Overview of the Interagency Visitor Use Management Framework and the Uses of Social Science in its Implementation in the National Park Service

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Overview

THIS PAPER PROVIDES AN OVERVIEW OF VISITOR USE MANAGEMENT (VUM) within the National Park Service (NPS) and describes the use of the interagency VUM framework and the associated role and applicability of social science. Social science is a particularly important contribution to informed and legally defensible decision making for managing visitor use. Proactively managing visitor use supports the ability of NPS to encourage access, improve visitor experiences, and protect resources. To guide its work in VUM, NPS is currently utilizing the first iteration of the framework, known as the *Visitor Use Management Framework, Edition One* (IVUMC 2016), which was developed by the Interagency Visitor Use Management Council. The framework is a flexible process for managing use that builds on lessons learned from previous approaches, and is shared by the six agencies that are members of the council (Bureau of Land Management, US Forest Service, National Oceanic and Atmospheric Administration, National Park Service, US Army Corps of Engineers, and US Fish and Wildlife Service). Successful implementation of the framework depends on public input, relevant data, and professional judgment.

The value of VUM

Recreation is fundamental to American culture. It connects people with nature and history, builds healthier minds and bodies, enhances bonds between family and friends, contributes to the quality of life and resiliency of local communities, and inspires and rejuvenates our

spirits (Driver 1976; Driver et al. 1999; Daniel 2010). Additionally, recreating in public spaces helps visitors to develop an understanding and sense of belonging to a real place and, thus, to act as citizen stewards of our collective natural and cultural heritage (Vagias and Powell 2010; Larson et al. 2011; Marchand 2015). As described by Richardson et al. in this volume, recreation and tourism also contribute greatly to local and regional economies.

Every year, people seek out public lands and waters to pursue a variety of recreational experiences. Planning for and managing this use is at the heart of the NPS mission to preserve in an unimpaired condition natural and cultural resources and values for the enjoyment, education, and inspiration of this and future generations. To ensure that people continue to benefit from expanding recreational uses, visitors, managers, and citizens need effective ways to sustainably manage those uses so these special places and the benefits they generate persist into the future. The VUM framework meets this pressing need and helps NPS maximize benefits for visitors while supporting the parks' purpose, significance, and fundamental resources and values. It allows managers to proactively protect resources, encourage safe and appropriate access, and improve experiences. It also supports sustainable operations and facilities. In contrast, unmanaged visitor use can inadvertently damage the very resources and values that attract people to these areas.

The Interagency Visitor Use Management Council defines VUM as the proactive and adaptive process for managing the characteristics of visitor use and the natural and managerial setting using a variety of strategies and tools to achieve and maintain desired resource conditions and visitor experiences (IVUMC 2016). Visitor use management is about more than just minimizing or mitigating the impacts that result from public use; rather, VUM includes the consideration and deliberate provision of a range of opportunities and settings in order to facilitate appropriate and high-quality visitor experiences. Opportunities include the recreational activities and educational programs that are available to visitors. Settings include the types, amounts, and conditions of natural and cultural resources, interactions among user groups, facilities that support visitor services, and the agency presence and regulations in an area. As a flexible and scalable process, VUM includes:

- Identifying desired conditions for resources, visitor experiences and opportunities, and facilities and services;
- Gaining an understanding of how visitor use influences achievement of desired conditions; and
- Committing to active/adaptive management and monitoring of visitor use to meet overall goals.

The increasing urgency for VUM
Recreation—the "who," "when," "how," and, most notably, the "how much"—is changing rapidly in the United States. Visitors to parks have a wide array of interests and needs, expanding interests in new types of recreation activities, evolving expectations about the type and variety of visitor services provided in parks, and higher demand for quality services coupled with an increasing reliance on information technology.

Many public lands have seen a significant increase in visitation over the last several years. During the NPS centennial in 2016, over 330 million people visited national parks, which was a 7% increase from 2015. Some individual parks have seen increases as high as 60% over the last several years (Ziesler 2017). Parks across the national park system have identified VUM as one of their highest-priority planning needs. These needs are particularly acute for those parks with visitation changes that have been relatively sudden and dramatic.

Increasing visitation is a trend driven by many factors, including state and national marketing campaigns, low gas prices, rising international visitation to the United States, favorable weather patterns, and new ways to recreate. In some locations, the dramatic increases in visitation levels far exceed the conditions of use for which these areas were designed and traditionally managed. Park facilities and staffing levels have been challenged to keep pace with these changes, resulting in issues related to visitor and staff health and safety, resource protection, and the quality of the visitor experience. NPS leadership teams are working to address the needs associated with this increase in visitation. These changes also extend beyond park boundaries into adjacent communities. Given the dynamic nature of visitor use, it's more important than ever to look holistically at how best to provide desired visitor experiences and opportunities and protect resources, including partnering with nearby public lands.
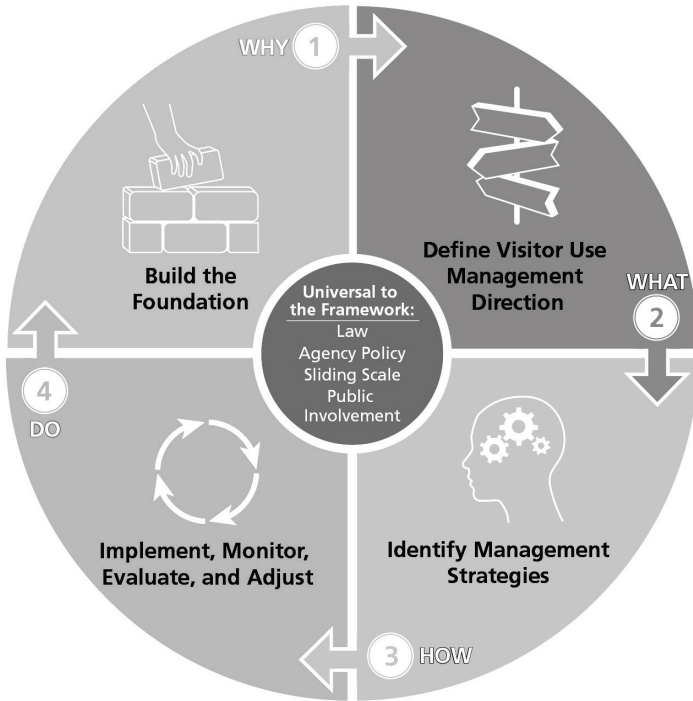
The Interagency Visitor Use Management Framework

The National Park Service applies guidance developed and distributed by the Interagency Visitor Use Management Council. Formed in 2011, the council is designed to increase awareness of, and commitment to, proactive, professional, and science-based VUM on federally managed lands and waters. Providing a consistent approach to VUM better serves the public by creating seamless connections between lands and waters managed by different federal agencies.

The *Visitor Use Management Framework, Edition One* offers a broadly applicable process and toolkit for making decisions at a variety of scales. Its purpose is to provide cohesive guidance for managing public use on federal lands and waters using a process that can be incorporated into existing agency planning and decision making. The VUM framework can be applied across a wide spectrum of situations that vary in extent and complexity, ranging from site-specific decisions to large-scale, comprehensive management plans. It also may be used across several tiered planning efforts.

By using this framework, managers collaboratively develop long-term strategies for providing access, connecting the public to key visitor experiences, protecting resources, and managing use. The framework is also intended to provide a legally defensible, transparent decision-making process that meets law and policy requirements, ensures agency accountability, and provides sound rationales upon which to base management decisions and actions (IVUMC 2016). It includes four major elements (see Figure 1) for analyzing and managing visitor use. These are:

1. *Build the foundation:* Understand why the project is needed, and develop the project approach;

Figure 1. Overview of the Visitor Use Management Framework.

2. *Define VUM direction:* Describe the conditions to be achieved or maintained and how conditions will be tracked over time;
3. *Identify management strategies:* Identify strategies to manage visitor use to achieve or maintain desired conditions; and
4. *Implement, monitor, evaluate, and adjust:* Implement management strategies and actions, and adjust based on monitoring and evaluation.

Great effort is taken to describe how to flexibly apply the VUM process. Of particular importance is the sliding scale of analysis (described below), whereby the investment of time, money, and other resources is commensurate with the complexity of the situation and the consequences of the decision.

The concepts presented in the VUM framework are not new; the framework is the product of an evolution of earlier efforts, modified to reflect lessons learned. It follows all of the council agencies' planning and decision-making principles and illustrates how to specifically address VUM. It is consistent with previous efforts, such as the Limits of Acceptable Change and Visitor Experience and Resource Protection frameworks. Since it will be used by all agencies, the council's framework will enhance consistency in VUM on federally managed lands and waters (IVUMC 2016).

Application of the VUM framework in NPS

New operational strategies and planning projects are underway at many NPS units that make use of the VUM framework. These projects apply a range of strategies for managing use, including education (e.g., trip planning information, variable message signs about real-time conditions), engineering (e.g., additional facilities to meet demand, reinforcing/redesigning facilities to increase sustainability), and enforcement (e.g., no-parking areas, shuttle-only access, increased staff presence). Other strategies include changes to routine operations to more efficiently manage visitation to better protect resources and support visitor opportunities, reduce congestion, and provide high-quality transportation experiences. Examples include introducing attended parking and strategic timing and location of visitor programs to move use away from high-demand areas and times. Projects using the framework range from day-to-day decision making and special event management, to coordinated workgroup discussions and field assessments, to more formal planning and compliance projects.

With a recent update to the NPS planning framework, several parks have initiated focused, implementation-level plans specific to visitor use. These plans develop a collaborative vision to provide for and manage visitor use. Their purpose is to provide effective VUM consistent with law and policy requirements. A VUM plan can:

- Enhance opportunities to connect visitors to the park's fundamental resources and values;
- Assess the appropriateness of new visitor activities;
- Help align public expectations with visitor opportunities;
- Minimize impacts to resources and experiences caused by visitor use;
- Manage visitor demand at popular destinations; and
- Balance trade-offs between different VUM strategies.

Visitor use management plans also address the requirements of the National Parks and Recreation Act of 1978, which mandates that NPS complete general management plans that include "identification of and implementation commitments for visitor capacities for all areas of the System unit" (54 U.S.C. 100502).

Maximizing visitor opportunities and minimizing resource impacts require a comprehensive and interdisciplinary approach. Developing a VUM plan may include collaborative opportunities with other NPS programs, including (but not limited to) commercial services, special park uses, congestion management and transportation, interpretation, and natural and cultural resource management. In addition, elements of the framework can be integrated into other types of plans, such as commercial service plans, wilderness plans, wild and scenic rivers plans, trails plans, and transportation plans.

The role of social science in visitor use management

The National Park Service is actively working to invite and welcome the next generation of visitors, many of whom may have different expectations and needs than current visitors. The agency continues to work toward being responsive to societal changes, improving visitor experiences, and developing new ways to connect with all members of the American

public. Additionally, many communities are looking toward tourism and recreation to boost local economic development. However, visitation increases have resulted in new demands on facilities and services, operational challenges, conflicts among visitors, new impacts on natural and cultural resources, and spillover effects on adjacent communities. The National Park Service, along with other federal land management agencies, is working to balance these changing dynamics with maintaining the authenticity and ecological integrity of their areas and associated desired conditions. The evaluation of these issues, needs, and their associated management strategies can be better informed by social science. Several applications where social science might benefit key elements of the VUM framework are discussed below. This is not intended to be an exhaustive list, but rather provides key examples of important milestones in the framework where social science can best contribute to decision making.

Social science applied to the VUM framework

Social science makes significant contributions to VUM decision making. Integrating social science into projects isn't only desirable for managers—it's required by agency policy. The *Director's Order on Information Quality Standards* (DO #11B; NPS 2002) states that "responsible management and interpretation of NPS resources and NPS technical assistance programs depend on authoritative information from scientific and scholarly activities. These activities, which include inventory, monitoring, research, assessment, and management projects, must be conducted to a high level of technical quality and accuracy to ensure that all information disseminated or utilized by the National Park Service complies with basic standards of quality that maximize the objectivity, utility, and integrity of information." This is true of all phases of the framework.

Element 1—Build the foundation: Understand why the project is needed, and develop the project approach. Social science helps to better understand and define issues by providing more information (beyond park staff observations) about the current conditions of resources, values, or experiences from visitors' perspectives. It can be leveraged to better understand if there is a need to take action and refine research questions. Additionally, social science outputs, such as meta-analyses and research summaries, can provide valuable insight into trends in resource conditions and visitor experiences that can inform future management directions. More specifically, social science can identify project issues (i.e., problems, concerns, conflicts, obstacles, or benefits to be addressed) by providing information on relationships between visitor use and the existing condition of park resources and experiences. It can inform important questions, such as "Are visitor perceptions of their experiences with park programs and facilities changing, and if so, why?" and "Is there an increase in visitor use to an area that has also recently become an important wildlife feeding location?"

Social science is also a valuable input to determining the geographic and temporal scope of a project. The term "geographic scope" includes the physical locations where planning will occur and the issues that will be addressed for those locations (e.g., camping opportunities at a specific day-use location along a riverbank or for the entire river corridor). "Temporal scope" refers to whether or not project decisions may vary seasonally or by time of day (e.g., shuttle-only access for peak season or during the core hours of every day throughout the

year). Social science can help inform where and when issues are of most concern and what management actions might be most applicable and acceptable in different places and times.

Element 2—Define VUM direction: Describe the conditions to be achieved or maintained and how conditions will be tracked over time. Social science can provide insight into decision making about the desired conditions of experiences and resources from the visitors' perspective. Further, it can help articulate the relative need for activities, facilities, and services. For example, a visitor survey or stakeholder interview might test the public's interest in new visitor opportunities in a specific location within a park. Additionally, social science could inform the selection of indicators and thresholds for long-term monitoring purposes (see Pettebone and Meldrum, this volume). Research and associated monitoring can help identify meaningful and sensitive indicators of visitor perceptions, park resources, and operational considerations.

Element 3—Identify management strategies: Identify strategies to manage visitor use to achieve or maintain desired conditions. Social science also helps test the relative effectiveness or suitability of VUM strategies. This is sometimes done by monitoring pilot programs or by surveys that ask for visitors' perceptions of actions being considered by NPS or other land managers. Social science can also provide insight on, and potentially quantify, the relationship between amounts of use, types of use, and resource or experiential conditions. Knowledge of these relationships helps to clarify limiting attributes and refine the identification of visitor capacities. Social science can help evaluate whether the amounts and types of current visitor use are consistent with maintaining desired conditions. For example, a relevant study to inform potential visitor capacities might include evaluating visitors' acceptance of and preferences for different levels of use along a specific trail corridor. These data, when combined with observational data or GPS tracking of the levels and patterns of use, are particularly powerful for informing decisions addressing visitor capacity.

Element 4—Implement, monitor, evaluate, and adjust: Implement management strategies and actions, and adjust based on monitoring and evaluation. Social science can inform best practices for establishing and implementing monitoring programs. It can also be leveraged to help managers understand how and when to adjust management actions as a result of monitoring. For example, if monitoring reveals that the amount of off-trail use is increasing, the park might set up a study to evaluate educational techniques designed to influence visitor behavior associated with off-trail use. The results could inform additional management actions that might be implemented. Monitoring conditions after new changes are made helps determine if these strategies are successful or if additional actions are needed.

Best practices for integrating social science into agency decision making

As we have seen, social science contributes to all four components of the VUM framework. To be most meaningful, the data should be relevant, both topically and in timeliness. An evaluation of existing knowledge should be done at the outset of a project to illuminate relevant data sources. A key question is whether the data are still valid, or whether anything has changed that suggests that underlying assumptions for a study are no longer true. For example, motivations and behaviors of visitors change, as do their expectations. Updating

data early in the process can be very helpful by identifying trends to see if visitor preferences and perspectives have indeed changed.

New social science data collection also might be needed when the project team does not have enough information to inform management decisions. New studies might focus on understanding the root causes of current visitor use issues, the relationship of these issues to visitor use, and visitors' preferences for potential management actions or other possible solutions. New data collection should ensure that research questions target project issues, and adhere to the appropriate geographic and temporal scope.

It's also important to consider the timing of data collection and associated analysis. Due to the availability of funding and the urgency of specific information needs, teams are often conducting studies while a project is already underway. In these instances, it's particularly important to clearly define research questions and consider the timing of new data collection initiatives so managers will have the information they need to make informed decisions in a timely way. To ensure that data can directly influence management, presentation of information should be tied to how the park unit manages visitor use. Data should be presented in a way that is useful and that researchers, managers, and the public can all understand. For example, although five-minute increments for traffic levels may be relevant to a research question, this particular metric may not be useful for managers or understood by the public.

Sliding scale of analysis

All VUM issues should be assessed against a sliding scale of analysis. This involves considering the issue along four measures: issue complexity, impact risk, need for stakeholder involvement, and level of controversy and/or litigation potential. This assessment is key to targeting effective and efficient research questions to the most critical data needs. Use of the sliding scale occurs throughout the VUM framework and ensures that all stages of the process, including data collection, are commensurate with the complexity of the situation and the consequences of the decision (for more information see the second chapter in the *Visitor Use Management Framework, Edition One*). For instance, if the issues are not particularly complex, are well understood, and there isn't much controversy, then new data collection might not be needed. In this case, it might be better to invest in monitoring conditions that result from new actions. Alternatively, if the issue is complex, there is a higher level of controversy, and the risk of impact to resources from proposed actions is likely significant, then new data collection may be necessary. Existing and new social science can contribute to a more rigorous, well-documented analysis that supports the project decision.

Summary

Visitor use management is a flexible and scalable set of tools and strategies that supports appropriate access to valued public lands and waters, while ensuring the long-term viability of resources that make high-quality visitor experiences possible. For over 100 years, NPS has dedicated itself to its mission to preserve the natural and cultural resources and values of the national park system in an unimpaired state for the enjoyment, education, and inspiration of current and future generations. Managers of federal areas have faced increasing challenges in

dealing with visitor use, as visitation has continued to increase and demand for access and activities has changed. In response, managers and researchers have intensified their study and understanding of the complex issues of VUM over several decades and have identified numerous best management practices for promoting a world-class visitor experience while simultaneously preserving protected areas for future generations. Social science has been an important input into advancements for managing visitor use and continues to be a vital thread in the application of the *Visitor Use Management Framework, Edition One*. Given the dynamic nature of visitor use on public lands, a long-term investment and commitment to both social science and ongoing management practice is needed to be truly successful with visitor use management.

For more information on the council, visit https://visitorusemanagement.nps.gov/.

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