Evaluation Tradecraft

Evaluation Tradecraft presents short articles about the art of evaluation in housing and urban research. Through this department of Cityscape*, the Office of Policy Development and Research presents developments in the art of evaluation that might not be described in detail in published evaluations. Researchers often describe what they did and what their results were, but they might not give readers a step-by-step guide for implementing their methods. This department pulls back the curtain and shows readers exactly how program evaluation is done. If you have an idea for an article of about 3,000 words on a particular evaluation method or an interesting development in the art of evaluation, please send a one-paragraph abstract to marina.l.myhre@hud.gov.*

Household Survey on Tribal Lands: Frame Building Through Rural Address-Based Sampling and Traditional Enumeration

Carol Hafford
Steven Pedlow
NORC at the University of Chicago

Nancy Pindus
Urban Institute

Abstract

The congressionally mandated Assessment of American Indian, Alaska Native, and Native Hawaiian Housing Needs was a housing needs assessment designed to produce national-level estimates of housing needs in U.S. tribal areas (HUD, 2017a). Special care was taken so that the process would not only be technically effective (to ensure reliable results) but also be fully acceptable to the tribes involved. The foundation for the in-person household survey was the development of the sample frame of eligible American Indian and Alaska Native (AIAN) households from which to derive national estimates of housing needs. Three methods were used to construct the list of AIAN households and addresses for the sample frame and to select the households to interview: (1) United States Postal Service address lists, (2) tribal maps and lists, and (3) in-person enumeration. Use of these methods yielded sufficient coverage to provide reliable estimates of housing needs.

Introduction

The *Assessment of American Indian, Alaska Native, and Native Hawaiian Housing Needs* was designed to study housing needs in U.S. tribal areas. The previous similar assessment was conducted in 1996, prior to the passage of the Native American Housing Assistance and Self-Determination Act of 1996[1] that fundamentally changed the way federal funding for housing is delivered to Native people.

This study was a 6-year effort, from 2011 to 2017, that included consultations with tribal leaders, analysis of U.S. Census Bureau data and U.S. Department of Housing and Urban Development (HUD) administrative data, three surveys, and site visits. The most important new data collection effort in this project was a major in-person household survey in a sample of American Indian and Alaska Native (AIAN) tribal areas. This effort was one of the largest and most complex surveys ever undertaken in Indian country. A nationally representative survey of tribally designated housing entities was also conducted.

The study team took special care to make the process technically effective (that is, to ensure reliable results) and also fully acceptable to the tribes involved. All tribal areas, as defined by the Census Bureau, with an AIAN-alone[2] population of at least 150 were eligible for selection. The minimum of 150 was to make sure that a sufficient number of interviews (approximately 30 eligible AIAN households) could be collected from each selected tribe to develop the national estimate, with a proportionally greater number collected from the largest tribes, including the Navajo and Cherokee Nations. The tribal area probabilities were derived from the AIAN-alone population in the 2010 census. From a sample of 595 eligible tribes, the research team selected two embedded representative samples: (1) a representative sample of 120 tribal areas that included the tribally designated housing entities sample; and (2) a representative subsample of 60 tribal areas that included the 40 tribal areas for the household survey and also 20 tribal areas as a reserve, if needed, to replace any of the original 40 sampled tribal areas. The team selected with certainty 7 tribal areas with populations greater than 15,861 AIAN-alone persons for the household survey: (1) Navajo Nation reservation and off-reservation trust land, (2) Cherokee Oklahoma Tribal Statistical Area (OTSA), (3) Lumbee State Designated Tribal Statistical Area, (4) Muscogee (Creek) OTSA, (5) Choctaw OTSA, (6) Chickasaw OTSA, and (7) the Oglala Sioux Pine Ridge Reservation.

After participating in the tribal consultations that HUD held in 2012, the research team worked closely with tribal leaders in each of the 40 tribal areas selected for the household survey to obtain permission to conduct the study. This process ensured tribal stewardship and oversight of any research conducted on sovereign lands while safeguarding community wellbeing and protecting the community from harmful research (Sahota, 2007). Each tribe participating in the study had different protocols and requirements. In nine cases, it was necessary to obtain approval from the tribe's Institutional Review Board and from the tribal government. Ultimately, 37 originally selected

[1] Pub. L. 104–330, 110 Stat. 4016. October 26, 1996.

[2] *AIAN alone* is defined as people reporting that they belong to a single race (American Indian or Alaska native), not in combination with any other race, on the census form.

tribes and 1 replacement tribe in the sample agreed to participate.[3] They included reservation-based tribes; large and small pueblo, woodland, and coastal tribes; tribal jurisdiction service areas in Oklahoma; and native villages in Alaska.

Using tribal-specific sample frames, AIAN households were selected for interviews.[4] In-person interviews were conducted with 1,340 households. This article focuses on the development of the household sampling frame in those selected tribal areas. We describe the procedures used and the experiences of this survey in order to guide other researchers working in tribal or in rural areas. Information for each sampled tribe, including their total populations based on the 2010 census, their AIAN-alone populations, the selection probability, the frame method used, estimated coverage, and the unweighted and weighted response rates are in the technical appendixes to the final report (HUD, 2017b).[5]

The Methodological Challenge

The foundation for the in-person household survey was the development of the sample frame of eligible AIAN households from which to derive national estimates of housing needs. However, no such national frame across tribal areas exists. The research team's experience with data collection in Indian country suggested at the outset that constructing an address-based list of households for each tribal area would be necessary to form the universe from which to draw the sample.

The advantages of using address-based sampling for probability-based surveys include increased coverage of households and access to cost-effective and timely sampling frames (AAPOR, 2016). However, coverage is not evenly distributed for some rural geographies or subpopulations, such as tribes, which can result in undercoverage errors, through either omissions or erroneous exclusions (O'Muircheartaigh, English, and Eckman, 2007). Use of general delivery postal addresses remains common in rural areas, including Indian country; one of the drawbacks of in-person household surveys is that post office box addresses and other rural route addresses are not locatable. Although many tribes have mapped locatable housing units for emergency response services and have assigned households with city-style addresses (that is, a house number and street name), others are still in the process of doing so. Consequently, once the sample of tribal areas was drawn, the research team had to identify alternative sources and methods for developing high-quality, tribal-specific sample frames to select and locate households for a hard-to-reach population within the time and cost parameters of the study.

Creating the Household Sampling Frame

Building the address-based, household-level sampling frame required multiple methods. Many households on tribal lands rely on post office box addresses and other rural route addresses, which

[3] A sample of 40 tribal areas originally was selected, but HUD deemed that 2 tribal areas were ineligible because they were not Indian Housing Block Grant program grantees.

[4] Tribal member households were those households in which the owners or renters, their spouses, or custodial children age 17 or younger self-identified as Native American or Alaska Native, alone or multiracial.

[5] See Exhibit E.1. Summary of 40 Selected Tribal Areas for Household Sample (HUD, 2017b).

do not provide a physical location for data collection. Taking this factor into consideration, the team used three methods to construct the list of AIAN households and addresses for the sample frame and to select the households to interview: (1) United States Postal Service (USPS) address lists, (2) tribal lists, and (3) in-person enumeration. Use of each method involved outreach with each tribe to discuss appropriate procedures and protocols.[6] The research team conducted a pilot test with 15 tribes to assess the feasibility of each approach, taking into consideration the density of the population, the ratio of the AIAN population to the total population (to forecast the level of screening needed), potential access to a tribally held list, the extent of the tribal terrain to cover, and the time and costs involved.

Of the 38 tribal areas, USPS address lists were usable for 9 tribal areas (24 percent). These address lists were used only if the estimated coverage was at least 80 percent. Coverage was determined by dividing the number of city-style addresses within the tribal area by the number of occupied housing units according to the 2010 census.

For another 16 tribal areas (42 percent)—which included land-based reservations, joint-use areas claimed by multiple tribes, OTSAs, and Alaska Native village statistical areas—the study team obtained a single source of housing units or eligible persons, provided by the tribe, to develop the tribal-specific sample frame. These sources varied and included maps of housing units and roads, spreadsheets and printouts of housing units, 911 or fire lists, and tribal membership lists. Gaining access to these lists involved extensive outreach with tribal leaders and tribal departments. Using a structured protocol, the research team consulted with relevant tribal entities to understand the content and quality of the lists or maps (that is, data fields, frequency of updating, percentage of population included, omissions, and so on) and assessed their utility and limitations as sampling frames. Once the quality of the lists or maps was determined, the team needed tribal consensus to share the lists. The research team then negotiated access through multiple entities, including tribal leaders, councils, housing authorities, and others. Use of these proprietary tribal resources was bound by strict confidentiality requirements.

For 12 tribal areas (32 percent), using USPS or tribal-specific lists was not possible. Therefore, housing units in selected blocks within tribal areas were systematically enumerated (listed) in person by field personnel to form the sampling frame. The team conducted listing on large and small land-based reservations, on pueblos, across OTSAs, and in Alaska Native villages. The 38th tribal area, a land-based reservation divided across two states, provided a county-based housing unit list for the portion in one state, but the portion in the other state needed to be listed.

Experienced field interviewers were trained in the enumeration methods. Maps, to help them find the selected areas, were prepared using census geography and MapMarker® software. Driving (sometimes great distances) throughout identified communities across the reservations or tribal areas, interviewers identified and plotted every dwelling in a defined area on a list. Using the list of all housing units identified for a tribal area, statisticians selected a sample of households for the study.

For two reservations, the research team used a list-and-go methodology to expedite the sample frame development-and-selection process, as permission to conduct the data collection was obtained in the final months of the field period. Instead of enumerating (listing) all units in the field, survey

[6] HUD (2017b), exhibit E.1 shows the frame used for each of the 38 tribal areas.

methodologists developed listing sheets based on geocoded maps that identified preselected housing units for each block at a specified sampling rate (this rate depended on the tribal area). Field interviewers received training before starting the list-and-go process and were monitored and coached throughout the listing activity. They were responsible for enumerating the area, screening eligible households, gaining cooperation, and conducting the in-person interviews with AIAN respondents.

The largest tribal area in the study, the Navajo Nation reservation and off-reservation trust land, contains more than 17 percent of the entire AIAN-alone population in tribal areas. With no maps or lists of rural-based addresses available for sampling purposes, listing was necessary. For the Navajo Nation, the research team first selected 15 chapters, or local jurisdictions, before selecting two segments within each chapter. Chapters were selected across five regions, with probabilities proportional to the AIAN population in those areas. The exception was that, within the western region, the Cameron chapter was selected with certainty by request of the Navajo Nation to include households affected by the Bennett Freeze area.[7] No chapters were large enough to be selected with certainty. Within chapters, segments of blocks were selected using census block housing unit counts so that the sample would be representative of all Navajo chapters. Partial or entire block groups (all census blocks with the same first digit within a census tract) were selected that contained approximately 100 to 150 housing units, according to 2010 census data. The research team listed 11 of the 15 chapters in this manner and conducted household interviews. Due to time limitations, interviews with 4 of the 15 chapters were not started before project closedown.[8]

Sampling and Selection Probabilities

When an address-based USPS list or a tribal list of households or persons was available as the sampling frame, the selection probability was very simple—the number of selected housing units divided by the total number of eligible housing units on the list. Determining the number of housing units to select was based on a nonvacancy rate of 85 percent, a screening completion rate of 90 percent, an interview completion rate of 70 percent, and the tribal area-specific person eligibility rate. Only AIAN residents were eligible, and it was assumed that the tribal area-specific eligibility rate was simply the 2010 census AIAN-only population divided by the total tribal area population.[9]

When no list of addresses was available from the USPS address lists or the tribal list (or if these lists did not provide coverage of at least 80 percent), the research team listed specific areas, or segments, and drew samples from the listed units. Different numbers of segments were selected for different tribal areas, often depending on the tribal area-specific eligibility rate. When this eligibility rate was lower, more housing units needed to be selected, and spreading them over more segments

[7] In 1966, the U.S. Bureau of Indian Affairs placed a development ban on 1.5 million acres of Navajo land, encompassing all or parts of nine western Navajo chapters, in order to promote negotiations over a land dispute between the Navajo and Hopi Nations. Under the ban, Navajo families were not allowed to repair their homes; housing construction and infrastructure projects, including installation of water and power lines, were halted. Thousands of Navajo families lived in substandard housing with no running water and electricity. The Bennett Freeze was lifted in 2009. Community development efforts are under way to build new housing units and develop needed infrastructure.

[8] To compensate for this chapter subsampling, the team adjusted weights within the same region. Further information about the 15 chapters selected and their selection probabilities can be found in HUD (2017b), exhibit E.2.

[9] As noted in HUD (2017b), exhibit E.1.

was preferable. Segments were listed in 11 tribal areas, with the most (22) being listed within Navajo Nation, the largest tribal area (2 in each of 11 chapters). Researchers aimed for segments of approximately 100 housing units to minimize effort and costs while still providing enough housing units for selection. Selection probabilities for listed tribal areas were determined using decennial census counts of housing units to establish the selection probability of the segment, and this was multiplied by the selection rate within the segment.

In the list-and-go procedure, the researchers determined in advance which households would be selected block by block based on the expected number of housing units in each block. If the number of housing units differed from expectations, the team prepared the materials so that any additional housing units had a selection probability equal to all others in the segment.

Household Survey Implementation

The integrated approach to onsite data collection was contingent on completing multiple interrelated activities, including tribal approval to conduct the study; developing the sample frame; drawing the tribal-specific sample; and the recruitment, hiring, and training of tribal field interviewers. Working with 38 tribal nations, the timeline for completing these activities differed, so the research team implemented a staggered data collection schedule. Ideally, the research team forecasted 12 weeks of data collection for the household survey, starting from the time permission was granted and field staff were hired and trained. The research team conducted the tribally designated housing entities telephone survey and site visits to 22 tribal areas during this field period.

With the encouragement of the tribal nations, and to ensure that the household survey was conducted in a culturally competent manner, the research team recruited, hired, and trained tribal members to conduct the interviews. Field interviewers' training focused on contacting sampled households, key respondent rules, gaining cooperation, obtaining informed consent, conducting the interview and the enumerator observation, securely mailing completed paper-and-pencil instrument questionnaires, and quality control procedures.

Each household selected for the survey received an advance package about 10 days before the start date of the field data collection period. The field interviewer mailed or hand delivered (to those with post office boxes) advance letters to all sampled households. After allowing sufficient time for receipt of the materials, the field interviewer telephoned or visited the household to schedule an appointment to conduct the in-person interview and assess the exterior conditions of each housing unit. Field interviewers recorded each attempt to contact a household. Interviewers varied contact attempts to the selected households during times household members were most likely to be home.

In many tribal areas, the low density of the AIAN population relative to the non-Native population required extensive screening by field staff to identity eligible AIAN households. For example, extensive screening was necessary for seven of the eight Oklahoma tribes in the sample, as they lack reservations and the American Indian population is dispersed throughout tribal jurisdiction service areas.

After addressing initial questions or concerns, the field interviewers conveyed the need to conduct interviews in respondents' homes to ensure privacy and to conduct the enumerator observation of exterior housing conditions. Depending on tribal protocols, AIAN heads of household or alternate

respondents provided informed verbal or written consent to participate in interviews. As with the information letters and brochures, the content of the consent form was tailored to different tribal research conditions or Institutional Review Board requirements.

Interviews focused on how residents viewed their own housing conditions. A key element of administering the household survey was to obtain a complete roster of persons living in the household at the time of the interview. This roster was used to assess the degree of overcrowding and the prevalence of doubled-up households being used as a way to afford housing or to avoid homelessness. Topics addressed included housing unit characteristics and conditions (based on the American Housing Survey's worst case housing needs), satisfaction with housing, culturally responsive housing, needed services and amenities in the community, preferences for homeownership, living on tribal lands, attitudes on tribally assisted housing, and household income and housing costs. After completing the in-home interview, the field interviewer conducted the observation of exterior housing conditions, noting the type of structure, access from the road, and the conditions of the roof, walls, windows, and foundation.

A completed interview consisted of responses to all modules and the enumerator observation of housing conditions. At the close of both parts of the interview, respondents received incentives valued at $20. The team informed each tribe about the post-data collection quality-control procedures to ensure that tribes understood the importance of verification calls to respondents.

Fieldwork on the household survey began in July 2013 and was completed successfully in February 2016. Beyond the anticipated challenges of gaining cooperation with a hard-to-reach population, the scale and remoteness of the geography and extreme weather (that is, blizzards, flash floods, and drought-related fires) challenged field interviewers. The overall weighted response rate was 60 percent.[10] Response rates varied across tribes, with 19 tribal areas having weighted response rates greater than 70 percent.

Conclusion

No one source of address-based household lists is available in Indian country. Ensuring sufficient coverage of the population and developing the sampling frame were key methodological challenges for the Assessment of American Indian, Alaska Native, and Native Hawaiian Housing Needs study (HUD, 2017a). The foundation for this nationally representative survey was the development of the sample frame of eligible AIAN households from which to derive national estimates of housing needs. Building the sampling frame necessitated reliance on multiple methods, including use of USPS address lists; maps and lists obtained from tribes; and in-person enumeration on tribal lands, including use of a list-and-go approach as a last resort. Approval from each tribe was necessary to implement these methods on sovereign tribal lands. Ensuring a high degree of coverage and developing a robust sample frame meant representing, mapping, and enumerating tribal communities so that their housing needs could be assessed and that the study team could have confidence in the national estimates derived.

[10] A weighted response rate is reported for nationally representative surveys, because that is an average of the response rates according to the location of the population.

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Authors

Carol Hafford is a principal research scientist at NORC at the University of Chicago.

Steven Pedlow is a senior statistician at NORC at the University of Chicago.

Nancy Pindus is a senior fellow at the Urban Institute.

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