

Yosemite National Park
California

National Park Service
U.S. Department of the
Interior



Visitor Experiences and Transportation Systems in Yosemite National Park



Final Technical Report
March 2006

Dave D. White, Ph.D.
Project Director/Principal Investigator

Yolonda L. Youngs
Project Manager

Jill A. Wodrich
Research Assistant

Tiffani Borcharding
Research Technician

School of
COMMUNITY RESOURCES & DEVELOPMENT

ASU College of
Public Programs
ARIZONA STATE UNIVERSITY

Table of Contents

Abstract..... 3

Summary of Cooperative Agreement 4

 Summary of Project Schedule..... 5

 Acknowledgements..... 5

Introduction and Literature Review 6

 Visitor Experiences in National Parks and Protected Areas..... 7

 Transportation and Visitor Experience in National Parks 13

 Visitor Perspectives toward Transportation in National Parks..... 15

Research Methods..... 18

 Study Area and Population 18

 Research Approach..... 21

 Data Collection 21

 Measures 22

 Analysis..... 22

 Figure 1. Process diagram of team-based qualitative codebook development 23

Results..... 24

 Sample Characteristics..... 24

 Visitors’ Significant and Meaningful Experiences..... 26

 Table 1. Elements mentioned as contributing to visitors’ most significant and memorable experiences in Yosemite Valley..... 27

 Influences of Transportation Mode..... 33

Table 2. Visitors’ mode of travel when encountering elements that contributed to their most significant and memorable experiences in Yosemite Valley 34

Table 3. Positive influences of modes of travel on visitors’ most significant and meaningful visitor experiences in Yosemite Valley 36

Visitors’ Perspectives toward Transportation Modes 38

Visitor Perspectives on Transportation Management Policy 40

Discussion 46

 Elements of Significant and Meaningful Visitor Experiences in Yosemite Valley 46

 Role of Transportation in Visitor Experience 48

 Visitor Perspectives on Transportation Management Policy 50

Conclusion and Implications for Future Research 51

References 55

Appendix I: Interview Protocol and Demographic Questionnaire 62

Abstract

This report summarizes a qualitative study of the influence of transportation systems on visitors' experiences in the Yosemite Valley of Yosemite National Park, California. On-site interviews were conducted during summer ($n = 100$) and fall ($n = 60$). The vast majority of visitors said natural landscape elements, such as waterfalls, valleys, and mountains contributed to their most significant experiences. Just a few visitors specifically mentioned cultural landscape elements or social interaction. Several positive influences of transportation mode on significant experiences were identified, including an enhanced sense of personal freedom to explore and connect with park resources, and unique opportunities for access to the park, and opportunities for learning. Positive influences were noted across different transportation modes. Qualitative analysis also revealed that visitors perceived that traditional transportation provides convenience, freedom, and access whereas alternative transportation was as seen as convenient, allowed visitors to slow down and connect with the park, and was valued for its environmental benefits. Visitors' who favored a policy focusing on alternative transportation supported their positions by environmental conservation values. Those with greater experience appeared to be more supportive of alternative transportation, perceived freedom was an important element of visitor experience that the transportation system may impact, and perceptions toward alternative transportation appear to be moderated by whether it is optional or required, with required services garnering less support. Future research is recommended to test hypotheses generated in this exploratory study. For alternative transportation to be successfully implemented in national parks, the expectations of visitors and managers may need to be realigned. One limitation of this study is that the findings cannot be interpreted to represent all Yosemite Valley visitors, or even those visiting during the sample periods. Rather, the findings represent the range of perspectives

that are present among Yosemite Valley visitors, but not necessarily in the proportions found in our study. Additional research using a probability sampling approach is necessary to establish the proportions with a quantifiable degree of sampling error at a known level of confidence.

Summary of Cooperative Agreement

Visitor Experience and Transportation Systems in Yosemite National Park Final Technical Report presents findings from a cooperative social science research study conducted to inform visitor experience and resource protection and transportation planning and management Yosemite National Park, California (YOSE). The objective of this study was to understand how visitors experience and evaluate transportation systems in YOSE. National Park Service (NPS) officials cooperated with researchers from the Arizona State University (ASU) School of Community Resources and Development (CRD) in the College of Public Programs (COPP). The cooperative agreement between ASU and NPS was facilitated by the Colorado Plateau Cooperative Ecosystems Studies Unit (Cooperative Agreement # H1200-04-0002, Task Agreement #J881351010, Project # ASU-17). The research protocol was approved by the ASU Office of Research Compliance, Institutional Review Board (IRB Protocol #0507000035). The research methods and instruments were reviewed and approved by the NPS Social Science Program and the federal Office of Management and Budget (OMB Approval #1024-0224 [NPS #05-062], Expiration Date: 04/30/2006). A Scientific Research and Collecting Permit was approved by Yosemite National Park on August 5, 2005 (Study YOSE #00204; Permit YOSE-2005-SCI-0069).

Summary of Project Schedule

Project Initiation	July 1, 2005
ASU IRB Approval	July 22, 2005
OMB Approval	July 27, 2005
YOSE Research Permit	August 5, 2005
Summer Sampling Period	August 15 – 27, 2006
Progress Report and Presentation	October 10, 2005
Fall Sampling Season	October 13 – 22, 2005
NPS Investigators Annual Report	December 13, 2005
Final Presentation and Draft Technical Report	February 2, 2006
Final Technical Report and Database	March 22, 2006
Project Expiration	June 30, 2006

Acknowledgements

The Principal Investigator is grateful to: Kevin Percival, NPS Transportation Management Program; Kerri Cahill and Lynell Wright, NPS Denver Service Center; Ron Hiebert and Nancy Skinner, CP CESU; James Gramann and Brian Forist, NPS Social Science Program; Dianne Croal, NPS Pacific West Region; and Henrietta DeGroot and Jim Bacon, Yosemite National Park for their valuable assistance. The Principal Investigator would also thank Yolonda Youngs, Jill Wodrich, Tiffani Borcharding, and Megan Evans for their assistance. Finally, we are extremely grateful to the park visitors who participated in the study.

Introduction and Literature Review

Transportation systems in National Parks affect the quality of both visitor experiences and environmental resources, and thus transportation is an important consideration for the National Park Service (NPS) as the agency implements its core mission. The relationship between transportation systems and desired visitor experience and resource conditions is a concern in many of the nation's most prominent national parks, including Zion, Denali, Yellowstone, Grand Canyon, Great Smoky Mountains, Acadia, and Yosemite. It is increasingly accepted that transportation systems in many parks are at or beyond capacity and that future demand must be met through more efficient management of existing systems and through alternative transportation. Although park visitor studies sometimes evaluate visitors' overall satisfaction with transportation, very little research has investigated how transportation systems influence the dimensions of visitors' experiences in national parks. Such research is important not only to improve social scientific understanding of human-environment interactions, but also for developing transportation policies that simultaneously promote meaningful visitor experiences and protect park resources.

The purpose of this report is present research exploring the nature and diversity of meaningful and significant visitor experiences in Yosemite, and specifically to investigate how visitors' experiences may be influenced by transportation modes. In this paper, we use qualitative techniques to analyze verbatim transcripts of 160 semi-structured interviews conducted in summer and fall of 2005 in seven locations in Yosemite Valley. Our findings suggest that natural landscape features such as waterfalls, valleys, and mountains were important determinants of visitor experience in Yosemite Valley, whereas cultural landscape features and social interaction were less influential by comparison. Most visitors' significant experiences of

the natural landscape and cultural landscapes as well as their learning experiences occurred while traveling on foot, although other experiences such as viewing granite features and mountains were more strongly associated with other travel modes. Travel mode appears to have few negative impacts on visitors' significant experiences and travel mode can meaningfully enhance appreciation of the landscape, especially by providing an enhanced sense of freedom, perception of unique access to the park resources and opportunities for learning.

Visitor Experiences in National Parks and Protected Areas

Our study follows a body of research on human-environment interactions in national parks and other protected natural areas, in line with others who have explored significant experiences arising through interaction among people and the natural, social, and cultural elements in such landscapes (e.g., Arnould & Price, 1993; Borrie & Roggenbuck, 2001; Brody et al., 2002; Chapman, 2003; Chhetri et al., 2004; Davenport & Borrie, 2005; Fredrickson & Anderson, 1999; Higham & Carr, 2003; Patterson et al., 1998). These studies have demonstrated that human experiences in parks are multidimensional, multi-sensory, multi-phasic, and socially constructed. Forty years ago Clawson & Knetsch (1966) described the multiple phases of outdoor recreation experience, which begins prior to arrival as people anticipate the experience, and continues through the on-site experience until well after the trip is over. More recently researchers have described how people construct and interpret the meaning of their experiences through memories, journals, photographs, and storytelling (Borrie & Roggenbuck, 2001; McIntyre & Roggenbuck, 1998; Patterson et al., 1998).

The human experience of National Parks and similar landscapes involves cognitive appraisals of the degree to which the landscape meets expectations in fulfilling psychological needs (Mannell & Isoahola, 1987) as well as affective responses such as emotion and mood

(Hull, 1990; Hull & Stewart, 1995). Satisfying experiences have been conceptualized as those in which visitors' expectations about qualities of the natural and cultural landscape were met or exceeded and/or as experiences that result in positive emotional states. Hull and Stewart (1995) developed an operational definition for experiences in natural settings that included the encountered landscape (e.g., scenic views, people, objects), sequence of events, and emotions, feelings, and thoughts. Among their key conclusions was that the subjective quality of landscape experience was multidimensional; that is, although mood, satisfaction, and perception of scenic beauty did covary, the measures were sometimes independent, suggesting that perhaps several dimensions of affect impact experience. More recently, Chhetri et al. (2004) studied hiking in an Australian National Park to identify the underlying dimensions that influence visitors' experiences when they are visiting natural landscapes, including subjective meanings, moods, emotions, and feelings. Similar to Hull & Stewart, Chhetri et al. claimed that experiences are multidimensional and multi-sensory, and reinforced the idea that experiences are influenced by preferences, values, beliefs, and attitudes of a visitor as well as the encountered landscape. Chhetri et al. used multidimensional scaling to identify two dimensions of experience: a negative-positive bipolar spectrum that varied across landscapes and an intrinsic-extrinsic dimension anchored at one end by feelings of enclosing, isolating, stimulating, and motivating (intrinsic) and at the other end by feelings of crowding, frustrating, attracting, exciting, pleasing, and boring (extrinsic). Principal components analysis was used to identify four experiential components, labeled desirable experience, impelling experience, apprehensive experience, and social interaction experience. Other researchers have studied unique experiences that are particularly intense, satisfying, or emotional; Arnould and Price (1993) studied "extraordinary experience" among river rafters in Grand Canyon National Park and Williams & Harvey (2001)

examined transcendent experiences in forest environments. A key finding from these studies is that visitors' experiences in national park landscapes involve their thoughts, emotions, and behaviors, occurring in the context of a specific natural and cultural environment, are shaped the people around them, and some of these experiences are particularly special or intense.

The research on human-environment interactions in national parks has identified several salient influences on the experience. In this study, we focus on natural landscape elements, cultural landscape elements, and social interaction as determinants of visitor experience, and investigate travel mode as a possible influential factor in affecting the relationship between the visitor and his or her interpretation of the meaning of these landscape encounters. Each of the components – natural elements, cultural elements, and social interaction – affects visitors thoughts and feelings, and is interpreted based on their prior experiences and in the context of society's prevailing ideas about what a "national park visit" entails.

Elements of the natural landscape. Features of the natural landscape especially are important determinants of visitor experiences in national parks, inspiring appreciation of scenic beauty, learning, positive affect, cognitive restoration, and spiritual development. In their study of hiking experiences in a natural setting, Hull & Stewart (1995) used participant photography and experience sampling methods, and found that hiker satisfaction and mood were partially explained by the natural landscape views that hikers encountered. Hikers rated views of water, mountains, and valleys as especially scenic and satisfying; ephemeral and novel landscape features such as snow, flowers, and wildlife attracted a disproportionate amount of hikers' attention in relation to the proportion of such features in the landscape. Viewing wildlife in a natural landscape can also be significant and meaningful for people. In a study of wildlife encounters in Elk Island National Park, Chapman (2003) found that close contact, a sense of

intimacy, and eye contact were important to visitors and that elements of surprise and novelty were central in creating a memorable wildlife experience. In addition to viewing landscape features and wildlife, other sensory experiences such as sounds are important to appreciation of park landscapes. Those sounds perceived as unnatural or inappropriate for the setting can negatively impact nature appreciation. Mace, Bell, & Loomis (1999) found that aircraft noise interfered with visitor experience and negatively affected perceptions of the aesthetic landscape quality at Grand Canyon National Park.

Elements of natural landscapes can facilitate learning experiences. Brody, et al. (2002) adapted a model of museum learning (Falk & Dierking, 2000) that emphasizes the role of personal, socio-cultural and the physical contexts to study how visitors' understandings, values, and beliefs were affected by their experiences at Midway Geyser Basin in Yellowstone National Park. Brody et al. interviewed 191 people before and after an interpretive program and found that visitors' prior knowledge served as a cognitive anchor on which new information was built and previous experiences served as a cognitive bridge to incorporate new meanings. Noting the importance of the physical landscape features to the experience, Brody et al. concluded, "Midway Geyser Basin is an incredibly powerful *physical* context for people to learn about these unique environments and associated life forms" (p. 1136, emphasis in original).

Furthermore, natural landscapes facilitate cognitive restoration (Hartig et al., 1991; Kaplan & Kaplan, 1989) and can be a source of spiritual inspiration and development (Fredrickson & Anderson, 1999; White & Hendee, 1999). Given the effects discussed above, it is not surprising that natural landscapes have been linked to extraordinary experiences by Arnould and Price (1993), who identified "communion with nature" as an important dimension of visitor experience in a study of river rafting. Almost half of the respondents in their study

reported appreciating the natural environment as the most significant experience on their river trip. The authors reported a strong correlation (.61) between a six-item “harmony with nature” scale and a six-item overall trip satisfaction scale. Qualitative analysis of post-trip comments in the Arnould & Price study revealed further the importance of immersion in a unique and scenic environment.

Elements of the cultural landscape. National park landscapes preserve cultural features as well as natural, and such elements are important influences on visitor experiences. Cultural elements have received somewhat less attention than natural elements in the recreation literature, although this dimension is more central in cultural geography and landscape studies (e.g., Colten & Dilsaver, 2005; Conzen, 1990; Groth, 1997; Jackson, 1980; Lewis, 1979; Sauer, 1963; Wyckoff & Dilsaver, 1995). Cronon (2003) has written about the role of cultural features in influencing human experience in nature; in his essay on the Apostle Islands in Minnesota, Cronon argues convincingly that “natural and cultural resources are equally important to any full understanding of place” (p. 38). Sears (1989) argues that transforming the “raw material of nature” into a “cultural commodity” in national parks and developing scenic vistas and nearby areas for recreation and visitor use fortified the need for national icons readily present in the scenery of western parks such as Yellowstone and Yosemite (p. 123). Other authors have emphasized the conflict between scientific values of nature and aesthetic and recreational ideals (Pritchard, 1999; Rolston, 2003; Vale & Vale, 1989). Many geographers and landscape researchers argue for the importance of understanding cultural landscape elements and the effects of such layouts on the visitor experience (Dorst, 1999; Melnick, 2000; Rothman, 1998; Smith, 2004).

In the recreation literature, Goldman et al. (2001) focused on cultural landscapes in a study of the meanings that visitors attach to National Capital Memorial sites in Washington, DC. They noted that visitors' experiences and emotions were influenced by sensation and tangible cultural artifacts, "Physically being present in a significant place, moving through the site, viewing it from different angles, and immersing oneself in the richness of sensory experience added to visitor enjoyment" (p. 15). Visitors to the National Capital considered the sites as "a holy ground, a sacred place" (p. 12) that engendered deep emotional responses.

Social interactions. Several researchers have discussed the role of positive social interactions to significant and meaningful visitor experiences in national parks and natural areas (Arnould & Price, 1993; Fredrickson & Anderson, 1999; Jonas et al., 2003; White & Hendee, 1999). Arnould & Price (1993) described a sense of community among friends, family, strangers, and guides on river trips, labeled "communitas," which was an essential influence on extraordinary experience. Using ethnographic methods, Jonas et al. showed how social interaction was key in providing audiences for the creation of river runner identities on the Colorado River in Grand Canyon National Park. Countering the common assumption that encounters always have a negative impact on experience quality, Jonas et al. stated: "Without encounters, the reaffirmation from audiences and shared interpretations of the meanings of behavior would not be shaped by socially constructed images of a river adventurer" (p. 423). In a study that examined the relationship between natural landscapes and human experiences among participants in facilitated wilderness experience programs in forest wildernesses, White & Hendee (1999) found the experience was pervaded by social interaction leading to an enhanced development of community among participants and guides; quantitative and qualitative evidence

supported the notion that group immersion in a remote natural landscape was essential to the social experience.

Taken together, this line of research suggests that people perceive natural and cultural landscape elements during recreation engagements and construct experiences through cognitions and emotions in the context of their immediate perception as well as their prior experiences, knowledge, values and attitudes, and relevant social group. In the current study, we focus on visitors' experiences of the natural and cultural landscape and social interactions in the Yosemite Valley portion of Yosemite National Park. Our original contribution to this literature is to explore how transportation – as means of traveling through these landscapes and structuring social interactions – might influence visitors' experiences. That is, we hope to understand how the experience of traveling through Yosemite Valley is shaped by the different transportation modes (e.g., park shuttle, private vehicle, foot, bicycle, etc.). For instance, does transportation mode positively or negatively impact the visitor's appreciation of the natural or cultural landscape; does the method of travel have any impact on the quality interactions with other visitors; does transportation mode change the way visitors think, feel, and act in the Valley? These are some of the questions addressed in this study.

Transportation and Visitor Experience in National Parks

This study is justified in that travel plays a significant role in the context of many national park visits – both to and through the landscape – and thus the mode of transportation is a potential influence on visitor experience, albeit one that has received very little attention from researchers. In a study of the spatial configuration of travel patterns to and from Yellowstone National Park, the most common travel pattern for park visitors (45%) was the full orbit (Mings & McHugh, 1992). These visitors left home in one direction, visited Yellowstone as part of a

larger experience of the American West, and returned home via a different route. Similarly, many people who come to Yosemite are visiting the park as part of a larger trip around California (Nelson & Tumlin, 2000). Thus many national park visitors arrive in the park in the context of a much larger experience lasting days or weeks; a trip that may be significantly intertwined with their transportation; imagine for example a small group of friends and family on a road trip in their car or a group traveling on commercial tour bus.

This topic of study is justified in that travel plays a significant role in the context of many national park visits – both to and through the landscape – and thus the mode of transportation is a potential influence on visitor experience, albeit one that has received very little attention from recreation researchers. In a study of the spatial configuration of travel patterns to and from Yellowstone NP, the most common travel pattern for park visitors (45%) was “the full orbit” (Mings & McHugh, 1992). That is, nearly half of all visitors left home in one direction, visited Yellowstone as part of a larger experience of the American West, and returned home via a different route. Similarly, many people who come to Yosemite are visiting the park as part of a larger trip around California (Nelson & Tumlin, 2000). Thus many national park visitors arrive in the context of a much larger experience lasting days or weeks; a trip that may be significantly intertwined with their transportation.

In one of the few studies to focus on transportation as a dimension of visitor experience, Davenport & Borrie (2005) interviewed winter visitors who traveled through Yellowstone via snowmobile. They found that the visitors’ experiences included feelings of freedom, remoteness, closeness and intimacy with nature, and connection to unique wildlife in a natural habitat. The snowmobile was not understood as a means for challenge or adventure, but rather as a mode of travel necessary to attain experiences that are, by and large, consistent with the park’s

desired visitor experiences. This study illustrates that the relationship between transportation, visitor experience, and park mission can not necessarily be intuitively understood and that additional research documenting the relationship between transportation and visitor experience is warranted.

Visitor Perspectives toward Transportation in National Parks

Several studies have examined visitor perspectives toward transportation issues in national parks. Most of these studies have relied on attitude theory and employed survey research methods to evaluate visitors' responses to changes or proposed changes in transportation management policy in specific parks. For instance, Harrison (1975) conducted an attitude survey of Denali National Park visitors to evaluate response to the newly instituted shuttle system. The study found that 84% approved of the new policy, 10% disapproved, and 6% were undecided. Although both car drivers and bus riders generally approved of the policy the former group was less supportive. More recently, Miller and Wright (1999) conducted a survey of visitor attitudes toward the transportation service in Denali. They found that visitors felt that the bus system actually enhanced their satisfaction with their park experience by providing "freedom to view the park instead of focusing on driving, driver courtesy, and wildlife observations" (p. 19). In the Miller & Wright study, 76% of respondents agreed that "the transportation service busses enhanced by visit to Denali National Park" and only 10% agreed that "busses and other vehicle traffic interfered with my enjoyment of wildlife."

Dilworth (2003) drew on attitude theory, including the theory of planned behavior, to examine visitor attitudes toward traditional transportation, ATS, and intelligent transportation systems (ITS) in Sequoia-Kings Canyon National Park Golden Gate National Recreation Area. Using data from self-administered mail surveys ($n = 660$, response rate = 62.6%), Dilworth

examined the effect of antecedent variables such as park type (urban vs. rural), past experience, level of current use of ATS and ITS, and perceptions of crowding, congestion and safety to explain attitudes toward and intentions to use ATS and ITS applications in national parks. A factor component including alternative transportation items (park and bike, mandatory shuttle in park, public bus to park) received an overall mean appropriateness rating of 3.3 on a five-point scale, significantly lower than the mean of 4.7 for the traditional transportation items. An optional in-park shuttle was viewed as appropriate by 73% of respondents whereas an mandatory shuttle received support from only 37%; Dilworth explained this finding as a function of visitors' value for perceived freedom a fundamental aspect of leisure experience. Dilworth also found that attitude toward appropriateness of ATS and prior experience with public transit in and out of parks were significant predictors of at-park behavioral intentions to use ATS, and that park type (urban vs. rural) was significant in predicting attitudes toward and intentions to use alternative transportation: "Urban park visitors viewed alternative transportation a more appropriate than rural park visitors, and also expressed a higher likelihood to use these tools" (Dilworth, p. 90).

Although not in the context of national parks, another relevant study was conducted by Bamberg et al. (2003), which relied on the theory of planned behavior (Ajzen, 1991) to examine the effect of an intervention in the form of a prepaid bus ticket on bus use among college students. A questionnaire was used to assess the predictor constructs in the theory of planned behavior (attitude, subjective norm, perceived behavioral control, and behavioral intention) as well as a self-reported measure of actual behavior. The behavior in question was travel mode to campus, with five modes assessed (bicycle, car, bus, train, and walking). The authors concluded: "Attitudes, subjective norms, perceptions of behavioral control, and intentions with respect to bus use became, on average, significantly more favorable, and reported bus ridership to the

campus increased at the expense of car use” (p. 181). The theory of planned behavior proved useful for predicting travel-mode choice and for assessing the efficacy of an intervention designed to increase bus ridership. These findings from this study, along with the study by Dilworth (2003) discussed earlier, demonstrate the potential utility of the theory of planned behavior for understanding behavioral intentions and reported behaviors related to transportation.

Sims and others (2005) evaluated visitor acceptance of a proposed park shuttle system in the Cave Codes area of Great Smoky Mountains National Park. At the time of the study, Great Smoky Mountains, the most heavily visited national park in the country, was considering implementing an alternative fuel bus system to alleviate traffic congestion in the most heavily visited areas of the park. Sims and others discussed controversy that arose over the park shuttle implementation among local residents; specifically, the authors noted that opponents of the shuttle system feared losing the sense of personal freedom provided by accessing Cades Cove in personal vehicles. Among the key findings in the study was that 75% of respondents supported a free, mandatory shuttle system in Cave Codes, but support was significantly eroded to 51% if a proposed fee was included.

Daigle and Zimmerman (2004) used on-site ($n = 1,505$) and mail back questionnaires ($n = 1,278$) to study visitor use of ITS at Acadia National Park, Maine to assess the effect of ITS on visitor behavior and experience. The study found that many visitors' experiences were enhanced by ITS components such as real-time parking information: 74% agreed that “the information helped me to reduce tension and stress related to traveling;” 81% agreed that “using this source of information in the future would be a pleasant experience;” and 85% agreed that real-time bus departure information “relieved uncertainty about when the bus will get to my stop” (Daigle & Zimmerman, p. 155). The authors concluded that enhanced ITS services appeared to influence

visitors to leave their personal vehicles and utilize the park alternative transportation shuttle system.

From the research on visitor perspectives toward transportation several issues seem to warrant further investigation. A number of these studies highlight the importance of perceived freedom to visitors' experiences with transportation systems; some visitors' perceptions of freedom were enhanced by transportation system and others feared losing freedom if traditional auto access was restricted. Visitors appear to prefer and value the option to use alternative transportation but may be more resistant to mandatory programs limiting traditional access. Also support for certain types of alternative transportation such as a park shuttle may be eroded if a fee is charged. Research also shows that visitors' intentions to use alternative transportation appear to be affected by prior park experience and other past behaviors, such as prior usage of alternative transportation. Also, there may be differences between visitors to parks near urban settings compared with visitors to more remote parks. Although attitude studies clearly have merit, one limitation of this approach is the inability to delve into visitors' elaborations and justifications underlying their attitudes. Interpretive studies such as this one are helpful to explore the issues identified earlier in more depth.

Research Methods

Study Area and Population

Yosemite National Park preserves remarkable natural landscapes characterized by unparalleled examples of granite rock features, waterfalls, glacial valleys, ancient giant trees, and thousands of lakes in the central Sierra Nevada of California. The park also preserves cultural history dating back thousands of years to the earliest inhabitants, people of southern Miwok and

Paiute Indian ancestry. Following exploration by trappers and American military in the 1830s – 1850s and the forcible removal of the Ahwahneechees, the scenic beauty of the Valley was promoted by early boosters such as artist Thomas Ayers and writer James Mason Hutchings. The first legal step in the establishment of Yosemite National Park came when President Abraham Lincoln signed the so-called “Yosemite Park Act of 1864,” transferring authority of the Yosemite Valley and the area around the Mariposa Grove of Giant Sequoias from the federal government to the state of California as an inalienable public trust for purposes of public use, resort, and recreation (Runte, 1990). The establishment of Yosemite National Park was realized fully through the California Forest Reservation Act of 1890, the subsequent return of management authority for the Valley and Mariposa grove to the federal government in 1906, and the creation of the National Park Service in 1916.

A tension has existed between automobiles, roads, and park preservation since the advent of auto tourism in the early twentieth century and the “See America First” campaign (Shaffer, 2001). Roads were built into the Valley in the 1870s and by 1913 the first cars were officially permitted into the park. Reliable all-weather road access provided for increasing numbers of automobiles and visitation grew dramatically throughout the early 1900s as Yosemite Valley became a focal point for visitor services and park management. Colten and Dilsaver (2005) trace the development of infrastructure for water, sewerage, and garbage services in Yosemite and the effort by the Park Service to hide facilities from public view to preserve the romantic ideal of the wilderness park landscape. Visitation to Yosemite increased dramatically during period from 1915 – 1930 and during the 1930s roads in the park were aggressively improved, widened, and paved (Runte, 1990). Visitation reached one million in 1954, two million in 1976, and four million by the mid-1990s. Frissell and others (1980) discussed the challenge of determining

visitor capacity in the Valley and noted that “debates over how to strike a balance in Yosemite have raged for many years” (p. 154). From the time of these comments to the present day, the Park Service has implemented several rounds of planning and measures to reduce traffic congestion, adjust traffic patterns, eliminate automobile travel in the East Valley, and institute shuttle buses.

With an estimated 2004 visitation of 3.38 million, Yosemite is one of the most popular parks in the U.S. Nearly 40% of the annual visitation occurs during the three month peak summer use-season, when as many as 15,000 visitors a day arrive at Yosemite Valley. NPS survey data (National Park Service, 2006) indicate that average group size is 4.6; one third of all parties visit the park in groups of two, and about one fifth in groups of six or more. Approximately half of respondents were between the ages of 30 and 60 and 14% were 15 or younger, and 57% of all visitors reside in California. NPS estimates that 18% percent of all visitors are foreign, with the majority of those being from northern Europe, especially England and France. Hispanic visitors comprise 8% of the population; the vast majority of all respondents (88%) identified are white and 10% are Asian. Data show that 55% of visitors have received a bachelor’s degree or higher level of education.

To address concerns related in part to transportation infrastructure and associated visitor experience impacts, and emboldened by more than \$200 million in emergency Congressional allocations for repairs from flooding in the winter of 1996-97, NPS officials developed the Yosemite Valley Plan in 2000 (citation). The final plan called for restoring 176 acres to natural conditions, redeveloping approximately 250 acres of visitor and employee services, reconfiguring traffic patterns to reduce congestion, and adding a fleet of diesel/electric hybrid shuttles to transport visitors around the Valley and reduce reliance on personal autos.

Research Approach

An interpretive research approach (Hemingway, 1990; Schwandt, 1994) was selected for this study to explore the context underlying visitors' perspectives toward alternative transportation. Interpretive research is well suited for exploring visitors' perspectives through collaborative back-and-forth exchange and dialogue. Interpretive researchers often utilize data collection strategies, such as interviews and participant observations, which facilitate a more contextual and nuanced understanding of perspectives than is often possible through survey research. Such methods typically produce data suitable for qualitative analysis.

Data Collection

Data were collected on site via semi-structured individual interviews with adult visitors, age 18 and older, in the Yosemite Valley portion of Yosemite National Park. To capture potential variation between visitors during the higher-use and lower-use seasons, sampling was conducted in two phases, August 15 – 27 and October 13 – 22, 2005. During each sample period, interviews were conducted each day between 8:00 a.m. and 6:00 p.m. at Yosemite Village Visitor Center, Yosemite Falls, Yosemite Lodge, Camp 4 Walk-in Campground, Curry Village, Nature Center at Happy Isles, and Upper/Lower Pines Campgrounds. The maximum variation, non-probability sampling approach was designed to ensure a mix of day use and overnight visitors, as well as visitors to very popular destinations such as Yosemite Falls and more secluded sites like Happy Isles. For each contact, the interviewer completed an on-site log, noting number of children present, personal group size, and reason for refusal if the potential respondent declined to participate. For each group contacted, a random visitor was chosen as the primary interviewee; however, in keeping with the interpretive research approach, other group members were not discouraged from contributing to the discussion. All visitors approached,

regardless of their decision to participate in the study, were offered a large color Yosemite postcard as a small token of appreciation. Interviews were digital audio recorded for accuracy; the resulting files totaled approximately 18 hours.

Measures

The on-site interview protocol included 11 open-ended questions in addition to a self-administered demographic questionnaire. The initial interview questions related to visitor experience-use-history with Yosemite National Park and other National Parks, and visitors' reasons for visiting Yosemite during their chosen use season. The next set of questions focused on visitors' preferences for and evaluations of various modes of transportation for traveling to the park.

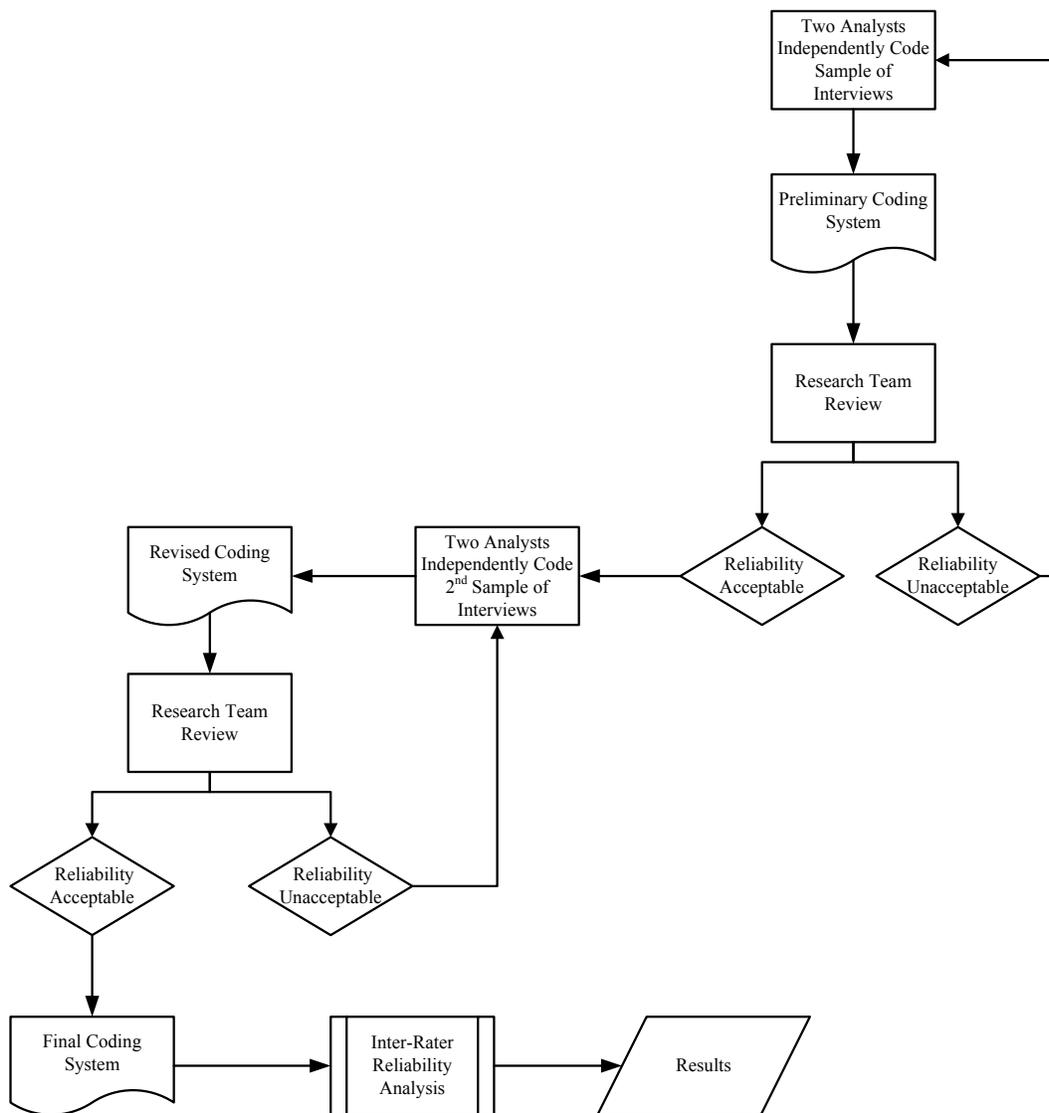
Visitors were queried next about their most memorable or significant experiences, learning experience, and least enjoyable experiences in the park, with specific focus and follow-up probes on the effects of transportation mode on their experiences. The final questions elicited visitors' opinions about park transportation management options, including whether the park should focus on accommodating personal vehicles or promoting alternative transportation. At the conclusion of the interview, respondents completed the one page self-administered demographic questionnaire that included sex, age, ethnicity, race, educational attainment, and household income.

Analysis

Qualitative analysis followed the procedures outlined by Miles & Huberman (1994). A team-based analysis strategy (MacQueen et al., 1998) was used to develop the codebook (see Figure 1). Through several iterations, analysts independently listened to the digital audio files to

develop a system to code the responses; that is the analysts developed hierarchical categories and subcategories of potential responses. The research team subsequently reviewed coding structure, resolved discrepancies, and revisited the interviews. The process continued until an acceptable level (Rust & Cooil, 1994) of inter-rater reliability was achieved for the final codebook ($\geq 90\%$).

Figure 1. Process diagram of team-based qualitative codebook development



Next, the interviews were transcribed verbatim by a professional transcription service and the resulting text files were imported in QSR N*Vivo for coding. Higher order categories and subcategories, called tree nodes and children respectively in N*Vivo, were used to classify experience use history, significant and meaningful experiences, significant learning experiences, transportation modes, positive and negative influences of mode on experience, and opinions toward future transportation management. The primary analytical tools used were proximity, Boolean, attribute, and matrix-intersection search functions to identify themes and relationships among key concepts. Demographic information was imported from an MS Access Database into N*Vivo as attributes for the cases (interviewees), which allowed the text to be assayed with restrictions, for instance by comparing high and low experience visitors or summer and fall samples.

Results

Sample Characteristics

A total of 207 groups were approached to participate in the study and 160 agreed, representing an on-site response rate of 77%. Of the total 160 interviews, 100 were completed during the summer sampling season and 60 in the fall season. A comparison of respondents with non-respondents revealed no differences in terms of average group size or number of children present; however, non-respondents were more likely to be male than respondents (chi-square=6.227, df=1, p=.013).

Demographics. The completed sample of primary respondents included 89 women (56%) and 71 men (44%). The mean age of respondents was 45 years ($SD = 13.95$); the youngest visitor interviewed was 20 years old, the oldest was 77, and 62% of respondents were

between the ages of 30 and 50. The vast majority of respondents ($n = 133$, 83.1%) identified their racial background as White and 14 (8.8%) interviewees identified themselves as of Hispanic or Latino/a ethnicity. Fewer respondents identified themselves as American Indian or Alaska Native ($n = 5$, 3.1%), Asian ($n = 7$, 4.4%), African American ($n = 2$, 1.3%), Native Hawaiian or other Pacific Islander ($n = 0$). As is often the case in studies of U.S. National Park visitors, the respondents in this study were well educated and reported high annual household income; 64.3% had earned a bachelors degree or higher and 56.5% reported income of greater than \$75,000. There were no significant differences in these demographic characteristics between summer and fall season respondents.

Experience use history. Almost two thirds of respondents ($n = 102$, 63%) had visited Yosemite National Park before being contacted for the current study. In the past five years, 24 respondents had visited the park one to two times, 29 between three and five times, 13 more than five times, and 34 respondents had visited Yosemite before, but not in the past five years. Several of the most experienced visitors reported making several annual trips to the park going back as many as fifty years. When asked to name all other U.S. National Parks visited in the previous five years, the most common specific parks mentioned were Grand Canyon ($n = 29$, 18%), Yellowstone ($n = 26$, 16%), Zion ($n = 23$, 14%), Bryce Canyon ($n = 18$, 11%). Respondents mentioned another 67 NPS units, including parks, recreation areas, monuments, and parkways. About one-third ($n = 55$, 34%) had not visited another National Park in the previous five years, or at least could not recall specific park names. Some visitors were unsure of the management authority for park and recreation areas they visited, for instance, a typical comment was: “I don’t know which ones [parks] are state and which ones are federal but the parks on

Bodega Bay on the shoreline, up in big trees, Alpine, which is that? Is that national or is that state?”

Factors influencing season of visit. Across the entire sample, the most commonly cited reason for visiting the park at the chosen season was availability of vacation time. For summer season visitors, an important determinant was the availability adult vacation coinciding with their children’s summer vacation from school. Summer and fall visitors were equally likely to visit Yosemite during the context of a larger trip. For instance, one summer visitor described a California vacation: “Well I guess it was just a convenient time for a trip, you know, and we’re combining it with San Francisco and the wine country and then here and then Sequoia and just making the trip.” Availability of park services, or lack thereof, was also mentioned as a decision factor. According to one male summer visitor, “Well, really I hate the crowds, but some things you can only get in the summer, unfortunately. So we were actually going to come in the winter, but we didn’t.” On the other hand, off-season visitors said the availability of lodging in the park influenced the timing of their visit; when asked why she visited in October, a female respondent said simply, “Because the Ahwahnee Hotel had room for me.”

Visitors’ Significant and Meaningful Experiences

Yosemite National Park is well known for spectacular scenic beauty, which has inspired artists for generations. As expected, the most commonly mentioned significant or meaningful visitor experiences were inspired by the natural landscape. As shown in Table 1, 132 respondents (83%) mentioned the natural landscape as contributing to their most memorable or significant experience in park. Some respondents referred to appreciating nature in general (32, 20%) or to viewing the scenic landscape as a whole (37, 23%). For example, a 50 year old female summer visitor commented on viewing the natural scenic beauty of the park in general:

“It’s just the scenery. It’s just any direction you look there’s beautiful scenery. Not just in one spot, it’s everywhere. A lot of the parks it’s just in one spot. But in Yosemite it’s everywhere.”

For many visitors, especially those who enter the park from the south via the Wawona Road, the panoramic vista from Tunnel View point is particularly significant. A 36 year-old male summer visitor recalled “Just, you know, when we were coming down into the valley, that first glimpse of the valley. That was really spectacular. The view.”

Table 1. Elements mentioned as contributing to visitors’ most significant and memorable experiences in Yosemite Valley

Coding category	Number	Percent
Subcategory		
Natural landscape	129	81
Waterfalls	38	24
Natural scenery	37	23
Mountains, canyons, and granite features	20	13
Celestial features (stars, moon, sky)	5	3
Cultural landscape	3	2
Social encounters	4	3
Learning experiences	102	64
Natural history	58	36
Social and cultural history	23	14
Bear safety	12	8
NPS management and planning efforts	9	6

Note. Number of mentions for natural landscape category includes subcategories as well as general comments with no specific elaboration.

About one quarter ($n = 38$, 24%) of all interviewees mentioned experiencing the park’s breathtaking waterfalls as significant. A few visitors mentioned a passive appreciation of the scenic beauty (e.g., “Just seeing the falls”) while several others recalled swimming in the clear water (e.g., “The dip in the waterfall was good for me. [Laughter]”). Twenty people (13%) said viewing the mountains, cliffs, and granite features in the valley was their most memorable

experience. Most of these visitors described viewing Half Dome and El Capitan with feelings of awe, wonder, and novelty. One 24 year-old woman said her most memorable experience was, “Seeing the Half Dome for the first time. It was really awesome.” Other visitors said: “Pulling in and seeing the huge rock cliff,” “When we came out and saw El Capitan that was just amazing,” and “Oh, the mountains.”

Contrary to our expectations, just a few visitors ($n=5$, 3%) mentioned the cultural elements of the landscape as part of their most memorable or significant experiences, although this theme was much more prominent in response to a follow-up question about the most interesting learning experiences (discussed in the next section). For those few who did mention cultural landscape elements, the historic Ahwahnee Lodge, Yosemite Lodge, and Curry Village were noted, which was expected. A 26 year-old male visiting in October, said, “So far, I think it was just wandering over to the beautiful dining room at the [Ahwahnee] Lodge and getting lookout over the vistas over there. It was pretty nice.”

We were also surprised that so few respondents ($n = 4$, 3%) discussed social interaction as contributing to their most memorable or significant experience, although it is possible that such experiences were not associated with traveling. Those who did were like one male summer-season visitor who said, “Sharing it with family,” or a female fall-season visitor who replied, “Spending time with family in a beautiful place... Well, just because it gives you time together without all the distractions of TV and work and outside life.”

Significant Learning Experiences. Visitors were also queried about the most interesting thing they learned while traveling through the park and 102 people (62%) offered responses, which were organized into four subcategories: learning about natural history, social and cultural history, bear safety, and NPS management and planning efforts. By far the most commonly

mentioned significant learning experiences were related to natural history. This category accounted for 57% of all the learning experiences. Many of these people talked about the glacial activity that formed Yosemite Valley and reported getting this information from the Yosemite Visitor Center, interpretive signs along trails and at scenic pullouts, or from rangers and park shuttle bus operators. In the next excerpt a 55 year-old male fall visitor recalls information he learned about the geology of the Valley, although he is somewhat unclear about both the facts and the source of information:

INTERVIEWER: Great, and what has been the most interesting thing you have learned while you were traveling through the park during this visit?

VISITOR: The most interesting thing? Well, I think we were on the bus yesterday when they told us that, no that was that film we watched, that was telling us that this is just one rock, all of this is like forty miles wide. No, eighty miles wide and four hundred miles long. It's just all one rock.

The next exchange humorously illustrates the process of the social construction of knowledge in National Parks, as the visitors recall leaning natural history of the Valley. First, the visitors are interpreting new information in the context of their existing experiences and knowledge, and second, the knowledge is interpreted through a process of social interaction among the visitors, and, in this case, the interviewer:

INTERVIEWER: What's been the most interesting thing that you've learned while traveling through the park on this visit?

MALE VISITOR 1: What was it? There was something we didn't know, some trivial question. Oh this meathead [sic] said that El Capitan is the largest hunk of granite in the world and I disagreed I said it was the Rock of Gibraltar.

INTERVIEWER: And did you learn the answers?

MALE VISITOR 2: It is, I think it is if you look at your guide book I think it tells you that. Maybe it's propaganda.

MALE VISITOR 1: Do you know the answer?

INTERVIEWER: I don't actually.

MALE VISITOR 2: I think it's the largest piece of granite in the world. That's what they said in the brochure. Not in the world. The Rock of Gibraltar is... Because if you look at El Capitan, it's you've just seen the face of it, but the whole thing goes like that right? [Gesturing]

MALE VISITOR 1: It's like an iceberg is that what you're trying to tell me?

MALE VISITOR 2: Yeah.

MALE VISITOR 1: Okay, next question.

Other natural history learning experiences were focused on park wildlife, such as deer, bears, or in the following example, bats. Illustrating the point often made by interpretive communication scholars that visitors do not focus on factual information, a 57 year-old woman visiting in the summer said, "Well the kids learned a lot about bats. They had some lady talking about bats and I guess they learned some interesting facts about bats."

Twenty-three people (14%) said the social and cultural history of the park was the most interesting that they had learned while traveling through the Valley. Several visitors were intrigued by Native American history and especially the Indian History Museum at Yosemite Village. One female visitor was intrigued to learn about traditional Native American resource management: "That the Indians had made meadows and cut down trees and made it look like a park before the European Americans ever even got here." Others mentioned learning about the

Ahwahnee Lodge, Curry Village, and the history of tourism in the park. A few mentioned key figures from the parks history, including John Muir and Ansel Adams.

The final two categories of learning experiences were management related: bear safety information and NPS planning efforts. The former was mentioned by 12 people (8%) and the latter by 9 visitors (6%). Several of the visitors learned about bear safety information by direct experience. One woman laughed and said the most interesting she had learned was, “that bears like M&Ms” and another woman, referring to the bear-proof food lockers in the campgrounds, said “to latch these darn things on right otherwise the bears will get into them.” The evolution in park management philosophy and strategy was described by a 59 year-old female visitor with significant experience visiting Yosemite:

FEMALE VISITOR: I think I’ve learned that there are a lot of programs that are changing. I’ve been coming here for a long time, since her mom was her age [referring to granddaughter]. And so there’s a lot of, there’s been an evolution of thought on how to manage fire, how to manage bears, things like that.

INTERVIEWER: Do you learn these things from like being on the tour or through signage while walking?

FEMALE VISITOR: Signs, tours, Visitor Center. Just reading the publications, you know, that are out. For example, when we first started coming here, all the fires were put out. And then after that they went to okay, let it burn. And then of course that was kind of a disastrous thing they found at Yellowstone several years ago that they let most of the park go. And you know, so now they’ve got a different methodology of dealing with that. Also when we first started coming here, there was no real bear control. And we would camp up in White Wolf and there were big open dumpsters so every evening at

sundown, you know, these bears would come out of their caves and go dumpster diving. And we'd all stand around and watch, and all you could see was little elbows going this way. So, you know, there's been quite an evolution on that thought, you know. And then after that they were tagging bears and someone was labeled a bad bear, you know, they'd go up the top and they kept coming down, they were a really bad bear and they'd be, you know, euthanized. And now they're back to, okay we can't educate the bears, let's educate the people. So I just think it's interesting that, you know, how these different ways of dealing with nature have evolved over time.

Least enjoyable experiences. Visitors were asked to recall the least enjoyable experience they had encountered while traveling through the park and 79 visitors (49%) offered a response. Of this group, 44 responses were classified as crowding or congestion, 26 dealt with NPS management issues, 7 mentioned conflict, and 2 mentioned resource issues. Most of the comments about crowding and congestion were terse, very general comments such as “too many people,” and “the crowds.” One straightforward male summer-season visitor said, “Parking is, yeah, parking sucks. You can have that on tape and you can quote me.” A few visitors offered more deliberative responses, considering the tradeoffs necessary in National Park visitor use management: “Well there are a lot of people here. It would be great if there were fewer people here, but, you know, what are you going to do? That would mean me. Everybody wants to come and see it, it's a national park. So, you know, a little bit a little congestion, congested.” Concerns with management issues ranged widely, including perceptions of litter, poor facility maintenance, unfriendly park and concessionaire staff, excessive regulations, and inconvenience from dealing with bears.

Influences of Transportation Mode

To begin to explore the potential influence of transportation mode on visitors' experiences, respondents were asked during the on-site interview how they were traveling through the park when their most memorable or significant experience occurred. Transportation mode was interpreted broadly to include travel by recreation vehicle (RV), commercial tour bus, YARTS bus, bicycle, foot, horse, raft, Yosemite Shuttle, personal car, and rental car. Table 2 displays the distribution of significant experiences across the various modes of travel; that is, the table shows the number of visitors who reported having each significant experience while traveling via each transportation mode.

Looking at the data in Table 2, it appears that most visitors were traveling by foot through the park when their most significant experience occurred, although for some experiences other modes of travel were notable. For instance, 68 people (43%) who said appreciating the natural landscape their most memorable park experience were walking when the experience occurred, while 40 people (25%) were driving either a personal or rental car, 10 (6%) were biking, and 9 (6%) were riding the Yosemite Shuttle. Walking was the most common travel form for the appreciating natural landscape by viewing waterfalls, viewing natural scenery, and viewing celestial features; however, for viewing the mountains, canyons, and granite features, such as Half Dome and El Capitan, more visitors reported driving when this memorable experience occurred than other forms of travel. Those very few visitors (3, 2%) whose most significant experience was appreciating the cultural landscape all reported walking at the time. Travel by foot was most common for learning about the natural history, social and cultural history, bear safety, and NPS management and planning efforts.

Table 2. Visitors’ mode of travel when encountering elements that contributed to their most significant and memorable experiences in Yosemite Valley

Elements of significant experiences	Mode of Transportation (Number)									
	RV	Tour bus	YARTS	Bike	Foot	Horse	Raft	YOSE Shuttle	Personal car	Rental car
Natural landscape	1	5	1	10	68	1	2	9	28	12
Waterfalls	1	2	0	2	24	0	0	2	8	2
Natural scenery	0	1	0	4	20	1	1	3	9	6
Mountains, canyons, and granite	1	3	0	0	5	0	0	0	5	5
Celestial features	0	0	0	0	3	0	0	1	2	0
Cultural landscape	0	0	0	0	3	0	0	0	0	0
Social encounters	0	0	0	0	2	0	0	0	0	0
Learning experiences	1	3	2	7	43	0	0	3	15	4
Natural history	0	2	2	2	20	0	0	1	8	2
Social and cultural history	0	2	1	0	8	0	0	1	1	0
Bear safety	0	0	0	0	3	0	0	0	1	1
NPS management planning	0	0	0	0	4	0	0	1	1	0

During the interview, respondents were also asked how the transportation mode may have enhanced or detracted from their most significant experience. Their responses were organized into thematic categories according to the coding process described earlier (see Figure 1). Table 3 displays the number of mentions for each positive influence for each travel mode for visitors’ most significant experience. The most commonly cited positive influence of transportation on visitors’ experiences was an enhanced sense of personal freedom. For instance, 26 visitors mentioned that traveling by foot through the park enhanced their most significant

experience by providing a sense of freedom that allowed them to “slow down and connect” with the park. A 45 year-old female visitor said that walking enhanced her experience of learning about cultural history in the park, “You get to see even a lot more than if you're just driving by in a car, even on the bike. I mean, you just, you know, you get to stop right there and see everything.” A 47 year-old female summer visitor said, “Well, it makes you closer to it and you can see a lot more detail that you normally wouldn't see out of a bus or a car.” A male 39 year-old fall season visitor said, “Well you get time to look at it. In the car or the bus it's too quick. It's gone in a nanosecond.”

Twenty people mentioned that traveling by car positively influenced their most significant experience by providing an enhanced sense of freedom. A female 27 year-old summer visitor said that her appreciation of the park wildlife was enhanced by being her personal car, “If I were in the shuttle I wasn't able to, I won't be able to stop and take pictures. I was in my car so I stopped, took pictures, took my time.” Other visitors said that their cars allowed them to be “more flexible” or “take my time and view everything.” Visitors riding bicycles similarly felt that biking enhanced their experience through personal freedom. A 45 year-old woman visiting in summer said, “We were able to really stop and, you know, see things that we wouldn't have seen if we were just driving around or taking a bus or something.”

Table 3. Positive influences of modes of travel on visitors’ most significant and meaningful visitor experiences in Yosemite Valley

Positive influences on experience	Mode of Transportation (Number)									
	RV	Tour bus	YARTS	Bike	Foot	Horse	Raft	YOSE Shuttle	Personal car	Rental car
Personal freedom	0	1	0	5	26	0	0	1	13	7
Unique access / opportunity	0	1	0	5	20	0	0	1	5	1
Accomplishment	0	0	0	0	8	0	0	0	0	0
Opportunity for learning	0	3	1	2	8	0	0	1	0	0
Serenity / peace and quiet	0	0	0	1	7	0	0	0	0	0
Socializing / family bonding	1	0	0	1	3	0	1	0	0	0
Convenience	0	0	0	0	1	0	0	1	1	1
Accessibility	0	0	0	0	1	0	0	0	0	0
Physical fitness	0	0	0	0	1	0	0	0	0	0
Reduce crowding	0	0	0	0	1	0	0	0	0	0

A related theme, labeled unique access and opportunity, was mentioned as a positive influence of transportation on significant experiences, predominantly by those traveling by foot, in cars, or on bikes. A 41 year-old woman said that walking was preferable to other travel modes for a wildlife viewing experience, “I think so. More quiet and you can go places where your bike can’t take you... yeah, walking definitely. Because you go into the, we couldn’t bike there. So yes, the walking did. Because we could go places that vehicles can’t take you.” Another visitor said that riding a bicycle, enhanced his learning about park geography, “I never knew we could have gone there... Because now I see all these other little signs riding our bike as opposed to a car.” Visitors traveling in their personal or rental vehicles also mentioned that being in the car

enhanced their experience by providing unique access; however the meaning differed. Typically, these visitors felt that cars provide opportunity to see more of the Valley in a shorter time.

Another category of positive influence of transportation on significant experiences related to enhancing opportunities for learning in the park. A 65 year-old woman visiting in summer said that her appreciation of the natural landscape was enhanced by learning opportunities provided by the commercial tour bus, “Very much so. We had, this is the first year we’ve ever taken a tour bus. And like I say, we have been, I have come up since I was 9 years old, so I’ve been coming up here over 50 years. And this is the first time, this year that we’ve ever taken tours. We found out information about the parks that we’ve never known before. It was excellent.” A male 49 year-old fall visitor similarly felt that his/her most significant experience was enhanced by learning opportunity provided by the tour bus, “the guy talked and said, this is good, and the way he talked, so it’s much better for us. Because we don’t know what we’re seeing. We are sitting in one place and he explained [unintelligible] the mountains and all, the Indians and all that stuff.” Visitors who traveled by foot also mentioned learning opportunities as a positive influence. A 27 year-old male fall visitor, said “We’ve been reading the information boards as we go around, so when you look at something and it’s telling you about it, that’s good because you can only take in a little bit of information relevant to what you’re looking at, can’t you? And that’s ideal, little bits of information are good.”

Negative influences of transportation on visitor experience were notably lacking. By far, the most common response to the question of how transportation mode detracted from visitors’ significant experience was not at all. Of those visitors who did mention negative impacts of transportation on experience, a few said that walking or biking was too physically challenging, or slow, or that small personal vehicle windows detracted from viewing the natural scenery. One

visitor summed the influence of the car this way, “Because I was in my vehicle and not out experiencing it. To me the car is just to get some place where I can get rid of it and get in the park.”

Visitors’ Perspectives toward Transportation Modes

Private vehicles provide “convenience, freedom, and access.” When discussing the advantages or benefits of traveling by private vehicle, three prominent themes emerged that related to convenience, an enhanced sense personal freedom and choice, and access and opportunity. Respondents, especially residents from California, commonly replied that using private vehicles was simply “convenient” because they “lived nearby.” Convenience was especially important for overnight visitors, many of whom were loaded down with suitcases or camping gear. For instance, a woman visiting in the fall said, “You should see all my stuff, you’d understand. I have at least 15, 20 pieces of luggage, two ice chests, um, my airbed, one two, three – three sleeping bags, I mean you could go on. It’s a lot.” A second theme showed that visitors valued private vehicles for an enhanced sense of personal freedom and choice to dictate their own travel schedules. Discussing the advantages of her car, one woman said, “We could get where we were going. When we wanted to go.” This and other comments, such as “you can go where you want when you want” were sometimes made to highlight the advantages of cars over the park shuttle bus, which limited the sense of freedom for some. Visitors also said private vehicles offered unique access and opportunity; there was a perception that other transportation modes limited access to the East Valley and other parts of the park, such as the Mariposa Grove of Giant Sequoias. When asked about disadvantages of using private vehicles in the valley, visitors mentioned traffic congestion and crowding, getting lost, and

inconvenience. Frequently, respondents replied simply that with personal cars came hassles of “traffic” and “parking.”

The Yosemite Park Shuttle is about “convenience and conscience.” Convenience was also a prominent theme that emerged in visitors’ talk about the Yosemite Park Shuttle. However, another theme emerged in this discourse suggesting that indicated visitors perceive the park shuttle to reflect and promote an environmental ethic or conscience. Regarding convenience, a typical comment was, “It’s just easier, you know you don’t have to find parking or anything, you just jump on the shuttle. It’s very convenient.” The environmental conscience theme included comments about the shuttle’s value in protecting park resources, reducing traffic congestion, and promoting environmentally responsible behaviors. Perceptions of the environmental benefits of the park shuttle are summarized by the remarks of one male summer visitor who said, “Well definitely it’s [park shuttle] my alternative. I mean I’m someone who’d almost like to see there be no cars in Yosemite Valley so. So save on pollution, I mean the number of trips, and you know they could make it electric. Environmental yeah.” Other visitors said of the shuttle, “Because it’s way better for the nature,” “environmentally it’s probably a lot better,” and “It’s environmentally correct.”

Walking and bicycling allow you “to slow down and connect.” According to visitors, walking and bicycling through the Valley allowed them to take their time, focus on their immediate surroundings, move at their own pace, and connect to the natural and cultural surroundings in an environmentally-friendly way. Respondents repeatedly replied that walking allowed them to “get up close,” “just see more of everything” and view natural scenery and wildlife. Visitors’ perceptions of the sense freedom and the protection of park resources provided by walking are summed up by the next two quotations. First, a female fall season

visitor said, “you see more, you don’t have to worry about running anyone over or anything, destroying the park, and preserves it more and makes you slow down and actually look at what you’re walking around.” Second, a man visiting in the summer said walking is “easier, more environmentally friendly, less hassle.”

Many visitors enjoy bicycling through the valley, most of whom rent bicycles from a shop at Curry Village. Visitors felt bicycles were, “faster than a shuttle or a car,” and provide “the freedom of not being with a car.” Similar to the park shuttle and walking, visitors recognized the environmental benefits of biking: “I’d rather not mess the Valley up with any more emissions” said one woman visiting in summer. A fall visitor summed up the advantages of biking this way: “Well I can go exactly where I want. The valley is small so you can go just about anywhere. And I can get there quick. Much more quickly than just walking, and I don’t want to do the car thing for environmental reasons.”

Visitor Perspectives on Transportation Management Policy

Once each interviewee had considered the advantages and disadvantages of the various transportation modes and considered the impact of transportation mode on their experiences and the park resources, the discussion turned to perspectives on transportation management policy in the Valley. Visitors were asked whether the park service should focus their efforts on traditional or alternative transportation and probed to justify their positions.

Focus on alternative transportation. One perspective, expressed by more than half of the respondents in the study, was that the park should focus heavily or exclusively on alternative transportation in the Valley. These responses revealed strongly-held opinions that were supported by reasoning that alternative transportation is environmentally sustainable and appropriate, reduces crowding and traffic congestion, alleviates parking problems, and promotes

more significant and meaningful visitor experiences. The next excerpt typifies the perspective that alternative transportation is more appropriate for the national park environment whereas traditional transportation is appropriate for other settings: “Park shuttles have less pollution. If they want to drive in their cars, go to Disneyland or something.” This perspective seemed to be most pronounced among visitors with higher levels of experience with Yosemite and other national parks, a longer history of visiting Yosemite, and overnight visitors. Many of these respondents were informed about park management and discussed at some length the continuing transportation management policy debate. The following excerpt, from a woman visiting in summer, is representative of the rationale for support of alternative transportation:

I like shuttle bus services. You know, several, I’m going to say back in the ‘80s there was a big article in National Geographic on the national parks and Yosemite in particular. Supposedly at that time, by the year 2000 there would be no cars coming into the park, you know, there would be points of entry and exit outside the park. You would leave your cars there and you and all of your belongings would be shuttled in. So I don’t know what happened to that concept, maybe they couldn’t get the funding, people protested, you know, wrote their congressman. I don’t know. But, you know, at that time, you know, that was the plan. And they were going to have it instituted by the year 2000. And obviously that didn’t happen, but I think that it’s you know, I think that I’m seeing, really seeing the effects of people a lot, you know, now more than I have before. I see things being trampled and broken and this and that, you know.

In this next exchange a male visitor who reported visiting Yosemite once a year for the past five years supports the shuttle bus and further suggests that the park management has lost an appropriate focus on restoring the natural character of the park:

My opinion on the whole thing is it seems like the park has gone more commercial, that now they've got the 20-dollar fee. They have never replaced the campgrounds that were washed out. They need more campgrounds for people, and it seems that they're focusing now on people driving in the park and riding around on the buses. And it doesn't seem like it seems like they've gone the opposite direction to what we heard they were going to do. The people that work here were so concerned with returning the place back to its natural beauty but now it's overwhelmed by cars and parking lots and buses. And to me, I think you've got a whole valley between the entranceway and Curry Village, and in that way, in that area there I think there should be more campgrounds. And maybe at the beginning of it, they could have a big parking lot with buses there that could bring people in. And unless you're going to camp, you could come in here with your car if you're going to camp and leave it there and not drive around, you know, and ride the shuttle buses around. That would be great. But I just think that the whole thing has fallen short.

Many visitors who supported a focus on alternative transportation also indicated their preferences for a policy of shuttling all visitors into the Valley. In this response, a woman visiting in summer recognizes the thorny challenges posed by such a policy but concludes that it is worthwhile nonetheless:

Focus on shuttle buses. And I think they should keep all personal vehicles outside of the park completely. Well, this is, like in my opinion, like my favorite place on earth. I think it's gorgeous and I love coming here to get away from everything and to still be here surrounded by vehicles and car noises and, you know, the pollution's just going to keep increasing and the popularity and I mean, just the number of people coming to this place. And so more for the sake of the natural beauty, I think that cars should be yeah,

left outside. And then yeah, just, if they you know, I mean, obviously, they'd have to create like a huge amount of parking outside of the park and then have, you know, a very smooth-running shuttle system and stuff like that. And it gets a little tricky with everyone being able to bring in all this stuff they need. But I think that would be worth the challenge. And yeah, I think we have to preserve what we have here. And just for the little conveniences of having our cars, I think it's not worth it.

A recurring theme in the responses supporting a policy focus on alternative transportation was a comparison to other parks and protected areas where visitors suggested shuttle services were successful. In the following two excerpts visitors suggest Yosemite follow models from other parks; the first is a male the second is female, both visiting in summer:

I've stayed in a lot of places where they have a lot more public transportation and it worked out very well. All the large snow ski areas like Aspen, Mammoth and so on, Lake Tahoe, they have a lot of public transportation, shuttle services that run constantly. And that works out really good.

I'm from Alaska and I go to Denali Park sometimes and that's just, there's not as much, there's not as much personal vehicle travel through there and I think that's better like for the animals and the other the plants and the wildlife. I just think that it seems better. I mean, this is this is just a lot different than that, so anyway.

Focus on traditional transportation. A less prominent theme by comparison, expressed by six respondents in our study, was that the park should focus on providing access to personal vehicles. Several of these respondents expressed concern that policy stressing alternative transportation would be inconvenient and cumbersome, especially for overnight visitors with

camping equipment. For instance, a summer visitor suggested, “I think more and more people tend, like us, to use personal vehicles. You can have your stuff in it you know. You are not limited to what you carry on and off the bus and you can stop whenever you want to.” A fall season visitor declared, “This is America, we use personal vehicles” and continued “I think that’s the preferred mode of travel and I think that they need to accommodate that and the park’s not that big but a couple of acres of parking I don’t think is going to detract from the park and if they do, well.”

Mixed or balanced approach. A third theme in the responses stressed a balance between traditional and alternative transportation. Visitors said that personal vehicles were essential for entry to the valley and for accessing campgrounds, but that shuttles should be encouraged, but not required, once visitors are in the Valley. Several respondents expressed satisfaction with the current mix of transportation modes in the Valley, such as this male summer visitor, “I think the way they have it right now seems to be a pretty good mix. Because it seems like there’s a lot of parking. But the shuttle system seems to be really awesome too so.” A theme in the responses of visitors who favored a mixed approach was a perception that increasing use pressures would necessitate an increasing focus on shuttle bus, but that some access to personal vehicles should be preserved. A male summer visitor said, “I think they’ve got a pretty good balance right now, and maybe long term, you know, we read a bit in the news how they’re going to try to really limit personal vehicles. And I think that might be good in the long run. But I think people like to have, and I like to have a little flexibility in where I’m going. But I also think it’s important that it’s nice and scenic here and not polluted.”

Visitor perspectives on discouraging personal vehicles. In a follow-up question to explore perspectives on transportation management policy further, respondents were if the park

management should actively discourage the use of private vehicles. There was some indication that summer visitors were less likely to support a policy discouraging personal vehicles from traveling in the valley. As might be expected, those visitors who felt the park should focus on providing alternative as opposed to traditional transportation providing were more likely to support a policy actively discouraging people from driving in the valley. Many respondents answered emphatically, “yes” and “absolutely.” To support this position, visitors stressed the value of reducing crowding, traffic congestion, and preserving the park environment. The response from this female summer visitor was typical, “Yes I do [think the park should limit cars]. It just causes a traffic jam and there is a lot of people biking, there are a lot of children and it’s safer with the shuttle. And it’s more convenient. I mean, but some people are just hard headed and just want to use them [cars]. I don’t know why they don’t because it’s so much easier to get on a shuttle.” Several respondents such as this male summer visitor indicated some deference to park managers to enact transportation management policies for environmental conservation, “We didn’t have a problem with traffic. It just surprised me, and certainly the cars didn’t, only if the cars were inhibiting the environment, then I’d say by all means, keep more of them out and stop us short of the park and make us take trams and stuff in that reduce, you know, the pollution of cars, if that becomes a problem.”

Another theme in these responses was that even if the park did not actively discourage personal vehicles, it should not promote them either. For instance, one respondent said, “Not discourage them, but provide more public transportation” and another replied “No, but I don’t think I’d cater to them any more than what they’re doing now.” Respondents who opposed discouraging vehicles often expressed support for the park shuttle, but also valued the personal freedom and convenience of their autos: “I think that the shuttle buses are a really good idea, but

I don't think they should restrict. See if they provide them and they're optional, people use them, as they have. We've been on a shuttle bus lately. So I think there's a happy medium in there." Another theme in these responses was that the park should actively, even aggressively encourage visitors to use the shuttle, but still not discourage or limit private vehicles: "No. I think they should encourage the use of public transportation. But I don't think they should discourage it [personal vehicles]."

Discussion

Elements of Significant and Meaningful Visitor Experiences in Yosemite Valley

Natural landscape features such as valleys, waterfalls, mountains, granite domes, and ephemeral celestial features were far and away the most commonly mentioned elements contributing to significant and memorable experiences in Yosemite Valley. An overwhelming majority of the people we interviewed (81%) said natural landscape elements contributed to their most significant experience; frequently visitors described with a feelings of awe and wonder the grandeur and scenic beauty of the valley landscape as a whole, especially when viewed from scenic overlooks. About one-quarter of respondents specifically mentioned the valley's waterfalls and almost one-sixth said mountains and domes contributed to their special experience. In comparison, just a few visitors specifically mentioned cultural landscape elements or social encounters when describing their significant experiences. Almost two-thirds of respondents reported significant learning experiences in the park; most respondents mentioned learning about natural history such as glaciers and fire while others learned about social and cultural history, bear safety, and NPS management and planning efforts.

The influence of natural landscape elements on significant visitor experiences identified here is consistent with other similar studies. In our study, natural landscape elements were clearly an important determinant of visitor experiences, which is consistent with “communion with nature” theme in Arnould & Price’s (1993) study of river rafters on the Colorado River, the importance of being in a bona fide natural wilderness environment discussed by Frederickson and Anderson’s (1999) in their study of all-women wilderness backpacking excursions, and the opportunity to be close to nature in described by Patterson et al. (1998) in their study of canoeists in the Okefenokee National Wildlife Refuge. The importance of natural landscape features to our respondents’ experiences is consistent with studies that tie natural landscapes to positive affective states (Hull & Stewart, 1995). Yosemite National Park identified natural landscape features as influential in their learning experiences, which is consistent with the conclusions drawn by Brody et al. (2002) that tangible biophysical features in park environments serve as cognitive bridges to facilitate learning and shape understandings

A difference between our findings and other previous research concerns the role of social interactions in constituting significant visitor experience. Elements of social interaction were almost completely lacking from Yosemite Valley visitors’ special experiences. In contrast, social interaction was key for “communitas” in Arnould & Price’s (1993) study, “development of community” in White and Hendee’s (1999) research, and to provide an audience for the construction an wilderness adventurer identity among participants in Jonas et al.’s (2003) ethnographic examination. Given the unparalleled magnificence of the natural beauty in Yosemite Valley it is possible that the social interaction dimension of the experience was simply overshadowed. Also, we interviewed visitors during the context of their on-site experience. As discussed earlier, prior research has illustrated the multi-phasic nature of visitor experience

(Borrie & Roggenbuck, 2001) and we suspect that social interaction may be more pronounced in certain phases; for instance, during the anticipation of the visit, travel to the site, and during the final stages of the on-site experience and during the recollection, as visitors develop and retell stories of their visit.

We were also somewhat surprised to find so few visitors mentioning cultural landscape elements; however, as noted earlier, cultural features were more pronounced in learning experiences. None of the respondents in our study expressed the type of special, even spiritual connection to cultural features described by Goldman et al. (2001) in their study of visitor experiences on the National Capital mall in Washington, DC. Clearly, the social and cultural significance of the national monuments in D.C. is unique in the U.S. and it is perhaps not surprising that cultural features in Yosemite Valley did not inspire such reverence. However, we did anticipate more visitors to discuss such features as the historic Ahwahnee Lodge or, for instance, the Curry Village post office. It is perhaps the case that respondents understand these features simply to be part of the park visitor infrastructure and not imbued with significant social, historical, and cultural meaning and value. If this is indeed the case, then Cronon's (2005) argument that that national parks would be well served to better interpret both the human and natural stories of a place to increase visitors' literacy in reading historical landscapes is relevant to Yosemite. Interestingly, most all respondents who reported learning about social and cultural history the valley mentioned Native American history.

Role of Transportation in Visitor Experience

With the knowledge that natural features were the most important dimension of visitors' significant experiences, and cultural landscapes and social interaction were less influential, what role then does transportation play in affecting these experiences? Is the way in which visitors

travel through the landscape simply a functional necessity, or does transportation mode influence visitors' experiences of the natural, cultural, and social landscapes? This exploratory study cannot answer these questions entirely, but several insights can be gleaned.

First, it is informative to recall that almost no one indicated that transportation mode negatively impacted their most significant or meaningful experiences. As noted earlier, some visitors mentioned problems with traffic congestion and parking and it is possible that such hassles have a detrimental effect on cognitive appraisals of overall satisfaction with the site's ability to meet desired psychological goals. Furthermore, although it was not a focus in this study, traffic congestion, long cue times at entry and exit points, and high use density probably influence visitors' perceptions of crowding in the Valley as a whole and at specific sites such as Yosemite Falls, especially for those visitors who have salient individual standards that were exceeded on site, and more experienced visitors. With this caveat in mind, whether moving through the landscape on foot, car, bike, or park shuttle, very few respondents suggested that transportation mode negatively impacted their significant experiences. This evidence suggests a limited role for transportation mode is consistent with Davenport and Borrie (2005), who concluded that transportation mode, in that case snowmobile, was a functional means to gaining an experience of the park, but not a significant influence on the experience.

On the other hand, findings indicate several positive influences of transportation mode on significant experiences. The most common influences were an enhanced sense of personal freedom to explore and connect with park resources, and unique opportunities for access to the park, and opportunities for learning. Some positive influences, such as enhanced personal freedom, were felt by visitors using different transportation modes – including walking, biking, and riding in cars – and this influence was interpreted in different ways. While those on foot felt that getting out of

their cars and away from the shuttle bus allowed them the freedom to get “closer” the park, other visitors felt cars gave them freedom to see more areas in the Valley in a shorter time and to choose freely when to travel from one site to another. It is interesting to note that enhanced personal freedom was mentioned by only one visitor riding the park shuttle.

Visitor Perspectives on Transportation Management Policy

Regarding visitor preferences for transportation management policies, several themes emerged. Private automobiles were valued for providing convenience, especially for overnight stays, freedom to dictate travel schedules, and access. The Yosemite Park hybrid shuttle was perceived as convenient, especially for eliminating the need to deal repeatedly with parking, and the shuttle was valued for its environmental benefits. Walking and bicycling allowed visitors to slow down, connect with the park, and avoid the hassles of traditional transportation. A prominent theme in the interviews was that visitors’ who favored alternative transportation and limiting car access supported their positions by environmental conservation values. It is hypothesized that in the general population of visitors, environmental orientation, perhaps as measured by the new ecological paradigm scales (Catton & Dunlap, 1980; Dunlap et al., 2000; Stern et al., 1995), would be predictive of attitude toward and intention to use alternative transportation.

In this study, visitors with greater experience with Yosemite and other national parks appeared to be more supportive of alternative transportation, which is consistent with the findings in Dilworth’s (2003) attitude study of visitors to Sequoia-Kings Canyon NP and Golden Gate NRA. Based upon the findings of this study and consistency with previous research, it is reasonable to hypothesize that in the general population of Yosemite Valley visitors, experience use history is positively related to positive attitude toward and intention to use alternative

transportation. Also consistent with previous research (e.g., Dilworth, 2003; Sims et al., 2005), the findings here indicate that perceived freedom is an important element of visitor experience that the transportation system may impact; that is, freedom is an essential feature of leisure and transportation modes that preserve or enhance perceived freedom are valued. Furthermore, from the interviews it appears that attitudes toward alternative transportation are moderated by whether it is optional or required. Additional research using probability sampling and survey methods is advised to test these hypotheses and estimate population proportions.

Yosemite has been at the center of the debate about the appropriate balance between visitor use and environmental preservation in national parks for more than a century. From the time roads first entered the Valley in the 1870s, through the 1970s when visitation reached two million, until today when the debate rages over cars versus shuttles, Yosemite exemplifies the uneasy historical alliance between roads, cars, and park preservation. As roads and cars replaced rails and trains in early twentieth century America, the emerging middle class explored the natural landscapes in their autos and experienced nature in a more direct way than train travel had allowed (Barnett, 2004). Generations of Americans have come to accept the automobile-moderated national park landscape as the norm, and a transition to alternative transportation would require a new reorganization of the culture of management and experience (Dilsaver & Wyckoff, 1999) in national parks. If alternative transportation systems are to be successfully integrated into the national park service, visitors and managers alike must reconsider their expectations about the appropriate means for democratic access and inspirational benefit

Conclusion and Implications for Future Research

With this study we seek to expand the realm of investigation of human-environment interactions in national parks and other natural areas to include heretofore little examined

dimension – the role of transportation through the environment. It might be argued that transportation is a mundane dimension of the national park experience of little interest to social science researchers; however, we feel that this routine aspect of the lived experience of visiting a national park merits attention. Especially when viewed from an interpretivist and phenomenological social scientific perspective, traveling through the national park landscape is a relevant aspect of the everyday, lived, localized context of what it “means” to visit a national park.

Our results have implications for management of national parks, especially for VERP-style planning efforts. For instance, for our respondents, most visitors’ significant experiences occurred while walking in the park; walking was strongly associated with positive impacts on experience; there were very few comments about negative impacts of any form of transportation; and visitors’ experiences were positively influenced by natural landscape elements and sense of freedom and unique opportunity. This implies that park management could encourage meaningful experiences and protect park resources by adopting transportation policies that facilitate close contact with natural elements while limiting the impact of the transportation system on the park environment.

The results of this exploratory study suggest several avenues for further investigation. First, the findings from the qualitative analysis identified key variables that could be used to build a comprehensive, explanatory, and predictive model of visitor perceptions and attitudes toward transportation in national parks and protected areas, perhaps using an expanded version of the theory of planned behavior. Combined with the existing attitude research discussed earlier, key variables for such an investigation would include the theory of planned behavior constructs (behavioral beliefs, control beliefs, normative beliefs), as well as prior experience

with national parks, prior experience with alternative transportation, general environmental values, community of origin (e.g., rural vs. urban), motives for visiting, season of visit, and type of visit (overnight vs. day).

A second potential avenue for inquiry is to explore the trade-offs that visitors perceive in evaluating transportation management options in national parks. Research suggests that visitors' significant and meaningful experiences are determined by interaction with the natural and cultural landscapes and shaped by social interaction. This study highlighted the importance of natural landscape elements in Yosemite and suggested that visitors' experiences of natural features were in many cases enhanced by transportation systems; however, visitors also expressed a generalized distaste for mandatory alternative transportation systems that might infringe upon their sense of freedom. Simultaneously, there was an awareness of crowding and congestion associated with auto-related visitor support services. These somewhat contradictory findings demonstrate that visitors are aware of the complexities and trade-offs inherent in visitor experience and resource protection. Additional information about the specific trade-offs that visitors do or are willing to make to maintain their desired experiences would be useful.

On a related note, this study has implications for future research for identifying indicators and formulating standards for the quality of visitor experience of transportation systems in national parks. As noted earlier, the respondents in this study valued transportation for enhancing their sense of personal freedom, providing unique access and opportunity, providing a sense of accomplishment, offering opportunities for learning, socializing and family bonding. These positive influences on experience quality must be examined to determine if they can be operationalized, measured, quantified, and monitored. Furthermore, negative influences on

experience quality, such as traditional measures of visitor preference and tolerance for crowding that are associated with transportation should be included.

Finally, research is necessary to test efficacy of interpretive messaging designed to influence visitors' attitudes and behaviors regarding alternative transportation in national parks. As this and other studies show that visitors appear to prefer transportation options, it may be necessary for NPS to utilize educational and interpretive programs ever more effectively in their transportation management strategies. Studies using theories of attitude, such as the Elaboration Likelihood Model, may be useful in this regard.

References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, 50, 179-211.
- Arnould, E. J., & Price, L. L. (1993). River Magic - Extraordinary experience and the extended service encounter. *Journal of Consumer Research*, 20(1), 24-45.
- Bamberg, S., Ajzen, I., & Schmidt, P. (2003). Choice of travel mode in the theory of planned behavior: The roles of past behavior, habit, and reasoned action. *Basic And Applied Social Psychology*, 25(3), 175-187.
- Barnett, G. (2004). Drive-by viewing - Visual consciousness and forest preservation in the automobile age. *Technology and Culture*, 45(1), 30-54.
- Borrie, W. T., & Roggenbuck, J. W. (2001). The dynamic, emergent, and multi-phasic nature of on-site wilderness experiences. *Journal of Leisure Research*, 33(2), 202-228.
- Brody, M., Tomkiewicz, W., & Graves, J. (2002). Park visitors' understandings, values and beliefs related to their experience at Midway Geyser Basin, Yellowstone National Park, USA. *International Journal Of Science Education*, 24(11), 1119-1141.
- Catton, W. R., & Dunlap, R. E. (1980). A new ecological paradigm for post-exuberant sociology. *American Behavioral Scientist*, 24(1), 15-47.
- Chapman, R. (2003). Memorable wildlife encounters in Elk Island National Park. *Human Dimensions of Wildlife*, 8, 235-236.
- Chhetri, P., Arrowsmith, C., & Jackson, M. (2004). Determining hiking experiences in nature-based tourist destinations. *Tourism Management*, 25(1), 31-43.
- Clawson, M., & Knetsch, J. L. (1966). *Economics of outdoor recreation*. Baltimore, MD: Published for Resources for the Future by Johns Hopkins Press.

- Colten, C. E., & Dilsaver, L. M. (2005). The hidden landscape of Yosemite National Park. *Journal of Cultural Geography*, 22(2), 27-50.
- Conzen, M. (Ed.). (1990). *The making of the American landscape*. New York: Rutledge.
- Cronnon, W. (2003). The riddle of the Apostle Islands: How do you manage a wilderness full of human stories? *Orion*, May-June, 36-42.
- Cronnon, W. (2005). *Why the division between natural and cultural resources in the national parks serves neither well: A plea for integration*. Paper presented at the George Wright Society Biennial Conference on Parks, Protected Areas, and Cultural Sites, Philadelphia, PA.
- Daigle, J. J., & Zimmerman, C. A. (2004). The convergence of transportation, information technology, and visitor experience at Acadia National Park. *Journal of Travel Research*, 43(2), 151-160.
- Davenport, M. A., & Borrie, W. T. (2005). The appropriateness of snowmobiling in national parks: An investigation of the meanings of snowmobiling experiences in Yellowstone National Park. *Environmental Management*, 35(2), 151-160.
- Dilsaver, L. M., & Wyckoff, W. (1999). Agency culture, cumulative causation and development in Glacier National Park, Montana. *Journal of Historical Geography*, 25(1), 75-92.
- Dilworth, V. A. (2003). *Visitor perceptions of alternative transportation systems and intelligent transportation systems in national parks*. College Station: Texas A&M University.
- Dorst, J. (1999). *Looking west*. Philadelphia: University of Pennsylvania Press.
- Dunlap, R. E., Van Liere, K. D., Mertig, A. G., & Jones, R. E. (2000). Measuring endorsement of the new ecological paradigm: A revised NEP scale. *Journal of Social Issues*, 56(3), 425-442.

- Falk, J. H., & Dierking, L. D. (2000). *Learning from museums: Visitor experiences and the making of meaning*. Walnut Creek, CA: AltaMira Press.
- Fredrickson, L. M., & Anderson, D. H. (1999). A qualitative exploration of the wilderness experience as a source of spiritual inspiration. *Journal of Environmental Psychology, 19*(1), 21-39.
- Frissell, S. S., Lee, R. G., Stankey, G. H., & Zube, E. H. (1980). A framework for estimating the consequences of alternative carrying-capacity levels in Yosemite Valley. *Landscape Planning, 7*(2), 151-170.
- Goldman, T. L., Chen, W.-L. J., & Larsen, D. L. (2001). Clicking the icon: Exploring the meanings visitors attach to three National Capital Memorials. *Journal of Interpretation Research, 6*(1), 3-30.
- Groth, P. (1997). Frameworks for cultural landscape study. In P. Groth & T. Bressi (Eds.), *Understanding ordinary landscapes* (pp. 1-21). New Haven: Yale University Press.
- Harrison, G. S. (1975). People and park - Reactions to a system of public transportation in Mt-Mckinley-National-Park, Alaska. *Journal of Leisure Research, 7*(1), 6-15.
- Hartig, T., Mang, M., & Evans, G. W. (1991). Restorative effects of natural environment experiences. *Environment and Behavior, 23*(1), 3-26.
- Hemingway, J. L. (1990). Opening windows on an interpretive leisure studies. *Journal of Leisure Research, 22*(4), 303-308.
- Higham, J. E. S., & Carr, A. (2003). Sustainable wildlife tourism in New Zealand: An analysis of visitor experiences. *Human Dimensions of Wildlife, 8*, 25-36.
- Hull, R. B. (1990). Mood as a product of leisure - Causes and consequences. *Journal of Leisure Research, 22*(2), 99-111.

Hull, R. B., & Stewart, W. P. (1995). The landscape encountered and experienced while hiking. *Environment and Behavior*, 27(3), 404-426.

Jackson, J. (1980). *The necessity for ruins and other topics*. Amherst: The University of Massachusetts Press.

Jonas, L. M., Stewart, W. P., & Larkin, K. W. (2003). Encountering Heidi - Audiences for a wilderness adventurer identity. *Journal of Contemporary Ethnography*, 32(4), 403-431.

Kaplan, R., & Kaplan, S. (1989). *The experience of nature: A psychological perspective*. Cambridge: Cambridge University Press.

Lewis, P. (1979). Axioms for reading the landscape: Some guidelines to the American scene. In D. Meinig (Ed.), *The interpretation of ordinary landscapes: Geographical essays*. New York: Oxford University Press.

Mace, B. L., Bell, P. A., & Loomis, R. J. (1999). Aesthetic, affective, and cognitive effects of noise on natural landscape assessment. *Society & Natural Resources*, 12(3), 225-242.

MacQueen, K. M., McLellan, E., Kay, K., & Milstein, B. (1998). Codebook development for team-based qualitative analysis. *Cam: the Cultural Anthropology Methods Journal*, 10(2), 31-36.

Mannell, R. C., & Isoahola, S. E. (1987). Psychological nature of leisure and tourism experience. *Annals of Tourism Research*, 14(3), 314-331.

McIntyre, N., & Roggenbuck, J. W. (1998). Nature/person transactions during an outdoor adventure experience: A multi-phasic analysis. *Journal of Leisure Research*, 30(4), 401-422.

- Melnick, R. (2000). Considering nature and culture in historic landscape preservation. In A. Alanen & R. Melnick (Eds.), *Preserving cultural landscapes in America* (pp. 22-43). Baltimore: John Hopkins University Press.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis* (2nd ed.). Thousand Oaks, CA: Sage.
- Miller, C. A., & Wright, G. R. (1999). An assessment of visitor satisfaction with public transportation services at Denali National Park and Preserve. *Park Science*, 19(2), 18-21.
- Mings, R. C., & McHugh, K. E. (1992). The spatial configuration of travel to Yellowstone National park. *Journal of Travel Research*, Spring, 38.
- National Park Service. (2006). *Yosemite National Park selected preliminary visitor study results* (Unpublished report). Moscow, ID: NPS Park Studies Unit.
- Nelson, B. W., & Tumlin, J. (2000). Yosemite regional transportation strategy, *Transportation Research Record: Journal of the Transportation Research Board* (Vol. 1735, pp. 70-78). Washington, DC: National Research Council.
- Patterson, M. E., Watson, A. E., Williams, D. R., & Roggenbuck, J. R. (1998). An hermeneutic approach to studying the nature of wilderness experiences. *Journal of Leisure Research*, 30(4), 423-452.
- Pritchard, J. (1999). *Preserving Yellowstone's natural conditions: science and the perception of nature*. Lincoln: University of Nebraska Press.
- Rolston, H. (2003). Life and nature of life - In Parks. In D. Harmon & A. Putney (Eds.), *The full value of parks: From economics to the intangible*. Lanham: Rowman and Littlefield Publishers, Inc.

- Rothman, H. (1998). *Devil's bargains: Tourism in the twentieth-century American West*. Lawrence: University Press of Kansas.
- Runte, A. (1990). *Yosemite: The embattled wilderness*. Lincoln: University of Nebraska Press.
- Rust, R. T., & Cooil, B. (1994). Reliability measures for qualitative data: Theory and implications. *Journal of Marketing Research*, 31(1), 1-14.
- Sauer, C. (1963). The morphology of landscape. In J. Leighly (Ed.), *Land and life: A selection from the writings of Carl Ortwin Sauer*. Berkeley: University of California Press.
- Schwandt, T. A. (1994). Constructivist, interpretivist approaches to human inquiry. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 118-137). Thousand Oaks, CA: Sage.
- Sears, J. (1989). *Sacred places: American tourist attractions in the nineteenth century*. Amherst: The University of Massachusetts Press.
- Shaffer, M. S. (2001). *See America first: Tourism and national identity, 1880-1940*. Washington: Smithsonian Institution Press.
- Sims, C. B., Hodges, D. G., Fly, J. M., & Stephens, B. (2005). Modeling acceptance of a shuttle system in the Great Smoky Mountains National Park. *Journal of Park and Recreation Administration*, 23(3), 25-44.
- Smith, L. (2004). The contested landscape of early Yellowstone. *Journal of Cultural Geography*, 22(1), 3-26.
- Stern, P. C., Dietz, T., & Guagnano, G. A. (1995). The new ecological paradigm in social-psychological context. *Environment and Behavior*, 27(6), 723-743.
- Vale, T., & Vale, G. (1989). *Walking with Muir across Yosemite*. Madison: The University of Wisconsin Press.

- White, D. D., & Hendee, J. C. (1999). Primal hypotheses: The relationship between naturalness, solitude and the wilderness experience benefits of development of self (DOS), development of community (DOC) and spiritual development (SD). In D. N. Cole, S. F. McCool, W. T. Borrie & J. O'Loughlin (Eds.), *Wilderness science in a time of change conference--Volume 3: Wilderness as a place for scientific inquiry* (pp. 223-228). Missoula, MT: USDA Forest Service, Rocky Mountain Research Station.
- Williams, K., & Harvey, D. (2001). Transcendent experience in forest environments. *Journal of Environmental Psychology, 21*(3), 249-260.
- Wyckoff, W., & Dilsaver, L. (Eds.). (1995). *The mountainous west: Explorations in historical geography*. Lincoln: University of Nebraska Press.

Appendix I: Interview Protocol and Demographic Questionnaire

Introductory Statement to invite visitors to participate in face-to-face interview:

“Hello! Welcome to Yosemite National Park. My name is []. I am a student from Arizona State University conducting a survey about the park and the transportation system. This survey is a joint research project between Arizona State University and the National Park Service; the purpose is to learn visitors’ opinions about the transportation system. We are only talking with a small number of visitors, so your participation would be greatly appreciated. The questions I would like to ask will take about 15 minutes. All of your answers are voluntary and confidential.

Would you be willing to participate in a short interview?

If no, thank the visitor; stop the interview, and record observational information on log sheet.

If yes, confirm that visitor is at least 18 years old, record observational information on log sheet, and continue with the interview.

The Paperwork Reduction Act requires approval of all federal government surveys by the Office of Management and Budget. This survey has been approved under this Act. The Office of Management and Budget control number and expiration date is available at your request. Additional information about this survey and its approval is available at your request.*

With your permission, we would like to tape record your answers for accuracy.

***Additional Information Provided upon Request.**

OMB Approval number: #1024-0224 (NPS #05-062)
Expiration Date: 04/30/2006
Person Collecting and Analyzing Information: Dr. Dave D. White
P.O. Box 874703
Tempe, AZ 85287-4703
(480) 965-8429
Email: YOSE@asu.edu

16 U.S.C. 1a-7 authorizes collection of this information. This information will be used by park managers to better serve the public. Response to this request is voluntary. No action may be taken against you for refusing to supply the information requested. No personal data will be recorded.

You may direct comments on the number of minutes required to respond, or on any other aspect of this survey to:

Information Collection Clearance Officer,
WASO Administrative Program Center
National Park Service
1849 C Street, NW
Washington, D.C. 20240

Interview Questions for Visitors (Duration 15 minutes)

- 1) Have you ever visited Yosemite National Park before this visit? If so, how many times have you visited in the last five years?
- 2) Which other National Parks have you visited in the last five years?
- 3) Why did you decide to visit Yosemite now and not another time of the year?
- 4) People travel to the park in different ways; for example, visitors come in a personal vehicle, or take an airplane then a rental car/RV, tour bus, or YARTS bus. Which way (or ways) did you travel to the park for this visit? Why did you choose [mode of travel] to travel to the park?
- 5) Visitors can travel around the park in multiple ways, such as personal or rental vehicle, shuttle bus, foot, bicycle, or horseback. Which way (or ways) have you traveled around inside the park during this visit? Why did you choose [mode of travel]?
 - a) What are the advantages of traveling though the park by [mode of travel]?
 - b) What are the disadvantages of traveling though the park by [mode of travel]?
- 6) How do you personally prefer to travel through the park? Why?
- 7) What has been the most memorable or significant experience you have had while you were traveling through the park during this visit?
 - a) How were you traveling though the park when this experience occurred? How did [mode of travel] enhance the experience? How did [mode of travel] detract from the experience?
- 8) What has been the most interesting thing that you learned while you were traveling through the park during this visit?
 - a) How were you traveling though the park when this experience occurred? How did [mode of travel] enhance the experience? How did [mode of travel] detract from the experience?
- 9) What has been the least enjoyable experience you have had while you were traveling through the park during this visit?
 - a) How were you traveling though the park when this experience occurred? How did [mode of travel] detract from the experience?
- 10) What is your opinion about how the park should manage the way people travel through the park; that is, do you think the park should focus mostly on providing access and parking for personal vehicles, or providing access to shuttle bus services? Why?
 - a) Do you think the park should discourage the use of personal vehicles to travel through the park? Why or why not?
- 11) If you could plan your trip all over again, what would you change how you traveled to or through the park? Why?

Your response to the following background questions is greatly appreciated. As always your response is voluntary and confidential.

1. What is your sex? (✓ *one*)
 - Male
 - Female

2. What year were you born? _____

3. Do you consider yourself to be Hispanic, Latino or Latina (✓ *one*)
 - Yes
 - No
 - Do not wish to answer

4. With which racial group(s) do you identify? (*please* ✓ *all that apply*)
 - American Indian or Alaska Native
 - Asian
 - Black or African American
 - Native Hawaiian or other Pacific Islander
 - White
 - Do not wish to answer

5. Please indicate the highest level of education that you have attained. (✓ *one*)
 - Less than high school
 - High school graduate
 - Technical school or Associates degree
 - Bachelor's degree
 - Master's Degree
 - Ph.D., M.D., J.D., or equivalent

6. Which of the following broad categories best describes your total annual household income (before taxes) for the last calendar year (✓ *one*)
 - \$25,000 or less
 - \$25,001 – \$50,000
 - \$50,001 – \$75,000
 - \$75,001 – \$100,000
 - \$100,001 – 125,000
 - 125,001 – 150,000
 - More than 150,000

PRIVACY ACT and PAPERWORK REDUCTION ACT statement:

16 U.S.C. 1a-7 authorizes collection of this information. This information will be used by park managers to better serve the public. Response to this request is voluntary. No action may be taken against you for refusing to supply the information requested. Your name is requested for follow-up mailing purposes only. When analysis of the questionnaire is completed, all name and address files will be destroyed. Thus permanent data will be anonymous. Data collected through public surveys may be disclosed to the Department of Justice when relevant to litigation or anticipated litigation, or to appropriate Federal, State, local or foreign agencies responsible for investigating or prosecuting a violation of law. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

Burden estimate statement: Public reporting for this form is estimated to average 1 minute per response. Direct comments regarding the burden estimate or any other aspect of this form to the Information Collection Clearance Officer, WASO Administrative Program Center, National Park Service, 1849 C Street, NW, Washington, D.C. 20240.