ASSESSING NEEDS AND IDENTIFYING OPPORTUNITIES FOR ITS APPLICATIONS IN CALIFORNIA'S NATIONAL PARKS

Technical Memorandum 3: Visitor Perceptions of Alternative Transportation Systems and Intelligent Transportation Systems in National Parks

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Prepared for the

California Department of Transportation
Division of Research and Innovation
Sacramento, CA

August 2003

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ACKNOWLEDGMENTS

There are many people to whom I am indebted for their guidance during my stay in Aggieland. First, and most importantly, is my committee chair, Scott Shafer. I would not have been able to achieve my goals without his constant support, advice, and patience. I would also like to thank the other members of my committee, Drs. Gramann, Scott, and Turnbull, for their support and guidance. It has been quite a learning experience.

I am also indebted to my friends at TTI and WTI who gave me the opportunity to work on this project. Shawn Turner and Chris Strong provided me with the opportunity to engage in a transportation study and to get an up-close look at how engineers view the world. It has been an interesting journey. I would also like to thank Pam Rowe for her last minute editing efforts. You are a lifesaver!

My friends in Aggieland and fellow graduate students in RPTS provided support and laughter when I needed it most. I am most appreciate to Kathryn Nachlinger and her family for taking me into their home this summer for a far longer stay than they had expected. Bless you!

Finally, I must thank the faculty, staff, and students at the University of Maine - Presque Isle. Their support and understanding during this past and very crazy year was greatly appreciated.

GLOSSARY OF ABBREVIATIONS

ANOVA	Analysis of Variance
ATS	Alternative Transportation System
Caltrans	California Department of Transportation
EMS	Electronic Message Sign
GGNRA	Golden Gate National Recreation Area
GPS	Global Positioning System
HAR	Highway Advisory Radio
ITS	Intelligent Transportation Systems
MTC	Metropolitan Transportation Commission
MUNI	San Francisco Municipal Transit
NPS	National Park Service
NRA	National Recreation Area
PDA	Personal Digital Assistant
RPTS	Recreation, Park and Tourism Sciences
SEKI	Sequoia and Kings Canyon National Parks
TEM	Traditional Electronic Media
TPB	Theory of Planned Behavior
TRA	Theory of Reasoned Action
TTI	Texas Transportation Institute
VTS	Visitor Transportation System
WTI	Western Transportation Institute
YART	Yosemite Area Regional Transportation

ABSTRACT

This technical memorandum examines the potential use of intelligent transportation systems (ITS) and alternative transportation systems (ATS) in national parks. Visitors at two of the national park units in California, Golden Gate National Recreation Area (GGNRA) and Sequoia and Kings Canyon National Parks (SEKI), were surveyed during May and July 2002 regarding their attitudes and intentions toward a variety of transportation and travel planning items (including ITS and ATS tools). There were three principal areas of inquiry: attitude toward transportation and travel planning tools, likelihood of using transportation and travel planning tools, and the difference between intentions for using tools before arriving at the study parks and while at the study parks.

The results revealed several key findings. First, there was substantial support for the relationship between attitudes and intentions. Furthermore, both experience with technology and attitude toward technology were predictive of intention to use technology in the study parks. Third, there was a significant difference between the attitudes and intentions of visitors to an urban park (GGNRA) and visitors to a rural park (SEKI). In particular, GGNRA respondents perceived alternative transportation (e.g. shuttle, public bus, park and bike) as more appropriate than did SEKI respondents. Fourth, while some support was found for a relationship between one of the ITS goals (safety) and attitude toward ITS tools in national parks, there was no support for the relationship between other ITS and ATS goals (e.g. reduction of congestion) and attitudes toward or intent to use these tools in national parks. Finally, there was a significant difference between the types of tools respondents would use before arriving at and while at the study parks. Technology such as the Internet was more likely to be used before arriving at the parks. Following diffusion of innovations theory, changes in perception toward these tools, as well as possible changes in the likelihood that they will be used in national parks, may be monitored by future research.

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1. INTRODUCTION

More than 277 million people visited units of the National Park System during 2002 (1). While the number of visitors to the parks has fallen somewhat in the past few years (2000 and 2001 visitation was approximately 285 million and 280 million, respectively), there have been increases at individual park units. For example, visitation at Sequoia and Kings Canyon National Parks has continued to increase steadily; visitation in 2002 reached over 1.4 million visitors (). As the bulk of these visitors arrive by car or recreational vehicle, searching for a parking space and sitting in traffic have become as much a part of the park experience as taking photographs or enjoying nature. Congestion, or crowding, in the parks is an issue that has been studied a great deal over the last thirty years, although the focus has been largely on the backcountry or primitive use areas rather than the frontcountry or developed areas of the parks (2, 3, 4). The demand for national park experiences draws attention to the need to study access to the parks, and the developed areas in particular. The National Park Service (NPS) has utilized a series of development strategies over the years, such as Mission 66, a ten-year program created in 1956 to increase the number of facilities in the parks in response to ever increasing numbers of visitors. However, more recent concern for an emphasis on preservation over use calls for the development of lower impact solutions that address impacts from congestion and crowding.

Access to national park units varies widely across the system. Some of the unit types are national parks, national historic sites, national memorials, and national preserves, all of which vary in size, type of access, and opportunity for recreation. Regardless of unit type, the purpose of the National Park Service system is "to conserve the scenery and the natural and historic objects and the wildlife therein, and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (5). The current use level of many of the parks is relevant to both aspects of the park mission; higher numbers of visitors can lead to resource damage and can also lower visitor enjoyment of the resource (6). Robert Stanton reiterated this point in the NPS Transportation Planning Guidebook, "As visitation to the parks continues to increase dramatically, so too does the challenge of ensuring resource protection while accommodating visitors and providing meaningful and enjoyable experiences for them. We cannot simply build and widen roads and parking lots" (7).

Transportation has long been an issue in the national parks. From the building of the early roads in the parks to blend with nature and entice the visitor to slow down and enjoy the surroundings, to the current proposal to straighten the historic highway in Yellowstone National Park, the purpose of the automobile in the parks has been debated. More recently, transportation in national parks has become the focus of several studies, as congestion problems have forced managers to repeatedly address safety and crowding issues. These include a feasibility study conducted by the National Park Service in 1994 on alternative transportation modes (8).

1.1. Crowding and Congestion

One of the factors believed to influence the visitor experience in park environments is perception of crowding. Altman described crowding as something that "occurs when privacy mechanisms fail to function successfully, causing a person or group to have more interaction with others than is desired" (9). More recently, crowding has been defined as "an evaluation of density

immediately determined by perceived spatial requirements and psychological behaviors ().” This process is twofold; density is a physical condition that deals with spatial limitations (10), while crowding is a negative evaluation of density (). In other words, density is objective and therefore can be precisely measured, while crowding is a subjective concept that may differ from one situation to the next. Furthermore, Gramann proposed that the issue is not sheer numbers as much as it is the behavior of others that may interfere with one’s goals. Thus, a park may seem more crowded if the people in the park are playing loud music and shouting than it would if the same number of people in the park were pursuing quieter activities.

Congestion, a common term in the transportation literature, is not typically defined in psychological terms. Orban, et al. defined congestion as “... overall system-level travel problems (11).” Congestion has been compared to physical crowding, which Gramann relates to the spatial requirements for an activity (). The everyday definition of congestion also ties it to crowding: “fill to excess; overcrowd” (12). Both definitions imply that it is a question of a facility’s physical carrying capacity, such as the number of cars that can be on a park road before it comes to a standstill, or the number of spaces in a parking lot. This view is supported by Lime, McCool, and Galvin: “*Congestion* refers primarily to the physical conditions that occur during periods of high density use when infrastructure and services are seriously stressed.” (13)

Higher use levels have led to a plethora of studies regarding recreational carrying capacity. Wagar’s landmark piece introduced the concept of social carrying capacity into the recreation field (14). Prior to that it had been largely employed as a biological concept. Social carrying capacity is based on several factors (15). The first is that the presence of others may add or detract from visitor satisfaction, depending on the goals for that experience. Secondly, the elements of an encounter such as location, frequency, and type play an important role in visitor satisfaction. Third, to examine carrying capacity there must be clearly stated goals. Finally, management needs to emphasize outputs, such as experience, rather than inputs such as use levels. Thus, goals and expectations for an experience are believed to play a critical role in satisfaction. Furthermore, Haas noted that one of the purposes for examining visitor capacity is trip planning – he claimed that informing visitors of the capacity level may result in “voluntary redistribution” without removing freedom of choice and thereby possibly increasing the quality of the visitor experience (16).

The relationship between physical carrying capacity (congestion) and social carrying capacity (crowding) can be viewed by examining the response of various disciplines. The transportation field has traditionally responded to physical carrying capacity problems by increasing capacity. Transportation agencies build more roads or make existing roads bigger, and build more parking lots. This approach had been adopted by the park service in the past, particularly in the 1930s and 1950s. As indicated above, however, managers have been trying to find solutions that do not involve an increase in infrastructure.

Visitors often employ coping behaviors to combat the negative effects of perceived crowding such as stress and anxiety (). Coping behaviors have been explained as “behaviors utilized in a proactive way to control conditions in wilderness (17).” Intrinsic to coping behaviors is the decision process; visitors are able to choose whether and/or how to cope with any perceived crowding. It is necessary, therefore, to understand what visitors intend to do, and the role that information plays in this process.

Coping behaviors in response to congestion have also been examined in the transportation field. A key finding is that travelers implement coping behaviors for many reasons other than simply avoiding congestion. Personal considerations, such as increased time with family, can account for congestion avoidance behaviors (18). While it is important to understand the reasons behind congestion avoidance, it is also critical to understand how the congestion is avoided. People may stay away completely, alter their schedule (e.g. drive home from work after rush hour, go to a park mid-week), or employ information to help them cope (e.g. informational radio stations that monitor traffic problems and suggest alternate routes).

1.2. Transportation Solutions

Alternative transportation systems (ATS) and changes in infrastructure (e.g. reduced parking spaces) are two of the approaches attempted in recent years to address higher levels of use in frontcountry areas of national parks. The frontcountry area is the developed portion of the park that includes roads, buildings (e.g. lodging, visitor centers) and services. Alternative transportation encompasses all travel modes that are used in place of private vehicles. This may include options such as shuttle buses, rail systems, passenger ferries and tour boats, as well as walking and bike trails or greenways. The focus of this approach is to get visitors out of their vehicles, with the goal of maintaining the visitor experience while lessening impacts on the resource.

Another approach involves the use of intelligent transportation systems (ITS), which are being implemented in several areas. ITS focuses more specifically on traffic congestion than crowding; the objective is to enhance the visitor experience by moving vehicles to and through the parks in a safe and efficient manner. However, the similarity between congestion and crowding has created opportunities for transportation engineers and social scientists to collaborate in examining both the physical and social implications of traffic, access, and experiences in national parks.

1.2.1. Alternative Transportation Systems

ATS is a term used to address both the ways that an area can be reached as well as the way people move around within the area. One way to manage congestion in national parks is to change the access both to and within the park. This can involve ATS elements such as changing the mode of access as demonstrated by the use of mandatory shuttle systems at Denali and Zion National Parks. Since 1972, visitors at Denali National Park who want to travel past milepost 14 on the park road must take a bus. Visitors with a camping permit are provided with a camping shuttle in order to get their gear to their campsite. Bicycles are also allowed on the road (19). Zion National Park's shuttle system was introduced in May 2000. Between April and October this is the only way to access Zion Canyon Drive; one exception is the visitors staying at the lodge, who are allowed to drive their car to that point. The shuttle systems in both parks are free of charge (20).

Some parks have a transportation system, such as Yosemite's YART (Yosemite Area Regional Transportation) system, that visitors may use on a voluntary basis. There is a fee for this service,

and the shuttle system operates between May and September in the region surrounding the park. There is also a free, voluntary shuttle that operates within the park (21).

Other parks are linked to their area's public transportation system. For example, Golden Gate Transit in San Francisco Bay Area may be used to access several sites within Golden Gate National Recreation Area (22).

1.2.2. Intelligent Transportation Systems

Another approach to managing access is intelligent transportation systems. This approach uses information technology to improve transportation services for the public (23). It "involves the application of electronic computer, navigation, information, and communication technologies to improve transportation system management and operations" (24). More specifically, ITS is used to address access and congestion concerns such as bottlenecks and safety. As noted by Roggenbuck, visitors with better information may have more realistic expectations and, therefore, may be better able to reduce or avoid negative evaluations of their experience (25). The experience includes the journey to and through the parks.

Acadia National Park has implemented such a system, which is referred to as an Advanced Traveler Information System (ATIS). The system is designed to provide visitors with needed information in the way they prefer to access it, such as the Internet, radio, or roadside signs (26). ATIS is designed to accomplish many ITS objectives, including improving the quality of the visit, reducing demand for parking at key locations, eliminating unsafe and illegal overflow parking, reducing congestion and improving traffic flow. The idea is to accomplish these goals by improving visitor awareness of transportation options.

The Internet is used by many of the national parks to distribute information, as are brochures, handouts and highway advisory radio. The key to success for such systems is whether they will be used by visitors, and to what extent. This is dependent upon visitors deriving benefits from the system, such as reduced congestion. An ATIS study conducted in Branson, Missouri and along Interstate 40 in Arizona (the latter geared toward visitors headed to Grand Canyon National Park) found that ITS was effective in several areas, including improving mobility, increasing access and reducing congestion (). The systems in Branson and along Interstate 40 included real-time information via interactive phone systems and variable message signs, kiosks, web sites and radio messages. A variety of travel planning styles was observed in this study. The Modern Traveler used the web, toll free numbers, guidebooks, and concierge or lobby information. The Nomadic Traveler used maps and hotel lobby information. The Traditional Automobile Traveler used maps and guidebooks, variable message signs, lobby brochure racks and concierges.

ITS systems are expensive to install and maintain. Therefore, it is vital to have a thorough understanding of the people who may use the system and what parts of the system that visitors may find most helpful. Do the visitors perceive that a problem exists in regard to congestion? Is congestion expected and accepted in some places more than others? If so, is this a function of the type of visitor, a visitor's goals, or the intended activity? Changes in access to an area, either through route changes, changes in information available to the public, or changes in the type of access allowed may affect visitor behavior. ITS may be used as a means to make decisions about possible coping behavior. An understanding of the types of visitors that travel to certain parks, as

well as the way in which they plan their trips, is crucial to helping managers determine the most effective way to provide traveler information in order to manage access. Furthermore, a summary of the National Workshop to Develop an Intelligent Transportation Systems Strategy for the National Park Service identified differing needs for various park types. Urban park representatives emphasized the need for in-park transit information, rural park representatives cited the need for initial trip planning information (e.g. is the park closed), and parkways representatives believed that their goal of fast, efficient travel could be best met by a travel information system that focused on roadway incidents and congestion (27).

1.3. Purpose of This Study

As indicated above, the National Park Service shares several common objectives with the transportation objectives outlined in ATS and ITS. Quality of experience, including reduced congestion and safety, are keys to this approach. Moreover, alternative transportation systems have been adopted in several national parks. The purpose of this study is to determine the potential for visitor acceptance of ATS and ITS techniques in and around national parks. The opportunity exists for visitors to use ATS and ITS to make decisions about access when visiting national parks, but it remains to be determined which of these tools visitors feel are appropriate and are likely to utilize for their park visits.

The principal objectives of this study are:

- to determine what types of visitors may use ATS and ITS facilities if implemented in NPS units; and

- to determine if, and which, components of ATS and ITS might be effective for managing visitors and their experiences in national parks.

The following chapters will review related literature, outline methodology, detail the results, and provide analysis and implications.

2. LITERATURE REVIEW

The study is based upon theory that links perceptions, attitudes and behavior. This theory builds upon a long history of concepts in the field of recreation and leisure studies that focus on the importance of understanding attitudes and perceptions. These concepts can be found in normative theory (e.g. crowding), the theory of planned behavior (TPB), and diffusions of innovations theory. Therefore, this chapter will include a discussion of these concepts, as well as their place in the recreation and leisure literature including studies of perceptions, experience, diffusion, crowding, congestion and coping behaviors. Additionally, studies addressing the perception of alternative transportation systems (ATS) and intelligent transportation systems (ITS) will be discussed. This chapter concludes with hypotheses that have been generated based on the research purpose and guided by the literature.

2.1. Attitudes and Behaviors

Attitudes have long been considered to influence behavior. Attitude has been defined as "the affect for or against a psychological object" (28), and as "an implicit, drive producing response considered socially significant in the individual's society" (29). Allport summarized his discussion of the early attitude literature by stating,

> Attitudes are never directly observed, but, unless they are admitted, through inference, as real and substantial ingredients in human nature, it becomes impossible to account satisfactorily either for the consistency of an individual's behavior, or for the stability of any society. (30)

Critical to the early literature was the belief that attitudes are learned; therefore, motivation and perception must be considered relevant to the concept (). The expectancy-value models expand on this, stating that attitude toward an object is drawn from an individual's salient beliefs, which are a function of the tendency to form beliefs about and evaluate the object's attributes (31). These models also emphasize that two individuals can share the same attitude about an object, but behave differently as a result of differing evaluations of the consequences of performing the behavior. Alternatively, two individuals may share the same evaluation of behavioral consequences, but not share the same attitude toward that behavior. Lawler states that there are two things that must be known in order to predict possible behavioral choices: 1) the general classes or groups of outcomes that people find desirable or undesirable, and 2) the factors that influence the desirability of outcomes (32). He also maintains that some of the variables that may influence expectations are past experience, communication with others, the situation at hand, and personality.

More recently, Ajzen summarized the literature's definitions of attitude as "a summary evaluation of a psychological object captured in such attribute dimensions as good-bad, harmful-beneficial, pleasant-unpleasant, and likeable-dislikable" (33). The uni-dimensional approach is not new; Allport noted early on that the bipolar function was the most important aspect of the concept ([from 34]). However, the uni-dimensional approach was deemed simplistic; Allport suggested that a qualitative examination of attitudes would add to their meaning. Furthermore, by the 1950s researchers had generally accepted that the concept of attitude contained three

aspects: affect, cognition and behavior (). A model presented in Eagly and Chaiken demonstrates this relationship (see Figure 2-1) (35). The affect refers to the emotions reflected toward the object. Cognition is the object, the belief or idea. Behavior, as described by Iso-Ahola, is the "predisposition toward action" (36). Most definitions focus on the affective facet of the concept, emphasizing the attitude or emotion held toward an object.

Iso-Ahola, focusing on the positive aspect of attitude, describes "liking" as a core element of the concept (). He relates the concept of attitude to intrinsic motivation, which is the idea that an individual, who participates in a leisure activity for intrinsic rewards such as feelings of competence, will have a positive attitude toward that activity. This builds upon Rokeach's proposal that attitudes, beliefs and values comprise a complete system that supports one's self-conceptions (37).

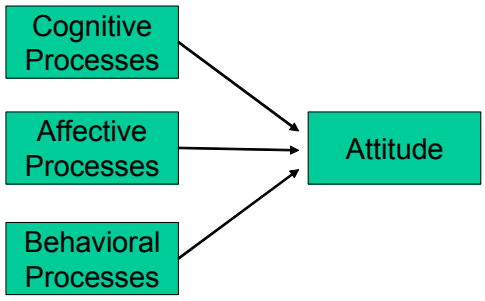

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Figure 2-1: Processes Leading to Attitude

When examining attitudes, it is important to remember that attitude toward an object and attitude toward a behavior are not the same (). Further, Ajzen and Fishbein propose that four factors need to exist on the same level of specificity for the attitude-behavior relationship to be strong: action, target, context and time (). The absence of compatibility between these four elements often leads to erroneous results in predicting behavior from attitudes (). Moreover, Feather proposed that the key was not to determine whether the attitude-behavior relationship exists – the assumption is that it does – but to determine what other variables are needed to completely explain the relationship ().

Understanding attitudes can provide a dual use for managers: as a source of information to help guide managers and as a social control tool that provides managers the ability to target attitudes that cause undesirable behaviors (38). This understanding, however, assumes that specific attitudes lead to specific behavior. This proposal has been greatly substantiated by the development of the theories of reasoned action and planned behavior.

2.1.1. The Theory of Planned Behavior

The theory of planned behavior (TPB) was developed by Ajzen to improve upon the theory of reasoned action (TRA), which suggests that intention predicts behavior (, 39). However, "intent to perform a given behavior cannot be used to predict the extent, magnitude, or frequency of action." Therefore, an aggregate of intentions is needed to provide a clear picture of what behaviors may result.

Based on the idea that attitudes determine a person's acts, an idea for which Fishbein and Ajzen credited Thomas and Znaniecki for introducing in 1918, the theory of reasoned action states that two factors – attitude toward a particular behavior and subjective norm – lead to intent to behave which, in turn, leads to behavior (). The theory of planned behavior (see Figure 2-2) adds to this model by factoring in perceived behavioral control (40). This factor accounts for the amount of

control or access to a behavior that an individual perceives he or she has; it is assumed that past experience and anticipated constraints will be reflected in this factor.

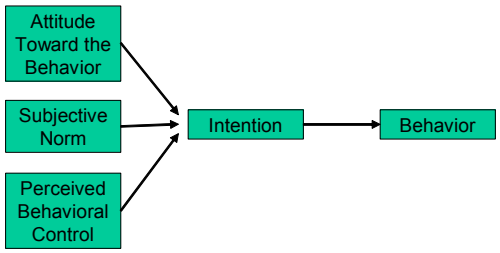

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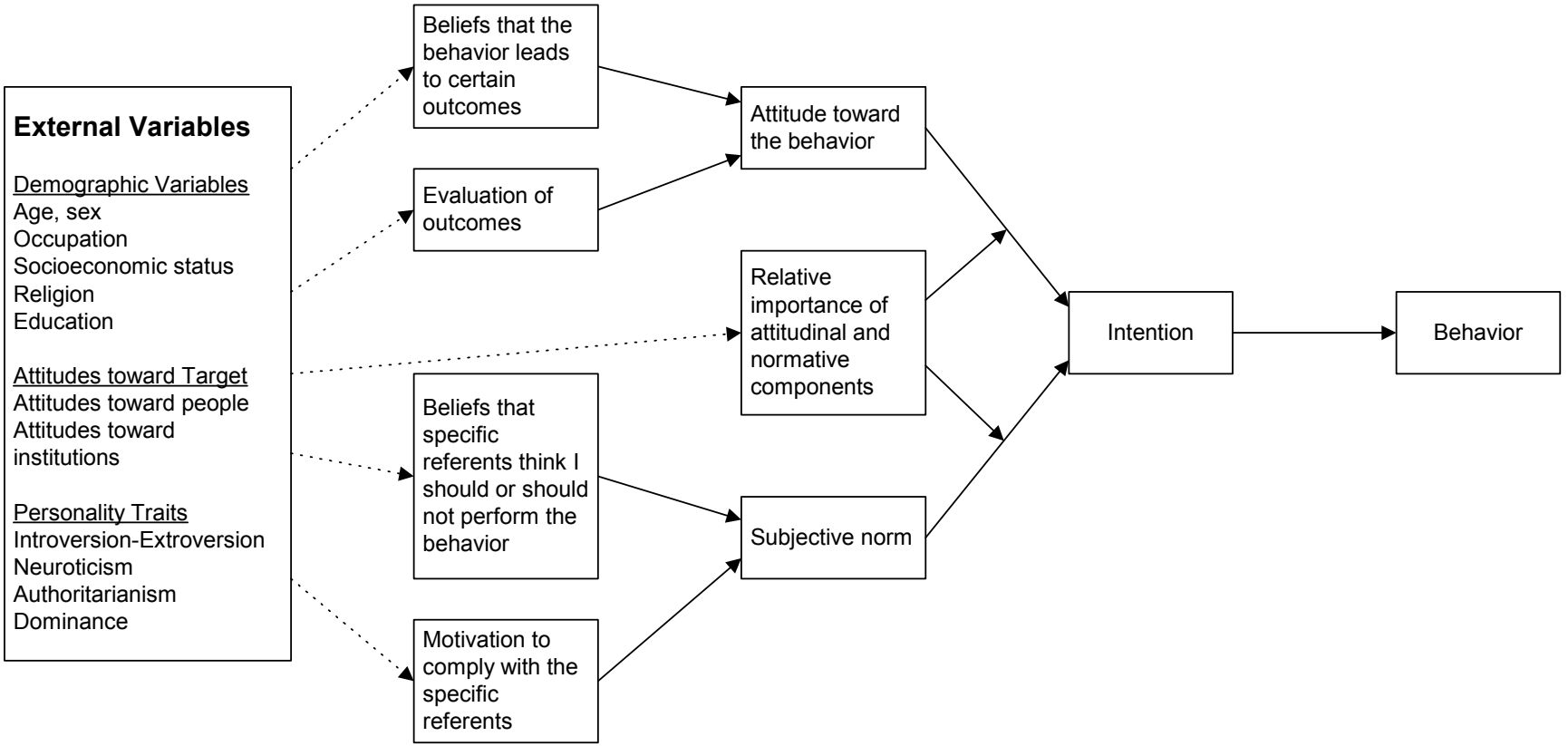
Figure 2-2: Theory of Planned Behavior

In an early study to test the proposed theory of planned behavior, Ajzen and Madden found a higher level of predictive ability than had been found with the theory of reasoned action (41). The theory of planned behavior proposes that three factors – attitude toward a behavior, subjective norm, and perceived behavioral control – determine intention (). Attitude toward the behavior is described as either a positive or negative evaluation of the behavior. Subjective norm is an individual's perception of social pressure in regard to the behavior. As indicated above, perceived behavioral control is the individual's perception of the level of difficulty associated with the behavior. The strength of these factors when determining intentions is dependent upon the behaviors and individuals involved. One of the key concepts to understand about the theory of planned behavior is that it is the cumulative effect of the variables that best determines intention and behavior; a single variable alone will not significantly link beliefs to behavior (42).

Antecedent variables are also considered in the model; Ajzen and Fishbein refer to these as external variables, stating that they may have an indirect effect on behavior (see Figure 2-3) (). These variables include demographics, attitude towards targets and personality traits, and are similar in nature to the personal and environmental variables that Lawler proposed had an influence on expectations (). The emphasis from Ajzen and Fishbein is that these variables can only affect behavior indirectly, as an influence on one of their variables (beliefs, evaluation of outcome, subjective norm, etc.) (). From a managerial standpoint, however, it may be important to test the relationships across certain external variables, as this may demonstrate unidentified user needs. Results of an early study in this area showed that groups with different preferences for type of experience also differed on their preferences for activities, settings and management actions (43). This indicated that different user groups, based on experience preferences, had different preferences for the way the setting was managed.

A principal facet of TPB is the importance of combining multiple variables to connect intentions to behaviors. In addition to the traditional three-prong approach of TPB (attitude, subjective norm, perceived behavioral control) several studies have factored in another variable, past experience (44, 45, 46). Some studies showed a greater consistency in the relationship between attitude and behavior for those with previous experience when the attitude was focused on an object such as a puzzle or a housing crisis (47, 48). Another recent study examined TPB along with the Informational-Motivation-Behavioral-Skills Model; the results supported TPB, and also showed that past behavior was the best predictor of actual behavior (49).



(Source:)

Figure 2-3: Indirect Effects of External Variables on Behavior

The theory of planned behavior has been used to examine intentions and behavior in several fields. Studies utilizing TPB to examine intent to exercise have added a plethora of support for this theory, including the importance of perceived behavioral control for predicting behavior, and the influence of past behavior on intention (, 50, 51, 52). Mummery and Wankel also found support for TPB in a study that analyzed training behavior in adolescent competitive swimmers (53).

The field of health science has also applied TPB in many instances; some of the findings are a strong association between attitudes and high-risk behavior (54), importance of perceived behavioral control for all stages of behavior (55), the relationship between attitudes, subjective norm, and perceived behavioral control to weight loss (56), and the importance of outcome expectancies as a predictor of alcohol consumption (57).

There have been several travel-related studies involving TPB as well. In one study, intention and perceived control, as well as habit, were found to predict behavior (58). Another study found that individuals were more likely to have positive beliefs and attitudes toward aggressive driving if initiating the incident, and more negative beliefs and attitudes if on the receiving end of aggressive driving (59). Finally, Evans and Norman found support for TPB in a study that evaluated pedestrians' road crossing decisions (60). In this case, perceived behavioral control, measured by the respondent's perception of the ease of crossing the road, was the strongest predictor of intention.

The adoption of technology has also been subject to the application of planned behavior. Klobas and Clyde attempted to determine what factors are important when measuring intent to use the Internet (61). Attitudes were an important factor, particularly as the acceptance of the Internet "as part of the future" outweighed perceived barriers to use. Moreover, perceived behavioral control and subjective norm also influenced use. A study comparing TPB and derived demand theory determined that it is important to examine actual, as well as perceived, control (62). In this study actual control was measured by financial capability. Perceived control was measured in two ways, by the level of control, which study participants believed they had regarding a decision to install a drip irrigation system, and by their perception of the control that agencies had to require them to install these irrigation systems. Finally, attitudes and perceived behavioral control were important determinants for the acceptance of technology by physicians (63). In this case, attitudes were measured as "positive or preferential attitudes toward use of telemedicine technology." Perceived behavioral control was measured as the perceived availability of training and access to telemedicine technology.

The theories of reasoned action and planned behavior have also been used to examine participation in leisure activities (). Young and Kent used the theory of reasoned action to examine the predictability of recreation participation (64). They reported a significant relationship between the expressed intent of whether or not participants would go camping and whether or not they actually did go camping. The theory of reasoned action was also used to examine attitudes toward the National Park Service's controlled burn policy (65). This study reported a significant relationship between change in attitude toward the burn policy and change in intent to support that policy. Many leisure-related studies utilizing the theory of planned behavior focus on exercise, as reviewed above. More recently, TPB has also been used to predict hunting participation, as Hrubes, Ajzen, and Daigle reported a relationship between intentions to

hunt and frequency of hunting (66). Another study focused on the instructor rather than the students / participants, finding that TPB predicted instructor behavior better than TRA (67).

As stated in the previous chapter, the primary purpose of this study is to determine visitor acceptance of ATS and ITS in national parks. More specifically, the study will focus on the links between antecedent variables and attitude, and attitude and intent to behave, and also examine the attitudinal differences between various user groups. As managers seek to meet their constituents' needs, they must address the various preferences that exist within their constituency. These antecedent variables, such as previous experience with technology, are based on the strength of attitudinal research as outlined in the theory of planned behavior; acceptance of ATS and ITS will be determined by examining visitor perception of and willingness to use ATS and ITS. This study will not test the theory of planned behavior per se, but will use the model as a guide to examine relevant relationships. Figure 2-4 shows the TPB links of concern in this study. The specifics of the measurement scales for these variables will be outlined in Chapter 3.

2.2. Recreation and Leisure Literature

2.2.1. Perceptions

Perceptions and beliefs about objects, policies, beliefs, behaviors, and conditions can be found in early studies in the recreation and leisure field. These studies focused on perceptions of objects such as campground conditions (68, 69, 70, 71), rationing systems (72), and management policies (73, 74). Understanding visitor perceptions was viewed as an important facet of managing recreation sites. Studies showed that visitor and manager perceptions often differed (75, 76).

A landmark study by Shafer identified a key concept in outdoor recreation management (77).

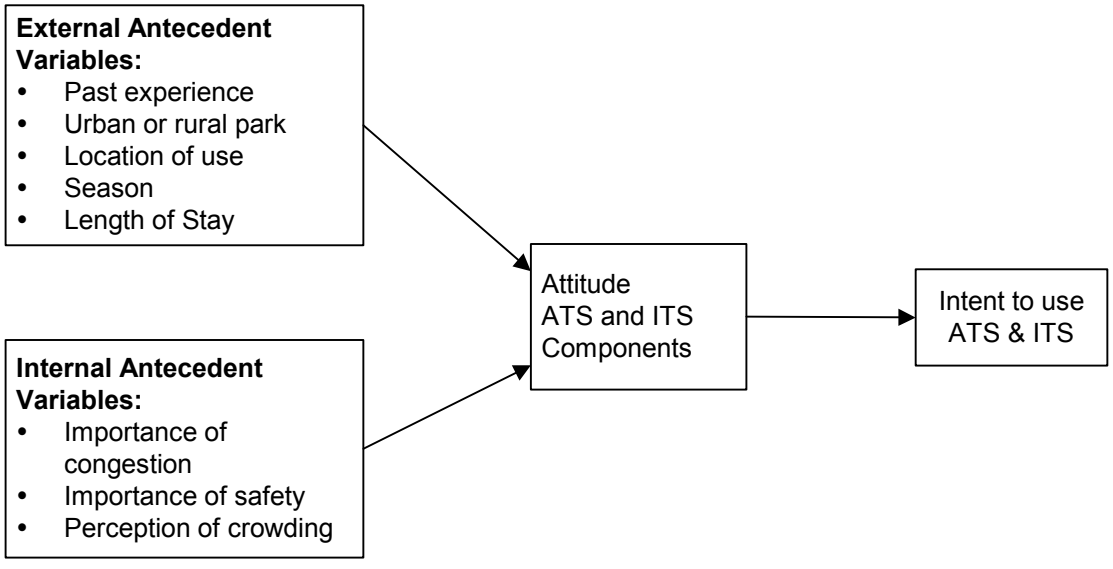


Figure 2-4: Antecedent Variables of Attitude toward ITS and ATS in National Parks

This idea, "the average camper who doesn't exist," emphasized that management actions based on average visitor perceptions and needs may not actually meet many visitors' needs at all. The diversity of users should not, in essence, be described by the average. Therefore, the need to focus on a diversity of user needs, and not simply the average, demonstrates the importance of considering external variables when discussing visitor attitudes and perceptions.

More recent studies indicate the continued importance of understanding visitor perceptions and the antecedent variables such as those of concern in this study. Shafer and Hammitt reported differences among groups based on level of "purism" of wilderness values, which are those values that most closely resemble the intent of the Wilderness Act (78, 79). The groups differed, for example, on length of time spent in wilderness, with those at a higher level of purism spending longer periods of time in the wilderness than those who did not rate as high on the purism scale. In a study examining the change in wilderness values over time, Watson, Hendee, and Zaglauer reported that visitors to the Eagle Cap Wilderness in 1993 were more supportive of management policy that focused on retaining wilderness quality than visitors to the same area in 1965 (80). A third study that focused on perceptions in wilderness reported that visitors believed that the Great Barrier Reef Marine Park, particularly the Far North Section, contained wilderness (81). Finally, a study that examined perception of activities that complemented the "quiet enjoyment" of national parks in England and Wales found a relationship between perception of activities that are acceptable for "quiet enjoyment" and acceptance of these activities in the national parks (82). Thus, the above findings indicate that visitors hold particular perceptions about parks and policies that should be considered by park managers when making management decisions. These decisions may include whether or not to implement intelligent and alternative transportation systems.

2.2.2. Experience

One of the external variables of concern here is experience (see Figure 2-4). The relationship of level of experience has also been well documented in the outdoor recreation literature. Following Ajzen and Fishbein's model, experience is an external variable (see Figure 2-3). This variable has been used to distinguish between users, based on the premise that a user with little or no experience with an activity or a place will have different perceptions, attitudes, preferences and behavior than a user with a high level of experience with that activity or place (83). Schreyer and Lime add to this by endorsing the assumption that a person with no previous experience in a particular activity will have different perceptions about the activity than those who have past experience with the activity (84). Moreover, the type and amount of information an individual has is related to experience use history (85). Finally, Trafimow and Borrie found support for using experience as a predictor variable in regard to intentions, although they qualify this by noting that it is contingent upon particular behaviors, context and population (86).

It is important to understand how past experience affects the perceptions of a recreational activity, as a lack of information can result in conflict and competition among participants (84). Repeat visitors to a park, for example, have a better understanding of the conditions to expect than first-time users. This can lead to a difference between repeat visitors and first-time visitors in regard to the amount or type of information that they seek. Hammitt, McDonald and Hughes found that the only difference between wilderness users with a higher level of experience and those with less experience was desire for solitude (87). McFarlane and Boxall found some

support for the relationship between past experience and choice of route in the wilderness, as those with higher levels of experience chose more difficult routes (88). Therefore, behavior (e.g. route choice) can be related to past experience.

Experience use history is an approach to examining past experience that considers multiple facets of experience. For example, this may include measures of past experience with an activity, and past experience with an activity at a particular site. In a study of river users, Schreyer, Lime and Williams used experience rafting the study river and experience rafting elsewhere to measure experience use history; they found significant differences between users with different levels of river recreation experience in regard to perceptions of conflict, perceptions of the environment and trip, and support for managerial action (85). However, some differences between groups were unexpected; for example, novices were found to be least likely to feel as if they were in a wilderness area (compared to more experienced users). As the authors pointed out, this may have been due to unrealistic expectations on the part of the novices about what constitutes a wilderness area. This supports the idea that experience level influences perceptions, but makes it difficult for managers to draw practical conclusions. Finally, Petrick, Backman, Bixler and Norman used experience use history to examine differences among golfers in regard to motivations and constraints (89). The researchers found that both constraints and motivations differed between experience groups.

While experience use history studies such as those mentioned above emphasize the importance of using multiple dimensions to examine experience, Schuster, Hammitt and Moore reduced the scale of seven experience items to a single item (on-site experience) as a measure of experience use history (90).

Similar studies have examined the relationship of experience to internal factors. In a study designed to define wilderness recreation experiences by the psychological outcomes that individuals seek, Brown and Haas found a relationship between user type, which included past experience, and the preferred psychological outcome (e.g. autonomy and achievement) (91). Their findings showed that those with the least amount of experience placed the least amount of importance on "achievement" as an outcome. Those with the most experience placed the greatest emphasis on "relationship with nature" as an outcome. Finally, a study of river recreationists found that users' motivations that represent the meaning of their participation changes as the amount of experience increases (92). Using a six-level hierarchy of users, their findings suggest that the three stages of the hierarchy with the least amount of experience (novices, beginners, visitors) viewed "escape" as the most important motivator, while this was a less important motivator for respondents at the higher three levels of the hierarchy (collectors, locals, veterans). Moreover, challenge and learning were the most important motivators for the higher three levels, and less important at the lower three levels. Thus, visitor motivations and desired experience differed among groups with varying levels of experience, with the greatest differences existing between extreme groups (e.g. novice and veterans). This has important implications for understanding visitors, particularly when taken together with the differences in perceptions and behavior as reported above.

Thus, experience and experience use history studies have shown that management decisions can be informed by the differences among visitors with varying levels of experience. As shown above this has been applied to, among other concepts, motivations, constraints, perceptions and

outcomes. These are important considerations when examining visitor perceptions in regard to attitudes toward and potential use of alternative and intelligent transportation systems.

2.2.3. Diffusion of Innovations

Diffusion of innovations is a theoretical concept that proposes that there is "a social process in which subjectively perceived information about a new idea is communicated" (93). Essentially, this line of research suggests that technological innovations that satisfy society's needs (e.g. less congested park roads) will be adopted over time as acceptance of the tools used to create less congested roads become more widespread. Rogers defined an innovation as "an idea, practice or object that is perceived as new by an individual or other unit of adoption" (93). He added that it does not matter much if the idea is new in regard to its first introduction as much as it matters if it is new to the individual, since "the perceived newness of the idea for the individual determines his or her reaction to it."

Rogers also described the innovation-decision process, which begins with gaining knowledge and ends with confirmation in regard to the level of success of the implemented innovation (93). This relates to Ajzen's premise that intentions may change over time, as a result of changes in beliefs, some of which may reflect the attainment of new information (39). Increasing levels of technology provide innovative ways to access information, but as technology continues to evolve the use of technology should evolve as well.

Diffusion of innovations theory involves examining attitudes toward the innovations, and monitoring both the change in attitude and change in acceptance of an innovation. Rogers notes that there is often a gap between forming a positive attitude toward an innovation and adopting that innovation (93). He offers cost and availability as two of the key mitigating factors. This is an important point in this study, as many ITS tools are cost-prohibitive. Rogers also suggested that preventive innovations (i.e. use of ATS or ITS to reduce congestion) may diffuse slowly due to the delayed rewards of adopting the innovation (94). On a related note, Jermias identified resistance to change as a factor in regard to preferences for costing systems (95). He found that people who were committed to a particular costing system found it more useful than an alternative system. Respondents often resisted the change despite problems with the current system.

Diffusion studies have also examined the contributing factors to adoption. Eastin found that several variables contributed to adoption of e-commerce activities, including perceived convenience and financial benefits, Internet use, and previous use of the phone for the same purpose (96). In other words, those who had used touch-tone phones for making financial transactions were more likely to use a computer for the same task. Four factors were determined to influence adoption of electronic newspapers in Taiwan (97). These included demographics (education and income), technology ownership, mass media use and innovativeness. Bennett and Bennett determined that adoption of instructional technology (i.e. Blackboard) could be influenced by explaining the advantages of the system, offering demonstrations, and explaining the usefulness of the system to enhance student learning (98). Finally, Blackley and Shephard found that institutional and regional variables could also affect adoption of innovative building materials and methods for home building (99). This is particularly important in that this study is examining an institution-specific (NPS) adoption area for innovations.

Diffusion of innovations implies that several factors such as demographics, technology experience, and perceived usefulness may serve as predictors of adoption. These are several of the variables (external and internal antecedents) that will be examined in this study to determine their possible influence on the perceptions and likelihood of using transportation and travel planning tools in national parks.

2.2.4. Crowding

Crowding has been one of the biggest concerns for outdoor recreation managers. An internal antecedent variable, visitor perception (see Figure 2-4), is also a key element in the concept of crowding. As explained in Chapter 1, crowding is a psychological evaluation of physical and situational circumstances. Manning refers to it as "a negative and subjective evaluation of a use level" (83). As noted by Vaske and Donnelly, crowding is often referred to as *perceived crowding* as a way of emphasizing that it is a subjective concept (100). The behavioral aspects of the situation (e.g. loud groups), in particular, can affect perception of crowding (6). This is an important consideration as one of the variables that may influence an individual's attitude toward an object is the situation (31).

Crowding is often examined as a facet of carrying capacity, which is "the amount and type of visitor use that can be accommodated appropriately within a park or recreation area" (101). As such, the focus has often been on the establishments of indicators and standards of quality (102). The focus in this study, however, is on the relationships between perception of crowding and coping. The coping tools in this case are ATS and ITS.

Most of the studies conducted regarding crowding in outdoor recreation have taken place in backcountry settings. It is possible that the reason for this is that provision of the opportunity for solitude is part of the wilderness manager's charge (79); therefore, crowding can have a greater impact in backcountry and wilderness settings than it might in the frontcountry. For example, Absher and Lee examined the perception of crowding among backcountry users at Yosemite National Park (103), Hammitt and Patterson identified coping behaviors employed by backcountry backpackers in Great Smoky Mountain National Park to avoid encounters (104), and Stewart and Cole explored the relationship between crowding and experience quality in Grand Canyon National Park's backcountry (105).

Several of these studies have reported a relationship between perception of crowding and a variety of other antecedent factors. Absher and Lee reported a relationship between motivations and perception of crowding in a study of backcountry hikers in Yosemite National Park (103). In particular, they noted, "crowding is less a response to social density than a product of the interaction setting, how it is defined, and the particular attributes, preferences, and expectations of the people present." Hammitt and Patterson found that more experienced backpackers adopted coping behaviors to avoid encounters with others more frequently than less experienced backpackers; however, the relationship was weak (104). More significant in their study was the finding that respondents utilized physical coping behaviors such as spatial and temporal displacement, more often than social coping behaviors such as avoiding social interaction.

Stewart and Cole utilized an elaborate methodology that included pre- and post-trip questionnaires as well as diaries to examine the experiences and perceptions of backcountry

users in Grand Canyon National Park (105). They found a significant positive relationship between numbers of encounters with others visitors and perception of crowding. However, they questioned the effect that this has on the experience, as they determined that encounters with others would have to increase exponentially to have a substantial negative effect on the experience. This finding has launched a debate regarding the methodology and relationship between crowding and experience quality. Manning noted that 1) measuring experience quality has long been problematic and 2) despite the small negative effect that crowding has on experience quality, solitude is an inherent part of the wilderness experience and the opportunity for that type of experience should be protected (106).

There have been several other crowding studies that examined antecedent variables. A study on river floating reported that the number of encounters with others that the respondents expected versus the number they actually encountered affected visitors' perceptions of crowding (2). The same study reported that perception of crowding was also related to goals; those respondents who sought solitude were bothered more by encountering others than those who were not seeking solitude. Tarrant, Cordell and Kibler also reported that preferred and perceived encounters were related to perception of crowding, but found that it was dependent on several other factors (107). The location of the encounter was related to activity, as kayakers felt significantly more crowded than rafters did while on the river. There was no difference between rafters and kayakers at the put-in point. This suggests that kayakers have a lower acceptance of encounters in the backcountry down river than the frontcountry put-in point. The type of users encountered was also found to affect perception of crowding, as visitors were less opposed to encounters with users performing the same activity. In other words, kayakers had a lower preference for encountering rafters, and rafters had a significantly lower level of preference for encounters with kayakers. Together, these studies reinforce the importance of obtaining visitor input and understanding antecedent variables when setting policy for outdoor recreation areas.

Researchers have recently begun to examine these issues in frontcountry settings. This may be the result of increasing visitor complaints about places that are "too crowded" (108). A study conducted in Arches National Park utilized a visual methodology (photographs) to measure perception of crowding in a frontcountry area (109). The purpose of the study was to determine the effectiveness of photographs for measuring crowding norms. The researchers suggested that this visual method was a more valid measure of the number of encounters in a high-use area. Respondents were asked to rate the level of acceptability for a photograph of Delicate Arch; they used 16 photographs, each with a different number of people in the scene. They found a strong relationship between the number of visitors in the photographs and the level of acceptability as rated by respondents. However, crowding studies in frontcountry areas are scarce so it remains to be determined if frontcountry visitors hold the same concerns as backcountry users (e.g. desire for solitude), or how they may react to attempts by management to control crowding. In the backcountry, for example, managers have utilized permits to reduce crowding. Finally, a frontcountry study in Acadia National Park reported that antecedent, or situational, variables such as the level of use (congestion) on a particular carriage road, influenced perception of crowding (108).

Two other studies have examined crowding in more developed settings. The first examined perception of crowding at an art festival in State College, PA. The researchers found that perception of crowding was more dependent on situational variables (e.g. expectations) than

actual density (110). However, Budruk, Schneider, Andreck and Virden found a significant relationship between density and perception of crowding at the Arizona–Sonora Desert Museum (111). Additionally, they found a relationship between perceived crowding and satisfaction at the museum.

As indicated above, crowding can lead to various coping behaviors. Alternative and intelligent transportation systems include tools that may be employed as coping behaviors in regard to crowding; therefore, it is important to consider the relationships between perceived crowding and attitude toward and intent to use these tools to determine potential management strategies that may reduce crowding.

2.2.5. Congestion

As mentioned in Chapter 1, congestion is a common term in the transportation literature, although not typically defined in psychological terms. As congestion is a possible outcome of cooperative behavior (e.g. lots of people in the same place at the same time), it is one factor that may be evaluated when assigning attitudes toward that behavior (see Figure 2-3). In other words, since reduction of congestion is one of the benefits of ITS, attitude toward ITS may be influenced by an evaluation of this outcome.

Higher use levels have led to a plethora of studies regarding recreational carrying capacity. Wagar's landmark piece introduced the concept of social carrying capacity into the recreation field (14). Prior to that it had been largely a biological concept. Social carrying capacity is based on several factors (15). The first is that the presence of others may add to or detract from visitor satisfaction, depending on the goals for that experience. Secondly, the elements of an encounter such as location, frequency, and type play an important role in visitor satisfaction. Third, to examine carrying capacity there must be clearly stated goals. Finally, management needs to emphasize outputs, such as experience, rather than inputs such as use levels. Thus, antecedent variables such as goals and expectations for an experience are believed to play a critical role in satisfaction.

The relationship between physical carrying capacity (congestion) and social carrying capacity (crowding) can be viewed by examining the response of various disciplines. The transportation field has traditionally responded to physical carrying capacity problems by increasing capacity. They build more roads or make existing roads bigger, and build more parking lots. This approach had been adopted by the park service in the past, particularly in the 1930s and 1950s. As indicated in Chapter 1, however, managers have been trying to find solutions that do not involve an increase in infrastructure. Similar to crowding as discussed above, ITS and ATS tools may be implemented as a form of coping. The following sections discuss this issue further.

2.2.6. Coping with Congestion that Leads to Crowding

Visitors often employ coping behaviors to combat the negative effects of perceived crowding such as stress and anxiety (9). Coping behaviors have been explained as "behaviors utilized in a proactive way to control conditions (17)." Intrinsic to coping behaviors is the decision process; visitors are able to choose whether and/or how to cope with any perceived crowding. If managers

can understand what visitors intend to do, and the role that information plays in this process, they can manage the visitor experience more effectively.

There are three commonly cited coping behaviors studied in outdoor recreation: rationalization, displacement, and product shift (83). Rationalization is the process by which people report high satisfaction regardless of conditions as a way to justify their participation. Displacement was defined by Anderson as "the outcome of a decision to change behavior and is caused by adverse changes in the recreation environment" (112). There are several types of displacement that can occur. Temporal displacement may involve visiting parks in different seasons, on different days, or at different times of the day. The other two types of displacement are spatial: intra-site displacement involves users who are displaced from one part of a park to another, and inter-site displacement involves users who are displaced from the park to another setting altogether. Intrasite displacement may include Shafer and Hammitt's micro level of coping, which involves behavior modification, "an experiential control of on-site conditions rather than simply avoidance reaction" (17). Examples of such behaviors are avoidance of others on site and planned encounters with others through choice of entry points and routes taken in an area. The third coping behavior is product shift, a "change in the definition of the experience" (113).

Recent studies show the relationship between environmental conditions (e.g. crowding) and employment of coping strategies such as displacement. A study by Miller and McCool found that higher levels of stress were related to coping that involved a change in the environmental condition (114). This could include the adoption of tools such as ATS or ITS to mitigate the negative effects of stress (e.g. as caused by congestion). Manning and Valliere found that coping strategies employed on the carriage roads of Acadia National Park included spatial and temporal changes by almost half or more of the respondents (115). Hall and Shelby also found that both temporal and spatial displacement strategies were employed in response to crowding and management conditions at a developed reservoir (116).

Coping behaviors in response to congestion have also been examined in the transportation field. A key finding is that travelers implement coping behaviors for many reasons other than simply avoiding congestion. Personal considerations, such as increased time with family, can account for congestion avoidance behaviors (18). In other words, implementing coping behaviors to avoid congestion can increase the time available to do other things, and is not merely a way of avoiding the aggravation of congestion.

Several approaches have been taken over the years to address the issue of crowding and its influence on experiences in wilderness or backcountry areas. The ways that information is provided to visitors for use in decisions related to access points, day use, activities or campgrounds are of interest here because ITS is designed to improve efficiency in order to increase satisfaction. Indirect methods such as communication are preferable in backcountry areas as they are seen as nonauthoritarian and allow visitors to make choices rather than being regulated (117). Communication via personal contact and brochures was used to disperse campers away from a heavily used meadow site at Shining Rock Gap (118). The use of a computer program to provide information intended to disperse trail users in Rocky Mountain National Park was tested by Huffman and Williams (119). They found that while visitors used both brochures and the computer, the computer program was more effective in dispersing

backcountry use away from trails with higher use levels that caused greater ecological impacts and adversely impacted the visitor experience by reducing the opportunity for solitude.

As indicated above, indirect methods such as information dispersal and education are favored in backcountry areas. ATS and ITS can both be used as an indirect approach to managing visitors, rather than regulating the number of visitors. As mentioned in Chapter 1, alternative transportation systems and changes in infrastructure (e.g. reduced parking spaces) are two of the approaches attempted in recent years to address higher levels of use in frontcountry areas of national parks. Reducing the number of available parking spaces at a site can reduce crowding at that site if visitors bypass the site when the parking lot is full. This way, the number of people at the site is limited to the number that can fit in the vehicles that are in the parking lot.

The use of shuttle buses, trails or greenways, rail systems, passenger ferries and tour boats can disperse visitors to ease congestion and create a quality experience. When optional, shuttle systems are an indirect management tool. The National Park Service views improved facilities and transportation systems as necessary components of visitor use management in their mission to provide visitor enjoyment while protecting park resources (120). The National Park Service refers to alternative transportation such as shuttles, buses and boats as Visitor Transportation Systems (VTS); there are over 62 Visitor Transportation Systems in the national parks (121). Some of the systems, in addition to the transportation systems mentioned in Chapter 1, are the shuttle systems in Bryce Canyon and Grand Canyon, a railroad in Cuyahoga Valley National Recreation Area (NRA), and trolleys at Lowell National Historic Park and Adams National Historic Site. In a study examining displacement in Yosemite Valley, 35.3 percent of respondents believed that a park and ride option in the valley was a good idea or had beneficial consequences (122). Additionally, 12.7 percent thought it was a good idea only if certain conditions (e.g. inexpensive, convenient) could be met, 2.7 percent thought it was a bad idea, and 10.1 percent expressed a preference for their own transportation and flexibility. Therefore, ATS has the potential to improve the visitor experience.

As introduced earlier, intelligent transportation systems are another way to address congestion issues in national parks. As an information-based approach to management, ITS is an indirect management tool. ITS tools include electronic message signs, use of global positioning systems (GPS) to track vehicles such as shuttles, and use of the Internet to provide up-to-date information for visitors. At a workshop in June 2002, transportation and national park experts agreed that the four most important issues with possible ITS solutions are: 1) provide driver information about roadway conditions to alleviate congestion; 2) provide information that allows visitors to make informed decisions about transit; 3) provide accurate, real-time information such as traffic, weather, and park conditions (e.g. openings and closings); and 4) use information systems to direct visitors to less congested areas (27). Furthermore, in addition to improving transportation safety and efficiency, ITS is also intended to "enhance the visitor experience and contribute to the preservation of park resources (24). Thus, not only are managers examining ITS tools as a potential coping device for visitors, they are considering the use of these tools to enhance the visitor experience.

The transportation field recognizes user behavior as a critical aspect in the deployment and effectiveness of intelligent transportation systems (123). Moreover, antecedent factors such as the purpose of the trip, time and length of trip, and available route choices, as well as user values

and attitudes, will affect whether ITS tools are utilized (124). Frayer and Kroot examined user perception of various ITS tools in regard to their ability to meet user needs, finding some ITS tools are viewed more positively than others (125). In particular, en-route driver information systems were viewed unfavorably, although it should be noted that considerable advances in GPS technology, such as improved satellite accuracy and coverage of more geographic areas, have been made in the last several years. Reaction to traveler services information was mixed, and was partly dependent on user access to auto clubs. With the increased availability and use of the Internet, this tool should also have improved in the last several years. In fact a study by Noonan and Shearer indicated that pre-trip information systems such as the Internet are reliable and performing well (126).

A study examining tourists' use of ITS in the Branson, Missouri area and in northern Arizona (i.e. Grand Canyon region) found several factors that affect use of ITS, with differences between the semi-rural (Branson) and rural (northern Arizona) areas evident for several factors (127). The first factor, distance traveled, determined the type of information sought; general area information was obtained by those further away (often via the Internet) while detailed information (e.g. hotel and restaurant information) was more important to visitors once in the area. There was no difference between visitors to the two areas. A second factor, previous experience in the area, had a varied effect. Repeat visitors to Branson had more knowledge of how to get around the area and avoid the congested times of day, while experienced northern Arizona visitors wanted information on new secondary sites. Both groups also expressed a need for information on the third factor, season and weather. Harsh winter weather in northern Arizona creates the need for weather advisory and road condition updates, while peak season use (e.g. Christmas shopping) is a concern in the Branson area.

Other factors include the destination's place in the scope of their trip, availability of alternate sources of information, users' comfort level with technology, and users' travel planning style. Few differences were recorded between visitors to the two areas. The exception, however, is the technology level of visitors. Visitors to the Branson area made little use of the Internet, while northern Arizona visitors made extensive use of this tool. This could have implications for managers in regard to the potential for ITS in rural and urban parks.

2.3. Research Questions

The preceding discussion centers on the importance of crowding and congestion in outdoor recreation, as well as ways to cope with these problems. Several antecedent variables have been tied to perception of crowding. Further, TPB studies have shown that preferences, attitudes and perceptions are related to behavior, as are several antecedent variables. This literature provides the basis for this study, which examines visitor attitudes and intentions in regard to ATS and ITS technologies as coping tools in national parks. More specifically, this study investigates the relationship between antecedent variables (e.g. past and current behavior and perceived conditions), attitudes (appropriateness), and intent to behave (likely to use). See Figure 2-4 for a summary of these relationships. The following research questions and hypotheses will address these relationships more specifically.

2.3.1. Research Question One

1. What, if any, differences exist between visitors with differing antecedent variables in regard to attitudes toward planning tools?

The purpose of this question is to determine if there is a relationship between antecedent variables and attitudes toward traditional, ATS, and ITS policies and facilities. Leisure research has focused on a number of differences between visitors as a way to increase understanding of visitors. Type of park visited, level of experience, perception of crowding, importance of safety, and importance of congestion are some of the variables addressed below. This is important in order to understand how to manage or administer recreation services for various user groups. It may also be important, as discussed above, in helping researchers to better understand the factors that lead to various behaviors. In addition to the basic demographic differences, there are several variables that have been examined in outdoor recreation including experience (43, 84, 85, 128), and perception of crowding (2, 3, 4, 111). There are two tiers of antecedent variables of interest in this study. The first group includes the external antecedent variables such as type of park being visited, amount of past experience, and the level of current use of ATS and ITS facilities. The second tier includes internal antecedent or perceived condition variables, such as perceptions and importance of crowding, congestion and safety. Second tier variables may be examined as dependent on those in the first tier, or as independent variables that may influence attitudes toward and intent to use ATS and ITS applications (see Figure 2-4).

Type of Park: Urban vs. Rural

One of the primary antecedent variables to be examined is the relationship of visitors to urban and rural parks. This study includes park units in both urban and rural areas, which will enable an examination of any differences between the way visitors to these different types of parks perceive the use of traditional travel planning tools, ITS information and ATS at the respective sites. Few studies have focused on a comparison of these two types of parks. It is common in the outdoor recreation literature to see crowding studies conducted in regard to wilderness users. Manning suggests that this is because of the assumption that wilderness involves an opportunity for solitude (83). In a discussion of normative standards in regard to crowding the same assumption regarding solitude is granted to backcountry areas (109). However, this same study notes that this assumption cannot be applied to frontcountry areas of heavily used national parks. However, if one assumes that the normative definition of crowding in the frontcountry of a rural park is expected to be different from the backcountry, variations in the normative definition of crowding may also exist between the frontcountry areas and urban parks.

One study that directly compared rural and urban parks was conducted by Ewert and Hood (129). These authors explored the differences between visitor characteristics, trip characteristics, and motivations between urban-proximate and urban-distant wilderness areas. They found a significant difference in level of experience, with the visitors to the urban-distant wilderness exhibiting higher levels of experience. They also found a significant difference in length of stay, with visitors to urban-proximate areas more likely to be day users. Finally, they found that urban-proximate wilderness users were more tolerant of encounters with other users than urban-distant wilderness users. It is possible that visitors in an urban-proximate park may also have been more likely to accept urban systems including ATS and ITS technologies. It is also possible

that a lower tolerance for encounters would lead to a greater preference for ITS applications because they could help visitors cope with encounters through detailed trip planning. For example, in the Branson (urban-proximate) – northern Arizona (urban-distant) analysis the urban-distant visitors used the Internet more than urban-proximate visitors (127). Thus, those who traveled to the rural area used the Internet more than those who visited the urban area. This may indicate a difference in level of planning used for different types of experience (e.g. distance and length of stay). Despite this finding, the more prevalent existence of technology such as electronic message signs, and alternative transportation such as buses, raises the possibility that these tools would be more acceptable in an urban-proximate rather than rural-proximate park. Thus, the following hypothesis is proposed.

Hypothesis 1a: Visitors to the urban park will have a more positive perception of ATS and ITS tools in national parks than visitors to the rural park.

Level of Experience

Concepts such as specialization and experience use history support the idea that there is a difference between individuals with different levels of experiences. The understanding behind this relationship is that a person with past experience is more likely to have an attitude related to behavior than a person with no previous direct experience (130). This indicates that there will be more consistency between attitude toward a park and level of experience at that park. Furthermore, a repeat visitor to a park is more likely to have an attachment to that park and, therefore, may possibly have a greater level of concern about changes such as ITS and ATS facilities to that park than visitors arriving for the first time. This relates to the purism concept, which "addresses congruency between attitudes toward wilderness use and the policy determined appropriate by managing agencies and the U.S. Congress" (78). Further, they note that purism values are developed over time; therefore, they are more likely to exist in visitors with previous experience at a park. As indicated by experience use history studies (see earlier discussion), people may have experience at a particular park and at parks in general. In this study, past experience has several additional elements, as it includes past experience with technological items such as computers, GPS, and personal digital assistants (PDA), past experience with these items in national parks, past experience with public transportation, and past experience with public transportation in national parks. Additionally, current level of use of ATS and ITS tools is a common variable examined in the information technology literature, and is similar to the experience literature in the leisure discipline. The Internet has been identified as a potential tool for providing information about tourism and recreation (131). Information technology research has identified experience as part of the "level of sophistication" factor (132). Further, Dishaw and Strong propose that an experienced user will only choose tools that fit a particular task, and that technology tools that do not offer a significant benefit will not be employed (133). Therefore, it is important to understand the extent to which past experience, with regard to several different variables, influences attitudes toward and intention to use ATS and ITS. Finally, as discussed earlier in this chapter, experience with technology or other innovative tools is often positively related to adoption of other innovative tools. Thus, the following hypothesis is proposed.

Hypothesis 1b: There will be a positive relationship between amount of experience and attitudes toward the appropriateness of ATS and ITS tools in national parks.

Perception of Crowding

An internal antecedent variable, visitor perception of crowding, has been covered extensively in the backcountry literature. Crowding norms have been based on a variety of factors including motivations, experience, attitudes and demographics (134). A study on river floaters by Ditton, Fedler and Graefe found that perception of crowding was related to visitors' expectations, preferences, and previous experiences (2). It has also been shown that perception of crowding is related to another antecedent variable, past experience (135). Further, the perception of crowding has been found to influence coping behaviors such as displacement and product shift (136, 137). Intrasite displacement was more common in the Apostle Islands study, indicating that tools such as ITS and ATS tools may be a good fit for natural resource areas (136). Furthermore, one of the factors related to customer demand for ITS technologies is level of congestion (124).

Hypothesis 1c: There will be a positive relationship between level of perceived crowding at a park and the perceived appropriateness of ATS and ITS tools in national parks.

Importance of Safety

A second internal antecedent variable is safety (see Figure 2-4). Users have identified ITS tools as a way to increase safety (125), as have engineers (24, 124). It is important to determine the extent to which safety is a concern to visitors to NPS units, and whether this concern may lead to use of ITS and ATS tools. If visitors associate ITS and ATS tools with an increase in safety, then they would be more likely to adopt these tools as coping mechanisms.

Hypothesis 1d: Visitors who feel that safety is more important will have a more positive view of ATS and ITS tools in national parks.

Importance of Congestion

The third internal antecedent variable is importance of congestion (see Figure 2-4). Perception of travel efficiency relates to the perception of traffic flow through a national park unit. Lappin found that the desire to travel efficiently was one of the characteristics of users of advanced traveler information systems (ATIS) (124). These users are attracted to the ATIS systems because they enable the traveler to reduce stress, avoid congestion and save time. Thus, as with safety, those who associate these tools with improving conditions are most likely to consider them acceptable in national parks.

Hypothesis 1e: Visitors who feel that congestion is more important will feel that ATS and ITS tools are more appropriate in national parks.

2.3.2. Research Question Two

2. What is the relationship between attitude toward traditional, ITS, and ATS travel planning tools in national parks and visitors' intentions to use different types of ATS and ITS travel planning tools while in the study parks?

This section addresses the relationship between visitors' attitudes toward the appropriateness of travel planning tools and visitors' intentions to use travel planning tools in a national park. Many studies across disciplines have found support for the intention-behavior causal relationship. Warburton and Terry found that the TPB model including the intention-behavior link was supported in a study regarding volunteer behavior (138). In this case, intention was predicted by all three of TPB's key variables, subjective norm, attitude, and perceived behavioral control. As mentioned previously, Mummery and Wankel found support for TPB, including the intention-behavior link (53). Another exercise study used TPB to examine professional management personnel's exercise intention and behavior, finding support for both the attitude-intention link and the intention-behavior relationship (139). The recycling study mentioned earlier also showed support for the intention-behavior link (44). Finally, support for TPB's intention-behavior link was shown in a test designed to predict cannabis and alcohol use (140).

Hypothesis 2: There will be a positive relationship between attitude toward ATS and ITS in national parks and intent to use ATS and ITS while at the study parks.

2.3.3. Research Question Three

3. Do visitors to national parks prefer to use the same transportation and travel planning tools before arriving at the study parks and while at the respective study parks?

It has been stated that outcomes of behavior are the result of both the behavior and other extraneous factors (31). For example, use of alternative transportation at a park may be the outcome of the perception of crowding and belief that use of ATS will improve the experience, or it may be the outcome because a personal vehicle was not available. If behaviors such as use of personal vehicles can lead to congestion, then it follows that behaviors such as use of public transportation can lead to less congestion. Further, if intent to behave is a strong indicator of behavior, then it is important to understand visitors' intentions regarding behaviors that may affect crowding and congestion levels at national parks, as well as the factors that lead to those intentions. In question one, antecedent variables were examined in relationship to attitude. In question two, attitude was examined in relationship to intention. In question three the focus is to determine which ITS and ATS tools visitors are likely to use during the trip planning process. This will be done to help inform park management about the potential use of these items at different trip planning stages (e.g. before arriving at the park or at the park).

Intelligent transportation systems involve the use of multiple media types. The Internet, interactive phone systems, radio, and traveler information kiosks are all used to relay information to travelers. In order to understand the effect that various media have on the park visitor, it is necessary to understand which of these media types they are willing to use. It is also important to know which traditional information sources, such as guidebooks or word of mouth, that visitors use. A study at Acadia National Park found that visitors preferred different forms of media at different stages of their trip. About half of the respondents used the Internet or travel guides to plan their trip before leaving home. Slightly less than half of the respondents used previous experiences of their own or of people they knew to plan their trip (141). Almost half of the respondents used visitor centers and printed materials when en-route to the park. Additionally, over 30 percent of respondents said they would prefer to obtain information from the radio while en-route, while 21 percent said they would prefer electronic signs. While at the park the majority

of respondents preferred to use guidebooks, park visitor centers and people in the area for obtaining information. They also indicated that kiosks, computers in hotel lobbies, and chambers of commerce were good sources of information once in the area. Thus, the following hypothesis is based on the premise that ITS tools such as the Internet are more likely to be used before arriving at the park while traditional travel planning tools are more likely to be used at the park.

Hypothesis 3: Visitors to GGNRA and SEKI will be significantly more inclined to use ITS tools before arriving at the park than once in the park. There will be a greater preference for ITS tools before arriving at the study parks than there will be at the study parks.

3. METHODS

3.1. Study Sites

The Western Transportation Institute (WTI), California Department of Transportation (Caltrans), Texas Transportation Institute (TTI) and the Recreation, Park and Tourism Sciences (RPTS) Department at Texas A&M University worked together to determine the state of transportation in and around the national parks in California, and the effect that transportation has on the visitor. Members of the research team, as referenced below, were drawn from these agencies. Preliminary meetings with Caltrans, WTI, TTI, RPTS and the NPS were held to determine which of the national parks in California to use for this study. A report analyzing transportation, visitation, and congestion problems at major national parks was compiled by WTI to help in this process (142).

An urban park, Golden Gate National Recreation Area (GGNRA), and a rural park, Sequoia and Kings Canyon National Parks (SEKI), are being used for this study. This will allow an examination of the relationship between the way visitors make travel choices and the type of park they are visiting. GGNRA is a large park unit located around the San Francisco Bay area. This urban park encompasses over 75,000 acres of land and water, including 28 miles of coastline, and receives approximately 15 million visitors per year. SEKI is a rural park encompassing 854,741 acres in the Sierra Nevada of central California. Much of the park is backcountry as 80 percent of the park is accessible by trail only. Both access and activities available at GGNRA and SEKI are vastly different, and will allow for comparisons among a variety of visitor groups in relation to ATS and ITS applications (143).

3.2. Survey Development

Several outreach meetings were held with park stakeholders to determine relevant issues for each site. These meetings provided information on visitor groups, key access points, and patterns of visitation. The outreach meeting at Sequoia and Kings Canyon was held at Park Headquarters on November 14, 2001. Meeting attendees, in addition to the research team and Caltrans' representatives, included representatives from Sequoia and Kings Canyon National Park, Sequoia National Forest, Fresno Council of Governments, California Division of the Federal Highway Administration, and the Three Rivers & Lemon Cove Business Association. Several stakeholders were unable to attend the meeting, including local Chambers of Commerce, Hume Lake Christian Camp, and regional planners from Tulare, Kings and Kern Counties. Topics covered in the opening roundtable included an overview of the park, current transportation projects (e.g. San Joaquin Valley Regional ITS plan, installation of a changeable message sign on State Route 180), relationship of Sequoia National Forest to Sequoia and Kings Canyon National Park, trade-off between quality of life and economic development in the local communities, need for the park to become involved in the local planning process (as opposed to routing everything through NPS Denver Service Center), transportation challenges (e.g. weather, communication limitations, parking, funding sources), and types of information needed to implement a plan (e.g. where to locate shuttle stops). The survey process was also explained to the stakeholders at this meeting.

The outreach meetings for Golden Gate National Recreation Area were held on November 15 and 16, 2001. The meeting on November 15 included, in addition to the research team and Caltrans, representatives of Golden Gate National Recreation Area, San Francisco Municipal Transit (MUNI), Federal Highway Administration, Metropolitan Transportation Commission (MTC), San Francisco Department of Public Transportation, Marin Department of Public Works, and Golden Gate Bridge, Highway and Transportation District. Topics covered in the opening discussion included regional ITS architecture in process, size and logistical issues of the park, particularly from a research standpoint, visitation, need to distinguish between visitors and travelers, and the importance of pre-trip information for GGNRA visitors. The roundtable covered current transportation projects, transit needs city wide, FasTrak (a pre-paid electronic card placed in vehicles that automatically deducts the toll charge when passing through a toll gate), congestion areas within GGNRA, ferry system, and parking issues. The need to distinguish between GGNRA access and regional park access was recognized. Challenges for GGNRA were identified as parking, congestion, State Route 1 corridor, need for travel time and parking lot status, Muir Woods and Ft. Baker congestion problems, and possible solutions. The purpose of the Caltrans study and the survey process were explained to the group as well.

The November 16 meeting was held for citizen groups; attending were representatives of GGNRA, Golden Gate National Parks Association, Fort Mason Foundation, and Presidio Trust. Several invited stakeholders were not in attendance, including California Highway Patrol, NPS Park Police, Crissy Field Council, convention and visitor bureaus, and Headlands Park Partner Council. Roundtable discussion focused on major challenges, current projects such as valet bike parking at Crissy Field, parking applications of ITS, need for ITS applications to be aesthetically consistent with the National Register of Historic Places, the Discovery Shuttle, parking congestion and the need for reliable visitor counting systems. Again, the Caltrans project and survey process were explained to the attendees.

In addition to the outreach meetings, the research team reviewed visitation data, results of previous studies from each park, transportation patterns for each park, and types of access for each park to aid in development of the survey instrument. Finally, a literature review of previous ITS projects in national parks, as well as ITS in general, was compiled to ascertain relevant topics and to review how the potential for ITS implementation had previously been measured (143).

It was decided that the most complete information could be gained by surveying visitors during three different months, representing off-peak, shoulder, and peak seasons. To cover these seasons at the two parks, surveys were distributed in March, May and July, 2002. Prior to the March distribution, the attitude and usefulness scales were tested on a class of 80 students in the RPTS Department at Texas A&M University. Adjustments were made to several items as a result of this test. It was foreseen that the March survey round could be used as a pilot test, with further adjustments to be made before the distribution of surveys in May and July.

The first survey (for March distribution) included eight sections. The first section covered trip characteristics such as origination point and distance traveled, mode of transportation used to get to the park, level of crowding in the park, the importance of congestion related items, type of accommodations, location of accommodations, length of stay, number of people in the party, and other parks visited on current trip.

The second section covered park use experience, which included the number of times respondents visited the park previously, whether or not they intend to return, and other national parks visited recently.

The third section addressed the travel planning process for the current trip. Some of the items included in this section were: the sources used to plan the trip (guidebook, Internet, word of mouth, etc.), if and how reservations were made, when the information was obtained (before trip, en-route, at park), and what sources respondents believed were most useful in planning the trip.

The fourth section asked respondents to rate their attitudes on a number of items. A five-point Likert scale was used to measure their attitudes toward various information media such as tourbooks, park rangers, electronic message signs, and various modes of transportation such as shuttle service in the park, and bike and ride opportunities. This section also asked participants to gauge the perceived level of importance of preservation as a purpose of the park.

The fifth section was designed to assess the technology skill level of the respondents, as well as their access to different types of technology. This includes whether or not they have access to a computer and/or the Internet at home and at work, if they own a cell phone, and if they own a PDA.

Section six asked respondents about their use of transportation for both everyday use and while traveling in national parks. Respondents were also asked in this section to explain why they do not use public transportation and various forms of information media (e.g. PDA, GPS).

Section seven asked respondents how and when they obtained various types of travel planning media. Respondents were asked to complete a five-point Likert scale for both how useful they felt each media form was for national parks, and how likely they are to use each form of information media for planning a trip specifically to GGNRA or SEKI.

Finally, section eight covered general demographics including gender, race and ethnicity, language spoken at home, education, income and employment. The race and ethnicity items were drawn from the National Park Service's Visitor Services Project format. Additionally, the last page invited respondents to share any other comments they had.

The response rate for the pilot study in March was 27 percent for GGNRA (n = 58) and 56 percent for SEKI (n = 88). According to Gary Machlis, Chief Social Scientist for the National Park Service, a 20 percent return rate differential between and urban and rural park is to be expected (144). As a result of the disappointing return rate the research team decided to alter the survey to make it shorter and, hopefully, more respondent friendly, thus yielding a higher response rate. The changes resulted in the same number of sections; only those sections that were changed are described below. Note that the section numbers correspond to the March survey; the sections were moved in the May survey to fit the information to twelve pages. See Appendix A for the pilot study survey instruments and Appendix B for the revised survey instruments used in May and July.

Sequoia and Kings Canyon National Parks Section 1. Fewer options were provided under question one, which asked respondents to indicate the other parks or tourist sites they had visited this trip. In the March survey Mammoth Mountain and Devils Postpile National Monument were

specific options in addition to Yosemite and Death Valley National Parks. Due to lack of response to these items, Mammoth Mountain and Devils Postpile were not offered as specific destinations in the revised survey distributed in May.

Sequoia and Kings Canyon National Parks Section 3. The scale in the March survey had a three-level time frame – before leaving home (while planning), en-route to the park, and while at the park. Due to the apparent perception of repetitiveness by the respondents and the need to shorten the survey, we changed this to a two-level time frame – before arriving at the park and while in the park. "Did not obtain / not applicable" was also added as an option to enable us to clarify respondent intent.

Sequoia and Kings Canyon National Parks section 4 (also section 4 in GGNRA survey instrument). In an effort to shorten the survey, the attitude/appropriateness scale was shortened by removing some seemingly redundant or less important items from the scale. The items that were removed are "talk to park employee to obtain travel information" (redundant to "talk to park ranger" and "calling park ranger"); the two items referring to hotel and campground information kiosks were eliminated, as this is viewed as an outside the park issue, particularly at GGNRA; the two shuttle options and one public bus option that included next time arrival and departure information were eliminated as there was little difference between these items in the March results. Additionally, "use travel agent to obtain park information," which had been included in the GGNRA survey, was eliminated. Additionally, the items included in the scale were resorted to mix ATS, ITS, and traditional items in a more random fashion. This was done in an effort to prevent response bias.

Sequoia and Kings Canyon National Parks, and Golden Gate National Recreation Area Sections 5 and 6. The technology and transportation items which asked respondents to indicate which media sources and transportation options they use when planning a trip and the reason they do not use certain items was combined into one scale for the purpose of simplicity and making the survey appear shorter.

Sequoia and Kings Canyon National Parks, and Golden Gate National Recreation Area Section 7. The March survey asked respondents to explain how useful the various sources of information and types of transportation were for planning a trip to and traveling in national parks in general. The second scale asked respondents to rate how likely they would be to use these types of items specifically for planning a trip to or traveling in GGNRA or SEKI. Due to the repetitiveness of the responses, the perception by many that the two scales were the same (as determined by comments written on the page by respondents), and the need to shorten the survey the "usefulness at parks in general" scale was eliminated. Additionally, the likeliness scale for GGNRA/SEKI had a three-level time frame – before leaving home (while planning), en-route to the park, and while at the park. Again, due to the apparent perception of repetitiveness and the need to shorten the survey, this was changed to a two-level time frame – before arriving at the park and while in the park. "Does not apply" was also added as an option to help clarify respondent intent. This resulted in a change to the hypothesis in question three which had originally tested intent based on three levels (before leaving home, en-route, and at the park) and for the final analysis was tested based on two levels (before arriving at the park and at the park).

Sequoia and Kings Canyon National Parks, and Golden Gate National Recreation Area Section 8. The general information section was altered slightly to correct editing problems with the March survey. "Age" was added to the SEKI survey; it was already on the GGNRA survey. The order of several items was also corrected to ease data entry. Finally, the ethnicity item, which had been copied from the NPS Visitor Services Project, was altered (145). The question asking "What ethnicity are you?" with two responses (Hispanic or Latino / not Hispanic or Latino) was eliminated. The question, "What race are you?" remained in the survey, and contained the various race and ethnicity options.

3.3. Sampling

The sample was drawn from the visitors at each park during the weeks of March 10-16, May 19-25, and July 14-20, 2002. There were three people on the survey distribution team in March: one stationed at Sequoia and Kings Canyon National Parks, one distributed surveys at Muir Woods on March 10 and 16, and one covered Stinson Beach all week (Sunday through Saturday) as well as Muir Woods on the weekdays. There were four survey team members in May. On May 19 and 25 one team member was stationed at Muir Woods and one was stationed at Kings Canyon. Additionally, one team member was stationed at Stinson Beach all week and also covered Muir Woods on the weekdays, and one team member stationed at Sequoia all week that also covered Kings Canyon on the weekdays. The July survey team consisted of four team members, one at each location for the entire week. The team member stationed at Muir Woods in July covered the park Sunday through Tuesday, Thursday and Saturday. That person did not work on Wednesday, and worked at Stinson Beach on Friday to help ensure that as many surveys as possible were distributed at this location, which received the lowest visitation and highest refusal rate of the sites where surveys were distributed. The same people were used to the extent possible to ensure consistency across survey distribution rounds.

A systematic and stratified sample was taken by distributing a pre-determined number of surveys per day, generally between 8 am and 8 pm. Ratios of one every n^{th} person and one every n^{th} minute were used to select participants. Because the research team did not have visitation numbers, the one every n^{th} minute approach helped to ensure that respondents were selected across the day. Visitors at Stinson Beach and Muir Woods were approached in the parking lots. Visitors at Kings Canyon were approached at the Grant Grove Visitor Center, Grant Grove Village, the Grant Grove trailhead parking lot, Cedar Grove Village and Azalea campground. Visitors at Sequoia were approached at the Foothills Visitor Center, Sherman Tree parking lot, Giant Forest Museum (both inside and in the parking lot), Moro Rock parking lot, Lodgepole campground, Buckeye Flat campground and Hospital Rock parking lot. This approach was used at Sequoia and Kings Canyon National Park to ensure that a variety of visitor types were included in the sample.

The purpose of the study was explained to each on-site contact; refusals were recorded as well as repeat contacts (people who had already received the survey). A brief on-site survey was conducted to gain preliminary information including contact information for follow-up purposes. Contacts were also asked to answer a series of brief questions; the first few questions set the tone for the survey purpose, including the type of transportation used to get to the park and why that type of transportation was used. GGNRA visitors were also asked to describe where they parked their car (in the parking lot or on the roadside) as this is a critical issue at these sites. A few

questions were designed to ascertain diversity of visitors contacted, including type of group and number of people in the group, age, and whether or not they were local residents; non-locals were also asked the purpose of their visit to the area. The survey team also recorded the weather for the sampling period, and the number of cars in the parking lot at the beginning and end of each sampling shift. Non-response bias will be measured based on a comparison of the on-site questionnaires between those who do and do not return the mail-back survey.

A modified Dillman approach was employed for each survey round. This approach endorses repeated follow-up with the contacted park visitors. A postcard reminder was mailed two weeks after the end of each survey distribution period. Two weeks following the mailing of the postcard reminder, a follow-up letter with a copy of the survey was mailed. The purpose of the three-contact approach is to attempt to gain the best possible response rate.

3.4. Operationalization

3.4.1. Operationalizing and Measuring Attitudes

Attitudes toward transportation and travel planning tools in national parks were measured using an appropriateness scale. This was a five-point Likert scale ranging from inappropriate to appropriate (see Figure 3-1). Respondents were asked to indicate how appropriate they believed each transportation and travel planning tool was for use in national parks (see Appendix A for GGNRA question 23 and SEKI question 24).

The 19 items that were included in the scale were chosen for several reasons. Generally speaking, a mixture of traditional and technologically advanced travel planning tools was used to examine differences between established tools (e.g. tourbook) and more recent innovations (e.g. PDA). Several items (e.g. chambers of commerce, computerized kiosks) were chosen based on tools that had been tested in previous studies (e.g. 141, 126). Additionally, items of interest to the National Park Service and Caltrans (e.g. Internet terminals in the park) were considered.

A factor analysis was conducted to identify any underlying factors (e.g. traditional tools versus ITS). This is one of the methods used in attitude studies (17, 40, 66, 81, 146). The advantage of

I believe each of the following is …	**Inappropriate 1**	**Somewhat Inappropriate 2**	**Neither 3**	**Somewhat Appropriate 4**	**Appropriate 5**
Internet terminals in the park					
Personal Digital Assistant (PDA) to access travel information					
Optional shuttle service in park (can either park car outside park and take shuttle or drive into park in your car)					

Figure 3-1: Appropriateness Scale Used to Measure Attitudes

using extracted factors to examine the relationship of attitudes to other variables is that the data is reduced into a manageable set. Furthermore, as indicated by Stevens, it makes more sense to determine if underlying components exist rather than testing a large number of items individually (147).

3.4.2. Operationalizing and Measuring Intentions

Next, behavioral intent was addressed by asking respondents to rate how likely they were to use each of the media forms and transportation modes before arriving at the study parks (either before leaving home or en-route), and while at the study parks. This scale ranged from "not at all likely" to "very likely" (see Figure 3-2). The 28 pre-park and 28 at-park items that were included in the scale were chosen based on the same criteria as those used for the attitude (appropriateness) scale. There were more items in the intention scale than the attitude scale, including the four kiosk items. This was done as the intention scale had both pre- and at-park aspects, while the attitude scale was focused on the at-park aspect.

Principal Components Factor Analysis was also used to determine underlying components for the intention items. Separate analyses were conducted for the pre-park and at-park intent items. This is due to the focus of previous ITS in national parks studies on the different trip stages (e.g. pre- and at-park), as well as the intent of this study to address these stages as well.

3.5. Analysis

Comparison of the various antecedent variables (e.g. visitors to rural and urban parks) in relationship to attitude was conducted through the use of t-tests and one-way analysis of variance (ANOVA) tests. The t-test was used to compare two means (e.g. rural vs. urban park). ANOVA tests were used to compare means of three or more groups with a single independent variable (e.g. level of experience with national parks). The F-test was employed to compare sample variances, making it possible to accept or reject a null hypothesis (148).

Multiple regression analysis was utilized to determine which predictor variables best explain the dependent variables: attitude and intention (147). The predictor items included external (e.g. past and current behavior) and internal (e.g. perceived conditions) antecedent variables. This type of analysis has been used to discern the strongest predictor variables in previous studies regarding attitudes (e.g. 40) and motivations (e.g. 149).

How **likely** is it that you would use each of the following . … (please rate each item on a scale of 1 to 5, with 1 meaning not at all likely and 5 meaning very likely)	**Before arriving** in this park not at all likely				very likely	Does not apply	**While in** this park not at all likely				very likely	Does not apply
	1	2	3	4	5	N/A	1	2	3	4	5	N/A
Tour Book / visitor guides	1	2	3	4	5	N/A	1	2	3	4	5	N/A
Internet – other web site	1	2	3	4	5	N/A	1	2	3	4	5	N/A
In park shuttle – fee	1	2	3	4	5	N/A	1	2	3	4	5	N/A

Figure 3-2: Scale Design for "Useful" and "Likely" Items

3.6. Pilot Study

The March survey round was utilized as a pilot test for this study (see Appendix C for the complete pilot study results). Changes in length and content were noted above; these changes were made mainly in the interest of increasing the response rate. Results of the pilot study were indicative that the research questions could be addressed once the changes to the survey instrument were implemented. The survey team was successful in reaching a variety of park visitors, although poor weather prevented the distribution of all of the surveys.

While a low response rate was the main reason for altering the survey instrument, the appropriate scale items were also pared back to derive clear ITS and ATS items. A principal components factor analysis of the attitude scale ("appropriate") yielded eight components that explained 70 percent of the variance. Three of the components contain ATS items and four of the components contain ITS items. However, one of the factors contain both traditional and ITS media; factor one includes commercial TV and commercial radio as well as the electronic message sign (EMS) items. Another factor, number two, contains ATS and ITS items (public bus and automated phone system). Two factors, number five (tour book and visitor center) and number seven (talk to ranger and call ranger), contain only traditional items. Therefore, it is difficult to compare antecedent variables based on factors one and two, and factors five and seven are not ATS or ITS related. Thus, the focus will be on technology factor three (hotel and campground kiosk with computer, PDA, hotel and campground kiosk without computer, and Internet terminal in park), optional shuttle factor four (optional shuttle with arrival and departure times and optional shuttle without arrival and departure times), radio factor six (NPS radio and information radio), and mandatory shuttle factor eight (mandatory shuttle with arrival and departure times and mandatory shuttle without arrival and departure times).

ANOVA tests were used to compare means of the antecedent variables in relationship to attitude; some significant results were obtained. There was a significant positive relationship between the use of GPS when planning trips and the technology factor ($F = 7.463$, $p < .01$) and between use of the Internet when planning trips and the technology factor ($F = 10.755$, $p < .01$). There was also a significant relationship between factor six (radio) and attitude toward using informational radio when planning a trip.

The purpose of reducing the number of items in the attitude scale for the final survey instrument was to create a clearer analysis in regard to transportation and travel planning tools. For example, the items, "optional shuttle in park" and "optional shuttle with arrival and departure times" loaded on the same factor. However, the second of these ATS items had an ITS component (arrival and departure times aspect) while the first one only represented ATS. Also, the combination of traditional and ITS or ATS factors made it difficult to examine the relationship of ITS and ATS alone, unless each item was tested individually (e.g. appropriateness of Internet terminal in park, PDA, etc.). The same problem applied to examination of the relationship between attitude and intent to behave.

A summary and discussion of the results from the main study (May and July survey rounds) are provided in the following chapters.

4. RESULTS

The intent of this chapter is to review the results from the primary study, which includes the May and July survey rounds. This chapter has been organized to address the hypotheses raised in Chapter 2, along with additional findings that arose from the study. After reviewing the response rate, describing the survey participants, and presenting an overall summary of the basic (descriptive) results, the remainder of the chapter will examine the results in order to address the key findings. This includes an explanation of the factor analyses that were used to examine attitudes and intentions, as well as the multiple regression results that indicate which variables are the best predictors of attitudes and intentions. There were five key findings: 1) the relationship between attitudes and intentions; 2) the relationship between technology experience, attitude toward technology and intent to use technology; 3) the effects of park type on attitudes and intentions; 4) the relationships between ITS goals and attitudes; and 5) the differences between pre-park and at-park intentions.

4.1. Response Rate

The response rate for May and July was calculated to reflect the overall response rate and the adjusted response rate, which considers bad or missing addresses. Two hundred and forty-five of the 400 surveys distributed at SEKI in May were returned, for a response rate of 61.3 percent. However, only 351 of the 400 surveys were fully deliverable (of the original 400, 72 did not have an address; 23 of these 72 surveys were returned). Thus the return rate was calculated based on the distribution of 351 surveys, yielding a final response rate of 69.8 percent (245 of 351 surveys returned).

Using the same formula as above, the May results for GGNRA were 146 fully deliverable surveys; 74 were returned for a response rate of 50.7 percent. Additionally, given that surveys for GGNRA were distributed at Stinson Beach, largely used by locals, and Muir Woods, largely visited by non-locals, a further breakdown of the response rate is informative. The May response rates for Stinson Beach and Muir Woods respectively are 60.0 percent and 49.6 percent.

July response rates were calculated in a similar manner. There were 336 fully deliverable surveys at SEKI; 209 were returned for a response rate of 62.2 percent. There were 222 fully deliverable surveys distributed at GGNRA in July; 132 were returned for a response rate of 59.5 percent. A further breakdown of the GGNRA data shows a response rate of 45.3 percent for Stinson Beach and a 65.2 percent response rate for Muir Woods.

Given that much of the analysis is based upon the combined results of May and July, it is important to acknowledge the combined response rates. A total of 687 fully deliverable surveys were distributed at SEKI in May and July; 454 were returned for a return rate of 66.1 percent. At GGNRA, a total of 368 fully deliverable surveys were distributed; 206 were returned for a response rate of 56.0 percent. The further breakdown of GGNRA yields a 48.1 percent response rate for Stinson Beach and 58.1 percent for Muir Woods. See Table 4-1 for a complete summary of the response rates in May and July. Finally, the overall response rate (GGNRA and SEKI for May and July) is 62.6 percent; 1,055 were fully deliverable, and 660 were returned.

Table 4-1: Response Rate

		Surveys Distributed		Surveys Received		Response Rate		# w/ bad or no address that were not returned		Distributed minus bad or no address		Adjusted response rate	
May:	SEKI	400		245		61.3%		49		351		69.8%	
	GOGA	233		74		31.8%		87		146		50.7%	
Stinson Beach			40		9		22.5%		25		15		60.0%
Muir Woods			193		65		33.7%		62		131		49.6%
Total May		**633**		**319**		**50.2%**		**136**		**497**		**64.0%**	
July:	SEKI	400		209		52.3%		64		336		62.2%	
	GOGA	298		132		44.3%		76		222		59.5%	
Stinson Beach			118		29		24.6%		54		64		45.3%
Muir Woods			180		103		57.2%		22		158		65.2%
Total July		**698**		**341**		**48.9%**		**140**		**558**		**61.1%**	
Overall Total		**1,331**		**660**		**49.6%**		**276**		**1,055**		**62.6%**	

Non-response bias was checked by comparing several of the on-site questionnaire items: age, group type, group size, and type of transportation used to get to the park. Respondents and non-respondents did not differ in group size or type of transportation used. The mean group size for respondents was 4.3 and the mean group size for non-respondents was 4.6. The type of transportation (e.g. private vehicle, rental vehicle, RV) that respondents and non-respondents used was also similar. However, chi-square tests revealed that respondents and non-respondents differed significantly in regard to group type ($X^2 = 12.79$, $p < .05$). Slightly higher proportions of surveys than expected were returned by those traveling only with family (53.3 percent) or on a tour bus (65.8 percent), and slightly lower proportions were returned by those traveling alone (44.1 percent) or with friends (43.4 percent). Additionally, there was a significant difference in regard to age ($t = 8.597$, $p < .01$). Respondents were older (mean age = 49) than non-respondents (mean age = 42). The potential for these differences in group type and age to influence results is discussed in the limitations section in Chapter 5.

4.2. The Respondents

As explained above, 660 surveys were returned from both parks across the May and July distributions. The majority of these, 68.8 percent, had visited Sequoia and Kings Canyon National Parks (SEKI); the remaining 31.2 percent had visited Golden Gate National Recreation Area (GGNRA). As the bulk of the analysis is based on the combined total, it is important to understand the characteristics of the group.

Overall, 48.7 percent of respondents were males and 51.3 percent were female. The overwhelming majority (90.6 percent) was white, and most respondents (69.4 percent) were between 35 and 64 years of age. Additionally, the majority was employed full-time (53.5 percent), although the next largest group was the retirees (21.4 percent). While 26.5 percent of SEKI respondents were retired, only 10.7 percent of GGNRA respondents were retired. The majority of respondents (68.5 percent) also had at least a college degree. Most respondents earned over $40,000 per year; only 12.6 percent earned less.

Table 4-2: Demographics of Survey Respondents Who Visited GGNRA and SEKI in May and July 2002

Demographic Variable	N[1]	Percentage of Total
Gender		
Male	318	48.7%
Female	335	51.3%
Age		
Under 20	2	0.3%
20 - 34	101	15.8%
35 – 49	240	37.5%
50 – 64	204	31.9%
65+	93	14.5%
Race[2]		
Asian	23	3.5%
Black	6	0.9%
Hispanic / Latino	16	2.4%
White / Caucasian	598	90.6%
Other	14	2.1%
Employment[2]		
Full time	353	53.5%
Part time	63	9.5%
Homemaker	76	11.5%
Self-employed	79	12.0%
Unemployed	11	1.7%
Retired	141	21.4%
Student	32	4.8%
Education		
Less than 12 years	5	0.8%
High school graduate	41	6.3%
Technical / vocational school	19	2.9%
Some college	139	21.3%
College graduate	210	32.2%
Graduate or professional degree	237	36.3%
Income		
Under $20,000	24	4.0%
$20,000 - $39,999	59	9.9%
$40,000 - $59,999	107	18.0%
$60,000 - $79,999	118	19.8%
$80,000 - $99,999	98	16.5%
$100,000 or more	188	31.6%

[1] Note that the N will not always total 660 as not every respondent answered every question

[2] Percentages may not add up to 100 as respondents were asked to check all that apply

The respondents also included a large percentage of repeat visitors; over 38 percent had made one or more additional visits to the respective study parks during the previous year. Moreover, while 40.0 percent of respondents had visited three or fewer national parks during the preceding five years, 37.4 percent had visited seven or more national parks during that time. The

Table 4-3: Mean Scores for Appropriateness of Transportation and Travel Planning Tools in National Parks

Attitude items	N[1]	Mean[2]	Std. Deviation
Tourbook	650	4.8	0.54
Visitor center information kiosks	640	4.7	0.66
Talk to ranger at park	634	4.7	0.72
Talking w/friends and family	636	4.3	0.88
NPS automated phone	620	4.1	1.08
NPS radio	621	4.0	1.04
Optional shuttle	627	4.0	1.16
Park video	621	3.8	1.08
Advisory radio	619	3.8	1.12
Public bus to park	618	3.7	1.23
Call ranger	621	3.6	2.40
Commercial radio	618	3.4	1.17
Commercial TV	615	3.2	1.20
Electronic signs in parking lots	619	3.2	1.37
Electronic signs on park roads	618	3.2	1.44
PDA	597	3.0	1.15
Internet terminal in park	620	2.8	1.39
Mandatory shuttle	625	2.8	1.47
Park and bike	625	2.8	1.49

[1] Note that the N will not always total 660 as not every respondent answered every question

[2] Mean scores based on a scale of 1-5, with 1 equaling inappropriate and 5 equaling appropriate

respondents from the shoulder and peak seasons were split fairly evenly; 48.3 percent of respondents had visited the parks in May and 51.7 percent of respondents had visited the parks in July. A summary of the basic demographics is displayed in Table 4-2 (page 36).

4.3. Summary of Descriptive Data

This section will present the basic findings such as the total mean scores for the appropriateness items and the intention (likely to use) items. This information provides a basic picture that allows comparison of the attitudes and intentions of single items (e.g. appropriateness of tourbook vs. appropriateness of PDA). As can be seen in Table 4-3, the basic mean scores indicate that traditional items (e.g. tourbook and talk to ranger) are viewed as most appropriate for use in national parks. Similar results were found for the likelihood of using items, as can be seen in Table 4-4.

4.4. Measuring Attitudes Toward ITS and ATS in National Parks

As mentioned in Chapter 3, the "appropriateness" scale (see Appendix B for GGNRA question 23 and SEKI question 24) was used to measure attitude toward the objects, which are transportation and travel planning tools. A principal component factor analysis with Varimax rotation was conducted on the items included in this scale to reduce the variables into underlying

Table 4-4: Mean Values of Likelihood of Using Transportation and Travel Planning Tools Before Arriving at and at the Study Parks

	Pre-park			At-park		
Intent Items	N[1]	Mean[2]	Std. Dev.	N[1]	Mean[2]	Std. Dev.
Previous visits	522	4.4	1.12	451	3.9	1.57
Tourbook	628	4.3	1.18	579	4.3	1.16
Park web site	605	4.1	1.35	514	1.6	1.15
Friends/family	619	3.9	1.28	514	2.3	1.57
Other web site	602	3.7	1.54	515	1.5	1.03
Visitor center	595	3.5	1.61	578	4.5	1.02
Current Internet	585	3.4	1.60	491	1.7	1.29
Newspaper	611	3.4	1.41	521	2.2	1.47
Phone park	614	3.2	1.52	491	2.1	1.47
Free in-park shuttle	472	3.1	1.71	546	3.7	1.52
EMS	563	2.9	1.59	535	3.2	1.54
Hotel kiosk	607	2.9	1.58	492	2.2	1.53
Locals	600	2.8	1.53	521	2.6	1.58
Advisory radio	588	2.5	1.50	541	2.5	1.56
Cell phone	578	2.5	1.59	509	2.3	1.57
Park and ride	561	2.5	1.52	561	2.7	1.55
Terminal kiosk	591	2.4	1.52	465	1.9	1.45
In-park shuttle with fee	472	2.3	1.44	472	2.7	1.50
Computerized hotel kiosk	583	2.1	1.44	478	1.7	1.25
Chamber of Commerce	586	2.0	1.31	494	1.4	0.97
Computerized terminal kiosk	577	1.9	1.34	447	1.5	1.12
Public bus	558	1.9	1.32	558	2.0	1.37
Park and bike	544	1.9	1.35	513	2.0	1.39
Commercial TV	573	1.8	1.16	486	1.3	0.76
Commercial radio	568	1.8	1.18	497	1.5	1.01
Local access TV	568	1.7	1.14	485	1.4	0.90
PDA	491	1.3	0.84	437	1.3	0.80

[1] Note that the N will not always total 660 as not every respondent answered every question

[2] Mean scores based on scale of 1-5 with 1 equaling not at all likely and 5 equaling very likely

[3] Items are listed in descending order based on mean value for pre-park items

factors (150). A Varimax rotation with Kaiser Normalization is the extraction method recommended by Stevens (147). The initial analysis extracted five factors that accounted for 58.2 percent of the variance (see Table 4-5). However, four of these five factors included ITS items.

In an effort to derive a single factor that included more of the ITS variables, instead of separating them into several factors, additional factor analyses were performed. The second analysis was conducted using all of the variables and forcing them into four factors. This resulted in several items loading onto multiple derived factors at similar levels (e.g. call ranger loaded onto one factor at .356 and another at .335, and PDA loaded onto three different factors with loadings of .377, .356, and .271). The third analysis was run without forcing a specific number of factors, and eliminating variables that continued to load on multiple derived factors (talk with

Table 4-5: Initial Factor Analysis Results for Measuring Appropriateness in National Parks

Variables	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Commercial radio	0.839				
Information radio	0.766	0.259			
Park video	0.761				
Commercial TV	0.753				
NPS radio	0.737	0.317			
Talk to ranger at park		0.694			
Visitor Center kiosk		0.676			
Tourbook		0.558			
Optional shuttle in park		0.486		0.286	
NPS automated phone	0.418	0.471			
Call ranger	0.297	0.370			0.297
EMS on park roads			0.883		
EMS in parking lots			0.875		
Park and ride				0.792	
Mandatory shuttle				0.762	
Public bus to park	0.378			0.582	
Internet terminal in park			0.265		0.804
PDA	0.257				0.761
Talk with friends/family		0.322			0.374

friends/family, call ranger, and NPS automated phone). This resulted in five factors, with the electronic sign variables loading separately from the Internet and PDA variables. In the fourth analysis the variables were forced into three components to determine if latent variables representing traditional travel planning tools, ITS and ATS would naturally result. However, the components were not clearly defined. Some of the ITS variables loaded together (Internet, EMS, PDA), but the remaining ITS variables (e.g. information radio and NPS automated phone) mixed with traditional and transportation items.

The next approach was to remove the transportation items from the factor analysis to see how the travel planning tools would load with one another. Four components were derived but, again, several variables loaded on more than one component. This made it difficult to use the derived factors for an analysis that was intended to compare traditional and ITS tools.

It was determined that the clearest result was obtained by eliminating variables that loaded similarly on more than one factor and not forcing the items into a specific number of components (round three above). The eliminated variables included “talking with friends and family,” “call ranger,” and “NPS automated phone.” Public bus was also eliminated as it is a pre-park item and the scale is for appropriateness of transportation and travel planning tools in national parks.

The resulting factors, which explained 65.39 percent of the variance, are displayed in Table 4-6. An examination of these derived factors revealed one ATS factor (mandatory shuttle and park and bike), two ITS factors (technology and electronic message signs), and one traditional factor (visitor centers, talk to rangers, tourbooks and optional shuttle), as well as a traditional electronic

Table 4-6: Factor Analysis of Appropriateness in National Park Items Used to Measure Attitude

		Factor Loading	Eigenvalue	Variance Explained	Alpha
Traditional Electronic Media (M^1 = 3.9)			4.46	27.90	0.86
	Commercial Radio	0.844			
	Information Radio	0.771			
	Commercial TV	0.766			
	Park video	0.765			
	NPS radio	0.733			
Electronic Signs (M^1 = 3.3)			1.75	10.96	0.88
	EMS on parks roads	0.915			
	EMS in parking lots	0.903			
Traditional (M^1 = 4.7)			1.45	9.07	0.53
	Talk to ranger at park	0.676			
	Visitor center info kiosks	0.674			
	Tourbook	0.616			
	Optional shuttle in park	0.542			
Alternative Transportation (M^1 = 3.3)			1.40	8.74	0.61
	Park and Bike	0.793			
	Mandatory shuttle in park	0.769			
	Public bus to park	0.587			
Technology (M^1 = 3.0)			1.14	7.10	0.57
	Internet terminal in park	0.856			
	PDA	0.770			

[1] Mean scores based on scale of 1 –5 with 1 equaling inappropriate and 5 equaling appropriate.

media (TEM) factor that included long-established forms of electronic media. Although seemingly traditional tools, the use of media forms such as highway advisory radio (HAR) to distribute road and weather information is an aspect of an integrated ITS system. However, from the user standpoint, radios are commonplace and not considered high technology. Since the attitude of concern in this study is that of the user, this is not considered to be problematic from the viewpoint of examining visitor attitudes regarding appropriateness of these items. However, as these are considered ITS tools, it is important from a managerial standpoint. Viewed separately, the TEM factor may indicate the ability to use this less expensive aspect of the ITS system. This could yield important practical implications for park managers. Also, one of the items presumed to be ATS, optional shuttle to park, loaded on the traditional factor, perhaps indicating that this item is viewed as a traditional travel option. Optional public transit, from horse-drawn carriages to shuttle buses, has long existed in national parks and thus it is not surprising that respondents seem to consider it a traditional option in national parks.

4.5. Operationalizing Intent to Behave

Intent to behave was operationalized in the "likely to" scale (see Appendix C for SEKI question 30 and GGNRA question 29). This five-point scale (1 = not at all likely, 5 = very likely) asked

respondents to rate how likely they were to use each item before arriving at the park and while they were at the park. In order to determine underlying factors of the intent to behave scale, a principal components analysis with Varimax rotation was performed in three ways. The first was an analysis of the "before arriving at park" items (pre-park), the second was an analysis of the "at park" items, and finally, a factor analysis for both pre-park and at-park items together was performed to determine if there were underlying domains that would explain the greater picture. Multiple principal components analyses were performed to determine what, if any, underlying domains existed while attempting to maximize the variance explained. Several differences between intent to behave pre-park and intent to behave at-park emerged. While the ATS items and kiosk items loaded similarly for both the pre-park and at-park intentions, the ITS and traditional travel planning items did not represent the same domains for pre- and at-park intentions. Advisory radio and electronic signs loaded with the other TV/Radio items pre-park, but loaded as a separate component at-park. As previously mentioned, while advisory radio is an ITS tool, it is a long-established information media source, and user-friendly. Thus it is not illogical for this item to load with electronic signs, another roadside item that provides roadside information in a way that does not require the driver to have additional tools or skills (e.g. GPS). Additionally, while PDA loaded with the web and Internet items at park, PDA was removed from the pre-park analysis due to insufficient loading on any component.

4.5.1. Pre-park Intentions

Principal components factor analyses with Varimax rotations were conducted to obtain the pre-park domains. First, all items were included which produced seven factors that explained 65.0 percent of the variance, but did not produce clear underlying domains. Next the group was forced into three components in an effort to derive an ITS, ATS and traditional factor. However, no clear domains were produced and only 44 percent of the variance was explained. Several items were removed for the third analysis because they loaded on multiple factors showing no clear relationship to a given domain (chamber of commerce, cell phone, phone park, friends/family, previous visits and locals). Five factors were derived explaining 69 percent of the variance. For the final factor analysis PDA was removed, as were the two in-park shuttle items, as this is the pre-park intent scale. This resulted in five clear domains that represented 70.85 percent of the variance: TV/radio and EMS, kiosks, Internet, ATS, and traditional travel planning tools (see Table 4-7).

4.5.2. At-park Intentions

Several principal components factor analyses with Varimax rotations were also conducted to obtain the underlying domains for at-park intentions. The factor analysis to obtain at-park intention domains included all at-park items and resulted in seven factors that explained 65 percent of the variance. There was only one clear underlying domain (ATS), and several variables loaded similarly on several components (e.g. computer hotel kiosks, chamber of commerce and use locals). The next explained 51 percent of the variance and was altered by forcing all of the variables into four factors. Again, ATS was the only clear underlying domain and several variables loaded similarly onto several components (e.g. newspaper, friends/family and hotel kiosk).

Table 4-7: Factor Analysis of Likelihood of Using Transportation and Travel Planning Tools before Arriving at the Study Parks

		Factor Loading	Eigenvalue	Variance Explained	Alpha
TV/Radio and Electronic Signs (M^1 = 2.1)			5.25	30.89	0.86
	Commercial Radio	0.863			
	Highway Advisory Radio	0.766			
	Commercial TV	0.806			
	Local access TV	0.803			
	Electronic Message Signs	0.536			
Kiosks (M^1 = 2.8)			2.20	12.94	0.86
	Computerized terminal kiosk	0.873			
	Terminal kiosk	0.804			
	Computerized hotel kiosk	0.791			
	Hotel kiosk	0.790			
Internet (M1 = 3.8)			1.83	10.78	0.82
	Park web site	0.859			
	Other web site	0.847			
	Current Internet	0.790			
Alternative Transportation (M^1 = 2.2)			1.64	9.63	0.79
	Park and ride	0.833			
	Park and bike	0.793			
	Public bus to park	0.587			
Traditional (M^1 = 3.9)			1.12	6.61	0.52
	Visitor center info kiosks	0.784			
	Tourbook	0.793			

[1] Mean scores based on scale of 1 –5 with 1 equaling inappropriate and 5 equaling appropriate.

The third factor analysis was conducted after removing several variables (use locals, Chamber of Commerce, previous visits, and friends/family) and also forced the variables into four factors. The resulting components explained 54 percent of the variance but some variables (e.g. phone park) still loaded on multiple components. For the fourth factor analysis, phone park, newspaper, and use cell phone were removed, and again the variables were forced into four factors. This result explained 58 percent of the variance, with three of the four factors being more interpretable. As mentioned above, one factor had a mixture of ITS and traditional items (visitor center, tourbook, information radio, and electronic signs). Finally, the analysis was performed without forcing a specific number of components, which resulted in five factors that explained 70.85 percent of the variance. These six factors represented alternative transportation, kiosks, technology, TV and radio, EMS/HAR and traditional travel planning tools (Table 4-8).

4.5.3. Combining Pre-park and At-park Intentions

The best result in terms of variance explained (59 percent) that was obtained when combining both pre-park and at-park items within one factor analysis resulted in six factors. However, there was no clear division of pre- and at-park items, nor was there clear separation of ITS and

Table 4-8: Factor Analysis of Likelihood of Using Transportation and Travel Planning Tools at the Study Parks

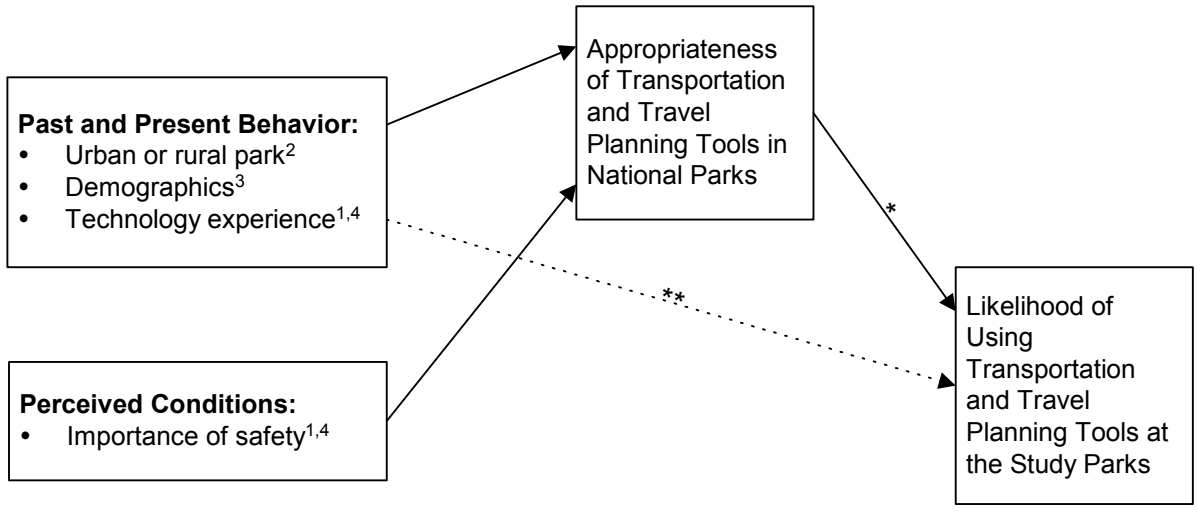
		Factor Loading	Eigenvalue	Variance Explained	Alpha
Alternative Transportation (M^1 = 2.8)			5.76	28.78	0.84
	Free in-park shuttle	0.769			
	In-park shuttle with fee	0.777			
	Park and ride	0.805			
	Park and bike	0.762			
	Public bus to park	0.728			
Kiosks (M^1 = 1.9)			2.62	13.09	0.82
	Computerized terminal kiosk	0.759			
	Terminal kiosk	0.785			
	Computerized hotel kiosk	0.738			
	Hotel kiosk	0.673			
Technology (M^1 = 1.6)			1.74	8.69	0.79
	Park web site	0.866			
	Other web site	0.865			
	Current Internet	0.618			
	PDA	0.573			
TV/Radio (M^1 = 1.4)			1.56	7.79	0.86
	Commercial Radio	0.756			
	Commercial TV	0.855			
	Local access TV	0.863			
EMS / Highway Advisory Radio (M^1 = 2.9)			1.28	6.41	0.69
	Advisory radio	0.823			
	Electronic signs	0.758			
Traditional (M^1 = 4.5)			1.05	5.24	0.55
	Visitor center info kiosks	0.721			
	Tourbook	0.819			

[1] Mean scores based on scale of 1 –5 with 1 equaling inappropriate and 5 equaling appropriate.

traditional travel planning items. This would make it difficult to analyze respondents' intentions for different stages of their trip. It is important to distinguish between respondents who will use, for example, a computer for trip planning before leaving home and at the park, and those who will use one at home but do not intend to use one in a national park. Thus, the analyses separated the pre- and at-park items, which were clearly viewed differently by the respondents.

4.6. Overview of Results

As indicated at the beginning of the chapter, there are several key findings around which the results center. These findings lend support to the relationships between antecedent variables and attitudes and intentions, as well as the relationship between attitudes and intentions (Figure 4-1). First, attitudes were the strongest predictor of at-park intentions. This supports hypothesis two which proposed that attitudes and intentions would be related. Attitudes regarding the



[1] Travel planning tools only
[2] ATS only
[3] Travel planning tools and ATS
[4] Individual independent variable level only
* Attitude was predictive of four at-park intention domains: ATS, Technology, EMS/HAR, and traditional travel planning
** Park type, and park, technology and transportation experience were predictive of at-park intent

Figure 4-1: Significant Predictive Relationships between Antecedent Variables and Attitude and Intention Factors

appropriateness of transportation and travel planning tools were predictive of four of the six at-park intentions. The first was alternative transportation, which included use of a free shuttle, use of a fee-based shuttle, park and bike, park and ride, and taking a public bus to the study parks. The second was the technology intent factor, which included likelihood of using a park web site, other web site, current Internet, and PDA devices at the study parks. Next was the likelihood of using electronic message signs and highway advisory radio at the study parks. The final intention domain that attitudes were predictive of was traditional travel planning tools, which included visitor center information kiosks and tourbooks.

Second, past experience with technology (as an individual independent variable) was related to attitudes toward technology in national parks. This supports the hypothesis that those with higher levels of experience with technology will assign a higher level of appropriateness to technology in national parks. Moreover, technology experience was also predictive of visitors' intentions to use technology both before arriving at and in the study parks.

The third key finding is that park type (urban vs. rural) is predictive of both attitudes and intentions. Urban park visitors viewed alternative transportation as more appropriate than rural park visitors, and also expressed a higher likelihood to use these tools at the study parks. This supports the hypotheses that urban park visitors will assign a higher level of appropriateness to alternative transportation in national parks and also be more likely to use these tools in the study parks.

A fourth key finding was the relationship between perception of safety and attitude. One of the perceived condition variables (importance of safety) that represents ITS and ATS concerns (increased safety is one of the goals of ITS and ATS) was predictive of attitudes toward ITS. This indicates that respondents viewed electronic signs as an appropriate coping device in national parks. However, there was not a predictive relationship between importance of safety and intention to use ITS or ATS tools before arriving at or while in the study parks.

Finally, there were significant differences in regard to pre-park and at-park intentions. This is particularly important as it lends insight to the tools that visitors may use before arriving at the study parks as opposed to those that they are willing to use once inside the park boundaries. It was clear from the factor analyses on the intention scale that respondents held different intentions for pre-park and at-park use of transportation and travel planning tools, and paired t-tests of the pre- and at-park items substantiated these differences.

4.7. Predicting Attitudes and Intentions

Linear multiple regression was utilized to determine which external (past and current behavior) and internal (perception and situational) antecedent variables were the strongest predictors of the perception of appropriateness of transportation and travel planning tools, as well as intent to use these tools at the study parks. Several groupings (blocks) were utilized as predictor variables in the regression analysis. The first five blocks represented external antecedent variables. These included demographics (gender, age, education, and income); park type, which contained the single park type (urban or rural) variable; park experience (experience at national parks and experience at the study parks); transportation experience (frequency of public transportation use and experience with public transportation in national parks); and technology experience, which was composed of the technology score (see the technology experience section under key findings later in this chapter for an explanation of the construction of technology score). The operationalization of national park and study park experience is explained later in this chapter.

The next four blocks represented the internal antecedent variables. These were: importance of congestion (importance of congestion levels on road to park and importance of congestion on trails), perceived congestion (perceived congestion of roads to park, parking lots, and on trails), perceived crowding (single item block), and importance of safety (importance of safe roads and parking lots). The final block (added to test at-part intentions), was composed of the five attitude domains (traditional electronic media, electronic message signs, traditional travel planning tools, alternative transportation, and technology). The general rule is to have 15 subjects per predictor; therefore, the use of 23 items in the regression is not problematic as the study population exceeded 400 (147).

4.8. Predicting Attitudes

The strongest predictors of attitudes were park type and demographics (external antecedent variables). Each was predictive of the appropriateness of ATS in national parks (Table 4-9 and Table 4-10). Park type (urban or rural) is a particularly strong predictor (r-square change = .052, $p < .001$) of perceived appropriateness of alternative transportation systems in national parks.

Table 4-9: Regression Analysis of External and Internal Antecedent Variables Related to Attitudes toward Transportation and Travel Planning Tools in National Parks

	Demographic Characteristics R-square Change	Park Type R-square Change	Park Experience R-square Change	Transportation Experience R-square Change	Technology Experience R-square Change	Congestion R-square Change	Imp. Of Congestion R-square Change	Crowding R-square Change	Imp. Of Safety R-square Change	Total R-square
	Attitudes									
Traditional Electronic Media	0.026	0.002	0.017	0.006	0.001	0.003	0.007	0.000	0.030	0.083
Electronic Message Signs	0.020	0.007	0.007	0.001	0.004	0.008	0.000	0.006	0.039	0.092
Traditional	0.005	0.003	0.032	0.002	0.015	0.001	0.001	0.000	0.004	0.064
Alternative Transportation	0.051 *	0.052 ***	0.013	0.010	0.002	0.024	0.013	0.001	0.005	0.168 **
Technology	0.012	0.001	0.002	0.008	0.018	0.006	0.011	0.000	0.001	0.059

* p < .05, ** p < .01, *** p ≤ 0.001

Table 4-10: Summary of Significant Individual Variables Predicting Attitudes toward the Appropriateness of Transportation and Travel Planning Tools in National Parks

Dependent Variables	Significant Independent Variables	Beta	p-value
Attitudes			
Traditional Electronic Media	None		
Electronic Signs	None		
Traditional	None		
Alternative Transportation	Park type	0.17	p < .05
Technology	None		

The underlying finding that the respondents from the urban park (GGNRA) perceived alternative transportation systems as more appropriate than did the SEKI respondents indicates a greater potential for this tool at the urban park.

What Table 4-10 does not show is the potential of the individual variable, technology experience, as a predictor. There was a positive relationship between level of experience with technology and both the traditional (beta = .17, $p < .05$) and the technology (beta = .15, $p < .05$) attitude domains. However, the r-square score for the regression toward appropriateness of technology and appropriateness of traditional items was not significant. Therefore, any underlying findings in regard to the individual items are not statistically relevant.

The only individual demographic variable of note was the predictive ability of income in regard to appropriateness of electronic message signs. The negative relationship indicated that as income increased, perception of the appropriateness of this tool in national parks decreased. However, as was the case for technology, the total R-square for the electronic signs factor was not significant. Therefore, the individual items are not particularly meaningful.

This same premise is true for other individual items that were significantly related to electronic signs (importance of safety), as well as traditional and technology attitudes (technology experience). The significance of the individual betas is not relevant for explaining their unique contribution to the model since the R-square is not significant. Therefore, the only true, significant individual beta result is the contribution of park type as a predictor of alternative transportation. In this case, GGNRA respondents perceived alternative transportation in national parks as more appropriate than did the SEKI respondents.

4.9. Predicting At-park Intentions

The next multiple regression tested the relationship between internal and external antecedent variables, as well as the attitude factor domains, to the likelihood of using transportation and travel planning tools at the study parks. The emphasis in the analysis was on the relationship of these items at the study parks, because the attitude domains addressed the appropriateness of transportation and travel planning tools at national parks (not before arriving at the parks). The test revealed that attitude was the strongest predictor of intention, followed by several external variables (park type, park experience, and transportation experience).

First, perceived appropriateness (attitude) of transportation and travel planning tools was predictive of intent to use alternative transportation at the study parks. More specifically, perceived appropriateness of alternative transportation was related to intent to use ATS at the study parks. Transportation experience, computed by combining experience with public transit in national parks and frequency of public transit use, was also predictive of intent to use ATS at the study parks. Secondly, attitude toward transportation and travel planning tools was predictive of intent to use technology at the study parks. As a reminder, the domain for at-park intent to use technology included park web site, other web site, current Internet, and PDA. Experience with technology was also predictive of the technology intent item. Third was the predictive nature of the appropriateness of transportation and travel planning tools in national parks in regard to intent to use electronic message signs and highway advisory radio (EMS/HAR) at the study parks. This was due, in part, to two individual attitude items that were significantly and positively related to intent to use electronic signs and highway advisory radio at the parks: appropriateness of EMS in national parks and appropriateness of TV and radio in national parks. Park type was also significantly related to intent to use EMS/HAR. In this case, SEKI respondents were more likely to intend to use these tools at the study park than were GGNRA respondents. Finally, attitude toward transportation and travel planning tools in national parks was predictive of intent to use traditional travel planning tools at the study parks. Specifically, perceived appropriateness of traditional travel planning tools was positively and significantly related to intent to use these tools at the study parks. Furthermore, SEKI respondents were more likely to intend to use these tools, which included visitor center information kiosks and tourbooks, than were GGNRA respondents. Additionally, there was a significant, negative relationship between study park experience and intent to use traditional items at the study parks. The complete results of this regression analysis are shown in Table 4-11 and Table 4-12 (page 50).

4.9.1. Predicting Pre-park Intentions

Pre-park intentions were also analyzed to determine potential predictor relationships. In this case, only the external antecedent variables (e.g. park type) were included in the regression analysis as the internal antecedent variables (e.g. perception of crowding) specifically addressed conditions inside the parks, making them an inappropriate variable to test pre-park intentions. For the same reason perceived appropriateness of the transportation and travel planning tools (attitude) was not used as this questionnaire item was phrased to address attitudes towards these tools in national parks (not before arriving there).

External antecedent variables were predictive of three of the five pre-park intention domains: kiosks, Internet, and alternative transportation (see Table 4-13 [page 51] and Table 4-14 [page 52]). The strongest predictors of pre-park intentions were park type and technology experience. Park type was predictive of intent to use kiosks and alternative transportation systems pre-park. GGNRA respondents were more likely to use kiosks; remember that the kiosk domain included both computerized and traditional travel information kiosks. In regard to transportation, GGNRA respondents were more likely to use ATS pre-park than were SEKI respondents. However, respondents who used public transportation more frequently throughout the year were less likely to intend to use public transportation to arrive at the study parks. This could indicate that regular users of public transit prefer their own vehicles during their leisure time.

Table 4-11: Regression Analysis of Antecedent Variables and Appropriateness Domains Related to the Likelihood of Using Transportation and Travel Panning Tools at the Study Park

	Demographic Characteristics R-square Change	Park Type R-square Change	Park Experience R-square Change	Transportation Experience R-square Change	Technology Experience R-square Change	Imp. Of Congestion R-square Change	Congestion R-square Change	Crowding R-square Change	Imp. Of Safety R-square Change	Attitude R-square Change	Total R-square
	Intentions at-park										
Alternative Transportation	0.006	0.006	0.009	0.027 *	0.001	0.000	0.007	0.000	0.008	0.120 **	0.235 ***
Kiosks	0.005	0.009	0.012	0.003	0.001	0.002	0.008	0.001	0.008	0.027	0.093
Technology	0.002	0.004	0.003	0.001	0.025 **	0.002	0.007	0.000	0.005	0.060 **	0.145 *
TV/Radio	0.011	0.001	0.004	0.010	0.006	0.004	0.020	0.001	0.009	0.038	0.115
EMS / HAR	0.009	0.028 **	0.004	0.016	0.006	0.008	0.018	0.001	0.003	0.124 ***	0.243 ***
Traditional	0.004	0.021	0.044 **	0.001	0.001	0.012	0.005	0.008	0.002	0.042 **	0.167 **

* $p < .05$, ** $p \leq .01$, *** $p < 0.001$

Table 4-12: Summary of Significant Individual Variables Predicting Likelihood of Using Transportation and Travel Planning Tools at the Study Parks

Dependent Variables	Significant Independent Variables	Beta	p-value
At-park Intentions			
Alternative Transportation	Experiences with transit in national parks	0.19	p < .01
	ATS appropriateness	0.37	p < .001
Kiosks	None		
Technology	Technology experience	0.18	p = .01
	Technology appropriateness	0.27	p < .001
TV / Radio	None		
Electronic Signs/HAR	Park type	-0.19	p < .01
	TV/Radio appropriateness	0.19	p < .01
	EMS appropriateness	0.26	p < .001
Traditional	Park type	-0.17	p < .05
	Study park experience	-0.22	p < .01
	Traditional appropriateness	0.17	p < .01

Technology experience was predictive of intent to use kiosks and Internet pre-park. The positive relationships indicated that respondents with higher levels of technology experience had a higher intention to use kiosks and Internet tools pre-park. These relationships between technology experience and intention to use kiosks (with and without computers) and the Internet seem logical, as those without experience with these items would be less likely to use them.

Demographics were also predictive of one pre-park intent domain, use of Internet. This was due to a negative relationship between age and intent to use Internet pre-park. This was an expected result, given that users of technology tend to be younger. The demographics of technology users are explained further under the key findings section of this chapter.

4.10. Key Findings

4.10.1. Attitude – Intention Relationship

The first key finding was the strong predictive ability that attitudes held for intentions. The perception of the appropriateness of transportation and travel planning tools was predictive of four of the six at-park intention domains: alternative transportation, technology, electronic signs and highway advisory radio, and traditional travel planning tools. Particularly strong were the results for alternative transportation (r-square = .235, $p < .001$) and electronic signs and highway advisory radio (r-square = .243, $p < .001$). The individual independent variable (attitude demands) revealed relationships specific to each transportation and travel planning tool: ATS appropriateness was predictive of intention to use ATS at the study parks (beta = .37, $p < .001$), technology appropriateness was predictive of intention to use technology at the study parks (beta = .27, $p < .001$), EMS appropriateness was predictive of intention to use EMS/HAR at the study parks (beta = .26, $p < .001$), and traditional travel planning tool appropriateness was predictive of intention to use traditional tools at the study parks (beta = .17, $p < .001$).

Table 4-13: Regression Analysis of External Antecedent Variables Related to Likelihood of Using Transportation and Travel Panning Tools before Arriving at the Study Parks

	Demographic Characteristics R-square Change	Park Type R-square Change	Park Experience R-square Change	Transportation Experience R-square Change	Technology Experience R-square Change	Total R-square
	Intentions pre-park					
TV/Radio	0.016	0.004	0.011	0.009	0.005	0.044
Kiosks	0.016	0.075 ***	0.015	0.012	0.017 *	0.134 ***
Internet	0.120 ***	0.005	0.009	0.004	0.135 ***	0.272 ***
Alternative Transportation	0.039	0.044 **	0.001	0.031 *	0.000	0.115 **
Traditional	0.018	0.011	0.021	0.001	0.001	0.051

* p < .05, ** p < .01, *** p < 0.001

Table 4-14: Summary of Significant Individual Variables Predicting Likelihood of Using Transportation and Travel Planning Tools before Arriving at the Study Parks

Dependent Variables	Significant Independent Variables	Beta	p-value
Pre-park Intentions			
TV / Radio	None		
Kiosks	Park type	0.25	p < .001
	Technology experience	0.15	p < .05
Internet	Age	-0.19	p < .01
	Technology experience	0.41	p < .001
Alternative Transportation	Park type	0.20	p = .01
	Frequency of using public transportation	-0.15	p < .05
Traditional	None		

The above findings also revealed that the weakest significant relationship was between the traditional attitude and intention items. This may be due to the difference in items included in each factor. The traditional attitude factor included four items (tourbook, visitor center information kiosk, talk to ranger at park, and optional shuttle) while the traditional at-park intention factor included only two of these items (visitor center information kiosk and tourbook).

The r-square change for the attitude items are higher than the r-square change contributed by the other groups (e.g. demographics, park experience) with one exception. The r-square change (.044, $p < .01$) of park experience in relationship to intent to use traditional travel planning tools at the study parks is higher than the r-square change (.042, $p < .01$) of attitude in relationship to intent to use traditional travel planning tools at the study parks. It should also be noted that none of the internal or external individual independent variables had a higher beta score than the attitude items, except for the traditional appropriateness attitude item. This lends further support to the importance of attitudes when predicting intentions.

4.10.2. Technology Experience

As indicated above, one of the key findings of the study was the relationship of experience with technology to attitudes and intentions toward technology (Figure 4-2). In order to test these relationships, a technology score was developed to determine the respondents' level of experience with high technology. The technology score was computed by assigning one point to each of the following survey items: own computer, own PDA, own GPS, own cell phone, Internet at home, Internet at work/school, Internet access at other location, use GPS for trip planning, use current Internet information for trip planning, use computer trip planners for trip planning, use informational TV for trip planning, use information radio for trip planning, use PDA for trip planning, and use cell phone for trip planning (see Appendix B for GGNRA questions 25-28 and SEKI questions 26-29). A respondent's score could range between zero and fourteen. Three levels of technology were created by assigning scores that added up to two or less as low technology (n = 83), scores that added up to 3-5 as moderate technology (n = 360), scores of 6 or higher as high technology (n = 205).

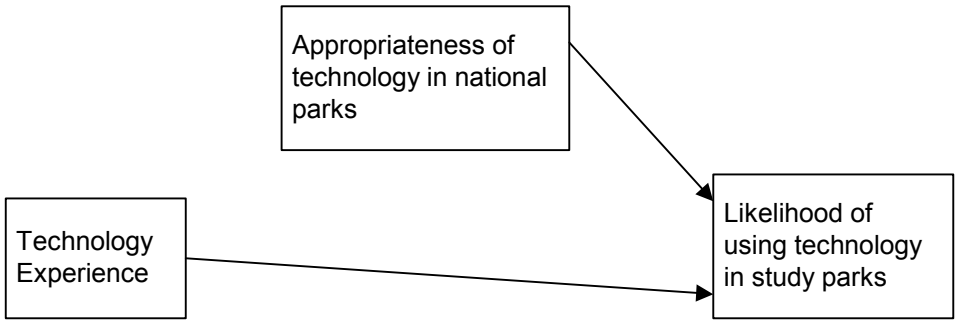


Figure 4-2: Predictive Relationships between Technology Experience, Attitudes and Intentions

A weighted system that assigned, for example, additional points for using PDA or GPS tools as opposed to a cell phone was considered. However, the simpler system was used as it avoids a subjective determination regarding which tools are easier or more difficult to master. As the technology score was significantly related to only the traditional attitude factor, it is possible that a more comprehensive computation would provide a more informed result. However, in order to create a relevant score, survey participants should also be asked how often they use these items, and to what extent. The application of the specialization construct to this problem may provide a more accurate portrayal of technological savvy. See Chapter 5 for a more complete discussion of this possibility.

There is one final note in regard to technology experience levels. Over 67 percent of high technology respondents are less than fifty years old, and over 69 percent of low-tech respondents are over fifty years old. Thus, as the population and the corresponding visitor base continues to age, it is likely that park visitors will become increasingly technologically savvy. This may result in changes in regard to perception of appropriateness of technology in national parks. On the other hand, national park visitors may increase their skills with technology at a faster rate than they change their perception of technology in national parks. See Chapter 5 for the discussion on diffusion of innovations for further comment on this trend.

The results revealed that attitude toward technology was predictive of the intention to use technology at the study parks. This was a positive relationship, indicating that the intention to use these items in the study parks increased as the level of appropriateness assigned to the use of these items in national parks increased. The appropriateness of technology in national parks was positively related to the technology intent factor, which included three Internet items (current Internet, park web site and other web site) as well as PDA. Additionally, level of experience with technology was significantly and positively related to intent to use technology in the study parks. In other words, respondents with a higher level of technology experience were more likely to intend to use technology in the study parks. Finally, level of experience with technology was significantly related to intent to use Internet (r-square change = .135, $p < .001$) and kiosks (r-square change = .017, $p < .05$) before arriving at the study parks. The reader is reminded that the kiosk item includes kiosks both with and without computers. Therefore, intent to use technology both before arriving at the park and while at the park can be predicted by both level of experience with technology and perceived appropriateness of technology in national parks.

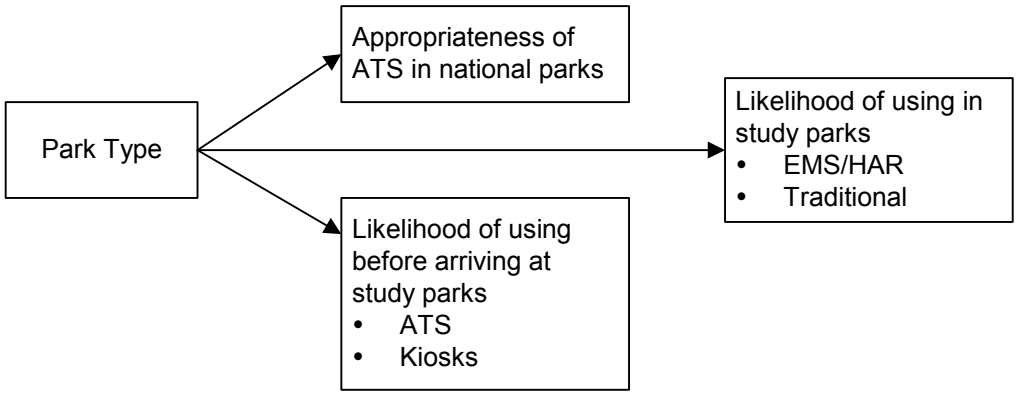


Figure 4-3: Predictive Relationships between Park Type and Attitudes and Intentions

Thus, the study revealed consistent significant, positive relationships between technology experience, appropriateness of technology in national parks, and intent to use technology before arriving at and while in the study parks. Furthermore, those with the most experience with technology were younger (20 – 50 years old), wealthier and more educated than those with less technology experience. The implications of these findings in regard to the use of technology in national parks are discussed in Chapter 5.

4.10.3. Park Type

The third key finding of the study involved differences between urban and rural park units of the National Park System (Figure 4-3). Golden Gate National Recreation Area represented the urban park and Sequoia and Kings Canyon National Parks represented the rural park. As expected, park type was predictive of attitude towards alternative transportation in national parks; urban park visitors viewed alternative transportation as more appropriate than rural park visitors. Park type was also directly predictive of likelihood of using alternative transportation before arriving at the study parks. These findings most likely reflect the more dominant presence of public transit in urban areas. It may also be reflective of the type of rural park used in the study. Sequoia and Kings Canyon National Parks are traversed by one main road, the Generals Highway. Thus, for people who are focused on driving through the park, alternative transportation may not appear to be highly appropriate.

In addition to the significant relationship between type of park and perceived appropriateness of ATS in national parks, ANOVA tests revealed significant differences between visitors to the urban park and visitors to the rural park for three of the individual items (Table 4-15). In each of the three cases, visitors to the urban park were more highly favorable to ATS items than visitors to the rural park. The only individual item that the groups did not differ on was optional shuttle, which was viewed as equally appropriate by respondents from both parks. That the optional shuttle item did not load with the other ATS variables in the attitude scale seems to indicate that visitors viewed an optional shuttle as a traditional part of a national park experience. However, as previously mentioned, this item is analyzed separately to determine its potential practical

Table 4-15: Results for Differences between Park Types in Regard to Perceived Appropriateness of Alternative Transportation

ATS Items	Park Type Mean Scores[1] SEKI	GOGA	F-Score	
Mandatory shuttle	2.5	3.4	51.22	***
Optional shuttle	4.0	4.0	0.69	
Public bus	3.5	4.1	26.65	***
Park and bike	2.7	3.1	9.67	**

[1] Mean scores based on scale of 1 – 5 with 1 equaling inappropriate and 5 equally appropriate
* p < .05, ** p < .01, *** p < .001

Table 4-16: Results for Differences between Park Types in Regard to Likelihood of Using Individual Alternative Transportation Tools at the Study Parks

ATS Items	Park Type Mean Scores[1] SEKI	GOGA	F-Score	
Public bus	1.7	2.4	31.93	***
Park and ride	2.3	2.9	18.32	***
Park and bike	1.7	2.2	12.52	***

[1] Mean scores based on scale of 1 – 5 with 1 equaling inappropriate and 5 equally appropriate
* p < .05, ** p < .01, *** p < .001

application as an ATS tool, although in the case of park type, there was not a significant difference in regard to attitude toward an optional shuttle.

Finally, there were significant differences between the parks' respondents in regard to each of the three alternative transportation pre-park intent items, each of which was more likely to be used by respondents from the urban park (GGNRA) than respondents to the rural park (SEKI) (Table 4-16). This was important because it further supported the premise that alternative transportation was more likely to be used by urban park visitors than visitors to the rural park. This seems logical in this case as the emphasis is on using public transit to arrive at the park (pre-park intent), and public transit is more readily available in the San Francisco area.

Park type was significantly related to only one of the pre-park travel planning intention items. GGNRA respondents were more likely to use kiosks than SEKI respondents (beta = .25, $p < .001$). Correspondingly, GGNRA respondents indicated a greater likelihood of using the individual kiosk items as well (Table 4-17).

Park type was also significantly related to intent to use travel planning tools at the study parks. Park type was predictive of both EMS/HAR and traditional travel planning tools at the study

Table 4-17: Results for Differences between Park Types in Regard to Individual Pre-park Travel Planning Intention Items

Travel Planning Intention Items	Park Type Mean Scores[1]		F-Score	
	SEKI	GOGA		
Tourbook	4.3	4.3	0.01	
Park web site	4.1	4.0	1.83	
Other web site	3.7	3.7	0.23	
Visitor center	3.5	3.7	1.67	
Commercial TV	1.7	1.9	3.52	
Local access TV	1.6	1.9	7.87	**
Commerical radio	1.7	1.9	5.90	*
Information radio (HAR)	2.6	2.3	3.04	
EMS	2.8	2.9	0.29	
Chamber of Commerce	1.9	2.2	7.01	**
Terminal kiosk	2.2	2.9	34.61	***
Computerized terminal kiosk	1.7	2.4	29.89	***
Hotel kiosk	2.7	3.4	30.97	***
Computerized hotel kiosk	1.9	2.5	26.55	***
Phone park	3.3	3.0	5.42	*
Cell phone	2.5	2.6	0.48	
PDA	1.3	1.2	1.02	
Current Internet	3.5	3.2	3.70	

[1] Mean scores based on scale of 1 – 5 with 1 equaling inappropriate and 5 equally appropriate
* p < .05, ** p < .01, *** p < .001

parks. In each case, SEKI respondents were more likely to use these tools than GGNRA respondents. As one of these factors is traditional and the other is an ITS-based factor (electronic signs and highway advisory radio), this may indicate that SEKI respondents are more likely to use travel planning tools at the parks in general. However, while that seems to be true in most cases, there are some instances (e.g. terminal kiosks and computerized terminal kiosks) of GGNRA respondents being more likely to use travel planning tools than SEKI respondents (Table 4-18).

The higher intent of using "roadside services" such as EMS and HAR may be an indication of the need for up-to-the-minute road information in the mountains, as it did snow enough during the May distribution round that the Generals Highway through the park was closed for one and a half days. The preference for kiosks by the urban park respondents may be due to the greater presence of these tools in the greater San Francisco area than exists in the towns outside of SEKI.

Overall, park type was a strong predictor of both attitude toward and intent to use alternative transportation, as well as a predictor of intention in regard to both traditional and more modern travel planning tools. These findings provide park managers with information that will allow them to better serve their constituents by utilizing the transportation and travel planning tools that were acknowledged by respondents to be appropriate for and/or likely to be used at each park type. The implications of these findings will be further discussed in Chapter 5.

Table 4-18: Results for Differences between Park Types in Regard to Individual At-park Travel Planning Intention Items

Travel Planning Intention Items	Park Type Mean Scores[1]			
	SEKI	GOGA	F-Score	
Tourbook	4.5	4.0	21.33	***
Park web site	1.5	1.7	2.64	
Other web site	1.4	1.6	2.24	
Visitor center	4.6	4.3	7.86	**
Commercial TV	1.3	1.3	0.42	
Local access TV	1.4	1.4	0.00	
Commerical radio	1.5	1.5	0.02	
Information radio (HAR)	2.8	2.0	26.46	***
EMS	3.3	2.8	12.98	***
Chamber of Commerce	1.4	1.6	8.25	**
Terminal kiosk	1.8	2.3	10.44	**
Computerized terminal kiosk	1.4	1.8	10.18	**
Hotel kiosk	2.3	2.1	0.66	
Computerized hotel kiosk	1.7	1.7	0.09	
Phone park	2.2	2.0	1.59	
Cell phone	2.3	2.2	1.03	
PDA	1.3	1.2	0.30	
Current Internet	1.7	1.8	1.42	

[1] Mean scores based on scale of 1 – 5 with 1 equaling inappropriate and 5 equally appropriate
* p < .05, ** p < .01, *** p < .001

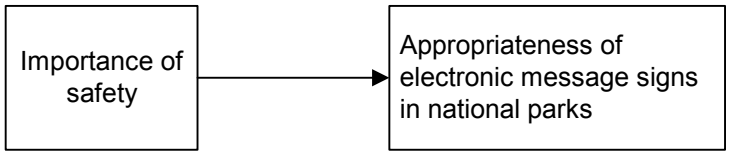


Figure 4-4: Predictive Relationships between Safety and Attitudes

4.10.4. ITS Goals and Attitudes

As explained in Chapter 2, ITS and ATS systems are geared toward several goals, including reduction of congestion and improving safety. Thus, the next key finding was in regard to the relationships between the perceived condition variables (congestion, importance of congestion, importance of safety, and crowding) and attitudes and intentions in regard to transportation and travel planning tools.

To recap the summary provided earlier in this chapter, importance of safety was the only predictor among the perceived condition variables in regard to attitudes toward transportation

and travel planning tools in national parks. Importance of safety was a predictor of EMS appropriateness, with the importance of safety in parking lots as the primary concern. However, importance of safety was not a predictor of likelihood of using transportation and travel planning tools in the study parks. Thus, while those respondents who placed a higher level of importance of safety viewed EMS as appropriate, they did not indicate that they were likely to use these tools at the study parks.

Thus, the predictive nature of the perceived condition variables indicates that respondents held the perception that at least one transportation and travel planning tool may be used as coping tools in regard to safety concerns. However, as explained earlier in this chapter, the significant beta is somewhat offset by the lack of significance of the r-square. A further discussion of these findings will be presented in Chapter 5.

4.10.5. Pre-park and At-park Intentions

As mentioned earlier, the results indicated that there were significant differences between pre- and at-park intentions in regard to transportation and travel planning tools. These differences were not exclusive to either traditional or newer tools. Only four items did not yield significant differences between pre-park and at-park intent: tourbook, information radio, PDA, and public bus. Several other items yielded significant differences, but the mean difference was less than .03; therefore, the possibility of a Type II error existed for these items (local access TV, commercial radio, computerized terminal kiosk, computerized hotel kiosk, cell phone, park and ride, and park and bike). An examination of the tools that represent ITS (e.g. current Internet, and park and other web sites) revealed a distinct trend, with the likelihood that these tools would be used before arriving at the study parks much higher than the likelihood that these tools would be used at the study parks. One exception to this trend was electronic signs, which were more likely to be used at the study park than they were before arriving at the study parks. See Table 4-19 for a complete summary of the significant differences between the pre-park and at-park intentions found in this study.

4.10.6. Additional Experience Variables

In addition to the key findings discussed above, two of the significant predictors of attitudes and intentions that deserve further consideration are study park experience and experience with public transportation in national parks. These results, along with the effect of technology experience, indicated that a wide variety of experience variables may be used as predictors of attitudes and intentions.

Study Park Experience. The variable, experience at study park, was measured by an analysis of the number of visits to the parks that respondents had made in the last twelve months. This resulted in four categories based on natural breaks in the data (see Table 4-19). The first category (low experience) included those who had visited the park before, but not in the last twelve months. The second category (moderate experience) was comprised of those who visited once in the past twelve months, not including their current visit. The third group (experienced) had made 2-4 visits to the park over the last twelve months, and the fourth group (high experience) had made 5 or more visits to the study park over the previous twelve months.

Table 4-19: Difference between Pre-park and At-park Intentions for Individual Transportation and Travel Planning Tools

Items	Mean Scores[1]		t-test	Std. Dev.	Significance	N
	Pre-park	At-park				
Park web site	4.1	1.6	34.22	1.63	0.001	511
Other web site	3.6	1.5	28.79	1.68	0.001	508
Visitor center	3.5	4.4	-12.78	1.76	0.001	538
Commercial TV	1.8	1.3	10.53	1.01	0.001	482
Local access TV	1.7	1.4	6.76	1.05	0.001	477
Commercial radio	1.8	1.5	6.91	0.98	0.001	487
Electronic Signs	2.9	3.1	-3.72	1.45	0.001	498
Chamber of commerce	1.9	1.4	9.56	1.05	0.001	486
Terminal kiosk	2.3	1.9	6.28	1.46	0.001	456
Computerized terminal kiosk	1.8	1.5	6.66	1.08	0.001	440
Hotel kiosk	2.8	2.2	9.19	1.49	0.001	484
Computerized hotel kiosk	2.0	1.7	6.09	1.20	0.001	466
Phone park	3.2	2.1	15.42	1.51	0.001	485
Cell phone	2.8	2.3	4.50	1.05	0.001	501
Current Internet	3.4	1.7	22.07	1.69	0.001	484
Park and ride	2.5	2.7	-3.54	0.04	0.001	484
Park and bike	1.9	2.0	-2.23	0.04	0.05	474

[1] Mean scores based on scale of 1 – 5 with 1 equaling inappropriate and 5 equally appropriate
* p < .05, ** p < .01, *** p < .001

Table 4-20: Levels of Experience at the Study Parks

Levels of experience	Number of previous visits during past 12 months	N
Low experience	0	51
Moderate experience	1	135
Experienced	2 – 4	88
High experience	5 or more	31

The results also revealed that study park experience was significantly related to at-park intentions. Study park experience was a significant predictor of likelihood of using traditional travel planning tools in the study parks. Those respondents with less experience at the study parks were more likely to intend to use traditional tools at the study parks. This finding may indicate that more experienced visitors do not view these items as necessary since they are already familiar with the study parks. This could also be indicative of a comfort level with traditional tools for the orientation process by first-time visitors.

Experience with Transportation in National Parks. Experience with public transportation in national parks was measured by asking respondents to indicate 1) if they had done so, and 2) at which parks they had used public transportation. This individual experience item was

significantly and positively related (beta = .19, $p < .01$) to likelihood of using ATS in the study parks. This may indicate that respondents who had used public transportation at other national parks had a satisfying experience and are likely to use this mode of travel again.

4.11. Summary

Overall, the findings supported the theorized relationships between antecedent variables and attitudes, as well as attitudes and intentions. Both internal and external antecedent variables may be utilized as predictors of attitudes toward transportation and travel planning tools in national parks, while the external antecedent variables may also be utilized to directly predict likelihood of using these tools both before arriving at and while at the study parks. Attitudes proved to be the strongest predictor of at-park intentions, adding weight to established theory (e.g. planned behavior, reasoned action). Furthermore, differences in intention also existed for pre-park and at-park intentions. This provides park managers with critical information when preparing to implement transportation and travel planning tools. Overall, traditional items were still preferred, but the strong relationship of technology experience to technology attitudes and intentions indicated that this may change as more people gain greater experience with technology.

One of the key practical implications of this study is the difference between urban and rural park visitors. These differences provide managers with insight regarding which tools may be effective to manage the visitor experience at different types of parks. The implementation of alternative transportation systems can be guided in part by the findings that urban park visitors are more receptive to these tools than rural park visitors, as well as the marked preference by respondents for optional rather than mandatory shuttles.

5. DISCUSSION AND CONCLUSIONS

The stated objectives of this study were 1) to determine what types of park visitors may use ATS and ITS facilities if implemented in NPS units, and 2) to determine if, and which, components of ATS and ITS might be effective for managing visitors and their experiences in national parks. Several relationships have been reviewed throughout this study in an attempt to address these questions. First, the literature on perceptions and attitudes was used to guide questions about the relationships between certain antecedent variables and attitudes toward transportation and travel planning tools. Second, the literature concerning what may serve as predictors of intentions was used to guide questions concerning the relationships between both antecedent variables and attitudes to intentions. Finally, the study examined the differences in attitudes and intentions before arriving at and while at the study parks.

Both external and internal antecedent variables were found to influence attitudes and intentions in regard to transportation and travel planning tools. The external antecedent variables of importance in this study were the personal and environmental variables such as those proposed by Lawler, including park type and experience variables (e.g. study parks, and technology) (32). The internal antecedent variables were the conditional variables including perception of crowding and congestion, and importance of congestion and safety.

Several key findings arose from this study. These were 1) the relationship between attitudes and intentions; 2) the relationship between technology experience, attitude toward technology and intent to use technology; 3) the effects of park type on attitudes and intentions; 4) the relationships between ITS goals and attitudes; and 5) the differences between pre-park and at-park intentions. A discussion of each of these issues will be presented in turn, followed by more general issues such as generalizability, the limitations of this study, and final comments.

5.1. Key Findings

5.1.1. Attitude – Intention Relationship

As explained in Chapter 2, much of the perception, attitude and intention literature focuses on some aspect of the relationship between attitudes and behavior. There is a long line of research that supports the influence that attitudes have on behavior (29, 30, 31, 61). This study also produced strong and significant results that supported the premise that attitudes are not only related to, but also predictive of intentions. This provides important information regarding trends that may influence management decisions. As attitudes toward technology continue to evolve, it is possible that park visitors' views of what is or is not appropriate in national parks may change. Correspondingly, the intentions of park visitors to use innovative tools such as ATS and ITS may also change. Refer to the discussion regarding diffusion of innovations in the following section for a more in-depth examination of this concept.

As indicated in the literature review, it is also important to understand the visitors' perceptions of park conditions compared to the perceptions of park managers. While park managers were not surveyed for this study, they were part of the preliminary survey process (see Chapter 3), and fully supported the investigation of ATS and ITS tools that may reduce congestion and increase

safety in and around the study parks. This was a given from the early stages of the project, when it was decided that the only parks that would be considered for the study would be those whose management teams were interested in pursuing these options. Thus, it is likely that visitor demand for innovative tools in and around the study parks will be well received by the managers of these parks.

5.1.2. Technology

As indicated in Chapter 2, the differences between individuals with different levels of experience are often compared because of the understanding that a person with past experience to draw upon is more likely to have an attitude related to behavior than a person with no previous direct experience (130). This seems evident given the results of this study, which indicate that both technology experience and attitude toward technology in national parks are predictive of intention to use technology in the study parks.

This is an important finding, given the trend in our society toward a higher use of technology in all aspects of life. The adoption of new ideas or new products such as ITS can be a lengthy process and diffusion research indicates that there are several stages in the process of adopting a new technology (93). In this case, the different stages may reflect the use of technology in different places, such as at work or school, at home, and at national parks. This line of research indicates that tools such as ITS, as with many of the other technological advances that have occurred in our society during the past several decades, will be adopted gradually depending on perceived level of need and other mitigating factors. One of the mitigating factors, perceived appropriateness of these tools in national parks, will be discussed under the pre- and at-park intentions section to follow. Other mitigating factors included cost and perceived usefulness, which are discussed later in this section.

Measuring Experience with Technology. An important factor for analyzing respondents' experience with technology was the creation of a technology score as a way of differentiating among visitors. The technology score was created by assigning scores based on the number of technical tools that respondents owned and/or used. Thus, it was a way of determining if differences regarding the appropriateness of travel planning tools were based on whether certain tools were owned or used by the respondents. Owning and using these tools at work and home does not necessarily translate to using them in a national park. Many people go on vacation to leave behind the trappings of everyday life; technology may be one of the things that people prefer to leave at home, particularly when in a setting such as a national park.

As indicated in Chapter 4, it is possible that more significant results would have been obtained if a different computation method had been utilized. As a reminder, the technology score was computed by assigning one point to each of the technology ownership and usage items. However, investigation of the level of involvement may enable the creation of a more comprehensive score. This could be done by having survey participants indicate how often they use these items, and to what extent. The application of the specialization construct to this problem may also provide a more accurate portrayal of technological savvy. This construct "refers to a continuum of behavior from the general to the particular, reflected by equipment and skills used in the sport and activity setting preferences," (151) and multiple variables include not only experience, but skill level, knowledge and commitment (152). Application of this concept

revealed differences between specialization levels in regard to preferences, indicating that it is a useful tool for examining preferences such as those measured in this study (e.g. appropriateness) (153, 154). Kuentzel and McDonald recommended a more involved analysis of past behavior, lifestyle and commitment, as a simple additive scale lessens the effect of the complexity of specialization (155). A more recent analysis of the construct by Scott and Shafer proposed that there was a need for a greater emphasis on the progression of specialization as originally intended by Bryan (156). Furthermore, Keuntzel's suggestion that "research should instead be identifying the factors that influence variation in the trajectories of change in leisure participation" points at the possible variation instigated by the line that is crossed when entering a national park (157). This line could be considered a "trajectory of change" that leads some visitors to retain traditional tools in this setting while other visitors proceed with their technologically advanced equipment. A more in-depth examination of the involvement that some visitors have with technology, the extent to which they use it in every facet of their lives, and the progression they followed would provide greater insight to the potential interest for technology applications in national parks. A specialization scale for technology could add to our knowledge by giving scholars a consistent tool that would allow more consistent comparisons across studies, and provide managers with greater insight regarding implementation of ITS tools.

Technology Users. It is important from a managerial standpoint to understand which visitors are using technology, and how this may evolve, or diffuse, over time. One of the overwhelming commonalities among those with greater technology experience was that they had the least amount of experience at the study parks. Over 91 percent of respondents who rated a high technology score in the technology scale had visited the study parks fewer than five times. Of the two parks, GGNRA received a greater proportion of the high technology visitors (40 percent) than SEKI (28 percent). Another commonality was income; 50 percent of high technology visitors had a household income greater than $100,000. Additionally, over 64 percent had at least a college education, and another 28 percent had finished some college. This is consistent with diffusion of innovations theory that indicates that early adopters of technology are likely to be wealthier and more educated than those who adopt technology later (93). It is likely that there will be an increase in usage as certain tools (e.g. GPS) become more affordable; many respondents cited expense as a prohibitive factor for using these tools (see discussion of mitigating factors below). Another attribute that relates to the above use of technology is age; over 66 percent of high technology visitors were 35 or younger, while over 69 percent of low-tech visitors were 50 or older. Thus, it is likely that as the generation currently in their twenties and thirties ages, there will be an increase in use of these tools in society in general, and possibly among park visitors as well.

Diffusion of Innovations. As explained in Chapter 2, diffusion of innovations theory proposes that there is "a social process in which subjectively perceived information about a new idea is communicated" (93). The adoption of new ideas or new products such as ITS can be a lengthy process, and diffusion research indicates that there are several stages in the process of adopting a new technology. Moreover, as discussed above, early adopters are more likely to be wealthier and more educated than late adopters (93). This line of research indicates that tools included in ITS frameworks, as with many of the other technological advances that have occurred in our society during the past several decades, will be adopted gradually depending on perceived level of need and other mitigating factors. Technology has significantly altered our culture and there is no reason to believe that this trend will end anytime soon.

Diffusion of innovations theory involves examining attitudes toward the innovations, and monitoring both the change in attitude and change in acceptance of an innovation. Rogers (93) noted that there is often a gap between forming a positive attitude toward an innovation and adopting that innovation. He offered cost and availability as two of the key mitigating factors. This is an important point in this study, as many ITS tools are expensive, and many respondents cited expense as the reason for not owning several ITS components. Table 5-1 summarizes the mitigating factors that were tested in this study.

Table 5-1: Percentage of Respondents who Cited Mitigating Factors for Not Owning Certain Technology Items

	Too Expensive	Don't know how to use	Do not think it is useful / Do not need
Computer	23.1%	15.4%	30.8%
Cell Phone	16.1%	0.0%	67.7%
PDA	11.8%	14.9%	67.7%
GPS	19.7%	10.7%	61.8%

Mitigating Factors. Mitigating factors are important when examining the relationships between attitudes and intentions. A particular behavior may be viewed favorably, but other circumstances, such as cost, may intervene with intent. According to Feather the important aspect of attitude-behavior studies is to determine what other factors are needed to explain behavior beyond attitude, which he took as a given (37). When examining technological innovations, mitigating factors become an important consideration due to cost and availability. Another important consideration is perceived usefulness. Over 60 percent of respondents who did not own a cell phone, a PDA, or a GPS unit considered these items as not useful or unnecessary. As mentioned above, perceived need is an integral part of the adoption process. If people do not see benefits from the use of the objects, then they will not have a positive attitude toward using the object.

Thus, there are several different possibilities for future examination of the place that technology will have in national parks. Certainly, a diffusion of innovations approach would enable researchers to study the trends involved, as well as the perceptions, mitigating factors, and changes in acceptance of such tools. This approach, bolstered by a more in-depth measurement of the technology construct, would provide greater insight for researchers and managers in regard to the possibilities for technology in national parks. In particular, the creation of a small, focused survey instrument to address attitudes and intentions toward specific technological tools would enable managers to check the status of the evolution of technology acceptance in parks. This type of survey could be distributed every 3 to 5 years, enabling managers to track any changes in visitor acceptance and use of technology in national parks.

5.1.3. Urban and Rural Parks

The findings that may lend the most to the literature, due to lack of existing studies in this regard, are those that concern park type (rural or urban). As a reminder, Golden Gate National Recreation Area is located in and around a major urban community (San Francisco), while

Sequoia and Kings Canyon National Parks are located in the Sierra Mountains. Kings Canyon is approximately an hour's drive from Fresno, a city of fewer than 500,000 people, while Sequoia NP is a 1½ to 2 hour drive from Fresno. The closest large metropolitan areas are Los Angeles and San Francisco, each about five or six hours away. As was the case with the study conducted by Ewert and Hood, the visitors to the urban park were more likely to be day users, a finding that is influenced by the type of parks used (few overnight facilities) (129). GGNRA respondents were mostly day visitors; the average length of stay in this study was three hours. The average length of stay at SEKI was 1.5 days, with approximately half of these respondents staying in the park and half staying outside the park. The two groups also differed in regard to age; 49 percent of SEKI respondents were over 50 and 41 percent of GGNRA respondents were over 50. Correspondingly, SEKI respondents included more retired persons (27 percent) than GGNRA respondents (11 percent).

There was also a larger difference between the two parks in regard to education. Over 75 percent of GGNRA respondents held at least a bachelor's degree and 65 percent of SEKI's respondents were college graduates. The comparison of visitors to the two parks may inform managers about potential differences that may affect management decisions regarding different travel planning tool preferences that may be held by day or overnight park visitors, as well as differences between those visiting a GGNRA unit as part of a San Francisco vacation, and those visiting SEKI to vacation in a more rural area.

The difference between visitors to urban (GGNRA) and rural (SEKI) parks was most evident in regard to alternative transportation, as park type was predictive of both attitude toward and intention to use ATS (pre-park). Furthermore, they differed significantly on the mandatory shuttle, public bus, and park and bike appropriateness items, each of which was viewed as more appropriate by GGNRA respondents than they were by SEKI respondents. In fact, mandatory shuttle was rated by GGNRA respondents as much more appropriate (mean = 3.4) than it was by SEKI respondents (mean = 2.5). As a reminder, the means were based on a scale of 1-5, with one equaling inappropriate, three equaling neither inappropriate nor appropriate, and five equaling appropriate. Not only did this indicate that GGNRA respondents viewed a mandatory shuttle as more appropriate than their SEKI counterparts, but that GGNRA respondents had a positive (somewhat appropriate) view of this tool (mean > 3) while SEKI respondents held a negative, or somewhat inappropriate, view (mean < 3). This reinforces the difference between the two parks.

The mandatory shuttle result is logical for several reasons. First, public transportation is more readily available in urban areas, and thus part of the landscape. As a common mode of transportation in an urban area, it may be that visitors to a national park in an urban area were more willing to accept the extension of public transportation to the park. Another factor may be that there are roads to, but not within, the two survey locations in GGNRA: Stinson Beach and Muir Woods. Thus, it may be that the public transportation option was less intrusive on the park experience, and simply viewed as a way to arrive at the park. Having a personal vehicle at SEKI may be considered a more important part of the experience as it is a large rural park with many of the key visitor attractions located along the mountain parkway. The influence of pleasure driving was evident in some of the responses to the question, "Why did you use the type of transportation that you used?" Responses included "It's a fun vehicle" and "driving 10,000 miles… first new car in 25 years." A commonly held view is that Americans are in love with their vehicles. Evidence from the open-ended responses in the survey supported that perception.

Moreover, one of the on-site study questions indicated differences between Europeans and Americans regarding personal vehicles. In response to the same on-site survey question, a frequent response from European visitors at SEKI was, "Because there isn't any public transportation." The most common responses to this question by Americans who drove a private automobile were "convenient," "only way to get here," and "holds all our stuff."

However, as the focus of the appropriateness items was at national parks and the variable was mandatory shuttle *in park*, the fact that the GGNRA respondents were visiting urban parks (Muir Woods and Stinson Beach) that do not have internal park roads may also figure into their perceptions. In other words, they could express the opinion that a mandatory in-park shuttle was appropriate, knowing that it would not affect the experience at the park at which they received the survey. This is not the case at SEKI. But then again, this could be reading too much into their responses, and it may simply be that visitors to urban parks have a more positive attitude toward alternative transportation than visitors to rural parks.

As indicated in previous sections, there is another possible reason for the favorable view of an optional shuttle in national parks by visitors overall (73 percent of respondents rated optional shuttle in-park as either "somewhat appropriate" or "appropriate") and more so by visitors with experience at national parks. This is the idea that, when optional, public transportation is welcome. For those who would rather use their private vehicle the shuttles take some of the cars off of the road and open up parking spaces. For those who would rather use a shuttle, something that is optional is often viewed more positively than something that is mandatory (only 37 percent of respondents rated mandatory shuttle as "somewhat appropriate" or appropriate"). Freedom of choice is an inherent part of leisure and leisure time activities. Thus, it is logical that an optional shuttle was viewed more favorably than a mandatory shuttle in a recreational setting.

The large difference in perception between a mandatory and optional shuttle was an important result. Furthermore, while differences existed between intent to use free in-park shuttles and intent to use in-park shuttles with a fee, the difference was not so great that the two items loaded on different components as did the mandatory and optional shuttle attitude variables. The importance of this difference can be seen at Acadia National Park. Acadia, a heavily visited park on the coast of Maine, has had a free optional shuttle system in place since 1999. The shuttle moves through the park and into the surrounding community of Bar Harbor and is highly regarded by both visitors and residents. Results from their 2002 survey indicate that users of the Island Explorer shuttle system express a distinct desire for that shuttle system to remain a free service (158). However, similar to SEKI, the large number of visitors who drive through the park (there is a scenic loop road) makes it likely that the implementation of a mandatory shuttle would draw even more opposition, with or without a fee.

The other item that was perceived as more appropriate in national parks by the urban park respondents was public bus to park. Both groups rated this variable more positively than mandatory shuttle, although again, the urban park respondents perceived the public bus to park as more appropriate than the rural park respondents. There may be a few reasons for this finding. As previously indicated, parks within urban areas are surrounded by facets of urban life, including public transportation. Furthermore, Golden Gate Transit offers service to Muir Woods (actual bus stop is 1.8 miles from park) and Stinson Beach on holidays and weekends (22). Therefore, it is logical that visitors to this park would perceive this option as more appropriate

than visitors to a rural park. GGNRA respondents also expressed a greater intent to use ATS pre-park than did SEKI respondents. Additionally, a public bus to SEKI, particularly by overnight visitors, may not seem as appropriate because the visitors may have more belongings to carry. However, more than one visitor from Fresno commented to the survey team at SEKI that a public bus from the city to the park would make the park more accessible to those urban residents.

Park type was also predictive of two other travel planning at-park intent factors: EMS/HAR and traditional travel planning tools. However, these findings are contrary to the greater likelihood that GGNRA respondents would use ATS, as SEKI respondents indicated a higher likelihood of using these travel planning tools than did GGNRA respondents. The higher likelihood of using roadside signs and highway advisory radio at SEKI may be a reflection of the pleasure driving aspect of this park experience. Visitors travel along the Generals Highway through the mountains, a situation in which few would venture on bike or foot, and a road trip is necessary in order to see much of the frontcountry (i.e. developed) portion of the park. Thus, there is inherently a greater need for roadside assistance and guidance, such as that provided by electronic signs and advisory radio.

The findings of this study in regard to park type, taken together with earlier findings that differences in visitor characteristics and trip characteristics exist between urban-proximate and rural-proximate park visitors, support the notion that these differences do exist, and can be used to inform managers about their visitors (129). Alternative transportation, for example, is a travel planning tool that should be further examined. It appears that a public bus and optional shuttle would be well received in either park, particularly increased access to the GGNRA park units via public bus. In fact, the overall perception of GGNRA respondents that ATS is appropriate in national parks indicates that this is an acceptable travel mode for this urban park, and is an option that managers may wish to further explore.

5.1.4. The Influence of Perceived Conditions on Attitudes and Intentions

It is important to develop an understanding of the relationships between ATS and ITS goals with ATS and ITS tools. The view of these tools as a contributing factor toward, for example, less congestion is likely to increase the use of these items. However, importance of safety was the only perceived condition variable found to be a significant predictor of attitudes toward transportation and travel planning tools in national parks. None of the remaining perceived condition variables, which included perception of congestion and crowding, and importance of congestion (all related to ATS and ITS goals), were significantly related to either attitudes or intentions.

The finding that the importance of safety was predictive of attitude towards electronic message signs was important in regard to intelligent transportation systems. As the provision of safe conditions is a key objective of ITS, acceptance of ITS tools will be greater if their effectiveness in this regard is viewed positively by the users. Thus, it is important to know that the data supported this relationship, which would not be effective if respondents (visitors) did not make the connection. Moreover, as noted in Chapter 2, Lawler claimed that in order to predict possible behavioral choices you must identify the general classes or groups of outcomes that people find desirable or undesirable, and the factors that influence the desirability of outcomes (32). Thus,

knowing that safety is important to some respondents, and that they relate one of the ITS tools to increased safety, indicates a higher likelihood that these tools may be used.

Coupled with the slightly positive (mean = 3.1) intention of using electronic signs at national parks, this provides transportation and park managers with a potentially acceptable tool. Furthermore, it was the rural park respondents that indicated a greater likelihood to use this tool, which was unexpected as electronic signs are more often associated with traffic management in urban areas. This may be a reflection of the traffic and weather conditions in the mountains as discussed above. Additionally, the May respondents at SEKI faced heavy snow at the beginning of the week and Memorial Day Weekend crowds at the end of the week, while the July SEKI respondents faced peak summer congestion, particularly on the weekends.

Greater education of the public regarding the benefits of these tools such as reduced congestion and improved safety may lead to the development of a better understanding of these items and, subsequently, influence both attitudes toward and intentions to use these tools as coping devices in national parks.

The greater predictability of external antecedent variables (e.g. experience, park type, and demographics) as opposed to internal antecedent variables indicates that park managers could focus on the external variables to help guide their transportation and travel planning agenda. However, this may simply indicate the need for a public relations campaign on the part of the transportation departments (state and federal) to inform drivers of the potential benefits of ITS. If the National Park Service wants to use these tools to increase traffic flow and safety in the parks, then they must inform the visitors of these goals in order to encourage participation.

5.1.5. Differences between Pre-park and At-park Intentions

As indicated above in the discussion regarding diffusion of innovations, one of the mitigating factors to the acceptance and use of innovative transportation and travel planning tools is whether or not these tools are perceived as appropriate for use in national parks. National parks have a long-established atmosphere as a rustic haven that allows visitors to renew themselves. One way they help to do this is by eliminating many modern gadgets (e.g. no televisions in park lodging). However, it is likely that as these tools become more of a part of our everyday life, particularly with the younger generation who has never known a world without computers, a more positive perception of their appropriateness in national parks may arise. This has already happened to some extent with televisions. While they are not available in most national park lodges, many visitors bring televisions with them in their recreational vehicles. This is an indication that some park visitors view television as appropriate in national parks, although most park managers and park concessionaires have yet to adopt this view.

While many of the ITS tools did not gain a high degree of loyalty in regard to the intention of respondents to use these tools in national parks, the pre-park use of items such as the park web sites revealed that managers should use this media outlet to inform their constituents. Moreover, well-prepared and up-to-date web sites will allow users to plan their trip in advance. GGNRA has a good web site that allows users to learn, for example, about upcoming events and transportation planning (159). Muir Woods' web site, in particular, has links to area transit that allows visitors to find ways to reach the park without using a personal vehicle (160, 161).

The most likely ITS tool to be used at the park is electronic messages signs (mean = 3.1). However, a word of caution is necessary. The results also indicated that visitors did not consider this to be an appropriate tool for inside national parks. Moreover, the intention mean was barely greater than 3 (on a scale of 1-5), which is not a very strong indication of intent.

It should also be noted that use of a visitor center is more likely at the park then before arriving at the park. This was expected given the need for first-time visitors in particular to use the visitor center as an orientation tool. This is also often the place where visitors can buy maps, books and postcards, making it a stop on the agenda of most visitors. Chambers of Commerce, on the other hand, may be viewed as less park-specific as they are more likely to be used pre-park. Use of a tourbook did not differ between pre- and at-park intent (both means = 4.3), but the mean score indicated that this tool will continue to be used both en-route to and in the parks.

It should also be noted that although the intent to use transportation and travel planning tools often differed between pre- and at-park intentions, this did not always result in a practical intent to use these items. For example, while the results indicated that visitors were more likely to use commercial TV pre-park (mean = 1.8) than at-park (mean = 1.3), the low mean scores indicate that there was little intent to use this item either before arriving at or while at the study parks.

Thus, while both traditional and more innovative tools may be used prior to arriving at the parks, there is still a prevailing intent to use traditional, rather than technological, tools at the parks. One other issue must be considered when using the information gathered in this study to determine the potential acceptance of ATS and ITS tools in national parks. Measuring attitudes is not restricted to positive attitudes, and the overall view that respondents have of many of the ITS and ATS tools appears to be negative. Negative attitudes are as important to understand as positive attitudes. It is important to understand what tools current visitors are unlikely to use. However, it is also important to understand that this may change over time. A transportation plan, particularly a complex ITS framework or an expensive alternative transportation system, takes time and money to implement. Thus, a gradual adoption of these tools, beginning with the ones that are currently viewed most positively, and thus are most likely to be used, would be the most prudent course of action for managers.

5.2. Limitations

The limitation of greatest concern in this study involves predictability. Ajzen and Fishbein noted that in order to guarantee the highest degree of correlation, attitudes and behavior should be defined at the same level of specificity (31). This was not the case in this study as the attitude scale (e.g. appropriateness) was for national parks, while the intent to behave scale ("likely to use") was for GGNRA and SEKI specifically. The original survey used in the pilot study in March contained two intention scales; the general one for national parks was eliminated when paring down the survey in an effort to increase response rate (see Chapter 3). Another point of concern in this regard was the level of specificity in the attitude and intention scales in regard to shuttles. The attitude scale used the items, optional shuttle in park and mandatory shuttle in park, while the intention scale used in-park shuttle with fee and in park shuttle without fee. The inconsistency of these items made it difficult to compare attitudes toward ATS and intent to use ATS in a meaningful way. In the latter case, in-park shuttle, with or without fee, loaded consistently onto the same factor. It has been shown that the mandatory and optional shuttle

variables did not consistently load onto the same factor. Thus, it appears that this was a more discriminating attribute than whether or not there was a fee.

Another concern in regard to the predictability of attitudes is the use of single items. It has been determined that attitudes are more predictive of behavior if linked to a series of behaviors and not just one instance of behavior (42). It is possible that using a single previous behavior item (e.g. experience with public transportation in national parks) to predict future behavior is also suspect; a series of past behaviors over time would possibly be more predictive of future use. This concern arises when examining the results of the past experience items as an antecedent variable. Survey participants were asked if they had used certain items (e.g. PDA) to plan their trip, but were not asked how often they used each tool for travel planning.

The amount of variance explained in the factor analysis of the items in the appropriateness scale is another potential limitation. The principal components factor analysis extracted four components that explained 65 percent of the variance. Stevens states that 75 percent of variance explained is the preferred level (147). An attempt to extract a greater number of factors failed to explain significantly more of the variance. The same holds true for the intent to behave factors.

Generalizability of a study is dependent on very specific circumstances. For example, due to differences in size, visitation numbers, and perhaps even visitor motivations, the findings for SEKI, the rural park in the Sierra Mountains, are not generalizable to the other rural park just north, Yosemite. There are too many differences between the two parks to say with any certainty that the findings would be the same. The same is true of the urban park, GGNRA, as the findings would not necessarily be the same, for example, for Santa Monica Mountains National Recreation Area, which is located in the Greater Los Angeles area. San Francisco and Los Angeles are different enough, and differences between the two parks also have to be considered when comparing them. While the issue of generalizability exists for theoretical implications as well, it is particularly important for park managers to keep this in mind before making decisions based on the data. Thus, these findings and implications are specifically geared toward GGNRA and SEKI, and are not to be considered applicable to the greater National Park System. Tabular results detailing the answers to each of the survey questions from the main study are in Appendix D.

Another generalization issue is in regard to sampling periods. Only three samples (March pilot study, May and July) were included in the study. A more thorough analysis could be gained by sampling visitors year-round. Costs, however, precluded this approach.

There is also some concern regarding non-response bias, as the respondents were slightly older than the non-respondents. This could have influenced the results, as technology users tended to be the younger respondents, and a higher proportion of older respondents may influence the results.

There was also some concern regarding the validity of one item. Content validity is the extent to which the items in the survey measure what was intended to be measured (150). Several respondents commented (on the survey) that they did not see the point of using TV commercials for trip planning. The intent of that item was to determine use of commercial TV (as opposed to

information or local access TV). The comments of some respondents indicated that they understood this, but as mentioned above that was not the case for all respondents.

Finally, the surveys were distributed in English only. This led to some difficulty contacting Spanish-speaking visitors in particular. The only Hispanic visitors who were able to participate were those who spoke English. A greater proportion of responses from Hispanic visitors could have been obtained if a multi-lingual survey team and multi-lingual surveys had been available.

5.3. Conclusions

This study revealed support for some of the relationships between antecedent variables, attitudes and intentions. The travel planning and transportation tools that are most likely to be used have also been outlined. The original area of inquiry in this study was to ask which, if any, of these tools will be used by park visitors. The critical part of this statement is whether they will be used. It appears that some of the ITS components, such as highway advisory radio, kiosks, and websites, will be used by some visitors, but not by the majority. The reasons behind this, as have been outlined in previous sections, include cost, perceived usefulness, and perceived appropriateness. However, as was discussed in this chapter, this is a rapidly changing world, and visitor attitudes and intentions may change over time, particularly in regard to technology. There has been considerable change over the last thirty years in regard to computers. In fact, the younger generation does not remember the pre-computer age. With the passage of time the predominant views will be shaped by the younger generation, which will dictate what tools will be accepted for use in national parks. This may mean drastic changes in the types of travel planning tools used in national parks, from touch screen computers throughout the parks to PDAs that are used for self-guided tours.

This study also found support for the predictive ability of antecedent variables in regard to attitudes and intentions, as well as the predictive ability of attitudes to intentions. As indicated in Chapter 2, travelers will employ coping behaviors to avoid congestion, and both alternative and intelligent transportation systems can be employed as coping tools. Coping was presented as "behaviors utilized in a proactive way to control conditions" (17). Although no relationship between perception of crowding and congestion to attitudes toward ITS and ATS was found, the finding that some respondents viewed certain ATS and ITS tools as appropriate tools in national parks indicates that there is some potential for these tools to be employed as coping behaviors, particularly as visitors' perceptions of these tools as ways to cope with crowding and congestion increases.

First, managers who are familiar with their park visitors can make distinctions regarding attitude in regard to transportation and travel planning tools. This study found differences among many variables, including type of park and demographics. These are identifiable visitor attributes from which managers may draw conclusions. Another important finding in regard to attitudes was the perception of an optional shuttle service in a national park as, apparently, a traditional item. Managers should be comfortable introducing this element to their parks, as it appears to be an established part of the visitor experience.

Secondly, the hypothesized relationship between attitude and intention was strongly supported by this study. In particular, the strength of the relationship between attitude toward ATS (both

the factor and individual items) and intent to use ATS (again, both factor and individual items) bodes well for monitoring their application. An important element in this regard was the particular dichotomy between an optional and mandatory shuttle. This dichotomy did not exist between shuttle with a fee and shuttle without a fee (with mandatory/optional attribute not specified). Managers should note that the fee attribute does not appear to be as problematic as the mandatory attribute.

Finally, it is extremely important to note that visitors to these two national parks did not necessarily view ITS as a welcome part of the park visit. Acceptance of these items, where it existed, tended to be prior to arrival at the parks. In this regard, the National Park Service may consider continuing with the distribution of traditional travel planning items within the park, while exploring technological advances that only affect visitors before their arrival (e.g. Internet). There is a possibility that implementation of electronic message signs (EMS) on routes to the park would be acceptable. This may be particularly useful for road closure notices in the winter on the road to Sequoia (State Route 198) and Kings Canyon (State Route 180). In addition, while advisory radio is part of an integrated intelligent transportation system, visitors viewed this item as a traditional tool. It also appeared to be a welcome tool for travel advisories. Many visitors noted that they did not use this medium because they were not familiar with the channel in the area, or because they did not see a sign advising them to turn to a specific station. Therefore, additional traveler information, such as what station to use in a particular area, may yield an increase in the level of use this medium receives. An example of this is evident on Zion National Park's website, as they identify the local AM radio station for traveler information (20).

Suggestions for future study include further analysis of the difference in perception regarding the various attributes available for shuttle systems. These attributes include mandatory or optional, inclusion of a fee, on-board tour guide, and on-board departure and arrival times (the last two were not tested in this study). Practically speaking, a mandatory shuttle at SEKI makes little sense, as too many visitors (47 percent) travel through the park, never returning to their point of origin. However, determining other attributes that may encourage use of this tool may prove highly useful for park managers.

This study could also be advanced by examining use of technological items in regard to both specialization theory and the diffusion of innovations theory. This may lend a greater understanding to a technology rating, as well as a possible timetable for the acceptance of these items in the national parks.

Finally, the logical next step is to test the actual use of ATS and ITS tools. It would be helpful for park managers to understand visitor acceptance and use of these items, particularly in regard to obvious intrusions on the park visit (EMS, shuttles). As discussed above, visitor acceptance of ITS and ATS tools in national parks and their intent to use these tools may continue to evolve. Testing actual behavior (use) and determining the effectiveness of these tools may provide the best information regarding the future usefulness of these tools in national parks.

APPENDIX A: SURVEY FORMS FOR MARCH

GOGA On-site Survey....87
GOGA Mailback Survey....88
SEKI On-Site Survey....100
SEKI Mailback Survey....101

GOGA On-Site Questionnaire

1. Record Questionnaire ID number: _____
2. Where did your trip begin today? _____
3. What other tourist sites/parks did you visit, or do you plan to visit, today (if any)?

_____

4. What type of transportation did you use to get to this park? (check the one that best describes mode)

____ private vehicle – circle one: Car SUV Truck Van Motorcycle
____ rental vehicle – circle one: Car SUV Truck Van Motorcycle
____ Recreational vehicle (RV) – circle one: own rent
____ Bicycle
____ Ferry
____ Public bus
____ Tour bus
____ Other (please specify: _____)

5. **Why** did you use the type of transportation that you used?

_____

6. Where did you park your vehicle while in the park (check all that apply)

____ Parking lot ____ Side of road
____ Did not have vehicle ____ Other _____

7. Do you live in the local area (close enough for day trip to park)?

YES (Thank you for participating, **NO** (continue with question 8)
(Please remember to return the survey)

8. What was the primary purpose of your visit to the area?

____ Visit this park
____ Visit other parks in the area (Please specify: _____)
____ Visit other attractions in the area (Please specify: _____)
____ Other (Please specify: _____)

9. Address: _____
_____
_____

Thank you for participating. Please remember to return the survey, and have a great day!

GOGA Mailback Questionnaire

Section I: Your visit to Golden Gate National Recreation Area (GGNRA)

The questions in this section of the survey are designed to help us understand some of the aspects of your most recent visit to Golden Gate National Recreation Area.

1. Which park in Golden Gate Recreation Area were you visiting when you received this questionnaire?
   Muir Woods ____ Muir Beach ____
   Stinson Beach ____ Other (please specify) _____

Questionnaires were distributed at several locations in Golden Gate National Recreation Area. Please respond to the following questions <u>for the park at which you received the questionnaire</u>.

2. Would you consider yourself a tourist on a trip to this area? (please circle one)
   YES NO (if YES, continue with 3. If NO, go to question 5)

3. Approximately how many days were you in the San Francisco Bay area? _____

4. What, if any, other parks/tourist sites did you visit while you were visiting the area?
   ____ Muir Woods
   ____ Stinson Beach
   ____ Marin Headlands
   ____ Point Reyes
   ____ Golden Gate Bridge/Overlooks
   ____ Golden Gate Park
   ____ Sausalito
   ____ Other (please specify) _____
   ____ Mt. Tamalpais State Park
   ____ Tennessee Valley
   ____ Fort Baker
   ____ Presidio
   ____ Cliff House
   ____ Mill Valley
   ____ Tiburon

5. What activities did you participate in during your trip to the park?
   ____ Visit beach ____ Ranger-led walks/talks ____ Walk nature trails
   ____ View wildlife ____ Hiking ____ Picnic
   ____ Horseback riding ____ Bicycling ____ Go for a drive
   ____ Other (please specify: _____)

A local resident is someone who lives in the area and travels to the park from home for a day visit. <u>If you are a local resident, please go to question 8</u>.

6. If you **are not a local resident**, did you stay overnight in the area? (please circle one)
   YES (continue with question 7) **NO** (go to question 8)

7. Where did you stay overnight while visiting the park?
   ____ With family/friends
   ____ Hotel (name of town hotel is in: _____)
   ____ Campground (name of town campground is in: _____)
   ____ Stayed in own home/condo
   ____ Other (please specify: _____)

8. Please rate how congested (with traffic) each of following areas was during your visit. Please check only one response for each area.

Areas	Congested 1	Somewhat Congested 2	Neither 3	Somewhat Uncongested 4	Uncongested 5	I Don't know 6
Roads leading to park	1	2	3	4	5	6
Parking lots	1	2	3	4	5	6
Trails	1	2	3	4	5	6

9. a) Please use the scale below to rate (from 1 to 5) how crowded you felt by people during this visit. Please circle **only one**.

Not at all Crowded		Crowded		Extremely Crowded
1	2	3	4	5

b) If you rated the above question by circling 3, 4, or 5, where in the park were you when you felt crowded? Please be as specific as possible.

_____
_____

10. Please indicate the importance of the following to your park visit.

	Unimportant 1	Somewhat Unimportant 2	Neither 3	Somewhat Important 4	Important 5
Safe roads	1	2	3	4	5
Safe parking areas	1	2	3	4	5
Level of congestion on roads leading to park	1	2	3	4	5
Level of congestion on trails in park	1	2	3	4	5
Ability to use own vehicle	1	2	3	4	5

11. If you visited more than one park in GGNRA, how did you get from one site to the next?

____ Private car ____ Public bus ____ Other
____ Tour bus ____ Bicycle (please specify: _____)
____ Rental car ____ Hike/jog

12. Please check the type of transportation you used and tell us why you used it.

____ Private automobile _____
____ Rental automobile _____
____ Private RV _____
____ Rental RV _____
____ Bicycle _____
____ Public transportation _____
____ Other _____

13. Please indicate your level of satisfaction with the mode of transportation that you used to travel to the park. (please circle only one)

Unsatisfied	Somewhat Unsatisfied	Neither	Somewhat Satisfied	Satisfied
1	2	3	4	5

Section II: Park Use Experience

The amount of experience that people have with parks varies greatly. The following questions will be used to help us understand your past experience with national parks.

14. Approximately how much time did you spend in this park? ____ Days ____ Hours

15. Was this your first visit to this park? **YES** (go to question 18) **NO** (go to question 16)

16. Approximately how many times have you visited this park (including this visit) in the last 12 months? _____ times

17. In approximately what year did you make your first visit to this park? _____

18. Do you plan to visit this park again in the next 12 months? (please circle one) YES NO

19. Please estimate how many national park units you have visited in the past 5 years (not including this park) _____ park units

20. Please list the most recent parks (other than GGNRA sites) that you have visited.

Section III: Planning for this Trip

In this part of the survey we would like you to tell us how you planned your trip to this park.

21. We would like to know what types of information you want when planning a trip. We would also like to know when you obtain each type of information. Please tell us at what point in your trip (before leaving home, on the way to the park, while at the park) you obtained each of the following types of information (if at all).

Please indicate (with an X) each type of information you obtained

	while planning your trip to the park (before leaving home)	while **on the way to the park**	while **at the park**	Did not obtain at all
General park information (hours of operation and entrance fees)				
Activities at park				
Hotel/lodging information				
Hotel/lodging reservations				
Campground information				
Campground reservations				
Estimated travel time to park				
Transportation options to get to park				
Alternate auto routes				
Road opening/closing notices				
Public transportation in park				
Parking availability				
Weather				
Other things to do in the area				

22. Next we would like to know what sources of information you used when planning your trip.

Please indicate (with an X) each item that you used …

I used the following …	**while planning your trip to the park** (before leaving home)	while **on the way to the park**	while **in park**	Did not obtain
Tour Book / visitor guides				
Internet – park web site				
Internet – other web site				
Friends/relatives				
Previous visits				
Visitor / Tourist information centers				
Commercial television				
Local access television				
Commercial radio				
Informational radio (e.g. highway advisory)				
Electronic Signs				
Chambers of Commerce				
Terminal Kiosks (airport, train or stations) with brochures, maps, etc.)				
Hotel or developed campground information kiosks - computer terminal				
Phone inquiry to park				
Cell phone (to access current data)				
Personal Digital Assistant (PDA)				
Current Internet travel information				
Newspaper/magazine articles				
Talk to people in local communities				
Travel agent				

23. If you stayed overnight in the area or at the park, how did you make your lodging or camping reservations?

____ Called establishment directly
____ Stopped in
____ AAA
____ Visitor center
____ Used reservation service
____ Used the Internet
____ Travel agent
____ Other (please specify: _____)

Section IV: ATTITUDES

Now we would like to know how you feel about certain aspects of a park.

24. Please indicate the extent to which you believe each of the following is an important part of the park's purpose.

Preservation of natural resources
____ not at all important ____ somewhat important ____ important ____very important ____ extremely important

Recreational use
____ not at all important ____ somewhat important ____ important ____very important ____ extremely important

25. Please indicate how **appropriate** you believe the following are for use in national parks.

Please circle one response for each item

I believe each of the following is …	**Inappropriate** **1**	**Somewhat Inappropriate** **2**	**Neither** **3**	**Somewhat Appropriate** **4**	**Appropriate** **5**
Tour Book / visitor guides available at the visitor center	1	2	3	4	5
Internet terminals at the visitor center	1	2	3	4	5
Talking with friends & relatives w driving through the park	1	2	3	4	5
Talking to Ranger at visitor center	1	2	3	4	5
Calling Ranger before visiting park	1	2	3	4	5
Talk to park employees to obtain travel information	1	2	3	4	5
Commercial television stations in parking lots providing traveler information	1	2	3	4	5
National Park Service video in the visitor center providing travel information	1	2	3	4	5
Commercial radio stations in visitor center providing travel information	1	2	3	4	5
Informational radio (e.g. highway advisory radio)	1	2	3	4	5
National Park Service radio station with travel information	1	2	3	4	5
Electronic signs with travel information in the parking lots	1	2	3	4	5
Electronic signs with travel information on the park roads	1	2	3	4	5

Question 25 (continued)

I believe each of the following is …	**Inappropriate** **1**	**Somewhat Inappropriate** **2**	**Neither** **3**	**Somewhat Appropriate** **4**	**Appropriate** **5**
Visitor center information kiosks – traditional (brochures, maps, etc.)	1	2	3	4	5
Hotel or developed campground information kiosks with brochures, maps, etc.	1	2	3	4	5
Hotel or developed campground information kiosks with computer terminals	1	2	3	4	5
National Park Service automated telephone information line	1	2	3	4	5
Personal Digital Assistant (PDA) to access travel information	1	2	3	4	5
Use Travel Agent to obtain travel information about park	1	2	3	4	5
Mandatory shuttle service in park – must park car outside park and ride shuttle into park	1	2	3	4	5
Mandatory shuttle service in park with next bus arrival & departure time information	1	2	3	4	5
Optional shuttle service in park - can either park car outside park and take shuttle or can drive into park in your car	1	2	3	4	5
Optional shuttle service in park with next bus arrival & departure time information	1	2	3	4	5
Public/municipal bus between area surrounding park and park	1	2	3	4	5
Public/municipal bus between area surrounding park and park with next bus arrival & departure time information	1	2	3	4	5
Parking lot in gateway from which you can ride your bike to the park	1	2	3	4	5

Section V: Technology

This section asks you to tell us about the technology that you use in general and when planning a visit to a park.

26. Do you **own** any of the following? (check all that apply)
    ____ Computer ____ PDA (Personal Digital Assistant)
    ____ Cell phone ____ GPS (Geographic Positioning System)

27. Please tell us why you **don't own** each item that you did not check in question 26.
    Please check only one for each item

	Too expensive	Don't know how to use	Don't think it is useful	Other (please specify)
Computer				
Cell Phone				
PDA (Personal Digital Assistant)				
GPS				

28. Do you have access to the Internet (check all that apply)
    ____ at home ____ at work/school ____ other (please specify: _____)

29. Do you use any of the following to make plan trips? (please circle YES or NO for each item)

GPS	YES	NO
Current Internet Information	YES	NO
Computer trip planners (e.g. MapQuest)	YES	NO
Informational TV (e.g. weather channel)	YES	NO
Commercial TV	YES	NO
Information radio (e.g. Highway advisory)	YES	NO
Commercial Radio	YES	NO
PDA (Personal Digital Assistant)	YES	NO
Cell phone to call for current information	YES	NO

Section VI: Transportation

This section asks about the types of transportation you use, and the reasons that you do or do not use various types of transportation.

30. How often do you use public transportation?
    ____ daily ____ at least once per week
    ____ at least once per month ____ at least once per year
    ____ never

31. Have you ever used public transportation at a national park? YES NO

    If yes, please specify the park(s) _____

32. If you responded NO to any of the above items in questions 29 - 31 please tell us why you don't use those items.

	Too expensive	Takes too much time	Don't know how to use	Traveling with children	Other
Public transportation					
Public transportation in national parks					
Cell Phone					
PDA (Personal Digital Assistant)					
GPS					
Current Internet information					
Computer trip planners (e.g. MapQuest)					
Informational TV (e.g. Weather channel)					
Commercial TV					
Information radio (e.g. Highway advisory)					
Commercial Radio					

Section VII: Obtaining Travel Information

In this section we would like you to tell how useful you believe various information sources are, and how likely you are to use them. Question 33 asks you to tell us how useful you believe each item would be in regard to national parks in general. Question 34 asks you to tell us how likely you would be to use each item at Sequoia and Kings Canyon National Parks in particular.

33. There are many ways to gather information when you are planning a trip to a national park, while you are on the way to a national park, and while you are at a national park. Please tell us how useful you believe each of the following items would be for obtaining information at these three times.

How **useful** do you believe each of the following is for obtaining information …	**While planning a trip** to a national park (before leaving home not at all useful……..…..very useful 1 2 3 4 5	**While on the way** to this park not at all useful……..…..very useful 1 2 3 4 5	**While at** a national park Not at all useful……..…..very useful 1 2 3 4 5
Tour Book / visitor guides	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Internet – park web site	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Internet – other web site	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Friends/relatives	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Previous visits	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Visitor / Tourist information centers	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Commercial television	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Local access television	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Commercial radio	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Informational radio (e.g. highway advisory)	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Electronic Signs	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Chambers of Commerce	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Terminal Kiosks (airport, train or bus stations) with brochures, maps, etc.)	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Terminal Kiosks (airport, train or bus stations) – electronic/computer	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Hotel or developed campground information kiosks with brochures, maps, etc.	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Hotel or developed campground information kiosks – electronic/computer	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Phone inquiry to park	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Cell phone (to access current data)	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Personal Digital Assistant (PDA)	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Current Internet travel information	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Newspaper/magazine articles	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Talk to people in local communities	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Travel agent	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

34. Please tell us how **likely** it is that you would use each of the following while planning a trip, while traveling to, and while you are in Golden Gate National Recreation Area.

How **likely** is it that you would use each of the following . … (please rate each item on a scale of 1 to 5, with 1 meaning not at all likely and 5 meaning very likely)	**While planning a trip** to this park (before leaving home) not at all likely…..……likely 1 2 3 4 5	**While on the way** to this park not at all likely…….likely 1 2 3 4 5	**While at** this park not at all likely……likely 1 2 3 4 5
Tour Book / visitor guides	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Internet – park web site	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Internet – other web site	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Friends/relatives	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Previous visits	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Visitor / Tourist information centers	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Commercial television	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Local access television	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Commercial radio	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Informational radio (e.g. highway advisory)	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Electronic Signs	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Chambers of Commerce	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Terminal Kiosks (airport, train or bus stations) with brochures, maps, etc.)	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Terminal Kiosks (airport, train or bus stations) – electronic/computer	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Hotel or developed campground information kiosks with brochures, maps, etc.	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Hotel or developed campground information kiosks – electronic/computer	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Phone inquiry to park	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Cell phone (to access current data)	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Personal Digital Assistant (PDA)	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Current Internet travel information	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Newspaper/magazine articles	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Talk to people in local communities	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Travel agent	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
In park shuttle – no fee	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
In park shuttle – fee	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Public bus to park - fee	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Park and ride	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Park and bike	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Section VIII: General Information

35. Please indicate your gender: ____ male ____ female

36. In what year were you born? _____

37. What ethnicity are you?
    ____ Hispanic or Latino
    ____ Not Hispanic or Latino

38. What race do you consider yourself? (please check all that apply)

    ____ Black or African American ____ Asian

    ____ Hispanic or Latino ____ American Indian or Native Alaskan

    ____ White/Caucasian ____ Native Hawaiian or Pacific Islander

    ____ Other (Please specify: _____)

39. Please tell us the primary language you speak at home _____

40. What is the highest level of education that you have completed so far? (please check one)
    ____ Less than 12 years ____ Some college

    ____ High school graduate ____ College graduate

    ____ Technical / Vocational school ____ Graduate or professional degree

41. Which of these categories includes your annual household income?
    ____ Under $20,000 ____ $60,000 - $79,999

    ____ $20,000 - $39,999 ____ $80,000 - $99,999

    ____ $40,000 - $59,999 ____ $100,000 or more

42. Which of the following categories applies to you? (please check all that apply)

    ____ Employed full-time ____ Retired ____ Unemployed
    ____ Employed part-time ____ Student ____ Homemaker
    ____ Self-employed

Thank you for taking the time to complete this survey. If you feel that we have left anything out please use the space below to write additional comments. **Please fold the survey in half, with the return address showing, tape the open end and mail it back to us at your earliest convenience.**

SEKI On-Site Questionnaire

Current Trip Details (to be completed on-site)

1. Record Questionnaire ID number: _____

2. Where did your trip begin today? _____

3. What other tourist sites/parks did you visit, or do plan to visit, today (if any)?

_____

4. What type of transportation did you use to get to this park? (check one that best applies)
   - ____ Private vehicle – circle one: Car SUV Truck Van Motorcycle
   - ____ Rental vehicle – circle one: Car SUV Truck Van Motorcycle
   - ____ Recreational vehicle (RV) – circle one: OWN RENT
   - ____ Bicycle
   - ____ Tour bus
   - ____ Other (please specify: _____)

5. **Why** did you use the type of transportation that you used?

_____

6. Do you live in the local area (close enough for day trip to park)?

   YES (Thank you for participating, Please remember to return the survey) **NO** (continue with question 7)

7. What was the primary purpose of your visit to the area?
   - ____ Visit the park
   - ____ Visit other parks in the area (please specify: _____)
   - ____ Visit other attractions in the area (please specify: _____)
   - ____ Other (please specify: _____)

8. Address: _____

   _____

   _____

Thank you for participating. Please remember to return the survey, and have a great day!

SEKI Mailback Questionnaire

Section I: YOUR VISIT TO SEQUOIA AND KINGS CANYON NATIONAL PARKS
(In this survey we will often refer to Sequoia & Kings Canyon National Parks as "this park")

The questions in this section of the survey are designed to help us understand some of the aspects of your most recent visit to Sequoia and Kings Canyon National Parks.

1. To begin, we would like to know what other tourist sites/parks, if any, you visited as part of this trip. We would also like to know what other tourist sites/parks you visited the same day that you visited Sequoia and Kings Canyon. (please check all that apply)

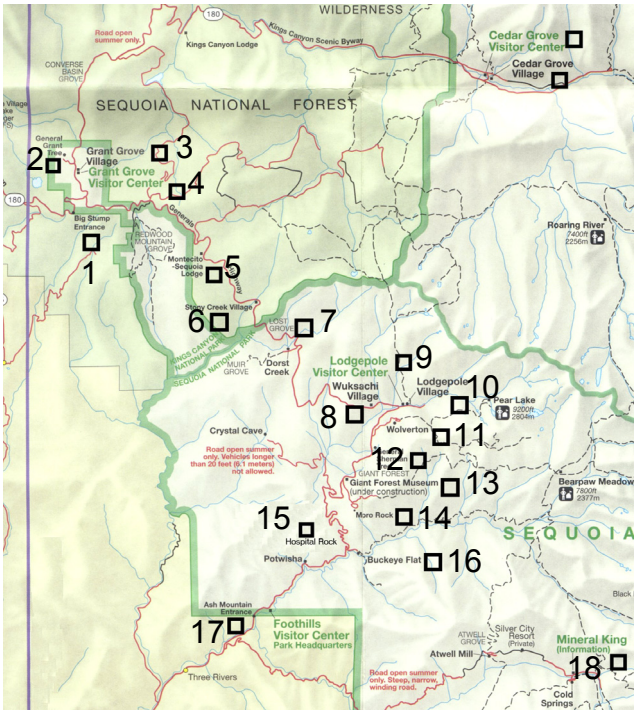
	Other sites visited during this trip	Other sites visited the same day as Sequoia & Kings Canyon
Yosemite National Park	_____	_____
Devils Postpile National Monument	_____	_____
Mammoth Mountain	_____	_____
Death Valley National Park	_____	_____
Other	_____	_____

(if other, please specify:_____)

2. We would like to get an idea of the route you took through the park and the places that you stopped inside the park. We would like you to do each of the following:

a. Using the map to the right, please draw arrows showing the route you took through the park.

b. Using the map to the right, please mark an "X" in the boxes next to the places that you stopped while in the park (use the list below as a reference).



1. Big Stump Entrance
2. General Grant Tree
3. Grant Grove Village
4. Grant Grove Visitor Center
5. Montecito-Sequoia Lodge
6. Stony Creek Village
7. Lost Grove
8. Wuksachi Village
9. Lodgepole Visitor Center
10. Lodgepole Village
11. Wolverton
12. General Sherman Tree
13. Giant Forest Museum
14. Moro Rock
15. Hospital Rock
16. Buckeye Flat
17. Foothills Visitor Center
18. Mineral King

3. Approximately how many days did you spend away from home on this trip? _____

4. How long did you stay at Sequoia and Kings Canyon National Parks? ___ days ___ hours

5. What activities did you participate in during your trip to Sequoia and Kings Canyon National Parks? (please check all that apply)

____ Backcountry camping	____ Camping in developed campground	____ Picnic
____ Ranger-led walks/talks	____ Horseback riding	____ Fishing
____ Sightseeing/scenic drive	____ View wildlife	____ Hiking
____ Cross-country skiing	____ Bicycling	____ Climbing

____ Other (please specify: _____)

A local resident is someone who lives in the area and travels to the park from home for a day visit.

If you **are a local resident**, go to question 9.

6. If you **are not a local resident**, did you stay overnight in the area?
   YES (continue with question 7) **NO** (go to question 9)

7. Did you stay **inside the park**? If yes, please check all that apply. If no, go to question 8.
   a) Campground
      ___ Grant Grove (___Azalea ___Crystal Springs ___Sunset)
      ___ Grant Forest / Lodgepole Area (___ Dorst ___ Lodgepole)
      ___ Foothills Area (___Buckeye Flat ___ Potwisha ___ South Fork)
      ___ Mineral King Area (___ Atwell Mill ___ Cold Springs)
      ___ Cedar Grove (___Sheep Creek ___Sentinel ___ Canyon View ___ Moraine)
      ___ Bearpaw High Sierra Camp
   b) Park lodging
      ___ Wuksachi Lodge ___ Grant Grove Village ___John Muir Lodge
      ___ Cedar Grove Lodge ___ Silver City Resort (Mineral King Area)

8. Did you stay **outside the park** (while visiting this park)? If yes, please check type of accommodations from list below.
   a) ____ Hotel (Name of town hotel is in: _____)
   b) ____ Campground (Name of town campground is in: _____)
   c) ____ B&B (Name of town B&B is in: _____)
   d) ____ With family/friends
   e) ____ Own home or condo
   f) ____ Other (please specify: _____)

9. Please check the primary type of transportation you used and tell us why you used it. (please check only one)

____ Private automobile	_____
____ Rental automobile	_____
____ Private RV	_____
____ Rental RV	_____
____ Bicycle	_____
____ Public transportation	_____
____ Other	_____

10. Please indicate your level of satisfaction with the type of transportation that you checked in question 9. (please circle only one)

Unsatisfied	Somewhat Unsatisfied	Neither	Somewhat Satisfied	Satisfied
1	2	3	4	5

11. Please rate how congested (with traffic) each of following areas was during your visit. Please circle only one response for each area.

Areas	**Uncongested** **1**	**Somewhat Uncongested** **2**	**Neither** **3**	**Somewhat Congested** **4**	**Congested** **5**	**I don't care** **6**
Roads leading to this park	1	2	3	4	5	6
Roads inside this park	1	2	3	4	5	6
Parking lots	1	2	3	4	5	6
Trails	1	2	3	4	5	6

12. Please use the scale below to rate how crowded you felt during this visit. Please circle only one.

Not at all crowded		Crowded		Extremely Crowded
1	2	3	4	5

13. If you rated the above question (#12) by circling 3, 4, or 5, where in Sequoia and Kings Canyon National Parks were you thinking of? Please be as specific as possible.

_____

14. Please indicate the importance of the following to your park visit. (please circle one response for each item)

	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important
	1	2	3	4	5
Safe roads	1	2	3	4	5
Safe parking areas	1	2	3	4	5
Level of congestion on roads leading to park	1	2	3	4	5
Level of congestion on trails in park	1	2	3	4	5
Ability to use own vehicle	1	2	3	4	5

Section II: PARK USE EXPERIENCE

The amount of experience that people have with parks varies greatly. The following questions will be used to help us understand your past experience with national parks.

15. Was this your first visit to this park? **YES** (go to question 18) **NO** (go to question 16)

16. Approximately how many times have you visited this park (including this visit) in the last 12 months?
_____ times

17. In approximately what year did you make your first visit to this park? _____

18. Do you plan to visit this park again in the next 12 months? YES NO

19. Please estimate how many national park units you have visited in the past 5 years (not including this park).
_____

20. Please list the most recent parks (other than this park) that you have visited.

Section III: PLANNING FOR THIS TRIP

In this part of the survey we would like you to tell us how you planned your trip to Sequoia and Kings Canyon National Parks.

21. We would like to know what types of information you want when planning a trip. We would also like to know when you obtain each type of information. Please tell us at what point in your trip (before leaving home, on the way to the park, while at the park), if at all, you obtained each of the following types of information.

Please indicate (with an X) each type of information you obtained

I obtained information about:	**while planning my trip** to the park (before leaving home)	**while on the way** to the park	while **in the park**	Did not obtain
General park information (hours of operation and entrance fees)				
Activities at park				
Hotel/lodging information				
Campground information				
Hours of operation				
Entrance fees				
Travel time to park				
Transportation options				
Alternate routes to travel				
Road conditions				
Parking availability				
Weather				

22. Next we would like to know how you obtained information when planning your trip. Please indicate when you used each of the following sources to obtain information for your trip, if at all.

Please indicate (with an X) each item that you used …

I used the following:	**while planning my trip to the park** (before leaving home)	while **on the way** to the park	while **in the park**	Did not use / not applicable
Tour Book / visitor guides				
Internet – park web site				
Internet – other web site				
Friends/relatives				
Previous visits				
Visitor / Tourist information centers				
Commercial television				
Local access television				
Commercial radio				
Informational radio (e.g. highway advisory)				
Electronic Signs				
Chambers of Commerce				
Terminal Kiosks (airport, train or bus stations) – traditional (brochures, maps, etc.)				
Hotel or campground information kiosks - electronic/computer				
Phone inquiry to park				
Cell phone (to access current data)				
PDA (Personal Digital Assistant)				
Current Internet travel Information				
Newspaper/magazine articles				
Talk to people in local communities				
Travel agent				

23. If you stayed overnight in the area or at the park, how did you make your lodging or camping reservations?

____ Called establishment directly
____ Stopped in
____ AAA
____ Visitor center
____ Used reservation service
____ Used the Internet
____ Travel agent
____ Other (please specify: _____)

Section IV: ATTITUDES
Now we would like to know how you feel about certain aspects of a park.

24. Please indicate the extent to which you believe each of the following is an important part of Sequoia and Kings Canyon National Parks' purpose.

Preservation of natural resources
____ unimportant ____ somewhat unimportant ____ neither ____ somewhat important ____ important

Recreational use
____ unimportant ____ somewhat unimportant ____ neither ____somewhat important ____ important

25. Please indicate how appropriate you believe the following are for use in national parks.

Please circle one response for each item

I believe each of the following is …	Inappropriate 1	Somewhat Inappropriate 2	Neither 3	Somewhat Appropriate 4	Appropriate 5
Tour Book / visitor guides available at the visitor center	1	2	3	4	5
Internet terminals at the visitor center	1	2	3	4	5
Talking with friends & relatives while driving through the park	1	2	3	4	5
Talking to Ranger at visitor center	1	2	3	4	5
Calling Ranger before visiting park	1	2	3	4	5
Talk to park employee to obtain travel information	1	2	3	4	5
Commercial television stations in the parking lots providing traveler information	1	2	3	4	5
National Park Service video in the visitor center providing travel information	1	2	3	4	5
Commercial radio stations in visitor center providing travel information	1	2	3	4	5
Informational radio (e.g. highway advisory radio)	1	2	3	4	5
National Park Service radio station with travel information	1	2	3	4	5
Electronic signs with travel information in the parking lots	1	2	3	4	5
Electronic signs with travel information on the park roads	1	2	3	4	5

Question 25 (continued)

I believe each of the following is …	Inappropriate 1	Somewhat Inappropriate 2	Neither 3	Somewhat Appropriate 4	Appropriate 5
Visitor center information kiosks with brochures, maps, etc.	1	2	3	4	5
Hotel or developed campground information kiosks with brochures, maps, etc.	1	2	3	4	5
Hotel or developed campground information kiosks with computer terminals	1	2	3	4	5
National Park Service automated telephone information line	1	2	3	4	5
Personal Digital Assistant (PDA) to access travel information	1	2	3	4	5
Mandatory shuttle service in park – you must park outside park and ride shuttle into park	1	2	3	4	5
Mandatory shuttle service in park with next bus arrival & departure time information	1	2	3	4	5
Optional shuttle service in park: you have a choice of riding the shuttle into the park or driving yourself	1	2	3	4	5
Optional shuttle service in park with next bus arrival & departure time information	1	2	3	4	5
Public/municipal bus between area surrounding park and park	1	2	3	4	5
Public/municipal bus between area surrounding park and park with next bus arrival & departure time information	1	2	3	4	5
Parking lot in gateway from which you can ride your bike to the park	1	2	3	4	5

Section V: TECHNOLOGY
This section asks you to tell us about the technology that you use in general and when planning a visit to a park.

26. Do you own any of the following? (check all that apply)
_____ Computer _____ PDA (Personal Digital Assistant)
_____ Cell phone _____ GPS (Geographic Positioning System)

27. Please tell us why you **don't own** each item that you did not check in question 26.

Please check only one for each item

	Too expensive	Don't know how to use	Don't think it is useful	Other (please specify
Computer				
Cell Phone				
PDA (Personal Digital Assistant)				
GPS				

28. Do you have access to the Internet (check all that apply)
____ at home ____ at work/school ____ Other (please specify:_____)

29. Please tell us if you use any of the following when planning a trip (please circle YES or NO for each item).

GPS	YES	NO
Current Internet Information	YES	NO
Computer trip planners (e.g. MapQuest)	YES	NO
Informational TV (e.g. Weather channel)	YES	NO
Commercial TV	YES	NO
Information radio (e.g. Highway advisory)	YES	NO
Commercial radio	YES	NO
Cell phone to call for current information	YES	NO
PDA (Personal Digital Assistant)	YES	NO

Section VI: TRANSPORTATION

This section asks about the types of transportation you use, and the reasons that you do or do not use various types of transportation.

30. How often do you use public transportation? (please check only one)
    ____ daily ____ at least once per week
    ____ at least once per month ____ at least once per year
    ____never

31. Have you ever used public transportation at a national park? YES NO
    If yes, please specify the park(s) _____

32. If you responded NO to any of the above items in questions 29 - 31 please tell us why you **don't use** those items.

Please mark an X in the applicable box for each item

	Too expensive	Takes too much time	Don't know how to use	Traveling with children	Not available	Other (please indicate)
Public transportation						
Public transportation in national parks						
Cell Phone						
PDA (Personal Digital Assistant)						
GPS						
Current Internet information						
Computer trip planners (e.g. MapQuest)						
Informational TV (e.g. Weather channel)						
Commercial TV						
Information radio (e.g. Highway advisory)						
Commercial Radio						

Section VII: OBTAINING INFORMATION

In this section we would like you to tell how useful you believe various information sources are, and how likely you are to use them. Question 33 asks you to tell us how useful you believe each item would be in regard to national parks in general. Question 34 asks you to tell us how likely you would be to use each item at Sequoia and Kings Canyon National Parks in particular.

33. There are many ways to gather information at different time of your trip planning process, including when you are planning a trip to a national park, while you are on the way to a national park, and while you are at a national park. Please tell us how **useful** you believe each of the following items would be for obtaining information at these three times.

Please circle one response for each item at each time

How **useful** do you believe each of the following is for obtaining information … Please rate each item on a scale of 1 to 5, with 1 meaning not at all useful and 5 meaning very useful)	**While planning a trip** to a national park (before leaving home) not at all useful…..……very useful 1 2 3 4 5	**While on the way** to a national park not at all useful……very useful 1 2 3 4 5	**While at** a national park Not at all useful……very useful 1 2 3 4 5
Tour Book / visitor guides	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Internet - park web site	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Internet – other web site	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Friends/relatives	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Previous visits	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Visitor / Tourist information centers	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Commercial television	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Local access television	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Commercial radio	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Informational radio (e.g. highway advisory)	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Electronic Signs	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Chambers of Commerce	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Terminal Kiosks (airport, train or bus stations) with brochures, maps, etc.)	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Terminal Kiosks (airport, train or bus stations) – electronic/computer	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Hotel or developed campground information kiosks with brochures, maps, etc.	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Hotel or developed campground information kiosks - electronic/computer	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Phone inquiry to park	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Cell phone (to access current data)	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Personal Digital Assistant (PDA)	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Current Internet travel information	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

34. Please tell us how **likely** it is that you would use each of the following while planning a trip, while traveling to, and while you are in Sequoia and Kings Canyon National Parks.

Please circle one response for each item at each time

How **likely** is it that you would use each of the following . … (please rate each item on a scale of 1 to 5, with 1 meaning not at all likely and 5 meaning very likely)	**While planning a trip** to this park (before leaving home) not at all likely…..…….likely 1 2 3 4 5	**While on the way** to this park not at all likely……likely 1 2 3 4 5	**While at** this park not at all likely……likely 1 2 3 4 5
Tour Book / visitor guides	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Internet – park web site	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Internet – other web site	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Friends/relatives	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Previous visits	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Visitor / Tourist information centers	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Commercial television	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Local access television	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Commercial radio	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Informational radio (e.g. highway advisory)	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Electronic Signs	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Chambers of Commerce	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Terminal Kiosks (airport, train or bus stations) with brochures, maps, etc.	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Terminal Kiosks (airport, train or bus stations) with internet terminals	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Hotel or developed campground information kiosks with brochures, maps, etc.	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Hotel or developed campground information kiosks with internet terminals	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Phone inquiry to park	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Cell phone (to access current data)	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Personal Digital Assistant (PDA)	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Current Internet travel information	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Newspaper/magazine articles	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Talk to people in local communities	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Travel agent	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
In park shuttle – no fee	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
In park shuttle – fee	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Public bus to park - fee	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Park and ride	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Park and bike	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Section VIII: GENERAL INFORMATION

35. Please indicate your gender: _____ Male _____ Female

36. What ethnicity are you?
    ____ Hispanic or Latino
    ____ Not Hispanic or Latino

37. What race do you consider yourself? (please check all that apply)
    ____ Black or African American ____ Asian
    ____ Hispanic or Latino ____ American Indian or Native Alaskan
    ____ White/Caucasian ____ Native Hawaiian or Pacific Islander
    ____ Other (Please specify: _____)

38. Please tell us the primary language you speak at home _____

39. What is the highest level of education that you have completed so far? (please check one)
    ____ Less than 12 years ____ Some college
    ____ High school graduate ____ College graduate
    ____ Technical / Vocational school ____ Graduate or professional degree

40. Which of these categories includes your annual household income?
    ____ Under $20,000 ____ $60,000 - $79,999
    ____ $20,000 - $39,999 ____ $80,000 - $99,999
    ____ $40,000 - $59,999 ____ $100,000 or more

41. Which of the following categories applies to you? (please check all that apply)
    ____ Employed full-time ____ Retired ____ Unemployed ____ Student
    ____ Homemaker ____ Employed part-time ____ Self-employed

Thank you for taking the time to complete this survey. If you feel that we have left anything out please use the space below to write additional comments. **Please fold survey in half, with the return address showing, tape or staple the open end and mail it back to us at your earliest convenience.**

APPENDIX B: SURVEY FORMS FOR MAY AND JULY

GOGA On-site Survey....115
GOGA Mailback Survey....116
SEKI On-Site Survey....128
SEKI Mailback Survey....129

GOGA On-site Survey

1. Questionnaire ID number: _____Refused survey _____ Already rec'd survey _____
2. Where did your trip begin today? _____
3. What other tourist sites/parks did you visit, or do plan to visit, today (if any)?

_____

4. What type of transportation did you use to get to this park? (check one that best applies)

____ Private vehicle – circle one: Car SUV Truck Van Motorcycle

____ Rental vehicle – circle one: Car SUV Truck Van Motorcycle

____ Recreational vehicle (RV) – circle one: OWN RENT

____ Bicycle

____ Tour bus

____ Other (please specify: _____)

5. **Why** did you use the type of transportation that you used?

_____

6. 6. Where did you park your vehicle while in the park (check all that apply)

____ Parking lot ____ Side of road

____ Did not have vehicle ____ Other _____

7. Age: Year person who will complete survey was born _____

8. a. Type of group (check one): alone ____ family ____ friends ____ family/friends ____ other ____ tour group ____

   b. Number of people in group_____

9. Do you live in the local area (close enough for day trip to park)?

YES (Thank you for participating, please remember to return the survey) **NO** (continue with question 10)

10. What was the primary purpose of your visit to the area?
    ____ Visit this park
    ____ Visit other parks in the area (please specify: _____)
    ____ Visit other attractions in the area (please specify: _____)
    ____ Other (please specify: _____)

11. Name & Address: _____
    _____
    _____

Golden Gate National Recreation Area
Transportation and Technology Study
2002

California Department of Transportation
Department of Recreation, Park & Tourism Sciences, Texas A&M University
Texas Transportation Institute
Western Transportation Institute

Mobility Analysis

Texas Transportation Institute
3135 TAMU
College Station, TX 77843-3135

Dear Visitor:

Thank you for taking the time to participate in this important study. Our goal is to learn about the experiences, opinions and needs of visitors to national parks in regard to transportation and technology. This will enable park managers, such as those as Golden Gate National Recreation Area, to better manage the park and serve you, the visitor.

The questionnaire is only being given to approximately 1200 visitors, so your participation is very important! It should take about 15-20 minutes for you to complete the survey. When your visit is over, please complete the survey, fold it in half with the postage-paid stamp and return address on the outside, staple or tape the open end, and drop it in any U.S. mailbox.

Please note that by returning this questionnaire, you are voluntarily agreeing to participate in this study. All of your answers in this questionnaire will be treated as strictly confidential. This survey has been reviewed and approved by the Institutional Review Board – Human Subjects in Research, Texas A&M University. For research-related problems or questions regarding subjects' rights, you may contact the Institutional Review Board through Dr. Michael W. Buckley, Director of Support Services, Office of Vice President for Research at (979) 458-4067.

If you have questions about this survey, please contact Scott Shafer (sshafer@rpts.tamu.edu) or Ginni Dilworth (gdilwort@rpts.tamu.edu), Department of Recreation, Park & Tourism Sciences at Texas A&M University. The phone number is (979) 845-5349.

NPS permit #: GOGA-2002-SCI-0001

Section I: Your visit to Golden Gate National Recreation Area (GGNRA)

The questions in this section of the survey are designed to help us understand some of the aspects of your most recent visit to Golden Gate National Recreation Area.

1. Which park in Golden Gate Recreation Area were you visiting when you received this questionnaire?

   Muir Woods ____
   Stinson Beach ____

Questionnaires were distributed at several locations in Golden Gate National Recreation Area. Please respond to the following questions <u>for the park at which you received the questionnaire</u>.

2. Would you consider yourself a tourist on a trip to this area? (please circle one) YES NO
   (if YES, continue with 3. If NO, go to question 5)

3. Approximately how many days were you in the San Francisco Bay area? _____

4. Please check the type of transportation you used and tell us why you used it.
   - ____ Private automobile _____
   - ____ Rental automobile _____
   - ____ Private RV _____
   - ____ Rental RV _____
   - ____ Bicycle _____
   - ____ Public transportation _____
   - ____ Other _____
     _____

5. What, if any, other parks/tourist sites did you visit while you were visiting the area?
   - ____ Muir Woods
   - ____ Stinson Beach
   - ____ Marin Headlands
   - ____ Point Reyes
   - ____ Golden Gate Bridge/Overlooks
   - ____ Golden Gate Park
   - ____ Sausalito
   - ____ Mt. Tamalpais State Park
   - ____ Tennessee Valley
   - ____ Fort Baker
   - ____ Presidio
   - ____ Cliff House
   - ____ Mill Valley
   - ____ Tiburon
   - ____ Other (please specify) _____

6. Did you use any other type of transportation than that indicated in question #4 to move between sites listed in question #5?

7. What activities did you participate in during your trip to the park?
   - ____ Visit beach
   - ____ Ranger-led walks/talks
   - ____ Walk nature trails
   - ____ View wildlife
   - ____ Hiking
   - ____ Picnic
   - ____ Horseback riding
   - ____ Bicycling
   - ____ Go for a drive
   - ____ Other (please specify: _____)

A local resident is someone who lives in the area and travels to the park from home for a day visit. <u>If you are a local resident, please go to question 8</u>.

8. If you **are not a local resident**, did you stay overnight in the area? (please circle one)
   YES (continue with question 7) **NO** (go to question 8)

9. Where did you stay overnight while visiting the park?
   ____ With family/friends
   ____ Hotel (name of town hotel is in: _____)
   ____ Campground (name of town campground is in: _____)
   ____ Stayed in own home/condo
   ____ Other (please specify: _____)

10. Please rate how congested (with traffic) each of following areas was during your visit. Please check only one response for each area.

Areas	**Uncongested 1**	**Somewhat Uncongested 2**	**Neither 3**	**Somewhat Congested 4**	**Congested 5**	**I Don't know 6**
Roads leading To park	**1**	**2**	**3**	**4**	**5**	**6**
Parking lots	**1**	**2**	**3**	**4**	**5**	**6**
Trails	**1**	**2**	**3**	**4**	**5**	**6**

11. a) Please use the scale below to rate (from 1 to 5) how crowded you felt by people during this visit. Please circle **only one**.

Not at all Crowded				Extremely Crowded
1	2	3	4	5

b) If you rated the above question by circling 3, 4, or 5, where in the park were you when you felt crowded? Please be as specific as possible.

_____

12. Please indicate the importance of the following to your park visit.

	Unimportant 1	Somewhat Unimportant 2	Neither 3	Somewhat Important 4	Important 5
Safe roads	1	2	3	4	5
Safe parking areas	1	2	3	4	5
Level of congestion on roads leading to park	1	2	3	4	5
Level of congestion on trails in park	1	2	3	4	5
Ability to use own vehicle	1	2	3	4	5

13. Please indicate your level of satisfaction with the mode of transportation that you used to travel to the park. (please circle only one)

Unsatisfied	Somewhat Unsatisfied	Neither	Somewhat Satisfied	Satisfied
1	2	3	4	5

Section II: PARK USE EXPERIENCE

The amount of experience that people have with parks varies greatly. The following questions will be used to help us understand your past experience with national parks.

14. Approximately how much time did you spend in this park? ____ Days ____ Hours

15. Was this your first visit to this park? **YES** (go to question 18) **NO** (go to question 16)

16. Approximately how many times have you visited this park (including this visit) in the last 12 months? _____ times

17. In approximately what year did you make your first visit to this park? _____

18. Do you plan to visit this park again in the next 12 months? (please circle one) YES NO

19. Please estimate how many national park units you have visited in the past 5 years (not including this park) _____ park units

20. Please list the most recent parks (other than GGNRA sites) that you have visited.

Section III: PLANNING FOR THIS TRIP

In this part of the survey we would like you to tell us how you planned your trip to this park.

21. We would like to know what types of information you want when planning a trip. We would also like to know when you obtain each type of information. Please tell us at what point in your trip (before arriving at the park and/or in the park) you obtained each of the following types of information (if at all).

Please indicate (with an X) each type of information you obtained (Please check all that apply)

	Before arriving at The park	**In the park**	**Did not obtain at all**
General park information (hours of operation and entrance fees)			
Activities at park			
Hotel/lodging information			
Campground information			
Travel time to park			
Transportation options to get to the park			
Alternate auto routes			
Road conditions			
Public transportation in park			
Parking availability			
Weather			
Other things to do in the area			

22. Next we would like to know what sources of information you used for your trip.

Please indicate (with an X) each item that you used … (Please check all that apply)

I used the following …	**Before arriving at the park**	**In the park**	**Did not obtain**
Tour Book / visitor guides			
Internet – park web site			
Internet – other web site			
Friends/relatives			
Previous visits			
Visitor / Tourist information centers			
Commercial television			
Local access television			
Commercial radio			
Informational radio (e.g. highway advisory)			
Electronic Road Signs			
Chambers of Commerce			
Terminal Kiosks (airport, train or stations) with brochures, maps, etc.)			
Hotel information kiosks - computer terminal			
Phone inquiry to park			
Cell phone (to access current data)			
Personal Digital Assistant (PDA)			
Current Internet travel information			
Newspaper/magazine articles			
Talk to people in local communities			
Travel agent			

23. If you stayed overnight in the area or at the park, how did you make your lodging or camping reservations?

____ Called establishment directly
____ Stopped in
____ AAA
____ Visitor center
____ Used reservation service
____ Used the Internet
____ Travel agent
____ Other (please specify: _____)

Section IV: ATTITUDES

Now we would like to know how you feel about certain aspects of a park.

24. Please indicate how **appropriate** you believe the following are for use in national parks.

Please circle only one response for each item

I believe each of the following is ...	**Inappropriate 1**	**Somewhat Inappropriate 2**	**Neither 3**	**Somewhat Appropriate 4**	**Appropriate 5**
Tour Book / visitor guides available in the park	1	2	3	4	5
Internet terminals in the park	1	2	3	4	5
Getting information from friends and relatives	1	2	3	4	5
Talking to Ranger at the park	1	2	3	4	5
Calling Ranger before visiting park	1	2	3	4	5
Commercial television used to provide park information	1	2	3	4	5
National Park Service video providing travel information	1	2	3	4	5
Commercial radio stations used to provide travel information	1	2	3	4	5
Informational radio (e.g. highway advisory radio)	1	2	3	4	5
National Park Service radio station with travel information	1	2	3	4	5
Electronic signs with travel information in the parking lots	1	2	3	4	5
Electronic signs with travel information on the park roads	1	2	3	4	5
Visitor center information kiosks – traditional (brochures, maps, etc.)	1	2	3	4	5
National Park Service automated telephone information line	1	2	3	4	5
Personal Digital Assistant (PDA) to access travel information	1	2	3	4	5
Use Travel Agent to obtain travel information about park	1	2	3	4	5
Mandatory shuttle service in park (you must park car outside park and ride shuttle into park)	1	2	3	4	5
Optional shuttle service in park (can either park car outside park and take shuttle or can drive into park in your car)	1	2	3	4	5
Taking a public bus into the park	1	2	3	4	5
Parking your car at the entrance and riding your bike into the park	1	2	3	4	5

25. Please indicate the extent to which you believe each of the following is an important part of the park's purpose.

Preservation of natural resources

____ not at all important ____ somewhat important ____ important ____very important ____ extremely important

Recreational use

____ not at all important ____ somewhat important ____ important ____very important ____ extremely important

Section V: TECHNOLOGY

This section asks you to tell us about the technology that you use in general and when planning a visit to a park.

26. Do you **own** any of the following? (check all that apply)

____ Computer ____ PDA (Personal Digital Assistant)
____ Cell phone ____ GPS (Geographic Positioning System)

27. Please tell us why you **don't own** each item that you did not check in question 26.

Please check only one for each item

	Too expensive	Don't know how to use	Don't think it is useful / don't need	Other (please specify
Computer				
Cell Phone				
PDA				
GPS				

28. Do you have access to the Internet (check all that apply)

____ at home ____ at work/school ____ other (please specify: _____)

29. Do you use any of the following to make plan trips? (please circle YES or NO for each item)

Please tell us why you do or do not use each item

GPS	YES	NO	
Current Internet Information	YES	NO	
Computer trip planners (e.g. MapQuest)	YES	NO	
Informational TV (e.g. weather channel)	YES	NO	
Commercial TV	YES	NO	
Information radio (e.g. Highway advisory)	YES	NO	
Commercial Radio	YES	NO	
PDA (Personal Digital Assistant)	YES	NO	
Cell phone to call for current information	YES	NO	

Section VI: OBTAINING TRAVEL INFORMATION

In this section we would like you to tell how useful you believe various information sources are, and how likely you are to use them.

30. Please tell us how **likely** it is that you would use each of the following before arriving at the park and while you are in Golden Gate National Recreation Area.

How **likely** is it that you would use each of the following . … (please rate each item on a scale of 1 to 5, with 1 meaning not at all likely and 5 meaning very likely)	**Before arriving** in this park not at all likely…..……very likely 1 2 3 4 5	**While in** this park not at all likely……very likely 1 2 3 4 5
Tour Book / visitor guides	1 2 3 4 5	1 2 3 4 5
Internet – park web site	1 2 3 4 5	1 2 3 4 5
Internet – other web site	1 2 3 4 5	1 2 3 4 5
Friends/relatives	1 2 3 4 5	1 2 3 4 5
Previous visits	1 2 3 4 5	1 2 3 4 5
Visitor / Tourist information centers	1 2 3 4 5	1 2 3 4 5
Commercial television	1 2 3 4 5	1 2 3 4 5
Local access television	1 2 3 4 5	1 2 3 4 5
Commercial radio	1 2 3 4 5	1 2 3 4 5
Informational radio (e.g. highway advisory)	1 2 3 4 5	1 2 3 4 5
Electronic Road Signs	1 2 3 4 5	1 2 3 4 5
Chambers of Commerce	1 2 3 4 5	1 2 3 4 5
Terminal Kiosks (airport, train or bus stations) with brochures, maps, etc.)	1 2 3 4 5	1 2 3 4 5
Terminal Kiosks (airport, train or bus stations) – electronic/computer	1 2 3 4 5	1 2 3 4 5
Hotel information kiosks with brochures, maps, etc.	1 2 3 4 5	1 2 3 4 5
Hotel information kiosks – electronic/ computer	1 2 3 4 5	1 2 3 4 5
Phone inquiry to park	1 2 3 4 5	1 2 3 4 5
Cell phone (to access current data)	1 2 3 4 5	1 2 3 4 5
Personal Digital Assistant (PDA)	1 2 3 4 5	1 2 3 4 5
Current Internet travel information	1 2 3 4 5	1 2 3 4 5
Newspaper/magazine articles	1 2 3 4 5	1 2 3 4 5
Talk to people in local communities	1 2 3 4 5	1 2 3 4 5
Travel agent	1 2 3 4 5	1 2 3 4 5
In park shuttle – no fee	1 2 3 4 5	1 2 3 4 5
In park shuttle – fee	1 2 3 4 5	1 2 3 4 5
Public bus to park - fee	1 2 3 4 5	1 2 3 4 5
Park and ride	1 2 3 4 5	1 2 3 4 5
Park and bike	1 2 3 4 5	1 2 3 4 5

Section VII: TRANSPORTATION

This section asks about the types of transportation you use, and the reasons that you do or do not use various types of transportation.

31. How often do you use public transportation?

____ daily ____ at least once per week
____ at least once per month ____ at least once per year
____ never

32. Have you ever used public transportation at a national park? YES NO

If yes, please specify the park(s) _____

If no, please tell us why not _____

Section VIII: GENERAL INFORMATION

33. Please indicate your gender: ____ male ____ female

34. In what year were you born? _____

35. What race do you consider yourself? (please check all that apply)

____ Black or African American ____ Asian
____ Hispanic or Latino ____ American Indian or Native Alaskan
____ White/Caucasian ____ Native Hawaiian or Pacific Islander
____ Other (Please specify: _____)

36. Please tell us the primary language you speak at home _____

37. What is the highest level of education that you have completed so far? (please check one)

____ Less than 12 years ____ Some college
____ High school graduate ____ College graduate
____ Technical / Vocational school ____ Graduate or professional degree

38. Which of these categories includes your annual household income?

____ Under $20,000 ____ $60,000 - $79,999
____ $20,000 - $39,999 ____ $80,000 - $99,999
____ $40,000 - $59,999 ____ $100,000 or more

39. Which of the following categories applies to you? (please check all that apply)

____ Employed full-time ____ Retired ____ Unemployed ____ Student
____ Employed part-time ____ Homemaker ____ Self-employed

Thank you for taking the time to complete this survey. If you feel that we have left anything out please use the space below to write additional comments. **Please fold the survey in half, with the return address showing, tape the open end and mail it back to us at your earliest convenience.**

SEKI On-site Survey

1. Questionnaire ID number: _____ Refused survey _____ Already rec'd survey _____

2. Where did your trip begin today? _____

3. What other tourist sites/parks did you visit, or do plan to visit, today (if any)?
_____

4. What type of transportation did you use to get to this park? (check one that best applies)
____ Private vehicle – circle one: Car SUV Truck Van Motorcycle
____ Rental vehicle – circle one: Car SUV Truck Van Motorcycle
____ Recreational vehicle (RV) – circle one: OWN RENT
____ Bicycle
____ Tour bus
____ Other (please specify: _____)

5. **Why** did you use the type of transportation that you used?
_____

6. Age: Year person who will complete survey was born _____

7. a. Type of group (check one): alone ____ family ____ friends ____ family/friends ____
other ____ tour group ____

   b. Number of people in group_____

8. Do you live in the local area (close enough for day trip to park)?

   YES (Thank you for participating, Please remember to return the survey) **NO** (continue with question 9)

9. What was the primary purpose of your visit to the area?
____ Visit this park
____ Visit other parks in the area (please specify: _____)
____ Visit other attractions in the area (please specify: _____)
____ Other (please specify: _____)

10. Name & Address: _____

_____

_____

Sequoia and Kings Canyon National Parks
Transportation and Technology Study
2002

California Department of Transportation
Department of Recreation, Park & Tourism Sciences, Texas A&M University
Texas Transportation Institute
Western Transportation Institute

Mobility Analysis

Texas Transportation Institute
3135 TAMU
College Station, TX 77843-3135

Dear Visitor:

Thank you for taking the time to participate in this important study. Our goal is to learn about the experiences, opinions and needs of visitors to national parks in regard to transportation and technology. This will enable park managers, such as those as Sequoia and Kings Canyon National Parks, to better manage the park and serve you, the visitor.

The questionnaire is only being given to approximately 1200 visitors, so your participation is very important! It should take about 15-20 minutes for you to complete the survey. When your visit is over, please complete the survey, fold it in half with the postage-paid stamp and return address on the outside, staple or tape the open end, and drop it in any U.S. mailbox.

Please note that by returning this questionnaire, you are voluntarily agreeing to participate in this study. All of your answers in this questionnaire will be treated as strictly confidential. This survey has been reviewed and approved by the Institutional Review Board – Human Subjects in Research, Texas A&M University. For research-related problems or questions regarding subjects' rights, you may contact the Institutional Review Board through Dr. Michael W. Buckley, Director of Support Services, Office of Vice President for Research at (979) 458-4067.

If you have questions about this survey, please call Scott Shafer (sshafer@rpts.tamu.edu) or Ginni Dilworth (gdilwort@rpts.tamu.edu), Department of Recreation, Park & Tourism Sciences at Texas A&M University. The phone number is (979) 845-5349.

NPS permit #: SEKI-2002-SCI-0003

Section I: YOUR VISIT TO SEQUOIA AND KINGS CANYON NATIONAL PARKS
(In this survey we will often refer to Sequoia & Kings Canyon National Parks as "this park")

The questions in this section of the survey are designed to help us understand some of the aspects of your most recent visit to Sequoia and Kings Canyon National Parks.

1. To begin, we would like to know what other tourist sites/parks, if any, you visited as part of this trip. We would also like to know what other tourist sites/parks you visited the same day that you visited Sequoia and Kings Canyon. (please check all that apply)

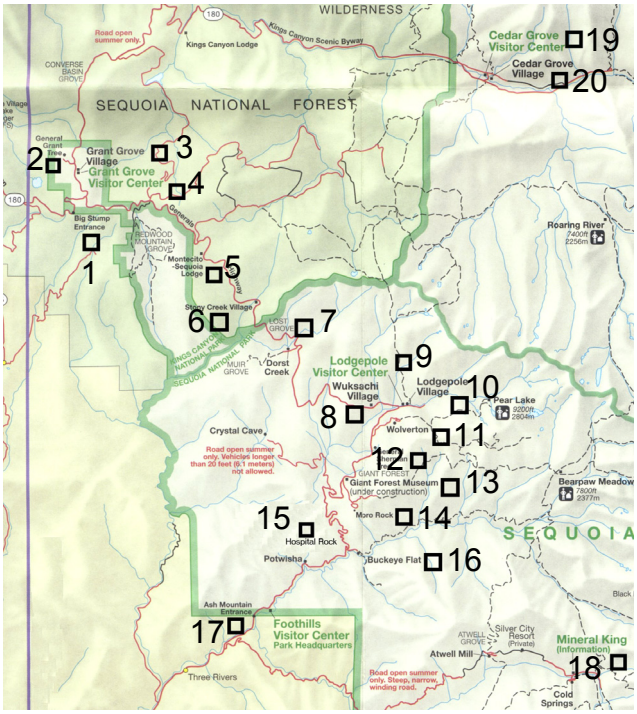
	Other sites visited during this trip	Other sites visited the same day as Sequoia & Kings Canyon
Yosemite National Park	_____	_____
Death Valley National Park	_____	_____
Other	_____	_____

(if other, please specify: _____)

2. We would like to get an idea of the route you took through the park and the places that you stopped inside the park. We would like you to do each of the following:

a. Using the map to the right, **please draw arrows showing the route you took** through the park.

b. Using the map to the right, **please mark an "X" in the boxes next to the places that you stopped while in the park** (use the list below as a reference).



1. Big Stump Entrance
2. General Grant Tree
3. Grant Grove Village
4. Grant Grove Visitor Center
5. Montecito-Sequoia Lodge
6. Stony Creek Village
7. Lost Grove
8. Wuksachi Village
9. Lodgepole Visitor Center
10. Lodgepole Village
11. Wolverton
12. General Sherman Tree
13. Giant Forest Museum
14. Moro Rock
15. Hospital Rock
16. Buckeye Flat
17. Foothills Visitor Center
18. Mineral King
19. Cedar Grove Visitor Center
20. Cedar Grove Village

3. Approximately how many days did you spend away from home on this trip? _____

4. How long did you stay at Sequoia and Kings Canyon National Parks? _____ days _____ hours

5. What activities did you participate in during your trip to Sequoia and Kings Canyon National Parks? (please check all that apply)

____ Backcountry camping	____ Camping in developed campground	____ Picnic
____ Ranger-led walks/talks	____ Horseback riding	____ Fishing
____ Sightseeing/scenic drive	____ View wildlife	____ Hiking
____ Cross-country skiing	____ Bicycling	____ Climbing

____ Other (please specify: _____)

A local resident is someone who lives in the area and travels to the park from home for a day visit. If you **are a local resident**, go to question 9.

6. If you **are not a local resident**, did you stay overnight in the area?

   YES (continue with question 7) **NO** (go to question 9)

7. Did you stay inside the park? If yes, please check all that apply. If no, go to question 8.
   a) Campground
      ___ Grant Grove (Azalea, Crystal Springs, Sunset)
      ___ Grant Forest / Lodgepole Area (Dorst, Lodgepole)
      ___ Foothills Area (Buckeye Flat, Potwisha, South Fork)
      ___ Mineral King Area (Atwell Mill, Cold Springs)
      ___ Cedar Grove (Sheep Creek, Sentinel, Canyon View, Moraine)
      ___ Bearpaw High Sierra Camp
   b) Park lodging
      ___ Wuksachi Lodge ___ Grant Grove Village ___John Muir Lodge
      ___ Cedar Grove Lodge ___ Silver City Resort (Mineral King Area)

8. Did you stay **outside the park** (while visiting this park)? If yes, please check type of accommodations from list below.
   a) ____ Hotel (Name of town hotel is in: _____)
   b) ____ Campground (Name of town campground is in: _____)
   c) ____ B&B (Name of town B&B is in: _____)
   d) ____ With family/friends
   e) ____ Own home or condo
   f) ____ Other (please specify: _____)

9. Please check the primary type of transportation you used and tell us why you used it. (please check only one)

____ Private automobile	_____
____ Rental automobile	_____
____ Private RV	_____
____ Rental RV	_____
____ Bicycle	_____
____ Public transportation	_____
____ Other	_____

10. Please indicate your level of satisfaction with the type of transportation that you checked in question 9. (please circle only one)

Unsatisfied	Somewhat Unsatisfied	Neither	Somewhat Satisfied	Satisfied
1	2	3	4	5

11. Please rate how congested (with traffic) each of following areas was during your visit. Please circle only one response for each area.

Areas	**Uncongested 1**	**Somewhat Uncongested 2**	**Neither 3**	**Somewhat Congested 4**	**Congested 5**	**I don't care / not applicable 6**
Roads leading to this park	1	2	3	4	5	6
Roads inside this park	1	2	3	4	5	6
Parking lots	1	2	3	4	5	6
Trails	1	2	3	4	5	6

12. Please use the scale below to rate how crowded you felt during this visit. Please circle **only one**.

Not at all crowded		Crowded		Extremely Crowded
1	2	3	4	5

13. If you rated the above question (#12) by circling 3, 4, or 5, where in Sequoia and Kings Canyon National Parks were you thinking of? Please be as specific as possible.

---

14. Please indicate the importance of the following to your park visit. (please circle one response for each item)

	Unimportant 1	Somewhat Unimportant 2	Neither 3	Somewhat Important 4	Important 5
Safe roads	1	2	3	4	5
Safe parking areas	1	2	3	4	5
Level of congestion on roads leading to park	1	2	3	4	5
Level of congestion on trails in park	1	2	3	4	5
Ability to use own vehicle	1	2	3	4	5

Section II:PARK USE EXPERIENCE

The amount of experience that people have with parks varies greatly. The following questions will be used to help us understand your past experience with national parks.

15. Was this your first visit to this park? **YES** (go to question 18) **NO** (go to question 16)

16. Approximately how many times have you visited this park (including this visit) in the last 12 months? _____ times

17. In approximately what year did you make your first visit to this park? _____

18. Do you plan to visit this park again in the next 12 months? YES NO

19. Please estimate how many national park units you have visited in the past 5 years (not including this park). _____

20. Please list the most recent parks (other than this park) that you have visited.

Section III: PLANNING FOR THIS TRIP

In this part of the survey we would like you to tell us how you planned your trip to Sequoia and Kings Canyon National Parks.

21. We would like to know what types of information you want when planning a trip. We would also like to know when you obtain each type of information. Please tell us at what point in your trip (before leaving home, on the way to the park, while at the park), if at all, you obtained each of the following types of information.

Please indicate (with an X) each type of information you obtained (Please check all that apply)

I obtained information about:	**Before arriving** in the park	**In the park**	Did not obtain / Not applicable
General park information (hours of operation and entrance fees)			
Activities at park			
Hotel/lodging information			
Campground information			
Travel time to park			
Transportation options to get to the park			
Alternate auto routes			
Road conditions			
Public transportation in the park			
Parking availability			
Weather			
Other things to do in the area			

22. Next we would like to know how you obtained information when planning your trip. Please indicate when you used each of the following sources to obtain information for your trip, if at all.

	Please indicate (with an X) each item that you used … (Please check all that apply)		
I used the following:	**Before arriving** in the park	while **in the park**	Did not use / not applicable
Tour Book / visitor guides			
Internet – park web site			
Internet – other web site			
Friends/relatives			
Previous visits			
Visitor / Tourist information centers			
Commercial television			
Local access television			
Commercial radio			
Informational radio (e.g. highway advisory)			
Electronic Road Signs			
Chambers of Commerce			
Terminal Kiosks (airport, train or bus stations) with brochures, maps, etc.			
Hotel information kiosks - electronic/computer			
Phone inquiry to park			
Cell phone (to access current data)			
Personal Digital Assistant (PDA)			
Current Internet travel information			
Newspaper/magazine articles			
Talk to people in local communities			
Travel agent			

23. If you stayed overnight in the area or at the park, how did you make your lodging or camping reservations?

____ Called establishment directly ____ Used reservation service
____ Stopped in ____ Used the Internet
____ AAA ____ Travel agent
____ Visitor center ____ Other (please specify: _____)

Section IV: ATTITUDES
Now we would like to know how you feel about certain aspects of a park.

24. Please indicate how **appropriate** you believe the following are for use **in national parks**.
Please circle one response for each item

I believe each of the following is …	Inappropriate 1	Somewhat Inappropriate 2	Neither 3	Somewhat Appropriate 4	Appropriate 5
Tour Book / visitor guides available in the park	1	2	3	4	5
Internet terminals in the park	1	2	3	4	5
Getting information from friends and relatives	1	2	3	4	5
Personal Digital Assistant (PDA) to access travel information	1	2	3	4	5
Calling Ranger before visiting park	1	2	3	4	5
Commercial television used to provide park information	1	2	3	4	5
National Park Service video providing travel information	1	2	3	4	5
Commercial radio stations used to provide travel information	1	2	3	4	5
Informational radio (e.g. highway advisory radio)	1	2	3	4	5
National Park Service radio station with travel information	1	2	3	4	5
Public/municipal bus between area surrounding park and park					
Electronic signs with travel information in the parking lots	1	2	3	4	5
Electronic signs with travel information on the park roads	1	2	3	4	5
Visitor center information kiosks with brochures, maps, etc.	1	2	3	4	5
National Park Service automated telephone information line	1	2	3	4	5
Talking to Ranger at the park	1	2	3	4	5
Mandatory shuttle service in park – you must park outside park and ride shuttle into park	1	2	3	4	5
Optional shuttle service in park (can either park car outside park and take shuttle or drive into park in your car)	1	2	3	4	5
Parking you car at entrance and riding your bike into the park	1	2	3	4	5

25. Please indicate the extent to which you believe each of the following is an important part of Sequoia and Kings Canyon National Parks' purpose.

Preservation of natural resources

____ not at all important ____ somewhat important ____ important ____ very important ____ extremely important

Recreational use

____ not at all important ____ somewhat important ____ important ____ very important ____ extremely important

Section V: TECHNOLOGY

This section asks you to tell us about the technology that you use in general and when planning a visit to a park.

26. Do you own any of the following? (check all that apply)

_____ Computer _____ PDA (Personal Digital Assistant)
_____ Cell phone _____ GPS (Geographic Positioning System)

27. Please tell us why you don't own each item that you did not check in question 26.

Please check only one for each item

	Too expensive	Don't know how to use	Don't think it is useful / don't need	Other (please specify
Computer				
Cell Phone				
Personal Digital Assistant (PDA)				
GPS				

28. Do you have access to the Internet (check all that apply)

____ at home ____ at work/school ____ Other (please specify:_____)

29. Please tell us if you use any of the following when planning a trip (please circle YES or NO for each item).

Please tell us why you either do or do not use each item

GPS	YES	NO	
Current Internet Information	YES	NO	
Computer trip planners (e.g. MapQuest)	YES	NO	
Informational TV (e.g. Weather Channel)	YES	NO	
Commercial TV	YES	NO	
Information radio (e.g. Highway Advisory)	YES	NO	
Commercial radio	YES	NO	
Personal Digital Assistant (PDA)	YES	NO	
Cell phone to call for current information	YES	NO	

Section VI: OBTAINING INFORMATION

30. Please tell us how **likely** it is that you would use each of the following before arriving at the park, and while you are in Sequoia and Kings Canyon National Parks.

Please circle one response for each item "before park" and "in park"

How **likely** is it that you would use each of the following . … (please rate each item on a scale of 1 to 5, with 1 meaning not at all likely and 5 meaning very likely)	**Before arriving** in this park not at all likely……very likely 1 2 3 4 5	Does not apply	**While in** this park not at all likely……very likely 1 2 3 4 5	Does not apply
Tour Book / visitor guides	1 2 3 4 5	N/A	1 2 3 4 5	N/A
Internet – park web site	1 2 3 4 5	N/A	1 2 3 4 5	N/A
Internet – other web site	1 2 3 4 5	N/A	1 2 3 4 5	N/A
Friends/relatives	1 2 3 4 5	N/A	1 2 3 4 5	N/A
Previous visits	1 2 3 4 5	N/A	1 2 3 4 5	N/A
Visitor / Tourist information centers	1 2 3 4 5	N/A	1 2 3 4 5	N/A
Commercial television	1 2 3 4 5	N/A	1 2 3 4 5	N/A
Local access television	1 2 3 4 5	N/A	1 2 3 4 5	N/A
Commercial radio	1 2 3 4 5	N/A	1 2 3 4 5	N/A
Informational radio (e.g. highway advisory)	1 2 3 4 5	N/A	1 2 3 4 5	N/A
Electronic Road Signs	1 2 3 4 5	N/A	1 2 3 4 5	N/A
Chambers of Commerce	1 2 3 4 5	N/A	1 2 3 4 5	N/A
Terminal Kiosks (airport, train or bus stations) with brochures, maps, etc.	1 2 3 4 5	N/A	1 2 3 4 5	N/A
Terminal Kiosks (airport, train or bus stations) with internet terminals	1 2 3 4 5	N/A	1 2 3 4 5	N/A
Hotel information kiosks with brochures, maps, etc.	1 2 3 4 5	N/A	1 2 3 4 5	N/A
Hotel information kiosks with internet terminals	1 2 3 4 5	N/A	1 2 3 4 5	N/A
Phone inquiry to park	1 2 3 4 5	N/A	1 2 3 4 5	N/A
Cell phone (to access current data)	1 2 3 4 5	N/A	1 2 3 4 5	N/A
Personal Digital Assistant (PDA)	1 2 3 4 5	N/A	1 2 3 4 5	N/A
Current Internet travel information	1 2 3 4 5	N/A	1 2 3 4 5	N/A
Newspaper/magazine articles	1 2 3 4 5	N/A	1 2 3 4 5	N/A
Talk to people in local communities	1 2 3 4 5	N/A	1 2 3 4 5	N/A
Travel agent	1 2 3 4 5	N/A	1 2 3 4 5	N/A
In park shuttle – no fee	1 2 3 4 5	N/A	1 2 3 4 5	N/A
In park shuttle – fee	1 2 3 4 5	N/A	1 2 3 4 5	N/A
Public bus to park - fee	1 2 3 4 5	N/A	1 2 3 4 5	N/A
Park and ride	1 2 3 4 5	N/A	1 2 3 4 5	N/A
Park and bike	1 2 3 4 5	N/A	1 2 3 4 5	N/A

Section VII: TRANSPORTATION
This section asks about the types of transportation you use, and the reasons that you do or do not use various types of transportation.

31. How often do you use public transportation on a day-to-day basis? (please check only one)

____ daily ____ at least once per week
____ at least once per month ____ at least once per year
____ never

32. Have you ever used public transportation at a national park? YES NO

If yes, please specify the park(s) _____

If no, please tell us why not _____

Section VIII: GENERAL INFORMATION

33. Please indicate your gender: _____ Male _____ Female

34. In what year were you born? _____

35. What race do you consider yourself? (please check all that apply)

____ Black or African American ____ Asian
____ Hispanic or Latino ____ American Indian or Native Alaskan
____ White/Caucasian ____ Native Hawaiian or Pacific Islander
____ Other (Please specify: _____)

36. Please tell us the primary language you speak at home _____

37. What is the highest level of education that you have completed so far? (please check one)

____ Less than 12 years ____ Some college
____ High school graduate ____ College graduate
____ Technical / Vocational school ____ Graduate or professional degree

38. Which of these categories includes your annual household income?

____ Under $20,000 ____ $60,000 - $79,999
____ $20,000 - $39,999 ____ $80,000 - $99,999
____ $40,000 - $59,999 ____ $100,000 or more

39. Which of the following categories applies to you? (please check all that apply)

____ Employed full-time ____ Retired ____ Unemployed ____ Student
____ Homemaker ____ Employed part-time ____ Self-employed

Thank you for taking the time to complete this survey. If you feel that we have left anything out please use the space below to write additional comments. **Please fold survey in half, with the return address showing, tape or staple the open end and mail it back to us at your earliest convenience.**

APPENDIX C: SUMMARY RESULTS FOR MARCH SAMPLING PERIOD

Prepared by Ginni Dilworth and Scott Shafer, Department of Recreation Park and Tourism Sciences, Texas A&M University

Overview

The initial round of surveys, doubling as a pilot test, was conducted during the week of March 10-16, 2002 (Sunday through Saturday). The intent was to distribute 400 surveys each at Golden Gate National Recreation Area (GGNRA) and Sequoia and Kings Canyon National Parks (SEKI). Within each park unit, survey distribution would be divided so that 200 surveys would be distributed at each of two locations in GGNRA: at Stinson Beach and Muir Woods. Another 200 would be distributed at each of two locations in SEKI: Sequoia National Park (south end of SEKI) and Kings Canyon National Park (north end of SEKI). A survey team of four people – two working each day of the sampling and an additional two working on Sunday and Saturday only due to higher visitation on those days – distributed the surveys.

Weather problems at both locations – snow in SEKI and rain in GOGA – resulted in a distribution of 218 surveys at GOGA, and 158 at SEKI. Given the low level of visitation during that time and inclement weather, the number distributed, though lower than planned, should be representative of visitors given such conditions.

The response rate was lower than desired: 27 percent (n=58) for GOGA and 56 percent (n=88) for SEKI. According to Gary Machlis, Chief Social Scientist for the National Park Service (NPS), a 20 percent difference in return rate for an urban and rural park is to be expected. The desired response rate was 65 percent. Efforts to improve the response rate in May included additional training for the survey team and shortening the survey. A second follow up mailing (including a second copy of the survey) was also used to enhance response rates.

Current Trip Details - On-Site Questionnaire

The on-site questions were used to gather basic information regarding the respondents' trip that day. For SEKI, 55 percent of the returned surveys were distributed on the weekend (Sunday, Monday, Friday, Saturday); 44 percent were distributed mid-week. The majority (78 percent) visited the park with family; 11 percent traveled with friends; 5 percent were with friends and family. Another 4.5 percent were traveling alone. One quarter (25 percent) of respondents were in the 46-55 age group; 24 percent of respondents were in the 26-35 age group; 19 percent were in the 36-45 age group.

For GOGA, 62 percent of respondents were contacted at Muir Woods, and 38 percent of respondents had been intercepted at Stinson Beach. Seventy-nine percent of returned surveys were distributed on the weekend (Sunday, Monday, Friday, Saturday); 10 percent were distributed midweek (all on Wednesday); 10 percent had no date recorded. Twenty-one percent visited the parks (Stinson Beach and Muir Woods) alone, 19 percent visited with family, 17 percent visited with friends, and 5 percent visited with family and friends. Visitor group type was similar for the two park units, except that the majority (83 percent) of visitors to the GOGA units

traveling alone were intercepted at Stinson Beach. Twenty-two percent of GOGA respondents were in the 26-35 age group; 26 percent of respondents were in the 46-55 age group; 16 percent were in the 56-65 age group, and 12 percent were in the 36-45 age group.

Other Tourist Sites and Parks Visited Same Day

SEKI

- 46 percent started out that day within a 1-hour drive from the park
- only 11.5 percent of respondents considered themselves locals
- 41 percent started out that day in SEKI
- The remainder started out that day from elsewhere in California

GOGA

- 36 percent started out that day from San Francisco
- 14 percent began in Marin County that day
- The remainder started out that day from elsewhere in Northern California

The only sizable differences between park units were those starting out in San Francisco (44 percent of Muir Woods respondents; 23 percent of Stinson Beach respondents), and non-response to the item (33.3 percent of Muir Woods respondents; 13.6 percent of Stinson Beach respondents).

Type of Transportation Used to Get to Park

SEKI

- Private vehicle (car, SUV, truck, van) = 59 percent (car = 25 percent; SUV = 16 percent)
- Rental vehicle (car, SUV, truck, van) = 28.4 percent (car = 27.3 percent; SUV = 1.1 percent)
- Recreational vehicle = 5.7 percent (private = 2.3 percent; rental = 3.4 percent)
- Tour Bus = 1.1 percent

GOGA

- Private vehicle (car, SUV, truck, van) = 53 percent (car = 41 percent; SUV = 7 percent)
- Rental vehicle (car, SUV, truck, van) = 21 percent (car = 19 percent; SUV = 1.7 percent)
- Tour Bus = 5.2 percent

Differences between the two park units were with the use of a rental car (23 percent of Muir Woods respondents; 14.3 percent of Stinson Beach respondents) and non-response to the item (23 percent of Muir Woods respondents; 4.8 percent of Stinson Beach respondents).

Why Used That Type of Transportation

This was an open-ended, follow-up question regarding the type of transportation that the respondents used. A greater variety of responses was given at SEKI than GOGA.

SEKI

- Because it is what they have/own = 15 percent
- Touring state / on road trip = 14 percent
- Convenient / independence = 14 percent
- Holds lots of people and/or gear = 11 percent
- Because of the snow / 4x4 = 8 percent
- No other way to get to park = 8 percent
- Camping = 7 percent

GOGA

- Convenience = 26 percent (25 percent of Muir Woods Respondents; 27 percent of Stinson Beach respondents)
- Own it / live in area = 12 percent (18 percent of Muir Woods; 11 percent of Stinson Beach)
- Non-response = 40 percent (50 percent of Muir Woods; 23 percent of Stinson Beach)

Where GOGA visitors parked their vehicle

- Parking lot = 77.6 percent
- Side of road = 3.4 percent (0 percent of Muir Woods)
- Non-response = 19 percent (25 percent of Muir Woods)

Primary Purpose of Trip

SEKI

- Visit the park – 44.3 percent
- Visit other parks – 17 percent (Yosemite most frequently cited – 10.2 percent)
- Visit other attractions – 1.1 percent

- Other – 27.3 percent (12.5 percent - touring; 6 percent - visit friends/relatives; 4.6 percent - business)

GOGA

- Visit the park – 5.2 percent (all Muir Woods)
- Visit other parks – 1.7 percent
- Visit other attractions – 0.0 percent
- Other – 21 percent (66.7 percent - vacation; 25 percent - business)

Mail-back survey

Section I –Your visit

The purpose of this section was to gather information about the respondents' most recent trip to the respective parks. The questions in this section varied somewhat for SEKI and GOGA; results will be compared where possible.

SEKI

Other sites visited this trip and other sites visited same day as SEKI. Yosemite National Park was the most visited "other" site by respondents (21.6% visited Yosemite during this trip and 4.5% visited Yosemite the same day as SEKI). Neither Devils Postpile nor Mammoth Mountain received any positive responses; they were removed from the May survey as specific items. 11.4% of respondents visited Death Valley on this trip, but none visited both parks in the same day. Other parks mentioned by more than two respondents as having been visited on this trip included Joshua Tree NP (5.7%), Grand Canyon (5.6%), and Redwoods (2.3%).

Visitors were asked to tell us where they stopped within the park. The table below shows the percentage of respondents who stopped at each location.

Big Stump Entrance	24.0%		Lodgepole Village	21.6%
General Grant Tree	45.5%		Wolverton	6.8%
Grant Grove Village	31.8%		General Sherman Tree	71.6%
Grant Grove Visitor Center	40.9%		Giant Forest Museum	61.4%
Montecito-Sequoia Lodge	8.0%		Moro Rock	11.4%
Stony Creek Village	4.5%		Hospital Rock	27.3%
Lost Grove	21.6%		Buckeye Flat	12.5%
Wuksachi Village	37.5%		Foothills Visitor Center	34.1%
Lodgepole Visitor Center	35.2%		Mineral King	(closed)

Direction. Respondents at SEKI were asked which direction they traveled through the park. The largest group (33%) traveled in and out of the park from the south side. The next largest group (25%) also entered from the south, but exited at the north end of the park. Entering the park at the north end was less common, with 17% entering and exiting at the north entrance (Big Stump), and 10% entering at the north entrance and exiting at the south end of the park.

Days spent away from home on this trip (open-ended question). SEKI: the most frequent responses were 2-3 days (20%), 4-5 days (16%),10-11 days (14%). 55% were away from home 1-7 days, and 20% were away from home for more than two weeks.

Most visitors stayed at the park for either one (21.6%) or two (22.7%) days. 52% of those who stayed less than one day were in the park from 4-7 hours.

GOGA: 53% of respondents who were not locals stayed in the area for 3-5 days; 23% stayed 7-10 days. 81% stayed of those who stayed less than one day were in the park from 1-4 hours.

Activities. See the following table:

ACTIVITY	SEKI	GOGA
Backcountry camping	2.3%	n/a
Ranger-led walks/talks	8.0%	1.7%
Sightseeing/scenic drive	83.0%	46.6%
Cross-country skiing	14.8%	n/a
Camping (developed campground)	10.2%	n/a
Horseback riding	0.0%	0.0%
View wildlife	33.0%	31.0%
Bicycling	1.1%	1.7%
Picnic	10.2%	13.8%
Fishing	0.0%	n/a
Hiking	25.0%	37.9%
Climbing	1.1%	n/a
Other – snow shoe	9.0%	n/a
Walk nature trails	n/a	46.6%
Visit beach	n/a	34.5%

Where non-residents stayed in the area. SEKI: 33.5% of non-residents who stayed in the area used a campground in the park, while 69.5% stayed at a park lodge (adds up to more than 100% because some people did both). Of those who stayed in the area, but outside the park, 19.3% stayed in hotels, 6.8% stayed at campgrounds, 4.5% stayed at a Bed & Breakfast, and 4.5% stayed with family or friends.

GOGA: 71% of those who stayed in the area stayed at a hotel; 32% stayed with family or friends. Of the hotel visitors, 55% stayed in San Francisco, while 10.7% stayed in Marin County.

Primary type of transportation. This transportation data will differ from the transportation data collected on-site date in that it includes only those on-site visitors contacted who returned the mail-back survey, therefore the total number of respondents is less.

Type of Transportation	SEKI	GOGA
Private car	59.1%	63.8%
Rental car	34.1%	24.1%
Private RV	4.5%	0.0%
Rental RV	4.5%	0.0%
Bicycle	1.1%	0.0%

Type of Transportation	SEKI	GOGA
Public Transportation	1.1%	3.4%
Tour bus	0.0%	6.9%

Crowding and congestion. Respondents were universally satisfied with their transportation – 87.5% of SEKI respondents were satisfied with their transportation and 84.5% of GOGA visitors were satisfied (80.5% of Muir Woods respondents and 91% of Stinson Beach respondents).

SEKI: Respondents were asked to rate the level of congestion for different aspects of the park; a five-point scale ("uncongested," "somewhat uncongested," "neither," "somewhat congested," and "congested"). Level of congestion on park roads was rated as "uncongested" by 91% of respondents, roads leading to the park were rated "uncongested" by 94% of respondents, parking lots were rated as "uncongested" by 78.4%, and as "somewhat uncongested" by 11.4%, and trails were rated as "uncongested" by 70.5% of respondents.

On a similar five-point scale, 92% of respondents felt "not at all crowded" by people during their visit. While congestion is viewed as the physical conditions in the park, crowding is an individual evaluation (perception) of that congestion.

91% of respondents rated safe roads as either "somewhat important" or "important". Likewise, 85% of respondents rated safe parking lots as either "somewhat important" or "important" and 79% rated safe roads to the park the same. Congestion on trails is either "somewhat important" or "important" to 64% of respondents. 79% rated the use of one's own vehicle as either "somewhat important" or "important", while 12.5% rated use of one's own vehicle as either "somewhat unimportant" or "unimportant".

GOGA: Most respondents rated the level of congestion on roads to the park as "uncongested" (48.3%), "somewhat uncongested" (22.4%); 17% rated the roads as either "somewhat congested" or "congested." The parking lots were rated as "somewhat uncongested" or "uncongested" by 40% of respondents, but as "somewhat congested" or "congested" by 53.4% of respondents. The majority of respondents (44.8%) described the trails as "uncongested;" 22.4% rated the trails as "somewhat congested" or "congested." 84.6% of the latter visited Muir Woods; 15.4% of Stinson Beach respondents reported congestion on the trails.

44.8% of respondents felt "not at all crowded" during their visit, while 34.5% were not very crowded. 12% of respondents felt either somewhat or "extremely crowded" during their visit. The parking lots were cited most often as the place where respondents felt crowded; 75% of these respondents were Muir Woods visitors.

Importance of congestion related items. Most respondents rated safe roads (86%) and safe parking lots (84%) as either "somewhat important" or "important." Correspondingly, 79% of respondents rated level of congestion on the roads as either "somewhat important" or "important." 83% of respondents rated level of congestion on trails as either "somewhat important" or "important." Finally, ability to use own vehicle was "important" overall to 43.1% but "unimportant" to 17.2% of respondents. However, only 30% of Muir Woods respondents rated this as "important" while 67% of Stinson Beach respondents felt this was "important."

Additional Questions. GOGA: Visitors to Golden Gate National Recreation Area were asked additional questions.

At least a quarter of the respondents visited Muir Woods, Golden Gate Bridge, and Sausalito. 20.7% visited Golden Gate Park, 17.2% visited Pt. Reyes, 13.8% visited the Presidio, 12% visited Cliff House, 10.3% visited Stinson Beach, 6.9% visited Marin Headlands, and 5.2% visited Ft. Baker.

GOGA visitors were also asked how they traveled between GOGA locations (if at all). Most (41.4%) used a private vehicle and another 17.2% used a rental car. 8.6% were on a tour bus.

Section 2 – Park Use Experience (SEKI and GOGA)

First-time visitors. At GOGA, 61.1% of Muir Woods respondents and 27.2% of Stinson Beach respondents were first-time visitors. 35% of Stinson Beach's repeat visitors have been to the park over 10 times in the past twelve months. The majority of Muir Woods' repeat visitors had been to the park either zero (35.7%) or one time (28.5%) in the past twelve months. Muir Woods and Stinson Beach visitors who plan to return to the park in the next twelve months totaled 41.6% and 71.4% respectively. 55.7% of SEKI respondents were first time visitors. 56% of SEKI's repeat visitors had been to the park one or two times in the past twelve months; 44.3% plan to return again in the next year.

Parks visited. In addition to asking respondents to name the other parks they visited on the same trip as the one during which they received the survey (see page 4), we asked them to tell us what other parks they had visited recently (within the last five years). 40% of GOGA respondents, and 40% of SEKI respondents visited 3-5 national parks in the past 5 years. For GOGA respondents, the most frequently cited parks visited were Yosemite National Park (34.5%) and Pt. Reyes National Seashore (17.2%). SEKI respondents visited Yosemite National Park (37.5%), Grand Canyon National Park (25%), Death Valley National Park (13.6%), Yellowstone National Park (11.3%), Joshua Tree National Park (10.2%) and Zion National Park (10.2%).

Section 3 – Planning For This Trip

Types of information. Respondents were asked to tell us what types of information they want when planning a trip, and at which point in the planning process they obtained the information. In this section, we review the combined results for GOGA and SEKI. However, a breakdown of the two parks is provided in cells where a difference we considered large enough to be of interest existed. NOTE: Respondents were asked to check all that apply; therefore, percentages may not add up to 100.

Types of information obtained…	**while planning your trip to the park** (before leaving home)	while **on the way to the park**	while **at the park**	Did not obtain at all
General park information (hours of operation and entrance fees)	35.6 %	8.9%	32.2%	27.4% 38% GOGA 21% SEKI

Types of information obtained…	**while planning your trip to the park** (before leaving home)	while **on the way to the park**	while **at the park**	Did not obtain at all
Activities at park	24.0	5.5	45.9 29% GOGA 57% SEKI	30.1 47% GOGA 19% SEKI
Hotel/lodging information	37.0 29% GOGA 42% SEKI	5.5 2% GOGA 8% SEKI	7.5 0 GOGA 12.5% SEKI	51.4 69% GOGA 40% SEKI
Campground information	13.7	4.1	6.8.	74.7
Estimated travel time to park	41.1	17.8 10% GOGA 23% SEKI	0.7	41.1 52% GOGA 34% SEKI
Transportation options to get to park	33.6	3.4	2.7	60.3
Alternate auto routes	29.5 19% GOGA 36% SEKI	15.8 12% GOGA 18% SEKI	3.4	52.1 67% GOGA 42% SEKI
Road conditions	15.1 7% GOGA 21% SEKI	24.7 7% GOGA 36% SEKI	17.8 3% GOGA 27% SEKI	50.0 81% GOGA 30% SEKI
Parking availability	7.5	2.1	26.7	65.8
Weather	39.0 48% GOGA 33% SEKI	25.3 13% GOGA 33% SEKI	17.8 3% GOGA 27% SEKI	25.3 38% GOGA 17% SEKI

How hotel and campground reservations were made. The majority of respondents either called the establishment directly (18.5%) or stopped in at an establishment (16.4%). Others used the Internet (10.3%), the visitor center (4.1%) or a reservation service (3.4%). A few used AAA (2.1%).

Sources of information. Respondents were asked to tell us what sources of information they used when planning their trip, and at which point in the planning process they used the information source. In this section, we will review the combined results for GOGA and SEKI. Again, a breakdown of the two parks is provided for items on which a relatively large difference exists. NOTE: Respondents were asked to check all that apply; therefore, percentages may not add up to 100.

I used the following …	**while planning your trip to the park** (before leaving home)	while **on the way to the park**	while **in the park**	Did not obtain
Tour Book / visitor guides	38.4 48% - GOGA 32% - SEKI	12.3 2% – GOGA 19% - SEKI	21.2 7% - GOGA 31% - SEKI	35.6 43% - GOGA 31% - SEKI
Internet – park web site	28.1 17% - GOGA 35% - SEKI	1.4	0.7	68.5 79% - GOGA 61% - SEKI

I used the following …	**while planning your trip to the park** (before leaving home)	while **on the way to the park**	while **in the park**	Did not obtain
Internet – other web site	29.5 21% - GOGA 35% - SEKI	0.7	1.4	67.1 76% - GOGA 61% - SEKI
Friends/relatives	41.1	1.4	2.1	56.2
Previous visits	37.7	0.7	2.1	58.9
Visitor / Tourist information centers	9.6	6.2	39.0 19% - GOGA 52% - SEKI	46.6 64% - GOGA 35% - SEKI
Commercial television	1.4	0.0	0.0	96.6
Local access television	0.7	0.0	0.0	97.3
Commercial radio	0.0	0.7	0.0	97.3
Informational radio (e.g. highway advisory)	1.4	3.4	2.7	91.1
Electronic Signs	0.0	2.7 (all SEKI)	2.7 (all SEKI)	91.8
Chambers of Commerce	2.1 (all SEKI)	2.1	0.0	93.8
Terminal Kiosks (airport, train or bus stations) with brochures, maps, etc.	1.4	2.7	1.4	92.5
Hotel or developed campground information kiosks - computer	6.8	2.7	3.4	85.6
Phone inquiry to park	10.3 2% - GOGA 16% - SEKI	6.8 0.0 – GOGA 11% - SEKI	0.0	82.9 97% - GOGA 74% - SEKI
Cell phone (to access current data)	0.7 2% - GOGA 9% - SEKI	6.2	1.4	89.7 93% - GOGA 86% - SEKI
Personal Digital Assistant (PDA)	0.0	0.0	0.7	97.3
Current Internet travel information	16.4	0.0	0.0	81.5
Newspaper/magazine articles	8.9	1.4	1.4	86.3
Talk to people in local communities	8.9	7.5	3.4	78.8
Travel agent	0.0	0.0	0.0	97.3

Section 4 – Attitudes

Importance of preservation and recreational use to the park's purpose. Respondents were also asked to rate the importance of a) preservation of natural resources and b) recreational use, as part of the park's purpose. Due to an editing error, different responses were provided on each survey. For SEKI, responses on a five-point scale ranged from "unimportant" to "important". 91% of SEKI respondents rated preservation of natural resources as "important" while only 43%

of respondents rated recreational use as "important". For GOGA, responses on a five-point scale ranged from "not at all important" to "extremely important." 84.5% of respondents rated preservation as "extremely important", while only 20.7% of respondents rated recreational use as "extremely important." A small percentage of respondents at both parks rated recreational use as "unimportant" (or "not at all important"); none of the respondents rated preservation on the negative end of the scale.

Appropriateness of information media and alternate transportation. Visitor attitudes about various forms of information media and transportation options were determined by having respondents reply to the statement, "I believe each of the following is" … inappropriate, somewhat inappropriate, neither, somewhat appropriate, or appropriate.

Two items, tour book and talking to a ranger at the visitor center, received only positive ratings (81% and 72% "appropriate" respectively). Calling a ranger, however, was rated "appropriate" by only 24.7% of respondents, and was rated as either "somewhat inappropriate" or "inappropriate" by 13%.

Of the information media items, television and radio received the most negative ratings, while electronic message signs (EMS), Internet terminals at hotels and campgrounds received mixed ratings. Internet terminals at the visitor center received a slightly higher rating, with 35.7% of respondents rating it positively and 18.4% rating it negatively. Informational radio received a more positive rating than commercial radio; 59.5% rated it favorably and only 4.4% rated it unfavorably. PDAs were viewed "appropriate" by 15.1% of respondents but "inappropriate" by 11.0%.

As for NPS related items, an NPS video was viewed favorably by 57.1% of respondents, while NPS radio was rated favorably by 61.9% of respondents. NPS automated phone system was rated favorably by 58.9% of respondents.

	Inappropriate	Somewhat Inappropriate	Neither	Somewhat Appropriate	Appropriate
Commercial TV	39.0%	12.3%	13.5%	8.9%	3.4%
Commercial Radio	24.7%	14.4%	34.9%	13.7%	7.5%
EMS – in parking lots	20.5%	16.4%	26.7%	23.3%	9.6%
EMS – park roads	25.3%	13.7%	21.2%	22.6%	14.4%
Internet terminal – hotel/campground	17.1%	13.7%	28.8%	20.5%	13.0%

Transportation-related items also received mixed reviews from respondents; optional shuttle systems were viewed much more favorably than mandatory shuttles in the parks. There was little difference between the ratings when next bus arrival and departure time was specified versus a system without this feature. Overall, respondents seem to favor optional shuttle systems and public bus systems to the park. A parking lot in the gateway town from which visitors can ride their bikes was rated favorably by 63.0% of respondents.

	Inappropriate	Somewhat Inappropriate	Neither	Somewhat Appropriate	Appropriate
Mandatory shuttle	31.5%	8.2%	19.2%	20.5%	17.1%
Mandatory shuttle with next bus arrival & departure times	30.1%	9.6%	17.1%	16.4%	23.3%
Optional shuttle	5.5%	3.4%	18.5%	31.5%	35.6%
Optional shuttle with next bus arrival & departure times	6.2%	3.4%	17.1%	32.2%	35.6%
Public bus to park	10.3%	6.2%	23.3%	30.1%	26.0%
Public bus to park with next bus arrival and departure times	8.9%	5.5%	24.0%	29.5%	27.4%

One exception to the above is the rating on mandatory shuttles by GOGA and SEKI respondents. More GOGA respondents rated a mandatory shuttle favorably (44.8%) than unfavorably (24.1%), while SEKI respondents were more likely to rate a mandatory shuttle unfavorably (50.0%) than favorably (32.9%).

Section 5 – Technology

Technological items which respondents own. 89.7% of respondents own a computer and 75.3% own a cell phone. However, only 11.6% own a PDA and 16.0% own a GPS. There are some differences between the respondents from each park; visitors at SEKI (83.0%) are more likely to have a cell phone than GOGA visitors (63.8%), as well as GPS (21.6% vs. 8.6%). However, GOGA (17.2%) visitors are more likely to own a PDA than SEKI visitors (8.0%).

Most of those who do not own a cell phone replied that it was either "not useful" or "too expensive", while PDAs are viewed by 52.1% of respondents as "not useful". GPS is also viewed as "not useful" (33.6%) but price also appears to be a factor as 21.9% rate it as "too expensive".

The majority of respondents have access to a computer; 81.5% at home and 61.0% at work or school.

Information media used when planning a trip. The following table shows the percentage of respondents who use the different types of information media when planning a trip (GOGA and SEKI).

Technology	Percentage who use	Reason why not used
GPS	7.5%	20.5% don't know how 19.9% too expensive
Current Internet Information	76.0%	4.8% not available 4.8% don't know how 4.8% too much time

Computer Trip Planners	58.2%	8.9% don't know how 7.5% too much time
Informational TV	55.5%	8.2% don't watch TV 7.5% too much time 4.1% not available
Commercial TV	17.8%	10.3% too much time 8.2% don't watch TV 6.8% not available
Informational Radio	41.1%	7.2% not available 6.8% don't know how
Commercial Radio	22.6%	10.3% not available 5.5% don't know how 5.5% too much time
Cell phone to call for current information	43.2%	13.7% too expensive
PDA	4.8%	24.0% don't know how 34.0% too expensive

Section 6 – Transportation (GOGA and SEKI)

Frequency that you use public transportation. The most frequent reasons given by those who do not use public transportation are "too much time" (35.8%), "not available" (18.3%), and "traveling with children" (7.3%). The majority of respondents does not use public transportation or only use it once per year (see below).

- Daily = 6.8%
- At least once per week = 6.2%
- At least once per month = 11.6%
- At least once per year = 34.2%
- Never = 40.4%

34.9% of respondents have used pubic transportation in a national park. The parks most frequently mentioned as the place they used public transportation are Yosemite (45.0%) and Grand Canyon (27.4%).

The most frequent reasons given by those who do not use public transportation in national parks is "not available" (27.1%), "too much time" (21.9%), "don't know how" (10.4%), and "traveling with children" (7.3%).

Section 7 – Obtaining Travel Information

The March survey used two five-point scales to determine what visitors may actually use when planning a trip. The first scale asked respondents to rank how *useful* they believe each form of information media is for trip planning to *national parks in general*. The second scale asked respondents to rate how *likely* they would be to use each form of information media as well as various forms of alternate transportation in *GOGA or SEKI* specifically. Many respondents appeared to have checked the same items for each scale, many others did not complete the

second scale, some writing "see previous page." Therefore, the "usefulness" scale was eliminated from the May survey. This eliminated the perceived repetitiveness and made the survey shorter, but retained the principal question of what visitors would use for planning a trip and traveling to GOGA and SEKI. Summarized below is the *likely to use* scale as this addresses the main question.

How likely are you to use each of the following at GOGA/SEKI? (on scale of 1-5; 1 = not at all likely; 5 = very likely). Items with large differences between the two parks are in bold print.

Traditional items	**GOGA mean**	**SEKI mean**	**Overall Mean**
Tour book while planning (at home)	4.50	4.33	4.40
Tour book enroute to the park	3.83	3.96	3.91
Tour book at the park	**3.57**	**4.24**	3.98
Friends/family while planning	4.26	4.02	4.11
Friends/family enroute to the park	2.73	2.64	2.67
Friends/family at the park	2.60	2.38	2.47
Previous visits while planning	4.38	4.48	4.44
Previous visits enroute to the park	4.10	3.82	3.93
Previous visits at the park	4.13	3.86	3.97
Visitor center while planning	3.15	3.05	3.09
Visitor center enroute to the park	3.13	3.15	3.14
Visitor center at the park	**3.72**	**4.38**	4.13
Chamber of Commerce while planning	1.96	1.91	1.93
Chamber of Commerce enroute to the park	1.58	1.67	1.64
Chamber of Commerce at the park	1.38	1.52	1.46
Hotel kiosk while planning	2.30	2.49	2.42
Hotel kiosk enroute to the park	**2.30**	**2.88**	2.66
Hotel kiosk at the park	**2.18**	**3.16**	2.80
Phone park while planning	**3.40**	**3.1**	3.72
Phone park enroute to the park	**2.69**	**3.10**	2.94
Phone park at the park	**1.90**	**2.47**	2.25
Newspaper while planning	**3.66**	**3.25**	3.41
Newspaper enroute to the park	**2.53**	**2.04**	2.23
Newspaper at the park	**2.45**	**1.74**	2.02
Talk to locals while planning	**2.90**	**2.29**	2.80
Talk to locals enroute to the park	**3.04**	**2.62**	3.06
Talk to locals at the park	**2.98**	**2.31**	2.87
Travel agent while planning	**2.41**	**1.83**	2.06
Travel agent enroute to the park	**1.47**	**1.21**	1.41
Travel agent at the park	**1.48**	**1.17**	1.25

Technology-based items	GOGA mean	SEKI mean	Overall Mean
Park web site while planning (at home)	4.10	4.05	4.07
Park web site enroute to the park	1.83	1.71	1.75
Park web site at the park	1.61	1.64	1.63
Other web site while planning	3.85	3.69	3.75
Other web site enroute to the park	1.62	1.60	1.61
Other web site at the park	1.52	1.51	1.51
Commercial TV while planning	**2.02**	**1.65**	1.79
Commercial TV enroute to the park	1.48	1.47	1.47
Commercial TV at the park	1.46	1.42	1.43
Local access TV while planning	1.92	1.60	1.72
Local access TV enroute to the park	1.52	1.56	1.54
Local access TV at the park	**1.48**	**1.84**	1.70
Commercial radio while planning	1.88	1.84	1.73
Commercial radio enroute to the park	1.79	1.82	1.82
Commercial radio at the park	**1.73**	**2.22**	1.79
Information radio while planning (at home)	2.44	2.22	2.3
Information radio enroute to the park	2.91	3.29	3.15
Information radio at the park	**2.49**	**3.23**	2.94
Electronic message signs while planning	1.94	1.79	1.85
Electronic message signs enroute to the park	3.23	3.17	3.19
Electronic message signs at the park	3.02	3.16	3.11
Terminal kiosk w/computer while planning	2.12	1.80	1.92
Terminal kiosk w/computer enroute to park	2.14	2.16	2.15
Terminal kiosk w/computer at the park	1.49	1.69	1.61
Hotel kiosk w/computer while planning	2.13	2.03	2.06
Hotel kiosk w/computer enroute to the park	2.19	2.17	2.18
Hotel kiosk w/computer at the park	**2.09**	**2.32**	2.24
Cell phone while planning	**2.10**	**2.60**	2.41
Cell phone enroute to the park	**2.50**	**2.95**	2.77
Cell phone at the park	**2.04**	**2.52**	2.33
PDA while planning	1.49	1.35	1.40
PDA enroute to the park	1.39	1.14	1.40
PDA at the park	1.38	1.29	1.33
Current internet information while planning	3.53	3.36	3.42
Current internet information enroute to park	1.62	1.78	1.72
Current internet information at the park	1.28	1.56	1.45

Transportation items	GOGA mean	SEKI mean	Overall Mean
In-park shuttle/no fee while planning	3.02	2.31	2.58
In-park shuttle/no fee enroute to the park	3.02	2.39	2.63
In-park shuttle/no fee at the park	**4.02**	**3.51**	3.71
In-park shuttle/fee while planning	2.43	1.89	2.09
In-park shuttle/fee enroute to park	2.36	2.04	1.90
In-park shuttle/fee at the park	**3.11**	**2.80**	2.64
Public bus while planning	2.02	1.73	1.84
Public bus enroute to the park	2.27	2.11	2.17
Public bus at the park	2.30	2.10	2.18
Park & Ride while planning	**2.76**	**1.92**	2.24
Park & Ride enroute to park	**3.02**	**2.24**	2.54
Park & Ride at the park	**3.33**	**1.57**	2.95
Park & Bike while planning	**2.15**	**1.57**	1.79
Park & Bike enroute to park	**2.47**	**1.81**	1.81
Park & Bike at the park	**3.80**	**1.98**	2.23

Section 8 – General Information

This section was used to determine the overall diversity of the sample. Language spoken at home by 93.8% of respondents (combined) is English.

Gender

	Combined	GOGA	SEKI
Male	51.4%	67.2%	40.9%
Female	47.9%	31.0%	59.1%

Race/Ethnicity

	Combined	GOGA	SEKI
Black/African American	2.7%	0.0%	4.5%
Hispanic or Latino	6.2%	1.7%	9.1%
White/Caucasian	87.7%	91.4%	85.2%
Asian	3.4%	3.4%	3.4%
American Indian or Native Alaskan	4.1%	1.7%	5.7%
Native Hawaiian or Pacific Islander	2.1%	0.0%	3.4%

Education

	Combined	GOGA	SEKI
Less than 12 years	0.7%	0.0%	1.1%
High School Graduate	3.4%	1.7%	4.5%
Technical/Vocational School	7.5%	1.7%	11.4%
Some College	22.6%	20.7%	23.9%
College Graduate	31.5%	32.8%	30.7%
Graduate or professional degree	33.6%	41.4%	28.4%

Income

	Combined	SEKI	GOGA
Under $20,000	11.0%	13.8%	11.3%
$20,000 – 39,999	13.0%	17.2%	10.2%
$40,000 – 59,999	22.6%	17.2%	26.1%
$60,000 – 79,999	11.0%	8.6%	12.5%
$80,000 – 99,000	15.8%	15.5%	15.9%
$100,000 or more	18.5%	20.7%	17.0%

Employment

	Combined	GOGA	SEKI
Employed full-time	50.7%	58.6%	45.5%
Employed part-time	8.9%	6.9%	10.2%
Self-employed	14.4%	12.1%	15.9%
Retired	17.8%	10.3%	22.7%
Student	8.2%	8.6%	8.0%
Homemaker	5.5%	3.4%	6.8%
Unemployed	3.4%	5.2%	2.3%

APPENDIX D: SUMMARY RESULTS OF THE MAY AND JULY SAMPLING PERIODS

Overview

The main study was conducted during two periods, May 19-25, and July 14-20, 2002. As was the case with the pilot study, the intent was to distribute 400 surveys per park during each of the months. Further, this was to be equally divided at Golden Gate National Recreation Area (GOGA) between Muir Woods and Stinson Beach, and at Sequoia and Kings Canyon National Parks (SEKI) between Sequoia NP and Kings Canyon NP. The overall return rate for the study was 61.7%. A breakdown of the distribution process and return rate is described in chapter three. The following is a summary of the results to each question in the surveys. For ease of managerial evaluation and use, results are given for GOGA and SEKI separately.

Note: the summary is arranged by question number to assist the reader in referencing these items where they are mentioned in the body of the dissertation.

GOGA Section I: Your Visit to Golden Gate National Recreation Area

The purpose of this section was to gather information about the respondents' most recent trip to the park.

1. GOGA location at which questionnaire was received.

	Count	Percent
Muir Woods	168	81.6
Stinson Beach	38	18.4

2. 75.4% of respondents considered themselves a tourists at the site at which they received the questionnaire.

	Count	Percent
Yes	153	75.4
No	50	24.6

3. The average stay in area for respondents who replied "yes" to question two was 4.7 days.

	Count	Percent
1 to 3 days	49	33.1
4 to 5 days	61	41.2
5 to 7 days	26	17.6
7 or more days	12	8.1
	N =	148
	*** =**	58
	Mean	4.66
	StDev	3.48

4. The following table summarizes the type of transportation that respondents used.

	Count	Percent
Private automobile	91	44.2
Rental automobile	84	40.8
Private RV	2	1.0
Rental RV	1	0.5
Bicycle	0	0.0
Public transportation	5	2.4
Other*	23	11.2
	N =	206
	*** =**	0

** Of the Other, Tour bus is 10.2% (n =21)*

Respondents were also asked to explain why they used the type of transportation that they used. The most frequent responses are summarized below:

Why used private automobile:

	Count	Percent
Close to home	23	26.4
Convenience	19	21.8
With friends/relatives	12	13.8
Driving vacation	10	11.5
Kids and stuff	6	6.9
Cost effective	6	6.9
What I use	6	6.9
No public transit	5	5.7
	N =	87
	*** =**	119

Why used rental automobile:

	Count	Percent
Convenience	27	33.3
Flew in	25	31.0
Independent	2	2.4
No choice	2	2.4
	N =	81
	*** =**	125

5. Other parks and tourists sites that were visited while in the area are summarized in the table below.

	Count	Percent
Muir Woods	85	41.3
Stinson Beach	47	22.8
Marin Headlands	31	15.0
Point Reyes	25	12.1
Golden Gate Bridge	125	60.7
Golden Gate Park	72	35.0
Sausalito	89	43.2
Mt. Tamalpais	26	12.6
Tennessee Valley	7	3.4
Fort Baker	7	3.4
Presidio	43	20.9
Cliff House	33	16.0
Mill Valley	24	11.7
Tiburon	25	12.1
Napa	13	6.3
Alcatraz	9	4.4
Fisherman's Wharf	8	3.9
	N =	206
	*** =**	0

6. 44.1% of respondents used a private automobile to travel between GOGA sites. An additional 39.4% use a rental car. Other modes of transportation used to travel between sites included tour bus (11.2%), and public bus (1.8%).

	Count	Percent
Car	75	44.1
Tour Bus	19	11.2
Rental Car	67	39.4
Public Bus	3	1.8
Other	1	0.6
Taxi	1	0.6
RV/Van	4	2.4
	N =	170
	*** =**	36

7. The following table summarized the types of activities that respondents participated in while visiting GOGA.

	Count	Percent
Visit Beach	76	37.1
View wildlife	69	33.7
Horseback riding	2	1.0
Ranger-led walks/talks	25	12.2
Hiking	80	39.0
Bicycling	4	2.0
Walk nature trails	148	72.5
Picnic	37	18.0
Go for drive	87	42.9
Other	8	3.9
	N =	205
	*** =**	1

8. 78.3% of respondents who did not live in the area stayed overnight.

	Count	Percent
Yes	112	78.3
No	31	21.7
	N =	143
	*** =**	63

9. The majority of those who stayed overnight stayed at a hotel (80.5%). Of these, the majority stayed in San Francisco (76.5%). An additional 4.0% stayed in Sausalito. 10.2% of respondents stayed with friends and relatives, and 0.9% stayed in their own home or condominium. 4.2% of respondents stayed at campgrounds; 40.0% of campers stayed at Bodega Bay. Finally, 3.6% stayed at a B&B.

	Count	Percent
Family/Friends	12	10.2
Hotel	95	80.5
Campground	5	4.2
Home/Condo	1	0.9
Other	5	4.2
	N =	118
	*** =**	88

10. Respondents were next asked to rate the level of congestion on the roads, in parking lots and on park trails. The five-point scale ranged from 1 = uncongested to 5 = congested. The average response for congestion on roads leading into the park was 2.07. The average response for parking lots was 3.33, and the average response for trails was 2.35.

Roads leading to Park

	Count	Percentage
(1) Uncongested	101	51.8
(2) Somewhat Uncongested	33	16.9
(3) Neither	19	9.7
(4) Somewhat congested	30	15.4
(5) Congested	12	6.2
	N =	195
	*** =**	11
	Mean	2.07
	St Dev	1.34

Parking Lots

	Count	Percentage
(1) Uncongested	51	26.3
(2) Somewhat Uncongested	22	11.3
(3) Neither	6	3.1
(4) Somewhat congested	42	21.6
(5) Congested	73	37.6
	N =	194
	*** =**	12
	Mean	3.33
	St Dev	1.67

Trails

	Count	Percentage
(1) Uncongested	66	36.7
(2) Somewhat Uncongested	36	20.0
(3) Neither	36	20.0
(4) Somewhat congested	33	18.3
(5) Congested	9	5.0
	N =	180
	*** =**	26
	Mean	2.35
	St Dev	1.28

11. a) An average score of 2.02 was reported for overall crowding perception (scale of 1 – 5; 1 = not at all crowded and 5 = extremely crowded).

	Count	Percent
(1) Uncongested	69	34.3
(2) Somewhat Uncongested	79	39.3
(3) Neither	36	17.9
(4) Somewhat congested	13	6.5
(5) Congested	4	2.0
	N =	201
	*** =**	5
	Mean	2.02
	St Dev	0.98

b) Those who reported feeling crowded (by responding between 3 and 5 to question 12) cited the following locations as the places where they experienced the crowding: nature trails (47.2%), parking lots (47.2%), and 20.8% for restrooms, gift shop, and entrance.

	Count	Percent
Nature trails	25	47.2
Parking lots	25	47.2
Restrooms/Gift shops/Entrance	11	20.8
Other	8	15.1
	N =	53
	*** =**	153

12. A five-point scale (1 = unimportant, 5 = important) was used to measure the importance that respondents place on several travel-related items. Next to the item is the average response.

	N	*	(1) Unimportant		(2) Somewhat Unimportant		(3) Neither		(4) Somewhat Important		(5) Important		Mean	StDev.
			Count	%	Count	%	Count	%	Count	%	Count	%		
Safe Roads	197	9	3	1.5	3	1.5	5	2.5	48	24.4	138	70.1	4.60	0.75
Safe Parking Areas	197	9	2	1.0	3	1.5	12	6.1	50	25.4	130	66.0	4.54	0.77
Level of congestion on roads leading to park	196	10	2	1.0	5	2.6	19	9.7	101	51.5	69	35.2	4.17	0.78
Level of Congestion on trails in park	198	8	6	3.0	10	5.1	18	9.1	75	37.9	89	44.9	4.17	1.00
Ability to use own vehicle	199	7	23	11.6	7	3.5	30	15.1	43	21.6	96	48.2	3.91	1.35

13. The average level of satisfaction with the mode of transportation used (as indicated in question 4) was 4.77 on a scale of 1 –5 (5 = satisfied).

	Count	Percent
(1) Unsatisfied	1	0.5
(2) Somewhat Unsatisfied	5	2.5
(3) Neither	4	2.0
(4) Somewhat Satisfied	20	9.8
(5) Satisfied	174	85.3
	N =	204
	*** =**	2
	Mean	4.77
	StDev.	0.65

GOGA Section II: Park Use Experience

14. The average length of stay in the park (question 14) was 1 day or 3 hours.

Days

N =	20
*** =**	186
Mean	1.30
StDev.	0.57

Hours

N =	131
*** =**	75
Mean	2.95
StDev.	1.55

15. 49.5% of respondents were first time visitors to GOGA.

	Count	Percent
Yes	101	49.5
No	103	50.5
	N =	204
	*** =**	2

16. Repeat visitors have visited the park an average of two times over the previous twelve months.

N =	103
*** =**	103
Mean	2.92
StDev	6.14

17. Repeat visitors were also asked when they first visited the park.

	Count	Percent
2000s	12	11.8
1990s	34	33.3
1980s	19	18.6
1970s	21	20.6
1960s	12	11.8
Prior to 1960	4	3.9
	N =	102
	*** =**	104

18. 24.3% of visitors to GOGA plan to visit the park again in the next twelve months.

	Count	Percent
Yes	50	24.3
No	121	58.7
Didn't Answer	35	17.0
	N =	206
	*** =**	0

19. Respondents had visited an average of eight national parks in the past five years.

N =	198
*** =**	8
Mean	6.34
StDev.	7.41

20. The parks frequented most often by respondents are shown in the next table.

	Count	Percent
Yosemite	49	28.0
Grand Canyon	39	22.3
Yellowstone	32	18.3
Zion	15	8.6
Sequoia and Kings Canyon	14	8.0
Grand Teton	13	7.4
Bryce Canyon	11	6.3
Rocky Mountain	11	6.3
Great Smoky Mountains	10	5.7
Acadia	8	4.6
Arches	7	4.0
Glacier	7	4.0
Mount Rushmore	6	3.4
Badlands	5	2.9
Joshua Tree	5	2.9
Lassen	5	2.9
Mount Rainier	5	2.9
Painted Desert	5	2.9
Redwood	5	2.9
Shenandoah	5	2.9
Other Parks**	4	2.3
	N =	175
	*** =**	31

** Other parks visited included the Washington Mall, Canyonlands, Death Valley Everglades, and Gettysburg (each has 2.3%).

GOGA Section III: Planning For This Trip

21. Respondents were asked to tell us what types of information they want when planning a trip, and at which point in the planning process they obtained the information. NOTE: Respondents were asked to check all that apply; therefore, percentages may not add up to 100.

	N =	* =	Before Arriving in the Park		While in the Park		Did Not Obtain/Not Applicable	
			Count	Percent	Count	Percent	Count	Percent
General Park Information	206	0	92	44.7	68	33.0	53	25.7
Activities at park	206	0	51	24.8	99	48.1	60	29.1
Hotel/Lodging Information	206	0	67	32.5	3	1.5	136	66.0
Campground Information	206	0	19	9.2	6	2.9	181	87.9
Travel Time to Park	205	1	103	50.2	6	2.9	96	46.8
Transportation Options to get to the Park	206	0	62	30.1	2	1.0	142	68.9

	N =	* =	Before Arriving in the Park		While in the Park		Did Not Obtain/Not Applicable	
			Count	Percent	Count	Percent	Count	Percent
Take Auto-routes	206	0	56	27.2	4	1.9	146	70.9
Road Conditions	206	0	33	16.0	11	5.3	164	79.6
Public Transportation in Park	206	0	20	9.7	13	6.3	175	85.0
Parking Availability	206	0	26	12.6	68	33.0	113	54.9
Weather	206	0	101	49.0	28	13.6	79	38.3
Other Things to do in the Area	205	1	82	40.0	18	8.8	106	51.7

22. Sources of information. Respondents were asked to tell us what sources of information they used when planning their trip, and at which point in the planning process they used the information source. NOTE: Respondents were asked to check all that apply; therefore, percentages may not add up to 100.

Travel Information Type	N =	* =	Before Arriving in the Park		While in the Park		Did Not Obtain/Not Applicable	
			Count	Percent	Count	Percent	Count	Percent
Tour Book/Visitor Guides	204	2	117	57.4	32	15.7	66	32.4
Internet – park web site	203	3	54	26.6	1	0.5	149	73.4
Internet – other web site	205	1	74	36.1	0	0.0	131	63.9
Friends/relative	203	3	95	46.8	1	0.5	107	52.7
Previous Visits	204	2	94	46.1	4	2.0	107	52.5
Visitor/Tourist Information Centers	203	3	53	26.1	47	23.2	110	54.2
Commercial Television	202	4	3	1.5	0	0.0	199	98.5
Local Access Television	202	4	6	3.0	0	0.0	196	97.0
Commercial Radio	201	5	2	1.0	0	0.0	199	99.0
Highway Advisory Radio	202	4	4	2.0	1	0.5	197	97.5
Electronic Road Signs	201	5	9	4.5	0	0.0	192	95.5
Chambers of Commerce	202	4	13	6.4	1	0.5	188	93.1
Terminal Kiosks -- airport, train or bus station	202	4	16	7.9	2	1.0	184	91.1
Hotel Information Kiosks – computer terminal	202	4	40	19.8	1	0.5	162	80.2
Phone Inquiry to Park	202	4	15	7.4	0	0.0	187	92.6

Travel Information Type	N =	* =	Before Arriving in the Park		While in the Park		Did Not Obtain/Not Applicable	
			Count	Percent	Count	Percent	Count	Percent
Cell phone (to access current data)	202	4	9	4.5	1	0.5	192	95.0
Personal Digital Assistant (PDA)	202	4	2	1.0	0	0.0	200	99.0
Current Internet Travel Information	202	4	35	17.3	1	0.5	166	82.2
Newspaper/magazine Articles	202	4	34	16.8	1	0.5	167	82.7
Talk to People in Local Communities	202	4	44	21.8	7	3.5	151	74.8
Travel Agent	202	4	4	2.0	1	0.5	197	97.5

23. How hotel and campground reservations were made.

	Count	Percent
Called the establishment directly	28	26.7
Stopped in at an establishment	5	4.8
AAA	8	7.6
Visitor center	0	0.0
Used the reservation service	12	11.4
Used the Internet	42	40.0
Travel agent	16	15.2
Other	6	5.7
	N =	105
	*** =**	101

GOGA Section IV: Attitudes

24. Appropriateness of information media and alternate transportation. Visitor attitudes about various forms of information media and transportation options were determined by having respondents reply to the statement, "I believe each of the following is" … inappropriate, somewhat inappropriate, neither, somewhat appropriate, or appropriate.

	N =	* =	(1) Inappropriate		(2) Somewhat Inappropriate		(3) Neither		(4) Somewhat Appropriate		(5) Appropriate		Mean	StDev
			Count	%	Count	%	Count	%	Count	%	Count	%		
Tour Book / visitor guides available in the park	203	3	1	0.5	5	2.5	4	2.0	22	10.8	171	84.2	4.76	0.66
Internet terminals in the park	197	9	70	35.5	18	9.1	53	26.9	29	14.7	27	13.7	2.62	1.44
Getting information from friends and relatives	199	7	0	0.0	5	2.5	27	13.6	57	28.6	110	55.3	4.37	0.81
Talking to Ranger at the park	196	10	3	1.5	2	1.0	14	7.1	41	20.9	136	69.4	4.56	0.80
Calling Ranger before visiting park	194	12	13	6.7	20	10.3	58	29.9	52	26.8	51	26.3	3.56	1.18
Commercial television used to provide park information	192	14	15	7.8	20	10.4	66	34.4	57	29.7	34	17.7	3.39	1.13

	N =	* =	(1) Inappropriate		(2) Somewhat Inappropriate		(3) Neither		(4) Somewhat Appropriate		(5) Appropriate		Mean	StDev
			Count	%	Count	%	Count	%	Count	%	Count	%		
National Park Service video providing travel information	196	10	8	4.1	13	6.6	44	22.4	73	37.2	58	29.6	3.82	1.06
Commercial radio stations used to provide travel information	194	12	13	6.7	15	7.7	55	28.4	65	33.5	46	23.7	3.60	1.13
Informational radio (e.g. highway advisory radio)	195	11	10	5.1	13	6.7	50	25.6	54	27.7	68	34.9	3.81	1.14
National Park Service radio station with travel information	195	11	7	3.6	12	6.2	33	16.9	56	28.7	87	44.6	4.05	1.09
Electronic signs with travel information in the parking lots	197	9	26	13.2	26	13.2	45	22.8	53	26.9	47	23.9	3.35	1.33
Electronic signs with travel information on the park roads	195	11	28	14.4	29	14.9	32	16.4	56	28.7	50	25.6	3.36	1.38
Visitor center information kiosks – traditional (brochures, maps, etc.)	201	5	1	0.5	1	0.5	8	4.0	51	25.4	140	69.7	4.63	0.64
National Park Service automated telephone information line	196	10	6	3.1	4	2.0	31	15.8	52	26.5	103	52.6	4.23	1.00
Personal Digital Assistant (PDA) to access travel information	190	16	29	15.3	15	7.9	84	44.2	36	18.9	26	13.7	3.08	1.19
Use Travel Agent to obtain travel information about park	68	6	3	4.4	4	5.9	22	32.4	17	25.0	22	32.4	3.75	1.11
Mandatory shuttle service in park (you must park car outside park and ride shuttle into park)	196	10	33	16.8	19	9.7	37	18.9	61	31.1	46	23.5	3.35	1.38
Optional shuttle service in park (can either park car outside park and take shuttle or can drive into park in your car)	197	9	15	7.6	3	1.5	36	18.3	65	33.0	78	39.6	3.95	1.15
Taking a public bus into the park	197	9	9	4.6	7	3.6	42	21.3	47	23.9	92	46.7	4.05	1.11
Parking your car at the entrance and riding your bike into the park	197	9	48	24.4	15	7.6	58	29.4	31	15.7	45	22.8	3.05	1.46

25. Respondents were asked to indicate the level of importance that they placed on preservation of natural resources and recreational use of the park as part of the park's purpose.

Preservation of natural resources

	Count	Percent
(1) Not at all Important	1	0.5
(2) Somewhat Important	3	1.5
(3) Important	10	4.9
(4) Very Important	27	13.2
(5) Extremely Important	164	80.0
	N =	205
	*** =**	1
	Mean	4.71
	StDev.	0.67

Recreational Use

	Count	Percent
(1) Not at all Important	7	3.4
(2) Somewhat Important	20	9.9
(3) Important	68	33.5
(4) Very Important	66	32.5
(5) Extremely Important	42	20.7
	N =	203
	*** =**	3
	Mean	3.57
	StDev.	1.03

GOGA Section V: Technology

This section asked respondents to identify technology that they use in general as well as specifically for planning purposes.

26. Technology ownership.

	Count	Percent
Computer	191	93.2
Cell phone	174	84.9
PDA	42	20.5
GPS unit	24	11.7
	N =	205
	*** =**	1

27. Respondents who indicated that they did not own the above items were asked to provide a reason.

Computer

	Count	Percent
Too Expensive	3	23.1
Don't know how to use	2	15.4
Don't think it is useful/ don't need	4	30.8
Other	4	30.8
	N =	13
	*** =**	193

Cell Phone

	Count	Percent
Too Expensive	5	16.1
Don't know how to use	0	0.0
Don't think it is useful/ don't need	21	67.7
Other	5	16.1
	N =	31
	*** =**	176

PDA

	Count	Percent
Too Expensive	19	11.8
Don't know how to use	24	14.9
Don't think it is useful/ don't need	109	67.7
Other	9	5.6
	N =	161
	*** =**	45

GPS

	Count	Percent
Too Expensive	35	19.7
Don't know how to use	19	10.7
Don't think it is useful/ don't need	110	61.8
Other	14	7.9
	N =	178
	*** =**	28

28. 58% of those who had another way to access the Internet access the web at the library.

	Count	Percent
At home	179	87.3
At work/school	157	76.6
Other way to access the Internet*	19	9.3
	N =	205
	*** =**	1

29. Participants were asked if they used various media outlets when planning a trip. They were also asked why they did or did not use each item (please note that many respondents left this blank, resulting in percentages do not add up to 100). A summary of their responses follows.

	YES	Percent
GPS (N = 199)	14	7.0
Current Internet information (N = 202)	172	85.1
Computer trip planners (N = 202)	140	69.3
Informational TV (N = 205)	125	61.0
Commercial TV (N = 201)	53	26.4
Information radio (N = 203)	72	35.5
Commercial radio (N = 202)	53	26.2
PDA (N = 201)	11	5.5
Cell phone (N = 203)	94	46.3

Reasons given for using GPS (n = 14) included available in rental car (14.3%), use for hiking (14.3%), use when sailing (14.3%), and use when flying plane (7.1%). Reasons given for not using GPS (n = 185) included do not have/want/need (38.9%), use maps (3.8%), expense (2.7%), do not know how to use (2.2%), and want to find on own/drive randomly (1.6%).

Reasons given for using Current Internet Information (n = 172) to plan included information (9.9%), ease of use (9.3%), ability to get current information (8.7%), convenient/available (8.1%), useful/helpful (7.6%), fast (2.3%). The most common reason given for not using Current Internet Information (n = 30) was do not own/have/need (30.0%).

Reasons for using Computer Trip Planners (n = 140) to plan included convenience (17.9%), to obtain directions (15.7%), accuracy (3.6%), and to check distances (2.1%). The reasons given by those who do not use Computer Trip Planners (n = 62) included do not have/own/need (24.2%), use maps (6.5%), not accurate (6.5%), and use AAA (2.1%)

Reasons for using Informational TV (n = 125) included check weather and related clothing needs (20.0%), convenient/easy/current (12.0%), and general planning information (8.0%), Reasons given by those who do not use this media form (n = 80) included do not like/own TV (17.5%), not useful/not convenient (6.3%), read newspaper (3.8%)

Reasons given for using Commercial TV (n = 53) included weather information (9.4%), travel channel (9.4%), and to get ideas (7.5%). Reasons given for not using this media outlet (n = 148) included no need/not useful (17.6%), do not watch (4.1%) do not watch much (3.8%), and not convenient (3.4%).

Reasons given for using Information Radio (n = 72) included traffic (25.0%), weather (12.5%), and convenience (6.9%). Reasons given for not using Information Radio (n = 131) included do not like/use/need (11.5%), do not know how/do not know about (3.8%), and do not know local channels (3.1%).

Reasons given for using Commercial Radio (n = 53) included current traffic (11.3%), ideas/information (11.3%), if available (7.5%), and weather (3.8%). Reasons given for not using Commercial Radio (n = 149) included do not listen/need (11.4%), does not provide information (7.4%), not efficient (4.0%), do not know about/do not think about (3.4%), and only listen for music (2.7%).

Of the eleven participants who verified that they use a PDA for planning, reasons given included handy (9.0%), husband's new toy (9.0%), and it links to my computer (9.0%). Reasons given for not using a PDA (n = 190) included do not own/need/have (29.5%), does not have network capability (5.3%), do not know what it is/do not know how to use (3.2%), and toy/gadget (2.1%).

Finally, the reasons given for using a Cell Phone (n = 94) to plan included convenient/handy (19.1%), call ahead for hotel (5.3%), in case I get lost (5.3%), if needed (4.3%), current updates (4.3%), and emergencies (4.3%). Reasons given for not using a Cell Phone (n = 109) included do not own/need/use on trip (22.9%), and expense (3.7%).

GOGA Section VI: Obtaining Travel Information

30. The following table indicates the average score on a scale of 1-5 (1 = not at all likely, 5 = very likely) for the likelihood that participants would use each of the following before arriving at GOGA and while at GOGA.

Before Arriving in the Park:	N =	* =	(1) Not at All Likely		(2) Somewhat Not Likely		(3) Neither		(4) Somewhat Likely		(5) Very Likely		N/A		Mean	StDev
			Count	%	Count	%	Count	%	Count	%	Count	%	Count	%		
Tour Book / visitor guides	202	4	12	5.9	11	5.4	18	8.9	23	11.4	136	67.3	2	1.0	4.30	1.20
Internet – park web site	202	4	21	10.4	6	3.0	32	15.8	41	20.3	99	49.0	3	1.5	3.96	1.32
Internet – other web site	201	5	29	14.4	12	6.0	30	14.9	40	19.9	86	42.8	4	2.0	3.72	1.45
Friends/relative	202	4	15	7.4	6	3.0	35	17.3	44	21.8	99	49.0	3	1.5	4.04	1.22
Previous visits	195	11	10	5.1	2	1.0	13	6.7	32	16.4	119	61.0	19	9.7	4.41	1.07
Visitor/tourist information centers	199	7	27	13.6	19	9.5	29	14.6	37	18.6	83	41.7	4	2.0	3.67	1.45
Commercial television	201	5	106	52.7	29	14.4	34	16.9	11	5.5	12	6.0	9	4.5	1.93	1.23
Local access television	201	5	111	55.2	30	14.9	26	12.9	18	9.0	11	5.5	5	2.5	1.92	1.25
Commercial radio	199	7	109	54.8	28	14.1	31	15.6	11	5.5	14	7.0	6	3.0	1.93	1.27
Informational radio (e.g. highway advisory)	199	7	85	42.7	26	13.1	43	21.6	20	10.1	22	11.1	3	1.5	2.33	1.41
Electronic Road Signs	198	8	56	28.3	18	9.1	45	22.7	33	16.7	40	20.2	6	3.0	2.91	1.51
Chambers of Commerce	197	9	93	47.2	28	14.2	36	18.3	19	9.6	16	8.1	5	2.5	2.15	1.34
Terminal Kiosks (airport, train or bus stations) with brochures, maps, etc.)	199	7	57	28.6	23	11.6	38	19.1	31	15.6	47	23.6	3	1.5	2.94	1.55
Terminal Kiosks (airport, train or bus stations) – electronic/;computer	198	8	85	42.9	25	12.6	37	18.7	18	9.1	27	13.6	6	3.0	2.36	1.47
Hotel information kiosks with brochures, maps, etc.	202	4	41	20.3	11	5.4	39	19.3	47	23.3	63	31.2	1	0.5	3.40	1.49
Hotel information kiosks – electronic/computer	199	7	81	40.7	24	12.1	32	16.1	27	13.6	32	16.1	3	1.5	2.52	1.53
Phone inquiry to park	200	6	52	26.0	23	11.5	50	25.0	25	12.5	48	24.0	2	1.0	2.97	1.51
Cell phone (to access current data	199	7	76	38.2	23	11.6	40	20.1	24	12.1	32	16.1	4	2.0	2.55	1.51
Personal Digital Assistant (PDA)	198	8	145	73.2	13	6.6	13	6.6	1	0.5	6	3.0	20	10.1	1.37	0.91
Current Internet travel information	198	8	48	24.2	14	7.1	37	18.7	38	19.2	57	28.8	4	2.0	3.22	1.55
Newspapers/magazine articles	199	7	31	15.6	13	6.5	44	22.1	57	28.6	51	25.6	3	1.5	3.43	1.36
Talk to people in local communities	201	5	48	23.9	20	10.0	42	20.9	36	17.9	49	24.4	6	3.0	3.09	1.51
Travel agent	198	8	97	49.0	25	12.6	33	16.7	17	8.6	17	8.6	9	4.5	2.11	1.36
In park shuttle – no fee	193	13	38	19.7	9	4.7	18	9.3	30	15.5	67	34.7	31	16.1	3.49	1.62
In park shuttle – fee	190	16	59	31.1	17	8.9	34	17.9	22	11.6	29	15.3	29	15.3	2.66	1.53
Public bus to park – fee	198	8	85	42.9	16	8.1	37	18.7	20	10.1	25	12.6	15	7.6	2.37	1.49
Park and ride	198	8	54	27.3	16	8.1	43	21.7	30	15.2	39	19.7	16	8.1	2.91	1.52
Park and Bike	199	7	96	48.2	20	10.1	31	15.6	12	6.0	23	11.6	17	8.5	2.15	1.44

While in Park:	N =	* =	(1) Not at All Likely		(2) Somewhat Not Likely		(3) Neither		(4) Somewhat Likely		(5) Very Likely		N/A		Mean	StDev
			Count	%	Count	%	Count	%	Count	%	Count	%	Count	%		
Tour Book / visitor guides	188	18	20	10.6	12	6.4	17	9.0	28	14.9	104	55.3	7	3.7	4.02	1.39
Internet – park web site	184	22	115	62.5	24	13.0	13	7.1	5	2.7	14	7.6	13	7.1	1.71	1.24
Internet – other web site	184	22	122	66.3	22	12.0	12	6.5	4	2.2	10	5.4	14	7.6	1.58	1.11
Friends/relative	184	22	81	44.0	19	10.3	24	13.0	14	7.6	32	17.4	14	7.6	2.39	1.58
Previous visits	176	30	30	17.0	7	4.0	18	10.2	24	13.6	72	40.9	25	14.2	3.67	1.57
Visitor/tourist information centers	183	23	10	5.5	4	2.2	15	8.2	44	24.0	106	57.9	4	2.2	4.30	1.09
Commercial television	183	23	133	72.7	12	6.6	4	2.2	3	1.6	5	2.7	26	14.2	1.31	0.88
Local access television	184	22	125	67.9	20	10.9	6	3.3	4	2.2	4	2.2	25	13.6	1.38	0.88
Commercial radio	181	25	123	68.0	16	8.8	10	5.5	4	2.2	7	3.9	21	11.6	1.48	1.03
Informational radio (e.g. highway advisory)	184	22	99	53.8	12	6.5	25	13.6	15	8.2	16	8.7	17	9.2	2.02	1.41
Electronic Road Signs	184	22	57	31.0	14	7.6	35	19.0	30	16.3	34	18.5	14	7.6	2.82	1.54
Chambers of Commerce	182	24	110	60.4	21	11.5	13	7.1	8	4.4	7	3.8	23	12.6	1.62	1.11
Terminal Kiosks (airport, train or bus stations) with brochures, maps, etc.)	182	24	86	47.3	8	4.4	21	11.5	17	9.3	23	12.6	27	14.8	2.25	1.56
Terminal Kiosks (airport, train or bus stations) – electronic/;computer	184	22	105	57.1	11	6.0	15	8.2	10	5.4	11	6.0	32	17.4	1.76	1.29
Hotel information kiosks with brochures, maps, etc.	185	21	88	47.6	10	5.4	19	10.3	21	11.4	16	8.6	31	16.8	2.14	1.47
Hotel information kiosks – electronic/computer	180	26	104	57.8	11	6.1	18	10.0	8	4.4	9	5.0	30	16.7	1.71	1.22
Phone inquiry to park	180	26	92	51.1	16	8.9	17	9.4	11	6.1	16	8.9	28	15.6	1.97	1.40
Cell phone (to access current data	184	22	91	49.5	20	10.9	14	7.6	24	13.0	19	10.3	16	8.7	2.17	1.48
Personal Digital Assistant (PDA)	182	24	134	73.6	14	7.7	6	3.3	0	0.0	3	1.6	25	13.7	1.24	0.70
Current Internet travel information	182	24	107	58.8	13	7.1	18	9.9	9	4.9	13	7.1	22	12.1	1.80	1.31
Newspapers/magazine articles	181	25	86	47.5	21	11.6	20	11.0	21	11.6	15	8.3	18	9.9	2.13	1.41
Talk to people in local communities	182	24	70	38.5	14	7.7	21	11.5	28	15.4	30	16.5	19	10.4	2.60	1.60
Travel agent	181	25	127	70.2	13	7.2	5	2.8	3	1.7	2	1.1	31	17.1	1.27	0.74
In park shuttle – no fee	186	20	27	14.5	4	2.2	23	12.4	36	19.4	84	45.2	12	6.5	3.84	1.45
In park shuttle -- fee	185	21	52	28.1	15	8.1	34	18.4	35	18.9	36	19.5	13	7.0	2.93	1.53
Public bus to park – fee	184	22	79	42.9	17	9.2	24	13.0	13	7.1	25	13.6	26	14.1	2.29	1.53
Park and ride	183	23	55	30.1	11	6.0	33	18.0	28	15.3	40	21.9	16	8.7	2.92	1.59
Park and Bike	184	22	91	49.5	13	7.1	28	15.2	16	8.7	20	10.9	16	8.7	2.17	1.46

GOGA Section VII: Transportation

31. Frequency of public transportation use:

	Count	Percent
Daily	15	7.4
At least one per week	12	5.9
At least once per month	29	14.4
At least once per year	89	44.1
Never	57	28.2
	N =	202
	*** =**	4

32. Use of public transportation in a national park:

	Count	Percent
Yes*	76	37.8
No**	125	62.2
	N =	201
	*** =**	5

The parks that they used public transportation in included Yosemite (51.3%), Grand Canyon (28.9%), Zion (9.2%), and Denali (3.9%). Note: visitors could list more than one park.

The reasons given by those who have not used public transportation in a national park included not available (23.4%), had a car (10.2%), no need (7.8%), own car more convenient (5.5%), and have never seen it (4.7%).

GOGA Section VII: General Information

33. Gender of respondents.

	Count	Percent
Male	96	47.1
Female	108	52.9
	N =	204
	*** =**	2

34. Age of respondents:

	Count	Percent
Under 19	0	0.0
19 – 34	37	18.4
35 – 50	91	45.3
51 – 65	62	30.8
66+	11	5.5
	N =	201
	*** =**	5
	Mean	46
	StDev.	12.2

35. Race of respondents:

	Count	Percent
Black / African American	2	1.0
Hispanic / Latino	3	1.5
White/Caucasian	195	95.1
Asian	3	1.5
American Indian/Native Alaskan	1	0.5
Native Hawaiian/Pacific Islander	0	0.0
Other	2	1.0
	N =	205
	* =	1

36. English was the primary language spoken at home by respondents.

	Count	Percent
English	198	97.5
German	2	1.0
Russian	2	1.0
Dutch	1	0.5
	N =	203
	* =	3

37. Level of education

	Count	Percent
Less than 12 years	0	0.0
High School Graduate	8	3.9
Technical / Vocational School	5	2.5
Some College	35	17.2
College Graduate	78	38.4
Graduate or Professional Degree	77	37.9
	N =	203
	* =	3

38. Household Income

	Count	Percent
Under $20,000	7	3.6
$20,000 - $39,999	17	8.9
$40,000 - $59,999	28	14.7
$60,000 - $79,999	30	15.7
$80,000 - $99,999	28	14.7
$100,000 or more	81	42.4
	N =	191
	* =	15

39. Employment status

	Count	Percent
Employed full-time	118	57.6
Employed part-time	23	11.2
Self-employed	36	17.6
Homemaker	31	15.1
Retired	22	10.7
Unemployed	2	1.0
Student	7	3.4
	N =	205
	*** =**	1

Visitor Comments – March surveys - GOGA

- The GGNRA is a tremendous, great park. We hiked from near the top of Mt. Tamalpais through Mt. Tamalpais State Park to Stinson Beach. We shuttled our vans to Stinson Beach before we began hiking. We ate lunch and played on the beach at Stinson Beach.
- Clean and well placed / indicated rest rooms. Fair, non-exploitative prices in eating places and gift shops.
- The search for new easy to distribute information about national parks is a necessary task, and the NPS should embrace this duty with an open mind to technology. Failure to do so can risk sending the agency into a situation where they refuse to use the tools to combat a trend of higher and higher visitation, and the probable accompanying resource damage. However, it is essential to preserve the personal aspects of the NPS… the rangers and their service that have become the bread and butter of the agency. Despite any and all new transportation and/or technology introduced, the foundation of information distribution must stay with the park ranger!

Visitor Comments – May surveys - GOGA

- The park was very busy, but to be expected on Memorial Day Weekend
- Nice park – thanks
- Muir Woods is a beautiful park. It has been well maintained. My only frustration is not being able to park during my visit.
- I've loved every park I've visited and can't wait to see more. I volunteered on the Big Bend National Park trail crew through the Student Conservation Association. I think programs like this need to be expanded and their existence communicated to more people – kids especially.
- I don't use public transportation on holidays as I have kids with me and strollers and diaper bags and it is too much to haul in and out of shuttles and buses.
- Need free transportation to parks such as Muir Woods. We drove only because tickets would have cost us $80.00. We rented a car for $43. I would gladly pay $43 if you took me to the park. Additionally, the trails need to be identified more properly. The routes

were very confusing. Finally, where are all the trashcans?! This encourages littering. Parking situation is horrific. I was at Muir on a weekday. It must be worst on weekends.

- I would have been able to use a little map upon entering the park regarding the trails and distances (like you get at a golf course). It is truly a beautiful park in its natural beauty. Thank you!
- Using technology to access info about park is great. Having technology in the park contradicts the "natural environment" unless it is only for info about Muir Woods – interactive educational stuff. Using some sort of park & ride during peak season makes sense. It's a fairly dangerous road for those not familiar with area. Limit size of buses, they're part of the problem. No electric signs in park, again, this is nature at its best, not Disneyland. Today, May 25, was a beautiful, sunny day – perfect for Muir Woods. I was glad to see people there, it wasn't too crowded and parking was easy (Lot full sign but a place opened up for us ☺), it seemed in perfect balance. I hope we can keep it this way.
- Access seems to be an issue. If access needs to be limited to protect resources, environmentally and shuttles or other means of access is required, I would be willing to use whatever is helpful; needed. Information – although I have a computer and use it to plan and schedule trips and gain info – printed materials I believe are vital. Younger folks would enjoy computer terminals – for information, if readily accessible.

Visitor Comments – July surveys – GOGA

- It's nice to get away from any kind of electronics when in national parks
- RE: Muir Woods – if shuttle system was run like that at the Hearst Castle – with large parking area away from the actual site and frequent, well-managed bus transportation that included taped information on the recreation area – designed to have the minimum impact on the park site itself – and it was required to park personal vehicles off site at this center that offered the needed amenities (food, restrooms, souvenir ships, film and video "theaters" with park history and information) it would benefit both tourists and park preservation.
- It would be hard to have shuttles when you're transporting kids and stuff too far. Although, I would not want to "pave" paradise.
- I volunteer at the visitor center in Sausalito. Many tourists come by ferry boat from San Francisco. They are very disappointed – the only transportation to Muir Woods is by taxi. A roundtrip, with ½ hour to walk through, is $60. Muir Woods is only 12 miles from Sausalito. Because of mountain roads it takes about ½ hour. Once there parking, at least in summer, does not meet the demand. Cars lined up to wait for a space. My daughter and I drove over last week to act like tourists, Muir Woods is very beautiful and the walk is raised to protect the environment and make it handicapped accessible.
- RE: Recreational Use for Park purpose… If rec. use means walking on nature trails/ranger talks – very important. If Rec. use means horseback riding/motorcycle riding, etc. – then not at all important.
- A park shuttle would be very helpful in this park. I would use it.

SEKI Section I: Your Visit to Sequoia and Kings Canyon National Parks

The purpose of this section was to gather information about the respondents' most recent trip to the park.

1. Other tourist sites and parks visited this trip.

Park / tourist site	Visited during this trip		Visited same day as SEKI	
	Count	Percent	Count	Percent
Yosemite National Park	118	26.0	21	4.6
Death Valley National Park	31	6.8	3	0.7
Other:	116	25.6	7	1.5
Southwestern National Parks	39	8.6	N =	454
Central California sites	20	4.4	* =	0
California – General	17	3.7		
Rockies and Southwestern parks	12	2.6		
West Coast	9	2.0		
	N =	454		
	* =	0		

2. Respondents were asked to indicate the route they took through the park.

Entry Point	Exit Point	Count	Percent
South (Ash Mountain)	North (Big Stump)	112	31.2
South (Ash Mountain)	South (Ash Mountain)	67	18.7
North (Big Stump)	North (Big Stump)	107	29.8
North (Big Stump)	South (Ash Mountain)	68	18.9
North & South*	North & South*	5	1.4
		N =	359
		* =	95

The following chart indicates the percentage of respondents who stopped at various sites within the park (see corresponding map in survey).

	Count	Percent
Big Stump Entrance	150	33.9
General Grant Tree	264	59.6
Grant Grove Village	231	52.1
Grant Grove Visitor Center	240	54.2
Montecito-Sequoia Lodge	66	14.9
Stony Creek Village	51	11.5
Lost Grove	76	17.2
Wuksachi Village	127	28.7
Lodgepole Visitor Center	183	41.3
Lodgepole Village	166	37.5
Crystal Cave**	36	17.6
Wolverton	39	8.8
General Sherman Tree	307	69.3
Giant Forest Museum	220	49.7
Moro Rock	196	44.2
Hospital Rock	77	17.4
Buckeye Flat	30	6.8
Foothills Visitor Center	185	41.8

Mineral King	11	2.5
Cedar Grove Visitor Ctr.	59	13.3
Cedar Grove Village	84	19.0
	N =	443
	* =	11

3. Respondents spent an average of 10.5 days away from home on this trip.

N =	442
* =	12
Mean	10.48
StDev.	22.11

4. Respondents stayed an average of 2.8 days at SEKI; the average visit for day visitors was 6 hours.

Stay at least one day:	
N =	339
* =	115
Mean	2.80
StDev.	2.20

Stayed less than one day:	
N =	105
* =	349
Mean	6.06
StDev.	3.08

5. The following table summarized the types of activities that respondents participated in while visiting SEKI.

	Count	**Percent**
Backcountry camping	15	3.3
Ranger-led walks/talks	66	14.6
Sightseeing/scenic drive	385	85.4
Cross-country skiing	1	0.2
Front country camping	114	25.3
Climbing	48	10.6
Horseback riding	14	3.1
View wildlife	239	53.0
Bicycling	16	3.5
Picnic	162	35.9
Fishing	28	6.2
Hiking	270	59.9
Other	67	14.9
Explore caves	13	2.9
Swimming	9	2.0
Photography	6	1.3
See snow	6	1.3
	N =	451
	* =	3

6. 82.9% of respondents stayed overnight in the area.

	Count	Percent
Yes*	325	82.9
No	67	17.1
	N =	392
	* =	62

7. Lodging and camping inside the park.

Campgrounds

	Count	Percent
Giant Forest	51	28.8
Grant Grove	40	22.6
Cedar Grove	16	9.0
Foothills	11	6.2
Mineral King	2	1.1
Bearpaw High Sierra	1	0.6
	N =	177
	* =	277

Park lodging

	Count	Percent
Wuksachi Lodge	44	24.9
John Muir Lodge	22	12.4
Grant Grove Village	19	10.7
Cedar Grove Lodge	8	4.5
Silver City Resort	3	1.7
	N =	177
	* =	277

8. Lodging and camping outside the park.

	Count	Percent
Hotels	128	68.1
Three Rivers	56	29.8
Visalia	23	12.2
Fresno	14	7.4
Tulare	6	3.2
National Forest Lodges	5	2.7
No answer	8	4.3
Other Cities	24	12.8
Campgrounds	38	20.2
National Forest	19	10.1
Three Rivers	5	2.7
Lemon Cove	4	2.1
Visalia	3	1.6
Kingsburg	2	1.1
No answer	2	1.1
Other Cities	5	2.7
B&B	4	2.1
Lemon Cove	2	1.1
Other Cities	2	1.1
With family/friends	9	4.8

Own home	1	0.5
Other Cities	3	1.6
	N =	188
	* =	266

9. The following table summarizes the type of transportation that respondents used.

	Count	Percent
Private automobile	310	68.9
Rental automobile	87	19.4
Private RV	46	10.2
Rental RV	9	2.0
Bicycle	2	0.4
Public transportation	0	0.0
Other	3	0.7
	N =	450
	* =	4

Respondents were also asked to explain why they used the type of transportation that they used. The most frequent responses are summarized below:

Why used private automobile?

	Count	Percent
Convenience	56	18.1
What I use	31	10.0
Flexible/ Easy	26	8.4
Cost effective	26	8.4
Gear	21	6.8
Tow car/RV	18	5.8
Park of longer trip	18	5.8
No other transportation	13	4.2
Day trip/close to home	13	4.2
Fits everyone	9	2.9
	N =	310
	* =	144

Why used rental automobile?

	Count	Percent
Flew in	44	50.6
Convenience	8	9.2
Lengthy trip	4	4.6
Least expensive	4	4.6
More room	4	4.6
	N =	87
	* =	367

Why used own RV?

	Count	Percent
Lodging	6	13.0
Feels like home	4	8.7
Comfort	2	4.3
Convenience	2	4.3
Independence/freedom	1	2.2

N =	46
*** =**	408

Why used rental RV?

	Count	Percent
Convenience	4	44.4
	N =	9
	*** =**	445

10. The average level of satisfaction with the mode of transportation used (as indicated in question 9) was 4.82 on a scale of 1 –5 (5 = satisfied).

	Count	Percent
(1) Unsatisfied	2	0.4
(2) Somewhat Unsatisfied	7	1.6
(3) Neither	2	0.4
(4) Somewhat Satisfied	48	10.7
(5) Satisfied	388	86.8
	N =	447
	*** =**	7
	Mean	4.82
	StDev.	0.55

11. Respondents were next asked to rate the level of congestion on the roads leading to the park, roads in the park, in parking lots and on park trails. The five-point scale ranged from 1= uncongested to 5 = congested.

Roads leading to this park

	Count	Percent
(1) Uncongested	283	63.0
(2) Somewhat Uncongested	81	18.0
(3) Neither	36	8.0
(4) Somewhat Congested	32	7.1
(5) Congested	14	3.1
I don't care/ not applicable	3	0.7
	N =	449
	*** =**	5
	Mean	1.68
	StDev.	1.09

Roads inside this park

	Count	Percent
(1) Uncongested	242	54.4
(2) Somewhat Uncongested	97	21.8
(3) Neither	51	11.5
(4) Somewhat Congested	43	9.7
(5) Congested	8	1.8
I don't care/ not applicable	4	0.9
	N =	445
	*** =**	9
	Mean	1.82
	StDev.	1.09

Parking lots

	Count	Percent
(1) Uncongested	175	39.3
(2) Somewhat Uncongested	102	22.9
(3) Neither	36	8.1
(4) Somewhat Congested	77	17.3
(5) Congested	43	9.7
I don't care/ not applicable	12	2.7
	N =	445
	*** =**	9
	Mean	2.33
	StDev.	1.41

Trails

	Count	Percent
(1) Uncongested	246	58.2
(2) Somewhat Uncongested	63	14.9
(3) Neither	38	9.0
(4) Somewhat Congested	24	5.7
(5) Congested	1	0.2
I don't care/ not applicable	51	12.1
	N =	423
	*** =**	31
	Mean	1.58
	StDev.	0.93

12. An average score of 1.60 was reported for overall crowding perception (scale of 1 – 5; 1 = not at all crowded and 5 = extremely crowded).

	Count	Percent
(1) Not Crowded	248	55.6
(2) Somewhat Crowded	142	31.8
(3) Crowded	45	10.1
(4) Really Crowded	10	2.2
(5) Extremely Crowded	1	0.2
	N =	446
	*** =**	8
	Mean	1.60
	StDev.	0.78

13. Those who reported feeling crowded (by responding between 3 and 5 to question 12) cited the following locations as the places where they experienced the crowding.

	Count	Percent
Sherman Tree	16	27.1
Moro Rock	11	18.6
Parking lots	9	15.3
Grant Grove	7	11.9
Entrances	6	10.2
Grant Grove Village	6	10.2
Azalea Campground	4	6.8
Museum	3	5.1
Giant Forest	3	5.1
	N =	59
	*** =**	395

14. A five-point scale (1 = unimportant, 5 = important) was used to measure the importance that respondents place on several travel-related items. Next to the item is the average response.

Safe roads

	Count	Percent
(1) Uncongested	2	0.4
(2) Somewhat Uncongested	5	1.1
(3) Neither	10	2.2
(4) Somewhat Congested	80	17.8
(5) Congested	352	78.4
	N =	449
	* =	5
	Mean	4.73
	StDev.	0.60

Safe parking areas

	Count	Percent
(1) Uncongested	4	0.9
(2) Somewhat Uncongested	9	2.0
(3) Neither	35	7.8
(4) Somewhat Congested	98	21.9
(5) Congested	301	67.3
	N =	447
	* =	7
	Mean	4.53
	StDev.	0.80

Level of congestion of roads leading to park

	Count	Percent
(1) Uncongested	5	1.1
(2) Somewhat Uncongested	11	2.4
(3) Neither	59	13.1
(4) Somewhat Congested	192	42.7
(5) Congested	183	40.7
	N =	450
	* =	4
	Mean	4.19
	StDev.	0.84

Level of congestion on trails in park

	Count	Percent
(1) Uncongested	24	5.5
(2) Somewhat Uncongested	11	2.5
(3) Neither	60	13.9
(4) Somewhat Congested	158	36.5
(5) Congested	180	41.6
	N =	433
	* =	21
	Mean	4.06
	StDev.	1.07

Ability to use own vehicle

	Count	Percent
(1) Unimportant	14	3.1
(2) Somewhat important	22	4.9
(3) Neither	34	7.6
(4) Somewhat important	86	19.2
(5) Important	293	65.3
	N =	449
	* =	5
	Mean	4.39
	StDev.	1.03

SEKI Section II: Park Use Experience

15. 55.2% of respondents were first time visitors to SEKI.

	Count	Percent
Yes	250	55.2
No	203	44.8
	N =	453
	*** =**	1

16. Repeat visitors have visited the park an average of two times over the previous twelve months.

N =	201
*** =**	253
Mean	2.17
StDev.	3.81

17. Repeat visitors were also asked when they first visited the park.

	Count	Percent
Since 2000	18	9.1
In the 1990s	50	25.3
In the 1980s	31	15.7
In the 1970s	34	17.2
In the 1960s	39	19.7
Prior to the 1960s	26	13.1
	N =	198
	*** =**	256
	Mean	1978
	StDev.	16

18. 25.3% of visitors to SEKI plan to visit the park again in the next twelve months. 31.3% of respondents indicated that they might visit again during that time. This was not a valid response, so these were included in the "no" category.

	Count	Percent
Yes	114	25.3
No	336	74.7
	N =	450
	*** =**	4

19. Respondents had visited an average of seven national parks in the past five years.

N =	452
*** =**	2
Mean	7.4
StDev.	12.0

20. The parks frequented most often by respondents during the past five years were:

	Count	Percent
Yosemite	189	48.7
Grand Canyon	110	28.4
Yellowstone	74	19.1
Zion	72	18.6
Bryce Canyon	55	14.2
Death Valley	48	12.4
Joshua Tree	37	9.5
Arches	35	9.0
Glacier	31	8.0
Grand Teton	25	6.4
Crater Lake	20	5.2
Rocky Mountain	20	5.2
Great Smoky Mountains	19	4.9
Lassen	19	4.9
Redwood	18	4.6
Acadia	17	4.4
Canyonlands	17	4.4
	N =	388
	*** =**	66

SEKI Section III: Planning For This Trip

21. Respondents were asked to tell us what types of information they want when planning a trip, and at which point in the planning process they obtained the information. NOTE: Respondents were asked to check all that apply; therefore, percentages may not add up to 100.

	N =	* =	Before arriving in the park		While in the park		Did not obtain/not applicable	
			Count	Percent	Count	Percent	Count	Percent
General Park information	452	2	272	60.2	154	34.1	60	13.3
Activities at park	452	2	192	42.5	226	50.0	90	19.9
Hotel/lodging information	452	2	200	44.2	41	9.1	220	48.7
Campground information	452	2	149	33.0	77	17.0	250	55.3
Travel time to park	451	3	293	65.0	19	4.2	143	31.7
Transportation options to get to park	452	2	129	28.5	10	2.2	315	69.7
Alternate auto routes	452	2	239	52.9	37	8.2	187	41.4
Road conditions	452	2	136	30.1	106	23.6	230	50.9
Public transportation in park	452	2	42	9.3	50	11.1	366	81.0
Parking availability	452	2	44	9.7	132	29.2	282	62.4
Weather	452	2	250	55.3	106	23.5	121	26.8
Other things to do in the area	452	2	160	35.4	97	21.5	222	49.1

22. Sources of information. Respondents were asked to tell us what sources of information they used when planning their trip, and at which point in the planning process they used the information source. NOTE: Respondents were asked to check all that apply; therefore, percentages may not add up to 100.

Travel Information Type	N =	* =	Before Arriving in the Park		While in the Park		Did Not Obtain/Not Applicable	
			Count	Percent	Count	Percent	Count	Percent
Tour Book/Visitor Guides	451	3	253	56.1	137	30.4	119	26.4
Internet – park web site	451	3	267	59.2	3	0.7	183	40.6
Internet – other web site	451	3	185	41.0	3	0.7	265	58.8
Friends/relative	451	3	205	45.5	9	2.0	242	53.7
Previous Visits	451	3	164	36.4	20	4.4	280	62.1
Visitor/Tourist Information Centers	451	3	73	16.2	257	57.0	141	31.3
Commercial Television	451	3	8	1.8	0	0.0	443	98.2
Local Access Television	451	3	0	0.0	0	0.0	451	100.0

Commercial Radio	451	3	2	0.4	0	0.0	449	99.6
Highway Advisory Radio	451	3	13	2.9	21	4.7	418	92.7
Electronic Road Signs	451	3	14	3.1	36	8.0	405	89.8
Chambers of Commerce	451	3	16	3.5	2	0.4	434	96.2
Terminal Kiosks -- airport, train or bus station	451	3	12	2.7	7	1.6	433	96.0
Hotel Information Kiosks – computer terminal	451	3	38	8.4	8	1.8	405	89.8
Phone Inquiry to Park	451	3	107	23.7	5	1.1	341	75.6
Cell phone (to access current data)	451	3	22	4.9	12	2.7	421	93.3
Personal Digital Assistant (PDA)	451	3	3	0.7	4	0.9	445	98.7
Current Internet Travel Information	451	3	111	24.6	2	0.4	339	75.2
Newspaper/magazine Articles	451	3	94	20.8	15	3.3	348	77.2
Talk to People in Local Communities	451	3	74	16.4	26	5.8	356	78.9
Travel Agent	451	3	12	2.7	2	0.4	437	96.9

23. How hotel and campground reservations were made.

	Count	Percent
Establishment directly	120	35.7
Stopped by establishment	108	32.1
AAA	16	4.8
Visitor center	8	2.4
Reservation service	50	14.9
Internet	73	21.7
Travel Agent	2	0.6
Other	14	4.2
	N =	336
	*** =**	118

SEKI Section IV: Attitudes

24. Appropriateness of information media and alternate transportation. Visitor attitudes about various forms of information media and transportation options were determined by having respondents reply to the statement, "I believe each of the following is" … inappropriate, somewhat inappropriate, neither, somewhat appropriate, or appropriate.

	N =	* =	(1) Inappropriate		(2) Somewhat Inappropriate		(3) Neither		(4) Somewhat Appropriate		(5) Appropriate		Mean	StDev
			Count	%	Count	%	Count	%	Count	%	Count	%		
Tour Book/ visitor guides available in the park	447	7	1	0.2	1	0.2	11	2.5	40	8.9	394	88.1	4.85	0.47
Internet terminals in the park	423	31	96	22.7	52	12.3	136	32.2	72	17.0	67	15.8	2.91	1.35
Getting information from friends and relatives	437	17	8	1.8	6	1.4	69	15.8	128	29.3	226	51.7	4.28	0.91
Talking to Ranger at the park	438	16	2	0.5	9	2.1	17	3.9	61	13.9	349	79.7	4.70	0.68
Calling Ranger before visiting park	427	27	39	9.1	33	7.7	136	31.9	92	21.5	127	29.7	3.55	1.24
Commercial television used to provide park information	423	31	57	13.5	53	12.5	137	32.4	113	26.7	63	14.9	3.17	1.23
National Park Service video providing travel information	425	29	19	4.5	31	7.3	109	25.6	144	33.9	122	28.7	3.75	1.09
Commercial radio stations used to provide travel information	424	30	41	9.5	45	10.6	151	35.6	111	26.2	76	17.9	3.32	1.17
Informational radio (e.g. highway advisory radio)	424	30	24	5.7	18	4.2	106	25.0	135	31.8	141	33.3	3.83	1.11
National Park Service radio station with travel information	426	28	12	2.8	17	4.0	96	22.5	130	30.5	171	40.1	4.01	1.02
Electronic signs with ravel information in the parking lots	422	32	85	20.1	51	12.1	89	21.1	120	28.4	77	18.2	3.13	1.39
Electronic signs with travel information on the park roads	423	31	94	22.2	42	9.9	75	17.7	117	27.7	95	22.5	3.18	1.46
Visitor center information kiosks with brochures, maps, etc.	439	15	2	0.5	9	2.1	13	3.0	61	13.9	354	80.6	4.72	0.66
National Park Service automated telephone information line	424	30	19	4.5	19	4.5	81	19.1	116	27.4	189	44.6	4.03	1.11

	N =	* =	(1) Inappropriate		(2) Somewhat Inappropriate		(3) Neither		(4) Somewhat Appropriate		(5) Appropriate		Mean	StDev
			Count	%	Count	%	Count	%	Count	%	Count	%		
Personal Digital Assistant (PDA) to access travel information	408	46	67	16.4	35	8.6	204	50.0	63	15.4	39	9.6	2.93	1.13
Mandatory shuttle service in park – you must park outside park and ride shuttle into park	429	25	163	38.0	72	16.8	72	16.8	72	16.8	50	11.7	2.47	1.43
Optional shuttle service in park (can either park car outside park and take shuttle or drive into park in your car)	430	24	22	5.1	28	6.5	64	14.9	114	26.5	202	47.0	4.04	1.16
Public/municipal bus between area surrounding park and park	421	33	40	9.5	33	7.8	137	32.5	94	22.3	117	27.8	3.51	1.24
Parking your car at entrance and riding your bike into the park	428	26	154	36.0	38	8.9	112	26.2	50	11.7	74	17.3	2.65	1.49

25. Respondents were asked to indicate the level of importance that they placed on preservation of natural resources and recreational use of the park as part of the park's purpose.

Preservation of Natural Resources

	Count	Percent
(1) Not at all Important	2	0.4
(2) Somewhat Important	4	0.9
(3) Important	25	5.5
(4) Very Important	75	16.6
(5) Extremely Important	345	76.5
	N =	451
	*** =**	3
	Mean	4.68
	StDev.	0.66

Recreational Use

	Count	Percent
(1) Not at all Important	6	1.3
(2) Somewhat Important	40	8.9
(3) Important	152	33.9
(4) Very Important	144	32.1
(5) Extremely Important	107	23.8
	N =	449
	*** =**	5
	Mean	3.68
	StDev.	0.98

SEKI Section V: Technology

26. Technology Ownership.

	Count	Percent
Computer	414	92.0
Cell phone	358	79.6
PDA	75	16.7
GPS unit (N = 445)	78	17.5
	N =	450
	* =	4

27. Respondents who indicated that they did not own the above items were asked to provide a reason.

Computer

	Count	Percent
Too Expensive	8	20.5
Don't know how to use	5	12.8
Don't think it is useful/ don't need	21	53.8
Other	5	12.8
	N =	39
	* =	415

Cell Phone

	Count	Percent
Too Expensive	29	32.2
Don't know how to use	1	1.1
Don't think it is useful/ don't need	47	52.2
Other	13	14.4
	N =	90
	* =	364

PDA

	Count	Percent
Too Expensive	33	9.0
Don't know how to use	53	14.4
Don't think it is useful/ don't need	253	68.9
Other	28	7.6
	N =	367
	* =	87

GPS

	Count	Percent
Too Expensive	72	19.5
Don't know how to use	42	11.4
Don't think it is useful/ don't need	224	60.5
Other	32	8.6
	N =	370
	* =	84

28. Of those who have another way to access the Internet, 58% of these accessed the web at the library.

	N =	* =	Count	Percent
At home	450	4	383	85.1
At work/school	449	5	266	59.2
Other way to access the Internet*	450	4	40	8.9

29. Participants were asked if they used various media outlets when planning a trip. They were also asked why they did or did not use each item (please note that many respondents left this blank, resulting in percentages do not add up to 100). A summary of their responses follows.

	N =	* =	Count	Percent
GPS	422	32	31	7.3
Current Internet Information	439	15	355	80.9
Computer trip planners	440	14	257	58.4
Information TV	439	15	209	47.6
Commercial TV	435	19	76	17.5
Information radio	437	17	152	34.8
Commercial radio	435	19	68	15.6
PDA	436	18	20	4.6
Cell Phone	434	20	164	37.8

Reasons provided by respondents for using GPS (n = 31) included backpacking safety (12.9%) and helpful (9.7%). Reasons given for not using GPS (n = 391) included do not want/like/need (15.9%), do not know what it is/do not know how to use (4.3%), use map (4.1%), and expensive (3.1%).

Reasons given for using Current Internet Information (n = 355) included ease of use (17.7%) information source (13.0%), current/up-to-date (8.2%), available/convenient (7.0%), useful/helpful (6.8%), fast (6.0%), and weather and road information (2.8%). Reasons given for not using Current Internet Information (n = 84) included do not own/have/need (28.6%), not aware of do not know how (9.5%), and familiar with site (6.0%).

Reasons given for using a Computer Trip Planner (n = 257) included ease of use (14.4%), directions and compare routes (13.2%), convenient and useful (12.8%), and travel time (4.7%). Reasons given for not using a Computer Trip Planner (n = 183) included do not need/do not use (24.0%), use maps (9.3%), familiar with site (7.1%), do not know how (6.0%), and use AAA (5.5%).

Reasons given for using Informational TV (n = 209) included weather and related clothing (27.3%), convenience (12.0%), current information (4.9%), and good planning information (2.9%). Reasons given for not using Informational TV (n = 230) included do not need / do not use (17.8%), do not have/like/own (15.2%), check web/use Internet instead (5.7%), poor quality information (2.6%), and familiar with site (2.2%).

Reasons given for using Commercial TV (n = 76) included to get ideas (21.0%), convenient / useful (10.5%), and weather reports (6.6%). Reasons given for not using Commercial TV (n = 359) included do not watch/own (18.7%), not useful/not helpful/not for planning (12.0%), do not watch often (4.2%), commercials are fake [respondents did not understand question] (3.5%), and use Internet instead (2.5%).

Reasons given for using Information Radio (n = 152) included road and weather conditions (31.0%), convenient/up-to-date (14.5%), and if happen to hear it (2.6%). Reasons given for not using Information Radio (n = 285) included do not need/do not use (17.5%), poor reception (5.3%), do not know how (3.2%), do not know channel (2.8%), and always have music on (2.1%).

Reasons given for using Commercial Radio (n = 68) included road and traffic information (14.7%), weather (11.8%), if by chance (8.8%), general information (7.3%), and ease of use (5.9%). Reasons given for not using Commercial Radio (n = 367) included do not need/do not use for planning (13.4%), do not like (8.2%), inefficient (3.3%), and listen to music only (2.7%).

Reasons given for using a PDA (n = 20) included data storage and retrieval (25.0%), and convenience (20.0%). Reasons given for not using a PDA (n = 416) included do not have/own/need (38.7%), do not know what it is (3.6%), no Internet link (2.4%), and for business only (2.4%).

Finally, reasons given for using a Cell Phone (n = 164) included convenient/handy/useful (22.6%), emergency use (14.6%), check weather (4.2%), and to check lodging (3.7%). Reasons given for not using a Cell Phone (n = 270) included do not need/use/have (29.3%), expensive (6.7%), no signal in park (6.3%), call before leaving home (4.1%), and not for planning (3.3%).

SEKI Section VI: Obtaining Travel Information

30. The following table indicates the average score on a scale of 1-5 (1 = not at all likely, 5 = very likely) for the likelihood that participants would use each of the following before arriving at SEKI and while at SEKI.

Before Arriving in the Park:	N =	* =	(1) Not at All Likely		(2) Somewhat Not Likely		(3) Neither		(4) Somewhat Likely		(5) Very Likely		N/A		Mean	StDev
			Count	%	Count	%	Count	%	Count	%	Count	%	Count	%		
Tour Book / visitor guides	434	20	23	5.3	25	5.8	38	8.8	61	14.1	281	64.7	6	1.4	4.29	1.18
Internet – park web site	426	28	48	11.3	12	2.8	35	8.2	60	14.1	251	58.9	20	4.7	4.12	1.37
Internet – other web site	429	25	81	18.9	22	5.1	45	10.5	64	14.9	193	45.0	24	5.6	3.66	1.58
Friends/relative	434	20	40	9.2	26	6.0	78	18.0	92	21.2	184	42.4	14	3.2	3.84	1.31
Previous visits	421	33	23	5.5	10	2.4	15	3.6	51	12.1	247	58.7	75	17.8	4.41	1.14
Visitor/tourist information centers	425	29	102	24.0	22	5.2	42	9.9	48	11.3	186	43.8	25	5.9	3.49	1.68
Commercial television	425	29	237	55.8	58	13.6	50	11.8	22	5.2	14	3.3	44	10.4	1.73	1.12
Local access television	424	30	248	58.5	53	12.5	43	10.1	14	3.3	14	3.3	52	12.3	1.64	1.07
Commercial radio	419	35	252	60.1	42	10.0	48	11.5	17	4.1	16	3.8	44	10.5	1.67	1.12
Informational radio (e.g. highway advisory)	425	29	159	37.4	44	10.4	72	16.9	47	11.1	70	16.5	33	7.8	2.55	1.54
Electronic Road Signs	416	38	134	32.2	34	8.2	52	12.5	61	14.7	90	21.6	45	10.8	2.84	1.63
Chambers of Commerce	427	27	247	57.8	42	9.8	51	11.9	26	6.1	28	6.6	33	7.7	1.85	1.28
Terminal Kiosks (airport, train or bus stations) with brochures, maps, etc.)	430	24	210	48.8	36	8.4	60	14.0	47	10.9	42	9.8	35	8.1	2.18	1.45
Terminal Kiosks (airport, train or bus stations) – electronic/;computer	429	25	259	60.4	42	9.8	38	8.9	22	5.1	24	5.6	44	10.3	1.73	1.22
Hotel information kiosks with brochures, maps, etc.	432	22	158	36.6	42	9.7	63	14.6	67	15.5	76	17.6	26	6.0	2.66	1.57
Hotel information kiosks – electronic/computer	424	30	247	58.3	39	9.2	37	8.7	32	7.5	33	7.8	36	8.5	1.88	1.35
Phone inquiry to park	429	25	91	21.2	34	7.9	90	21.0	72	16.8	129	30.1	13	3.0	3.27	1.52
Cell phone (to access current data	422	32	184	43.6	37	8.8	47	11.1	33	7.8	82	19.4	39	9.2	2.46	1.63
Personal Digital Assistant (PDA)	420	34	266	63.3	21	5.0	15	3.6	4	1.0	7	1.7	107	25.5	1.29	0.81
Current Internet travel information	425	29	94	22.1	19	4.5	41	9.6	77	18.1	160	37.6	34	8.0	3.49	1.62
Newspapers/magazine articles	427	27	75	17.6	33	7.7	89	20.8	98	23.0	120	28.1	12	2.8	3.37	1.44
Talk to people in local communities	431	23	153	35.5	45	10.4	81	18.8	58	13.5	68	15.8	26	6.0	2.61	1.51
Travel agent	427	27	277	64.9	42	9.8	35	8.2	17	4.0	16	3.7	40	9.4	1.59	1.09
In park shuttle – no fee	422	32	121	28.7	23	5.5	36	8.5	37	8.8	93	22.0	112	26.5	2.86	1.72
In park shuttle – fee	417	37	170	40.8	29	7.0	55	13.2	33	7.9	24	5.8	106	25.4	2.07	1.36
Public bus to park – fee	426	28	252	59.2	40	9.4	42	9.9	22	5.2	19	4.5	51	12.0	1.71	1.18
Park and ride	428	26	181	42.3	32	7.5	75	17.5	40	9.3	51	11.9	49	11.4	2.34	1.48
Park and Bike	424	30	255	60.1	29	6.8	29	6.8	21	5.0	28	6.6	62	14.6	1.72	1.28

While in Park:	N =	* =	(1) Not at All Likely		(2) Somewhat Not Likely		(3) Neither		(4) Somewhat Likely		(5) Very Likely		N/A		Mean	StDev
			Count	%	Count	%	Count	%	Count	%	Count	%	Count	%		
Tour Book / visitor guides	400	54	17	4.3	8	2.0	23	5.8	66	16.5	284	71.0	2	0.5	4.49	1.00
Internet – park web site	385	69	259	67.3	31	8.1	25	6.5	10	2.6	18	4.7	42	10.9	1.53	1.10
Internet – other web site	390	64	275	70.5	25	6.4	24	6.2	8	2.1	13	3.3	45	11.5	1.43	0.99
Friends/relative	388	66	179	46.1	36	9.3	43	11.1	31	8.0	55	14.2	44	11.3	2.26	1.54
Previous visits	382	72	54	14.1	7	1.8	21	5.5	35	9.2	183	47.9	82	21.5	3.95	1.55
Visitor/tourist information centers	402	52	18	4.5	2	0.5	26	6.5	49	12.2	304	75.6	3	0.7	4.55	0.98
Commercial television	393	61	278	70.7	24	6.1	21	5.3	3	0.8	3	0.8	63	16.0	1.26	0.70
Local access television	389	65	266	68.4	23	5.9	19	4.9	10	2.6	8	2.1	63	16.2	1.38	0.91
Commercial radio	386	68	262	67.9	26	6.7	29	7.5	8	2.1	12	3.1	49	12.7	1.46	1.00
Informational radio (e.g. highway advisory)	395	59	137	34.7	29	7.3	77	19.5	51	12.9	80	20.3	21	5.3	2.75	1.58
Electronic Road Signs	386	68	79	20.5	23	6.0	79	20.5	65	16.8	119	30.8	21	5.4	3.33	1.52
Chambers of Commerce	391	63	278	71.1	19	4.9	22	5.6	8	2.0	8	2.0	56	14.3	1.36	0.89
Terminal Kiosks (airport, train or bus stations) with brochures, maps, etc.)	391	63	220	56.3	14	3.6	25	6.4	23	5.9	28	7.2	81	20.7	1.79	1.36
Terminal Kiosks (airport, train or bus stations) – electronic/;computer	391	63	245	62.7	14	3.6	14	3.6	11	2.8	11	2.8	96	24.6	1.40	1.01
Hotel information kiosks with brochures, maps, etc.	397	57	185	46.6	21	5.3	43	10.8	38	9.6	51	12.8	59	14.9	2.26	1.56
Hotel information kiosks – electronic/computer	389	65	241	62.0	19	4.9	24	6.2	21	5.4	23	5.9	61	15.7	1.68	1.26
Phone inquiry to park	391	63	188	48.1	34	8.7	42	10.7	29	7.4	46	11.8	52	13.3	2.15	1.49
Cell phone (to access current data	389	65	184	47.3	21	5.4	43	11.1	30	7.7	63	16.2	48	12.3	2.32	1.61
Personal Digital Assistant (PDA)	389	65	245	63.0	12	3.1	8	2.1	8	2.1	7	1.8	109	28.0	1.29	0.86
Current Internet travel information	385	69	249	64.7	19	4.9	22	5.7	13	3.4	29	7.5	53	13.8	1.66	1.28
Newspapers/magazine articles	387	67	177	45.7	35	9.0	59	15.2	39	10.1	48	12.4	29	7.5	2.29	1.49
Talk to people in local communities	390	64	156	40.0	29	7.4	62	15.9	48	12.3	63	16.2	31	7.9	2.53	1.57
Travel agent	391	63	303	77.5	7	1.8	6	1.5	6	1.5	3	0.8	66	16.9	1.15	0.62
In park shuttle – no fee	396	58	76	19.2	14	3.5	56	14.1	65	16.4	161	40.7	24	6.1	3.59	1.55
In park shuttle -- fee	399	55	143	35.8	33	8.3	90	22.6	55	13.8	54	13.5	24	6.0	2.58	1.47
Public bus to park – fee	387	67	206	53.2	23	5.9	41	10.6	20	5.2	19	4.9	78	20.2	1.78	1.25
Park and ride	393	61	140	35.6	18	4.6	86	21.9	51	13.0	61	15.5	37	9.4	2.65	1.53
Park and Bike	394	60	218	55.3	30	7.6	41	10.4	27	6.9	29	7.4	49	12.4	1.90	1.35

SEKI Section VII: Transportation

31. Frequency of public transportation use:

	Count	Percent
Daily	14	3.1
At least once per week	7	1.6
At least once per month	41	9.1
At least once per year	132	29.4
Never	255	56.8
	N =	449
	*** =**	5

32. Use of public transportation in a national park. Note: visitors could list more than one park.

	Count	Percent
Yes:	244	54.1
Yosemite	131	62.7
Grand Canyon	60	24.6
Zion	53	21.7
Denali	17	7.0
Bryce	9	3.7
Yellowstone	7	2.9
Glacier	5	2.0
No:	207	45.9
Car more convenient	33	13.1
Had a car	31	12.4
Freedom/own schedule	25	10.0
Not aware of availability	12	4.9
Privacy	6	2.4
	N =	451
	*** =**	3

The reasons given by those who have not used public transportation in a national park included car more convenient (13.1%), had a car (12.4%), freedom/own schedule (10.0%), not aware it is available (4.9%), and privacy (2.4%).

SEKI Section VIII: General Information

33. Gender of respondents.

	Count	Percent
Male	222	49.4
Female	227	50.6
	N =	449
	*** =**	5

34. Age of respondents:

	Count	Percent
Under 19	1	0.2
19 – 34	65	14.8
35 – 50	170	38.7
51 - 65	143	32.6
66+	60	13.7
	N =	439
	*** =**	15
	Mean	50
	StDev.	13.7

35. Race of respondents:

	Count	Percent
Black / African American	4	0.9
Hispanic / Latino	13	3.0
White/Caucasian	403	91.6
Asian	20	4.5
American Indian/Native Alaskan	5	1.1
Native Hawaiian/Pacific Islander	1	0.2
Other	5	1.1
	N =	440
	*** =**	14

36. English was the primary language spoken at home by 96.0% of respondents.

	Count	Percent
English	428	96.0
Chinese	4	0.9
German	3	0.7
Dutch	3	0.7
Greek	2	0.4
Other	6	1.3
	N =	446
	*** =**	8

37. Level of education

	Count	Percent
Less than 12 years	5	1.1
High School Graduate	33	7.4
Technical / Vocational School	14	3.1
Some College	104	23.2
College Graduate	132	29.5
Graduate or Professional Degree	160	35.7
	N =	448
	*** =**	6

38. Household Income

	Count	Percent
Under $20,000	17	4.2
$20,000 - $39,999	42	10.4
$40,000 - $59,999	79	19.6
$60,000 - $79,999	88	21.8
$80,000 - $99,999	70	17.4
$100,000 or more	107	26.6
	N =	403
	* =	51

39. Employment status

	Count	Percent
Employed full-time	235	52.3
Employed part-time	40	8.9
Self-employed	43	9.6
Homemaker	45	10.0
Retired	119	26.5
Unemployed	9	2.0
Student	25	5.6
	N =	449
	* =	5

Visitor Comments – May surveys – SEKI

- Actually, most of our time was spent outside of the park's boundaries. In the Converse Basin, Hoist Ridge, Hume Lake and Mill Wood areas. I was impressed with the big stumps – Chicago stump. It was truly amazing that these trees could be removed and produced into lumber over 100 years ago, with minimal equipment and lots of ingenuity such as the chutes, the flume to Sanger. It would be hard to imagine the flume without the pictures in the book, "They Felled the Redwoods." I would recommend a video at visitor centers showing pictures of logging the redwoods in a positive nature. These men involved with cutting the redwoods should be looked up to in a positive nature.
- Recreational use of the park is "extremely important" if you mean hiking and enjoying the natural environment. If you mean other than seeing the trees, like skiing and snowmobiling, not appropriate.
- We had a wonderful time. Thank you for all of your efforts. May God bless you and may God continue to bless this country and the world.
- I'm an old hard rock climber from the 1960s. Just drove up for the day to see, feel and dream for a few hours. Keep up the good work. It is still very beautiful.
- I give thanks to those who dedicate their lives to share the wonder of nature with other human beings. You are true keepers of the forest and the dragonflies and salamanders can live on!
- I think the problem with transportation is that people want to be able to have all their "gear" at their disposal and on public transportation systems makes this hard.

- We are extremely impressed with the greatly improved infrastructure, public buildings, new stone work, and the consistency of architecture style "Neo-craftsman." The high quality and attention to detail is very impressive. Problem (all very few at that) – picnic areas are of driving distance from main attractions. Therefore, a lot of backtracking is done in search of picnic areas. Why aren't they (picnic areas) located in some proximity to large attractions/parking?
- For handicapped or partially handicapped visitors – "activity" is limited (photography, birding, native trees and shrubs, wildflowers). More labels for plants and trees would be nice. When there are "school tours" in progress it would be nice to have someone directing visitors not involved with children.
- I really enjoy the bus systems at Grand Canyon and Yosemite. I have visited Sequoia/Kings Canyon more than three dozen times since '57. I love the parks. I would love to see a shuttle system! I have backpacked both parks, brought girl scouts for week long trips, brought foreign students and my family. We love how clean the park is. Foreign visitors always remark on how clean the park is. A shuttle system would help keep the park even cleaner. Thanks for the chance to participate in this survey.
- I enjoyed the public transportation systems in both Zion and the South Rim of Grand Canyon. They work great, have plenty of buses, and are easy to use. It might be tougher to set up a system at Sequoia/Kings Canyon because of the size, how spread out it is, and the fact that it isn't a one-way in and out road. You could probably do well shutting down the one-way in/out roads and using shuttles on them, but the main road would be more difficult. I am all for the shuttle system. It sometimes takes a little more time, but is good for the park, for hikers, and for all visitors. My visit was during a not-so-busy time so the congestion wasn't too bad, but I'm sure summers are crazy. My visit was cut short by a big snowfall so I didn't get to visit as many places as I'd hoped and go hiking as I'd planned.
- I do not like buses or shuttles in or outside of the park. I feel that people can travel safer with their own car. In the park you should have three-wheeled electric transportation or golf carts. This kind of transportation would work on trails that are paved or well-worn dirt paths. This kind of transportation is good for disabled or elderly. OR What would be safe would be a 4-lane highway in or out of park even 6 lanes in some parts of highway in or out of park. This would be a safe way to travel. We all pay taxes for roads and highways and it is time for a new highway 180 and park roads.
- I believe we should use some type of insect killer (e.g. DDT or other available ones) to rid the park of things like the bark beetle especially when it is not a native of the area.
- This survey appears to be looking for attitudes concerning mass transportation for this park. My attitude would be decidedly negative. As it stands I can take an impromptu trip to S/KC; decide to go, prepare, go, enjoy, return, cook dinner. If mass transportation were a requirement any trip to the park would require pre-planning; when do buses run? What are their destinations? Do I need to make transfers? What times do buses return? In other words, any trip to the park would be planned around public transportation. Also, what do campers do? If you plan to use an RV, can you? If you are tent-camping do you have to unload all your gear and put it on some form of public transport?

- In the face of increasing population pressure our parks have done well to survive. Preservation of the remarkable natural features is crucial to our national well-being – make it the key rule. There is a place for options to the way in which we do things but a park can not be all things to all people. I question the need of a plethora of information before and in the park. It is interesting to discover things and to have the flexibility to be able to change a trip to fit conditions (weather or wife's backache). I have no fixed schedule and this allows me the freedom to travel "off season" when competition is less. Yes, we are a social culture, but I do not go to a park to see other people. One must plan to have an easier existence rather than a more difficult one. Many of the "features" asked about in this survey would detract from the quality of any park and turn it instead into an "amusement park" – somehow I am not impressed with the concept of a "roller coaster ride" to see "Smoky the Bear" – it reeks of Southern California hucksterism. It all needs to be quiet and unobtrusive. I've no solution to the high use problem, but perhaps a bicycle access only may solve it. Many of the "information" means are more "buzz words" than anything else – a person can do a huge amount with an adequate map and compass, though the GPS is well on the way to replacing a compass at least, but it cannot replace a map. An electronic device depends on … power – consider entropy!
- Often times I've found that the National Park websites do not give enough information to help plan a trip well. Sometimes the most convenient way to plan is to call the park, but I have found that park contacts are reluctant to give helpful information over the phone, which leaves much of the planning to be done once you arrive at the park, which can lead to problems. Upon arrival, rangers are very helpful, but it would be much better if websites or phone service were improved so planning could be done beforehand.
- I came to visit a friend in Cambria, CA. We came to Sequoia because it was a manageable (time) trip. Because we came the week before everything "opened" it was not crowded. The park is magnificent … because of its natural beauty. Do what it takes to preserve that. People pollution will ruin the natural/tourist appeal.
- I and my family have visited Sequoia and Kings Canyon National Park since 1957. Last summer a nine day backpack trip out of Sequoia. Over the years one or more visits per year is enjoyed. We are tent campers! Parking, then walking/biking/shuttle bus a must.
- I guess I used a reservation service (to make hotel reservation), wish I'd known they were a reservation service. The only phone number on several websites goes to them. We had big troubles with the reservation service lying to us. The individual lodge's phone numbers need to be posted on websites, so the public does not get cheated like we did. [note: visitor stayed at Grant Grove Village].
- One main reason that I do not use public transportation in National Parks is that they stop too long at places that are less interesting to me and not long enough at places of great interest. In Yosemite, where would could get on and off at will, it worked better.
- The National Park Service continues to do a great job! Keep up the good work … the parks are just as beautiful as they were 30 years ago!
- A shuttle in the park would be a nice thing whether I have to pay or not. For a lot of people it would be easier than driving on curvy roads. Lots of people use their brakes too much, rather than lower gears. I've seen enough near-accidents that this alone makes a

shuttle attractive. It would save gas during busy summer months, and protect ecosystems. If there already is any sort of public transit in the park I'm unaware of it, but it would be nice.

- The entrance to Kings Canyon Park was a joke. Generals Highway needs work. Depletion of frogs at Hume Lake (found 50 dead, large, tadpoles). Lovely park.
- While leaving the park (Big Stump Entrance) at 2:30 pm traffic was backed up 2 miles at the gate. People were turning around on the 2-lane road creating a dangerous situation. On busy weekend multiple pay lines would speed throughput. Signs on the road indicating how long the line is would make it safer/less frustrating while waiting. Once in the park a shuttle would be nice – included in the cost of entrance fee.
- Stayed in Azalea Campground. We wished Sunset or Crystal Springs were open, since it was Memorial Day weekend.
- The road from about the area of the General Grant Tree to the visitor center had a lot of potholes. I believe the area was in Tulare County, when we passed the county road sign the condition of the road was rough. The private road was smooth, less likely to cause driver hazards when not needing to avoid holes. Also less likely to have collisions on the better maintained roads.
- Kings Canyon – refusal to extend temporary handicapped parking pass – I have a chronic asthmatic condition which requires medication as needed, and under doctor supervision. I live at sea level and need time to adjust to altitudes above 4,000'. I try to be independent and am careful of avoiding asthmatic crisis. I carry a doctor's note and my medication at all times on my person. Although I am not confined to a wheelchair, or with oxygen connections, I do have limitations. For someone who is an asthmatic, I think that a temporary pass to parking would not be abusing a requirement. I would be able to function independently w/o being a burden, or being deprived of enjoying the national parks at whatever the altitude, etc. The lodges have been helpful in room assignments by allocating rooms which do not require use of stairs. For others with similar conditions, I think that an extension of temporary parking for handicapped would be beneficial.
- Gorgeous park!
- Visited the park Memorial Day weekend on Thurs. and Fri. had a fantastic experience! Visited Yosemite on Sat. – too many people, too much traffic! Left early. Too much recreation. Too much controlled access to sites and not as well kept as Sequoia and Kings Canyon.
- Use of own vehicle is somewhat important because Kings and Sequoia are very spread out. Less important in Yosemite, for example.
- In addition to the subject parks, my wife and I visited Yosemite for the first time. We were frustrated for two reasons. 1. We drove well into the heart of Yosemite before reaching visitor center where we might procure park information and aids to identify various peaks and numerous waterfalls. It does seem to make sense to hand out such info at the park gates. 2. We loved the waterfalls! But our constant question to each other was, "which one is this beauty?" Tastefully carved or hewn wooden signs in natural tones would see, to me to be appropriate – and helpful.

- Get the names of the trees and groves changed in Sequoia NP. They are stupid/sexist and only promote violent past of this screwy nation!
- Electronic signs appropriate because the posted signs [the day visitor was at park] were all for previous day.
- We arrived at Sequoia to find it had closed due to snow. On the road we had known only about rain. Near the entrance there was a sign saying trails were open. Only at the gate did we discover that driving without 4-wheel drive was hazardous. Unfortunately, don't think we will be this way again. I think the radio news might have said something, or perhaps storm warnings night have been issued before – I understand that the storm was expected for a few days. Needless to say this was unavoidable in the end but very disappointing. The storm was unusual for so late in the season. We did have reservations that had to be cancelled.
- We enjoyed our stay in Azalea campground (4 nights). We prefer to travel with our own RV and set our own pace. We would like to see an RV dump station in the Azalea area. It would encourage us to return. The information guide was somewhat clear. I could have used better information on the hikes/trails. Zion's trail & hike guide is great. Overall, we enjoyed the Kings Canyon portion of the park more than the Sequoia part. If I return I will recreate in the Kings Canyon only, unless there is a park and ride transportation for Sequoia. I would take a transit system in the Sequoia area. I prefer my own vehicle in the Kings Canyon area. It was stunning.
- I traveled to Sequoia in May and left before going to Kings Canyon because a snow/rain storm was coming in – too old to camp. During summer I can imagine the crowds – perhaps a shuttle from lodging and campgrounds to popular stops for no fee or small fee would be useful then – could have some vehicles equipped to carry bikes. Would like to increase food storage containers at hiking areas if only shuttle service allowed.

Visitor Comments – July surveys – SEKI

- We were told by the nice lady handing out these surveys that there was road work in Kings Canyon. It would be nice if the park information entrance would post this at the entrance. Also post congested area of the park so you can visit something else. We enjoyed Kings Canyon more than Yosemite because it was not as congested!
- It is very difficult for those of us who drive a great distance to know exactly what day we will arrive at the park. I would like to see a system that immediately upon entering the park, we would be able to pay for and secure a campsite at any of the drive-in campgrounds where a site is available (a particular site at one campground). Two things that need to be addressed: 1) People are reserving sites and not using them. Some arrangement should be made to allow that site to be used by someone after a certain time if the reserver is not coming (they could call). Campgrounds are shown full when in reality some sites are never used that night. 2) I have noticed that vendors are using employees who cannot speak nor understand English fluently. There are plenty of Americans who need jobs and do speak English. It's quite upsetting to walk into a restaurant, pay double for food, and also have to deal with someone who can't understand English.

- This was our first visit to the area and picked areas we wanted to see that we knew would be popular. Next time will choose less popular areas. Definitely not as congested as Yosemite!
- My travelling companion thought it might be nice to have occasional, small, refreshment areas that serve ice cream and cold drinks. She says flashing electronic signs and Christmas tree lights would not be appropriate.
- The shuttle system at Zion works great. I think the same system would work at Sequoia. Allow those with hotel reservations to park their car at hotel and require shuttle to be used to sightsee. Campers could work it the same way. Those without reservations must take shuttle from outside park. Think of all the additional asphalt parking lots that could be removed and restored back to the forest!
- It would be nice to be able to make Internet reservations 24/7 instead of only between 7 am – 7 pm. A very good job has been done to educate the public on bear safety and rules. It would be good to also direct these rules to trash pick up as well.
- I have vacationed at Sequoia regularly (almost every year) since I was born – I love this place. As a child we stayed every year at Kaweah Village cabins. It was always my favorite vacation spot. As an adult, my family comes at least once a year – and sometimes more if we can fit it in. We bring extended family and friends and introduce them to Sequoia. The other national parks that we visit never draw me like Sequoia. Yosemite and Grand Canyon seem like congested cities instead of unspoiled wilderness. The loss of the cabins at Giant Forest Village is one that is bittersweet – it will help the trees but the experience cannot be matched in accommodations currently available at Sequoia. We have stayed at campsites in tents, rented RVs, personal travel trailers and at Wuksachi Lodge, which all have benefits; however, the housekeeping cabin experience is the best. In the past five years, the staff at markets, the cleanliness of the shower area, the availability of goods at the stores (mkt and souvenirs) have all turned for the worse. It seems like NPS and Delaware Park Services want to make a bad experience to keep the tourists away (I will undoubtedly be back every year I am able – regardless!). My suggestions for future facilities: cabin area (housekeeping) at Wuksachi Village, cable/satellite TV/internet access at Wuksachi Lodge, Lodgepole internet cafe, clean & adequate shower and restroom facilities, deli/fast food service (we waited almost 2 hours for breakfast order of pancakes, eggs, hashbrowns – so we won't go back) for a quick meal. I believe the park service has taken the right steps to restore the Giant Forest Village – now the plan needs to focus on how to bring the visitor experience to the levels of today's expectations: clean facilities, customer-focused staff, and computer/electronic access.
- We really enjoyed our day through the Sequoias! We were thankful though to have our son guide us through. Your rangers on duty were very gracious and knowledgeable.
- We try to visit the Redwoods every decade. Our grown children have fond memories of these childhood vacations. My husband is a hiker and loves state and national parks. We buy a $50 park entrance fee every year. We brought the Frommer's Guide for touring California and basically planned our vacation from it.

- During the summer season more rangers to move traffic through entry gates: Need some type of traffic control on roads to enforce use at turnouts – this will reduce congestion.
- Cell [phone] service would be helpful. Making visitors take public transportation would cause our family to stop staying at national parks.
- I would like to see at least one gas station in the park. I would hope that no more campgrounds will be closed down permanently. I camped many years in Sequoia at Paradise and Sunset campgrounds. Now my grandchildren do not get to enjoy them. We miss the dump station at Azalea campground greatly! We do not want to be forced to use "public transportation" to arrive at the park. We have eaten in the Grant Grove coffee shop for 25 years or more, and have enjoyed it. However, with the new updated coffee shop you can't even get a hamburger for dinner, and the prices of the food they do have is outrageous!
- The purpose of this trip was to visit and deliver food to my husband and son who are hiking a portion of the Pacific Crest Trail so I'm probably not your typical visitor. However, we've been here before as tourists camping at Cedar Grove and we love the park and forest. Please continue to preserve its beauty and limit human impact. We appreciate the safe roads and the clean campgrounds – what would be absolutely ideal would be to keep RV campers and tent campers separate as each have different reasons for being here. Us tent campers want peace and quiet, no generators, no late night activity, no noisy rowdy adult or child behavior at any time. Thank you very much. Keep up your good work.
- Great trip! Wonderful experience for our family.
- We thought the shuttle bus system at Yosemite convenient but a little annoying. Maybe if they had been the only source of transportation within the park, we would have been more appreciative. The central "village" area could be bicycles or buses only with the parking lots exterior to this area.
- We feel privileged to be close to the park in question and really enjoy coming here. The Azalea campground has been very crowded but we know the other camps are closed because of dead tree removal. Our main problem concerns RV waste dumping. For years we had this facility readily available at the entrance of Azalea. Our friends and my husband and I miss this facility very much. What can we do to help restore this important station to make out trips more comfortable!
- I noticed there weren't enough signs regarding snow chains near the entrances to the park. I plan to be going back to the park in winter, and I wouldn't want to get stuck without them. Also, the signs weren't posted with turn-out areas where a person could pull off the road to install them. Otherwise, the park was great!
- We've been coming to Sequoia Grant Grove (Azalea) since 1969. What we really miss is the dump station that was closed approximately 2000. We would often stay the 14 day limit. Now we can only stay 4-5 days. It's an inconvenience now to have to travel miles to seek a dump station. We now come to relax. We've done all the sightseeing there is to do which is great. We leave because of the dumping problem. Also, you have an area designated for "tents only" at Azalea campground. No campers or RVs allowed but yet

the tent campers take a lot of spaces where the campers and RVs are allowed and the "tent only" area is not full, thus limiting the spaces for campers and RVs in the other area.

- Comments on transportation in Sequoia National Park. We have been coming to the park regularly every year for the past eight years and last year had an annual pass. Last summer we visited the park, and tried to go to Moro Rock and Round Meadow. We could not deal with the traffic. There was no place to park! We have visited the park four times this year and saw improvements planned for the General Sherman Tree area when we visited the new Giant Forest Museum. The General Sherman Tree area is also a problem parking area, at least in the summer. The plan seems a marked improvement and I do support a local shuttle service serving the Giant Forest Village area – all these places which cannot support the vehicle traffic based on demand. Maybe from Lodgepole, or even Dorst, to Wolverton, Giant Forest Museum, Moro Rock, Round Meadow, etc. Since we drive from Los Angeles and usually camp, or stay at the lodge, a shuttle service from outside the park would not serve our needs very well. And it doesn't seem a very workable plan to close Generals Highway to through traffic. We enter the park through both south and north entrances, depending on the trip. But once we are settled in, a shuttle service would beat the congestion in the more popular areas. I have been to Grant Grove area as well, but am not as familiar with the problems there. However, it would seem a shuttle there might work as well. Have been to the Cedar Grove area of Kings Canyon as well, but not in a number of years. I cannot comment on this area. I am considering camping in this area, though restricting access would be troublesome for this reason. But again, a local shuttle service for these pockets would probably be a workable convenience. Then connections between the local services could work, although, due to travel time between localities, would not be as frequent or as convenient in all likelihood. But the service would probably be used during peak summer activities. I would encourage keeping the fares low. I have a family of 5 and sometimes feel taken advantage of when fares do not recognize that families participate in visiting national parks. Perhaps consideration of a family fee structure in addition to a per person fare would be a good idea. I hope my thoughts have been helpful to you.
- We were very surprised to find 2 out of 3 Grant Grove campgrounds were closed! Didn't see any info on this on the website. Given that 12 of the 14 campgrounds in Kings Canyon / Sequoia are first-come, first-serve, this info would definitely affect my travel plans for what I was certain would be a busy weekend.
- We took Route 245 out of the park. This very "snaky" road made my husband and myself very nervous. There should be some warning about this road.
- Regarding transportation – motor homes are a problem – slow and use of turnouts not commonly enforced. If the park service adheres to the practice of 1) preserving the park then 2) providing rec. use, and has transportation practices that follow that agenda, then I think the park/transportation departments will earn well deserved respect. Good luck and keep up the good work.
- In Yosemite there were lots of bike paths but there weren't any in Kings Canyon – otherwise we would have brought ours. Also, bikes not allowed on trails, a mountain bike trail or two would be nice. A parking lot at the entrance would have been nice to car pool

in (when meeting folks from out of town). Like the idea of shuttling people in but what about those who are camping and have a car full of stuff? A shuttle/tour bus might be good for day trippers, but personally, wouldn't want to drive 5 hours for it. Maybe have a "rent an electric golf cart" station – and make that the only way to have a "personal vehicle" while in the park. Allows for folks to drag camping stuff around.

- We have made 7 trips to Kings Canyon since 1980 and they have all been tent camping. We enjoy it there immensely! Please keep it the way it is.
- We, as a family, have loved and enjoyed all the park has to offer for over 25 years. We love to backpack and hike back into the park and see the beauty as God intended it to be. But in the last few years, it seems to be more difficult to do so. We usually find a campsite as a base ("home") for the week we're there, and then go for short excursions from there. It is very difficult now to dump the camper tanks, take a shower between the hours they are open and the crowded conditions at those facilities, and with many young grandchildren doing the occasional loads of laundry is a whole day adventure, thus, wasting a big chunk of your vacation time. I really feel that these areas need to be addressed, as many people camp with RVs (also the getting gas situation, because RVs don't usually get good gas mileage and if you travel about seeing the park you sometimes need to refill before you go down the hill). I think the impact of these facilities on a small area of the total acreage of the parks is well worth it. The parks are for everyone to enjoy and restore themselves, and at this time, it feels like the park is visitor unfriendly. Thank you.
- My wife and I toured all the parks listed at item 20 this ear [total of 7]. We were very pleased with the natural beauty the parks had to offer, but were shocked at the poor condition of the park facilities at most places other than visitor centers, which were usually very nice. The bathrooms were pitiful most places. I felt embarrassed to see people from other countries having to use them in our famous national parks. Fix them ... every one of them!!! Public transportation worked fairly well but it is limiting. When traveling long distances to arrive, it is not ideal to have to be tied to a bus schedule. The ranger-led programs were our favorite activities at each park, but they were very limited in availability. No ranger-led activities were available at Yellowstone the last week of May when we were at the park, which was very disappointing. Those activities should be increased.
- We believe the railings on Moro Rock are not adequate as smaller children could easily fall through the existing railings and they do not make you feel at all safe. Also, smoking should be limited to directly outside the visitor centers to reduce the risk of fires and cigarette butts littering the parks.
- We had a great trip. The parks were well-run, rangers helpful, roads good. Will return. Wuksachi Lodge far too expensive. Food dreadful and service terrible. Would not return.
- Please bring the shuttle back! We missed so much because we have a motor home and no tow vehicle.
- Great places to visit! Thanks!

- Our trip took 1 ½ months – we didn't know we were going to Sequoia National Park until our relatives took us since they live close. They have been there many times. We were in several states and one province on this trip. The rates for senior citizens have been very helpful to us and we were pleased with the clean campgrounds, trails, signs with maps, etc.
- My recent experience with public transportation at Grand Canyon was disappointing. My family does not need to spend our limited vacation time figuring out the system, then waiting on the system's timetable. Additionally, we prefer to spend the time together, not with groups of complete strangers. I no longer visit the Grand Canyon annually as I once did. I also discourage our tourists from visiting because of its limited public transportation system.
- Just a comment or two! 1) At Mesa Verde in Colorado there is a shuttle to various sites and even a tramway (from the visitor center) but there is no way to get from the park entrance to the visitor center except by car or walking (15 miles up hill). 2) Yosemite is very well organized. 3) Kings Canyon and Sequoia are for camping, hiking, etc. – more down to nature type place. Great fun. Thanks.
- Azalea campground [crowded]. You need to finish work on Sunset and Crystal Springs. 2 years closed is excessive.
- Slideshow at Lodgepole is very interesting. Talked with several rangers – all very helpful.
- Mileage to the different areas, at intervals, rather than driving forever (it seems) to get somewhere. Also letting us know how many miles of mountain driving we are in for!
- If you need to have buses they should be free, included with entrance fee. Smaller buses running frequently best. They need more turnouts on highway 180 so people can pass buses. You already charge admission by carload that encourages 3-4 people per car. Perhaps let bike and ride in free. Have buses equipped to haul bikes.
- Convenient and varied forms of public transportation to and within the national parks is a great idea. Please remember that there are all types of people who want to visit the parks and that they have different physical abilities. The parks need to remain accessible to everyone, not just those that are in top physical condition.
- Even though we drive a relatively short distance to these parks, we would prefer public transportation within the parks. The few times we've used shuttles within parks, their use did not pose any inconvenience. But then, we make deliberate decisions to avoid all parks during peak holiday times. We don't like the crowds, noise, traffic, etc.
- Great area to ride / needs bike lanes on roads
- The park roads could use a few more guardrails. The drop off along the edges of the roads are sometimes pretty steep.
- I would be willing to use a shuttle but would like to have detailed information on schedules and drop off/pick up locations. I'm a serious hiker/backpacker and would like to continue to have access to various trails in park and surrounding locations (I did Weaver Lake trail) but I recognize the need to preserve the park's natural resources.

- Road to Mineral King – too scary. Some of the hiking trails not well marked. Need more info along hiking trails as to how far from one place to another, etc.
- We felt the in-park shuttles work well at other parks. They reduce congestion and slow traffic to safe speeds. We would be willing to use them for a reasonable fee.
- A park & ride system is needed in Yosemite! Since we are retired we try to visit parks in spring or fall and haven't found a problem with our car. We do take shuttles if there are a lot of convenient stops in the park and frequent shuttles. The shuttles should be free or inexpensive. Bryce Canyon National Park has a great shuttle system and also a tour shuttle that stopped at various scenic spots with time to see them. We don't mind a reasonable fee for a tour shuttle. If there is any kind of shuttle system, there should be clear maps available in lots of places or given at the entrance (shuttles need to be frequent, uncrowded, and inexpensive).
- Park lodging is overpriced, but we loved our visit to the park.
- I think a shuttle service from campgrounds to scenic areas, museums, visitor centers, and viewing areas would be great. A tram tour of the park would be nice, too. The winding roads in the park are hard on vehicles and it would be nice to have a driver familiar with the roads to do the driving!
- In Sequoia, from the Three Rivers entrance to elevation of forest is a tortuous drive for a private driver or a shuttle driver. What about considering an aerial tramway – like the one at Scandia Peak in Albuquerque, NM – for moving numbers of people in an environmentally safe manner? Then trams could be used to ferry people at elevation (~4,500 ft).

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