The Supporting Statement for OMB 0596-0110
NATIONAL VISITOR USE MONITORING

B. Collections of Information Employing Statistical Methods

1. Describe (including a numerical estimate) the potential respondent universe and any sampling or other respondent selection method to be used. Data on the number of entities (e.g., establishments, State and local government units, households, or persons) in the universe covered by the collection and in the corresponding sample are to be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection had been conducted previously, include the actual response rate achieved during the last collection.

Respondent universe:

Approximately 240 million separate recreation site visits occur on National Forests annually, t he exact number unknown. There are no reliable totals of the number of visits to recreation sites on Bureau of Land Management lands and DOI lands in Southern Nevada. Obtaining credible visitation estimates is a primary reason for this collection.

These recreation site visits constitute the primary sampling universe. In reporting visitation for GRPA and other purposes, the National Forest visit has been chosen as the most appropriate unit. Visits best describe the principal focus for current Forest Service management for recreation, i.e., the National Forest visitor as the customer, and the trips to National Forests for recreation. Visits represent a body of discrete units which can be easily defined both spatially and temporally. Visits are also closely analogous to recreation trips, which is a complete unit of consumption as viewed from the perspective of the visitor. The recreation trip is the most widely used and theoretically correct unit for measuring recreation demand and value.

For the Forest Service, the national estimates of the size of the visit population by type of site visited are:

Day Use Developed Sites:	71 million
Overnight Use Developed Sites:	18 million
General Forest Area	142 million
Designated Wilderness	9 million
TOTAL	240 million

Sampling:

Sampling of respondents is a multi-stage process. These sampling procedures apply to all site types, including viewing corridors. The first stage reflects a site/day combination. This stage places the interviewer in space and time.

In the second stage, interviewers sample all possible exiting visitor parties within the identified sampling period, which typically covers the daylight hours in which visitors would be exiting the recreation site. This method is unbiased, because the first party exiting through the checkpoint is selected, and upon

completion of the interview, the next available exiting party is selected. The number of visitor parties exiting during an interview is not systematic. Interviewer training stresses impartiality in selection for interviewing. All parties exiting are counted and the number of intervening unsampled parties is obtainable.

In the third stage, once the party is stopped, interviewers choose a particular respondent from within the party through random selection among persons age 16 or older.

Cruise Ship Sampling: The sampling frame for the Alaska cruise ships is similar to that of other parts of the NVUM sample. The primary sampling unit is a site-day. In this instance, that is defined as the combination of a docking locate that is visited by a set of cruise ships whose passengers could be viewing the forest, and one calendar day. For each cruise ship route, the forest selects one docking location at or near the end of the portion of the cruise wherein passengers could be viewing and/or visiting the forest. For each location, the forest determines the volume stratum for each calendar day during the sampling year. A random sample of between 6 and 8 days is drawn from the set of site days. On those assigned sample days, interviewers go to a location at the docking area where they can interview cruise ship passengers, and contact a random sample of people. Sampling of individuals occurs as groups exit the ship when it docks. One person is selected at random from each sampled group. Since most of the cruise ships follow a known time pattern in docking and leaving, interviewers can be in place when a large portion of the ship's passengers are getting the ship to spend time ashore.

The joint NPS/FS Appalachian Trail (AT) Study involves a pilot test of the NVUM method on a section of the AT in FY2007, with full implementation beginning in FY2009. The index estimator would be developed by relating car counts (C_i) at parking lots to the NVUM-type visitation estimate (V i) at each of the n=141 sampled site days along the AT pilot study area. A regression or ratio estimator will be developed to relate visitation V i to car counts C_i. This estimator will be used to convert inexpensive car counts obtained at sites not sampled by the NVUM-type methodology to visitation estimates. The relationship between Vi and C_i will probably be strongest within a strata so these estimators will most likely be developed for each individual stratum or combination of strata. The accuracy of this index estimating procedure will be assessed by comparing a visitation estimate of the pilot area based on the index method to that based on the NVUM-type method. This will include determining the difference between both estimators along with their variance, coefficient of variation and confidence interval.

Expected Response Rates:

The primary contact for all modules in this collection is an on-site visitor survey. Previous experience with this collection shows a response rate of about 88 percent of those contacted, and that response rate is expected in the future.

2. Describe the procedures for the collection of information including:

- **Statistical methodology for stratification and sample selection,**

- **Estimation procedure,**
- **Degree of accuracy needed for the purpose described in the justification,**
- **Unusual problems requiring specialized sampling procedures, and**
- **Any use of periodic (less frequent than annual) data collection cycles to reduce burden.**

STATISTICAL METHODOLOGY

In NVUM applications to lands managed by a Federal agency, categorizing recreation sites and areas is done with five strata:

- Day Use Developed Sites (DUDS) includes sites with facilities that meet the Forest Service definition for development scale for Moderate, Heavily, or High degree of modification. Generally the facilities provided include visitor comfort, convenience, and education opportunities. Site with facilities provided for health and safety only are not generally considered developed sites. These sites are intended for day (as opposed to overnight) use. This includes boating, picnic sites, fish viewing sites, fishing sites, information sites, interpretive sites, observation sites, playground-park sport site, ski areas both alpine and Nordic, wildlife viewing sites, caves, visitor centers, museums, swimming areas, and other winter sport sites.
- Overnight Use Developed Sites (OUDS) meet the definition for development scales of Moderate, Heavily, or High degree of modification. These sites include campgrounds (family & group), fire lookout & cabins, hotels, lodges, and resorts- both publicly and privately owned, horse camps, organization sites (both publicly and private owned), and any other overnight developed sites on agency lands whether managed by the government or by concession.
- Wilderness Areas (WA) include agency lands and waters that are part of the National Wilderness Preservation System. Wilderness Study areas, Research Natural Areas, or other roadless areas are typically included in this stratum for NVUM applications on Department of Interior (DOI) managed lands, but not Forest Service lands.
- General Forest Area (GFA) includes all of the residual part of the agency's lands not included in any of the above categories. On DOI agency lands, this category is termed General Public Lands (GPL), although the operational definition is the same. The sample points will generally be on roads with speeds of 40 mph or less and some trailheads. Most dispersed types of use such as hiking, hunting, and dispersed camping will be captured here. These sites represent portals through which the public can access undeveloped portions of the land base (not including Wilderness Areas).
- Viewing Corridors: This is a fifth type of site that is not on the agency's lands. This type of site is a sightseeing corridor, which includes travel corridors that permit travel through or adjacent to the agency's lands. These corridors provide visitors the opportunity to view the natural scenery, but without ever entering the agency's lands. Because this represents a potentially high level

of off-site use, it is included in this study. Use of cruise ships that travel waters off the coast of Alaska is included in the definition of viewing corridor activity. For most locations, the viewing corridor interview form collects the information needed to obtain an estimate of the magnitude of this sort of use. Due to the nature of cruise ship activity and visitor patterns in Alaska, a sampling form specific to that type of viewing corridor activity has been developed. For visitors to be included in this strata they must meet the following definition:

- The use of highways or roads on or through the agency's lands should be reported only when the primary purpose of the trip is recreational. Do not count commuter, commercial or other incidental non-recreation traffic. Stops at other developed sites, or time spent in more specific types of activities should be reported for the site or area on which they occur. Do not count use for commercial planes, trains, buses, boats, etc unless these are scheduled as scenic tours with informational services.

Defining Site-days. Some sites are open and available for public recreation use every day of the year; others are open only part of the year. Any day that a site is open defines a spatial and temporal combination within which the amount of recreation use can be measured. In this study, the combination of a site open for a calendar day is called, quite simply, a `site-day'. Site-days form the primary sampling unit for the first stage of the study design.

A second level of stratification is based on the expected volume of exiting recreation traffic for the site-day. The stratification is developed in comparison with all site-days on the forest in that site type. Five stratification levels are used: Very High, High, Medium, Low, and Closed. The Closed category includes site-days outside of the managed use season, as well as site-days that may be technically open, but there are zero expected visitations.

At some sites, the agency obtains a count of some measure that is directly related to recreation visitation, such as fees, mandatory permits, reservations, permanent traffic counts, or site usage reports from concessionaires. At these sites, the type of site and type of visitation proxy information define the sampling stratum.

ESTIMATION PROCEDURES

For NVUM applications, the following table describes the information needs and statistical procedures used to estimate them:

Information needed	Technical Procedures	Statistical Procedures
Profiles and characteristics of visits and visitors	Descriptive arrays, frequencies, weighted means	Means, medians, modes, cross-tabulations, confidence intervals
Demand models and Economic Values	Travel cost models	Count data regressions
Economic Impacts	Input/Output analysis	Weighted Means, ANOVA

The NVUM module uses standard statistical procedures for its stratified random sample to develop estimates of total recreation visits per Forest, and estimate associated confidence intervals.

The sampling design for the site visit estimate was based on a stratified random sampling design. Thus, the estimator was calculated using the typical equations in Cochran for a stratified random sample and we did not need to use probabilities of selection. We did not do any adjusting for frame error, sampling error, nonresponse bias (unit and item) or measurement error and, therefore, no calibration or adjusting weights were used. In some instances and applications it was advantageous to compute estimates in a very simple manner instead of using the typical stratified random sampling equations. Here is where we derived the probabilities of selection for each sampled item from the stratified random sampling equations (which were simply nh/Nh for items in stratum h). Then we used weights that were the inverse of the probabilities of selection to compute the estimates.

DEGREE OF ACCURACY

The NVUM project has a statistical goal of providing estimates of National Forest visits, at the national, regional and forest levels that are within 20 percent of the true visitation at the 90 percent confidence level. No degrees of accuracy have been set for any of the visit characteristics, satisfaction, economics, or other results.

UNUSUAL PROBLEMS

The Alaska region and other remote Forest Service areas contain a number of remote recreation cabins in or near Wilderness areas that are only accessible by float plane. In order to reduce staff time and travel costs in sampling usage at these areas, phone interviews are conducted after the visit has ended. All of these cabins require the user to make a prior reservation by phone or e-mail. The phone number listed on the visitors cabin reservation is used to call them. In these cases, the same interview is conducted, but the method of contact is different.

PERIODIC DATA COLLECTION

NVUM has adopted a five-year period for a sampling cycle that covers all national forest units, rather than attempting to monitor recreation use on each Forest each year. This level of frequency is considered sufficient to capture emerging recreation trends, and places recreation monitoring on a frequency equal to that of other forest resource outputs.

3. Describe methods to maximize response rates and to deal with issues of non-response. The accuracy and reliability of information collected must be shown to be adequate for intended uses. For collections based on sampling, a special justification must be provided for any collection that will not yield "reliable" data that can be generalized to the universe studied.

Experience has shown that non-responses most often occur from language barriers with non-English speaking visitors. Discussions with interviewers have shown that the most common language for non-English speakers is Spanish. In applications in the South and West, interviewers are sought who are fluent in both English and Spanish. The NVUM is available in a Spanish version as well as English version, to reduce this source of non-response. Interviewers are well-trained, wear official hats and name tags to identify themselves, and characteristically proceed with the interview process courteously and quickly. Interviewers are trained to elicit responses from traffic exiting the site. To further facilitate a high response rate the interviewer provides the respondent with information about the survey, its uses, and its importance. Since the overall response rate approaches 90 percent, bias resulting non-response is not expected.

4. Describe any tests of procedures or methods to be undertaken. Testing is encouraged as an effective means of refining collections of information to minimize burden and improve utility. Tests must be approved if they call for answers to identical questions from 10 or more respondents. A proposed test or set of tests may be submitted for approval separately or in combination with the main collection of information.

During this collection approval period three types of method testing will be continued from the last approval period.

- In cooperation with the Forest Service's San Dimas Technology Development Center, several types of electronic field data recorders and interview software programs will be tested. Using field data recorders can improve data accuracy, reduce need for post-survey error checking and data cleaning, and eliminate certain types of internal inconsistencies that are otherwise present in the dataset. Another result can be improved turnaround time for having analyses and reports completed.
- Alaska provides a number of unique challenges for sampling visitors to National Forests. Many visitors access the National Forests by boat or plane rather than by car. It is not clear that the best times, places, and methods for counting visiting vehicles and interviewing occupants to determine the proportion that are recreating have been completely identified. Cooperative research with scientists to evaluate sampling rates, response bias, and coverage of visitation for a series of options for conducting vehicle counts and interviews will be tested during this collection.
- Further tests of non-response bias and "trap-shy" behavior of traffic moving past the interview site. An observational study will be undertaken to determine if there is bias in the traffic that stops at the interview site versus the traffic that does not stop. A change in sign wording revealed some bias from signs, which is now reduced. However, additional investigation of other potential types and sources of bias is needed.

A test of the accuracy of proxy and index count estimation procedures from a combination of trail counters, traffic counters, and parking lot counts in estimating annual visits, and will be conducted in conjunction with the joint

NPS/FS Appalachian Trail study. In addition, an index estimating procedure will be developed, providing a means to estimate future annual visitation in a more expedient and cost effective manner than the NVUM-type methodology. The project involves a pilot test of the NVUM method on a section of the AT in FY2007, with full implementation beginning in FY2009. The index estimator would be developed by relating car counts (C_i) at parking lots to the NVUM-type visitation estimate (V i) at each of the n=141 sampled site days along the AT pilot study area. A regression or ratio estimator will be developed to relate visitation V i to car counts C_i. This estimator will be used to convert inexpensive car counts obtained at sites not sampled by the NVUM-type methodology to visitation estimates. The relationship between Vi and C_i will probably be strongest within a strata so these estimators will most likely be developed for each individual stratum or combination of strata. The accuracy of this index estimating procedure will be assessed by comparing a visitation estimate of the pilot area based on the index method to that based on the NVUM-type method. This will include determining the difference between both estimators along with their variance, coefficient of variation and confidence interval.

5. Provide the name and telephone number of individuals consulted on statistical aspects of the design and the name of the agency unit, contractor(s), grantee(s), or other person(s) who will actually collect and/or analyze the information for the agency.

Principal design and analysis consultants include:

- Dr. Stanley J. Zarnoch: (828) 529–0515; USDA Forest Service, Southern Research Station
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- Dr. Daniel Stynes: (517)353–5190; Professor emeritus, Michigan State University
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The principal scientist in charge of sample design, data collection, analysis, and reporting is:

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