



Visitor Use Management Fact Sheet

# Surveys 101: Using Surveys in Visitor Use Management

Troy E. Hall, Ashley D'Antonio, & Madeline Aberg  
Department of Forest Ecosystems & Society, Oregon State University



## The Role of Surveys in Visitor Use Management

The **Visitor Use Management Framework** provides a defensible, scalable process to identify issues, evaluate management actions, and implement change. The framework is based on the idea of establishing **desired conditions**, or qualitative statements about an area's desired look, feel, sound, and function. Objective **indicators** and **measures** are used to track how actual conditions compare to desired conditions.

**Surveys** provide a direct and meaningful measure of about **experimental desired conditions**, such as:

*Visitors of all physical abilities have the opportunity for safe, comfortable, non-strenuous travel among the redwoods.*

*Visitors engaged in different activities can all enjoy the setting without interfering with others' enjoyment.*

*Visitors experience the historic feel of Big Basin Redwoods State Park.*

### Example of Survey-based Indicators and Measures

For this experiential desired condition:

*Visitors experience the awe and splendor of old growth redwood trees.*

A potential indicator:

*Visitor satisfaction with seeing redwood forests and iconic big trees.*

Potential measures:

- Mean satisfaction rating
- % very or extremely satisfied

Survey question:

	b) what was your <b>satisfaction</b> with this element				
	Very unsatisfied	Somewhat unsatisfied	Neutral	Somewhat satisfied	Very satisfied
A welcoming park environment	-2	-1	0	+1	+2
Being able to see redwood forests	-2	-1	0	+1	+2
Seeing iconic big trees (the Auto Tree, Mother Tree, etc.)	-2	-1	0	+1	+2
Hearing natural sounds (birds, wildlife, water, etc.)	-2	-1	0	+1	+2
Opportunities for recreation	-2	-1	0	+1	+2
Positive interactions with other visitors	-2	-1	0	+1	+2

## Writing Questions

The wording of survey questions is critical to your ability to obtain usable data. Some helpful tips:

- Your questions should fit your survey’s purpose.
  - Be sure that question wording is appropriate for the specific indicator(s) you are measuring.
- Craft questions carefully, follow available guides.
- Avoid common problems:
  - Vague language
  - Double-barreled questions
- Limit open-ended questions, which take longer to analyze and interpret.
- Look at other surveys to see how they asked the questions you are using. Consult pools of questions.

## Approaches to Surveying

### Mail Surveys

- Poor response rates
- High cost
- Requires sample frame (i.e., a list of all people in the population of interest and their addresses)
- Has the ability to reach non-visitors, which may be relevant to certain desired conditions.



**Figure 1.** An onsite survey of visitors to a park. Photo credit Troy Hall.

### Web Surveys

- Low to no cost
- No manual data entry
- Poor response rates
- One option: Make the survey open to anyone.
  - Engaged stakeholders are the most likely respondents.
  - There is no way to know if the data are or are not representative.
- Another option: Targeted distribution
  - Convenient for visitors
  - Distribute to a representative sample and track response rate.

### Onsite Surveys

- Highest response rate
- Expensive and requires staff time.
- Paper forms
  - Able to contact many people without being limited by the number of electronic devices.
- Electronic forms
  - No manual data entry

### The National Park Service Pool of Known Questions

A collection of survey questions organized into 11 themes, including:

- Experience quality
- Safety
- Constraints
- Expenditures
- Trip Planning
- Demographics

Nearly 300 pages of examples, including alternative visual layouts of questions.

<https://omb.report/icr/20230>

8-1024-003

## Sampling

### Random Sampling

- Every member of the population of interest has an equal chance of being selected.
- Unbiased information
- Confidence in the range of variation in the data
- Ability to use statistical analyses and track trends over time.

### Convenience Sampling

- Examples: Comment cards, open web surveys, distributing based on staff availability
- Efficient use of staff time
- Unknown if your sample is representative.
- May be cheaper to implement than random sampling.

### Purposive Sampling

- Non-random sampling of specific park users (e.g., a demographic group, an activity group)
- Efficient use of time and cheaper
- Not generalizable to a larger population

#### Do I need a random sample?

This depends on your research aims and population of interest.

A random sample is necessary if you:

- Work on a controversial issue.
- Want to use statistical comparisons.
- Plan to track trends over time.

A convenience sample may be sufficient if:

- There is little variation in responses.
- You can show that your data capture a wide variety of park users.

#### How much data do I need?

This depends:

- The intrinsic variation within the population
  - If there is little variation, you only need a small sample.
  - Difficult to know before gathering data.
- Your desired level of confidence
  - More samples will increase your confidence at a low sample size but have less impact in a large sample.
- The number of comparison units (e.g., locations, seasons, user types)
  - Your sample size requirement generally doubles if you want to compare two groups, compared to analyzing the population as a whole.

#### Strategies for Random Sampling

- Stratification
  - Represent important places and times.
  - Example: One randomly selected weekend day and two randomly selected weekdays every week during high use season
- Start small
  - Gather a minimum number of surveys on a random sample, then examine the data to see if there appears to be important variation and whether additional data are needed.

#### Strategies for Convenience Sampling

- Build in procedures to enhance representativeness of the data.
- Collect ancillary data to gauge representativeness.

## Data Management

- Keep detailed records of:
  - The number of surveys distributed.
  - The number of refusals.
  - The reason for refusal.
- Data entry
  - Follow best practices.
  - Electronic survey forms can help to reduce errors and staff time.
- Plan time for data QA/QC.

## Data Analysis

- Consider the difference between statistical significance, which is heavily impacted by sample size, and **practical significance**.
  - Example: We want to know if visitor satisfaction is different between tow groups. On the scale of -2 (very unsatisfied) to 2 (very satisfied), one group has a mean of 1.5 and the other group has a mean of 1.8. This could be statistically significant, but the key finding is that both groups are satisfied. From a practical standpoint, the difference may not be important.
- For convenience samples, consider:
  - The number of surveys.
  - The distribution of surveys across characteristics of interest.
  - Other information to gauge representativeness.
- For tracking trends over time:
  - Data must be comparable.
  - Consider any differences in methods or characteristics of the sample.
  - You want to be sure any apparent differences are real, not driven by changes in methods.



**Figure 2.** An onsite survey at Big Basin Redwoods State Park.  
Photo credit: Madeline Aberg.

## Tips

- Think about how you will use the data.
- The major cost is in the effort. Collect data that will help you in the long term, including outside of VUM:
  - Long-term planning
    - Facilities
    - Activities
    - Visitor satisfaction
  - Communications
    - Economic impact
    - Visitor satisfaction
- Train all survey personnel and document methods thoroughly.
- Consistency matters!



## RESOURCES

### Interagency Visitor Use Management Framework

<https://visitorusemanagement.nps.gov/VUM/Framework>

### Writing Survey Questions

- Pew Research Center: <https://www.pewresearch.org/our-methods/u-s-surveys/writing-survey-questions/>
- Hyman & Sierra (2016):  
[https://www.researchgate.net/publication/282250020\\_Guidelines\\_for\\_writing\\_good\\_survey\\_questions](https://www.researchgate.net/publication/282250020_Guidelines_for_writing_good_survey_questions)

### Pool of known questions

<https://omb.report/icr/202308-1024-003>

### Data Management

Broman, K. W., and K. H. Woo. 2018. Data Organization in Spreadsheets. *The American Statistician* 72, 2-10. <https://doi.org/10.1080/00031305.2017.1375989>

### Survey Research and Analysis: Applications in Parks, Recreation and Human Dimensions. J.

J. Vaske. 2008. Venture Publishing. [Google Books link](#).

### Electronic Surveys

- Survey123: <https://doc.arcgis.com/en/survey123/get-started/whatisurvey123.htm>
- Qualtrics: <https://www.qualtrics.com/>

### U.S. Fish and Wildlife Service, National Survey of Fishing, Hunting, and Wildlife-Associated Recreation

- <https://www.fws.gov/program/national-survey-fishing-hunting-and-wildlife-associated-recreation-fhwar>

### U.S. Forest Service, National Visitor Use Monitoring Program

- <https://www.fs.usda.gov/about-agency/nvum>
- References & Tools: <https://www.fs.usda.gov/about-agency/nvum/manager-tools>

## SUGGESTED FACT SHEET CITATION

Hall, T. E., D’Antonio, A., & Aberg, M. (2023). Surveys 101: Using Surveys in Visitor Use Management. Fact Sheet prepared for the Visitor Use Management Toolkit. Corvallis, OR: Oregon State University, Department of Forest Ecosystems & Society.