



Defining Data

NATIONAL RECREATION
AND PARK ASSOCIATION

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Introduction

Evaluation in parks and recreation involves data in the form of numbers (quantitative) and narratives (qualitative). This resource provides fundamental knowledge and guidance for using these two data types.

Quantitative Data

Quantitative data has a numerical value associated with it. These data are measurable, often used for comparisons and regularly involve counting people, behaviors, conditions and other discrete events. Common approaches to quantitative data collection are surveys, structured observations and analyses of previously collected data from secondary sources.

Quantitative Data

Data that have a numerical value associated with it

Common Methods: Surveys, Structured Observations, Administrative Data, Secondary Data (Census)

Advantages

- Compares data over time
- Leverages existing data sets
- Can require minimal involvement from participants
- Can be collected from a large number of people
- Can be consistent, precise, reliable and repeatable

Disadvantages

- Requires larger sample size to make statistically meaningful inferences
- May require a statistician to analyze, depending on data scope
- Unable to provide contextual details that qualitative data can offer
- Data collection can be inflexible; difficult to pivot once started



Measurable parks and recreation data in the form of numbers. Photo credit: freepik.com

Methods of Quantitative Data Collection

Surveys

Surveys are the most common method of data collection in parks and recreation. They allow for the collection of data directly from participants, and responses are recorded as a numerical value. Surveys have advantages and disadvantages:

Advantages	Disadvantages
<ul style="list-style-type: none"> • Anonymous completion possible • Can administer to multiple people at the same time • Can be efficient and cost effective 	<ul style="list-style-type: none"> • Forced choices may miss responses from participants • Wording may misdirect and bias responses • Impersonal

Surveys are conducted in a variety of ways, including links to online surveys via email, social media, mailed questionnaires or intercept surveys (i.e., approaching visitors in person and requesting they complete a survey). Some tips for surveys include:

- Minimize survey length to avoid survey fatigue and help ensure completion of questions. Strive for the survey to take 10 or fewer minutes; five minutes is optimal.
- Include only the most important questions. It also is important to provide responses that will be used; eliminate extraneous questions and responses.
- Review existing validated surveys from trusted sources for examples of solid survey questions. Examples of common survey questions are offered on NRPA's Evaluation Resource Hub.
- Carefully order the survey questions to create a natural flow through topics.
- Consider incentives to encourage participation. Incentives could be park-related items — such as mugs, t-shirts, caps, koozies — or program registration discounts or small financial gratuities.

Systematic Observations

A systematic observation records actions and/or behaviors in a structured way. This process involves the use of a measurement tool (such as a checklist or an observation log) in accordance with strict guidelines.

Advantages	Disadvantages
<ul style="list-style-type: none"> • Can view activities and operations as they occur • Usually no consent needed if in a public setting (anonymity) 	<ul style="list-style-type: none"> • Difficult to interpret observed behaviors • May influence behaviors of program participants • May be expensive and time consuming to record each individual event

Systematic observations require structure and rigorous training for those who are collecting the data. Suggestions for conducting a successful observation include:

- Interactions between evaluators and participants should be noted, because behavior can change when a person is aware of being observed.
- When resources allow, observations should involve multiple observers. Leaders should provide training to ensure consistency between observers. To ensure agreement and consistency, the observers should compare initial observations. If agreement is not achieved, observers should discuss coding differences to reach mutual understanding and try again (often called recalibration) until agreement is demonstrated.

Secondary Data

Secondary data is information that has been collected by other sources and is available for use. This includes internal administrative data (e.g., registration data), publicly available data sources (e.g., U.S. Census data, crime records and property value data) and for-pay proprietary data.

Advantages	Disadvantages
<ul style="list-style-type: none"> ● Can obtain a wide variety of community-level data ● Much data is public and cost effective ● Most datasets publish tools that will aggregate information, visualize it in a map and/or make comparisons by various geographies, such as census tract, ZIP code, county, state, etc. 	<ul style="list-style-type: none"> ● No control over the methods of data collection (most typical of secondary and proprietary data) ● Sometimes methods are difficult to find or understand ● Often not updated regularly and participant sampling may not align with your context ● Must be careful about indices and understand what datapoints are included in their calculation ● Proprietary datasets can be expensive

One advantage of secondary data is that you do not have to spend time or resources collecting the data yourself; it already exists. However, there are challenges in ensuring that the data align with your evaluation goals and in properly accessing, analyzing and interpreting the data. Other tips include:

- Invest the time needed to understand the reliability, validity and data collection methods for the data you are using. It is important to verify that the data answer the evaluation question as intended.
- Using secondary data with which you are not initially familiar requires time and training to appropriately use. It may even require analytical tools not currently available at your agency (such as Geographic Information Systems or advanced statistical packages).
- While many secondary data sources are free (e.g., U.S. Census), other secondary data can be expensive to obtain (e.g., purchasing cellphone location data).

For a library of free, publicly available data, visit NRPA's [Data and Mapping Resource Library](#).

Analysis of Quantitative Data

The first step in quantitative data analysis is to organize the collected data. This involves assigning numbers, or values, to the possible values of a variable (e.g., yes = 1 and no = 0). Creating a codebook for survey analysis that details the response values associated with a variable can be helpful. An example of a survey question recorded in a codebook is:

Variable Name	Question	Value Labels
Q4-Satisfaction	How satisfied were you with the condition of the basketball courts?	1=Very dissatisfied; 5=Very satisfied

The next step is to gather data by manually entering the data into a spreadsheet or downloading it from an online source. After the data are in a digital format, you can sort and filter it. This also presents an optimal opportunity to check for data quality issues (missing data, duplicates, misspellings and other potential issues). Once any issues have been addressed and the data are determined “clean,” analysis can begin.

Types of Data Analysis

Quantitative data analysis can be simple, complex or somewhere in between. Most evaluation questions can be answered through simple analyses, as they are relatively easy to interpret and communicate to a general audience.

Descriptive statistics summarize and describe data. The most common types of descriptive statistics include:

- Frequencies and percentages, which are data that display the number or proportion of responses for a given question.
- Frequencies and percentages are valuable in a variety of contexts, such as summarizing respondent demographics (the number or percentage of respondents who are under the age of 18) or the percentage of people who agree with a specific statement.
- Measures of central tendency are expressed using mean/average, median and mode.
 - Mean, or average, is the sum of all values divided by the number of cases/observations. One example is the average number of people visiting a park per day.
 - Median is the middle value; half of the responses fall above and half below. Unlike mean scores, medians are not as easily influenced by data points that are drastically different than others (these abnormal data are called “outliers”). For example, the median age of people who visit your park might be the best metric to use because it helps control for “outliers,” such as older adults (>80 years of age) who artificially raise the average age of park visitors.
 - Mode is the most frequently occurring value. Mode would be the most applicable statistic if you want to know the most common number of days per week a group of people visits your park.

Inferential statistics identify relationships, associations or differences within the data. These analyses are more complex and require expertise to compute and interpret. Partnering with experts from a university or consulting firm that specializes in this type of analysis may be needed. To learn more about these analyses, refer to these external resources.

Resources for Inferential Statistics

[Purdue Online Writing Lab: Basic Inferential Statistics](#)
[University of Texas Statistics Online Support](#)

Common Tools for Data Analysis

Several software packages are available for quantitative data analysis. Readily available ones include Microsoft Excel and Google Sheets. Many basic and some advanced analyses can be carried out using these spreadsheet-based tools. Additionally, online survey platforms — such as Google Forms, Microsoft Forms, Survey Monkey, Qualtrics and Alchemer — have built-in analysis tools that allow you to build basic reports that summarize data.

More specialized software may be needed for advanced analyses. Leading statistics packages include SPSS, SAS, STATA or R. Learning these more advanced statistical packages requires an investment of both time and money, but built-in tutorials often are available along with other self-training, tutorials and coursework resources on the internet. If an evaluation requires this level of analysis and agency staff members or project partners do not possess the expertise, then partnering with knowledgeable experts from a local university or a consulting firm may provide the assistance necessary. Deciding whether such services from an outside vendor will be essential during the planning process is crucial; you may need to alter evaluation questions that require simpler analysis methods or engage an analyst who can help with the process.

Data Analysis Resources

[Resources for quantitative data analysis in Excel](#)

[Resource for quantitative data analysis in Google Sheets](#)

Data Visualization

Quantitative data can be visualized through tables and figures, such as bar charts, line charts, mapping and many more graphical methods to present the information. Consider how the data can best and most simply be displayed to convey a result. Do not use charts and figures for a finding unless they tell a compelling story.

Data Visualization Resources

[Using Graphs and Charts](#)

[How Charts Lie](#)

[Displaying Data Effectively](#)

[Interactive Chart Chooser](#)



Utilizing graphs and data. Photo credit: freepik.com

Qualitative Data

Qualitative data is a broad category for information that is non-numerical. The most common qualitative data collection methods — such as interviews and focus groups — allow individuals to convey their perceptions and describe their experiences in their own words. Such data are useful in providing an in-depth understanding of complex topics.

Quantitative Data

A broad category that can include almost any non-numerical data

Common Methods: Interviews, Focus Groups, Open-Ended Survey Responses, Natural Observations

Advantages	Disadvantages
<ul style="list-style-type: none"> ● Powerful method of storytelling ● Yields data with greater depth for further analysis and reflection ● Provides context for findings from quantitative data ● Allows for more flexible data collection through clarifying and/or follow-up questions ● Informs the development of quantitative evaluation tools 	<ul style="list-style-type: none"> ● Typically requires use of trained interviewers or moderators knowledgeable in the subject area ● Participants may be less willing to take part because of time commitment and sensitivity of a discussion topic ● Fewer participants mean potentially missing important perspectives ● Analysis can be subjective and time intensive, depending on the volume of the data

Methods of Qualitative Data Collection

Interviews are valuable for exploring perceptions and experiences through a dialogue with an individual participant. Interview formats vary (e.g., telephone, video conference, in person) and may use structured interview questions or a more informal conversational method.

Advantages	Disadvantages
<ul style="list-style-type: none"> ● Can build rapport with a participant ● Can probe to get additional information ● Can get breadth or depth of information 	<ul style="list-style-type: none"> ● Need an experienced facilitator ● Time consuming; expensive to analyze ● Interviewing styles and wording may affect responses

When preparing to conduct an interview, it is important to detail what questions to ask, the sequence of the questions, the level of detail desired and how long the interview will last. Ideally, interviews should temporarily be recorded for transcription (creating a verbatim written account). Recordings require the permission of the participant. Taking notes can be useful both during the interview and when analyzing the transcribed recording. Additional tips include:

- Begin the interview with neutral or conversational questions to establish rapport.
- Design questions that are clear, concise and open-ended while avoiding questions that can result in single-word answers.
- Prepare follow-up questions to use when a participant is not offering sufficient information about a topic or seems confused about the original question.

Focus Groups

Focus groups are meetings or gatherings intended to collect information from a group. Ideally, focus groups will involve a conversation among the participants on a topic, but sometimes they feel more like group interviews. The following table outlines some advantages and disadvantages of focus groups.

Advantages	Disadvantages
<ul style="list-style-type: none"> • Can quickly gather common impressions • Can be an efficient way to get breadth and depth of information in a short time frame 	<ul style="list-style-type: none"> • Need an experienced facilitator • Can be logistically difficult and costly to schedule a group of 6-10 people, even in a virtual setting • Time consuming to transcribe and analyze responses

To keep the focus group discussion on track, develop a list of questions and organize them into a guide by topic. The guide should direct the discussion. Some tips include:

- Keep the focus group size between six and 10 participants.
- Use incentives, such as meals or childcare, to increase participation and representation.
- Use an experienced facilitator to ensure the conversation remains focused and that all participants have a voice.
- Intentionally ask probing questions in response to what participants share and to ask others how they feel about what has been said. Often, these small diversions can result in richer insights into the topic.
- Ask a colleague to help with notetaking to allow the facilitator to focus on engaging with participants, especially if the focus group is not recorded.

Analysis of Qualitative Data

The analysis of qualitative data is the process of organizing words and comments into themes and the identification of key findings. This type of analysis is time consuming and relies on subjective interpretation of meanings, but it also can reveal deep and contextualized insights into the topics of interest.

Preparing the Data

To begin the qualitative analysis, organize the data into a manageable format. Transcribe audio recordings of interviews and focus groups from audio to text — either manually or through readily available transcription software. Videoconference software (e.g., Zoom or Microsoft Teams) can automatically create a transcript of the meeting. The analyst should listen to the recording alongside reading the transcript and correct any errors, as needed.

Resources for video and audio transcription

[Descript](#)
[InqScribe](#)
[Otter.ai](#)

Approaches to Qualitative Analysis

For many evaluations, especially with shorter focus group sessions, simply reading through the transcripts and taking detailed notes about what is being discussed are sufficient for distilling sentiments shared by members of the group to identify key themes. This kind of analysis often can be achieved using Microsoft Excel or Word. In addition, including relevant and direct quotes from participants adds greater context and substance to your communication of key findings; such quotes should be flagged or gathered somehow during the analysis process.

However, there are other times when you have multiple interviews or focus groups and need to analyze them more systematically. Using a software package to tag phrases of a transcription with a specific code will help you conduct this kind of rigorous analysis and allow you to “pull out” themes and quotes from the coded text. Some common qualitative analyses tools include NVivo, Atlas.ti and Dedoose.

Finally, two primary approaches are often used when analyzing qualitative data:

- **Deductive analysis** begins with pre-formed ideas of potential themes that may arise during the conversations. These themes are based on expected outcomes of the evaluation and are determined before reading through the transcripts. The researcher then looks for these key themes within the transcripts.
- **Inductive analysis** is an open exploration of the transcripts. Themes are not predetermined and instead arise organically. This kind of analysis requires multiple reviews of the transcripts, as themes are often identified, redefined and combined throughout the analysis.

Putting It All Together

The most robust and actionable evaluation findings often result from weaving together quantitative and qualitative data in order to tell a story. Numbers are crucial, but when narratives are combined with the numbers, a rich, informative and memorable story can emerge.

Conclusion

This resource describes the two primary types of data — quantitative and qualitative data — while highlighting effective ways to collect and analyze such information. With this understanding, you should be better prepared to integrate data into your organization’s decision making.

For further information on NRPA Evaluation resources, please visit the [NRPA Evaluation Resource Hub](#) or contact NRPAEval@nrpa.org.

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