four goals that are essential to the creation of a real estate market: 1) see real estate deals through to conclusion, 2) provide gap financing to help overcome bureaucratic obstacles, 3) provide personal finance education, and 4) develop the economy through construction and finance activities.

Despite the obstacles, a limited real estate market does exist in the Navajo Nation. According to the Census Bureau, there were over 600 homes that were conveyed in 2009.⁴⁴ As detailed in the affordability section of this report, asking prices for homes on the Navajo Nation are significantly lower than the nation as a whole. The low home values are a partly a function of the overall quality of homes in the Navajo Nation.

Table 2.2.14. Asking Price for Homes Sold or For Sale

	US	Navajo Nation
Less than \$10,000	2%	17%
\$10,000 to \$100,000	30%	76%
\$100,000 to \$200,000	28%	1%
\$200,00 to \$300,000	15%	1%
\$300,000 to \$400,000	9%	0%
\$400,000 to \$500,000	5%	0%
\$500,000 +	10%	5%

Source: US Census

In conclusion, determining housing need on the Navajo Nation is not simply a matter of utilizing a standard supply and demand model because the information is simply not available. Consequently, this analysis utilizes a number of alternative techniques to describe demand, characterize the needs of existing and future supply, and estimate costs for realizing those needs.

The following section discussing Navajo housing preferences exemplifies one of the techniques used to express demand.

⁴⁴ Note that the majority of these homes were not sold, but rather conveyed or changed ownership in some format.—The number of homes actually sold on the Reservation is much lower than 600.

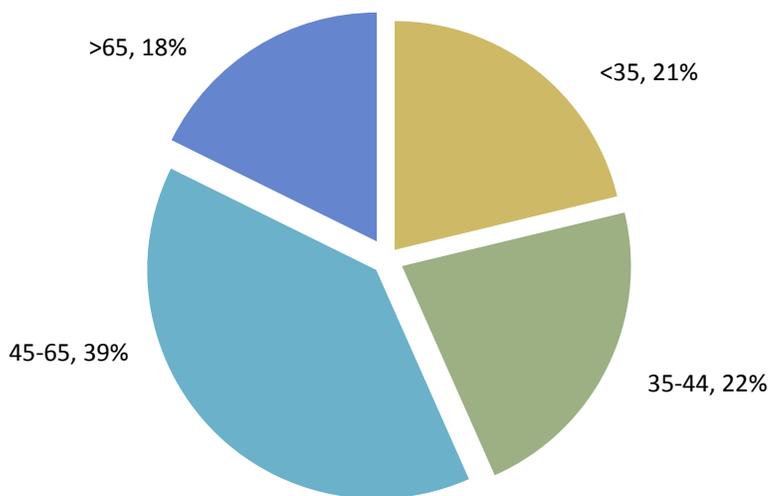
PREFERENCE SURVEY RESULTS

Because the original NHA survey contained minimal information with regard to housing preference, the analysis team designed and undertook a series of short on-site surveys to determine what Navajo Nation citizens preferred with regard to housing. This preference survey information was augmented with other ethnographic research on housing preferences, as conducted by the US Census Bureau.⁴⁵

PREFERENCE SURVEY DEMOGRAPHICS AND EXISTING CONDITIONS

In the spring of 2011, 114 surveys examining housing preferences of Navajo Nation residents were collected from the following chapters: Kin Ligaai, Toadleana, Ganado, Newcomb, and Santosee. 55% of respondents were female, with 39% between the ages of 45-65. The survey population had a higher percentage of females and middle aged respondents than the Navajo population as a whole. 13% of respondents were disabled, which is close to the 15% disability rate of the Nation as whole. Disabilities listed include diabetes, heart conditions, back injuries, and arthritis.

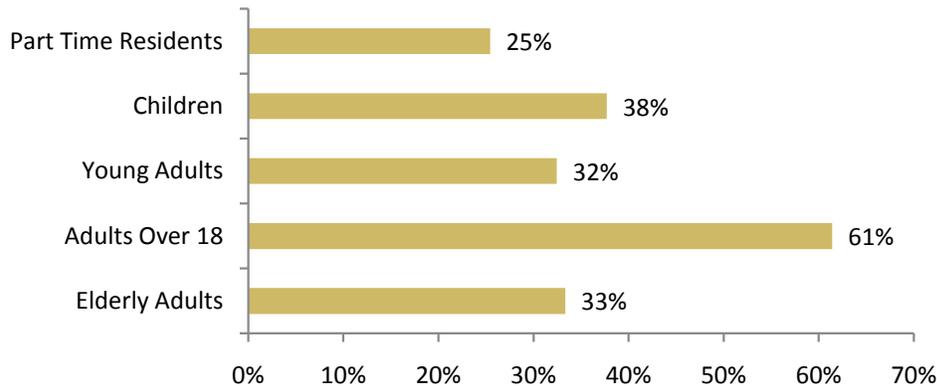
Figure 2.2.1. Preference Survey Respondents by Age



⁴⁵ Complex Households and Relationships in the Decennial Census and in Ethnographic Studies of Six Race/Ethnic Groups. Laurie Schwede, Statistical Research Division, US Census Bureau

One quarter of households have part-time residents, 38% have one or more children, 32% include young adults, 61% have adults, and 33% have elderly adults. 41% of respondents indicated living with extended family members.

Figure 2.2.2. Preference Survey Household Residents By Type



PREFERENCES AND HOUSING CONDITIONS

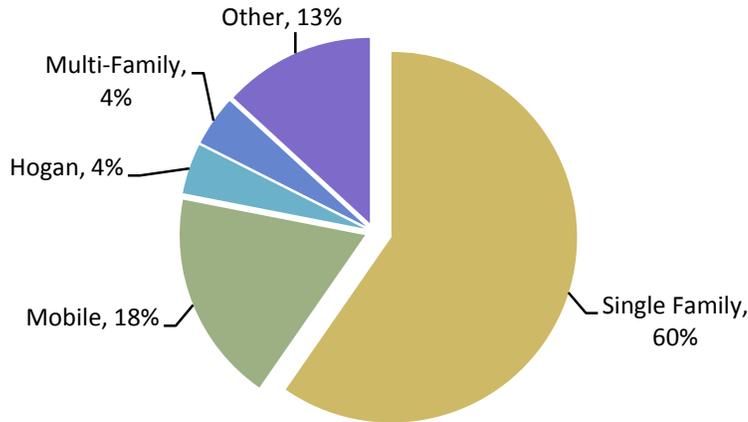
The majority of respondents prefer to live in single-family dwellings. Additionally, 18% of respondents indicated they would prefer to live in a mobile home⁴⁶. Only 8% of individuals want to live in multi-family homes or the traditional Hogan-style home.

Comments from satisfied homeowners include the following:

- “It’s my own space.”
- “Although a three bedroom, the house we currently live in is spacious, well built, energy efficient, has a garage and driveway and a spacious yard.”
- “I like not having to pay for a home and having my own land, and it is out in the country.”

⁴⁶ [The preference survey did not specifically differentiate between mobile homes, manufactured homes, or other prefabricated housing types.](#)

Figure 2.2.3. Preferred Housing Type



45% of respondents are satisfied with their current housing situation.

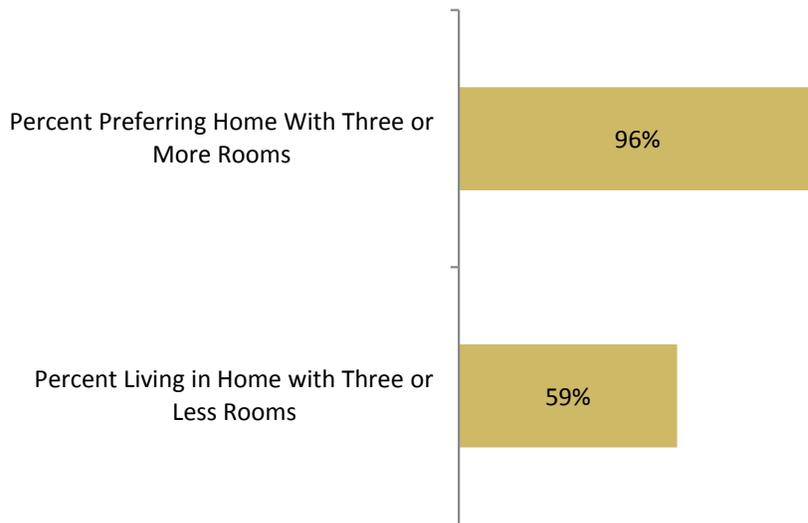
Dissatisfied homeowner comments include the following:

- “Too many people in home.”
- “Very old, dilapidated, need new home.”
- “Need septic tank repair, trailer skirt, additional remodeling.”
- “I can be more helpful if my home is bigger. I can watch more of my grandchildren.”
- “Need additional bedrooms and insulation.”
- “There is not a lot of space, plus we don’t have running water.”

Most comments from dissatisfied individuals involved dilapidated home conditions and crowding .

On average there were 1.3 people per room, which is 0.5 higher than the survey indicated preferred average ratio of 0.8. The survey showed 84% of individuals preferred a home that was larger than their current home. Individuals preferred to have an average of 2.3 additional rooms. 75% of surveyed individuals lived in homes containing four or less rooms, while 57% of respondents preferred homes with five or more rooms.

Figure 2.2.4. Preferred Number of Rooms vs. Actual Number of Rooms



The vast majority of individuals prefer to live on their own land and in a home they own. Only 10% indicated they did not want to live on their land; only 7% preferred to rent or own in common.

42% of respondents prefer to live in close proximity to their extended family, either in the same dwelling or on the same lot. 27% preferred to live in the same area as their extended family, but would like to have their own dwelling and lot. 31% indicated that it did not matter where their extended family lived.

Table 2.2.15. Extended Family Preferences

Prefer extended family living in same home	24%
Doesn't Matter	31%
Prefer extended family living in same area/neighborhood but not in the same home or same lot	27%
Prefer extended family living in other homes or structures but on same lot.	18%

One quarter of the individuals surveyed indicated they would not or could not sustain increased housing payments for better housing. 43% would be willing to pay more if it meant better housing for their immediate family, and 10% would pay more if it would help disadvantaged members of their community. 16% indicated they would pay more for other reasons including: “if I could own it and it was built securely and energy efficient”, and “I was going to own my own home”.

Table 2.2.16. Willingness to Pay

Better housing primarily for my immediate family	43%
Other	16%
Better housing for disadvantaged members of my community (elders, veterans, disabled)	10%
I would not or cannot pay more each month for housing	25%
Multiple	5%

The final question of the survey asked what respondents would change about their current homes. Answers included:

- “Getting it remodeled and up to date with new appliances, flooring, and windows.”
- “Children having their own homes.”
- “I need a home, we don’t have one.”
- “Have our own house instead of renting.”
- “Need a larger home.”
- “Need more bedrooms.”
- “Addition, better insulated, storm windows, cooling and heating system.”
- “Better foundation and more rooms.”
- “Wide doors for handicapped wheelchair accessibility.”
- “Have a little living room.”
- “Having more rooms and a better house than an old trailer.”
- “Everything, or a whole new house.”
- “Adding on more and larger rooms, but I am happy with what I have now.”

During the process of taking the preference surveys, the following housing stories were recounted to the staff:

A young man about 41 years of age got laid off from his job in construction. He had no choice but to move back to the reservation. He currently has seven members in his family. He does not have a home, but recently moved into a one room home which is owned by his wife's uncle. The current one room home has no kitchen, no bathroom or living room. The children's ages range from 12 months to 13 years.

Another individual has a home site lease, but is a single parent and cannot afford to build his home. He is a single father of two and all his income currently goes to his rented home in Shiprock. This individual has a home site in Sheepsprings, New Mexico. He only has the foundation of the home started.

Two elderly Navajo Veteran's age ranging from 65-75 said they both love their homes which were built for them because they are veterans. They would like to have a separate dining and living room added. The current standard style home which is the same floor plan for both homes is combined with the dining area and living room.

A 65 year old man wants a home that is wheel chair accessible. A year ago his granddaughter became really ill and was in a coma for 2 months. Because of her medical condition she was bed ridden and was not able to walk. The hallway is too narrow for her to get to the restroom and she's not able to get around the home.

EXISTING HOUSING PROGRAMS AND ORGANIZATIONS

This section presents a brief overview of existing housing assistance programs on the Navajo Nation. Although the Navajo Housing Authority (NHA) provides the most comprehensive housing services, many others provide ancillary services and, in several cases, duplicate services. The long-term growth and sustainability of the following organizations is of concern given stagnant and likely reduced federal funds for Indian housing and infrastructure development. Going forward, the substantial, continuing, and growing need for housing on tribal lands indicates Indian housing professionals will find it increasingly difficult to house their constituents. Therefore, a concerted effort to streamline and coordinate the activities of the agencies listed below could significantly improve delivery of housing and related services.

NAVAJO HOUSING AUTHORITY

The Navajo Housing Authority (NHA) is the designated organization tasked with allocating HUD Indian Housing Block Grant funds for housing projects on the Navajo Nation. According to the 2009 Indian Housing Plan (IHP), NHA manages 8,493 housing projects; 4,421 of these homes require extraordinary maintenance or modernization. In addition to managing public housing projects, NHA facilitates HUD Section 8 rental assistance, relocation programs, and lease-to-purchase programs. NHA is the largest housing organization, as measured by available funding and staff, serving the Navajo Nation.

EMPLOYEE HOUSING

The Navajo Nation Employee Housing Program (EHP), the Bureau of Indian Affairs (BIA), Navajo Tribal Utility Authority (NTUA), and Indian Health Services (I.H.S.) all maintain housing stock for some of their staff. These homes are not controlled by NHA and the number of units vary by employer. Currently the Navajo Nation Employee Housing Program has 100 units, and demand for 200 additional units. The EIG has 2,600 units which it provides to employees across the Nation. Given the demand, each organization is active in developing additional housing and utilizing resources other than NAHASDA.

BIA HOUSING IMPROVEMENT PROGRAM

The BIA's Housing Improvement Program (HIP) provides grant money to federally recognized tribes for home repair, renovation, and replacement. Native individuals and families can receive HIP housing assistance if they live in substandard housing and have incomes that do not exceed 125% of the poverty guidelines set by the US Department of Health and Human Services. HIP provides up to \$2,500 for housing repairs which threaten the health or safety of occupants, up

to \$35,000 to bring substandard homes into code compliance, and funds for home replacement if a home cannot be improved to applicable building codes.

NAVAJO PARTNERSHIP FOR HOUSING

The Navajo Partnership for Housing (NPH) is a not-for-profit organization that receives NAHASDA funding through NHA, as well as direct funding from the Department of the Treasury, to provide housing related services to members of the Navajo Nation. The mission of NPH is to “provide innovative and flexible homeownership financing opportunities on or near the Navajo Nation and empower Navajo families with new knowledge, skills and understanding which will enable them to complete real estate transactions”. In 2009, NPH provided services to 400 families through home counseling service, managing rental units, and leveraging monies for a revolving loan fund. Recently, NPH has embarked on infill housing development activities on fee-simple lands within the Navajo Nation. Previous housing development services were limited to single, scattered-site housing.

WEATHERIZATION ASSISTANCE PROGRAM

The Weatherization Assistance Program (WAP) provides maintenance and minor rehabilitation of low-income households on a first-come, first-served basis through an application process. Repairs may not exceed an average of \$3000 per unit and repairs are primarily intended to increase energy efficiency of the home, as well as related health and safety of the units. Annual allocation of funds from the Department of Energy are approximately \$200,000, with additional funds from public utilities.

DEPARTMENT OF NAVAJO VETERANS AFFAIRS

Veterans of the Armed Services residing on the Navajo Nation are eligible to receive housing assistance services through the Department of Navajo Veterans Affairs (DNVA). The DNVA partners with federal, state, and local entities, including NHA, to assist in the construction of housing throughout the Navajo Nation. Currently, funding for construction is limited to \$500,000 annually. Demand for these funds is high. One local veterans advocacy group in Chinle alone has a waiting list of 145 veterans requesting housing.

COMMUNITY DEVELOPMENT DIVISION

Although the Community Development Division does not produce housing, they have been successful at securing funding from the Department of Housing and Urban Development through the Indian Community Development Block Grant (ICDBG) program. Multi-million dollar grants have been utilized by CDD to construct or expand physical infrastructure for general community and economic development activities that could also benefit current or future residential development.

NAVAJO-HOPI LAND COMMISSION

The Navajo-Hopi Land Commission oversees activities in the 1.5 million acre Bennett Freeze Area in the extreme western portion of the Navajo Nation. Recently Congress lifted a freeze on development imposed on this area in 1966. Federal legislation has authorized resources to improve living conditions for residents who have been unable to receive housing and other community development assistance. Although programs have been limited to land improvements and agriculture, the potential for housing funding and program services is considerable given the need for housing improvements in the area.

OTHER HOUSING PROVIDERS

A number of non-profit organizations have worked to augment services available to members of the Navajo Nation. Their efforts, although nominal compared to the need, offer models for financing and development that could inform the range of solutions needed to address the various types and degrees of housing assistance identified in this report. The following organizations have completed work on the Navajo Nation, while several others not listed have expressed interest but have yet to complete housing activities on the reservation.

- Indigenous Community Enterprises. Located in Cameron chapter, this organization has received (as of this writing) past funding through NHA and other federal and private partners to build homes primarily for elders.
- Red Feather Development Group. This non-profit organization works with tribes and utilizes volunteer labor to build homes for families in need.

PART 2.

CHAPTER 3.

CALCULATING HOUSING NEED ON THE NAVAJO NATION

CHAPTER INTRODUCTION

This part of the report is the culmination of all research and analysis preceding it. Here, the total current housing-unit needs for the Navajo Nation are detailed. Housing needs are first determined by the condition of the housing stock and then looked at in terms of total capacity. Capacity based additions to the housing stock are driven by crowded housing conditions.

Next, the number of units by housing types is considered based on preference by size and style. Final, total, estimated costs are presented to address the total described need on the Navajo Nation.

HOUSING NEEDS ANALYSIS

This section develops a two-tiered methodological process to establish housing need for the Navajo Nation. The existing housing units are considered first in terms of condition and second in terms of capacity. Need analysis based on existing physical condition of housing stock was examined first to determine the required number of new units, relocated units, and repairs. The second level of analysis examines housing-stock capacity to determine the number of new units or expansions that need to be created in order to alleviate crowding issues.

TIER ONE - NEED ANALYSIS - PHYSICAL CONDITION

Using the Navajo Housing Authority (NHA) Survey, condition and capacity thresholds were established and remedies defined in order to address each specific problem. For example, if a home was listed as “dilapidated” the home is considered beyond repair and completely unsatisfactory for habitation; this analysis recommends the home be completely replaced. The following tables present the thresholds and their corresponding remedies.

Table 2.3.1. Physical Needs Thresholds and Remedies

Condition Threshold	Abbreviation	Remedy
Lack of electricity, offsite or lack of water, wood/pellet or lack of heat	3X Utilities	Relocate/Replace
Housing condition listed as “Dilapidated”	Dilapidated	Replace
More than 4 major repair needed	> 4 Major	Replace
Incomplete bathroom and lack of utilities	Bath (No Utilities)	Relocate Or Repair
Incomplete kitchen and lack of utilities	Kitchen (No Utilities)	Relocate Or Repair
4 or less major repairs needed	<=4 Major	Repair
Incomplete bathroom with utilities present	Bathroom (W/Utilities)	Repair
Incomplete kitchen with utilities present	Kitchen (W/Utilities)	Repair
4 or more minor repairs needed	>= 4 Minor	Repair
Less than 4 minor repairs needed, no other thresholds	<4 Minor	No Action

To ensure units were not double counted and repairs not included for homes that require replacement, the analysis used a tiered approach. This system began addressing the most serious conditions first, working through to units which do not need any action. Once a unit was determined to require action it was eliminated from further threshold checks. This method prevents prescribing more than one remedy per unit or attribution of multiple repairs to a

single home. In other words, if multiple repair thresholds are met, such as having a major repair and having five minor repairs, the unit is only counted once.

Table 2.3.2. Physical Condition Tiered Analysis Filter

Does the unit lack utilities?	
Yes: recommend replacement and relocation	No >
Is the unit dilapidated?	
Yes: recommend replacement	No >
Require more than 4 major repairs?	
Yes - recommend replacement	No >
Unit have incomplete bathroom or kitchen and lack water or electricity?	
Yes: recommend repair or potential replacement	No >
Require 4 or less major repairs?	
Yes: recommend repairs	No >
Unit have incomplete bathroom or kitchen and complete utilities	
Yes: recommend repairs	No >
Unit require 4 or more minor repairs	
Yes: recommend repairs	No - recommend no action

TIER TWO - NEED ANALYSIS - CAPACITY

The second layer of need analysis examines the capacity and crowding issues of Navajo Nation housing stock. It is important to highlight that these two analyses do not overlap. The first analysis concerning physical needs does not account for overcrowded homes. In other words, if only physical needs are addressed, the housing stock will be brought up to “livable” standards but the units required to alleviate overcrowding will not be included in the final solution. For



this reason it is imperative that solutions include construction of new units for both physical condition and crowding needs. The capacity threshold allows for two people per bedroom before a person is counted as a surplus individual. This threshold is roughly in line with the desires shown in the preference survey. If all households enumerated by the NHA Survey had 2 people per bedroom, there would be .77 individuals per livable room, which aligns with data showing a preferred ratio of 0.8 people per livable room.⁴⁷ Using this standard for household capacity, a family of four would live in a two-bedroom home, with a total of five livable rooms.

The capacity analysis utilized the same tiered structure as the physical conditions analysis, to ensure units were not counted more than once. Homes with more than two surplus individuals were sorted out before the homes that need expansions were counted.

Table 2.3.3. Capacity Needs Thresholds and Remedies

Capacity Threshold	Abbreviation	Remedy
3-4 surplus individuals living in a home	Surplus >2, <=4	1 New Unit
5-8 surplus individuals living in a home	Surplus >4, <=*8 (2 Units)	2 New Units
More than 8 surplus individuals living in a home	Surplus >8 (3 Units)	3 New Units
Multiple families living in home with 1 or 2 surplus individuals	Multi-Family	1 New Unit
2 or less surplus individuals living in a home	Surplus <=2	Expansion
No surplus individuals and single family living in a home	No Action	No Action

⁴⁷ 0.8 persons per room is derived from the preference survey. See chapter two of this report.

Table 2.3.4. Capacity Tiered Filter

Does the unit have 3-4 surplus individuals?	
Yes: recommend one new unit	No >
Does the unit have 5-8 surplus individuals?	
Yes: recommend two new units	No >
Does the unit have more than 8 surplus individuals?	
Yes - recommend three new units	No >
Are there multiple families and 1-2 surplus individuals?	
Yes: recommend 1 new unit	No >
Are there 1-2 surplus individuals?	
Yes: recommend 1 new unit	No > recommend no action

TIER ONE - NEED ANALYSIS - PHYSICAL CONDITION RESULTS

Applying the thresholds to the NHA Survey shows that 90% of the housing stock on the Navajo Nation is in need of being replaced or repaired. It should be noted that this analysis only counted a unit once; many of the homes met multiple criteria. For example, nearly 20% of homes do not have the utilities required for a complete bathroom or kitchen and needed one to four major repairs.

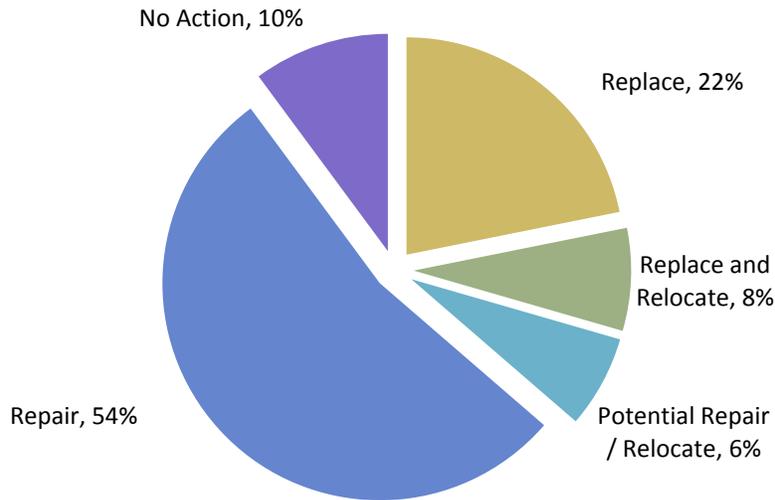
Many homes that need to be replaced require replacement for more than one reason. Much of this problem is likely related to the age of homes on the Navajo Nation. On average, homes are 27 years old; more than a third of the total stock is over 30 years old. It is assumed that many of these homes were not well built to begin with, or did not receive necessary maintenance and upgrades over the last decades. 63% of the dilapidated homes are older than 30 years, and 75% of homes older than 30 require at least one major repair. Only 15% of homes 30 years or older do not require any major or minor repairs.

Table 2.3.5. Navajo Nation Housing Stock Physical Condition and Remedy

Condition	Remedy				
	Replace Unit	Replace and Relocate Unit	Potential Repair or Relocate	Repair Unit	No Action
3X Utilities		8%			
Dilapidated	12%				
> 4 Major	10%				
Bath (No Utilities)			4%		
Kitchen (No Utilities)			2%		
<=4 Major				34%	
Bathroom (w/Utilities)				18%	
Kitchen (w/Utilities)				<1%	
>= 4 Minor				1%	
<4 Minor					10%
Totals	22%	8%	6%	54%	10%

According to the NHA database, only 10% of housing units on the Navajo Nation do not require any remedy. More than half (54%) of units are in need of repairs, and 30% of the housing stock needs to be completely replaced. Some units may need to be replaced and relocated in order to have access to utilities. In our analysis, if a unit had lack of three or more utilities, the remedy may require that a new unit be constructed in a location close to existing utility infrastructure. In some cases the remedy may be a replacement or simply a repair, depending on proximity to existing utility infrastructure.

Figure 2.3.1. Physical Condition Remedies By Type



Using the 2010 Navajo Nation ACS Census housing unit count as a baseline, and applying the remedy percentages from the NHA survey, it is possible to calculate the size and scope of the physical condition of homes on the Navajo Nation. Over 18,000 units need to be replaced, nearly 5,000 of which may also require relocation due to the lack of nearby infrastructure. 34,000 units are in need of significant repairs. Only 6,500 units are in good enough physical condition to warrant no direct action.

Table 2.3.6. Required Physical Remedies to Existing Housing Stock

Remedy Type	Number of Remedies ⁴⁸	% of Total Housing Stock
Replace	14,000	22%
Replace and Relocate	4,900	8%
Potential Repair / Relocate	4,400	6%
Repair	34,300	54%
No Action	6,500	10%
2010 Census Baseline Total Units	63,866	100%

⁴⁸ Figures have been rounded to the nearest 100

EXAMPLES OF HOUSING CONDITION

The following pictures are of actual homes that participated in the NHA Survey. During that Survey homes were categorized into one of six categories.

CATEGORY: STANDARD

No, or few, inexpensive repairs necessary. House in good habitable condition.

Standard single family home



Standard Hogan



CATEGORY: MINOR REPAIRS

The minor repairs category includes homes needing minor safety upgrades, doors, windows, or minor roof work. These homes are generally in habitable condition.

Single family, minor repairs



CATEGORY: MAJOR REPAIRS

The major repair category includes significant foundation, roof, electrical, plumbing, or building envelope issues. These homes may be repaired, but the severity of major repair categories suggests that homes with multiple, serious, major repair issues may not meet habitable standards.

Single family, major repairs



Hogan major repairs



CATEGORY: DILAPIDATED

The dilapidated category includes homes for which repair would be both impractical and inadvisable. The majority of homes in this category are greater than 30 years old and not currently in habitable standard, nor could they be brought to that standard for less than it would cost to simply build a new home.

Single family, dilapidated



Hogan, dilapidated



CATEGORY: OTHER

The other category includes all non-traditional or non-standard housing units and includes shelter types that were either not intended or not suitable for habitation or long-term habitation. The category includes animal building structures, tents, shacks, makeshift shelters, and recreational vehicle units that are being used as permanent/semi-permanent domiciles. Some people included manufactured homes in this category, probably out of confusion. This indicates some need for clarity when discussing housing types.

Home in the “other” category



The other category includes all non-traditional or non-standard housing units and includes shelter types that were either not intended or not suitable for habitation or long term habitation. The category includes animal building structures, tents, shacks, makeshift shelters, and recreational vehicle units that are being used as permanent/semi permanent domiciles.

TIER TWO - CAPACITY NEEDS ANALYSIS – RESULTS

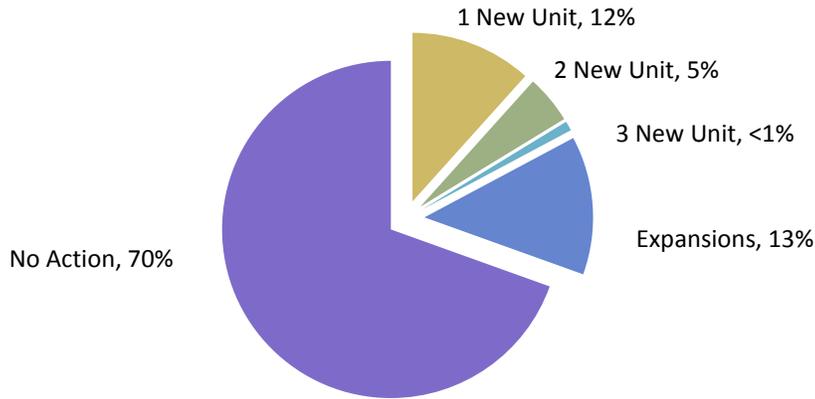
The problem of overcrowding on the Navajo Nation is not as dramatic in number as the problems occurring from the aging and poorly constructed housing stock. However, a significant portion of the population lives in dwelling units that are occupied beyond accepted and preferred standards.

Table 2.3.7. Navajo Nation Housing Stock Capacity Condition and Remedy

Condition	Remedy			Unit Expansion	No Action
	1 New Unit	2 New Units	3 New Units		
Surplus >2, <=4	8%				
Surplus >4, <=*8 (2 Units)		5%			
Surplus >8 (3 Units)			<1%		
Multi-Family	4%				
Surplus <=2				13%	
No Action					70%
Total	12%	5%	<1%	13%	70%

70% of homes do not require a remedy to correct an overcrowding issue. To remedy overcrowding, 12% of homes would require the construction of a new unit, 5% of homes would require two new units and a small percentage would require three new units. 13% of homes do not need a new unit constructed to remedy overcrowding but simply need additional rooms built onto an existing structure.

Figure 2.3.2. Capacity Remedies By Type



Based on the 2010 Baseline Census housing counts, the addition of 15,200 new units and the expansion of 8,500 units would alleviate overcrowding issues on the Navajo Nation.

Table 2.3.8. Required Capacity Remedies to Existing Housing Stock

Remedy Type	Number of Remedies
1 New Unit	7,500
2 New Unit	5,900
3 New Unit	1,800
Expansions	8,500
No Action	44,500

COMBINED PHYSICAL CONDITION AND CAPACITY RESULTS

Combined, the need analysis shows that the Navajo Nation is in need of 34,100 new units, 4,400 potential new units or repairs, 34,300 repairs and 8,500 unit expansions. 45% of the demand for new units originates from capacity-related needs totaling 15,200 units. The remaining 55% of demand is due to physical conditions and requires 18,900 new units.

Table 2.3.9. Combined Remedy Total

	Condition Related	Capacity Related	Total
Total New Units	18,900	15,200	34,100
Total Potential New Units/ Repairs	4,400		4,400
Total Repairs	34,300		34,300
Total Expansions		8,500	8,500

HOUSING NEEDS BY UNIT TYPE

This Section suggests housing unit types to meet the now established need. Housing type recommendations are based on demographics and available preference information. The 34,100 new units were divided by type, room size, and population needs. Additionally these units were divided into detached single family structures, manufactured homes, Hogans, or multifamily/attached units. Units were then further subdivided by size and potential occupants.

At this stage of planning, it was thought best to categorize Navajo citizen preferences into three basic home styles which will meet the majority of the population's needs. The basic styles are elderly, family-oriented homes, and homes described as flexible, meaning they can be built to accommodate the preferences not served by family or elderly homes. The styles are described below.

ELDERLY HOMES

Features of elderly homes include:

- Single story
- Minimal grade changes for ingress and egress
- In proximity to health care services
- Bright lighting
- Well insulated with high-efficiency heating and cooling
- Non-slip flooring surfaces
- Rooms and floor plans designed to accommodate large furniture and wheelchair accessibility.
- Grab rails in appropriate locations

FAMILY HOMES

Features of family homes include:

- Bedrooms with adjacent bathrooms
- Plenty of storage/ outbuildings for storage
- Yards
- Onsite washer/dryer
- Close proximity to schools, facilities

FLEXIBLE HOMES

Flexible units describe all of those units that do not fit into the elderly or family category. Examples of these home types could be a studio and/or single-bedroom units intended for single persons, or perhaps attached multi-family units intended for single parents or seasonal workers. It should be noted that these housing categories are not necessarily mutually exclusive; inevitably there will be some overlap between categories.

HOUSING UNIT BREAKOUT BY UNIT TYPE AND HOME STYLE

Preference survey information was used in conjunction with demographic data to generate housing type and style breakouts. Responses were cross-tabulated, accounting for unit preference by the presence of families and elderly, as well as preferred number of rooms. For example, the analysis asked what percent of households preferring single family homes had elderly individuals present, as well as how many rooms this household preferred.

Table 2.3.10. Housing Unit Type Preferences by Household Composition

Home Style	Home Type			
	Single Family	Mobile	Hogan	Multi-Family
Elderly	32%	18%	25%	29%
Family	48%	45%	75%	43%
Flexible Units	20%	36%	0%	29%

The data was then used to examine the preferences of the elderly and families in order to determine adequate home size.

Table 2.3.11. Housing Unit Size by Household Composition

Number of Bedrooms	Percent of Units by Number of Bedrooms				
	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom	5 Bedroom
Elderly	24%	28%	4%	4%	40%
Family	20%	18%	24%	25%	14%
Flexible Units	22%	33%	19%	11%	15%

Approximately one third of the total new units will need to be single family units that can accommodate families. There is demand for 7,400 single family homes to accommodate elderly individuals, 1,700 Hogans, and 7,300 manufactured units. The following table summarizes the breakdown by home type, size and special conditions.

Table 2.3.12. Unit Types by Number of Room and Type

Home Type & Size	Home Style		
Single Family	Elderly Homes	Family Homes	Flexible Units
1 BR	1770	2220	1070
2 BR	2070	1990	1600
3 BR	300	2660	890
4 BR	300	2880	530
5 BR	2960	1550	710
Total	7400	11300	4800
Mobile/ Manufactured			
1 BR	550	690	320
2 BR	640	620	500
3 BR	1110	2190	780
Total	2300	3500	1600
Hogan			
Total	500	800	400
Multi-Family			
1 BR	120	160	50
2 BR	140	140	100
3 BR	240	500	250
Total	500	800	400

A one-size-fits-all approach to housing issues on the Navajo Nation is not appropriate and may not accommodate many individuals and families. The needs analysis shows significant demand exists for new single family, detached homes with additional bedrooms which are oriented to a variety of population types, including the elderly and traditional and extended families.

The study also strongly suggests the Navajo housing stock would benefit from the addition of numerous manufactured homes to accommodate lower-income populations. Manufactured homes have the additional benefit of offering an expedient solution to dire housing situations. Hogans and multi-family homes will round out the housing stock for remaining residents.

POTENTIAL COSTS

The final portion of this analysis presents the potential costs associated with remedying housing issues on the Navajo Nation. These cost estimates provide both monetary context and additional scale for examining the true nature of housing problems on the Navajo Nation.

NEW CONSTRUCTION

Cost figures for constructing new units were obtained from HUD’s Office of Native American Programs (ONAP). These figures are regionally specific and based on home size. Estimated single family home costs are between \$205,000 and \$310,000; it is estimated that construction costs for these units would be between \$150 and \$250 per square foot, which is consistent with recent building projects on the reservation. HUD does not provide construction costs for manufactured and multi-family units on the Navajo Nation, but the best available construction estimates suggest these types of units can be built for approximately half the per square foot cost. Manufactured and multi-family units will cost between \$102,000 and \$155,000, with per square foot costs of \$75 to \$125. It is assumed that manufactured units and multi-family homes will not be larger than three bedrooms. Hogan construction cost information was obtained from a report prepared by Indigenous Community Enterprises, which estimates a per Hogan building cost of \$20,000.

Table 2.3.13. New Home Construction Costs by Home Size

	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom	5 Bedroom
Single Family	\$205,000	\$217,000	\$244,000	\$285,000	\$310,000
Mobile	\$102,500	\$108,500	\$122,000		
Hogan	\$20,000				
Multi-Family	\$102,500	\$108,500	\$122,000		

REPAIR COSTS

Repair costs were obtained from the 2009 NHA Survey in which respondents were asked to classify types of repairs by total cost. Major repairs cost an average of \$22,500, minor repairs \$7,500, and new bathrooms/kitchens \$20,000. Expansions are estimated to cost \$40,000.

The largest variable in the study is homes classified as “potential” repair or replacement. Repair of these homes would require only \$77 million to execute, while it would cost just over \$1 billion if all of these homes need replacing. It is likely the true number lies somewhere between these two extremes.

TOTAL COST TO MEET THE NEED

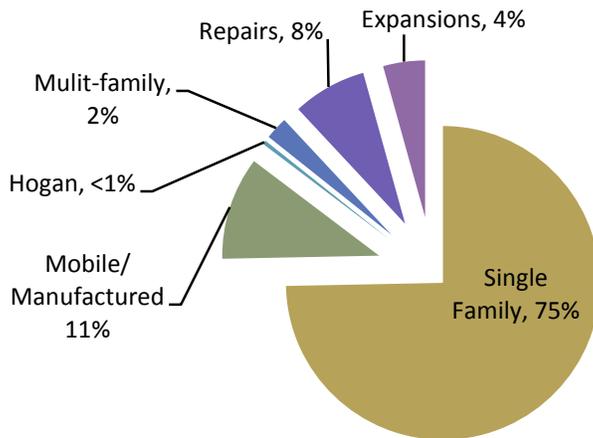
In total, this analysis estimates transforming the Navajo housing stock from its current condition to an overall satisfactory level for every citizen living on the Navajo Reservation will cost between \$7.9 and \$8.9 billion dollars.

The majority (88%) of costs are a result of constructing new units to alleviate overcrowding and dilapidated living conditions. Repairs and expansions occupy a relatively small portion of the total costs. At \$5.8 billion, the construction of single family, detached housing units is the largest contributor to estimated construction costs, comprising three quarters of the total. The construction of manufactured and multi-family homes is estimated to total just over \$1 billion. The cost for repairs and expansions to existing units totals just under \$1 billion, or about 12% of the total.

Table 2.3.14. Estimated Total Construction, Repair and Expansion Costs

New Units	Total Costs
Single Family	\$5,880,470,000
Mobile/Manufactured	\$836,420,000
Hogan	\$32,000,000
Multi-family	\$184,660,000
Total New Units	\$6,933,550,000
Repairs	\$600,250,000
Expansions	\$340,000,000
Potential Repairs/Replacements	\$77,000,000 - \$1,109,680,000
Grand Total	\$7,950,800,000 - \$8,983,480,000

Figure 2.3.3. Percentage of Total Construction, Repair and Expansion Costs⁴⁹



It should be noted that the cost estimates in this analysis are gross approximations and meant to provide a broad estimate of potential costs. Accurate cost accounting will be dependent upon a clear and specific housing plan that registers actual “to build” units by type, size, and location. Also, these costs are only suggestive of the total cost and do not make any implications about how much of the cost would be borne by the public sector or residents of the homes themselves. Nor do the costs reflect the administration of such a program.

What does seem clear is the majority of the demand and need is for single family homes; thus it may be prudent to give priority to meeting this need.

⁴⁹ Does not include costs from the potential repairs/replace category

PART 2.

CHAPTER 4.

RECOMMENDATIONS

RECOMMENDATIONS

As indicated in this report, the scale of need for new and repaired housing is great. Meeting this objective is complex. There are a number of questions that need to be asked and answered. These include but are not limited to:

- What are the existing Navajo Nation resources to plan and construct new housing?
- How many organizations are going to be involved in delivering on the repair and construction of the housing?
- What is the current capacity to renovate or provide expansions?
- How long will it take to complete these objectives?
- Are plans currently in place to meet these objectives?
- What specialists are going to be required to complete this project?
- What other information is needed to begin this project?
- How long would it take to properly train and manage project management staff?
- What funding is in place to repair property not currently managed by NHA?
- How long will it take homeowners to generate the financial resources so that they are ready for new properties?
- What other financial planning needs to occur?
- How much workforce is currently ready and available to meet the construction pace and how long will it take to train more?
- Are we willing to supplement the pace with off-nation contractors? If yes, what type of training contribution will they be expected to provide to build local capacity?
- Who is going to lead this effort?

The answers to these questions can be simplified into three task areas:

1. Organizational Development
2. Planning
3. Financing

If these three tasks are completed they can be immediately followed by implementation – that is housing production. Of course, some scale of housing production is and will take place prior to a full ramp-up of housing production on this scale, but these tasks represent the necessary ingredients to a long term solution to the complex need issues outlined in this report.

The talent and experience that the Navajo Housing Authority possesses in the development and management of affordable housing provides it with an opportunity to lead an effort that could mark the beginning of community renewal benefitting both housing residents and Navajo Nation government agencies. The recommendations contained herein recognize that the scale of the effort ahead is large and therefore, they are intended to create opportunities for NHA to engage other parties to more actively participate in housing and community development activities thereby sharing both burdens and successes.

In each of these three areas recommendations are categorized into near and long-term objectives. The assessment of what the current organizational capacities are, will determine what can be done sooner and what will need more foundational work to proceed. In addition, an assessment of initiatives currently in development by the NHA to meet its mission may make some of these recommendations redundant.

ORGANIZATIONAL DEVELOPMENT

DINE HOUSING TASKFORCE - INTER-AGENCY COLLABORATION

The main question that naturally comes out of an effort like this is, “What does the organization need to do in order to successfully meet the objectives and scale of the work ahead of it?” The first and foremost recommendation is that a “Dine Housing Taskforce” be formed that includes NHA’s key and potential allies in providing housing and related services. At the macro level, the scale of the housing issue will only effectively be addressed with a more robust level of sharing and coordination of information. Such coordination positively influences work outcomes. For example, an individual housing development project may benefit from involving behavioral health services providers early in the project planning phase so that community space for delivery of services can be designed into the housing project. Coordinating housing as well as social service goals facilitates improvements in asset management, rent collection and compliance issues.

The need for coordination was made clear to the project team at the start of this study. Attempts to secure information from varied sources in order to form a more complete picture of Navajo Nation housing and infrastructure were not successful. Without active participation and “buy in” at the leadership level from other agencies, putting together a complete understanding of the existing housing situation, much less building an efficient process for building and operating housing on the Navajo Nation at the needed scale, is not possible.

The economic and social distress that impact many people living within the Navajo Nation suggests that community wellness is a mission that all Navajo government agencies and NHA share in common. Creating acceptance of this shared mission may provide the basis for not only more successful housing but long term community development efforts as well, so long as the relevant providers coordinate and collaborate effectively.

This housing taskforce would potentially have committees to cover important aspects of housing development including:

- Planning, zoning and Infrastructure



- Employment, Job Training and Education
- Land, Community and Economic Development
- Public Safety, Social & Behavioral Health

During the formation of the Taskforce the parties would be tasked with bringing forward relevant information from their agencies to build a communal data store for planning.

ORGANIZATIONAL DEVELOPMENT PERSONNEL

In order to successfully meet the objectives and scale of the work ahead, it is recommended to secure the services of a professional in Organizational Development to assess current organizational capacities. These capacities would include:

- Commitment to a shared vision
- Inherent paperwork processes within federally funded construction projects
- Cross training for business cycle leveling
- Project management in all aspects including grant funding and reporting, planning, construction, property management, and mortgage and homeowner assistance
- Developing processes for moving homes from construction into operations

In the short term this need might be met by a consultant team, but in the long term the vision is for an executive staff member that will keep the organization healthy and focused on meeting its objectives with strategies for staff growth, education, change management, process improvement and structural viability. The person in this role should have graduate level studies in organizational development, development of workforce learning or industrial psychology with strong experience in designing and implementing learning and organizational effectiveness programs that are executable in the context of public agencies. As part of creating long-term organizational solutions, it may be beneficial to identify a couple of committed staff members to receive a graduate scholarship opportunity to gain these skills while meeting short term goals with a consultant.

A role for this position would also be overseeing the next recommendation, which is to facilitate the educational structure to meet the multiple levels of skills needed to achieve housing objectives identified in this report.

EDUCATION

The level of complexity proposed to expand into and deliver the multiple housing activities suggested in this report, dictates an enhanced level of training for employees of taskforce agencies and members of the community who will constitute the resources to deliver the needed housing. The training must be relevant, easily accessible and cost effective.

The Red Lake Chippewa of Minnesota have some useful insights about taking a diligent approach to major projects:

“Efforts to create non-casino jobs on the reservations have had limited success. Over the past few years, the Red Lake Tribe has started a water bottling plant, a door factory and a modular home factory. All of those businesses failed. Red Lake Tribal Chairman Buck Jourdain blames politics and poor planning.

"A lot of the projects that don't succeed in Indian Country are attributed to a rush to create jobs in general," Jourdain says. "A lot of times when you have new administrations come in, they don't want to waste a lot of time doing the educating, doing the due diligence and a lot of thorough planning. And you spend a ton of money and throw it into projects that are not well thought out."⁵⁰

Engaging the scale and cost of the housing need as outlined in this report will require a methodical approach to planning and training to achieve the ultimate objectives of providing better quality housing.

The Office of Native American Programs issued [Program Guidance](#) No. 2010-03 in May 2010 that allows, for the first time, use of NAHASDA funds for building and operation of training centers so long as its activities benefit low and moderate-income families. The report authors recommend consideration of establishing a training center to benefit those with an interest in gaining skills to participate in the activities proposed to meet the housing need. The relevant sections of the Program Guidance are excerpted below:

“Section 202. Eligible Affordable Housing Activities

⁵⁰ “Northern tribes rally to boost economy” by Tom Robertson, Minnesota Public Radio November 30, 2006 <http://minnesota.publicradio.org/display/web/2006/11/28/tribalsummit/>

Affordable housing activities under this title [title II of NAHASDA] are activities, in accordance with the requirements of this title, to develop, operate, maintain, or support affordable housing for rental or homeownership, or to provide housing services with respect to affordable housing, through the following activities:

(4) Housing Services -- The provision of housing-related services for affordable housing, such as housing counseling in connection with rental or homeownership assistance, establishment and support of resident organizations and resident management corporations, ...assisting owners, tenants, contractors, and other entities, participating or seeking to participate in other housing activities assisted pursuant to this section.

- Activities related to the provision of self-sufficiency
 - Job placement and job training for residents of affordable housing
- The development and delivery of training courses related to the administration of affordable housing activities and programs in compliance with NAHASDA....

(6) Model Activities -- Housing activities under model programs that are designed to carry out the purposes of this Act and are specifically approved by the Secretary as appropriate for such purpose.

- Construction of an administrative facility and training center⁵¹

Relevant, consistent education and training is of paramount importance to provide as much housing as is needed, create the local capacity to finance, build, manage, and maintain that housing and create self-sufficiency.

TRAINING

Training and professional development, as opposed to academic education, refers to the acquisition of knowledge, skills, and competencies for the purpose of increasing vocational or practical capabilities. Building professional competency will take more exposure than conferences or workshops can provide.

⁵¹ Program Guidance No. 2010-03 Office of Native American Programs – Office of Public and Indian Housing 5/7/2010. Emphasis added.

Initially, the training would have three primary objectives:

- Engage taskforce agency personnel in a training environment to build rapport between agency personnel and develop camaraderie towards a shared vision of sufficient, decent and affordable housing across the Navajo Nation.
- Align federally funded housing priorities with capacity building of task force agency employees;
- Provide education from subject matter experts using controlled delivery of local training on-site, in a cost-effective manner;

TASKS TO CREATE TRAINING

We recommend forming a “Dine Housing Institute” funded under the Program Guidance 2010-03 and built collaboratively with existing educational providers in the area, potentially engaging the resources of Northern Arizona University, Navajo Technical College and Dine College. The objective would be to access faculty members with core competencies in the areas of study and supplement them with members of the professional community practicing in the federal housing environment. We envision a curriculum leading to job competency in providing affordable housing. The subject matter of this curriculum would include:

- Basics of Federal regulations relating to housing including NAHASDA, HUD, etc.
- Finance procedures including homeowner financing and large scale federal programs
- Planning and housing development
- Shared equity and other affordable home-ownership models
- Legal issues of housing
- Social and behavioral health services related to affordable housing
- Construction contract administration

Some of these courses could be met by bringing existing programs offered by the Construction Specifiers Institute or the Project Management Institute to the on-site training facility.

WORKFORCE TRAINING OBJECTIVES

In addition to providing training to prepare the agency employees for their work in creating housing, there is an opportunity to train the workforce which will renovate, build, maintain and occupy the housing.

The second track that could be provided by the “Dine Housing Institute” would be access to technical training. Too often contractors and others are underprepared to participate in

federally funded construction programs due to misunderstandings about paperwork, complex accounting requirements, lack of understanding of the quality control procedures and lack of familiarity with the contract structures. It could become a requirement of submitting to do the work that the workforce has successfully completed a course of study decided to help them succeed. In collaboration with already existing job training, the goal of this second track would be to prepare contractors and workers with the skills needed to enter the workforce for modern housing. Some of those existing job training programs could be providing training under the Workforce Investment Act which contains provisions aimed at supporting employment and training activities for Indian, Alaska Native, and Native Hawaiian individuals or The Department of Labor's Indian and Native American Programs (INAP) which funds grant programs that provide training opportunities at the local level.

There are potential tracks for workers to conduct the renovations on the existing houses, a track for workers to build the new homes and potential for a track to train workers for mechanized construction techniques to construct manufactured housing.

HOMEOWNERSHIP TRAINING

Potentially one of the most important educational tracks for long term sustainability of the housing efforts will be training for homeownership. Tracks could be offered in home maintenance to create familiarity with the new constructions, especially if any green technologies are used. Also preparing for mortgage financing, tax implications and managing other financial issues presented by some of the housing opportunities will be important. This could be part of a program to help homeowners save down payments and prepare to understand the contracts they might be undertaking.

PLANNING

Expenditures of the scale outlined in this report will require extensive and coordinated planning. To some extent this step can be concurrent to organizational development. The purpose here is to begin to organize the strategies and resources necessary to begin home remediation/improvement.

HOUSING MASTER PLAN

The basic outlines of the planning stage (not including organizational development or financing steps) are as follows:

1. Develop a Navajo Nation-wide Housing Master Plan that includes:
 - a. Comprehensive and subarea plans
 - b. Community process clarifying (if necessary) community vision and goals with regard to new housing and development
 - c. Development of future land use maps with environmental, geologic, existing use, hazards, slope, ownership, and other relevant constraint factors
 - d. Existing infrastructure analysis
 - e. Future infrastructure analysis
 - f. Infrastructure strategic approach – building economies of scale
 - g. Detailed inventory sample for both repairs and replacements – requires architectural and engineering assessment samples
 - h. Development of comprehensive preference information from citizens
 - i. Individual housing unit designs (architectural)
 - j. Location determinations including both general area and site design standards (landscape architectural)
 - k. Project phasing including milestone development
 - l. Project coordination and implementation matrix/responsibility delegation

The project needs to begin with a Master Plan, similar to what is common to municipal and county land use planning throughout the United States – that answers the simple questions of: What do we want to build? Where do we want to build it? How are we going to build it?

The following subsections expound on some of the necessary details and considerations common to the planning phases of projects of this scale.

PLANNING AND POLICY FORMATION

In order to undertake and ramp up for a program of this scale, there may need to be interaction with the Navajo Nation governmental planning structure to address general plan issues. This may also extend to utilities, roads and schools. There may also need to be review with HUD of the recommendations in this report for policy implications.

As a large program which potentially impacts every extended family on the Nation either for housing or potential employment, establishing policies that address potential concerns can only help reduce the occurrence of political roadblocks. Some of the issues for program policy considerations are:

- What are the policy implications of financing recommendations?
- What are potential land policies that need to be in place?
- Will there be a set percentage of work over what period of time that is required to be done by local contractors?
- Will non-local contractors have local hiring and training requirements?
- What will the priority structure be for people having their housing need addressed? (Using existing structures like chapters or extended family clans to help create a prioritization plan may assist in public acceptance of the programs.)

It is recommended that firms with strong western and rural comprehensive planning backgrounds be sought to assist with the master planning phase.

TECHNOLOGY SUPPORT

The complexity of this undertaking and the magnitude of the effort clearly defines a need for a management platform that can help to facilitate the developed best practices, work-flows and quality control measures. A needs analysis is recommended to determine what can be encapsulated by a systems approach, how it is developed and implemented and how it is maintained. Once the system objectives are understood, it is best to include the scope of its development efforts into Taskforce initiatives. From there a gap analysis can be conducted which would include evaluating each departments existing systems, interoperability opportunities as well as defining how to evolve existing systems from where they are today to where they need to be to meet the needs of this effort.

The basic principles of a system should be to:

1. Inventory the assets - A full inventory of what is being managed is necessary. Assets would include land, structures, housing units, and infrastructure. In addition to the assets, it is also important to layer in items that impact those assets that may or may not be controllable. That may be grazing rights, flood zones, soil conditions, boundary lines, protected status, etc. We believe these items are being covered in the new LIMS system. Depending on the platform for this system, it may be connectable to a management system allowing the use of GIS interface to access complex data about a parcel of land, structures on it and homeowner participation in NHA programs.
2. Process or work-flow management – Digitally embed standard procedures and forms necessary to ensure that the process is followed and verifiable. Having a planned methodology that is auditable allows for more transparency, garnering faith in the organization.
3. Reporting on success - The data collected and tracked initially and over time should be designed to provide the ability to paint a picture of what is happening to the land, housing stock and the families that are assisted. Ideally you can collect information over time to track if families are benefiting from being in a home. That may be better jobs, higher education, financial growth or better health.

The goal of a systems approach is to be comprehensive and inclusive. Maintaining a system like this can be a project in itself. Incorporating the system into the active work-flow of the organization and its departments can ease that effort. For this reason it is critical to have each group represented and define the needed goals for each group and how that groups goals interact with the organizational goals. Finding the perfect balance between too much and too little early on in the process can produce a plan that is realistic to implement and win adoption.

EMERGING TECHNOLOGIES

The burgeoning green industry has significant potential to offer Navajo Nation the means to live in scattered sites with little or no public utilities. Servicing these technologies is also a potential economic opportunity for the growth of local installation and service companies. However, these technologies are often complex and can be sensitive. As with any new technology, there is a shallow curve of gaining familiarity with the products, being able to maintain and repair them and operating them effectively. The formation of the Navajo Green Jobs Coalition to promote opportunities in this field, may provide a potential partnership opportunity for NHA to incorporate into the housing program.

WORKFORCE READINESS

The construction industry in Arizona has been severely depressed by the economic events. Starting a large-scale housing program will garner significant interest from workers and construction companies. In order not to be overwhelmed by that interest, NHA needs a plan in place to handle inquiries. Managing this interest may provide the NHA with opportunities to find good quality partners for its efforts.

There are multiple ways to contract construction work. Understanding those models may enable the NHA to utilize available workforce capacities while growing additional capacity. For example, if more local people are trained and ready to handle the repair portion of the work, that work can be accelerated while delivering a smaller number of new homes with outside forces. During this time workers would be in training for construction skills so the number of new homes being constructed can increase over time. A third option might be to research the economic potential for manufactured home production. With the cautions noted above about the potential pitfalls of getting into a construction business, the potential for advanced level manufacturing jobs makes it worth further investigation. Again partnerships with good and stable companies will be critical for such initiatives. Working with existing workforce development programs to understand the labor market will be an important component in designing the delivery pace.

HOUSING DESIGN OPTIONS FOR POPULATION CENTERS / HIGH EMPLOYMENT AREAS

SINGLE-FAMILY OPTIONS

- Clustered Homes – intended for larger families as well as for those who want to rent or own and maintain property in an area likely away from their historic family lands. Although anecdotal evidence shows a preference for scattered-site housing - design, orientation and fencing could be used to maximize privacy between homes. Concepts such as “pocket neighborhoods” offer design concepts that could be adapted to make the housing seem less suburban and more like family clusters.
- Multi-Generational Design – Given the larger size of Navajo households, single family homes could be designed so that homes are built on larger lots as well as structurally designed to allow for additions and expansion as family financial circumstances allow.
- Improved Lots – Many families may not have the resources to purchase an entire home but they may be able to purchase an improved lot within a subdivision. Thereafter, they can hold the property and build once they have improved their financial position.

MULTI-FAMILY OPTIONS

- SRO or Lost Cost Efficiency Units – intended for single men or women regularly commuting between the employment areas and more rural areas where they maintain permanent housing. In addition, incorporating supportive housing models serving American Indian populations that provide operating subsidies should be considered. Supportive housing models have been successful in addressing social and behavioral health issues that otherwise prove detrimental to the maintenance and management of affordable housing units.
- Duplex/Triplexes/Townhomes – intended for small families who commute semi-regularly between or make the employment area their primary place of residence

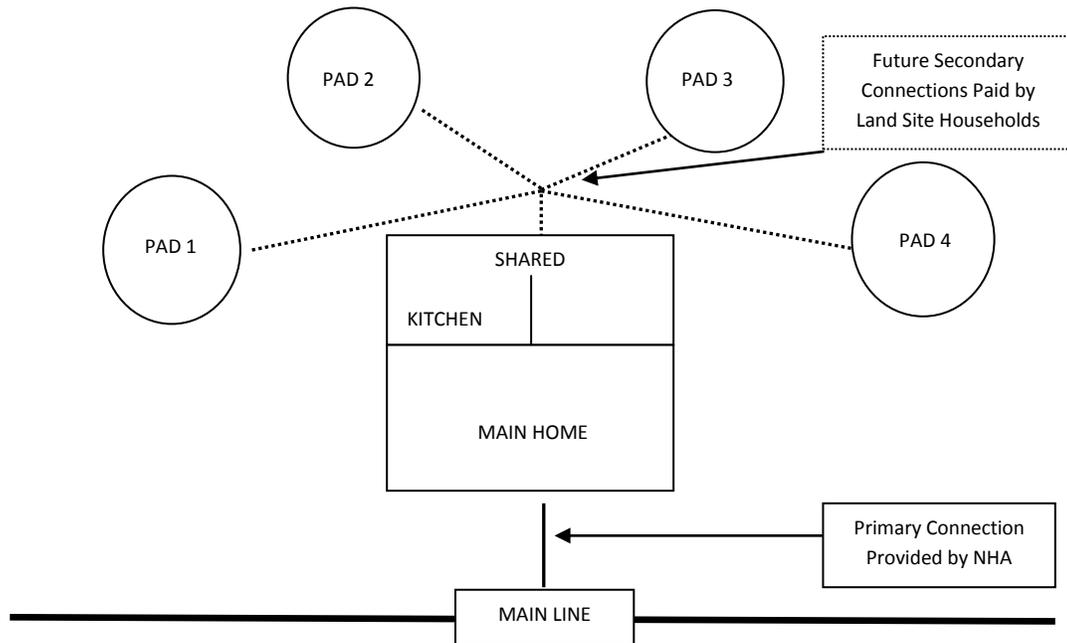
OTHER HOUSING OPTIONS

- Student Housing – Boarding schools remain an important education as well as housing option particularly for families who are at the lower end of the economic spectrum as well as for families living in more remote areas of the reservation.
- Elder Care Housing – Although aging in place is preferred, unfortunately medical and caretaking needs often exceed what is available in most rural communities. As a result many families are forced to place their loved ones in facilities off the reservation – away from their loved ones, their community and the culturally relevant environment and care they desire and deserve. Therefore, assisted living facilities and other temporary or flexible housing options to serve elder populations should be considered.

HOUSING DESIGN OPTIONS FOR SEMI-RURAL AREAS

- Clustered housing – although perhaps least preferred, the intended purpose of subdivision housing is to capture economies of scale and offer safe, decent and affordable housing to the largest number of households with limited means. Once again, design, orientation and fencing could be used to maximize privacy between homes.
- Clustered Infrastructure & Housing for Home-Site Development – this option is in use now but in an unregulated way. Such clusters typically consist of a main single family home and secondary units of varying types, sizes and conditions. The idea here would be to respond to community members' preference for multi-generational, extended family compounds. The tactic then would be to build infrastructure with sufficient capacity or potential capacity to accommodate clusters of housing throughout the reservation. The initial infrastructure build would provide services only to the main home but with capped branches to areas in close proximity (e.g. 100 yards or less). Thereafter, families would need to pool and secure resources to pay for the completed build out of the infrastructure and additional housing as they are able.

Clustered Housing Example



- Scattered site efficiency units and Hogans – Given the scale of the need, a policy decision may be necessary to establish priorities wherein preference is given to a range of the above noted options. The options with the least preference may be those with the highest cost to NHA including scattered site housing in extremely remote areas and Hogans where the use is primarily ceremonial. Even in such situations, assistance may be available through organizations such as Habitat for Humanity or a new NHA enterprise that could provide modular housing options to meet the need for low cost, pre-manufactured Hogans. Electric power available through mobile solar arrays such as those available through organizations like [Sacred Power](#) could make off-grid affordable housing a viable option for more households with a preference for this type of housing.

REGARDING DESIGN – A preference for housing and co-housing with or near family or clan members indicates that dense, urban-style multi- and even single-family housing could run counter to demand. Therefore, for each housing option type noted above an open design exercise is encouraged in order to capture maximum demand for the housing that is built.

Community Design exercises may reveal, due to a strong desire to accommodate elders, a high demand for housing that incorporates ADA compliant design to accommodate the needs of this priority population. To coin and expand on a popular term – If you build housing they want, they will come and pay for it.

- Develop housing alternatives and programs for seasonal workers
- Design template multi-family multi domicile lots to capitalize on infrastructure and lot configurations
- Develop a menu of on-site utility generation menu for rural homes
- Consider future housing trends in a housing plan

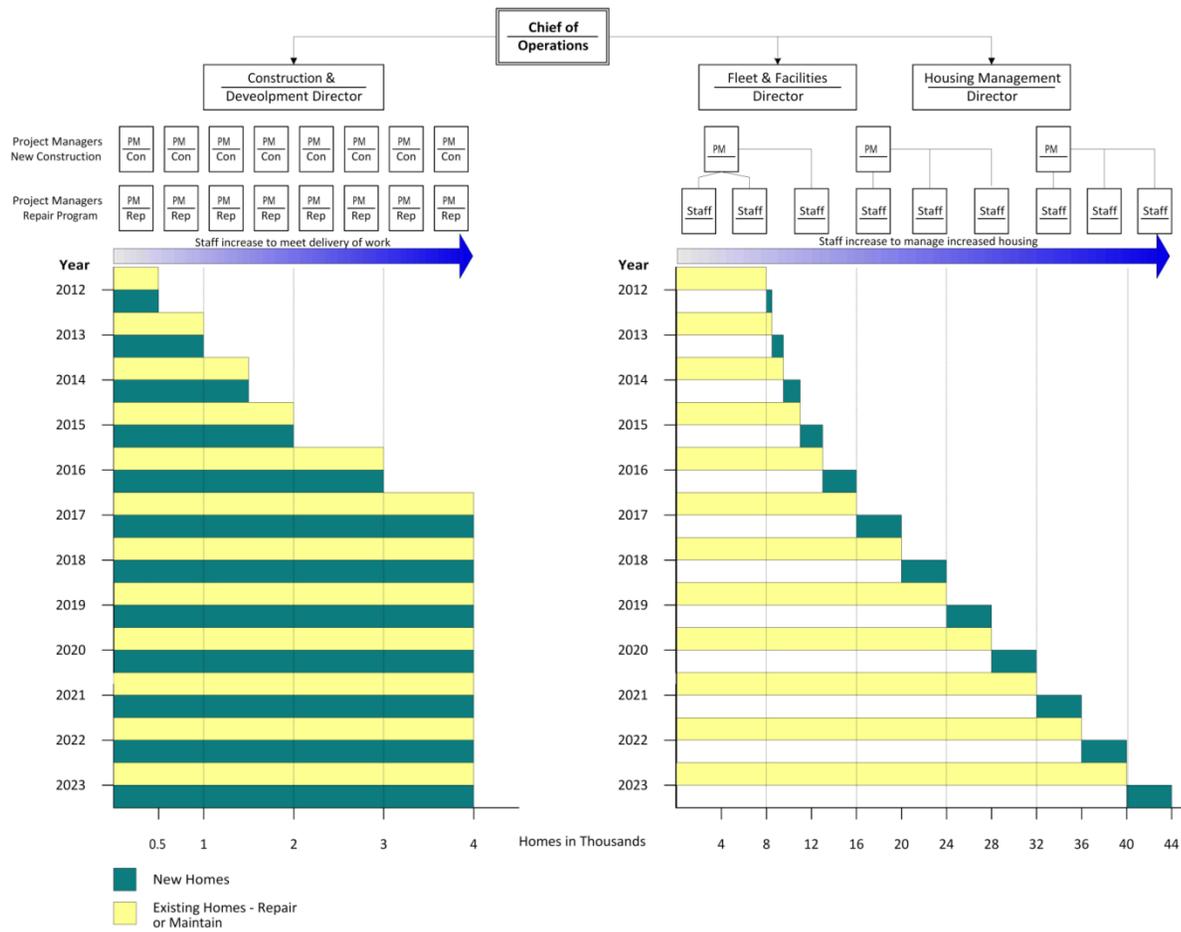
INFRASTRUCTURE ANALYSIS

In the process of planning for the housing, information will need to be gathered that shows the current and expected concentration of housing relative to existing infrastructure and other important determinants for future development such as grazing permit holder areas.

CONSTRUCTION PACE AND ORGANIZATIONAL CAPACITY

The need for housing is so dire that there will be pressure to address as much as possible as soon as possible. Undertaking initiatives that are not ready will burn out staff, increase the potential failures of delivery and create public discontent. The previous discussions about organizational development and education apply to how fast the work can be delivered. However it is possible to structure a multi-layered approach that allows some work to start while building the structure to increase the pace.

The following chart provides an example of a model to use to construct a potential pace and organizational structure to deliver 34,000 units of new construction and the same number of repairs in a 12 year period.



Model for Designing Organizational Capacity to Meet Housing Pace Delivery

DETERMINE A COMMUNITY RELATIONS STRATEGY FOR INFORMATION DISSEMINATION

Sharing information on the findings of this report as well as seeking public input on policy development and program prioritization requires a well constructed community relations plan with short and long term approaches. It is important to the continuing success of such a large program to manage public expectations. That is most effectively done with transparent dissemination of well structured policies and plans.

Beyond an initial public relations plan, most organizations will need tools and tactics to launch and manage ongoing public relations strategies and objectives. Depending on current NHA initiatives, we recommend the formation of a strategy potentially with the help of a community relations professional consultant. Should the delivery of the housing program include other entities providing some of the housing, forming a consistent message about the program as a whole will require a good deal of coordination.

The model shows the increased layers of management as well as a progression in the number of people it would take to deliver at the growing pace. The charts also exhibit a moderately aggressive pace to deliver in 12 years. A more realistic pace might be 20 or more years. This model shows one organization delivering the scope of work, but another model that could be developed would examine a structure for multiple agencies working towards completing the work. An important aspect of this chart is that it also shows the housing moving from construction to being managed on an ongoing basis after construction is finished. That may or may not be the case depending on how the ownership transaction for the home is conducted. Working with the Organization Development professional described above and potentially with a construction modeler, the NHA can design their desired approach to delivering the work.

AND LONG TERM GOALS

Each of the recommendations contained herein will take time to come to full fruit. Therefore it is important to identify those activities that can

begin in the near future and recognize those activities which will take time to bring into full force. Below is a review of the near and long term recommended actions to meet the housing need identified in this report:

FURTHER RESEARCH

Areas requiring further information and research with regard to planning include the following subtopics.

COORDINATE EXISTING HOUSING PROGRAMS

This is also addressed in the organizational development phase of the project, but will also be critical to a planning phase. In order to avoid overlap and duplication of efforts, it will necessary to coordinate all previous and current housing planning work prior to initiating a Reservation wide master plan.

CLOSE SURVEY INFORMATION GAPS REGARDING HOUSELESSNESS/HOMELESS AND SEASONAL WORKERS AND COMMUTING PATTERNS.

These two relevant fields of inquiry were left unaddressed by the 2009 NHA housing survey.

Because both of these topics may have significant impact on future housing planning we suggest that additional sample survey information be sought on the topic of homeless/houselessness and, seasonal workers and their commuting patterns.

BENNETT FREEZE AREAS NEEDS ASSESSMENT

Determine priorities for this area that has had limited activity since 1966.

GRAZING RIGHTS & AREA

In order to determine where grazing lands exist in relation to housing demand areas

CONDUCT A COMPREHENSIVE PREFERENCE SURVEY

Our team recommends further research to fully understand community needs, social opinions & values regarding housing issues, and some of the gaps that were not addressed in the initial survey.

FINANCING STRATEGIES

COMPLETE FINANCIAL ANALYSIS

In order to secure financing a borrower must have sufficient and reliable access to debt repayment resources. Aside from federal NAHASDA funds already committed to construction, maintenance and operations, limited revenue has been identified to establish a primary source of repayment for any specific financing. Moreover, NHA's capacity to take on debt - and its related federal grants history - is unclear. Therefore, the first step in determining financing options is completion of external financing needed as well as sustainable growth analysis. Both studies will help determine which and in what sequence to pursue the strategies below.

Further, residential development financing assumes that the physical assets financed have, at the very least, the potential for appreciation over time. A second important assumption is that there is a ready and growing market to absorb the assets proposed for development. The data in this study indicates the first assumption has limited potential due to the nature of land status on the reservation. With regard to the second assumption, this report posits an existing but limited homeownership market that itself must be cultivated through training and education to limit loan defaults. This is particularly important as history shows the private sector must be incentivized to commit capital for financing home construction on tribal lands. Moreover, the higher the risk that banks perceive for tribal lending initiatives, the higher the cost of capital from those sources. Therefore, NHA and its clients must be especially well-prepared to take on debt to demonstrate existence of an emerging market to a reluctant lending community.

ENHANCE AND CODIFY THE AFFORDABILITY SYSTEM DETAILED IN THIS REPORT

Chapter 3 of this report introduces an affordability standard customized for the Navajo Nation. To be codified, and ultimately accepted by federal agencies, it is likely that this standard will require some additional enhancement with regard to the information it is based on. Specifically,

it may need to be tied to more precise household expenditure patterns and it is also likely that the on-site infrastructure costs borne by Navajo Citizens can be better refined.

ENHANCE DESIGN OF FINANCING MODELS

Instead of offering exotic financing models or even conventional financing sources for NHA's primary consideration, all three strategies below propose an organizational design for NHA that involves creating one or more enterprises to provide enhanced services with existing funds as well as activities intended to generate revenue. The goal of providing enhanced services is intended to cultivate a fertile market that is more willing and better able to use debt on the Navajo Nation than is occurring presently. The goal of generating revenue shall provide funds to use as collateral for future financing initiatives, for use on projects to serve over-income populations as well as other priorities not possible with restricted federal funds. The ultimate goal is to provide NHA a path towards self-sufficiency and less reliance on NAHASDA and other federal funding.

The development of Navajo Flexcrete is perhaps an appropriate example that indicates the amount of time, resources as well as the nature of the risks that underlie any serious attempt to address the severe housing and related needs on the Navajo Nation. Nevertheless, the strategies and enterprises noted below represent those considered most consistent with the general findings of this report and that hold the most promise for success.

HOUSING DEVELOPER STRATEGY

The type of housing NHA and most tribal housing organizations produce requires significant subsidies due in part to poverty (i.e. an inability for clients to pay market rents) as much as dependence on federal funding as the primary source of capital. In contrast, affordable housing organizations off the reservation regularly access and manage multiple funding streams to build and operate housing to serve their clients. Those properties can often generate income that can be reinvested into additional services or affordable housing. The more progressive affordable housing entities leverage their physical assets to secure

financing for continued expansion. The most capable of all affordable housing entities work as housing developers and generate revenue from allowable developer fees. Moreover, as non-profit entities they can access grant funding to engage in development activities with a minimal outlay of their own funds.

The primary barrier for NHA to engage in these activities is a reliance on federal NAHASDA funds as its primary source of development capital as well as the trust status of the lands where the majority of its physical assets and demand for its services exist. Nevertheless, the need for housing extends beyond the reservation boundary. Therefore, one concept that may be worth pursuing is to develop a small-scale affordable housing project in cooperation with an experienced affordable or other housing developer off the reservation. The project could serve casino enterprise employees or students in Albuquerque or Phoenix. In so doing, an asset is established that can thereafter be pledged as collateral for private sector funds for another affordable housing development on the reservation. This strategy would achieve the following multiple goals:

- Housing is built oriented to Navajo citizens
- NHA establishes itself as a developer possibly creating unrestricted revenue in the form of developer fees.
- NHA is better positioned to access private sector financing for additional development activities.

This strategy in particular provides opportunities to secure and more effectively use other financing tools including federal guarantees and enhancements, tax-credit equity as well as increased access to private sector capital from financial institutions. Several other notable sources of financing include the following:

PROGRAM RELATED INVESTMENTS (PRI)

PRI's are typically associated with a lending institution's efforts to comply with the Community Reinvestment Act. However, the investments they make are nevertheless measured by their potential to provide increased business opportunities for the bank. Projects on the Navajo Nation would qualify for such

investments and are particularly attractive given the volume of activity it could generate for banks. Therefore, developing stronger lender relations through outreach should be a goal. The primary objective would be to demonstrate that the Navajo Nation represents a viable emerging market where banks can make prudent investments.

NATIONAL/REGIONAL INTERMEDIARY LOAN FUNDS

Several national and regional intermediaries receive federal appropriations to support affordable housing development in underserved areas. Although charged with providing technical assistance and funding to local and regional groups, few have made any consistent or substantive efforts to serve Indian Country's need for capital to support residential development. As with the lending community, developing relations with intermediaries will help define the amount and nature of the resources these organizations may be able to provide.

SPECIAL FEDERAL/STATE/OTHER SET-ASIDE FUNDING

Tribal housing advocates have been successful in securing set-aside allocations of resources historically available for affordable housing development but unavailable or underutilized by Indian tribes. ARRA, State Housing Trust Funds, Low-Income Housing Tax Credits, Federal Home Loan Bank funds and others are examples of resources that have become available to tribes over the last decade. However, just like competitive grant funds, tribes must have the administrative and technical capacity to administer and manage the funds effectively. NHA's use of a housing developer strategy implies building and maintaining capacity to compete with other non-profit housing developers in terms of access to, implementation of, and compliance with funders that have as, if not more, stringent requirements than NAHASDA grant funds.

COMMUNITY LAND TRUST STRATEGY

The Community Land Trust (CLT) strategy offers a model consistent with common land status in Indian Country. It uses the restricted nature of land ownership to benefit potential homeowners through reducing the

overall development cost by discounting the cost of land. The model is useful when land costs are high and homeowners have limited buying power. It assumes that the land remains property of the land trust organization indefinitely. As such, a homeowner may only sell the home, not the land. The homeowner would realize less of a financial gain than if the home were outside the land trust. However, the logic is that the homeowner may not have qualified for homeownership without the assistance of the land trust organization. Moreover, because the land trust status remains beyond the tenure of any homeowner the cost is permanently reduced (i.e. made more affordable) for all future homebuyers of homes on land trust properties. Other distinguishing characteristics of land trusts include the following:

- Shared Equity Transactions - Sale of the home benefits both the homeowner and the land trust organization through a sharing of the equity realized in the sales transaction. The homeowner retains an equity share associated with the appreciation of the home as does the land trust organization. The land trust organization may use its share of equity to reduce the cost of the home to a new homebuyer or invest the funds into additional affordable housing development activities.
- Community Spaces – Within the context of a CLT, it is possible to manage community spaces such as community gardening, job training centers, or incubator spaces for non-profit service organizations. Leveraging this broader sense of community can address cultural needs beyond providing housing.
- Equitable Distribution – Successful CLTs garner the support of their residents to create a leadership voice in a community that defines reinvestment and empowers the residents. The whole community is vested in the success of the effort and all equally benefit.
- Community Assets – The CLT model is based on the idea of long term visioning and stewardship of community assets. It is possible to limit or regulate outside development influences when successful city partnerships are developed in addition to traditional zoning controls.

The application of a land trust model may have its highest value in consolidating allotted lands or other areas where chapter officials would like to set-aside lands for residential development activities.

The other high value opportunity by engaging the CLT organization is partaking in the educational and organization building skills this network has formed which could provide NHA with new concepts and support for its efforts.

- <http://www.cltnetwork.org/> - The National Community Land Trust Network is having its annual conference in Seattle in October. It is a good opportunity to learn about the CLT model and organizational resources.
- <http://www.nwcltc.org/> - The Northwest Community Land Trust Coalition (NWCLTC) supports and enhances the activities of the community land trusts (CLTs) based in the Pacific Northwest so that they can provide permanently affordable access to land for housing and other community needs that serve low- and moderate-income members of their communities. This organization piloted for formation of “Capacity Building Institutes” for training.
- <http://www.fordfoundation.org/> - The Ford Foundation supports visionary leaders and organizations on the frontlines of social change worldwide. This organization may be helpful in providing resources for staff training since they work mainly by making grants or loans that build knowledge and strengthen organizations and networks.
- <http://affordableownership.org/about/> - The Cornerstone Partnership is a peer network for homeownership programs that preserve long-term affordability and community stability, helping more hard-working people buy homes today, maintain those homes and keep them affordable in the future. Cornerstone Partnership is a program of NCB Capital Impact with funding provided by the Ford Foundation.
- <http://www.ncbcapitalimpact.org/> - NCB Capital Impact’s mission is to, “envision a world where high-quality health care, housing, and education are accessible and attainable; where eldercare is dignified and respectful; and where environmental stewardship is

practiced by every community. NCB Capital Impact uses its depth of experience, cooperative approach, and diverse network of alliances to generate critical investments that create a high quality of life for low income people and communities.”

LOAN FUND STRATEGY

The services and funds available through homeownership loan funds have been successful in financing homeowner housing for families across the economic spectrum - including on tribal lands. The NHA Mortgage Program sets in place the policy foundation for homeownership on the Navajo Nation. NHA’s coordination with and funding to the Navajo Partnership for Housing (NPH) augments existing staff capacity with that of an entity focused exclusively on the homeownership process. Yet NPH remains the only entity serving the Navajo Nation’s homeownership needs.

Accessing planning dollars from the Department of Treasury’s CDFI Fund program is suggested in order to study the merits of creating an NHA loan fund and more clearly delineating NHA’s role relative to that of its non-profit as well as other public- and private-sector partners. The result will likely be to provide additional services that strengthen the Navajo Mortgage Program as much as to develop, test and refine multiple products and implementation techniques. Far from duplicating services, NHA, NPH, NeighborWorks America and other partners should work towards a coordinated effort to more fully serve the homeownership needs of the Navajo Nation. The CDFI Fund’s Technical Assistance program provides as much as \$150,000 a each year for approximately three years and will pay operating costs associated with assessing and building capacity towards the goal of establishing an NHA CDFI. It’s particularly important to note that acceptance of CDFI Fund TA funds does not obligate NHA to establish a CDFI – only to study the merits and possibly work towards that goal if deemed appropriate to do so.

CDFI Fund TA dollars should be used for the following purposes:

- Market Study – The last housing market study completed on the Navajo Nation was restricted to a limited area affected by the

proposed development of a Low-Income Housing Tax Credit project. CDFI TA funds should be used to study other growth areas across the Navajo Nation. The fact that the rental market on the Navajo Nation is limited implies that any market study must take an unconventional approach to understanding the housing market. For example, a market study must consider the capacity of other housing providers including groups such as I.H.S., NTUA as well as community development corporations or other non-profits that can reasonably affect the need and serve NHA as viable partners over the next five to ten years.

- Development of an IDA program – Individual Development Accounts (IDA) and employer assisted housing programs work together to provide incentives to staff members as well as stimulate model homeownership initiatives. Presumably, NHA employees and those of other Navajo Nation departments are the individuals most knowledgeable and committed to housing solutions for the Navajo Nation. Moreover, collectively they constitute the single largest employment base on the reservation. As such, they offer a test population for other Navajo Nation government and other agencies to emulate for their own portion of the workforce Beginning with employee housing initiatives also provides an opportunity to implement payroll-deductions for rents as a way to limit non-payment of rent issues that have historically plagued Tribally Designated Housing Entities as well as to guarantee a steady revenue stream for servicing debt assumed by NHA.
- Training for Staff – Operation of a loan fund would require NHA staff to consider NHA clients as more than simply tenants or mutual help program clients. A new role of working to transition renters to homeowners who qualify and can sustain a home mortgage. In this way, NHA clients become partners in solving the housing shortage problem by having them invest in resolving their own housing needs. CDFI TA funds can be used to train staff in areas such as homeowner counseling, underwriting, loan portfolio management, risk assessment and mitigation and other related topics.
- Capitalization of a Loan Fund - Should NHA pursue establishment and certification of a loan fund, additional dollars are available to

capitalize a loan fund – up to \$750,000 a year that can be used for NHA’s Mortgage Subsidy and Loan Guarantee programs as well as a Loan Loss Reserve. Further, establishment of a CDFI provides opportunities to access other HUD grant funds as well as those from the Administration for Native Americans, USDA Rural Development and other agencies for direct and indirect funding of loan fund and housing related activities.

More information on the CDFI Fund is available online at:

- Main Web Page: www.cdfifund.gov/
- Native Initiatives Web Page
www.cdfifund.gov/what_we_do/programs_id.asp?programID=3

OTHER STRATEGIES

The strategies noted above may benefit from inclusion of the following additional general strategies.

URBAN CENTER GROWTH & DEVELOPMENT

Given that the largest employment opportunities on the Navajo Nation are in five population centers, NHA may want to study the merits of investing in housing development activities primarily in those areas. Developing a housing market in more densely populated areas takes advantage of more developed economic and physical infrastructure. However, the right mix of housing must be achieved in relation to the housing type and design considerations noted in the previous section as well as the amount of rental and homeownership units. The development of a more active housing market should allow for asset and wealth creation by individual households. The wealth created in the form of homeowner equity may stimulate investments by these families in more rural areas where they may contribute to maintaining a homesite.

UNCONVENTIONAL LOAN PRODUCTS

Given the relatively low household incomes on the Navajo Nation, a multi-generational loan product might provide families homeownership options not otherwise available to those in the lower income ranges.

Homes on the Navajo Nation do not typically change ownership outside of the immediate or extended family. This fact provides for a level of stability and certainty that there is long-term interest in maintaining ownership of a home by multiple inter-generational households. Therefore, a 40- or 50-year mortgage with assignment features could help reduce principal payment amounts that would otherwise exceed the 18% income housing payment threshold cited in the report. Structuring the loan for refinancing, likely needed for purchase of the loan on the secondary market, would require additional analysis and development. Nevertheless, given the household income levels and cost of construction particularly in more rural areas of the Navajo Nation, an unconventional loan product may offer a solution for at least a select segment of the population.

MORTGAGE LOAN PROGRAM ELIGIBILITY CRITERIA

Although the report states that households on the Navajo Nation have lower homeownership affordability thresholds, experience and evidence suggests lowering eligibility standards undermines intrinsic motivation for employment. The rationale is that if a household's income is too high then that household may not qualify for NHA subsidized housing. Therefore, in establishing eligibility criteria in relation to the affordability analysis, care should be taken to facilitate access to subsidies for the most needy. Moreover, maintenance of data on rent, vacancy rates and other market dynamics is suggested in order to regularly evaluate the proportionate demand for deeply subsidized to market rate housing.

FURTHER RESEARCH

Additional fields of research may include the following:

EVICTION AND FORECLOSURE

With increased transactions and possibly increasingly complex obligations it may be prudent to conduct additional research regarding customized approaches to eviction and foreclosure proceedings.

LAND LEASING AND SECURING TITLE

It may be necessary to conduct additional research and standardize processes with regard to land withdrawal and assignment processes (i.e. the land withdrawal and land assignment process)

RIGHTS-OF-WAY AND EASEMENTS

Utility, transportation, emergency access, and a variety of other easements become central to securing and holding title to property.

FEEES AND TAXATION

Mechanisms for levying fees and taxation for real estate administration will likely eventually be necessary in formats not-typical on the Navajo Nation at this time. Example might include ownership and property taxes, property assessments, etc.

NHA HOUSING FINANCE AUTHORITY

The previous section presume that NHA staff will implement the majority if not all activities associated with the implementation and maintenance of the proposed strategies. However, a much different role may be appropriate for the geography NHA serves and the production volume it is challenged with. That is – NHA may need to consider establishing a Navajo Housing Finance Authority responsible simply for governing the deployment of funds and development activity of its partners (i.e. for- or non-profit housing developers) who can design, build and manage affordable housing solutions. In this role, an NHA HFA would simply provide loan guarantees and perhaps rental assistance to encourage

affordable housing developers to serve the needs of the Navajo Nation. Initial research into this option may include determining how existing HFA's in surrounding states use their funds as well as the roles, responsibilities and technical capacities each rely on to produce affordable housing in their respective service territories.

SHORT & LONG TERM GOAL LIST

SHORT TERM GOALS AND ACTIVITIES

- Identify the key interests and participants of an Interagency Housing Task Force, begin initial meetings and establish joint/cooperative mission
- Develop in-house scholarship program for organizational development professionals
- Conduct and enhanced housing preference survey
- Close information gap through survey or other mechanism regarding houselessness/homelessness and seasonal workers/migration
- Identify specific fields for staff training (e.g. project management, and inter-agency cooperation)
- Develop a scope of work for Housing Master Planning Project
- Conduct field architectural/condition analysis of repairable housing (sample)
- Initiate policy inventory to better understand what existing policies may facilitate or impede the Master Planning Effort
- Conduct a workforce readiness assessment – that is, what construction and other professional resources are currently available on the Reservation. What is their capacity?
- Begin a community/public relations and outreach effort to increase awareness of the Housing Needs Assessment and brand the upcoming Master Planning project and increase community awareness
- Conduct a technology audit – to determine whether existing technology platforms have the capacity to manage large scale housing remediation efforts
- Identify and attend relevant workshops and conferences – e.g. the Community Land Trust\
- Analyze organizational capacity for construction delivery
- Research items
- Initiate an existing construction pace and organizational capacity audit

- Conduct comprehensive Reservation-wide market study
- Explore alternative programs for financing including community land trusts
- Finalize and codify the customized affordability standard introduced in this report

LONG-TERM GOALS AND ACTIVITIES

- Finalize Housing Master Plan documents
- Develop community outreach/public relations campaign to assist with citizen recruitment into home ownership/construction programs and increase awareness of the programs long-term goals
- Develop loan fund strategy and capitalize loan fund
- Implementation of ownership/lending training programs for NHA and other agency staff as appropriate
- Categorically define housing style and type categories, create architectural inventory
- Create Individual development
- Finalize a construction pace schedule
- Design and administer full homeownership training program
- Full construction workforce training programs in place
- Full organizational and staff development training programs in place
- Development of full policy inventory for managing private property including eviction and foreclosure, taxing, easements, and title security
- Building a successful mortgage and payment history
- Achieve federal agency adoption of a customized affordability standard
- Produce comprehensive policy category
- Housing being built at pace and prioritized for those in greatest need – e.g. special populations groups, those currently living in hazardous or dilapidated housing.

APPENDICES

PREFERENCE SURVEY INSTRUMENT AND METHODOLOGY

Methodology

Approximately 12 Navajo Nation chapters were contacted regarding their meeting schedules and the opportunity to present information regarding a housing needs assessment survey. Based on calendar schedules, feedback from those chapters and travel dates, four chapter meetings were confirmed: Sanostee, Two Grey Hills, Ganado and Baca. Attendance at these meetings varied from about a dozen to more than 40 people at each gathering. Most of the attendees were seniors or elders who spoke English as a second language. Our team members shared background information about the group, the survey and the goals, and assisted community members in completing the surveys. As an incentive and “thank you,” to the groups and attendees, each meeting was provided raffle tickets and door prizes.

Survey Instrument

1. Please fill in the following information about yourself:

Sex (Check One): Male Female

Age: (Specify) ___ or (Check One) Older than 65 65 – 45 44 – 35
 Younger than 35

Disability: No Yes If Yes, please specify: _____

2. How many...

- a) ...rooms are in the home you currently live in? ___
- b) ...people from each category typically live in the home you currently live in?
Elderly Adults ___ Adults (Over 18) ___ Young Adults (Under 12-18) ___ Children under 12 ___
- c) ...people live in your home only part time (example: student, spouse who travels for work, other relatives)? ___

3. How many rooms would you like/prefer to have in your home? _____

4. Please check the type of structure you prefer to live in?

- Single Family Home (for example, a standard 3 bedroom NHA home)
- Hogan
- Mobile Home
- Multi-Family Home (apartment, townhouse, condo, duplex, etc.)
- Other Please specify _____

5. Where would you prefer to live most of the time / year?

- a) City or Town
- b) Rural areas
- c) If a or b, would you also prefer to have a home on the land where you were born/or are from?
 Yes No Doesn't Matter

6. If you are not the head of a household, do you currently live with extended family members? Extended Family is defined as anyone other than the head of household and his/her spouse and non-adult children

- Yes
- No

7. Extended family preference – check the one that best applies:

- Prefer extended family living in the same home
- Prefer extended family living in other homes or structures but on the same lot
- Prefer extended family living in the same area/neighborhood but not in the same home or on same lot
- Doesn't matter

8. My family is satisfied with the home we currently live in:

- Yes If Yes, what does your family like most? (please specify) _____
- No If No, what is your family most dissatisfied with? (please specify) _____

9. I would pay more each month for housing if it meant: (check all that apply)

- Better housing primarily for my immediate family
- Better housing for disadvantaged members of my community (elders, veterans, disabled)
- I would not or cannot pay more each month for housing
- Other (please specify) _____

10. I would prefer: (check one)

- Owning a home and property __
- Renting a home __
- Living with others who own or rent a home __
- Owning a home/property in common with others __

11. If I could change one thing about my house it would be:



Tribal / Agency Title (Demographics and Needs Assessment Survey)



NOTE: A separate survey form is to be completed for each target “household” (including single individuals over 18 years of age). A computerized “household record” will be created in the project database. For the purposes of this survey, a “Household” will consist of a person or group of persons living in a housing unit.

Identification Information: Please identify the “head of household” in this section

Name: _____ / _____ / _____ DOB ____/____/____ Maiden Name (if female) _____ Male Female
Last Name First Name Initial

Relationship: Head **Marital Status:** Individual Married Separated Divorced Widowed Common Law Domestic Partnership

Race/Ethnicity: Multi Race Single Race US Citizen Registered U.S. Voter Country of Birth (USA)

White Black Hispanic Asian / Islander American Indian/Alaska Native (AIAN) Ethnicity (Ex: Mexican/Navajo) _____

○ For AIAN list Tribe/Blood-Culture (Ex. Spirit Lake - Sioux) _____ / _____
Tribe Affiliation One Tribe Affiliation Two

○ Enrolled Tribal Member Roll Number _____ Registered Chapter Voter Member- Other Tribe Which? _____

Disability(s): Disabled [__%] Category - Mobility Vision Hearing Mental Military Related Other _____

Military: Currently Enlisted US Veteran Branch _____ Era (Ex. WWII): _____ Years Served ____ to ____ Total ____

Employment: Full-time Part-time Seasonal Self-Employed Retired Other _____

• Unemployed Reasons for Unemployment _____ Present Occupation _____
Include Retired, Unemployed, and Student

• Vocation _____ List additional job skills _____ / _____ / _____

Education: Num. of years completed (K-12) ____ Current Student H/S Graduate GED College – Yes No Degree(s) ____/____/____

• Vocational, Business, or Trade School - Graduated with Certificate Training/Education Category(s) _____

Gross Annual Income - Amount \$ _____ Income from Employment / Self Employment / Other : _____

Household Contact Information:

Address (Mailing) _____

Additional Mailing Address Info. _____

City _____ State _____ / ZIP Code _____

County _____ / Country USA

Address (Physical) _____

Identify the specific Community, District or Target Area

Directions (if needed) _____

City _____ State _____ / ZIP Code _____

County _____ / Country USA

Latitude (GPS) _____

Longitude (GPS) _____

Telephone (_____) _____ Mobile/Cell Phone?

This is a Message Phone No Phone

Household Composition: Complete this section for all "household" members including domestic partners and extended family. Document each individual's race and ethnicity, as well as their country of origin and specific culture(s) (example: Hispanic / Mexican). For American Indians, Alaskan and Canadian Natives, identify specific "Tribal" affiliation as well as their blood/culture affiliation (example: Tribe = AIAN / Navajo-Chapter Affiliation)

HOUSEHOLD MEMBER 2

Name: _____ / _____ / _____ **DOB** ____/____/____ **Maiden Name (if female)** _____ **Male** **Female**

Relationship: Spouse Dependent Child Custodial Child Adult Child Non-Married Partner Other (Ex. Nephew) _____

Marital Status: Individual Married Separated Divorced Widowed Common Law Domestic Partner Other _____

Race/Ethnicity: Multi Race Single Race US Citizen Registered U.S. Voter Country of Birth (USA) Other _____

White Black Hispanic Asian / Islander American Indian/Alaska Native (AIAN) Specific Ethnicity (Ex: Mexican/Navajo) _____

o For AIAN list Tribe/Blood-Culture (s) (If **NAVAJO**, Include **Chapter Affiliation**) _____ / _____

o Enrolled- this Tribe Census Number _____ Registered Chapter Voter Enrolled In another Tribe Tribe: _____

Disability(s): Disabled [____%] Category - Mobility Vision Hearing Mental Military Related Other _____

Military: Currently Enlisted US Veteran Branch of Service _____ Era (Ex. WWII): _____ Years Served ____ to ____ Total ____

Employment: Full-time Part-time Seasonal Self-Employed Retired Other _____

Unemployed Reasons for unemployment _____ Present Occupation _____ Include Retired, Unemployed, and Student Vocation _____

• List additional job skills _____ / _____ / _____

Education: Years completed (K-12) ____ Current Student Graduate GED College - Yes No Degree(s) _____ / _____ / _____

• Vocational, Business, or Trade School Graduated with Certificate Training Category(s) _____ / _____

Gross Annual Income - Amount \$ _____ Income from Employment / Self Employment / Other : _____

•

HOUSEHOLD MEMBER 3

Name: _____ / _____ / _____ DOB ____/____/____ Maiden Name (if female) _____ Male Female

- **Relationship:** Spouse Dependent Child Custodial Child Adult Child Non-Married Partner Other (Ex. Nephew) _____
- **Marital Status:** Individual Married Separated Divorced Widowed Common Law Domestic Partner Other _____
- **Race/Ethnicity:** Multi Race Single Race US Citizen Registered U.S. Voter Country of Birth (USA) Other _____
 White Black Hispanic Asian / Islander American Indian/Alaska Native (AIAN) Specific Ethnicity (Ex: Mexican/Navajo) _____
 - For AIAN list Tribe/Blood-Culture (s) (If **NAVAJO**, Include **Chapter Affiliation**) _____ / _____
 - Enrolled- this Tribe Census Number _____ Registered Chapter Voter Enrolled In another Tribe Tribe: _____
- **Disability(s):** Disabled [____%] Category - Mobility Vision Hearing Mental Military Related Other _____
- **Military:** Currently Enlisted US Veteran Branch of Service _____ Era (Ex. WWII): _____ Years Served ____ to ____ Total ____
- **Employment:** Full-time Part-time Seasonal Self-Employed Retired Other _____
 Unemployed Reasons for unemployment _____ Present Occupation _____ Include Retired, Unemployed, and Student Vocation _____
 - List additional job skills _____ / _____ / _____
- **Education:** Years completed (K-12) ____ Current Student Graduate GED College - Yes No Degree(s) _____ / _____ / _____
 - Vocational, Business, or Trade School Graduated with Certificate Training Category(s) _____ / _____
- **Gross Annual Income - Amount \$** _____ Income from Employment / Self Employment / Other : _____

HOUSEHOLD MEMBER 4

Name: _____ / _____ / _____ DOB ____/____/____ Maiden Name (if female) _____ Male Female

- **Relationship:** Spouse Dependent Child Custodial Child Adult Child Non-Married Partner Other (Ex. Nephew) _____
- **Marital Status:** Individual Married Separated Divorced Widowed Common Law Domestic Partner Other _____
- **Race/Ethnicity:** Multi Race Single Race US Citizen Registered U.S. Voter Country of Birth (USA) Other _____
 White Black Hispanic Asian / Islander American Indian/Alaska Native (AIAN) Specific Ethnicity (Ex: Mexican/Navajo) _____
 - For AIAN list Tribe/Blood-Culture (s) (If **NAVAJO**, Include **Chapter Affiliation**) _____ / _____
 - Enrolled- this Tribe Census Number _____ Registered Chapter Voter Enrolled In another Tribe Tribe: _____
- **Disability(s):** Disabled [____%] Category - Mobility Vision Hearing Mental Military Related Other _____
- **Military:** Currently Enlisted US Veteran Branch of Service _____ Era (Ex. WWII): _____ Years Served ____ to ____ Total ____
- **Employment:** Full-time Part-time Seasonal Self-Employed Retired Other _____
 Unemployed Reasons for unemployment _____ Present Occupation _____ Include Retired, Unemployed, and Student Vocation _____
 - List additional job skills _____ / _____ / _____
- **Education:** Years completed (K-12) ____ Current Student Graduate GED College - Yes No Degree(s) _____ / _____ / _____
 - Vocational, Business, or Trade School Graduated with Certificate Training Category(s) _____ / _____
- **Gross Annual Income - Amount \$** _____ Income from Employment / Self Employment / Other : _____

OCCUPANCY STATUS: Complete this section based on your present occupancy status

Own or Buying the Dwelling You Reside In:

- Dwelling Type: Single-Family Dwelling Multi-Family Complex Mobile Home Hogan Other _____
- Are you buying your home? Yes No Monthly House Payment Amount \$_____ No house payment
 - Amount of annual property taxes (if any) \$_____, None
 - Home /property insurance amount \$_____ (If not included in your house payment) None
- Home Purchased through "Assisted" Program. Specify the source of home purchase assistance below:
 - HUD Home "Purchase" Program BIA / HIP Program Veterans Program Other Describe, _____
- Mobile Homes: If living in a "mobile home," list all other combined yearly expenses not listed above (example: personal property taxes, site rent, registration fees, license fees, etc. * Mortgage on mobile home \$_____ * All other site expenses \$_____

Renting the Dwelling You Reside In:

- Monthly Rent Amount \$_____ Cost for Insurance \$_____ Annual Cost for Utilities \$_____
- Meals are included in rent payment Energy costs included in rent payment
- Are you paying more than 30% of your monthly income for rent? Yes No Paying more than 50%? Yes No
- Are you renting through a Housing Authority? Yes No If Yes, please identify the type:
 - Local or Tribal (this Tribe)
 - County
 - Other (Including another Tribe)
- If renting through another program, list below:
 - Which "type" of rental are you living in?
 - Tax Credit Rental College Housing Military Rental Housing Private Rental Public Rental USDA
 - Other Rental Category: _____

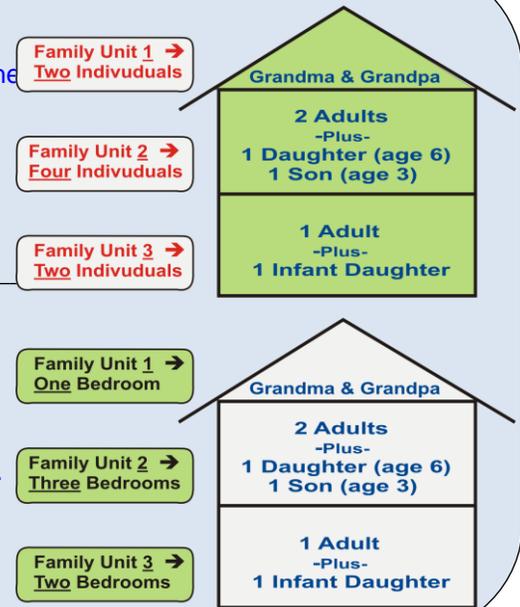
Neither Own nor Rent: Check One of these categories Living with extended family, or Living in available shelter

- Present "Non-Owner/Non-Renter" Circumstances: Provide "*complete*" descriptions of circumstances (Example-Living with parents in a single-wide trailer that is overcrowded and dilapidated) _____

If a non-owner/non-renter, please identify the general reason: Unemployed Under-employed (Can't afford to buy or rent Full time student Part time student Institutionalized Other, Describe _____

OVERCROWDING FACTORS:

- o **Overcrowding-HUD Section 8 Occupancy Standards** - For HUD Sec8 related housing needs assessment, the following clarifications may be considered: Overcrowding is determined by the number of “bedrooms” in a dwelling, as well as the age/gender/relationship of the occupants. Example: One adult (or adult cohabitant unit), plus – two minor children - per gender –per livable room.
 - **Factors-Age / Gender / Relationship, by number of rooms used as bedrooms**
 - o Number of people living in the dwelling ____ Multiple family units in dwelling # family units ____
 - o Number of bedrooms ____ Number of “livable” rooms ____ Approximate square footage ____
 - Overcrowded (by HUD Sec8 Standards)
- o **Overcrowding-US Census Definition** – For use in HUD NAHASDA census challenge applications – 1.01 person per “livable” room. For surveys using the US Census definition for overcrowding, the term “livable room” will include bedrooms, living rooms, kitchens, a separate dining room, and rooms in a finished basement. Do not count bathrooms, porches, balconies, entry areas, halls, or half-rooms. Count multipurpose rooms only one time, for example; a kitchen and dining room combination, or a living room that is used as a bedroom at night.



PROPERTY STATUS:

- Identify the “property status” of current residence: Fee Status (taxed) Public Domain Trust Status (not taxed)
- If living on “trust” property, identify the status: Individual Allotment Assignment (ex: lease) Tribal Land
 - How long have you lived in this community? ____ year(s) In this dwelling? ____ year(s) Number of moves in the past five years # ____

Present Housing Condition:

- Do you have complete and operable bathroom facilities? (hot and cold piped water, flush toilet, bathtub or shower) Yes No
- Do you have complete and operable kitchen facilities? (hot and cold piped water, range or cook stove and refrigerator) Yes No
- Electrical Source: Public Community Private Generator Solar Other _____ None
- Water Source: Public Community Private Well Off-Site Source (hauling) Other _____ None
- If hauling water from an off-site location, how far do you haul the water for family and/or animal consumption? ____ Miles (round trip)
- Heat Source: Electricity Wood/Pellet Stove Coal Natural Gas/Propane Other _____ None
- Safety : Fire Extinguisher(s) Smoke Detector Carbon Mon. Detect. First Aid Supplies Other _____ None
- Handicap Accessibility: Exterior Ramps Bathroom Modifs. Kitchen Modifications Handicap Doors Other _____ None

Dwelling Condition: What is the approximate age of your dwelling unit? ____ years old

Check one box in **each** of the categories below:

Foundation Status: _____	Status: <input type="checkbox"/> Standard	<input type="checkbox"/> Minor Repairs	<input type="checkbox"/> Major Repairs	<input type="checkbox"/> Not Repairable
Building Envelope Status: _____	Status: <input type="checkbox"/> Standard	<input type="checkbox"/> Minor Repairs	<input type="checkbox"/> Major Repairs	<input type="checkbox"/> Not Repairable
Windows: _____	Status: <input type="checkbox"/> Standard	<input type="checkbox"/> Minor Repairs	<input type="checkbox"/> Major Repairs	<input type="checkbox"/> Not Repairable
Doors: _____	Status: <input type="checkbox"/> Standard	<input type="checkbox"/> Minor Repairs	<input type="checkbox"/> Major Repairs	<input type="checkbox"/> Not Repairable
Roof Status: _____	Status: <input type="checkbox"/> Standard	<input type="checkbox"/> Minor Repairs	<input type="checkbox"/> Major Repairs	<input type="checkbox"/> Not Repairable
Electrical System Status: _____	Status: <input type="checkbox"/> Standard	<input type="checkbox"/> Minor Repairs	<input type="checkbox"/> Major Repairs	<input type="checkbox"/> Not Repairable
Plumbing System Status: _____	Status: <input type="checkbox"/> Standard	<input type="checkbox"/> Minor Repairs	<input type="checkbox"/> Major Repairs	<input type="checkbox"/> Not Repairable
Yard / Property Status: _____	Status: <input type="checkbox"/> Standard	<input type="checkbox"/> Minor Repairs	<input type="checkbox"/> Major Repairs	<input type="checkbox"/> Not Repairable
Outbuildings / Fences : _____	Status: <input type="checkbox"/> Standard	<input type="checkbox"/> Minor Repairs	<input type="checkbox"/> Major Repairs	<input type="checkbox"/> Not Repairable

List any "Major" repairs that are presently needed on this dwelling unit (interior and exterior). Be complete when describing deficiencies. [\(Example: If listing roofing deficiencies, do not simply enter the word "roof." Describe in detail what is wrong with the roof - "roof leaks badly, 25 years old" etc.\)](#)

- _____
- _____
- _____

Based on the age and condition of the dwelling, estimate the approximate cost to bring this unit up to "standard" condition. Include "overcrowding" factors and potential costs for necessary additions.

<input type="checkbox"/> Good Condition Between \$1-\$5,000	<input type="checkbox"/> Needs "Minor" Repairs Between \$5,001-\$10,000	<input type="checkbox"/> Needs "Major" Repairs Between \$10,001-\$35,000	<input type="checkbox"/> Exceeds \$35,000 and/or "not repairable"
----------------------------------------------------------------	----------------------------------------------------------------------------	-----------------------------------------------------------------------------	----------------------------------------------------------------------

CERTIFICATION:

Form completed by: (Name) _____ Title _____ Date ____/____/20__

If information was not collected directly from the household "head" or "spouse/partner;" was it provided by a close (adult) family member?

Yes No Information source (Example: Mother/Grandmother, etc.) _____

Comments: _____

AS SIMPLE AS ONE, TWO, THREE: CENSUS UNDERENUMERATION AMONG THE AMERICAN INDIANS AND ALASKA NATIVES

by

Carol Lujan

UNDERCOUNT BEHAVIORAL RESEARCH GROUP STAFF WORKING PAPER # 2
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INTRODUCTION

This paper focuses on allegations and evidence of the United States Bureau of the Census (Census Bureau) undercount of the American Indian population. To develop a comprehensive understanding of the census enumeration process as it concerns American Indians it is important to examine previous methods, procedures, and practices of the Census Bureau regarding the American Indian population. This will be undertaken by first presenting an initial overview of the unique legal and political status and relationship that Indian tribes have with the federal government. Second, actual documentation of underenumeration among various tribes will be presented. Last, reasons for the undercount will be explored.

BACKGROUND INFORMATION

American Indians have a unique legal and political relationship with the United States government. Their status is that of domestic dependent nations within a nation. No other ethnic minority group in the country has this type of relationship with the federal government. The special status is based on treaty obligations enacted between the federal government and various tribes. These treaties are legally binding agreements. Policies that result from the treaties were codified by the first Congress in the Indian Trade and Intercourse Act of 1790 (U.S. Commission on Civil Rights, 1981). The act prohibited any land transactions with Indian nations or tribes of Indians without the participation of the US government.

In the treaty relationship the tribes gave up external sovereignty -- the right to go to war with or make treaties with foreign powers -- in return for the protection of the United States. The trust relationship centers on three components: land, tribal self-government, and social services (US Civil Rights Commission, 1981). Most specific to the Census Bureau are the issues of land and taxation. Because Indian land is held in trust by the federal government it is non-taxable. The decision not to include Indians in the initial

census process resulted from their non-taxable status, which is referred to in Article I, Section 2 of the Constitution mandating the census process.

Article I Section § 2 of the U S Constitution states:

“Representatives and direct taxes shall be apportioned among the several states which may be included within this Union according to their respective numbers, which shall be determined by adding to the whole number of free persons, including those bound to service for a term of years, and **excluding Indians not taxed**, three-fifths of all other persons. The exact enumeration shall be made within three years after the first meetings of the Congress of the United States, and within every subsequent term of ten years, in such manner as they shall by law direct.”

As a result of the above mandate, American Indians were excluded from the first six censuses from 1790 through 1850. Indians not paying taxes were not to be counted when determining the population of states, based on the presumption that those Indians immune from state and federal taxes were in some kind of political allegiance to their own tribes and thus not truly part of the United States (Deloria and Lytle, 1984). However, with the advent of Andrew Jackson's forced assimilation policies of the early 1800's, the Census Bureau began the process of enumerating Indians by counting certain segments of the American Indian population. Beginning in 1860, only those Indians who were considered assimilated were officially counted and noted as "civilized Indians" in census documents. Identifying civilized Indians was primarily contingent on land ownership. As Clemence (no date: 11) states:

“The determination was administrative: apparently Indians on reservations who received 'allotments' under the General Allotment Act of 1887 were considered citizens. The Bureau determined whether a reservation had been allotted, and if so, the residents were enumerated as taxed Indians. “

Another issue which further complicated the process of enumerating Indian people was counting Indian people of mixed blood. It was decided that persons of mixed white and Indian blood, living in white communities, who were assimilated would be counted as white. However, if the mixed bloods lived among Indians, they would be counted as Indian (Drees, 1968:2). These definitions of Indians were applied in the federal censuses of 1850, 1860, and 1870, in determining the country's population (Drees 1968).

In 1880, the Census Bureau cooperated with the Commissioner of Indian Affairs and collected information on both taxed and not-taxed Indians. However, the information

was not published in the 1880 Census report (Drees, 1968). It was not until 1890 that the Census Bureau not only performed an in-depth enumeration of both taxed and non-taxed Indians but also published the information. The 1890 census report on Indians is presented in Volume X of the Eleventh Census publication and contains extensive information on living conditions, vital statistics, land, and customs. The 1890 enumeration had the advantage that residence patterns of Indians had stabilized because the federal policies of forced removal had ended. Consequently, most of the Indians were living on reservations, on land owned by themselves, or in white communities.

Problems encountered during the 1890 enumeration are concerns which continue to affect census taking among American Indians. Barriers to a more accurate count included language differences, resistance to federal government activities, high mobility rates, and lack of sufficiently trained interviewers. The census report for the Five Tribes (the Creeks, Cherokees, Seminoles, Choctaws and Chickasaws) indicates that two or three interpreters were needed to administer the census. In addition, many of the tribes were opposed to the census process. On the Creek and Seminole reservations, meetings were held by the Indian leaders to resist actively participating in the census count (Bureau of the Census, 1943, viii: 301). In large isolated reservation areas such as the Navajo reservation, insufficient coverage was given. A lone agent was assigned to enumerate the entire Navajo reservation (Bureau of the Census, 1943: vi, 112).

Thus, Indians have been included in the census count since 1890. However, for purpose of apportioning representatives to Congress, Indians not taxes were deducted from the total population count until 1940. In 1939, the Census Bureau solicited an opinion from the U.S. Attorney General to resolve the problem of excluding certain segments of the Indian population from the total count. Two events which most likely serves as an impetus were a 1935 Supreme Court decision (*Superintendent v. Commissioner*) which held that all Indians are subject to federal taxation regardless of land ownership (Clemence, no date) and the Indian Citizenship Act of 1924. The Indian Citizenship Act gave all Indians born within the territorial limits of the United States full citizenship. This status, however, did not infringe upon the rights enjoyed as members of their respective tribes, thus implying a dual citizenship status for Indians (Deloria and Lytle 1983). Hence, in 1940 the Indian population was finally included in the total U. S. census count.

Because of various problems experienced in enumerating the American Indian population it was difficult to get an accurate count. Inaccuracies of the early censuses were emphasized by Lewis B. Meriam in 1928. Meriam's book, entitled, **The Problem of Indian Administration** (more widely known as the Meriam Report), cited the lack of accurate statistics about Indians as a major problem and suggested the need for additional questions in the general population schedule such as degree of Indian blood. Partly as a response to the Meriam Report, the 1930 census scheduled included a more thorough account on the American Indian population. This is reflected not only in the method and type of information gathered but by the 36 per cent increase over the 1920 census (Bureau

of the Census 1933). The 1930 census evidenced three major improvements over past procedures, including (1) the use of the general schedule, (2) enumerating Indians at the same time as the rest of the population, and (3) the use of trained census employees as enumerators rather than the Bureau of Indian Affairs employees as had been done in all previous counts (Drees 1968).

The 1940 census does not indicate any special treatment for the Indians. The 1950 census included a supplemental schedule used to assist the Bureau of Indian Affairs (BIA) in policy decision. With input from the BIA, maps were utilized to designate the boundaries of the reservations.

The 1960 census differed from earlier decennials in that the respondents self-reported their race. In the 1940 and 1950 census counts the enumerators indicated the race of the respondent. This method was reportedly criticized by the BIA stating that "a trained anthropologist would not be able to tell upon sight whether a person was an Indian" (Drees 1968:10). In 1970 race was once again obtained on the basis of observation by enumerators in rural areas of the country, including most reservations (Bureau of the Census 1984:9).

In 1980, 1, 420, 400 American Indians and Alaska Natives were enumerated.¹ This decennial census includes the highest official count of the American Indian and Alaska Native population through its date. The 1980 count represents a 72 per cent increase over the 1970 census count (Bureau of the Census 1984). Passel and Berman (1986) note that this type of natural increase is demographically impossible and suggest an overcount of Indians in certain segments of the country. However, caution must be taken when comparing previous decennial censuses of American Indians with more recent ones since the accuracy of the past and present censuses is highly questionable. Moreover, a number of other factors made comparisons between censuses on American Indians and Alaska Natives difficult. For example, in the 1970 census, the item race was obtained on the basis of observation by enumerators in rural areas, including on reservations. For the 1980 census respondents self-identified their race. In addition, differences in the wording of the question on race and improvements in enumeration procedures may also have influenced the outcome of the 1980 census (Bureau of the Census 1984).

In summary, the review of the decennial censuses among American Indian and Alaska Natives reveals a complex process centering on both political and methodological issues. The political concerns stem from the unique status that Indian tribes have within the federal government and ultimately affect the methodological process of enumerating Indians. For example, race is an important component of the census schedules. However not only is biological race involved but, in the case of the American Indian and Alaska Native population, it is also politically and culturally grounded.

¹This is the first time that Alaska Native have been mentioned separately in the census literature.

In general three criteria for classification of individuals as Indian are: (1) legally Indian e.g. individuals enumerated on tribal rolls, (2) Indian by residence: e.g. legal Indians who reside within Indian reservations or Indian communities, and (3) cultural Indians: e.g. Indians who are functional participants in an on-going Indian society and who identify as Indians (Wahrhafting, 1968).

For the purposes of the Census Bureau, the more recent definition of an Indian (in 1960, 1980 and, to some extent, 1970) has been a social one that has relied upon "self-identification." This procedure can be problematic since the individual may or may not be culturally Indian or may or may not have any degree of Indian blood (Weber, 1989). This type of ambiguity leads to inaccurate counts among the Indian population. Another methodological problem related to political considerations is the lack of American Indian involvement in the census process. As the review of the census records indicates until recently the Census Bureau by-passed tribal governments and worked directly with the Bureau of Indian Affairs official to assist in the data collection process. It has also been pointed out that government officials have systematically enumerated American Indians for purposes other than counting, including fiscal control over annuity payments and land allotments (Dobyns 1984). In summary, the Census Bureau has experienced a number of unique problems in counting the American Indian and Alaska Native populations. Many of those problems center on political as well as cultural considerations. As a result, the population estimates for the Indians is more an approximation of their numbers rather than an accurate count.

DOCUMENTATION OF THE UNDERCOUNT

The second part of this analysis will attempt to understand the demographic undercount of American Indians by an examination of the literature and other documents. Recently, there have been an increasing number of allegations concerning the census undercount by various Indian tribes and Indian groups. However, there is a lack of written documentation to support these charges. This review indicates the paucity of published research in this area. The most recent studies which examine undercounting among the American Indian population are those which have been done with the support of the Census Bureau.

Undercount

Numerous researchers have alluded to the inaccuracies of the census data on American Indians (Weber 1987; Dobyns 1984, Sanderfur and McKinnell 1986; Thornten 1987; Snipp 1986). The studies which do examine the census undercount of American Indians have focused primarily on historical underenumeration among specific tribes. For example, ethnohistorians have revealed undercounts among the Cherokee (McLoughlin and Conser 1977); the Mandan (Glassner 1974), and the Pima and Maricopa Indians

(Meister 1975). Within the more recent past, research by Hillery and Essene (1963) indicate that there was an undercount of approximately 20,000 Navajos residing on the reservation during the 1960 census. Their figures are based on a comparison of the 1960 U.S. Census count with the 1960 Bureau of Indian Affairs records.

Research concerning the 1980 census and the 1988 dress rehearsal count also reveals an undercount among American Indian population. A preliminary report by David Fein (1989) using data from the 1980 Census Post Enumeration Program found that the 1980 census undercounted American Indians by approximately 8 per cent.

One of the few studies which examines the urban Indian population was submitted to the Census Bureau by Van A. Reidhead. In his non-random sample of urban Indians in the St. Louis Area, Reidhead (1989) indicates that a large number of American Indian households that area either did not receive a 1988 dress rehearsal form in the mail or were not visited by a census taker.

Two other research papers submitted to the Census Bureau include the Colville Indian reservation study and the St. Regis research. The Colville study was undertaken by Lillian Ackerman (1989) during the fall of 1988. The study provides comparative information between the spring 1988 census dress rehearsal and the ethnographic research in the fall of the same year. Inconsistencies in the two selected study blocks were found between the spring dress rehearsal count and the fall enumeration. Undercounts of 13 per cent to 23 per cent were documented in these small sample areas (Ackerman 1989). The reasons for the discrepancies include clerical errors made by the census workers, high mobility patterns among Colville residents as well as resistance and apathy on the part of the Indian respondents. An Additional study prepared by Ackerman (1988) concentrates on mobility patterns in Colville. She found a 25 to 35 per cent mobility rate in the areas studied.

The study on the St. Regis Mohawk reservation focuses on issues that affect the outcomes of census counting. In particular, Nancy Bonvillain (1989) concentrates on the mobility and work patterns of the Mohawk population as these relate to residence patterns which ultimately affect accurate population counts by the Census Bureau.

In addition to the research presented by ethnographers, there have also been reports by tribes concerning underenumeration. According to tribal officials, Santo Domingo Pueblo in New Mexico was underenumerated for the 1980 census. The discrepancy was due primarily to the mapping procedure employed by the Census Bureau. The tribe received the maps by bulk mail from the Bureau. Not only were some of the maps damaged in transport -- which made them difficult to read, but they were also incomplete (Atencio, personal communication, 1989). Consequently, entire sections of the reservation were excluded from the maps which led to the omission of a number of households in the 1980 count. In 1984, the Census Bureau performed a special count of Santo Domingo that

revealed an undercount of approximately 24 per cent.

The Red Lake Band of Chippewa Indians formally complained of an undercount. In November of 1980, the tribe filed a complaint in federal district court against the Census Bureau for undercounting the Red Lake Chippewa Reservation community. Although a number of charges were listed in the suit against the Bureau, such as failing to enumerate all persons living on the reservation, failing to enumerate and properly classify all housing units on the reservation, and failing to employ sufficiently skilled employees to conduct the census, the suit was dismissed by the court in November of 1988 for lack of adequate documentation. However, according to the tribe's suit, the Census Bureau failed to provide data that would allow them to provide proper documentation.

The documented evidence of census undercounting among American Indian population indicates that it is not concentrated among any particular tribe or region but encompasses a wide range of circumstances and situations. For example, undercounting has occurred among urban and reservation based Indians and in large and small tribes. An undercount has also been established in traditional tribes as well as fairly modernized tribes. A number of reasons have been presented to explain the undercount. And, the last section of this paper will delve into the possible causes of the undercount.

Undercount and Overcount

Research by Cary Meister (1980) on the Salt River Pima-Maricopa reservation in Arizona shows an undercount in the 1970 census by as much as 65 per cent. In addition, Meister (1975, 1978) demonstrates discrepancies within the Census Bureau's own data reporting. The Census Bureau's 1970 subject report on American Indians was based on 20 per cent sample data and included inaccurate population characteristics for four reservations. Meister indicates that sampling is useful and of low error for large populations. However sampling error can be extreme when applied to small populations. Consequently, he found both an undercount and overcount in the four reservations studied. In comparing the complete census count tape with the 10 per cent sample, it was revealed that the 20 per cent sample fell 3.7 per cent short of the complete national Indian count. The sample undercounted Gila River Reservation by 2.5 per cent and Ft. McDowell by 23.4 per cent. In addition, it over reported Salt River by one per cent and Ak Chin by 33.8 per cent. In studying age groups of the 1970 census and comparing this with birth and death statistics, Jeffrey Passel (1976) found a possible undercount of 6.9 per cent for the American Indian population under 20 years of age and an overcount for other age groups.

Overcount?

The study by Passel and Berman (1985) on the 1980 census attribute the dramatic increase to the respondents change in racial identification rather than more accurate reporting. Based on other demographic data they suggest an overcount among American Indians for the 1980 census particularly in 'non-Indian' states.

CAUSES OF UNDERENUMERATION

A number of hypotheses have been presented in an attempt to understand the undercount among American Indians and Alaska Natives. The three most common explanations given for undercounting Indians are (1) high mobility patterns among the Indian population, (2) resistance because of distrust of government and fear of losing government assistance, and (3) methodological problems such as inconsistent data collection procedures and culturally biased schedules.

Mobility

According to the literature, the most readily perceived cause for undercounting the Indian population is mobility. Included in mobility are the differentiated living patterns found among many American Indian tribes (i.e. extended family households) which is conducive to movement among households. The subject of mobility and census undercounting has recently generated several in depth studies. Ackerman's (1988) thorough study of the Colville Indian Reservation community gives a good account of household structure and mobility patterns that is applicable to a number of different tribes. Factors that contribute to mobility include both traditional and contemporary influences. Traditional reasons for mobility involve attendance at celebrations and participation in ceremonies. As mentioned above, the extended family structure is conducive to greater movement between extended family households.

Contemporary factors contributing to mobility center primarily on employment, education, and travel. Employment and education are two major reasons for mobility. Economic conditions on most reservations limit employment opportunities (Gilbreath, 1974; Prucha, 1984). Therefore, a major portion of the reservation population must seek employment opportunities away from the reservation. Bonvillain (1988) elaborates on the type of residential arrangement among the St. Regis Mohawk tribe. The Mohawk men are noted for their skill as high steel workers and are in demand by construction companies. Rather than move their families to the cities where the jobs are available, the men set up temporary group households in their current city of employment. Upon completion of their work, they return to their permanent homes on St. Regis. The study by Hillery and Essene (1963) also attributes the undercount among the Navajo to their high mobility rate in the 1970 census enumeration.

Resistance

Historically the federal government has viewed American Indians in a paternalistic and ethnocentric manner (Prucha 1985; Zuern 1983; Jarvenpa 1985). This perspective has been reflected in various governmental policies directed at American Indians such as the Indian Removal Act of 1830, the Dawes Severalty Act of 1887, and more recently the Indian Civil Rights Act of 1968. Given the internal colonial relationship that has existed between the United States government and American Indians, resistance to the census is not an uncommon response.

One of the earliest reports which documents resistance as a reason for undercounting American Indians was presented in 1866 by Washington Matthews, an assistant surgeon for the United States Army. He indicates that the counts among the Mandans in Ft. Berthold, North Dakota, were inaccurate because the Mandans did not trust the intentions of the Census Bureau and refused to be counted. The reason for their resistance was a smallpox epidemic which devastated the community in 1837. Prior to that epidemic, a census had been taken. The Mandans believed that the epidemic resulted from the census and have since resisted all efforts to be counted (Glassner 1974).

Recent studies also mention resistance as a cause for underenumerations. Ackerman's (1988) work among the Colville notes that some respondents were reluctant to participate in the count for various reasons including cohabitation and violation of housing regulations in tribal HUD homes. Reidhead's 1989 study on Indian attitudes toward the census found that the urban Indian population in St. Louis held ambiguous views of the census. When asked if they would cooperate with the census, 23 per cent said they would not. The explanations given for not participating centered around general distrust of the federal government and uncertainty about confidentiality.

Methodology

Areas that were listed as problems in the 1890 census of American Indians, including language, resistance, high mobility rates, and lack of sufficiently trained interviewers continue to be emphasized by researchers as reasons for undercounts in the more recent censuses. With some exceptions, language is less problematic today since more American Indians are familiar with English and the Census Bureau has made a concerted effort to recruit, hire, and train American Indian census enumerators familiar with their tribal language from the communities. Despite improvements in language and some tribal involvement at the local level, major methodological problems exist.

A most evident methodological problem, as mentioned earlier, is the uncertain and inconsistent definition of "Indian." In recent census counts, the definition has been a social one that has relied upon "self-identification." There are two reasons why this is problematic and can lead to undercounting. First, the unclear definition of who is an Indian leads to uncertainty about census results. Researchers and practitioners alike are cautious about making projections from census data. This was particularly evident with the 1980 census results. The 1980 census count showed an increase of approximately 70 per cent over the 1970 census. A number of researchers and practitioners claimed an overcount of American Indians while a number of tribal leaders claimed an undercount of their people. Claims of an undercount by tribal leaders appeared to be overshadowed by the overcount claims. The claims of the overcount were based on the self-identification procedures used in the 1980 census (Snipp, 1986). The uncertainty about the accuracy of census data on American Indians can also result in negative policy and program decisions for the Indian population. A second problem with uncertain definition of Indian is the inability of the Census Bureau to recognize the unique relationship that American Indian tribes and

Alaska Natives have with the federal government. Tribal identification is not only biological; it is also political.

Therefore, to avoid confusion the race item should include questions on tribal identification and tribal enrollment. For example, the 1990 questionnaire states, "If Indian (Amer.) print the name of the enrolled or principal tribe." To distinguish between individuals who identify as American Indian and those who are actually enrolled members of their tribe, a follow up question could read, "Is this person an enrolled member of the above mentioned tribe?"

Another methodological problem is the cultural bias of the census questionnaire. Due to the fact, the census schedule is founded on a western European image of how society is organized. An example is the question on residence. Specifically, residence is defined by the census is one that is based on the nuclear family household. Most American Indian tribes and Alaska Native villages are based on the extended family concept and current residence patterns reflect this lifestyle. The research by Ackerman (1988) and Bonvillain (1989) reflect the incongruence between the census format and the actual residence patterns of the Indian tribes they studied. These studies indicate that residence patterns on Colville and St. Regis are fluid and complex. They include extended families, inter-household mobility, on/off reservation employment with temporary out-migration, and frequent returns to the reservation. Currently, the census items on the schedules fail to incorporate the residence patterns of many ethnic minority groups thus resulting in an undercount. Other methodological problems that have resulted in underenumeration include mapping problems and unclear boundary divisions. Some of the maps received for the 1980 census were illegible and inaccurate. As a result, a significant number of households were missed in several Indian communities.

RECOMMENDATIONS AND CONCLUSIONS

Historically, the relationship between the Census Bureau and American Indians and Alaska Natives has been complex, involving both political considerations and methodological problems. In preparing for the 1990 census, the Bureau has initiated the process of involving American Indians and Alaska Natives in its structural procedures and activities. Indian involvement has been accomplished by (1) increasing the number of American Indians employed at the main office of the Census Bureau, (2) establishing a Tribal Liaison Program to increase awareness of the 1990 census in the Indian population, and (3) establishing a national American Indian and Alaska Native Advisory Committee. This is the first time that American Indians and Alaska Natives have been included in the procedures of the Census Bureau.

The research on the undercount among the American Indian and Alaska Native populations suggests a number of important policy implications. First, the Census Bureau must become more flexible in relating to the American Indians and Alaska Natives as well

as to other racial and ethnic population in America. Specifically, programs which promote cultural sensitivity should be implemented at the initial employee orientation and should be integrated throughout the Bureau's training programs.

Second, more initiatives should be undertaken by the Bureau to encourage American Indians and Alaska Native researchers to use census data in studying their communities. Such initiatives would provide a means of building greater trust in the census, and assuring that the collection and interpretation of census data would be culturally sensitive. Two specific initiatives should be considered. One, the Bureau should conduct an aggressive search to staff and promote American Indians and Alaska Natives within the various divisions of the Census Bureau. Two, the Bureau should develop an outreach seminar, similar to the multi-agency sponsored American Indian/ Alaska Native Research Development Seminar to network those American Indian and Alaska Native researchers working in universities and their communities who might use census data in their research.

Parallel to this initiative, the Census Bureau should underwrite or directly organize a seminar for non-Indians and non-Native Alaska researchers, inside and outside the federal government, who use census data to conduct inquiries of these communities. Such an effort could enhance the cultural sensitivity of these researchers and provide insights as to how their research can be made meaningful to the communities they are investigating.

Third, more American Indians and Alaska Natives must be involved in the decision-making process of the Census Bureau by placing them in positions of authority. This can be accomplished through an aggressive recruitment and training process. In 1990, only five American Indians were employed in the Census Bureau's central office which is located in Suitland, Maryland. This number is equal to approximately 00.1 per cent of the five thousand people currently employed at the main office. Because of the difficulty of recruiting American Indians to work in the Washington area, consideration should be given to placing Indians in regional offices. In addition, field visits to Indian reservations and villages and soliciting continuous involvement of tribal leaders will also assist in establishing a cooperative relationship between the Indian population and the Bureau.

Last, it is essential that the Bureau establish an office or "desk" that is specifically intended to work with American Indian and Alaska Native issues and concerns. This would further institutionalize the Bureau's efforts to involve the Indian population in Bureau activities.

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DISCLAIMER

1990: The views expressed are attributable to the author and do not necessarily represent those of the Census Bureau.

EDITOR'S UPDATE (1998)

"The 1990 census counted over 1.9 million American Indians, Eskimos, and Aleuts compared with 1.4 million in 1980. ... Preliminary analysis suggests a number of factors— improved outreach through the American Indian Liaison Program, changing self-identification, seeking ethnic roots, and improvements in census procedures, especially automated coding— might explain the larger than expected growth." (See "Preliminary Evaluation of data from the race and ethnic origin questions in the 1990 Census" by Arthur R. Cresce, Susan J. Lapham, and Stanley J. Rolark, a paper presented at the 1992 annual meeting of the American Statistical Association.) The 1991 March Current Population Survey, by contrast, estimated a national American Indian population on the order of 1.5 million.

Additional information concerning census coverage --whether persons who are American Indians were or were not enumerated-- was produced by the special 1990 Post Enumeration Survey conducted on the ten largest American Indian reservations. The post-strata of American Indians on reservations registered the highest net undercount of any of the post-strata, which were defined by region, size of settlement, race, and other demographic or geographic characteristics. The PES elsewhere did not measure coverage of persons self identified as American Indian, however. The ethnographic evaluation program reported coverage of American Indians in sample areas on Isleta Pueblo, New Mexico (see Jojola 1992), urban Indians in Chicago (see Straus 1991), Creek Indians in Oklahoma (see Moore 1991) and a community of a tribe recognized by the State of North Carolina which had applied but not yet received federal recognition (Lerch).

Final counts reported were affected by edits, especially those to "impute" a race to the millions of Americans reported in the census without any race ascribed or reported as an "other race". Some impacts of these edits were examined in the Demographic Evaluation Project D 8 and discussed in "Uncertainty for models to translate the 1990 census concepts into historical racial classifications/ PREM 81 " by J. Gregory Robinson, David L. Word, and Gregory S. Spencer.

As a result of recommendations of the American Indian and Alaska Native advisory committee to the Census Bureau, on the 1998 dress rehearsal census questionnaires and the proposed year 2000 census forms, one possible answer option to the question, "What is this person's race?" reads "American Indian or Alaska Native" (instead of the "Indian (Amer.)" that appeared pre-printed on the 1990 and 1980 census forms. The race question instructions for the last 20th century census of population and housing are "Mark one or more races to indicate what this person considers himself/herself to be" and to those persons marking American Indian or Alaska Native "race" the instruction: "Print name of enrolled or principal tribe" in a write-in section (as in 1980 and 1990). Although the sample for the 1996 National Content Survey which tested alternative versions of questions on race and ethnicity (Hispanic origin) was not designed to detect differences in the questions among American Indian and Alaska Natives (and no persons reported as Alaska Native from this survey) the mark one or more race instruction did not register a statistically significant effect at the 90 per cent confidence interval on the percentages of persons who reported as White, as Black, as American Indian, or as Asian and Pacific Islander in this survey. See "Findings on Questions on Race and Hispanic Origin tested in the 1996 National Content Survey," (December 1996).