

Information Technology to Support Alternative Vehicle Travel in Yellowstone National Park

by

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Prepared for the

**University of Idaho
Moscow, Idaho**

October 30, 2003

ABSTRACT

Because of crowding, overuse, and pollution, the National Park Service is conducting a major effort to develop alternative forms of transportation in the national parks. A new generation of busses and trams will provide features that motivate visitors to leave their private automobiles in favor of public transportation. One such feature might be an interactive computer-based information system that would provide riders with various kinds of interpretive and visit planning information.

A series of surveys and focus groups explored visitors' motivations and expectations when visiting Yellowstone National Park. They also documented the features and the kinds of information visitors would like to have available during a trip through the park using an alternative vehicle system. These studies culminated in the functional design of a prototype visit enhancement system.

Using the findings of the surveys and focus groups in the requirements development phase, a simulation of the visit enhancement system was developed. The simulation, in the form of an interactive website, includes sections containing maps; current and forecast weather; interpretive information on animals, vegetation, and thermal features; park regulations; and upcoming events of interest to the visitor. The simulation is designed in a modular structure to allow easy addition of new information pages within these basic sections.

This report summarizes the user requirements analysis that led to the basic functional design of the prototype information system and then describes in detail the information structure and content of the simulation. Future efforts will evaluate the acceptance, usability of the prototype, expand the information content of the prototype, and port the user interface to a touch monitor computer system.

ACKNOWLEDGMENTS

The research described in this report was performed by the Western Transportation Institute, College of Engineering, of Montana State University under Subcontract KLK360-02-A from the University of Idaho. The research was a task under Contract DTFH61-01-X-00101 between the U.S. Department of Transportation, Federal Highway Administration and the University of Idaho. Prof. Donald M. Blacketter, Department of Mechanical Engineering, University of Idaho was the subcontract monitor.

Surveys and focus groups during the user requirements phase of the effort were conducted by Ms. Joann L. Moore with the assistance of Ms. Yvonne Wachutka. The visit enhancement system prototype was developed by Messrs. Sean Graham and Douglas Galarus. Focus group participants were coordinated by the Kriegel Marketing Group of Bozeman, Montana.

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3. EXECUTIVE SUMMARY

Yellowstone National Park is a popular attraction for visitors from all over the United States and many foreign countries. Between three and four million visitors travel to Yellowstone each year. The vast majority tours the park in their private vehicles. Only about one percent of YNP visitors ride tour buses or snow coaches. As early as 1973, park officials were starting to acknowledge that the roads in Yellowstone were "overburdened" and that traffic was becoming a problem.

The National Park Service is conducting a major effort to develop and promote alternative forms of transportation in the national parks. Plans are being developed for a new generation of transportation vehicles that will be attractive to visitors and will motivate them to leave their private vehicles in a parking lot and ride the new busses or trams. Glacier National Park has rebuilt and successfully reintroduced its fleet of vintage "red busses". Yellowstone is considering building a new fleet of retro designed "yellow busses" reminiscent of the fleet they operated during the first half of the 20th century. A prototype of this bus was introduced in 2003. The goal, according to one NPS official, is "to make the alternative vehicle experience so positive that visitors won't even consider driving their own cars."

One way of making alternative transportation more attractive might be to provide a portable interactive information system that would be available to visitors riding alternative touring vehicles. Such a system would provide the visitor with various kinds of interpretive and trip planning information.

The objectives of this study were to:

- (1) Explore visitors' motivations and expectations for visiting Yellowstone National Park and how well these motivations were being met,
- (2) Explore how alternative transportation systems might be designed to better meet visitor expectations and enhance their visit experience,
- (3) Identify types of information visitors would like to have available during their trip through the park and how they would like to have it presented,
- (4) Develop a simulation of a prototype visit enhancement system that meets the information requirements identified during the first phase.

WTI conducted a series of surveys and focus groups in order to obtain answers to these questions and to obtain information to guide the design of a prototype visit enhancement system. The main body of the survey consisted of 50 statements concerning vacation/recreation goals. The statements were based on Maslow's classic hierarchy of needs that provided a model describing peoples' motivations for working. Maslow's hierarchy included physiological, safety, belonging, esteem, and self-actualization needs. We found this model inadequate for describing motivations for recreation. To revise the list of motivating factors to better describe recreational activities, the original list was expanded to include four additional factors, autonomy, novelty, pleasure/enjoyment, and altruism. Survey items were crafted to represent each of these nine motivating factors. These statements were rated on a seven-point scale according to the extent visitors expected to meet each goal during a visit to Yellowstone.

The survey also included a number of open-ended questions exploring what activities visitors undertook, what features would make alternative transportation in Yellowstone desirable, and what types of information people want to have available while in the park. There were also several questions to allow us to define the demographics of the visitor population.

Surveys were distributed to 400 park visitors in Yellowstone gateway communities during summer 2002. Of these, 103 surveys were returned by mail.

A series of four focus groups was then conducted in Yellowstone National Park and in nearby communities. Focus group participants were recruited to match the demographics of the survey respondents and were familiar with travel and tourism in Yellowstone. The main issues of interest concerned participants' views on public transportation in the park and what would make public transportation desirable to visitors. We also explored what types of information visitors would want available while visiting and how that information could best be presented on an interactive communication system aboard the vehicles.

The majority of the respondents indicated that they would engage in sightseeing, learning about animals, viewing wildlife, walking, viewing nature, and photography during their visit to Yellowstone. Only four percent of survey respondents said that they might ride a tour bus during their visit.

Survey results showed that for the most part, respondents expected to meet most of the listed vacation goals. There was an open-ended question asking what features or amenities would make a tour bus or tram desirable to respondents. The feature mentioned by the most respondents (42 %) was convenience, which was characterized as frequent stops, multiple routes, and the ability to get on and off at will. Approximately twenty percent of respondents, though, said that they would not use alternative transportation through Yellowstone.

Another question asked what kinds of information they would like to see provided by an electronic information system. Types of information that interested the most respondents included park maps, (74 %), weather (74 %), road conditions (70 %), nature (68 %), park news (56%), historical information (53%), and special events (51%). Types of information that interested the fewest respondents were shopping information (21 %), nature sounds (21 %), seasonal/winter views (20 %), and games (9 %).

Focus groups were then conducted to elaborate on the most interesting findings of the surveys. Many people said that they enjoy the freedom of going through the park in their own cars. People want to be able to control where they go in the park and how long they stay at each stop. Most people said that if the park were to adopt alternative transportation, it should be voluntary, not mandatory.

There was much more support for a shuttle type system than for tour buses. People visiting the park do not want to have to stay with a group the entire day, stopping, moving on, and eating on the same schedule as the rest of the group. This mirrors the results of the surveys, in which most participants said that they wanted the convenience and independence that a shuttle bus system could provide.

Several features were mentioned as necessary conditions to entice visitors to choose public transportation over their own vehicles. The most frequently mentioned features were visibility, flexibility, comfort, and cost. Most people said that the vehicles should have big windows, and several said that they should have removable tops.

Some people thought that having an interactive computer would be a valuable tool to enhance their visit through the park. Other people said that they go to a National Park to get away from technology and that a computer system would be intrusive. Many of the older participants commented that the younger generations are much more computer-oriented and may be more interested in the idea.

Hikers thought that having access to a Doppler radar image of the park would be a big help in avoiding hiking in the rain. Some people suggested that the visitor centers should make use of this kind of weather technology regardless of whether an interactive computer system is adopted.

Several people said that visiting Yellowstone is an educational experience, and if a computer system could enhance the amount of information they can receive while in the park, it would make their visits more rewarding. Many people want to know more about the park itself, the plant and animal life, the geology and the history, and they would like to have a greater depth of information provided than is currently presented in pamphlets and interpretive displays. It was suggested that trivia or other educational games might be nice to have to pass the time between attractions. Other types of information that people were interested in receiving included campground availability, special events, and park news such as what research is currently going on, for example monitoring wolves in the park. It was also suggested that a computer system could be useful in keeping children occupied because they often become bored during the lapses between wildlife and geothermal sightings.

Several global characteristics were suggested to create a computer system that visitors would enjoy. It would need to be very user-friendly because several visitors said that they are not computer literate. It would also have to be unobtrusive to those who are not interested in using it lest become a distraction from other visitors' goals of enjoying nature and escaping modern technology.

Based on these results, we developed a prototype interactive information system that initially has been fielded as an Internet web site to support usability testing and evaluation. A later generation of the system will be ported to a PDA-type device for field-testing. Information with a short useful life (e.g., weather) could be obtained via wireless transfer or an IR communication link at tourist centers.

Based on the user requirements, the system provides information in the following categories:

Maps. Road and trail maps with two levels of zoom, transit maps showing routes and schedules (assuming introduction of shuttle buses.)

Weather. Current and forecast weather including weather cams at selected attractions, weather maps with forecast weather, satellite and Doppler radar images.

Interpretive. The animals of Yellowstone Park, the plants of Yellowstone Park, thermal features of Yellowstone, fire and the Yellowstone forests, and history of Yellowstone.

Park information. Park rules and regulations, scheduled events, and today's news and events.

4. INTRODUCTION

Yellowstone National Park is a popular attraction for visitors from all over the United States and many foreign countries. There are between three and four million visitors to Yellowstone each year, and the vast majority tour the park in their private vehicles. As early as 1973, park officials were starting to acknowledge that the roads in Yellowstone were "overburdened" and that traffic was becoming a problem.

The summer months are the most popular time to visit Yellowstone. In July of 1998, the park averaged over 26,000 visitors each day, most of whom were in private vehicles. This translated to an average of about 11,000 vehicles entering the park each day. There is a significant amount of traffic congestion in the park, especially around the main attractions, such as Old Faithful. This leads to noise and air pollution, visitor frustration, and inevitable vehicle accidents. In 1998 there were over 500 traffic accidents, causing 800 injuries and two million dollars in damages. As with many of our overcrowded parks, there is a need to reduce the amount of vehicle traffic. Currently, only about one percent of visitors use tour buses or snow coaches to travel through the park (statistics above from the National Parks Service webpage: www.nps.gov/yell).

The National Park Service is conducting a major effort to develop and promote alternative forms of transportation in the national parks. Plans are being developed for a new generation of transportation vehicles that will be attractive to visitors and will motivate them to leave their private vehicles in a parking lot and ride the new busses or trams. In Glacier National Park, a vintage fleet of red "jammer" busses has been rebuilt and returned to service with very positive response from the park visitors. For Yellowstone, a prototype of a new generation of "Yellow Busses" has been built and is being used as a traveling demonstration of the alternative vehicle concept. While maintaining some of the "retro" design influences of the retired yellow bus fleet, this prototype is demonstrating a higher technology approach to alternative vehicles including the ability to convert between summer and winter operations. The NPS is examining what features might motivate visitors to make the change to the new transportation system.

This study represents a two-phase effort to develop and evaluate a prototype information system that might be incorporated into an alternative transportation vehicle (e.g., bus or tram) for use in Yellowstone National Park. The initial phase of the project was to define characteristics of a desirable alternative transportation system and then to define features of a portable information system that might be used in conjunction with that system. The purpose of the system is to enhance the visit experience of visitors in Yellowstone National Park and other units of the National Park System. The second phase of the effort included developing a prototype information system that could be tested by typical visitors to Yellowstone National Park. This prototype system was developed as an Internet website to allow easy access by potential evaluators.

The objectives of the study reported here were to:

1. uncover visitors' motivations and expectations when visiting Yellowstone National Park, and to find out how these expectations were and were not being met,
2. discover what visitors would desire in an alternative transportation vehicle and how alternative transportation might be designed to better meet visitor expectations and enhance their visit experience,

3. explore the acceptability and requirements for an interactive information system to support the visit experience, and
4. develop a simulation of such a system that could be demonstrated and tested with park visitors.

The goal would be to make alternative transport sufficiently desirable that a significant percentage of visitors would be motivated to use alternative transportation instead of their own vehicles while in the park. One possible way of making alternative transportation more attractive might be to develop a portable interactive computer-based information system that would be available to visitors using alternative transportation. Such a system would provide the visitor with various kinds of interpretive and trip planning information.

5. METHODOLOGY

A draft survey instrument was developed to explore visitors' vacation/recreation goals. The initial survey, shown in Appendix A, was in two sections. The first section contained 75 statements of vacation/recreation goals and subjects were asked to rate their importance in their recreation planning. The second section contained the same 75 goals and the subjects were to rate them on the extent they would expect to meet them during a trip to Yellowstone National Park. The statements were based on Maslow's classic hierarchy of needs that provided a model describing peoples' motivations for working (Maslow, 1943). Maslow's hierarchy of needs includes physiological, safety, belonging, esteem, and self-actualization needs. To extend the list of motivating factors to better include recreational activities, the list was expanded to include four additional factors, autonomy (Porter, 1961), novelty, pleasure/enjoyment, and altruism. Some of the items to be rated included:

- Becoming closer to my family. (*belonging*)
- Seeing new things that I've never seen before. (*novelty*)
- Being able to set my own schedule. (*autonomy*)
- Feeling mentally relaxed. (*pleasure/enjoyment*)
- Receiving prompt medical care if I am ill or injured. (*safety*)

Pilot testing suggested that the initial survey instrument was too lengthy and so it was shortened to a single 50-item section containing a sample of items from the initial survey. These statements were to be rated on a seven-point scale according to the extent visitors expected to meet each goal during a visit to Yellowstone. There were also several demographic questions to allow us to define the characteristics of the visitor population. The survey also included a number of open-ended questions exploring what features would make alternative transportation in Yellowstone desirable and what types of information people want to have access to while in the park. The complete survey is attached as Appendix B.

Four hundred mail-in surveys were distributed to visitors during July 2002 in the town of West Yellowstone, Montana. West Yellowstone is a major gateway community for the national park and most of the individuals who agreed to participate in the survey were visitors who were entering or leaving the park. July is one of the busiest months of the relatively short primary tourism season in Yellowstone.

Focus Groups

A series of focus groups was conducted in Yellowstone National Park and in nearby communities. All focus group participants were familiar with travel and tourism in Yellowstone. During the warm-up discussion, participants were asked to discuss why they visit the park and what features of the park they like or dislike while visiting. The main questions of interest then inquired about participants' views on public transportation in the park and what would make public transportation desirable to visitors. We also explored what types of information visitors would want available while visiting and how that information could best be presented on an interactive communication system aboard the vehicles. The focus groups were facilitated by a WTI staff member and lasted between 60 and 90 minutes. All focus group sessions were audiotaped to ensure that all comments and ideas were retained.

On July 11, at noon, a group was held in the WTI conference room, consisting of six WTI student employees. Participants were recruited through an email sent the previous day to WTI students offering free lunch in exchange for participating in a focus group.

On August 10, at 2 pm, a focus group was held at the Mammoth Hotel in Yellowstone National Park in which six people participated. The group consisted of members of a class held by the Yellowstone Association, Geological Systems of Yellowstone, along with an employee of the park. We provided free lunch in exchange for their participation, and several of the group members asked for a copy of the report once the research is completed.

On August 17, an informal focus group was held at 12 pm. Participants were members of Elderhostel, a class organized by Extended Studies at Montana State University. The participants were from all over the United States, and were all over sixty years old. They were recruited at the end of a seminar they had attended. Four people were the main participants, and several other people joined in the conversation briefly.

On August 23, a focus group was held at the Bozeman Senior Center. Participants were recruited through advertising at the Senior Center, where fliers were handed out and a sign was posted in the lobby. The nine participants were provided with free lunch in exchange for participating.

Much information was gleaned during informal discussions in the course of handing out mail-in surveys and recruiting participants for the focus groups. Many people had input they wanted to give, even if they couldn't or wouldn't attend a focus group, and would simply discuss their opinions for a few minutes on the spot. In addition to the many tourists we encountered, we also spoke with park employees, park rangers, and employees of businesses in West Yellowstone, most of whom are frequent travelers in the park

6. SURVEY AND FOCUS GROUP RESULTS

Surveys

Slightly more than 100 surveys were returned out of 400 that were distributed, providing about a 25% response rate. Of these, 98 surveys were analyzed. The remainder were received after the deadline or were obviously frivolous responses. It should be noted that the results of this survey are not necessarily representative of the entire population of visitors to Yellowstone, but rather the people who accepted, filled out, and mailed in the survey. These were most likely people who were more interested in the topic of Yellowstone tourism than the average.

The main body of the survey consisted of fifty statements of vacation goals and motivations for which participants provided ratings. A typical statement from the survey was "Seeing new things that I've never seen before." Participants rated the extent to which they expected to meet each goal during a visit to Yellowstone in their own vehicle. Ratings were made on a seven-point scale ranging from 1, *Fully achieve the goal*, to 7, *Wouldn't expect to achieve the goal at all*.

Results showed that for the most part, respondents expected to meet most of the listed vacation goals. Nearly all of the items had average responses of 3 or below, indicating that the participants did expect mostly to meet the goals. The items that had mean responses above 4 were items 26 (doing something that seems dangerous, $M = 4.74$), 32 (seeing beautiful works that were created by people, $M = 4.04$), and 50 (listening to sounds created by people, such as music, $M = 4.43$). The higher means indicate that people do not expect to meet these goals while at Yellowstone.

Items which had wide variability in the responses they evoked included Item 9 (seeing interesting things that were created by people, $M = 3.61$, $SD = 1.94$), Item 11 (seeing new things that few people have seen before, $M = 3.18$, $SD = 1.86$), Item 19 (getting away from people, $M = 3.38$, $SD = 1.95$), Item 26 (doing something that seems dangerous, $M = 4.74$, $SD = 1.96$), Item 27 (making new friends, $M = 3.75$, $SD = 1.88$), Item 32 (seeing beautiful works that were created by people, $M = 4.04$, $SD = 2.06$), Item 34 (being safe from automobile crashes, $M = 2.96$, $SD = 1.85$), and Item 50 (listening to sounds created by people, such as music, $M = 4.43$, $SD = 2.07$). The large amount of variability in responses indicates that these are the items for which different visitors have different expectations. Items with the least amount of variability in responses were Item 5 (seeing beautiful things in nature, $M = 1.18$, $SD = .54$) and Item 23 (seeing interesting things in nature $M = 1.43$, $SD = .68$). These were also the two items with the lowest mean values. In fact, the means and variances of the items are strongly correlated ($r = .92$). This is consistent with the skewed nature of the distributions. The small amount of variability in responses indicates that these are the items for which most visitors have similar expectations. It is possible that respondents used a conservative decision criterion when rating the items. Most of the responses were between 1 and 4 on the scale, which may indicate that respondents were not considering the upper end of the seven-point scale, thus producing a skewed distribution of ratings. The alternative explanation is that visitors expected to meet all of the goals, at least to a limited extent during their visits.

Table 1: Responses for the 50 Survey Items

Survey Item	Mean Response	Minimum	Maximum	S.D.
1. Doing things that I find exciting.	1.93	1	7	1.26
2. Finding good tasting water when I'm thirsty.	2.61	1	7	1.75
3. Becoming closer to my family.	2.05	1	7	1.39
4. Being responsible for the outcomes for my own decisions.	1.77	1	6	1.11
5. Seeing beautiful things in nature.	1.18	1	4	0.54
6. Being free to move my arms and legs when I want to.	1.72	1	6	1.08
7. Being able to carry out my own plans.	1.81	1	5	0.97
8. Discovering new things.	1.60	1	7	1.03
9. Seeing interesting things that were created by people.	3.61	1	7	1.94
10. Becoming a better person.	2.98	1	7	1.79
11. Seeing new things that few people have seen before.	3.18	1	7	1.86
12. Enjoying the aromas of nature.	1.81	1	7	1.11
13. Experiencing new sensations that I've never known before.	2.79	1	7	1.61
14. Learning new information.	1.76	1	4	0.92
15. Being safe from getting lost.	1.97	1	6	1.23
16. Being safe from crime.	1.98	1	5	1.00
17. Being with my friends.	2.01	1	7	1.36
18. Visiting places I've never been before.	1.89	1	6	1.29
19. Getting away from people.	3.38	1	7	1.95
20. Finding clean, uncontaminated water when I'm thirsty.	2.45	1	7	1.71
21. Receiving prompt medical care if I am ill or injured.	2.76	1	7	1.63
22. Experiencing pleasant physical sensations.	2.40	1	7	1.39
23. Seeing interesting things in nature.	1.43	1	4	0.68
24. Seeing new things that I've never seen before.	2.02	1	7	1.31
25. Learning to do new things.	2.93	1	7	1.77

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26. Doing something that seems dangerous.	4.74	1	7	2.00
27. Making new friends.	3.75	1	7	1.88
28. Choosing my own actions.	1.80	1	5	1.05
29. Not getting bad information or advice.	2.29	1	7	1.31
30. Getting away from high technology.	2.38	1	7	1.47
31. Being safe from personal injury in nature.	2.58	1	7	1.54
32. Seeing beautiful works that were created by people.	4.04	1	7	2.06
33. Being able to set my own schedule.	1.71	1	4	0.92
34. Being safe from automobile crashes.	2.96	1	7	1.85
35. Being able to go where I want.	2.06	1	6	1.22
36. Finding good tasting food when I'm hungry.	2.54	1	7	1.46
37. Being safe from animal attacks.	2.65	1	7	1.66
38. Doing things that I've never done before.	2.52	1	7	1.48
39. Being safe from storms.	2.98	1	7	1.67
40. Breathing air that does not have an unpleasant odor.	2.6	1	7	1.77
41. Being safe from accidents.	2.68	1	7	1.71
42. Feeling physically relaxed.	1.87	1	5	1.05
43. Sharing my experiences with others.	2.09	1	7	1.29
44. Being safe from natural disasters.	3.00	1	7	1.76
45. Enjoying strenuous physical activity.	2.78	1	7	1.74
46. Learning about nature.	1.47	1	4	0.74
47. Hearing the sounds of nature.	1.47	1	4	0.8
48. Keeping my mind active and avoiding boredom.	1.84	1	5	1.08
49. Feeling mentally relaxed.	1.83	1	7	1.12
50. Listening to sounds created by people (such as music).	4.43	1	7	2.07

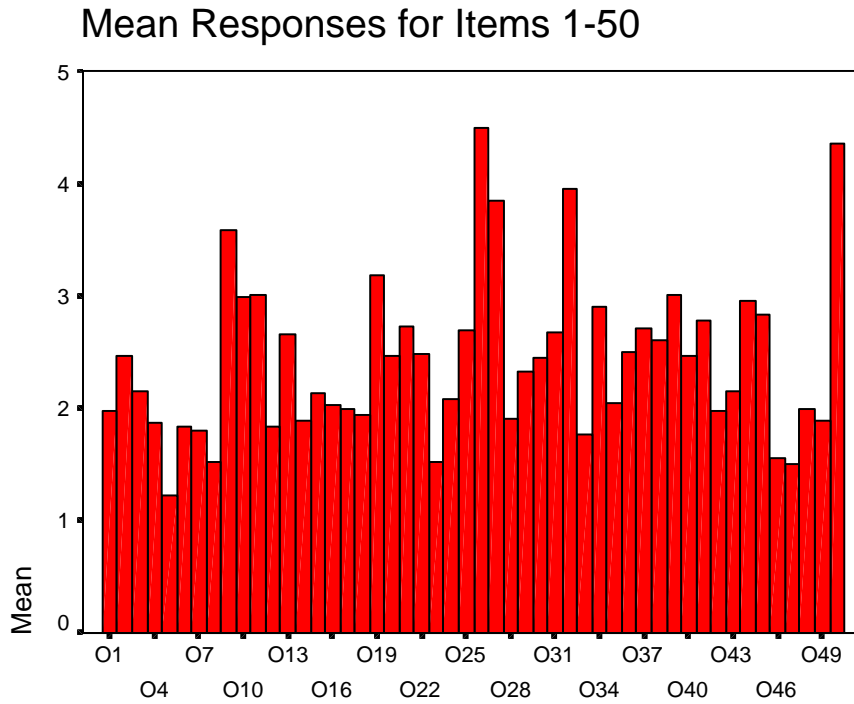


Figure 1: Responses for the 50 Survey Items

The last page of the survey consisted of demographic questions to establish the general characteristics of the persons responding to the survey. It should again be noted that the demographic make-up of the survey respondents reflects the people who actually returned the survey, and may not be representative of the population of visitors to Yellowstone. In terms of geographical representation, just over half of the respondents were from a Western state. Ten percent of the respondents were from California, and fourteen percent were from Utah.

Table 2: Home of the Responders

Where from	Frequency	Percent
USA	3	3.1
Alabama	1	1
Arizona	4	4.1
California	10	10.3
Colorado	3	3.1
Connecticut	1	1
Florida	4	4.1
Georgia	1	1
Hawaii	1	1
Idaho	2	2.1
Illinois	2	2.1
Iowa	3	3.1
Kansas	2	2.1
Louisiana	2	2.1
Maryland	1	1
Minnesota	2	2.1
Missouri	2	2.1
Montana	8	8.2
New Hampshire	1	1
New Jersey	1	1
North Dakota	2	2.1
Ohio	2	2.1
Oklahoma	1	2.1
Oregon	3	3.1
Pennsylvania	2	2.1

South Carolina	3	3.1
Texas	2	2.1
Utah	14	14.4
Washington State	4	4.1
Wisconsin	4	4.1
Wyoming	2	2.1
Canada	1	1
France	1	1

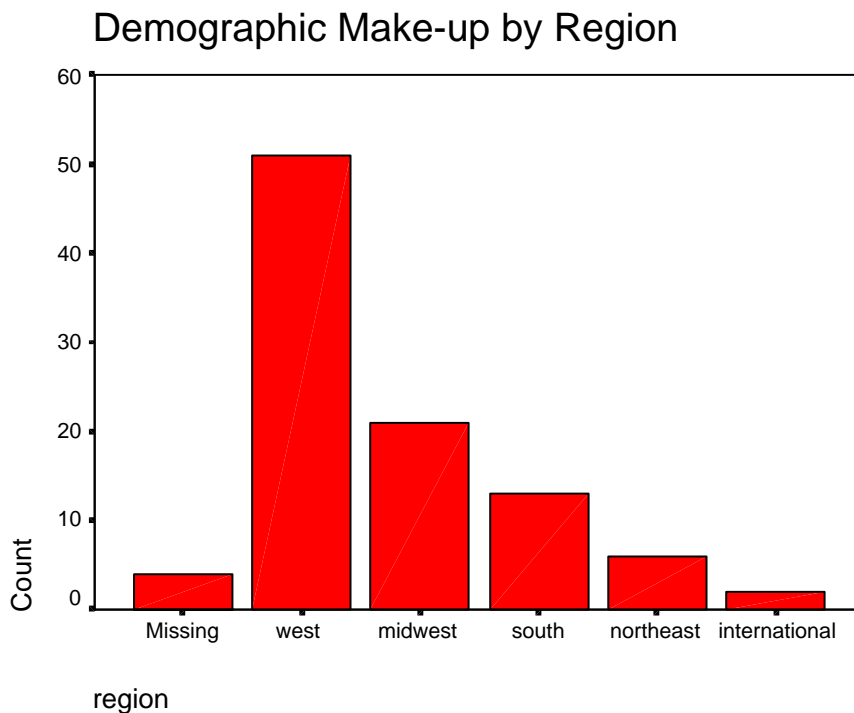


Figure 2: Home of the Responders

Slightly more females (53 %) than males (43 %) responded to the survey. The average age of respondents was 50 years old, and the ages ranged from 22 to 83 years of age. The respondents tended to be very well educated. Most respondents had college degrees or graduate degrees. This finding is similar to that of earlier surveys (MacDonald & Clark, 1969; Gilligan, 1962) that found that over two-thirds of visitors reported at least some college education.

Many of the respondents had been to Yellowstone more than once. Twenty-nine percent of the respondents were first-time visitors, 43 percent said they had visited a few times, and 27 percent

said they were frequent visitors. Sixty percent of respondents were visiting the Yellowstone area for 1 to 4 days, and the rest were staying for longer, up to three and a half months.

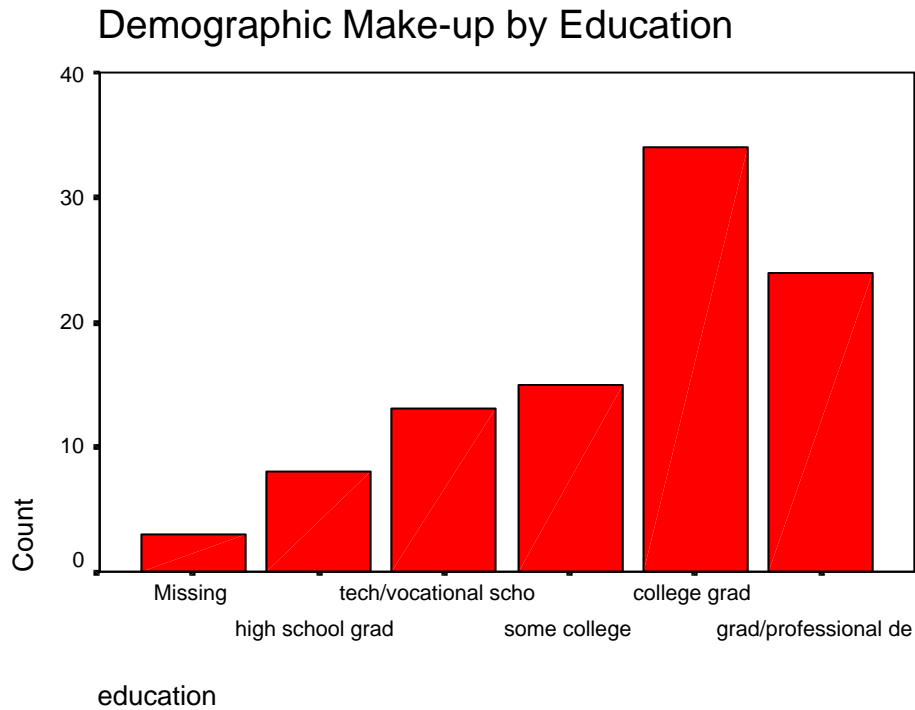


Figure 3: Demographic Make-up by Education

Table 3: Education of Visitors

Education	Frequency	Percent
high school grad	8	8.2
tech/vocational school	13	13.4
some college	15	15.5
college grad	34	35.1
grad/professiona l degree	24	24.7

The activities that the majority of the respondents indicated that they would engage in during their trip to Yellowstone included sightseeing, learning about animals, viewing wildlife, walking, viewing nature, and photography. Only four percent of survey respondents said that they intended to ride a tour bus during their visit.

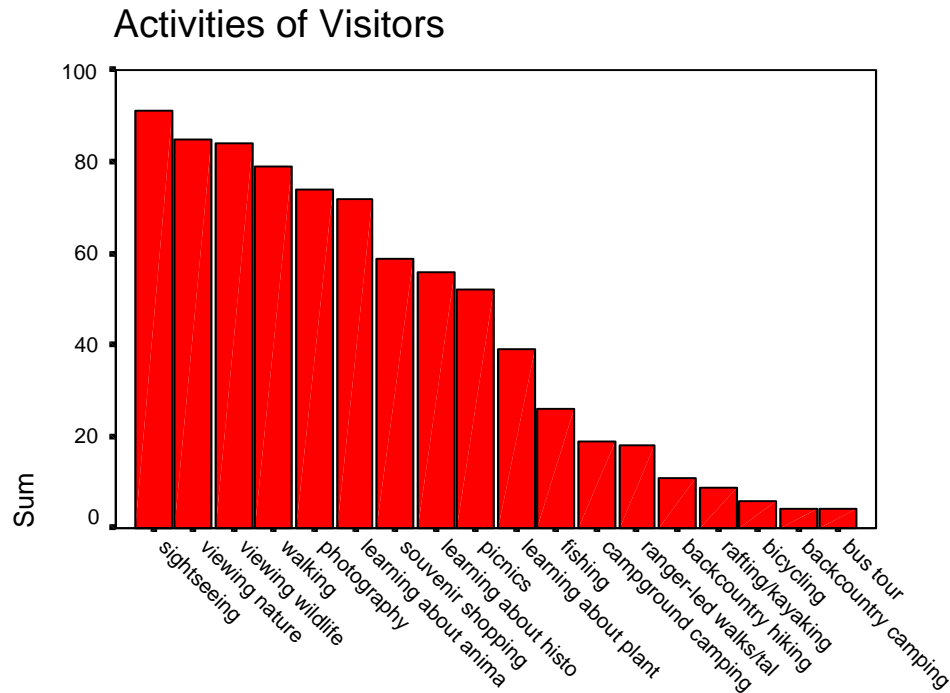


Figure 4: Activities of Visitors

There was an open-ended question asking what features or amenities would make a tour bus or tram desirable to respondents. The responses were simplified according to which features were mentioned more than once. The feature mentioned by the most respondents (42 %) was convenience, which was operationalized as frequent stops, multiple routes, and the ability to get on and off at will. This mirrors the results of the focus group section of the research, in which most participants said that they desire a shuttle bus system through Yellowstone. Approximately twenty percent of respondents said that they would not use alternative transportation through Yellowstone.

Table 4: Visitor Activities

Activities Visitors	of Frequency	Percent
Sightseeing	91	93.8
viewing nature	86	88.7
viewing wildlife	85	87.6
Walking	80	82.5
Photography	74	76.3
learning about animals	72	74.2
souvenir shopping	60	61.9
learning about history	56	57.7
Picnics	52	53.6
learning about plants	39	40.2
Fishing	26	26.8
campground camping	19	19.6
ranger-led walks	18	18.6
backcountry hiking	11	11.3
rafting/kayaking	9	9.3
Bicycling	6	6.2
backcountry camping	4	4.1
bus tour	4	4.1

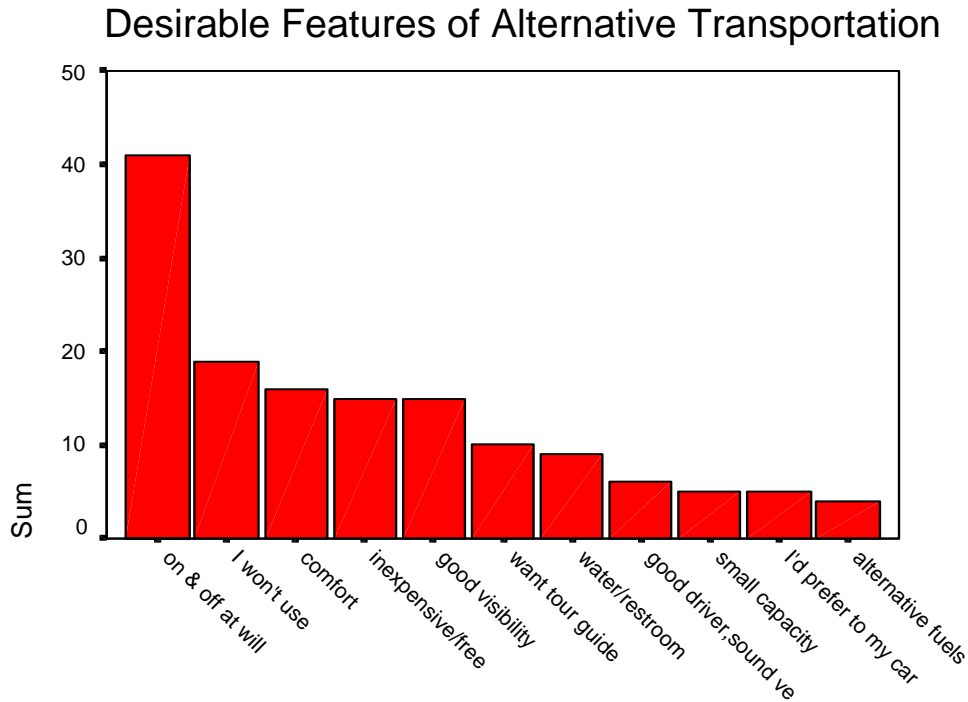


Figure 5: Desirable Features of Alternative Transportation

Another question asked that, if an electronic information device was available to respondents, what types of information they would like to see provided. Types of information that the most respondents expressed interest in (Figure 6) included park maps, (74 %), weather (74 %), road conditions (70 %), and nature (68 %). Types of information that the least respondents expressed interest in were shopping info (21 %), nature sounds (21 %), seasonal/winter views (20 %), and games (9 %).

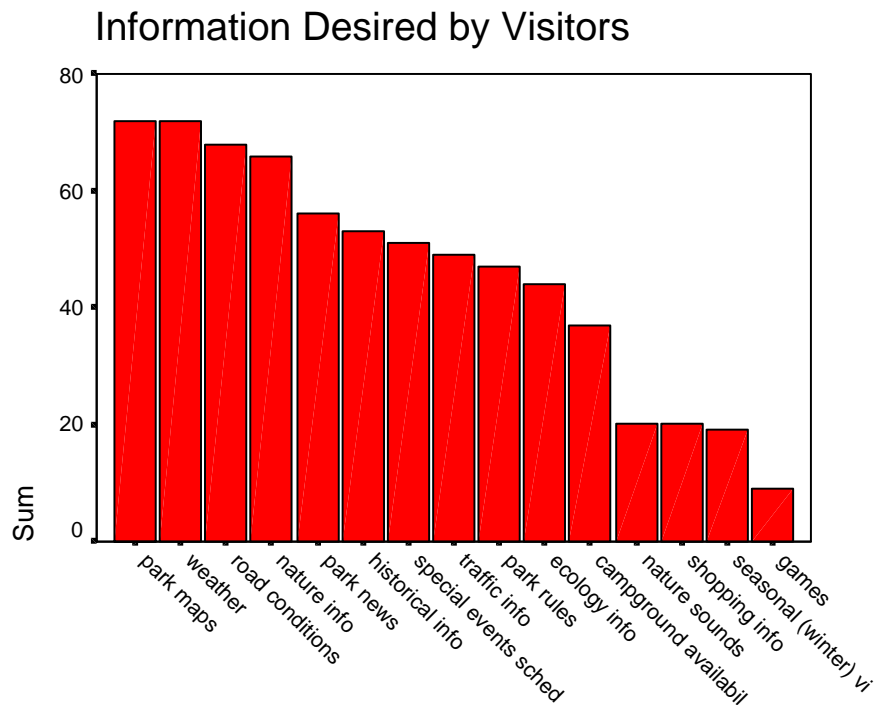


Figure 6: Information Desired by Visitors

Focus Groups

The following section is a summary of the general results obtained from the focus group research. Please refer to the Appendix C for a copy of the discussion guide and more detailed analyses of each focus group.

In reviewing the information derived from the focus groups, it is important to remember that focus group research methodology provides data that are qualitative, not quantitative data. Inferences cannot be drawn about the general population based on this small, non-random sample. This data is meant to generate and evaluate ideas and concepts to promote further understanding of a subject area.

Why do people visit Yellowstone? There are many varied reasons that people visit Yellowstone. Most people are there to see wildlife and geothermal features. Some people visit for the day while others stay for weeks or months in campgrounds, RV's, and hotels. Some people simply tour the park, while others take a more active approach, hiking, rafting, or kayaking during their visit. There are also educational experiences available in the park, such as classes or ranger-led tours. Some people visit the park as a learning experience, both for their children and themselves. Some people say they just want to "get away" for a while, and go to the park to get away from urban life and experience nature.

What are people's expectations while visiting Yellowstone? Many people say that one of their top priorities while at Yellowstone is to be able to go through the park in their own cars. Several people said that they would not visit Yellowstone if they could not do so in their own automobile. People want to be able to control where they go in the park and how long they stay at each stop. Some people said that they thought that transportation in Yellowstone is fine the

way it is. While there is a lot of traffic and crowds near the attractions, traffic is pretty well spread out unless there is congestion from road construction or a wildlife sighting (for example a bear, which is a less common sight so people will block traffic in order to view the animal). Most people said that if the park were to adopt alternative transportation, it should be voluntary, not mandatory.

Another issue relating to expectations of the park is the issue of bicycles. Many people bring bicycles to the park, and many use them on the roads and trails. Some people expect to ride bicycles through the park but once they get there are afraid of the traffic. There are no bicycle lanes on the roads, and many of the roads do not have shoulders, so people must share the roads with vehicles traveling at 45 mph, including buses and recreational vehicles with large side mirrors. Several people have said that they think the park needs to be made more bicycle friendly.

What should be done to alleviate traffic congestion in Yellowstone? Many people did say that traffic in the park is a problem. One man who visited the park in 1958, 1970, and 2002 said that traffic had increased exponentially each time he visited. Overall, people seemed to be interested in the idea of alternative transportation in the park, but emphasized that it has to be adapted to fit peoples' need to have control over where they go and where they can stop and how long they can stay at each attraction. Several people mentioned that many of the other National Parks provide shuttle buses, and said that Yellowstone should do the same. A park ranger said that many international visitors come to West Yellowstone on a Greyhound bus but once there have no way to get into the park except hitchhiking. He thought that a shuttle bus system would be a good idea. A Bozeman resident who used to work in Yellowstone said that when she was there, she had to hitchhike everywhere, and that regular public transportation through the park would be a welcome change.

The most popular idea that came out of the research was that the park adopt some sort of shuttle-bus system through the park similar to city bus transportation, such that people can go to each attraction and spend as little or as much time at each place as they wish, and simply catch the next scheduled bus to get to the next attraction. There were several features that were mentioned as necessary conditions to entice visitors to choose public transportation over their own vehicles. The most frequently mentioned features were visibility, flexibility, comfort, and cost. Most people said that the vehicles should have big windows, and several said that they should have removable tops. Also, in order to cater to people's desire to be able to travel at their own pace through the park, the vehicles should run at frequent intervals, have frequent stops, and run in all directions through the park. Half hour intervals were suggested as an appropriate time to wait between shuttles.

Comfort was also mentioned as important. Many people said that alternative vehicles should provide air conditioning, water, and restrooms.

Many people stressed that the vehicles would have to be environmentally friendly, noting that Zion National Park currently uses propane fueled shuttle buses.

Size was also an issue. Several people said that they would prefer small shuttles that held 16 or 20 people. Others said that the shuttles at Denali National Park, which consist of many rows of benches in the open air, might be more appropriate, having a much larger carrying capacity.

Some people thought that Yellowstone should set up a system similar to those currently used in some parks and zoos, and put in a monorail or train type system that you could ride through the park, making scheduled stops. One focus group participant said it would be nice if they could

put a train through the park that would not follow the roads but go to places you do not get to see from the roads.

Cost was another issue of concern. People with several children do not want to pay for five or six seats on a bus. People also do not want to have to pay twice, once to enter the park and once to get on a bus. It was suggested that shuttle bus transportation should be free once you pay to enter the park, or that the entrance fee is waived or reduced for people utilizing alternative transportation. Some people thought that bus tours would be nice, but they need to be cheap and attractive in order for people to use them. As it is now, people pay \$20 and are able to drive their car through the park for an entire week, so prices for tour buses would need to be competitive.

An employees of the Grizzly Discovery Center suggested that people with certain agendas such as viewing wolves would benefit from bus or van tours, because people who live in the surrounding area are more familiar with the best spots to go fishing, or bird or wolf watching, and would be able to take visitors to areas where they are most likely to see wildlife that the visitors may not be able to find when touring the park on their own.

If the park were to implement increased bus tours, people want a variety of services available. The rides need to be adapted to visitors' needs. For example, visitors with children probably have a different agenda than those without children, and different tour packages should be designed for families with children and for adults who do not want to be around vacationing children. Several people said that they do not like the idea of crowded buses, but a van that would only carry 16 people would be preferable. One woman spoke about having a heart condition that made it difficult for her to get access to some of the sites. She said that the park should have tours for seniors, complete with handicap accessible buses. She also said that she hopes that the park will do more to allow visitors with disabilities, or visitors in wheelchairs or with strollers, to see the different attractions, as several of the attractions have many stairs but no wheelchair ramps. Another woman I spoke with said that she had worked as an assistant to a group of nursing home residents whom she accompanied to Yellowstone, and she also voiced concern about handicapped facilities in the park, citing restroom accessibility as one problem.

Overall, there was much more support for a shuttle type system than for tour buses. People visiting the park do not want to have to stay with a group the entire day, stopping, moving on, and eating on the same schedule as the rest of the group. There was more support for a system in which you can get on whichever shuttle bus or tram you like, and simply catch another one when you're ready to move on to the next attraction.

What information do people want to have access to while visiting Yellowstone? People generally were not enthusiastic about the idea of having an interactive computer to provide information during their trips through the park. Several people said that they would prefer having a ranger or tour guide in the vehicles to provide information, and that they would be too busy looking at the scenery to pay attention to a computer screen. Others were concerned about the cost of maintaining a computer system with real time weather and traffic info, and said that the park needs to address current problems such as road and restroom maintenance before they spend money on a computer system. Some people said that they go to a National Park to get away from technology, and that a computer system would be intrusive; they did however acknowledge that the younger generations are much more computer-literate, and may be more interested in the idea.

Some people thought that having an interactive computer would be a valuable tool to enhance their visit through the park. People who liked to hike thought that having access to a Doppler

radar image of the park would be a big help in avoiding hiking in the rain. Some people suggested that the visitor centers should make use of weather technology regardless of whether an interactive computer system is adopted. It was also suggested that a computer system would be useful in keeping children occupied because they often become bored during the lapses between wildlife and geothermal sightings.

Several people said that visiting Yellowstone is an educational experience, and if a computer system could enhance the amount of information they can receive while in the park, it would make their visits more rewarding. Many people said that the more information they receive, the better. Many people want to know more about the park itself, the plant and animal life, the geology and the history, and they would like to have a greater depth of information provided than is currently presented in pamphlets and displays. It was suggested that trivia or other educational games would be nice to have to pass the time between attractions. Other types of information that people were interested in receiving included campground availability, special events, and park news such as what research is currently going on, for example monitoring wolves in the park.

A number of features were suggested to create a computer system that visitors would enjoy. It would have to be easy to operate, because several visitors said that they are not computer literate. It would also have to be non-intrusive to those who are not interested in using it; several participants said that it would be a distraction from their goal of enjoying nature and escaping modern life

7. THE VISIT ENHANCEMENT SYSTEM SIMULATION

The preferences of the visitors that responded to the surveys and the focus groups were translated into a set of user requirements for an interactive visit enhancement system. Global requirements included that the system would have to be extremely user-friendly with a highly intuitive user interface that could be used by non-computer literate visitors. It had to be unobtrusive to avoid annoying the many visitors who were trying to avoid technology and modern conveniences. It had to provide information that would enrich the educational experience of a Park visit and that would make the visit safer, more comfortable and more convenient.

These global requirements were translated into several design decisions. To ensure that the system is user-friendly, the interface would be implemented on a touch screen monitor with all touch points clearly designated as buttons. A very simple, shallow menu structure would be used to simplify navigation through the information site.

The system would have no audio component that might annoy other visitors. It was determined to be important that the system have no impact and be relatively invisible to visitors who are not using it or who are using their monitors in a different mode. Recorded nature sounds or voice narration could be intrusive to visitors who place a high priority on escaping modern technology and enjoying a relatively quiet environment.

The screens would be implemented with a rustic outdoor design using a pallet of soft earthy and woodland colors similar to those used by the National Park Service on their logos and interpretive literature. In an evaluation of a similar traveler information system related to the Lewis and Clark Trail, visitors commented unfavorably about a modernistic information kiosk design and felt that it should appear more old-fashioned or like an element of nature. This lesson carries through to design of the Yellowstone information system.

The displayed information would be provided in the categories of maps and geography, current and forecast weather, interpretive information, calendar of events, and park rules and regulations.

Our subjects requested that various kinds of maps be made available on the information system. The most common of these requests was for detailed maps of the roadways, bicycle trails, and hiking trails. A map providing two levels of detail was selected. At the largest scale, an image of the entire park with its main roads and points of interest is presented. The user can zoom to smaller scale maps of particular areas of the park and view highly detailed maps of natural and cultural features including trails. During the tourism season, fires can have a significant impact on the park visitors. A second set of maps provides the locations and status of active fires within the park boundaries. Two additional types of maps that will be implemented in later prototypes are roadway maps that will show the status of road construction and repair projects that might create delays and maps of the routes of a potential future shuttle system including locations of the busses if they are implemented with automatic vehicle location (AVL) technology.

Subjects also placed a high priority on the availability of current and forecast weather information. A visit enhancement system should provide current weather in several formats that would be used by visitors including current temperature and sky conditions, video weather cameras at a sample of popular park locations, and the most current satellite photographs of the Yellowstone area. One feature that was especially mentioned by hikers and bicyclists is a Doppler radar image to help them decide whether any approaching storms might threaten their outings. Finally, a five-day weather forecast for the park area was requested to help plan the more extended visits and camping trips in the park.

Many of our subjects reported that they visit Yellowstone for an educational experience and that they want to discover new facts about nature and history in Yellowstone on each visit. A major requirement for the visit enhancement system is to provide interpretive information in an interactive format to help the visitors learn more about the park. Of most interest among our subjects was information about the animals and thermal features of the park. Samples of information in these areas were included in the prototype system. The information content in these areas will be expanded in later prototypes. Other areas in which interpretive information would be of interest include plant life and identification of native plant species, geology of the mountains and the park's volcanic history, the history of humans in the park area, and a discussion of the fires that have changed the face of the park in recent years.

Numerous events are scheduled within the park to provide educational experiences or otherwise enhance the experience of the visitor. The prototype visit enhancement system includes a calendar of events that visitors may wish to include in their plans for current or future visits.

The following sections contain a small sample of screen shots of the more than 100 pages of the prototype system to illustrate the look and feel of the information pages and to present a sample of the content. The main (home) page is shown on Figure 7. This is the page that appears at system startup. It provides links to all of the information sections in the remainder of the data base.



Figure 7: Main Page

A fielded version of the visit enhancement system would provide additional categories of interpretive information that could be selected. These might include plant life, geographic features such as mountains and lakes, and history of the park including its evolution through events such as ancient volcanic eruptions and more recent fires.

If the user selects the "Wildlife" option, the Main Wildlife Screen appears. This screen, shown in Figure 8, displays the types of wildlife for which there is detailed information. From this screen, the user can select the type of animals for which they would like to obtain more information by selecting the appropriate button.



Figure 8: Main Wildlife Page

If the user were to then select the "Bison" alternative on the main wildlife page, they would see the "Bison" screen as depicted in Figure 9. This screen allows the user to determine the type of information they would like to learn about the YNP bison (in this case, their habits or their history in the park). Selection of other species of animals would call forth corresponding pages from which the user could obtain specific categories of information. The types of specific information varies according to the species. Figure 10 shows one particular page of text and graphics concerning the habits of the YNP bison.



Figure 9: Main Bison Page



Figure 10: Bison Habits

From the Main Page, the user might select the "Geofeatures" option. This action would call up the Geofeatures Main Page shown in Figure 11. From this page, the user could see examples of the various categories of thermal geofeatures and select one category to explore in more detail.

If the user selected the "Geysers" option, they would then see a screen shown in Figure 12 providing more detail about geysers and the geological phenomena that cause them. Selection of other choices on the Geofeatures Main Page would call forth corresponding screens about those kinds of features.

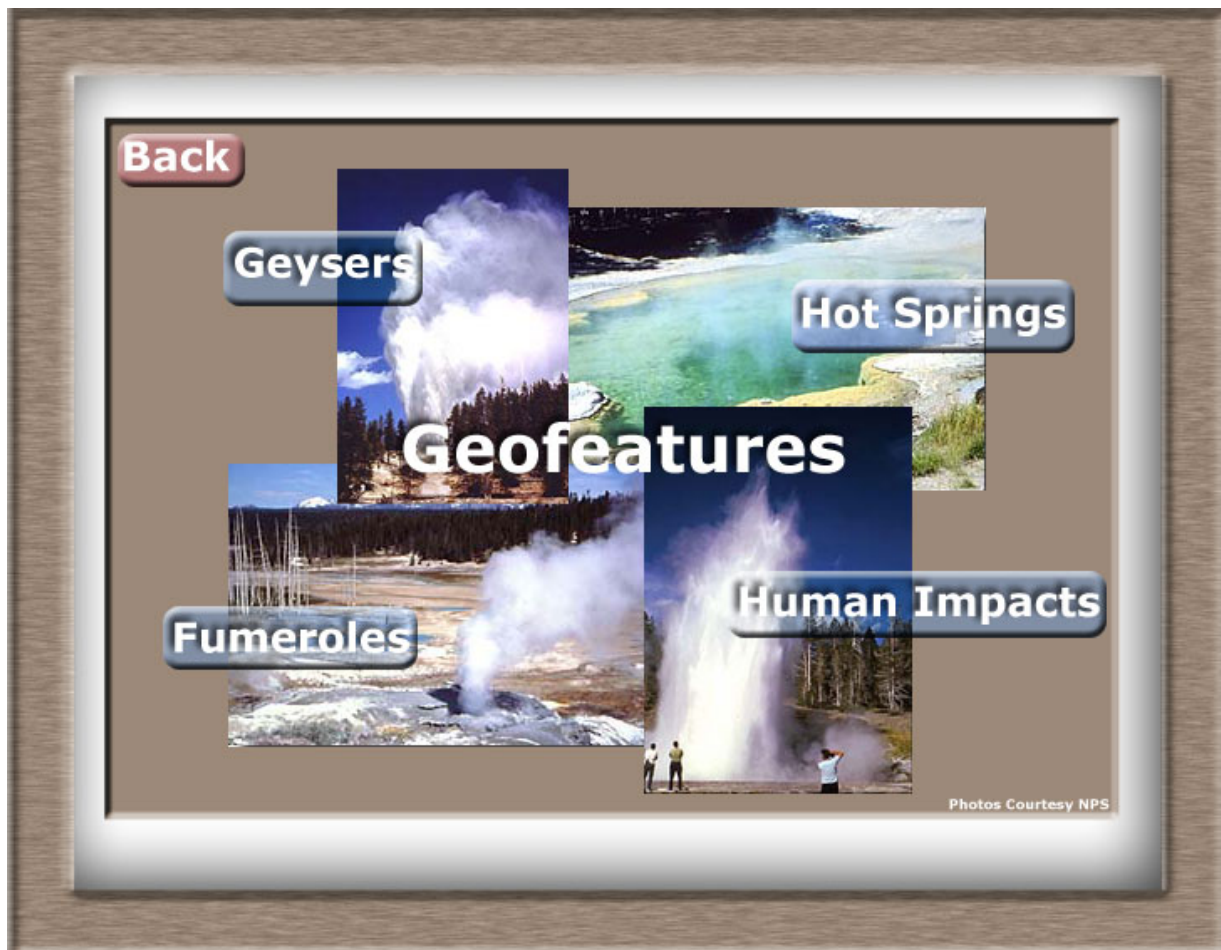


Figure 11: Geofeatures



Figure 12: Geysers

Another major section of the prototype information base is a series of maps. The Maps Main Page (shown in Figure 13) currently provides access to two major kinds of maps, interactive road and trail maps and wildlands fire situation maps. Later revisions of the prototype will explore adding additional map types to this list.

Fires play a significant role in the evolution of forests and they are relatively common in Yellowstone Park during the summer tourism season. The locations of wildlands fires near tourism areas may cause park visitors to change their plans for travel and outdoor activities. A map showing the status of fires could be a valuable planning tool and an example of such a map that is incorporated into the information system prototype is shown in the screen shot in Figure 14.

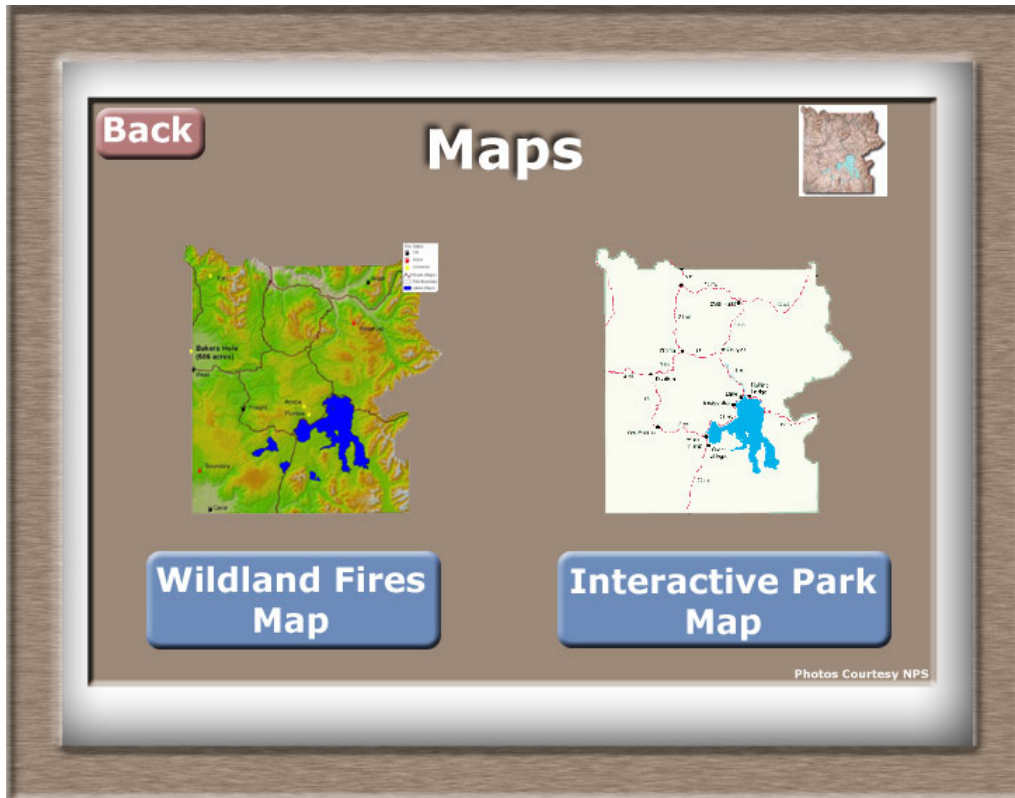


Figure 13: Maps

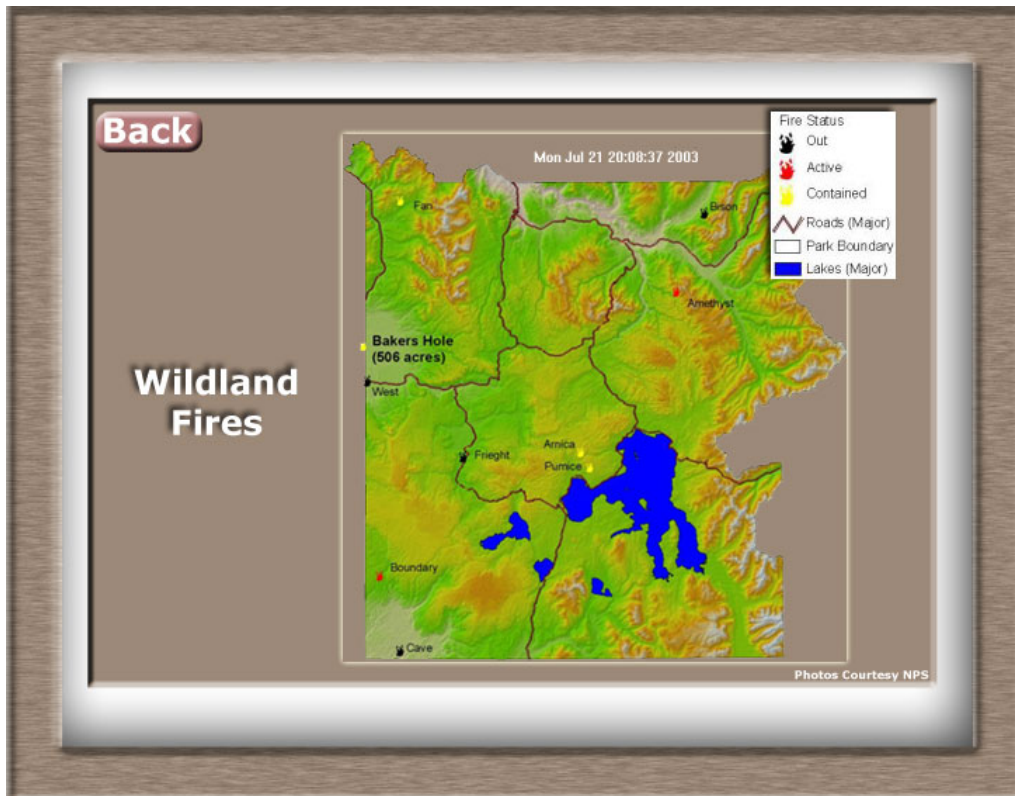


Figure 14: Wildland Fires Map

The Interactive Park Map section provides maps of roads, trails, and attractions in the park. The screen shown in Figure 15 provides a map of the major highways and attractions. The user can use this map page to select and zoom in for magnified views of any of 16 of the popular areas. Figure 16 provides a screen shot of the detailed map for the Madison Junction area including the rivers, roads, trails, campgrounds and picnic areas. Similar detailed maps are included in the prototype system for the other primary tourist areas.



Figure 15: Interactive Park Map

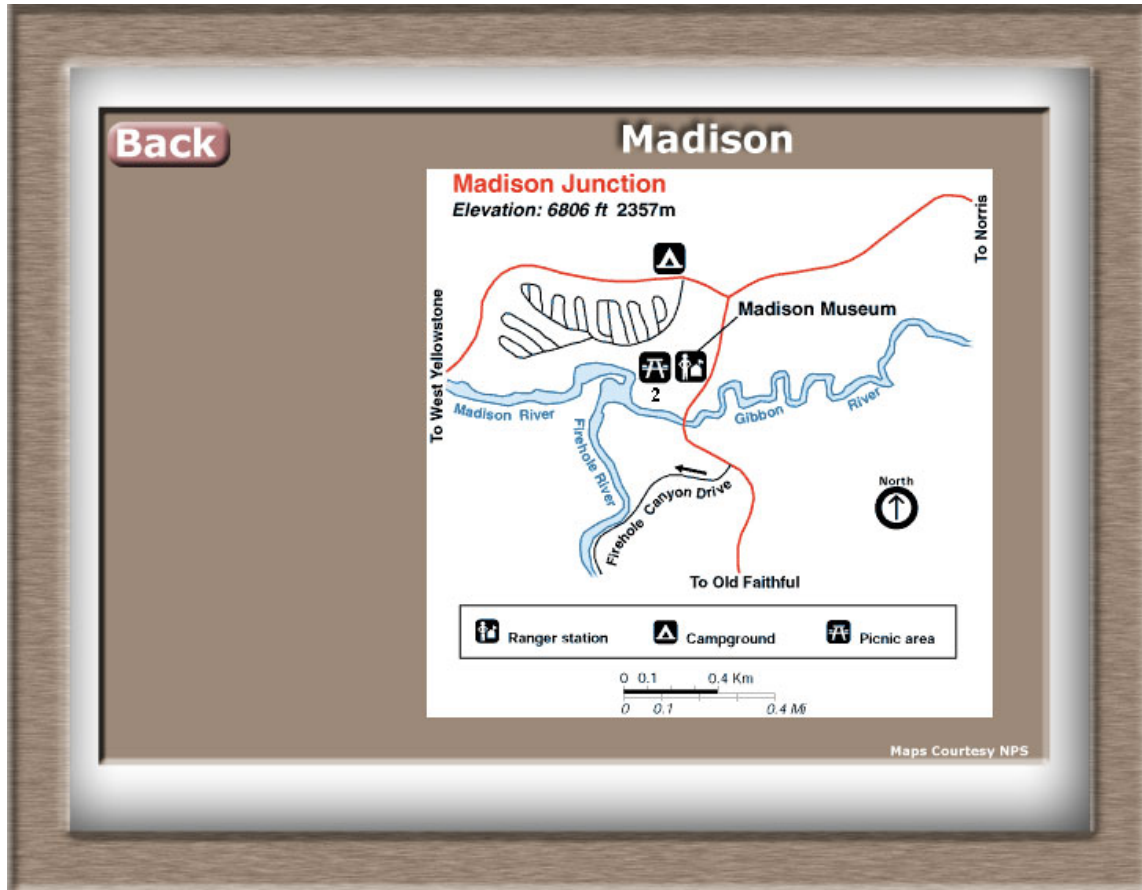


Figure 16: Madison Map

Visitor's activities in Yellowstone include a high level of outdoor activities including sightseeing, hiking, fishing, biking and photography. Extremes of weather that can occur in the area can have significant impacts on these activities. For this reason, visitors placed a high priority on receiving accurate and timely weather reports and forecasts to help plan their visits.

To help meet this need, the Visit Enhancement System prototype contains a section providing weather data. A screen shot of the Weather Main Page is shown in Figure 17. Ideally, this screen would include video images transmitted from cameras in various locations in the park and updated on a regular basis (say every 5 minutes). It would include current weather at a sample of park locations and any severe weather notices that might be currently in effect. From this page, the user can move to a weather forecast screen (Figure 18), a satellite image of the geographic region (Figure 19), or a Doppler radar display showing locations and amount of precipitation in the park area (not shown). We would emphasize that at the time of this report the technologies were not in place to communicate some of the data required for these screens to a vehicle or information system driving through the park. With advances in information technology and communication technology, these capabilities should become available in the short term. We, therefore determined to include these concepts in the system simulation

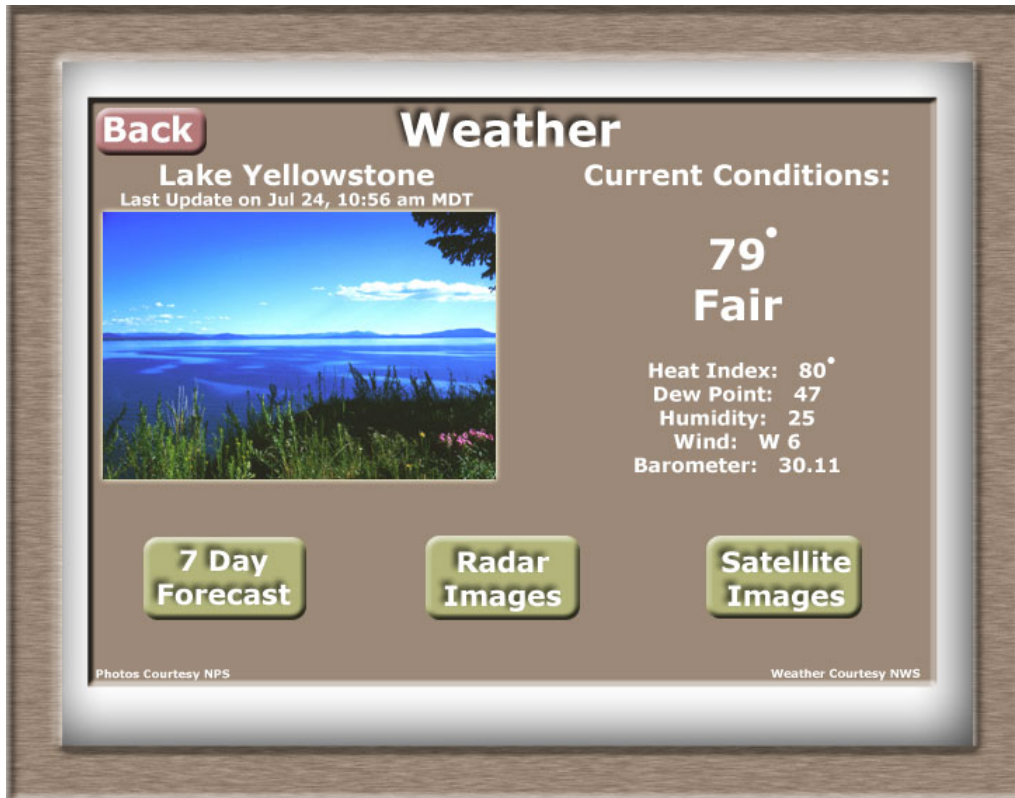


Figure 17: Weather Main Page

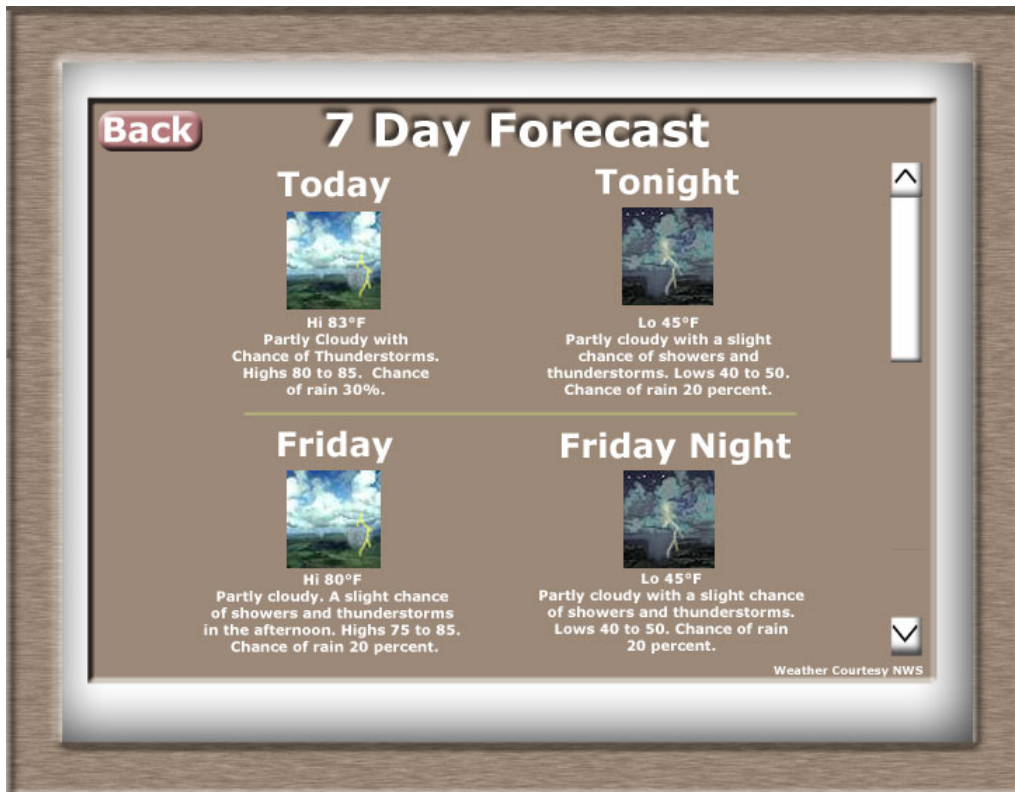


Figure 18: 7 Day Forecast

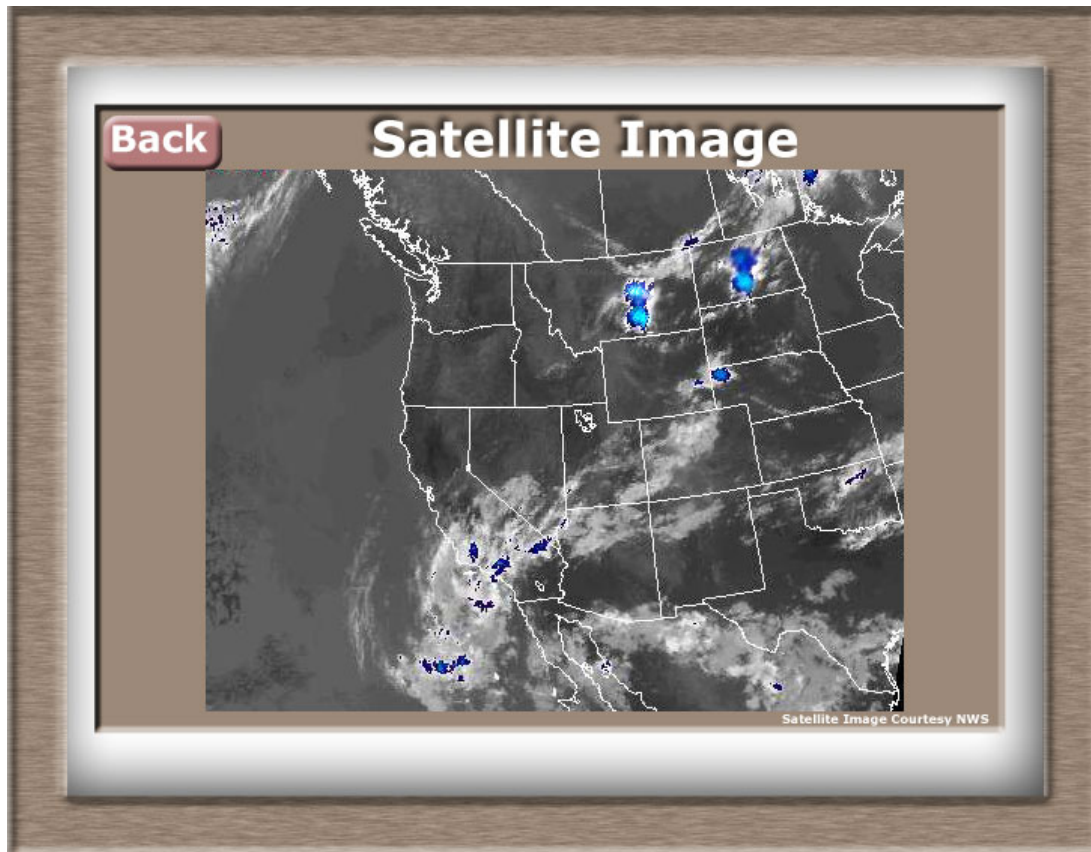


Figure 19: Satellite Image

The extensive schedule of educational and entertainment events that are held in Yellowstone and sponsored by the National Park Service or associated organizations is another source of information that would be useful to the visitors. The prototype system includes an "events" section, accessible from the Main Page, that provides a detailed schedule of these events.

The Events Main Page (Figure 20) allows the user to select between types and locations of events by selecting one of several buttons. Figure 21 is a screen shot of the page associated with the Kodak Photographic Activities program in which a Kodak Ambassador presents a seminar on hints for making better nature photographs. Similar pages are available to describe such activities as ranger-led nature walks, classes, and other events.



Figure 20: Events Main Page



Figure 21: Kodak Photographic Activities

The remaining section currently incorporated in the Visit Enhancement System simulation is a section on Yellowstone Park rules and regulations. The Park Rules Main Page is shown in Figure 22. It provides access to summaries of the most important regulations and safety guidelines that visitors should know. These include driving laws, descriptions of hazardous or illegal situations that the visitor should avoid, safety rules for avoiding injury by the park's numerous thermal features, guidelines for avoiding confrontations with wildlife, and emergency telephone numbers.

Figure 23 shows a screen shot of the page dealing with the hazards of the park's thermal water features. The figure demonstrates that the rules section is written to be readable and accessible to the park visitors rather than being written in legal terminology that might be difficult to read. While our research found that the average visitor is well-educated, it was important to make the information on the simulation understandable by the broadest possible range of visitors.



Figure 22: Park Rules Main Page

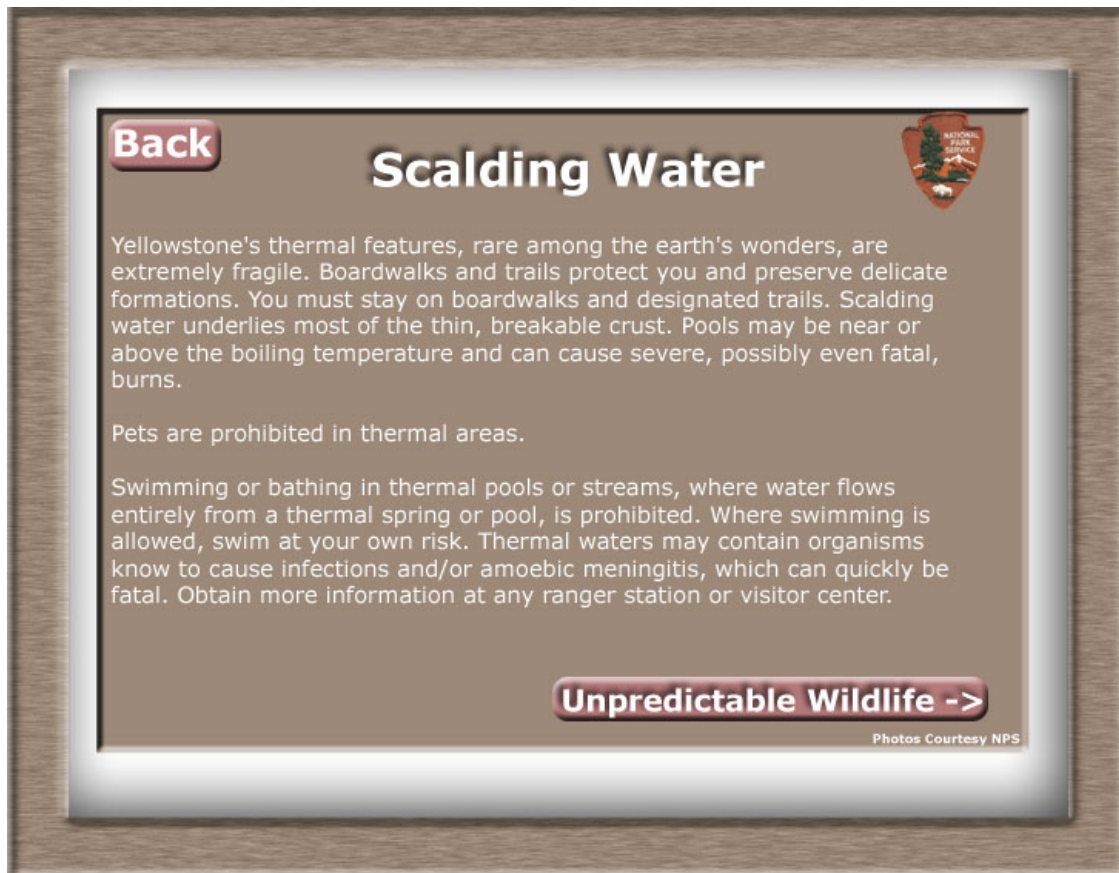


Figure 23: Scalding Water

Future plans for the Visit Enhancement System simulation include: (a) usability tests of the simulation to explore any refinements that might be needed in the look and feel of the user interface, (b) moving the user interface to a small, flat screen touch monitor and exploring how that impacts the usability, and (c) expanding the content of the web pages to include a greater depth of information.

Some usability issues would need to be explored before a Visit Enhancement System could be fielded in an alternative vehicle fleet. A small number of park visitors are not fluent in English and accommodations might need to be considered for those with different languages. In addition, some design accommodations should be considered for riders who might have visual or other handicaps that would make use of the currently designed user interface difficult.

A longer term goal might be to explore porting the Visit Enhancement System to a Personal Data Assistant (PDA). If technologies in wireless communication and Global Positioning System (GPS) continue to develop and expand into the consumer marketplace, a portable version of the system might become a viable alternative for hikers, bicyclists, and other visitors who would spend more of their time in the out-of-doors rather than on a shuttle bus.

8. APPENDIX A: THE INITIAL SURVEY INSTRUMENT

SURVEY OF RECREATION AND VACATION GOALS

You have been invited to take part in this survey because you are a visitor to Yellowstone National Park. The survey is being conducted by the Western Transportation Institute at Montana State University – Bozeman under sponsorship of the United States Department of Transportation.

The purpose of this survey is to find out why people choose certain kinds of recreational and vacation activities. We also want to find out what people expect to experience during, and as a result of, specific vacation activities. There are no right and wrong answers. It should take you approximately 15 minutes to complete the survey.

Participation is completely voluntary. You do not have to take the survey if you'd prefer not to. You may skip any question that you'd rather not answer.

All of your answers are completely confidential. You do not have to give us your name and any reports will contain only summaries of responses with no individual responses identifiable.

If you have any questions or complaints, contact:

Dr. Michael Kelly
Western Transportation Institute
416 Cobleigh Hall
Montana State University – Bozeman
Bozeman, MT 59717-3910
(406) 994-7377

Thank you for agreeing to participate in this survey!

Section 1. This section is to find out how important certain goals are to you *during recreational activities or when you are on vacation*. Please read each statement and tell us how important that listed goal is to you by circling a number from 1 to 7 where **1** is the **Most Important** and **7** is **Not At All Important**.

GOAL

RATING

Most
Important

Not At All
Important

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Appendices

1. Being with my family.	1	2	3	4	5	6	7
2. Seeing interesting things in nature.	1	2	3	4	5	6	7
3. Seeing new things that I've never seen before.	1	2	3	4	5	6	7
4. Learning to do new things.	1	2	3	4	5	6	7
5. Doing something that seems dangerous.	1	2	3	4	5	6	7
6. Helping someone who is in need.	1	2	3	4	5	6	7
7. Being safe from severe storms.	1	2	3	4	5	6	7
8. Seeing beautiful structures that were created by people.	1	2	3	4	5	6	7
9. Breathing air that does not have an unpleasant odor.	1	2	3	4	5	6	7
10. Having more pride in myself.	1	2	3	4	5	6	7
11. Hearing the sounds of nature.	1	2	3	4	5	6	7
12. Keeping my mind active and avoiding boredom.	1	2	3	4	5	6	7
13. Feeling mentally relaxed.	1	2	3	4	5	6	7
14. Knowing what to expect and that there are no surprises.	1	2	3	4	5	6	7
15. Listening to sounds created by people (such as music).	1	2	3	4	5	6	7
16. Being responsible for the outcomes of my own decisions.	1	2	3	4	5	6	7
17. Finding good tasting water when I'm thirsty.	1	2	3	4	5	6	7
18. Experiencing new sensations that few people have ever known.	1	2	3	4	5	6	7
19. Discovering new things.	1	2	3	4	5	6	7
20. Finding clean, uncontaminated food when I'm hungry.	1	2	3	4	5	6	7
21. Becoming closer to the people I work with.	1	2	3	4	5	6	7
22. Not getting bad information or advice.	1	2	3	4	5	6	7
23. Having others respect me more.	1	2	3	4	5	6	7
24. Being safe from personal injury in nature.	1	2	3	4	5	6	7
25. Having more pride in my family.	1	2	3	4	5	6	7

GOAL

RATING

**Most
Important**

**Not At All
Important**

Information Technology for Alternative Vehicles

Appendices

26. Visiting places I've never been before.	1	2	3	4	5	6	7
27. Feeling more self-fulfilled.	1	2	3	4	5	6	7
28. Finding clean, uncontaminated water when I'm thirsty.	1	2	3	4	5	6	7
29. Receiving prompt medical care if I am ill or injured.	1	2	3	4	5	6	7
30. Experiencing pleasant physical sensations	1	2	3	4	5	6	7
31. Seeing interesting things that were created by people.	1	2	3	4	5	6	7
32. Becoming closer to my family.	1	2	3	4	5	6	7
33. Becoming a better person.	1	2	3	4	5	6	7
34. Seeing new things that few people have seen before.	1	2	3	4	5	6	7
35. Enjoying the aromas of nature.	1	2	3	4	5	6	7
36. Being able to go where I want.	1	2	3	4	5	6	7
37. Finding good tasting food when I'm hungry.	1	2	3	4	5	6	7
38. Being safe from animal attacks.	1	2	3	4	5	6	7
39. Doing things that I've never done before.	1	2	3	4	5	6	7
40. Enjoying the aromas created by peoples' activities.	1	2	3	4	5	6	7
41. Doing things that I find exciting.	1	2	3	4	5	6	7
42. Seeing beautiful things in nature.	1	2	3	4	5	6	7
43. Being free to move my arms and legs when I want to.	1	2	3	4	5	6	7
44. Having the authority to carry out my own plans.	1	2	3	4	5	6	7
45. Tasting pleasant or interesting flavors.	1	2	3	4	5	6	7
46. Having others admire me more.	1	2	3	4	5	6	7
47. Being safe from accidents.	1	2	3	4	5	6	7
48. Seeing interesting structures that were created by people.	1	2	3	4	5	6	7
49. Feeling physically relaxed.	1	2	3	4	5	6	7
50. Finding shelter from inclement weather.	1	2	3	4	5	6	7

GOAL

**Most
Important**

RATING

**Not At All
Important**

Information Technology for Alternative Vehicles

Appendices

51. Helping protect the environment.	1	2	3	4	5	6	7
52. Accomplishing something worthwhile.	1	2	3	4	5	6	7
53. Experiencing new sensations that I've never known before.	1	2	3	4	5	6	7
54. Learning new information.	1	2	3	4	5	6	7
55. Being safe from getting lost.	1	2	3	4	5	6	7
56. Sharing my experiences with others.	1	2	3	4	5	6	7
57. Being safe from natural disasters.	1	2	3	4	5	6	7
58. Enjoying strenuous physical activity.	1	2	3	4	5	6	7
59. Learning about nature.	1	2	3	4	5	6	7
60. Doing things that few people have ever done before.	1	2	3	4	5	6	7
61. Being safe from crime.	1	2	3	4	5	6	7
62. Having more pride in my group.	1	2	3	4	5	6	7
63. Finding nutritious food when I'm hungry.	1	2	3	4	5	6	7
64. Being with my friends.	1	2	3	4	5	6	7
65. Having an opportunity for personal growth.	1	2	3	4	5	6	7
66. Finding warmth when it's cold.	1	2	3	4	5	6	7
67. Seeing beautiful works that were created by people.	1	2	3	4	5	6	7
68. Being able to set my own schedule.	1	2	3	4	5	6	7
69. Being safe from automobile crashes.	1	2	3	4	5	6	7
70. Contributing to the group's decisions.	1	2	3	4	5	6	7
71. Breathing air that is clean and unpolluted.	1	2	3	4	5	6	7
72. Making new friends.	1	2	3	4	5	6	7
73. Making the world better for others.	1	2	3	4	5	6	7
74. Choosing my own actions.	1	2	3	4	5	6	7
75. Becoming closer to my friends.	1	2	3	4	5	6	7

Section 2. This section is to find out what you would expect to happen on a vacation trip. *Imagine that you are making a visit to Yellowstone National Park in your own car.* Read each statement and tell us how well you would expect to achieve each listed goal during the visit to Yellowstone National Park. Circle a number from 1 to 7 where **1** means that you'd expect to **fully achieve the goal** and **7** means that you **wouldn't expect to achieve the goal at all**.

GOAL

RATING

Information Technology for Alternative Vehicles

Appendices

	Fully Achieve						Not At All
1. Being responsible for the outcomes of my own decisions.	1	2	3	4	5	6	7
2. Finding good tasting water when I'm thirsty.	1	2	3	4	5	6	7
3. Experiencing new sensations that few people have ever known.	1	2	3	4	5	6	7
4. Discovering new things.	1	2	3	4	5	6	7
5. Finding clean, uncontaminated food when I'm hungry.	1	2	3	4	5	6	7
6. Doing things that I find exciting.	1	2	3	4	5	6	7
7. Seeing beautiful things in nature.	1	2	3	4	5	6	7
8. Being free to move my arms and legs when I want to.	1	2	3	4	5	6	7
9. Having the authority to carry out my own plans.	1	2	3	4	5	6	7
10. Tasting pleasant or interesting flavors.	1	2	3	4	5	6	7
11. Seeing interesting things that were created by people.	1	2	3	4	5	6	7
12. Becoming closer to my family.	1	2	3	4	5	6	7
13. Becoming a better person.	1	2	3	4	5	6	7
14. Seeing new things that few people have seen before.	1	2	3	4	5	6	7
15. Enjoying the aromas of nature.	1	2	3	4	5	6	7
16. Helping protect the environment.	1	2	3	4	5	6	7
17. Accomplishing something worthwhile.	1	2	3	4	5	6	7
18. Experiencing new sensations that I've never known before.	1	2	3	4	5	6	7
19. Learning new information.	1	2	3	4	5	6	7
20. Being safe from getting lost.	1	2	3	4	5	6	7
21. Being safe from crime.	1	2	3	4	5	6	7
22. Having more pride in my group.	1	2	3	4	5	6	7
23. Finding nutritious food when I'm hungry.	1	2	3	4	5	6	7
24. Being with my friends.	1	2	3	4	5	6	7
25. Having an opportunity for personal growth.	1	2	3	4	5	6	7

GOAL

RATING

Fully Achieve

Not At All

Information Technology for Alternative Vehicles

Appendices

26. Visiting places I've never been before.	1	2	3	4	5	6	7
27. Feeling more self-fulfilled.	1	2	3	4	5	6	7
28. Finding clean, uncontaminated water when I'm thirsty.	1	2	3	4	5	6	7
29. Receiving prompt medical care if I am ill or injured.	1	2	3	4	5	6	7
30. Experiencing pleasant physical sensations	1	2	3	4	5	6	7
31. Being with my family.	1	2	3	4	5	6	7
32. Seeing interesting things in nature.	1	2	3	4	5	6	7
33. Seeing new things that I've never seen before.	1	2	3	4	5	6	7
34. Learning to do new things.	1	2	3	4	5	6	7
35. Doing something that seems dangerous.	1	2	3	4	5	6	7
36. Breathing air that is clean and unpolluted.	1	2	3	4	5	6	7
37. Making new friends.	1	2	3	4	5	6	7
38. Making the world better for others.	1	2	3	4	5	6	7
39. Choosing my own actions.	1	2	3	4	5	6	7
40. Becoming closer to my friends.	1	2	3	4	5	6	7
41. Becoming closer to the people I work with.	1	2	3	4	5	6	7
42. Not getting bad information or advice.	1	2	3	4	5	6	7
43. Having others respect me more.	1	2	3	4	5	6	7
44. Being safe from personal injury in nature.	1	2	3	4	5	6	7
45. Having more pride in my family.	1	2	3	4	5	6	7
46. Finding warmth when it's cold.	1	2	3	4	5	6	7
47. Seeing beautiful works that were created by people.	1	2	3	4	5	6	7
48. Being able to set my own schedule.	1	2	3	4	5	6	7
49. Being safe from automobile crashes.	1	2	3	4	5	6	7
50. Contributing to the group's decisions.	1	2	3	4	5	6	7

GOAL

RATING

Fully

Not

Information Technology for Alternative Vehicles

Appendices

	Achieve						At All
51. Being able to go where I want.	1	2	3	4	5	6	7
52. Finding good tasting food when I'm hungry.	1	2	3	4	5	6	7
53. Being safe from animal attacks.	1	2	3	4	5	6	7
54. Doing things that I've never done before.	1	2	3	4	5	6	7
55. Enjoying the aromas created by peoples' activities.	1	2	3	4	5	6	7
56. Helping someone who is in need.	1	2	3	4	5	6	7
57. Being safe from severe storms.	1	2	3	4	5	6	7
58. Seeing beautiful structures that were created by people.	1	2	3	4	5	6	7
59. Breathing air that does not have an unpleasant odor.	1	2	3	4	5	6	7
60. Having more pride in myself.	1	2	3	4	5	6	7
61. Having others admire me more.	1	2	3	4	5	6	7
62. Being safe from accidents.	1	2	3	4	5	6	7
63. Seeing interesting structures that were created by people.	1	2	3	4	5	6	7
64. Feeling physically relaxed.	1	2	3	4	5	6	7
65. Finding shelter from inclement weather.	1	2	3	4	5	6	7
66. Sharing my experiences with others.	1	2	3	4	5	6	7
67. Being safe from natural disasters.	1	2	3	4	5	6	7
68. Enjoying strenuous physical activity.	1	2	3	4	5	6	7
69. Learning about nature.	1	2	3	4	5	6	7
70. Doing things that few people have ever done before.	1	2	3	4	5	6	7
71. Hearing the sounds of nature.	1	2	3	4	5	6	7
72. Keeping my mind active and avoiding boredom.	1	2	3	4	5	6	7
73. Feeling mentally relaxed.	1	2	3	4	5	6	7
74. Knowing what to expect and that there are no surprises.	1	2	3	4	5	6	7
75. Listening to sounds created by people (such as music).	1	2	3	4	5	6	7

GENERAL INFORMATION

In which state or country do you live? _____

In what year were you born? _____ Gender: Male _____ Female _____

What is your level of education?

Less than 12 Years _____ High School Graduate _____ Technical/Vocational School _____

Some college _____ College graduate _____ Graduate/Professional degree _____

Have you visited Yellowstone National Park before this trip?

This is my first visit. _____ I have visited a few times. _____ I am a frequent visitor. _____

How many days will you spend in the Yellowstone Park area during this trip?

Are you visiting other National Park units during this trip? If so, which ones?

What activities have/will you take part in during this trip to Yellowstone National Park? (Check all that apply.)

Sightseeing/Scenic drive _____ Bus tour _____ Ranger-led walks/talks _____

Backcountry camping _____ Viewing wildlife _____ Campground camping _____

Learning about history _____ Picnics _____ Viewing nature _____

Learning about animals _____ Fishing _____ Photography _____

Learning about plants _____ Bicycling _____ Backcountry hiking _____

Rafting/kayaking _____ Walking _____ Souvenir shopping _____

Other (specify) _____

9. APPENDIX B: THE FINAL SURVEY INSTRUMENT

Final Survey Instrument

SURVEY OF RECREATION AND VACATION GOALS

You are invited to take part in this survey because you are a visitor to Yellowstone National Park. The survey is being conducted by the Western Transportation Institute at Montana State University – Bozeman under sponsorship of the United States Department of Transportation.

The purpose of this survey is to find out why people choose certain kinds of recreational and vacation activities and what people expect to experience during a visit to Yellowstone National Park. There are no right and wrong answers. It should take you approximately 10 minutes to complete the survey.

Participation is completely voluntary. You do not have to take the survey if you'd prefer not to. You may skip any question that you'd rather not answer.

All of your answers are completely confidential. You do not have to give us your name and any reports will contain only summaries of responses with no individual responses identifiable.

If you have any questions or complaints, contact:

Dr. Michael Kelly
Western Transportation Institute
416 Cobleigh Hall
Montana State University – Bozeman
Bozeman, MT 59717-3910
(406) 994-7377

Thank you for agreeing to participate in this survey! Please fill it out at your convenience, place it in the attached business reply envelope, and return it to us.

Section 1. *Imagine that you are making a visit to Yellowstone National Park in your own car.* Please read each statement and tell us how well you would expect to achieve each listed goal during the visit to Yellowstone National Park. Circle a number from 1 to 7 where **1** means that you'd expect to **fully achieve the goal** and **7** means that you **wouldn't expect to achieve the goal at all**.

<u>GOAL</u>	<u>RATING</u>						
	Fully Achieve						Not At All
1. Doing things that I find exciting.	1	2	3	4	5	6	7
2. Finding good tasting water when I'm thirsty.	1	2	3	4	5	6	7
3. Becoming closer to my family.	1	2	3	4	5	6	7
4. Being responsible for the outcomes of my own decisions.	1	2	3	4	5	6	7
5. Seeing beautiful things in nature.	1	2	3	4	5	6	7
6. Being free to move my arms and legs when I want to.	1	2	3	4	5	6	7
7. Being able to carry out my own plans.	1	2	3	4	5	6	7
8. Discovering new things.	1	2	3	4	5	6	7
9. Seeing interesting things that were created by people.	1	2	3	4	5	6	7
10. Becoming a better person.	1	2	3	4	5	6	7
11. Seeing new things that few people have seen before.	1	2	3	4	5	6	7
12. Enjoying the aromas of nature.	1	2	3	4	5	6	7
13. Experiencing new sensations that I've never known before.	1	2	3	4	5	6	7
14. Learning new information.	1	2	3	4	5	6	7
15. Being safe from getting lost.	1	2	3	4	5	6	7
16. Being safe from crime.	1	2	3	4	5	6	7
17. Being with my friends.	1	2	3	4	5	6	7
18. Visiting places I've never been before.	1	2	3	4	5	6	7
19. Getting away from people.	1	2	3	4	5	6	7
20. Finding clean, uncontaminated water when I'm thirsty.	1	2	3	4	5	6	7
21. Receiving prompt medical care if I am ill or injured.	1	2	3	4	5	6	7
22. Experiencing pleasant physical sensations	1	2	3	4	5	6	7
23. Seeing interesting things in nature.	1	2	3	4	5	6	7
24. Seeing new things that I've never seen before.	1	2	3	4	5	6	7
25. Learning to do new things.	1	2	3	4	5	6	7

Information Technology for Alternative Vehicles

Appendices

<u>GOAL</u>	<u>RATING</u>						
	Fully Achieve						Not At All
26. Doing something that seems dangerous.	1	2	3	4	5	6	7
27. Making new friends.	1	2	3	4	5	6	7
28. Choosing my own actions.	1	2	3	4	5	6	7
29. Not getting bad information or advice.	1	2	3	4	5	6	7
30. Getting away from high technology.	1	2	3	4	5	6	7
31. Being safe from personal injury in nature.	1	2	3	4	5	6	7
32. Seeing beautiful works that were created by people.	1	2	3	4	5	6	7
33. Being able to set my own schedule.	1	2	3	4	5	6	7
34. Being safe from automobile crashes.	1	2	3	4	5	6	7
35. Being able to go where I want.	1	2	3	4	5	6	7
36. Finding good tasting food when I'm hungry.	1	2	3	4	5	6	7
37. Being safe from animal attacks.	1	2	3	4	5	6	7
38. Doing things that I've never done before.	1	2	3	4	5	6	7
39. Being safe from storms.	1	2	3	4	5	6	7
40. Breathing air that does not have an unpleasant odor.	1	2	3	4	5	6	7
41. Being safe from accidents.	1	2	3	4	5	6	7
42. Feeling physically relaxed.	1	2	3	4	5	6	7
43. Sharing my experiences with others.	1	2	3	4	5	6	7
44. Being safe from natural disasters.	1	2	3	4	5	6	7
45. Enjoying strenuous physical activity.	1	2	3	4	5	6	7
46. Learning about nature.	1	2	3	4	5	6	7
47. Hearing the sounds of nature.	1	2	3	4	5	6	7
48. Keeping my mind active and avoiding boredom.	1	2	3	4	5	6	7
49. Feeling mentally relaxed.	1	2	3	4	5	6	7
50. Listening to sounds created by people (such as music).	1	2	3	4	5	6	7

GENERAL INFORMATION

In which state or country do you live? _____

In what year were you born? _____ **Gender:** Male _____ Female _____

What is your level of education?

Less than 12 Years _____ High School Graduate _____ Technical/Vocational School _____

Some college _____ College graduate _____ Graduate/Professional degree _____

Have you visited Yellowstone National Park before this trip?

This is my first visit. _____ I have visited a few times. _____ I am a frequent visitor. _____

How many days will/did you spend in the Yellowstone Park area during this trip? _____

What activities have/will you take part in during this trip to Yellowstone National Park? (Check all that apply.)

Sightseeing/Scenic drive _____ Bus tour _____ Ranger-led walks/talks _____

Backcountry camping _____ Viewing wildlife _____ Campground camping _____

Learning about history _____ Picnics _____ Viewing nature _____

Learning about animals _____ Fishing _____ Photography _____

Learning about plants _____ Bicycling _____ Backcountry hiking _____

Rafting/kayaking _____ Walking _____ Souvenir shopping _____

Other (specify) _____

The National Park Service would like to encourage visitors to use alternative forms of transportation such as a tour bus or tram when they visit Yellowstone. What features or amenities would a tour bus or tram need to have to make you want to ride it?

New electronic devices are becoming available to provide information and entertainment for travelers. If such a device were available during your trip to Yellowstone National Park, what features would you most like to see it provide?

Park maps _____ Weather _____ Campground availability _____

Shopping information _____ Nature information _____ Historical information _____

Road conditions _____ Traffic information _____ Nature sounds _____

Games _____ Park news _____ Special events schedule _____

Ecology information _____ Park rules _____ Seasonal (winter) views _____

Other: _____

Thank you for your help and opinions!!

**10.APPENDIX C: DETAILED COMMENTS FROM THE FOCUS
GROUPS**

Focus Group Discussion guide and Discussion Details

Introduction

Moderator: name, here on behalf of WTI, at MSU-Bozeman, sponsored by DOT, have no personal stake in discussion outcomes, just here to facilitate discussion.

Purpose

We want to find out what people's interests are when visiting YNP, and how their expectations are and are not met. We also want to find out what features would make an alternative transportation system desirable, so that people will get out of their cars and into other forms of transportation. We also want to know what types of information people want to know if YNP were to implement an interactive website for the alt. trans. vehicles.

Rules

1. 1 person talks at a time.
2. no side conversations.
3. speak loudly so recorder picks it up.
4. first names only.
5. variety is encouraged, both positive and negative comments are wanted.
6. everyone must give their input.
7. cell phones and pagers off.
8. bathroom breaks- go ahead.
9. confidentiality.
10. mention tape recorder-to ensure that all ideas are retained.
11. session will last 90 minutes.

Discussions

Consent forms, name tags

Introductions of group members: first name, where from, how many times been to park

Warm-up discussion (ice breaker)

-why do you go to Yellowstone?

-what are the things you like about Yellowstone?

-what are the things you dislike about Yellowstone or think need to be changed?

Main Discussion

1. Feelings about public transportation, past experiences.

What features are good and bad and why?

If Yellowstone were to implement alternative transportation in the park, what features should the vehicles have that would make them more desirable than your own car?

2. One idea that may make alternative transportation in Yellowstone desirable is having an interactive computer website at your seat. Is this something you would be interested in?

What types of information about the park do people want to know that should be included in the website?

Conclusion (20 minutes)

-final statement from each participant (if professionals were here what would you say to them)

-moderator summarizes main ideas, asks for input- what was *important* to them?

-demographic questionnaire- on the back add anything you didn't get a chance to say

-thanks for participating

Focus Group Analysis 7-11 MSU students

The group consisted of 6 MSU students working at the WTI, which makes the group a biased sample, and not necessarily representative of Yellowstone tourists. The atmosphere was very casual, and the session ran about an hour.

The group as a whole seemed interested in the idea of alternative transportation in the park. Everyone in the group acknowledged that traffic in the park is a problem. In terms of adopting alternative transportation, comfort and environmental friendliness were recurring themes. Other requirements included being able to get on and off at one's own pace. People want to be able to go as fast or slowly as they want through the park. They suggested having multiple buses at varying times so you can spend as much or little time at each park attraction as desired, without having to rely on when others are ready to move on. The group also wanted to have some methods of getting through the park that are more private. Horses, bicycles, and environmentally friendly rental vehicles were suggested.

Warm-up question: Why did you come to the park?

All of the participants said that they go to Yellowstone mainly to see the geo-thermal features and rare wonders of nature in the park, along with viewing the wildlife. They said that there is a lot of beautiful scenery to see and they enjoy being outdoors and away from the city. Several of the participants said that they go to Yellowstone to go camping, rafting, or hiking. One participant mentioned price, that once you pay to get into the park, all the scenery is free.

What is important to you while visiting?

There were two main points emphasized as important to people while visiting Yellowstone. One was that they go to the park to escape the stress of daily life, and do not want to experience stress during their visit. It was said that traffic congestion and full parking lots at the attractions caused stress, and they would like to see these problems alleviated. Another thing that the participants considered important to their visit was that they see animals while there, which they said was not a problem and that it is almost a guarantee to see bison and elk during a drive through the park.

What expectations are being met/not met?

One expectation that is not being met when people visit Yellowstone is that the number of cars detracts from the experience. The parking lots are often full near attractions such as Old Faithful, so people have to circle around until they can find a place to park. There are also areas on the roads where traffic comes to a standstill, usually if there is a bear nearby and no pullouts, which is frustrating to the vehicles in the back who do not see what is causing the traffic jam and have to wait until traffic starts moving again. A couple of participants said that they feel that their safety is compromised because there are so many cars on the roads, and accidents are inevitable. Related to road safety is the issue of bicycles. Most of the participants said that they would like to ride bicycles

through the park, but are afraid to because there are no bicycle lanes, and often there is not much of a shoulder, forcing them to ride in the road, alongside recreational vehicles with large side-mirrors. It was suggested that the park needs to make the roads more bicycle friendly.

What features would make an alternative transportation vehicle more desirable than your own car?

The main feature that participants want in an alternative transportation vehicle is the ability to get on and off whenever they want to. Planning one's own schedule while in the park was rated as very important. There are frequent turnoffs on the roads, and people want to be able to stop at any of them as they wish, and stay for as long as they would like. It was suggested that the park adopt a shuttle bus system, in which many buses run in many directions, so if you exit a bus at a certain place, another one will be by soon.

There were several features that participants would be desirable for alternative transportation vehicles in Yellowstone. One feature that was important to most participants was that the vehicles need to be environmentally friendly and economical, and run on clean fuel, and especially not diesel, which creates unpleasant odors. It was mentioned that Zion National Park has buses which run on propane fuel, which was said to be preferable for two reasons, first that they do not produce as many odors and harmful emissions, but also that the vehicles are very quiet, and do not disrupt the serenity of the park. Comfort and space were also said to be very important. The park is large, and takes several hours to drive through, so people want to have comfortable seats and plenty of leg room. There would also need to be plenty of space for backpacks and bicycles in the vehicles, or else hikers would not want to use them to get to trailheads. Visibility was also an important issue. It was suggested that the vehicles have large windows or no tops or sides, or perhaps the park should adopt both, so that the people who want air conditioning could ride in vehicles with windows. It was also suggested that the vehicles have a tour guide, someone who can speak about the areas of the park as they pass them, and also to answer peoples' questions.

An idea for mass transportation aside from shuttle buses that had some support was that the park use trains similar to those at some zoos. The participants also said that they want options other than mass transport such as bicycles but don't want to ride on the main road because of danger of other cars. They said that they want to be able to be by themselves and not with a group of strangers. Riding horses through the park also had some support.

What types of information do people want to have available while in the park?

The participants mainly said that they want information related to learning about the different features of the park, the nature, wildlife, geology, and history of the park. If the park were to adopt a shuttle system, schedules of when the buses would be going through would be important. Trail maps and descriptions would also be valuable to hikers. Other types of information included making the rules about approaching animals more salient; participants spoke about how every year people approach wildlife despite the warnings and are injured or killed. One participant said that he would like to have access to stories

of animal/human encounters, and perhaps exposure to detailed accounts of the encounters would deter the people who would otherwise approach the wildlife. It was also suggested that if a computer website were made available to people traveling through the park, it should have videos about the park, for example in the summer months showing footage of how the park looks in the winter.

Features for an interactive website?

Several features were discussed for how to have an interactive website set up. One way of making the system simpler would be to use a touch screen, such that the need for keyboards are eliminated and the system would be self contained in the back of the seat in front of you. It was also suggested that the screens be voice activated, but after discussion, the idea lost favor because a bus full of people would make a lot of noise and the system would probably not work. It was also suggested that each seat should be equipped with a set of headphones, for people who want to listen to videos or bird calls on the website without disturbing other passengers.

Focus Group Analysis**August 10, 2002, at the Mammoth Hotel in YNP- 6 people participated.**

Participants were members of a three-day class, Yellowstone's Geo-ecosystems, which was held by the Yellowstone Association. At the end of the class, they returned to the Mammoth Hotel, where they were provided with free lunch in exchange for their participation. One of the participants was a resident of Gardiner, and works at Yellowstone. Their ages ranged from 41 to 52, and were from Arizona, California, Washington, New York, and Montana. The group was highly educated- all had been to college, and 5 of the 6 had graduate or professional degrees. All of the participants had been to the park more than once, and several were annual visitors.

Why do you go to Yellowstone?

These particular visitors had come to the park to attend the Yellowstone Association class. All of the participants said that they mainly go to Yellowstone to see the natural wonders and wildlife, and to get outdoors. One of the participants said that it is important for him to learn something new each time he goes to the park, mirroring the comments of a tourist we spoke with who said that he wants his trip through the park to be like an adventure.

What things do you like about Yellowstone?

There are fishing shuttles currently in use, which were brought up as one way that people are already adopting alternative transportation.

What things do you dislike about Yellowstone?

The participants said that one of the main things they didn't like about the park were that many visitors break the rules while in the park, for example stopping their vehicles in the middle of the road when an animal is nearby, or approaching animals closer than the 25-100 yard viewing distance. One participant suggested that visitors sign a form or demonstrate that they understand the rules before they are allowed in the park.

Other things that the participants didn't like were the traffic problems, or "bear-jams," in which people will block traffic when an animal is nearby, and they suggested that the park create more pullouts to alleviate the problem. The condition of the roads was a grievance to the participants also.

What are people's feelings about public transportation, and what features should buses or trams have to make them appealing to visitors to the park?

Overall, the participants were split about the idea of using public transportation through the park. They all emphasized that if the park did adopt public transportation, it should be voluntary. If the only way to get through the park was public transportation, many visitors would no longer come to the park. One couple said that they took a trip through

North Cascades National Park using alternative transportation, and that it was “not an enjoyable experience.” They said that the shuttles were spaced too far apart, and they had to rush through the attractions or else wait 2 hours for the next bus.

One man suggested that the park adopt a system of charging vehicles by weight to get into the park, to compensate for the wear and tear on the roads due to heavy vehicles. There was general support for not allowing RV's through the park. There was also a suggestion to impose fuel efficiency standards for vehicles entering the park, such that vehicles exceeding the limit are not allowed in the park. Another suggestion was that the park impose size restrictions on which vehicles can drive through the park, such that RV's and buses are not allowed on all the roads, or that some roads are open to everyone, and others are only open to public transportation, which is currently the practice at Zion National Park. That spawned the park employee to say that Dunraven pass and some other areas should be restricted to public transportation only, because they are major areas for traffic jams. They also said that if transportation was provided in the park, that there should also be transportation to get people *to* the park. Currently, there are buses which travel from Bozeman to West Yellowstone, but once at the entrance, people have no way into the park. One of the visitors said that horse drawn stagecoaches would be a fun way to travel the park, for those who stay at Yellowstone for more than a day and want to take their time through the park. She said it would be fun to go through the park as the first visitors did.

Two of the visitors, who said they enjoy hiking through the park, said that public transportation would be ideal for hikers, especially considering that some of the hikes are one way, such that the trail does not loop back to people's vehicles. One participant said that he used public transportation at Denali National Park to get to trailheads, and it was an ideal form of transportation for that purpose. They also said that in order for it to work, there would need to be plenty of space for bicycles and backpacks. One of the participants said that she had a bad back, so the seats would have to be comfortable. Other features that were mentioned were that the vehicles be flexible and frequent, so people do not feel that they must rush or else wait an hour for the next bus. The couple that was opposed to public transportation said that stopping, moving along, and eating on a set schedule was not enjoyable, so that flexibility would be of paramount importance. The participants also said that public transportation vehicles should run on clean fuels, such as the propane fueled buses at Zion National Park. The cost of using public transportation was also an issue. Participants for the most part felt that once they pay for access to the park, they do not want to have to spend more money to travel through the park. It was suggested that the park impose fees for visitors using their own vehicles, which could help pay for the expenses of operating public transportation in the park.

There were several concerns regarding the use of public transportation in Yellowstone. As stated earlier, people do not want public transportation to be their only method of transportation in the park. Also, how much will it cost visitors if an alternative transportation system is implemented at Yellowstone? Another concern was what the policy would be in terms of wildlife sightings. It was suggested that some people will want to stop to take pictures, but others will be impatient to move on to the next attraction.

Would you like to see an interactive computer website available to visitors, and what types of information should the website provide?

Overall, the participants were not interested in the idea of an interactive website in the park. They said that when they are in the park, they are there to get away from technology. Several participants said that too much technology in the park will make it seem more like a theme park than a nature preserve, and that the pamphlets and newspapers currently available are all they need, and are also more portable than an electronic device. They also said that they would be too busy looking out the windows to pay attention to a computer screen. They did acknowledge that they are all in their 40's and 50's, and that the younger generation may be more interested in the idea. They said that a website would be better used for planning their trip than for use when actually in the park, and that the websites currently available are great for planning a trip to Yellowstone. It was suggested that the website include information about what to expect in terms of traffic while visiting the park, for example that there will be occasional traffic jams when wildlife are near.

The participants who liked to hike in the park said that having access to a Doppler image of weather in the park would be great. It was suggested that if the park does adopt an interactive website for visitors, there should be areas at the visitor centers to access the internet, but that having modem plug-ins at the pullouts would be overdoing it. If the park does create an interactive website for use in the park, some of the features suggested were high speed and real time info.

Information that participants rated as important to have available included park maps, road conditions, weather, park rules, campground availability, and ecology/ geology/ nature/ historical info. Information rated as least important was shopping info, games (unless they were learning games), and nature sounds.

Focus Group Analysis-8-17**Elderhostel of MSU, at the City Center Hotel, Bozeman MT, 12pm.**

The participants were part of the Elderhostel, a group of seniors from all over America who came to MSU through Extended Studies and spent several days attending seminars and exploring the area. On August 15, after one of their seminars, I spoke to the group briefly about the current research, and invited them to share their opinions with me the following Saturday during an afternoon in which they would have some free time.

On August 17 at 12 pm, an informal focus group was held in which I spoke mainly with four people, with other individuals joining in the conversation at various points. Most of the people I spoke with said that the traffic in the park detracts from the experience. Public transportation was seen as a viable option to help ease congestion. Some people suggested large vehicles that would transport many visitors at once, while others said they would prefer smaller vehicles. It was also suggested that a train should be put up in the park, which could travel over parts of the park that visitors on the main roads do not get to see.

One suggestion about transportation in Yellowstone in general was that the park needs to put up more directional signs. In some places, signs are too close to the turnoff, and seniors, who may have slow reaction time, have difficulty stopping and turning in time. In other places in the park, the signs were inadequate to help people in and out of the parking lots at some of the attractions.

Several participants suggested that Yellowstone adopt some of the ideas that the other parks use in terms of alternative transportation. Denali, Glacier, Yosemite, and Zion National Parks all have shuttles available to the public, and the shuttles at Denali and Zion are free. Glacier's Red Buses or "Jammer Buses" are very popular antique-style buses which seat 17 and have rollback canvas tops.

It was noted that the major congestion areas are the mountain passes, where there is not much room, and the attractions, especially Old Faithful. It was suggested that these are the problem areas, and perhaps should be limited or inaccessible to private vehicles.

Focus group analysis- 8-23

The focus group consisted of nine participants from the Bozeman Senior Center, and one of the participants was an employee. Participants were recruited through advertisement August 21 through August 23 at the Senior Center, where fliers were handed out and a sign was posted near the front desk. The group was conducted on August 23 at noon by Joann Moore. Participants were provided with free lunch in exchange for participation. The discussion was audiotaped.

All participants were over age 50. Several have lived in Montana their entire lives, and several were frequent visitors to Yellowstone.

What do you like about Yellowstone National Park?

The participants said that one of their favorite activities as Yellowstone is viewing wolves and other wildlife. One of the participants also mentioned that some of the attraction centers such as Mammoth have dinners sometimes, which he said are enjoyable. Other man-made features were also mentioned, such as the Old Faithful Inn, which they said was a beautiful building. The participants also said that the walkways are great because they allow people to safely see things such as the geysers and hot springs, and are easier on seniors than dirt trails.

What do you dislike about Yellowstone/ what needs to be changed?

One of the things that the participants did not like about Yellowstone was that there are so many people in the park. It makes the attractions crowded, makes it hard to find parking, and causes congestion in the park. It was mentioned that in some places there is a large distance between where the tour buses stop and where the restrooms are, which can be difficult for some seniors. Also, there is limited handicapped accessibility at some parts of the park, though they did say that the park has done a good job of trying to meet the needs of people with disabilities. Participants said that the park needs to be kept rustic, that they should not increase the number of gas stations and shops located inside the park. They said there needs to be a balance between meeting the needs of visitors and maintaining the wilderness aspect of the park.

Traffic congestion was an issue that most participants said was a problem in Yellowstone. Most participants said that they would like to see commercial public transportation introduced to Yellowstone, but that the park should not restrict personal vehicles through the park. It was suggested that the park needs to create more turn-offs in the park, at the areas prone to traffic jams, and that the rangers probably know where those areas are. The condition of the roads was also mentioned. Several participants agreed that the roads in the park need to be maintained better. The condition of the sewers and general infrastructure of the park was also said to be a problem, and one participant mentioned that the true problem is park funding, and that with more funding the other problems could be better addressed. Another thing that most of the participants wanted changed about Yellowstone was the snowmobiles. They thought that snowmobiles should be completely banned from the park.

Most participants said that public transportation in Yellowstone in the form of shuttle buses would be a welcome addition, but that they have to be designed with the needs of the park and its visitors in mind. It was brought up that buses could also cause traffic jams when wildlife (especially bears and wolves, which are less often seen) are nearby. The park will need to figure out how to handle wildlife sightings from the buses. Another potential problem with public transportation was described as the “herding effect,” in which 50 people get off the bus and all want to use the restroom at once. It was suggested that restrooms on the buses would help reduce the “herding effect.”

Participants indicated that shuttle buses would be preferable to tour buses, mainly because people do not want to stay with the same group all day. Another issue was price; bus tours tend to be expensive, but shuttle buses at other national parks are inexpensive or free. The park also needs to take individual differences into account. Some people want to be isolated from other people when they are at Yellowstone, while others feel more comfortable with other people nearby. They also need to take into account that some people are at the park for one day, and others are there for a month or more.

Overall, participants said that shuttle buses were the best way to get people out of their own vehicles. There were several features mentioned as desirable for shuttle buses to have. One person said that on a previous bus tour he took the bus had big comfortable headrests, but they blocked visibility. Comfort is an important feature of the vehicles, but it should not come at the expense of visibility. It was suggested that the park develop a variety of shuttle styles for people with different needs. There should be both small and large capacity vehicles. Some vehicles should have open or removable tops, and others should be closed, with large windows, for people who want to have air conditioning. Some vehicles should be designed for luxury, and others for hikers who will be carrying large backpacks and may be covered in mud. The buses should run on frequent intervals, so people do not have to wait more than half an hour for the next bus, and they should go in both directions around the figure-eight loop so people can choose where they are going. Frequent stops were also mentioned as important, and it was suggested that the shuttles run like city buses, in which you can signal to the driver to let you off at any point. It was suggested that Yellowstone work with the National Park Service to find out what works for the other National Parks and adapt it to Yellowstone’s unique needs.

The participants of this focus group were not interested in a computer system aboard the shuttle buses. They said that they would prefer a human guide to a computer. The information that they said was important to have access to included information about current happenings in the park, such as rates at the hotels or special events. They also want information about wolf and other wildlife activity, such as their feeding habits and lifecycles, or research that is currently going on in the park studying the wildlife and geology. They said the more information available, the better, and it should be presented in different formats for different people, for example children versus people with a Ph.D. in biology.

Information that was rated as important to have access to while in the park was nature, wildlife, geology, road conditions and weather, and special events. Information that was rated as not important to have access to was shopping information and games.

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