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Bureau of Land Management**

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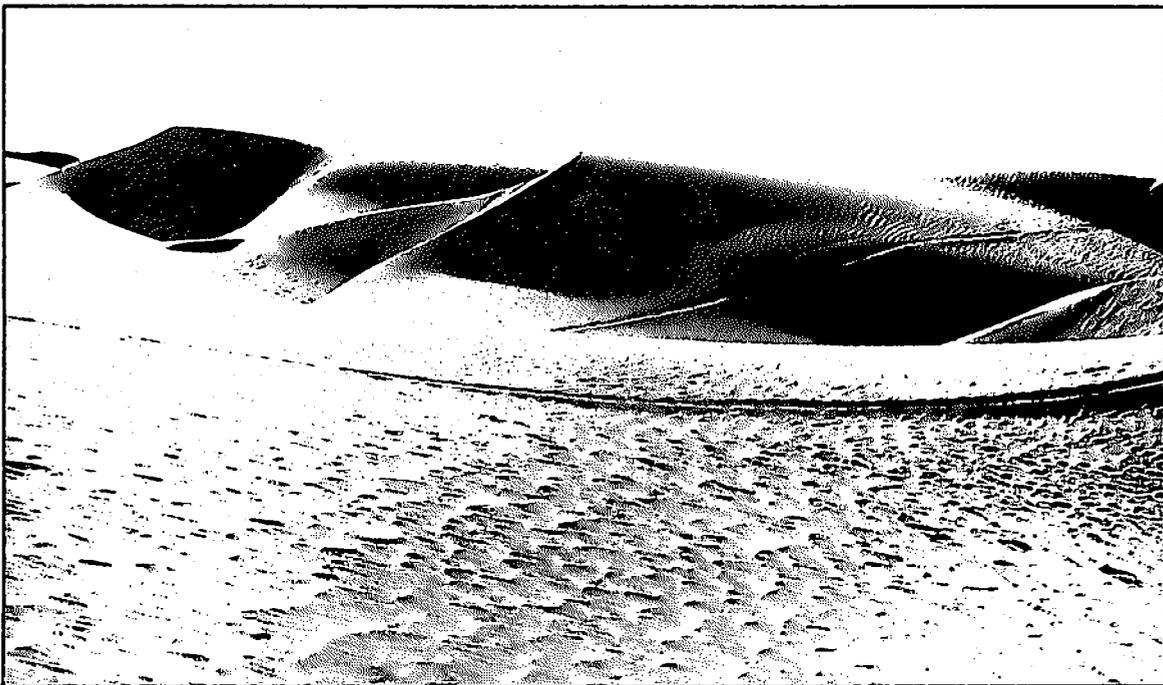
**United States Department of Agriculture  
U. S. Forest Service  
Pacific Southwest Research Station**

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# Imperial Sand Dunes

## Visitor Research Case Study



**Submitted by:**

*Deborah Chavez  
Supervisory Social Scientist, Pacific Southwest Research Station  
USDA Forest Service*

*Patricia L. Winter, Ph.D.  
Research Scientist, Pacific Southwest Research Station  
USDA Forest Service*

*John Baas, Ph.D.  
Assistant Professor  
Colorado State University*

**Research Coordinator:**

*Robert M. Laidlaw  
Senior Social Scientist, Bureau of Land Management  
U.S. Department of the Interior*

**BLM Production Staff**

*Jim Pickering, Photographer  
Michael Beaucage, Layout*

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## *Foreword*

In 1990 the California State Office of the Bureau of Land Management, in cooperation with Dr. Alan Ewert of the Pacific Southwest Research Station (PSW) USDA Forest Service initiated a multiple-year pilot research program examining human aspects of public land management. This study represents the second in a series of publications being produced to disseminate the findings of this program. Common to each of these publications, the research reflected in this study represents a critical examination of the changing land management environment and service delivery demands on public lands.

The Imperial Sand Dunes, located at the eastern Imperial Valley in Southern California, is one of the most popular Off-Highway Vehicle recreation areas in the western United States. In an effort to increase the quality of service delivery, the BLM, in cooperation with the PSW, initiated a study to examine patterns of recreation use, visitor profile, potential health and safety issues and strategies for increasing management effectiveness.

This research project also specifically evaluated the management utility of problem-oriented research compared to more traditional generalized questionnaires. One goal of the research pilot is to develop a model for optimizing data collection strategies to address the practical management issues facing land management agencies.

Similar to a previous study of cultural diversity in the Mecca Hills (also in Southern California) the Imperial Sand Dunes research design was problem-oriented and directed toward clarifying management communication, user satisfaction and service delivery issues. A number of characteristics are common to all of the specific research projects undertaken in this pilot program:

1. The development of **management problem statements** and goal analyses. Research is based upon the identification of information needs and/or identified management problems at the field office level.
2. The development of a context-specific **data collection instrument**. Although the research methodology and general profile information is common to all projects, the research format provides for the identification of research questions to respond to the management issues in each research setting.
3. **Coordinated data collection** (BLM/PSW) and interim response monitoring and evaluation. The daily working relationship of the research team is through the appropriate BLM Resource Area office(s). Data collected by the team is regularly evaluated in conjunction with BLM management and program specialists. In this manner, interim research data and monitoring results may be evaluated and adjusted to address issues that emerge during fieldwork.

4. **Development of Visitor Profile and Management Issues Analysis (Data Analysis).** An immediate product of all research projects is the development of information on public land visitors and discussion of the relationship between visitors and BLM management objectives and resources.

5. **Development of management implications and response options.** One of the primary objects of this research program is to identify specific management options for the BLM manager to achieve desirable changes in agency-visitor interaction and accomplish management goals. To the greatest extent possible, these options are developed within existing staffing and funding levels with the goal of increasing compliance and reducing workload.

6. **Monitoring of agency-visitor interaction.** Research field teams monitor agency relationships with the public, attitudes toward agency programs and personnel and levels of public information about agency programs. These data may be effectively applied to the development of agency service delivery and information strategies.

7. **Preparation of case studies, project reports and comparative analysis.** These documents provide a comprehensive summary of focused research projects and an analysis of factors, which may be common to the management environment across a number of Bureau offices or geographic regions.

8. **Technology Transfer.** The results of field research and analysis are valuable to the Bureau only if they are relevant to day-to-day management and cast in terms that are responsive to the agency's mission. Each project incorporates the translation of data and analysis into implications for managers. These factors are evaluated with BLM management cooperatively with BLM management. Formal and informal training for both managers and technical staff accomplished at the conclusion of each project.

Human interaction with the nation's public lands and resources represent a critical component of an integrated and flexible approach to a changing environment. The results of this and the other pilot studies in this series will contribute to the development of an integrated ecosystem-based management strategy. With the diversification and evolution of human interaction with public lands, research such as this will play a growing role in resource management and adaptation.

Robert M. Laidlaw  
Senior Social Scientist  
Bureau of Land Management

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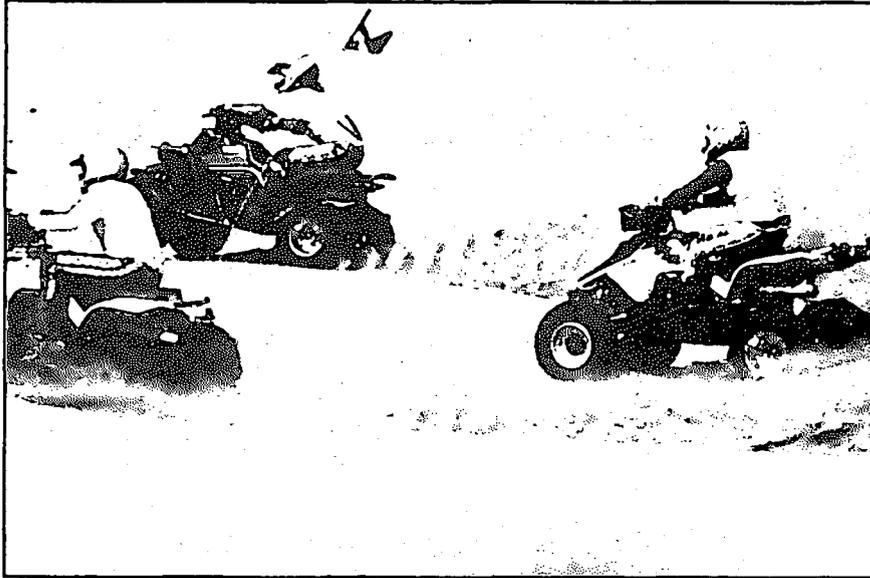
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## Visitor Research Pilot Study at Imperial Sand Dunes

### *Executive Summary*

The Bureau of Land Management (BLM) in cooperation with the Pacific Southwest Research Station of the United States Department of Agriculture initiated a pilot study of visitor use at the Imperial Sand Dunes recreation area in southern California. The purpose of this study was twofold. One purpose was to describe the socio-demographic characteristics of visitors to Imperial Sand Dunes as well as the importance of and visitor satisfaction with the area's natural and cultural features, types of information used to learn about the area, types of information desired, activity patterns, perceptions of crowding, perceptions of safety and knowledge of BLM's mission as a multiple use agency. Results will provide resource managers with information about people who use the area, where and when they visit the area, and what they would like from management in terms of customer service. A second purpose was to evaluate and compare two survey instruments for addressing BLM recreation management and planning issues. One survey known as "CUSTOMER" had standardized (generalized non-specific) questions and was administered at the East Mojave National Scenic Area. A site-specific study was designed and administered at Imperial Sand Dunes. Results of the visitor survey at Imperial Sand Dunes are being used to develop recommendations for information services, facility development and other service delivery strategies. A comparison of the two survey instruments will help determine whether generic or problem-related instruments have more utility for management decision-making.

Data collection at Imperial Sand Dunes occurred on weekends from November, 1991 to February, 1992. Because of the number of issues the resource managers were addressing, two versions of the survey were administered to visitors on-site. Two hundred and ninety-eight visitors completed one version, and another 307 visitors completed the other version for a total of 605 responses. Surveys were available in English or Spanish.

A preliminary analysis of the Imperial Sand Dunes data characterize visitors as predominately Anglo (68 percent), relatively young (85 percent were 45 years of age or younger) and most (91 percent)

had at least a high school education. Most visitors (82 percent) were from California, another 15 percent were from Arizona. The most frequently mentioned activity in which visitors participated was off-highway vehicle (OHV) riding (90 percent). However, only about one-third of the sample (35 percent) listed OHV riding as the primary reason for visiting the dunes. Other reasons included: the dunes, friends, open space, play, accessible, curiosity, to get away, vacation and to race. The majority of visitors (94 percent) learned about the ISD from friends and family, and less than one-third (32 percent) were aware of the visitor center at the Cahuilla Ranger Station.

Responses to questions regarding perceptions of problems and desired improvements indicate the majority of the sample are satisfied with the dunes in their current condition. For example, average responses for perceptions of problems ranged from 1.3 to 2.8 (on a scale where 1=not a problem and 5=very serious problem). Overall ratings for adding facilities were somewhat higher, ranging from 2.6 to 3.7 (on a scale where 1=not very important and 5=very important). These results suggest that change is not highly desired among the overall visitor sample.

Analysis of responses by first time and more experienced visitors indicated that first time visitors were more inclined to visit the dunes for reasons other than OHV riding (such as to be with friends) than were more experienced visitors. First time visitors demonstrated less awareness of the visitor center and were less aware of the new OHV regulations affecting minors. First time visitors expressed greater concern about the lack of garbage cans while more experienced visitors perceived people riding without helmets, not enough camping spaces and too few parking places as more serious problems. First time visitors were concerned about safety at all sites while more experienced visitors were most concerned with safety along Highway 78. To better serve first time visitors to the ISD, resource managers should focus their efforts on improving awareness of information services, especially about safety issues, and provide more garbage disposal sites.

Analyses of differences between California and Arizona visitors show that visitors from Arizona are more likely to be first time visitors, are more sensitive to crowding and express a greater desire for facility development than visitors from California.

Analyses for differences between groups who perceived the area as crowded and those who did not indicated that visitors who didn't think the area was crowded were slightly more supportive of leaving the dunes the way they are. Both groups listed their primary activities as riding, recreation and relaxation and both groups perceived safety issues similarly--sensing problems along Highway 78, the Glamis store, Competition Hill and Oldsmobile Hill.

The other purpose of this study was to evaluate and compare the CUSTOMER survey implemented at the East Mojave National Scenic Area with the Imperial Sand Dunes (ISD) survey for addressing BLM recreation management and planning issues. A set of randomly selected questions and the results from both surveys were reviewed by 9 individuals, (BLM managers and university recreation researchers). The specific (BLM) survey received a higher level of support for addressing management problems and for planning recreation projects. CUSTOMER received greater support for assessing regional recreation trends. When asked to select an instrument for its' overall utility over half (56 percent) chose the BLM survey, 33 percent chose both surveys, and 11 percent said neither was useful. Results of these reviews suggest that a specific survey instrument may be better than a standardized instrument for addressing BLM management and planning issues. Results also suggest better survey instrument development is needed to assess regional recreation trends.

# Visitor Research Case Study:

## The Imperial Sand Dunes

### *Introduction*

Recreational use of Bureau of Land Management (BLM) lands in Southern California is popular and growing. Many of these areas are within a two hour drive of 15 million people living in an urban environment. Individuals from urban areas are culturally diverse, representing Asian, Anglo and African American races, as well as Hispanic and Mideastern cultures. These individuals participate in a variety of recreation activities, some of which are nontraditional uses, such as hang gliding or mountain biking. The increasing use of recreation areas by diverse cultural and recreation user groups is a relatively recent occurrence (Laidlaw, 1991).

This emerging situation represents a significant challenge to management. Traditional public land recreation management has focused upon more primitive, undeveloped types of recreation opportunities for predominately Anglo visitors. The situation in Southern California is a departure from historic patterns of public land use. Research is being undertaken to better manage BLM lands for diverse urban populations who recreate on them, and to better understand the varied activities that occur there. It is likely that recreation areas near large urban centers in other parts of the country face a similar situation.

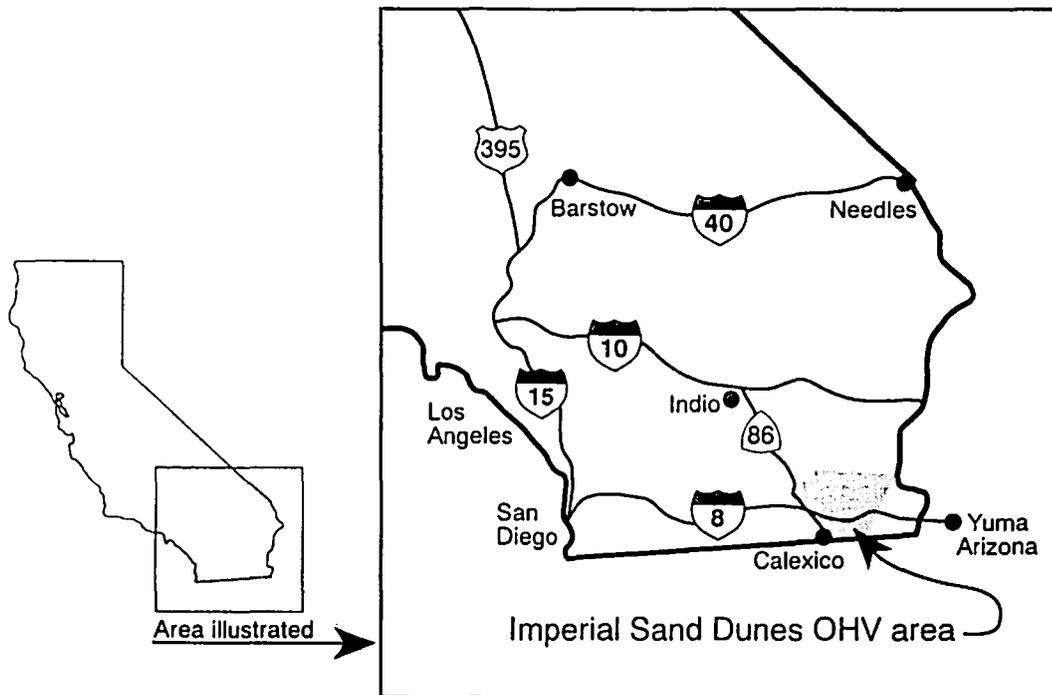
Research at the Imperial Sand Dunes was initiated to specifically examine apparent changes in recreation use of an off highway vehicle area on BLM lands in Southern California. BLM sought to identify the characteristics of a changing management environment that would not only address the site specific issues at the Imperial Sand Dunes, but which might also be useful for addressing similar issues in other BLM recreation locations. The Forest Service research staff hoped that research would reveal effective visitor management strategies for dealing with culturally diverse users; the mission statement of the recreation research unit at PSW.

The purpose of the study at the Imperial Sand Dunes was twofold. One purpose was to investigate and describe recreation use at the Imperial Sand Dunes Recreation area, which is within a two hour drive of the San Diego/Orange County area, and a three hour drive from the Phoenix area. Another purpose was to compare and evaluate the utility of two survey instruments for addressing BLM recreation issues, using results of this study and another conducted at the East Mojave National Scenic Area.

## Study Objectives

1. Describe visitors to the Imperial Sand Dunes area in terms of socio-demographics, activities pursued, and reasons for using the area.
2. Describe visitors' awareness of the Cahuilla visitor information center, new regulations affecting minors and OHVs, and visitor's preferences for information types and media at Imperial Sand Dunes.
3. Describe visitors in terms of their perceptions of problems at the Sand Dunes, such as safety and crowding, and their perceptions of the BLM's management role at the Dunes.
4. Describe visitor preferences for development and services at the Imperial Sand Dunes.
5. Determine if there are differences among first time and more experienced users regarding the above variables.
6. Determine if there are differences among users who perceived and did not perceive the area as crowded.
7. Compare the usefulness of results obtained from the CUSTOMER instrument with the one developed for the Imperial Sand Dunes (ISD) study for addressing BLM recreation management and planning needs.

Figure 1. Study Area Location - The Imperial Sand Dunes



## *Methods*

### Study Area

The Imperial Sand Dunes (ISD) are located in the southern California desert, just north of the Mexican border (please see Figure One). The dunes are within a two hour drive of the San Diego area, and three hours from Phoenix. During peak use, holiday weekends as many as an estimated 30,000 recreationists visit the area.

### Study Approach

Data were collected using self-administered questionnaires. The on-site surveys were administered to recreationists at the Sand Dunes by a research team from California State University at Pomona. Participation from visitors was voluntary. Visitors had the option of completing surveys in English or Spanish.

### Instrument Development

In a series of inter-agency meetings, several issues were identified by resource managers and researchers as important management concerns for the Sand Dunes area. These issues included safety and crowding, visitor awareness of the BLM's management mandate (i.e., that they are required by law to manage for multiple resources, not just recreation), information sources visitors need or desire, visitor preferences for development and improved services, and visitors' perceptions of problems.

The research development team was concerned that administering a single on-site instrument that covered the breadth of issues identified by BLM managers would impose an excessive burden on visitors' time, two survey instruments were developed. The last section for each survey was comprised of identical questions to enable general comparisons between the subsamples completing the two questionnaires. Surveys were color coded to help ensure an equal number of each was distributed. A copy of each is in Appendix A.

The "Yellow" Survey. Information collected in the first section of the "yellow" survey included group size and composition, first time visit or not, primary purpose of the visit, other places visited, and most important activities in which visitors engaged. The second section asked about visitor perceptions of the BLM management emphasis, and the need for regulation of OHV recreationists' behavior. Questions in this section were written in a Likert Scale format, with 1= strongly disagree and 5= strongly agree. The third section examined visitor perceptions of crowding and safety problems, and awareness of new regulations about minors' use of OHVs. The last section focused on socio-demographic information and was identical to that on the other (green) survey. Yellow surveys were collected from 307 visitors.

The "Green" Survey. Information collected in the first section of the "green survey" focused on why people visited the Dunes, visitation patterns (frequency and time of use), and perceived importance of development of facilities and services. The questions on development had a 5 point scale where 1= not important and 5= very important. The second section addressed visitor perceptions of problems. These questions were written in Likert Scale form where 1= not a problem and 5= very serious problem. Another section of the questionnaire addressed communication issues and asked what types of information visitors sought at the Dunes and the types of media they would prefer to use when at the Dunes. The last section focused on socio-demographic information and was identical to that on the other (yellow) survey. Green surveys were collected from 298 visitors.

Table 1 describes the relationship between the study objectives and the survey questions used to obtain information for each objective. The instruments were pretested during September, 1991. Substantive changes were not made in the instruments as a result of the pretest.

Table 1. Relationship between study objectives and survey questions

<u>Study Objectives</u>	<u>Question#/Survey</u>
1. Describe visitors to the Imperial Sand Dunes area in terms of socio-demographics, ethnicity, activities pursued, and reasons for using the area.	11-18 "green" 10-17 "yellow" 9 "yellow" 3c "yellow" 1 "green"
2. Describe visitors' awareness of the Cahuilla visitor information center, new regulations affecting minors and OHVs, and visitor's preferences for information types and media at Imperial Sand Dunes.	7-10 "green" 8 "yellow"
3. Describe visitors' perceptions of problems at the Sand Dunes, such as safety and crowding, and their perceptions of the BLM's management role.	4-6 "yellow" 5 "green"
4. Describe visitor preferences for development and services at the Imperial Sand Dunes.	4 "green"
5. Determine if there are differences among first time and more experienced users regarding the above variables.	1b "yellow" 2b "green" w/above questions
6. Determine if there are differences among users who perceived and did not perceive the area as crowded.	7 "yellow"
7. Compare the usefulness of results obtained from the CUSTOMER instrument with the one for the ISD study for addressing BLM recreation management and planning needs.	Randomly selected questions from each survey

## Sampling

The desired sample size for each survey was 300 respondents. To meet this objective, data were collected from visitors for 8 days, all on weekends, half on holiday weekends, and half on non-holiday weekends.

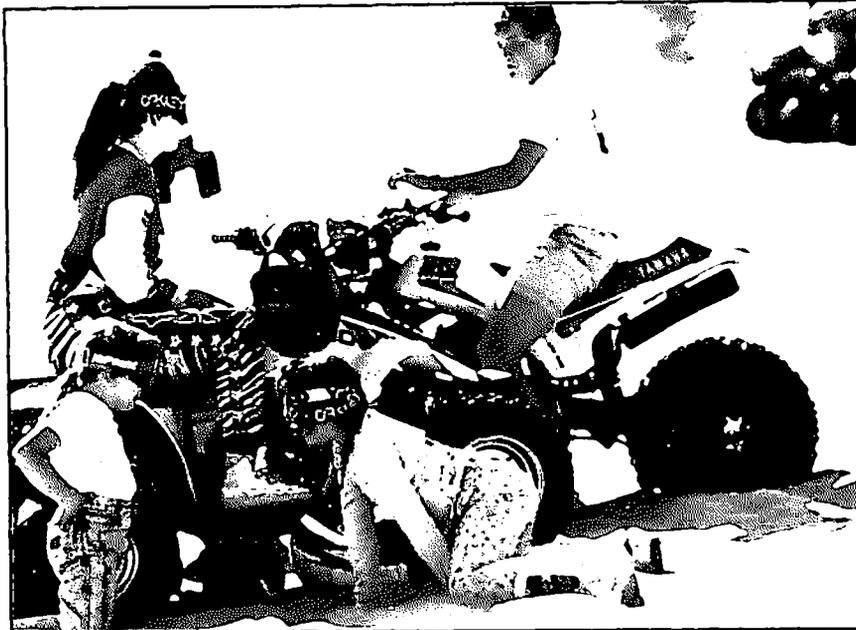
Table 2 displays the number of completed surveys by date. After data collection had been started a change in the sampling schedule was made to increase respondent participation. During Sunday mornings some difficulty was encountered in trying to solicit participation; many people were preparing to go home when contacted by the research team. In response to this, the sampling schedule was changed after the first three weekends and a Friday afternoon was used as a contact time rather than Sunday morning.

Table 2. Number of completed surveys by date

<u>Date</u>	<u>Number of Completed Surveys</u>
November 2-3	138
November 30-December 1	179
December 6-7	160
March 6-7	128
Total	605

## Data Collection for CUSTOMER and ISD Survey Comparison and Evaluation

An evaluation packet that included a cover letter, and randomly selected questions (and responses to those questions) from each survey were mailed to 12 individuals. These individuals were selected to ensure that a range of reviews would be obtained from university researchers and recreation planners at all levels within the BLM. The letter instructed them to review and evaluate the survey instruments with respect to several recreation management and planning criteria by September 1. Nine individuals returned completed evaluations.



### Data Analysis

Means and standard deviations were generated for all interval type variables, and percents were generated for all categorical variables for all respondents.

Several analyses by different subgroups were conducted, using t-tests or Chi-square tests where appropriate. One analysis examined responses by first time and more experienced users. Another focused on possible differences between visitors who thought the Dunes were crowded and those who did not.

Other analyses examined responses by gender, ethnic group (Anglos and Hispanics), and area of residence. Statistically significant differences between different ethnic groups and by gender were not found and are not reported.

### Results

#### **Objective One:**

**Describe visitors to the Imperial Sand Dunes area in terms of socio-demographics, activities pursued, and reasons for using the area.**

Table 3 provides a description of the overall sample. Most of the sample (66 percent) were male. Slightly more than half (56 percent) had a high school education. About three-quarters of the respondents were Anglo (68 percent), while about 1 in 8 (13 percent) identified themselves as Hispanic. Most of the sample used English as a primary language (82 percent) while less than one percent used Spanish as their primary language. Most respondents were from southern California (82 percent), another 15 percent were from Arizona. Only a small proportion of visitors reported they had some sort of impairment-- about 4 percent reported having a visual impairment and 2 percent reported having a hearing impairment. Less than 1 in ten (9 percent) belonged to an OHV club.

Table 3. Descriptive profile of total sample

	<u>Characteristic</u>	<u>Percent</u>
<b>Gender:</b>	Male	65.8
	Female	32.7
	Missing	1.5
		n=605
<b>Age:</b>	18 years old or less	7.8
	19-30	39.3
	31-45	37.7
	Over 45	12.4
	Missing	1.3
	n=605	
<b>Education Level:</b>	Less than high school	7.9
	High school	55.7
	Some college	18.2
	B.S. degree	12.9
	More than a B.S. degree	4.0
	Missing	1.3
	n=605	
<b>Impairments:</b>	Visual	3.8
	Hearing	2.0
	Mobility	0.8
	Mental	0.5
	n=605	
<b>Ethnicity:</b>	Anglo American	67.6
	Hispanic American	6.6
	Mexican	4.6
	Other groups	12.7
	Missing	8.5
	n=605	
<b>Languages Spoken:</b>	English	82.3
	Spanish	0.3
	Both	15.2
	Missing	2.2
	n=605	
<b>Area of Residence:</b>	California	81.7
	Arizona	14.7
	Other states	0.8
	Missing	2.8
	n=605	
<b>Member of an OHV Club:</b>		8.5
	(Green survey only)	n=307

Table 4 shows the most frequent activities pursued. OHV riding was most frequently listed (90 percent mentioned it as one of the three most important activities). Recreation was mentioned by 40 percent as one of the three activities in which they engage. Fewer than 20 percent mentioned relaxing, socializing, or drinking alcohol as one of the three most important activities. Other responses included open space, clean air, family, photography, sports, fun and vacation.

Table 4. Most frequently mentioned activities (Yellow)

<u>Response</u>	<u>Percent</u>
OHV riding	90.3
Recreation	40.3
Relaxing	17.3
Socializing	12.4
Drink alcohol	12.1
Other responses*	28.3
	n=307
* Other responses included open space, clean air, family, photography, sports, fun and vacation.	

Table 5 displays the responses to a question about what attracted visitors to the area. The most frequently mentioned responses were OHV riding (35 percent) followed by dunes (17 percent), friends (16 percent), open space (8 percent) and play (6 percent).

Table 5. Reasons for visiting the Imperial Sand Dunes (Green)

<u>Reason</u>	<u>Percent</u>
OHV riding	34.6
Sand dunes	16.8
Friends	15.8
Open space	7.7
Play	6.0
Accessible	3.7
Other reasons*	9.1
Missing	6.3
	n=298

A question on the “yellow” survey asked visitors to list the primary purpose of their trip. Table 6 displays the results. The three most frequent responses were OHV riding (57 percent), fun (27 percent), and recreation (6 percent).

Table 6. Most frequently mentioned primary purpose for visiting the Imperial Sand Dunes (Yellow)

<u>Primary Purpose</u>	<u>Percent</u>
OHV riding	56.7
Fun	26.7
Recreation	6.5
Sand dunes	2.3
Vacation	2.3
Other reasons*	4.2
Missing	1.3
	n=307
* Other reasons included drink alcohol, race, relax and socialize	

**Objective Two:**

**Describe visitors' awareness of the Cahuilla visitor information center, new regulations affecting minors and OHVs, and visitor preferences for information types and media at the Imperial Sand Dunes.**

Table 7 shows the responses for how visitors first learned about the Imperial Sand Dunes. Almost all the respondents (94 percent) learned about the area from family or friends. Less than one percent learned about the Dunes from either the BLM, from State Parks information, or from any other sources.

Table 7. How visitors first learned about the Imperial Sand Dunes (Green)

<u>Response</u>	<u>Percent</u>
Friends or family	93.6
From the BLM	0.7
State parks	0.7
Discover	0.3
Magazine	0.3
Missing	3.1
Other	1.3
	n=298

Table 8 shows preferred ways of receiving information of interest about the area. Signs along the road (62 percent), notes on a bulletin board (57 percent) and a brochure given at the entrance to the area (51 percent) were the most preferred media. Less than half wanted to have a ranger contact them in their camp (40 percent), listen to a radio broadcast (36 percent), or go to an evening program at the ranger station (32 percent).

Table 8. Preferred ways of receiving information of interest (Green)\*

<u>Ways to Get Information</u>	<u>Percent</u>
Signs along the road	61.7
Notes on bulletin board	56.7
Brochure given at entrance to the area	51.3
Ranger who stops to visit	39.9
A radio broadcast	36.2
Evening program at information center	32.2
	n=298
* Responses do not sum to 100% since more than one response was permitted	

Table 9 reports the types of information visitors would like to receive. About half the sample (51 percent) would like to receive information on safety, while almost half would like information on agency practices that affect riding opportunities (46 percent) and rules and regulations for the dunes (45 percent). About one-third would like information on the natural features of the area (40 percent), the cultural features of the area (33 percent), or information about what to see and do in the area (30 percent).

Table 9. Types of information of interest to visitors (Green)\*

<u>Information About</u>	<u>Percent</u>
Safety	50.7
Agency management practices that could affect OHV riding	46.3
The area's rules and regulations	44.6
Natural features of area	39.6
Cultural features of area	33.2
Things to see and do	30.5
Other	1.6
	n=298
* Responses do not sum to 100% since more than one response was permitted	

Table 10 reports findings related to use of the Cahuilla Ranger Station. About a third of the respondents were aware of the center (32 percent), while about one in ten (12 percent) had visited it. Most of the respondents who went to the visitor center were seeking general information about the area.

Table 10. Awareness of visitor center, proportion of those who visited it and the types of Information or services sought (Green)

	<u>Percent</u>
Awareness of visitor center	31.9
	n=298
Visited the center	12.4
Types of Information Sought*	
General information	43.2
Safety	5.4
Emergencies	2.7
Activities	2.7
Other	8.1
Missing	37.9
	n=37
* Applies only to those who visited the center	

Table 11 reports visitor awareness and knowledge about the new OHV regulations affecting minors. About half were aware of the regulations (55 percent), and among these one-quarter (25 percent) correctly described at least one portion of the regulations.

Table 11. Awareness of new OHV regulations affecting minors (Yellow)

<u>Question</u>	<u>Percent</u>
Are you aware of the new regulations affecting minors?	54.7
	n=307
Proportion of visitors who correctly described at least one part of the new regulations *	25.0
	n=168
* The proportions are reported only for those who were aware of the new regulations	



**Objective Three:**

**Describe visitors in terms of their perceptions of problems at the Sand Dunes, such as safety and crowding and their perceptions of the BLM's management role at the Dunes.**

Table 12 shows means for visitor perceptions of potential problems at the Imperial Sand Dunes. Items in the table measured such issues as site amenities (such as toilet facilities, trash cans, camp areas, etc.), law enforcement (such as people riding without a helmet, people riding too fast, people drinking alcoholic beverages while riding, etc.) and people issues (such as people shouting and yelling, people playing radios too loudly, etc.). Visitors did not give high ratings to the items listed--meaning that these items were not thought to be a problem of serious concern.

Additional analyses were done to determine whether perceptions of problems varied by visitors contacted on Thanksgiving weekend versus other weekends. Some statistically significant differences were found among these subgroups however neither group perceived these issues as a problem or very serious problem (i.e., all average scores were 3.5 or below).

Table 12. Perceptions of problems (Green)\*

To what extent did you find	<u>Mean</u>	<u>SD</u>	<u>n</u>
Inadequate toilet facilities	2.8	1.5	287
Litter	2.6	1.2	290
Too few garbage cans	2.4	1.3	291
People riding without a helmet	2.4	1.3	287
People drinking alcoholic beverages while riding	2.3	1.3	280
Too few parking places	2.3	1.3	286
Not knowing who to contact in an emergency	2.2	1.4	288
Not enough camping spots	2.2	1.4	292
People riding too fast	2.0	1.1	291
People breaking the law	1.9	1.1	281
Someone in your group being injured	1.8	1.2	285
Too many rules/regulations	1.7	1.2	287
Damage or loss of personal property	1.6	1.1	286
People shouting and yelling	1.5	0.8	291
People playing loud radios	1.5	0.8	289
Not enough information about things to see and do	1.4	0.8	283
Conflicts between your group and other groups	1.4	0.7	288
Graffiti	1.3	0.7	279

\* Responses ranged from 1= not a problem to 5= very serious problem

Table 13 shows visitors' perceptions of safety problems at various locations. The locations perceived to have the most serious safety problems were along Highway 78 and at the Glamis store. For these locations, about one-third of the visitors responded "yes" or "sometimes" that high numbers of users were creating a safety problem (35 percent for along Highway 78 and 30 percent for the Glamis store). Buttercup-Gray's Well Road received the lowest amount of concern, where only 12 percent of the respondents indicated "yes" or "sometimes" that high numbers of users were creating a safety problem.

Table 13. Perceptions of riders creating safety problems (Yellow)\*

<u>Item</u>	<u>Percent No</u>	<u>Percent Yes</u>	<u>Percent Sometimes</u>	<u>Percent Don't Know</u>
Along Highway 78	42.0	12.7	22.5	18.9
Glamis store	52.8	9.8	19.9	13.0
Competition Hill	58.6	5.5	19.9	11.1
Oldsmobile Hill	57.0	5.5	18.2	14.0
Gecko Campground	56.4	4.2	16.6	17.9
Dune Buggy Flats	50.2	2.6	11.4	29.6
Buttercup-Gray's Well Road	50.5	1.3	10.4	31.9

\* n= 307

Table 14 shows that about a third (32 percent) of the sample had seen at least one accident during their last two visits to the Dunes, and that the average number of accidents observed was 2.

Table 14. Visitors who observed OHV accidents during their last two visits and the average number of accidents observed (Yellow)\*

Visitor who indicated they had seen an accident in last two visits to the Dunes	<u>Percent</u>		
	31.6		
	n=307		
Average number of accidents observed*	<u>Mean</u>	<u>SD</u>	<u>n</u>
	2.0	1.6	91

\* Based only on those who reported seeing an accident

Respondents were given an opportunity to express level of agreement or disagreement with some management regulations and management emphasis areas. Table 15 shows average levels of agreement or disagreement resulting from a scale ranging from 1 = strongly disagree to 5 = strongly agree. Respondents agreed or strongly agreed with the following statements: visitors should be allowed to build open fires, it is a good idea to have a safety flag on all OHVs, managers should leave the dunes pretty much the way they are, there should be speed limits in camping areas, it is a good idea to not allow glass containers at the dunes and children should be allowed to ride in the dunes.

The lowest level of agreement (average score of 2.5) was for the following statement: there are several animal and plant species here that are threatened or endangered.

Table 15. Level of agreement with statements about management regulations and management emphasis areas (Yellow)

<u>Item</u>	<u>Mean</u>	<u>SD</u>	<u>n</u>
Visitors should be allowed to build open fires	4.4	0.9	303
It is a good idea to have a safety flag on all OHVs	4.4	1.0	301
Managers should leave the dunes pretty much the way they are	4.2	0.9	303
There should be speed limits in camping areas	4.0	1.1	302
It is a good idea to not allow glass containers here	3.9	1.4	300
Children should be allowed to ride in the dunes	3.6	1.0	298
The sand dunes are a place to ride for beginners	3.5	1.1	302
It is important to have someone manage the sand dunes	3.3	1.3	298
It is a good idea to have a 15 mph speed limit fo OHV's within 500 feet of the highways	3.5	1.3	299
The sand dunes are a safe place to ride for children	3.5	1.0	305
Managers should do all they can to protect endangered plants and animals	3.1	1.2	299
Managers manage the Dunes for more than just recreation use	3.1	1.1	301
Visitors should be allowed to camp on the shoulder of Highway 78	2.6	1.2	298
There are several animal and plant species here that are threatened or endangered	2.5	1.0	300
* Responses ranged from 1= strongly disagree to 5= strongly agree			



**Objective Four:**

**Describe visitor preferences for development and services at the Imperial Sand Dunes.**

Ratings of the importance of various site amenities is reported in Table 16. The rating scale ranged from 1 = very unimportant to 5 = very important. Water availability (mean= 3.7), telephones (mean= 3.7) and more camping sites (mean= 3.4) were considered the most important features that could be added to the dunes. Picnic tables (mean= 2.8) and recreation equipment rentals (mean= 2.6) were considered the least important features that could be added to the dunes.

Table 16. Importance of adding facilities (Green)\*

	<u>Mean</u>	<u>SD</u>	<u>n</u>
Water availability	3.7	1.4	281
Telephones	3.7	1.3	280
More camping sites	3.4	1.5	278
Group facilities	3.2	1.3	257
Fire rings	3.1	1.4	275
Educational programs	3.0	1.3	254
Cooking grills	2.8	1.3	271
Picnic tables	2.8	1.3	271
Recreation equipment rentals	2.6	1.2	265

\* Responses range from 1= very unimportant to 5= very important

**Objective Five:**

**Determine if there are differences among first time and more experienced users regarding the above variables.**

Table 17 displays the most frequently mentioned activities by first time and more experienced visitors. For both groups the three activities mentioned most were riding, recreation and relaxation.

Table 17. Most frequently mentioned activities by first time and more experienced visitors (Yellow)

<u>Response</u>	<u>First Time Percent</u>	<u>More Experienced Percent</u>
Riding	86.0	93.0
Recreation	44.0	40.5
Relax	22.0	16.1
Fun	14.0	9.6
Socializing	8.0	9.1
Other activities*	26.0	35.2
	n=50	n=230

\*Other activities included drink alcohol, race and open space

Table 18 shows reasons why visitors go to the Imperial Sand Dunes. While about half of the first time visitors (50 percent) reported friends as a primary reason to go to the dunes, only 12 percent of the more experienced visitors considered this their primary reason for visiting the dunes. More experienced visitors report OHV riding (36 percent) and the sand dunes (17 percent) as primary reasons they visit the Imperial Sand Dunes.

Table 18. Most frequently mentioned reasons for visiting the Imperial Sand Dunes by first time and more experienced visitors (Green)\*

<u>Reasons</u>	<u>First Time Percent</u>	<u>More Experienced Percent</u>
Friends	50.0	12.2
OHV riding	17.9	36.3
Sand dunes	14.3	17.0
Recreation	3.7	3.7
Open space	3.6	8.1
Accessible	0.0	4.1
Other reasons*	7.1	5.2
Missing	3.4	13.4
	n=28	n=270

\* Other reasons included: the dunes, drink alcohol, race, and vacation

Table 19 reports how visitors first learned about the Sand Dunes. The majority of both groups first learned about the Sand Dunes from friends and family.

Table 19. Percentage responses for first time and more experienced visitors (about How They First learned about the area) (Green)

<u>Source</u>	<u>First Time Percent</u>	<u>More Experienced Percent</u>
From friends or family	96.4	93.3
BLM	0.0	0.7
State park	0.0	0.7
Discover area	0.0	0.4
From magazine	0.0	0.4
Other	0.0	1.5
Missing	3.6	3.0
	n=28	n=270

Table 20 displays responses for how visitors prefer to receive information. First time visitors prefer to receive information by brochures given at the entrance (64 percent) or signs along the road (61 percent) while more experienced visitors prefer signs along the road (62 percent) or notes on a bulletin board (58 percent).

Table 20. preferred ways of receiving information by first time and more experienced visitors (Green)

<u>Item</u>	<u>First Time Percent</u>	<u>More Experienced Percent</u>
Brochure given at entrance	64.3	50.0
Signs along the road	60.7	61.9
Notes on bulletin board	46.4	57.8
Ranger who stops by for visit	39.3	40.0
A radio broadcast	32.1	36.7
Evening program at information center	25.9	33.0
* Responses do not sum to 100% since more than one response was permitted		

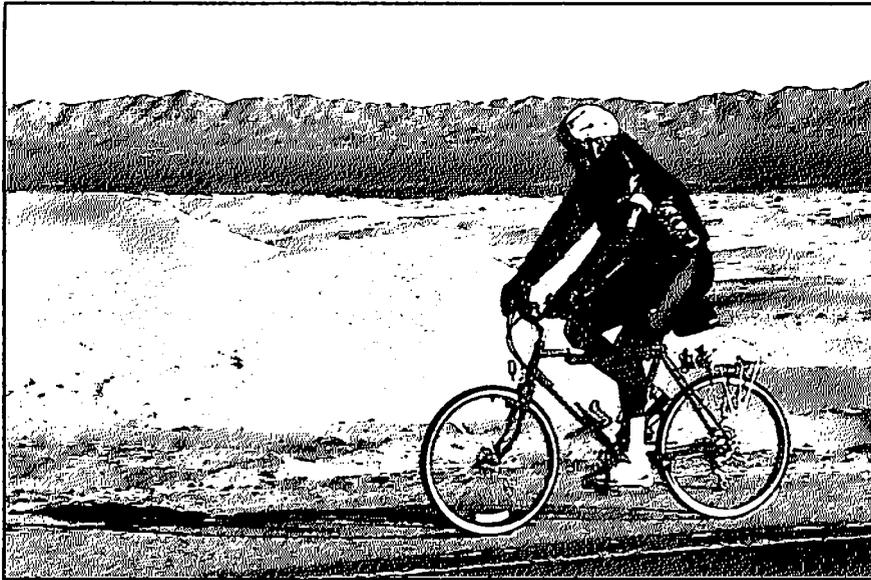


Table 21 shows responses for the kinds of information people want to receive. First time users are interested in receiving information about things to see and do in the area (57 percent), the natural features of the area (57 percent), safety (43 percent) and the area's rules and regulations (43 percent). More experienced visitors are interested in receiving information on safety (52 percent), agency management practices that could affect OHV riding (47 percent), the natural features of the area (38 percent) and the cultural features of the area (34 percent).

Table 21. Types of information of interest to first time and more experienced visitors (Green)

<u>Information About</u>	<u>First time Percent</u>	<u>More Experienced Percent</u>
Things to see and do*	57.1	27.8
Natural features of area*	57.1	37.8
Safety	42.8	51.5
The area's rules and regulations	42.8	44.8
Agency management practices that could affect OHV riding	39.3	47.0
Cultural features of area	28.6	33.7
Other	3.6	3.3
	n=28	n=270

Table 22 gives information for the proportion of visitors aware of the visitor center at the Cahuilla Ranger Station, the proportion who visited it and the kinds of information sought there. About a third (35 percent) of more experienced visitors were aware of the visitor center in contrast to one person among first time visitors. Those more experienced visitors who were aware of the center sought mostly general information (43 percent).

Table 22. Awareness of visitor center, proportion who stopped at it, and types of information or services sought by first time and more experienced visitors (Green)

<u>Question</u>	<u>First Time Percent</u>	<u>More Experienced Percent</u>
Awareness of visitor center*	3.6 n=28	34.8 n=270
Have you visited it?		
Yes	0.0 n=28	13.7 n=270
Type of Information Sought Among More Experienced Visitors**		
		<u>Percent</u>
General information		43.2
Emergency		10.8
Safety		5.4
Activities		2.7
Other		8.1
Missing		29.8
n=37		
* The Chi-square statistic is significant at $p < .01$		
** Based only on those who reported that they stopped at the visitor's center		

Table 23 gives responses for awareness and knowledge of the new OHV regulations affecting minors. About six out of ten more experienced visitors (60 percent) were aware of the regulations, as compared to about a third (32 percent) of the first time visitors. Number of correct responses was similar between the two groups with those having more OHV experience getting slightly more questions correct.

Table 23. Awareness and knowledge of new OHV regulations affecting minors by first time and more experienced visitors (Yellow)

<u>Question</u>	<u>First Time Percent</u>	<u>More Experienced Percent</u>
Are you aware of the new OHV regulations affecting minors?	32.0 n=50	59.6 n=230
<u>Number of Correct Responses*</u>	<u>First Time Percent</u>	<u>More Experienced Percent</u>
0	68.8	60.6
1	31.1	24.8
2	0.0	0.7
3	0.0	1.5
Missing	0.1 n=16	12.4 n=137
* Applies to only those who reported being aware of the new OHV regulations		

Table 24 displays average scores for visitor responses to possible problems encountered at the Imperial Sand Dunes. Several statistically significant differences were found. First time visitors exhibited greater concern than more experienced visitors for “too few garbage cans” while the more experienced visitors thought the following were more problematic than did the first time visitors: people riding without a helmet, not enough camping spots and too few parking places.

Table 24. Perceptions of problems by first time and more experienced visitors (Green)

<u>Item</u>	<u>First Time</u>			<u>More Experienced</u>			
	<u>Mean</u>	<u>SD</u>	<u>n</u>	<u>Mean</u>	<u>SD</u>	<u>n</u>	<u>p value</u>
Too few garbage cans	3.1	1.2	27	2.3	1.3	264	0.002
Not enough camping spots	1.7	1.1	27	2.3	1.4	265	0.03
People riding without a helmet	1.9	1.0	26	2.5	1.4	261	0.04
Too few parking places	1.8	1.2	27	2.3	1.4	261	0.04
Inadequate toilet facilities	2.8	1.6	26	2.8	1.5	265	NS
Litter	2.3	1.2	27	2.6	1.2	263	NS
People drinking alcoholic beverages while riding	2.2	1.4	24	2.3	1.3	256	NS
Not knowing who to contact in an emergency	2.2	1.4	26	2.1	1.4	262	NS
People breaking the law	2.0	0.8	25	2.0	1.1	256	NS
Someone in your group being injured	1.7	1.2	25	1.8	1.2	260	NS
People riding too fast	1.7	1.0	27	2.0	1.1	264	NS
Not enough information about things to see and do	1.6	0.9	24	1.4	0.8	259	NS
Damage or loss of personal property	1.5	1.0	26	1.6	1.1	260	NS
Conflicts between your group and others	1.4	0.8	25	1.4	0.7	263	NS
Too many rules/regulations	1.4	0.8	25	1.7	1.2	262	NS
People shouting and yelling	1.4	0.8	27	1.5	0.8	264	NS
People playing loud radios	1.3	0.5	27	1.5	0.8	262	NS
Graffiti	1.3	0.8	24	1.2	0.7	255	NS

\* Responses for perceptions of problems ranged from 1= not a problem to 5= very serious problem

Table 25 displays visitor perceptions of safety problems. Looking at response categories “yes” and “sometimes”, it appears that first time visitors were concerned about safety at all locations while more experienced visitors had the most concern for safety along Highway 78.

Table 25. Perception of OHV riders creating safety problems by first time and more experienced visitors (Yellow)

<u>Item</u>	First Time Visitors (n=50)			
	<u>No</u>	<u>Yes</u>	<u>Sometimes</u>	<u>Don't Know</u>
Along Highway 78	32.0	6.0	12.0	40.0
Glamis store	36.0	8.0	14.0	32.0
Gecko Campground	36.0	4.0	6.0	40.0
Dune Buggy Flats	40.0	4.0	6.0	40.0
Buttercup-Gray's Well Road	42.0	4.0	10.0	32.0
Oldsmobile Hill	44.0	6.0	10.0	30.0
Competition Hill	48.0	2.0	12.0	26.0
	More Experienced Visitors (n=230)			
	<u>No</u>	<u>Yes</u>	<u>Sometimes</u>	<u>Don't Know</u>
Along Highway 78	45.2	13.0	25.2	14.3
Dune Buggy Flats	51.7	2.6	13.0	28.3
Buttercup-Gray's Well Road	52.2	0.9	11.3	31.7
Glamis store	57.0	10.0	21.3	8.7
Gecko Campground	60.0	4.3	20.0	13.5
Oldsmobile Hill	60.0	5.2	20.9	10.4
Competition Hill	61.3	6.5	21.7	7.8

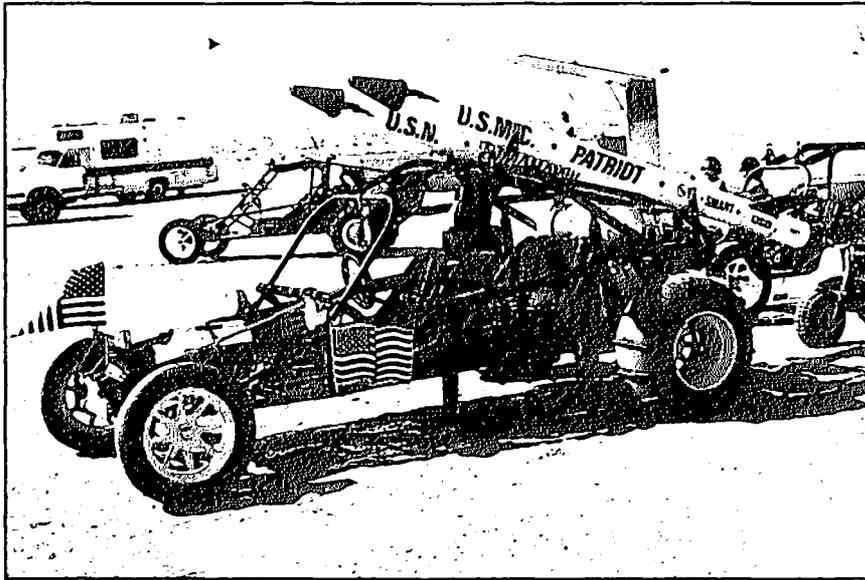


Table 26 gives responses for the proportion of visitors who had observed accidents during their last two visits to the dunes. About one-quarter (24 percent) of the first time visitors and one-third (33 percent) of the more experienced observed an accident on their visit and on average, they saw 2 accidents (1.5 on average for first time visitors and 2.0 on average number for more experienced visitors).

Table 26. Visitors who observed OHV accidents during their last two visits and the average number of accidents observed by first time and more experienced visitors (Yellow)

				<u>First Time Percent</u>	<u>More Experienced Percent</u>		
Visitors who indicated they had seen an accident in their last two visits to the dunes				24.0 n=50	32.6 n=230		
	<u>Mean</u>	<u>SD</u>	<u>_n</u>	<u>Mean</u>	<u>SD</u>	<u>_n</u>	
Average Number of Accidents Observed*	1.5	0.8	11	2.0	1.7	71	
* Reported only for those who had seen an accident. Responses to this question were open-ended. Fixed responses not provided.							

Table 27 shows level of agreement with statements about area management regulations and management emphases (such as threatened and endangered species protection). Only one statistically significant difference was found, where more experienced visitors agreed more strongly (mean= 3.7) than did first time visitors (3.3) with the statement that “children should be allowed to ride in the dunes.”

Table 27. Level of agreement with statements about management regulations and management emphasis areas by first time and more experienced visitors (Yellow)

<u>Item</u>	<u>First Time</u>			<u>More Experienced</u>			<u>p value</u>
	<u>Mean</u>	<u>SD</u>	<u>n</u>	<u>Mean</u>	<u>SD</u>	<u>n</u>	
It is a good idea to have a safety flag on all OHV's	4.5	0.9	47	4.5	1.0	228	NS
Visitors should be allowed to build open fires	4.3	0.9	49	4.4	0.9	227	NS
Managers should leave the dunes pretty much the way they are	4.2	0.8	48	4.2	1.0	228	NS
There should be speed limits in camping areas	4.0	1.0	49	4.0	1.1	226	NS
The sand dunes are a place to ride for beginners	3.7	0.9	49	3.4	1.1	226	NS
It's a good idea to not allow glass containers here	3.7	1.4	47	3.9	1.4	227	NS
Have a 15 mph speed limit for OHV's within 500 feet of the highways	3.5	1.2	47	3.6	1.3	226	NS
The sand dunes are a safe place to ride for children	3.3	1.0	49	3.6	1.0	229	NS
Children should be allowed to ride in the dunes	3.3	1.1	46	3.7	1.0	225	.05
It is important to have someone manage the sand dunes	3.3	1.1	47	3.3	1.3	224	NS
Managers manage the dunes for more than just recreation use	3.2	1.1	48	3.0	1.1	226	NS
Managers should do all they can to protect endangered plants and animals							
Visitors should be allowed to camp on the shoulder of Highway 78	2.6	1.2	46	2.5	1.2	226	NS
There are several animal and plant species here that are threatened or endangered	2.6	1.1	47	2.5	1.1	226	NS

\* Responses ranged from 1= strongly disagree to 5= strongly agree

Table 28 displays average scores for the importance of adding facilities to the area. In general, average scores for first time visitors are higher (except for telephones and water availability for which more experienced visitors give slightly higher importance ratings). Only two items are statistically significant where first time visitors think it is more important to have cooking grills (mean= 3.3 compared to 2.7 for more experienced visitors) and recreation equipment rentals (mean= 3.1 compared to 2.6 for more experienced visitors).

Table 28. Importance of adding new facilities by first time and more experienced visitors (Green)

	First Time			More Experienced			p value
	Mean	SD	n	Mean	SD	n	
More camping sites	3.7	1.2	24	3.4	1.5	254	NS
Group facilities	3.5	1.1	24	3.1	1.3	233	NS
Telephones	3.5	1.4	24	3.7	1.3	256	NS
Water availability	3.4	1.4	24	3.8	1.4	257	NS
Fire rings	3.3	1.4	23	3.1	1.4	252	NS
Cooking grills	3.3	1.4	24	2.7	1.3	247	0.03
Recreation equipment rentals	3.1	1.3	25	2.6	1.2	240	0.04
Educational programs	3.0	1.1	20	3.0	1.3	234	NS
Picnic tables	3.0	1.4	23	2.7	1.3	248	NS

\* Responses range from 1= very unimportant to 5= very important

Differences between Arizona and California Respondents. Table 29 indicates several statistically significant differences were found between Arizona and California residents. A lower proportion of those from Arizona (9 percent) were aware of the visitor center at the Cahuilla Ranger Station than were those from California (37 percent). Only 29 percent of visitors from Arizona were aware of the regulations affecting minors as compared to 60 percent of the visitors from California. Arizona visitors were more inclined to perceive the area as crowded (64 percent) than were those from California (47 percent). Arizona residents thought it was more important to add telephones (mean= 4.0) and picnic tables (mean= 3.3) to the area than did those from California (mean = 3.6 and 2.7, respectively). Visitors from Arizona also thought garbage disposal and inadequate toilet facilities

were greater problems than did those from California.

Table 29. Differences between visitors from Arizona and California\*

<u>Characteristic</u>	Arizona			California		
	<u>Percent</u>	<u>n</u>		<u>Percent</u>	<u>n</u>	
Awareness of visitor center (1)	8.9	45		37.3	236	
Awareness of new OHV regulations (2)	28.6	42		59.6	250	
Thought area was crowded (2)	63.6	44		47.0	249	
	<u>Mean</u>	<u>SD</u>	<u>n</u>	<u>Mean</u>	<u>SD</u>	<u>n</u>
Telephones (1) **	4.0	1.1	43	3.6	1.4	228
Picnic tables (1) **	3.3	1.4	43	2.7	1.2	219
Garbage disposal (1) ***	2.8	1.4	45	2.3	1.3	237
Toilets (1) ***	3.4	1.5	45	2.6	1.5	233

\* Statistically significant differences ( $p < 0.05$ ) were found for all characteristics displayed

\*\* Responses ranged from 1= not important to 5= very important

\*\*\* Responses ranged from 1= not a problem to 5= very serious problem

(1) Green survey  
(2) Yellow survey

**Objective Six:**

**Determine if there are differences among users who perceived and did not perceive the area as crowded.**

Table 30 displays the three most important activities done at the dunes by those who perceived the area to be crowded and those who did not. Both groups listed these three activities: riding, recreation and relaxation.

Table 30. Most frequently mentioned activities by visitors who thought the area was crowded and those who did not (Yellow)

<u>Activity</u>	<u>Crowded Percent</u>	<u>Not Crowded Percent</u>
Riding	91.2	94.8
Recreation	38.8	42.2
Relax	19.0	15.6
Socialize	12.9	11.0
Fun	10.2	10.4
Drink alcohol	3.4	3.2
Other activities	34.0	27.3
	n=147	n=154

Table 31 shows level of agreement with statements about management regulations and emphasis areas. In general, those who did not perceive the area to be crowded tended to more strongly agree with the statements evaluated. One statistically significant difference was found where the respondents in the not crowded group were slightly (mean=4.3) more supportive of the statement “managers should leave the dunes pretty much the way they are” than were those who thought the dunes were crowded (mean=4.1).

Table 31. Level of agreement with statements about management regulations and management emphasis areas (Yellow)\*

<u>Item</u>	<u>Crowded</u>			<u>Not Crowded</u>			<u>p value</u>
	<u>Mean</u>	<u>SD</u>	<u>n</u>	<u>Mean</u>	<u>SD</u>	<u>n</u>	
It is a good idea to have a safety flag on all OHV's	4.4	1.1	142	4.5	1.0	154	NS
Visitors should be allowed to build open fires	4.3	1.0	144	4.5	0.7	154	NS
Managers should leave the dunes pretty much the way they are	4.1	1.0	146	4.3	0.8	153	0.03
There should be speed limits in camping areas	3.9	1.1	144	4.1	1.1	153	NS
It is a good idea to not allow glass containers here	3.7	1.5	143	4.0	1.2	152	NS
Children should be allowed to ride in the dunes	3.6	1.1	143	3.6	1.1	151	NS
The sand dunes are a place to ride for beginners	3.5	1.1	145	3.5	1.1	152	NS
The sand dunes are a safe place to ride for children	3.5	1.1	146	3.6	1.0	154	NS
It is a good idea to have a 15 mph speed limit for OHV's within 500 feet of the highways	3.4	1.4	141	3.7	1.2	153	NS
It is important to have someone manage the sand dunes	3.3	1.3	142	3.3	1.2	152	NS
Managers should do all they can to protect endangered plants and animals	3.1	1.2	145	3.1	1.1	150	NS
Managers manage the dunes for more than just recreation use	3.0	1.1	145	3.1	1.0	152	NS
Visitors should be allowed to camp on the shoulder of Highway 78	2.6	1.2	142	2.5	1.2	151	NS
There are several animal and plant species here that are threatened or endangered	2.5	1.1	144	2.4	1.0	152	NS

\* Responses ranged from 1=strongly disagree to 5=strongly agree.

Table 32 reveals responses concerning perceptions of safety problems at various locations at the dunes. Both groups appear most concerned with safety along Highway 78, at the Glamis store, at Competition Hill and at Oldsmobile Hill.

Table 32. Perceptions of OHV riders creating safety problems by those who thought the dunes were crowded and those who did not (Yellow)

<b>Crowded (n=147)</b>				
<u>Location</u>	<u>No</u>	<u>Yes</u>	<u>Sometimes</u>	<u>Don't Know</u>
Along Highway 78	41.5	14.3	22.4	19.0
Glamis store	49.7	9.5	21.8	15.0
Buttercup-Gray's Well Rd	49.0	2.0	16.3	27.2
Dune Buggy Flats	49.7	3.4	10.2	27.9
Gecko Campground	52.4	5.4	17.0	21.1
Competition Hill	57.8	6.1	19.0	12.9
Oldsmobile Hil	57.1	6.8	17.0	15.0
<b>Not Crowded (n=154)</b>				
Along Highway 78	42.2	11.7	23.4	19.5
Dune Buggy Flats	51.3	1.9	9.7	32.5
Buttercup-Gray's Well Road	53.2	0.6	4.5	37.0
Glamis store	55.8	10.4	18.8	11.7
Oldsmobile Hill	57.1	4.5	20.1	13.6
Competition Hill	59.7	5.2	21.4	9.7
Gecko Campground	61.0	3.2	16.2	15.6

Table 33 displays visitor responses to questions about whether visitors had observed accidents during their last two visits to the dunes and the average number of accidents observed. One-quarter (25 percent) of those who did not perceive the area to be crowded and more than one-third (35 percent) of those who did perceive the area to be crowded indicated that they had seen an accident in their last two visits to the dunes. On average, those who perceived the area to be crowded saw 1.8 accidents while on average, those who did not perceive the area to be crowded saw 2.2 accidents.

Table 33. Visitors who observed OHV accidents during their last two visits and the average number of accidents observed by those who thought the area was crowded and those who did not (Yellow)

	<u>Crowded</u>			<u>Not Crowded</u>		
	<u>Percent</u>			<u>Percent</u>		
Visitor who indicated they had seen an accident in their last two visits to the Dunes	35.4			25.3		
	n=147			n=154		
	<u>Mean</u>	<u>SD</u>	<u>_n</u>	<u>Mean</u>	<u>SD</u>	<u>_n</u>
Average Number of Accidents Observed*	1.8	1.0	52	2.2	2.1	39
* Reported only for those who indicated they had seen an accident in their last two visits						



Table 34 reports awareness and knowledge of new OHV riding regulations pertaining to minors. Statistically significant differences were not found for awareness or knowledge.

Table 34. Awareness and knowledge of new OHV regulations affecting minors by visitors who thought the dunes were crowded and those who did not (Yellow)

	<u>Crowded</u>	<u>n</u>	<u>Not Crowded</u>	<u>n</u>
	<u>Percent</u>		<u>Percent</u>	
Are you aware of the new OHV regulations affecting minors?*	56.2	146	55.6	152
<u>Number of Correct Responses**</u>	<u>Percent</u>		<u>Percent</u>	
0	70.7		57.1	
1	23.2		26.2	
2	3.7		15.5	
3	0.0		3.6	
4	2.4		0.0	
	n=82		n=84	

\* The Chi-square test was not significant at  $p < 0.05$   
 \*\* Provided only for those who reported being aware of the new OHV regulations affecting minors

**Objective Seven:**

**Compare the usefulness of results obtained from the CUSTOMER instrument with the one developed for the Imperial Sand Dunes (ISD) study for addressing BLM recreation management and planning needs.**

Twelve individuals were asked to compare randomly selected questions and responses for the Imperial Sand Dunes (ISD) questionnaire and the CUSTOMER questionnaire. Nine of the twelve individuals responded and Table 35 reports their replies. In the first part of the evaluation respondents were asked to rate specific items from each survey for three criteria: (1) applicability to a specific management problem; (2) applicability to planning a specific project; and (3) usefulness in assessing regional recreational trends. Average ratings were assigned for the CUSTOMER and ISD survey items for the above criteria.

Applicability to a specific management problem. An average of 54 percent of the respondents felt that individual CUSTOMER items would be useful for a specific management problem, compared to an average of 77 percent reporting that the Imperial Sand Dunes would be useful.

Applicability to planning a specific project. While an average of 66 percent stated the CUSTOMER survey would be useful for planning a specific project, an average of 81 percent stated the Imperial Sand Dunes survey would be useful.

Usefulness in assessing regional recreational trends. Applicability to assessing regional recreational trends was rated the lowest for both surveys with an average of 47 percent rating the CUSTOMER survey as useful and only 28 percent rating the ISD Survey as useful.

Respondents were also asked to indicate if they had used similar types of information in the last year and to rate the utility of those items. The majority (77 percent) reported having used similar items, although the Imperial Sand Dunes items were more similar (an average of 40 percent reporting item similarity) than those in the CUSTOMER survey (an average of 38 percent).

When asked to choose the one survey which overall had the most useful information for resource managers, over half (56 percent) chose the Imperial Sand Dunes survey, 33 percent chose both, and 11 percent said neither.

Table 35. Tabulation of reviewers' responses

<b>Evaluation Criteria</b>	<b>Application A Specific Management <u>Problem</u></b>	<b>Application To Planning A Specific <u>Project</u></b>	<b>Assessing Regional Recreation <u>Trends</u></b>
<b><u>Items - Customer Survey</u></b>	<b><u>% Yes</u></b>	<b><u>% Yes</u></b>	<b><u>% Yes</u></b>
a. Number of visits	55	55	88
b. Location of area	22	55	44
c. Avail. of firewood	44	55	22
d. Distant views	11	78	22
e. A challenging environment	33	55	44
f. Plant loss	77	88	11
g. Provide wildlife and fish for hunting and fishing	63	55	44
h. Willingness to pay	33	55	67
i. Group type	67	89	77
<b><u>Items - Imperial Survey</u></b>			
j. Reasons for visiting	77%	89%	67%
k. Awareness of visitor center	77%	88%	22%
l. Too few parking places	100%	88%	22%
m. Adding picnic tables	67%	88%	11%
n. Adding picnic tables for first time versus more experienced visitors	55%	77%	22%
o. Have a safety flag on all OHVs--responses by visitors who thought dunes were crowded and those who did not	88%	55%	22%

Table 35 continued

Within the last calendar year, have you used similar types of information in your own work?

Yes 77%

If so, which items (list letter of above items) are similar to what you used?

	<u>Percent</u>
a. Number of visits	77
b. Location of area	50
c. Availability of firewood	38
d. Distant views	12
e. A challenging environment	38
f. Plant loss	55
g. Provide fishing and hunting	25
h. Willingness to pay	12
i. Group type	44
j. Reasons for visiting	50
k. Awareness of visitor center	38
l. Few parking places	38
m. Adding picnic tables	44
n. Adding picnic tables for first time visitors	38
o. Have a safety flag on all OHVs	38

In your estimation, which instrument overall provides resource managers with the most useful information?

	<u>Percent</u>
CUSTOMER survey	0
Imperial Sand Dunes survey	56
Both are useful	33
Neither	11

<u>Averages*</u>	<u>Percent Yes</u>	<u>Variance</u>
Management average CUSTOMER	54	.217
Management average ISD	77	.128
Plan average CUSTOMER	66	.138
Plan average ISD	81	.152
Region average CUSTOMER	47	.268
Region average ISD	28	.221

\* For CUSTOMER, averages were computed by summing responses to items A thru I, then dividing by the number of items for each category (e.g., management, planning, or regional). For ISD, the same procedure was applied to items J thru O.

## Discussion and Management Implications

One purpose of this study was to describe recreation use at the Imperial Sand Dunes. Data for this study were collected only on weekends as part of a pilot research project. These data may not accurately represent the overall variety of user types for the population of visitors of Imperial Sand Dunes, and should be interpreted cautiously.

### **Objective One:**

**Describe visitors to the Imperial Sand Dunes area in terms of socio-demographics, activities pursued, and reasons for using the area.**

Analyses suggest that the average Imperial Sand Dunes visitor is an Anglo, English-speaking male, 45 years or younger with at least a high school education. ISD visitors are predominately Anglo (68 percent), relatively young (85 percent were 45 years of age or younger) and most (91 percent) had at least a high school education. ISD visitors have few physical impairments and few belong to OHV clubs. Most visitors (82 percent) were from California or Arizona (15 percent).

The most frequently mentioned activity in which visitors participated was off-highway vehicle (OHV) riding (90 percent). Another 40 percent also mentioned recreation as a primary activity. About one-third of the sample (35 percent) listed OHV riding as the primary reason for visiting the dunes. Other reasons included: the dunes, friends, open space, play, accessible, curiosity, to get away, vacation and to race.

**These findings suggest that resource managers are serving a fairly homogeneous population.**

### **Objective Two:**

**Describe visitors' awareness of the Cahuilla visitor information center, new regulations affecting minors and OHVs, and visitor preferences for information types and media at the Imperial Sand Dunes.**

The majority of visitors (94 percent) learned about the ISD from friends and family. Preferences for getting information after they are at the site include signs along the road, notes on a bulletin board and a brochure given at the entrance to the area. Visitors are interested in receiving information on safety, agency practices that affect riding opportunities, the area's rules and regulations, natural and cultural features of the area and guidelines about what to see and do in the Imperial Sand Dunes area.

Less than one-third (32 percent) were aware of the visitor center at the Cahuilla Ranger Station and most who were aware had sought general information about the area during their visit to the Station. Visitors perceive themselves to be aware of the new rules and regulations concerning minors and OHVs yet only one-quarter correctly described any portion of those new rules.

Visitor awareness of and use of information about the Imperial Sand Dunes was low. Consistent with other studies of visitors of recreation areas on federal lands (eg. Lee and Brown 1991, Hodgson et al. 1990, Baas and Chavez 1991, Baas 1992) most visitors first learned about the Imperial Sand Dunes from friends or family. Also consistent with results of other recreation studies, use of on-site information (in this case visiting the Cahuilla Ranger Station) was low (Peine et al. 1984, Baas 1992). At the Sand Dunes low use may be due to the relative newness of the visitor center (about two years old) or it might be due to a desire to avoid contact with BLM management personnel. A final reason might be the appearance of the center which looks more like a ranger station than a visitor center.

BLM has the opportunity to offer a variety of types of information and may employ a variety of methods to get that information to their users. Given that most of the visitors are Anglo and English-speaking, it does not seem to be necessary to offer information in a variety of languages. This assumes that the current profile of use will continue. Should use start to change and more culturally and racially diverse individuals begin to use the area, then international signing might be more appropriate.

### **Objective Three:**

**Describe visitors in terms of their perceptions of problems at the Sand Dunes, such as safety and crowding and their perceptions of the BLM's management role at the Dunes.**

Responses to questions regarding perceptions of problems and desired improvements indicate the majority of the sample are satisfied with the ISD in their current condition. For example, average responses for perceptions of problems ranged from 1.3 to 2.8 (on a scale where 1= not a problem and 5= very serious problem). Thus, visitors did not give high ratings to the items listed suggesting that these items were not thought to be very serious problems.

Safety does seem to be a concern for the visitors, particularly along Highway 78 and at the Glamis store. About one-third of the visitors saw an accident on one of their last two visits to the Imperial Sand Dunes and on average, they saw 2 accidents.

Respondents had the opportunity to express level of agreement or disagreement with some management regulations and management emphasis areas. They agreed or strongly agreed with the following statements: visitors should be allowed to build open fires, it is a good idea to have a safety flag on all OHVs, managers should leave the dunes pretty much the way they are, there should be speed limits in camping areas, it is a good idea to not allow glass containers at the dunes and children should be allowed to ride in the dunes. Their lowest level of agreement (average score of 2.5) was for the following statement: there are several animal and plant species here that are threatened or endangered.

Visitors perceive few problems at the Imperial Sand Dunes, though they are concerned with safety issues. Some safety concerns are evidenced in the statements that include the safety issues of a flag on all OHVs, having speed limits and not allowing glass containers. They generally have given a message which says to the managers "leave the dunes alone." Nor do they believe that the area has threatened or endangered animal and plant species.

**These findings suggest that more work is needed to educate visitors about the species that exist in the area and also suggests that either more enforcement of safety laws or more education about safety issues should be done.**

**Objective Four:**

**Describe visitor preferences for development and services at the Imperial Sand Dunes.**

Overall ratings for adding facilities suggest that visitors do not consider many site facility additions as important. They did think that water availability, telephones and more camping sites are important considerations but did not feel that group facilities, fire rings, educational programs, cooking grills, picnic tables, or recreation equipment rentals were important.

These findings suggest few additional facilities are needed, that perhaps another campground or two (with telephones and running water) might be considered by the area resource managers. The costs and benefits of such changes would need to be weighed carefully since meeting current needs of visitors might encourage even more use at the ISD--an effect which may not be desired by either resource managers or visitors.

**Objective Five:**

**Determine if there are differences among first time and more experienced users regarding the above variables.**

Analysis of responses by first time and more experienced visitors indicated that first time visitors were more inclined to visit the ISD for reasons other than OHV riding (such as to be with friends) than were more experienced visitors. Both groups engaged in riding, recreation and relaxation as primary activities and both groups learned about the area from friends and family.

First time visitors prefer to receive information via brochures at an entrance station or signs along the road. More experienced visitors also prefer signs along the road in addition to notes on a bulletin board. While first time visitors prefer information about things to see and do and the natural features of an area, the more experienced visitors prefer information about safety and agency practices that might affect OHV riding in the area. First time visitors demonstrated less awareness of the visitor center and were less aware of the new OHV regulations affecting minors.

First time visitors expressed greater concern about the lack of garbage cans while more experienced visitors perceived people riding without helmets, not enough camping spaces and too few parking places as more serious problems. First time visitors were concerned about safety at all sites while more experienced visitors were most concerned with safety along Highway 78.

To better serve first time visitors to the ISD, resource managers should focus their efforts on improving awareness of information services, especially about safety issues, and provide more garbage disposal sites.

### **Objective Six:**

**Determine if there are differences among users who perceived and did not perceive the area as crowded.**

Analyses for differences between groups who perceived the area as crowded and those who did not indicated that visitors who didn't think the ISD were crowded were slightly more supportive of leaving the ISD the way they are. Both groups listed their primary activities as riding, recreation and relaxation and both groups perceived safety issues similarly--sensing problems along Highway 78, the Glamis store, Competition Hill and Oldsmobile Hill.

In general, these two groups are similar to one another and no management action based on this distinction is suggested.

### **Objective Seven:**

**Compare the usefulness of results obtained from the CUSTOMER instrument with the one developed for the Imperial Sand Dunes (ISD) study for addressing BLM recreation management and planning needs.**

The other purpose of this study was to evaluate and compare the CUSTOMER survey implemented at the East Mojave National Scenic Area with the Imperial Sand Dunes (ISD) survey for addressing BLM recreation management and planning issues. A set of randomly selected questions and the results from both surveys were reviewed by 9 individuals, either BLM managers or university recreation researchers. The ISD survey received a higher level of support for addressing specific management problems and for planning recreation projects. CUSTOMER received greater support for assessing regional recreation trends. When asked to select an instrument for its' overall utility over half (56 percent) chose the ISD survey, 33 percent chose both surveys, and 11 percent said neither was useful.

Results of these reviews suggest that a specific survey instrument may be better than a standardized instrument for addressing BLM management and planning issues. Results also suggest better survey instrument development is needed to assess regional recreation trends.

### Summary and Conclusions

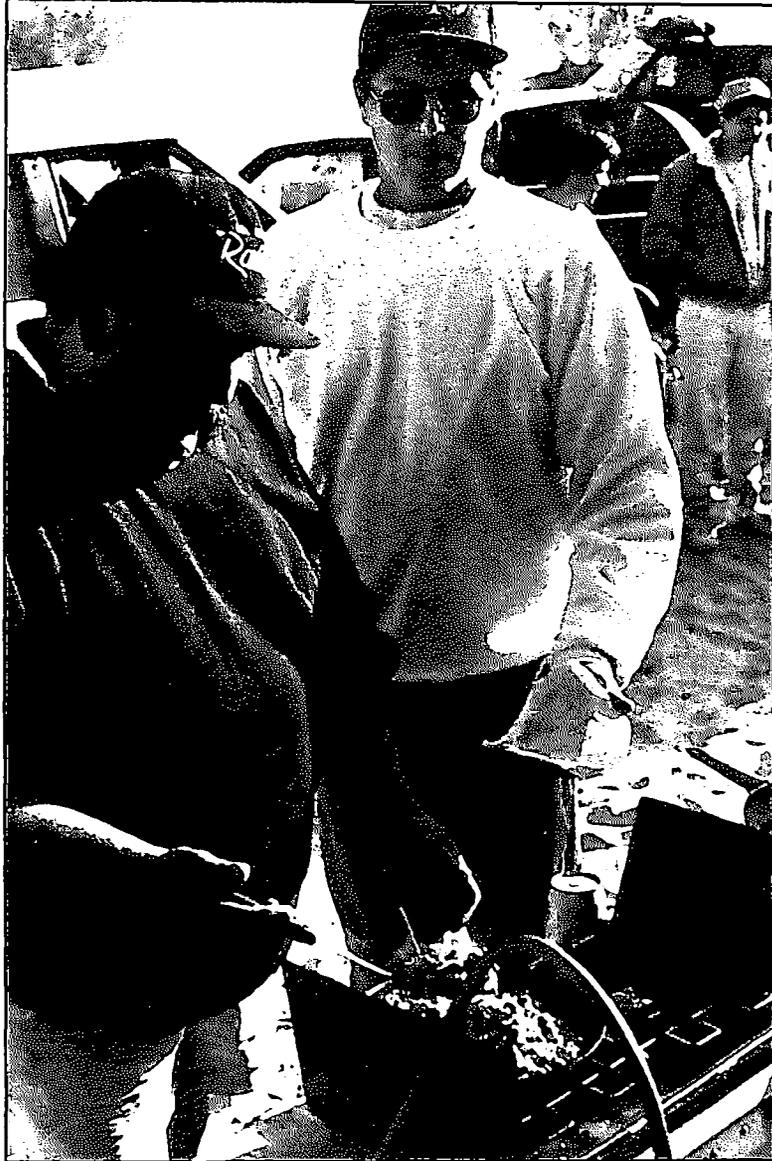
Visitor data were collected at the Imperial Sand Dunes during Fall-Winter, 1991-92. These data were collected as part of an ongoing research effort between the BLM and the PSW Research Station to characterize visitor use and preferences in areas where the management environment has been changing. 1.) The results revealed that visitors at the Imperial Sand Dunes are relatively uniform with respect to the characteristics measured, and basically satisfied with the current management situation. 2.) Results of the survey comparison and evaluation indicate a site specific instrument may be the most applicable to addressing management and planning issues. More refined instruments are

needed for assessing regional recreation trends.

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Appendix A. Survey Instruments



WELCOME TO THE IMPERIAL SAND DUNES RECREATION AREA. TO BETTER MEET YOUR NEEDS WE WOULD LIKE TO KNOW MORE ABOUT YOU. ALL RESPONSES YOU GIVE WILL BE ANONYMOUS AND CONFIDENTIAL. THANK YOU FOR YOUR PARTICIPATION.

1. How many people are in your group? \_\_\_\_\_ # of adults \_\_\_\_\_ # of children

1b. Is this your first visit here? \_\_\_\_\_ Yes \_\_\_\_\_ No

2. Are you here with: (please check all that apply)

- \_\_\_\_\_ your family
- \_\_\_\_\_ friends
- \_\_\_\_\_ organized group
- \_\_\_\_\_ by yourself
- \_\_\_\_\_ other \_\_\_\_\_

3a. What is the primary purpose of your visit? \_\_\_\_\_

3b. Are there other places you plan to or have visited on this trip?

\_\_\_\_\_ NO \_\_\_\_\_ YES If yes, please check those places you have OR plan to visit.

- \_\_\_\_\_ Joshua Tree National Monument
- \_\_\_\_\_ East Mojave National Scenic Area
- \_\_\_\_\_ Mecca Hills Recreation Area
- \_\_\_\_\_ Death Valley National Park
- \_\_\_\_\_ other area \_\_\_\_\_ (Please specify)

3c. What activities do you participate in here? Please list the three most important activities that you do here.

1) \_\_\_\_\_ 2) \_\_\_\_\_ 3) \_\_\_\_\_

4. PLEASE INDICATE YOUR LEVEL OR AGREEMENT/DISAGREEMENT WITH THE FOLLOWING STATEMENTS.

	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE
a. The sand dunes are a safe place to ride for beginners	1	2	3	4	5
b. Visitors should be allowed to camp on the shoulder of Highway 78	1	2	3	4	5
c. There should be speed limits in camping areas	1	2	3	4	5
d. Children should be allowed to ride in the dunes	1	2	3	4	5
e. It is important to have someone manage the sand dunes	1	2	3	4	5
<hr/>					
f. It is a good idea to:					
Have a safety flag on all OHV's	1	2	3	4	5
Have a 15 mph speed limit for OHV's within 500 feet of the highways	1	2	3	4	5
Not allow glass containers here	1	2	3	4	5
<hr/>					
g. The sand dunes are a safe place to ride for children	1	2	3	4	5
h. Visitors should be allowed to build open fires	1	2	3	4	5
i. Managers should leave the dunes pretty much the way they are	1	2	3	4	5
j. Managers should do all they can to protect endangered plants and animals	1	2	3	4	5
k. Managers manage the Dunes for more than just recreation use	1	2	3	4	5
l. There are several animal and plant species here that are threatened or endangered	1	2	3	4	5

THE FOLLOWING QUESTIONS ARE ABOUT THE NUMBER OF PEOPLE THAT USE THIS AREA AND THEIR EFFECT ON SAFETY.

5. In these locations, are high numbers of OHV riders creating a safety problem?

	YES	NO	SOMETIMES	DON'T KNOW
Along Highway 78	_____	_____	_____	_____
Glamis store	_____	_____	_____	_____
Gecko Campground	_____	_____	_____	_____
Buttercup-Gray's Well Road	_____	_____	_____	_____
Dune Buggy Flats	_____	_____	_____	_____
Competition Hill	_____	_____	_____	_____
Oldsmobile Hill	_____	_____	_____	_____

6. Have you seen any accidents involving OHV riders in your last two visits here?

\_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_ Never been here before

If yes, about how many have you seen? \_\_\_\_\_ ACCIDENTS

If yes, could you describe where and what happened? \_\_\_\_\_

\_\_\_\_\_

7. On this visit, do you think this area is:

Not  
crowded

\_\_\_\_\_

Slightly  
crowded

\_\_\_\_\_

Moderately  
crowded

\_\_\_\_\_

Very  
crowded

\_\_\_\_\_

Extremely  
crowded

\_\_\_\_\_

8. Are you aware of the new regulations regarding minors riding OHV's

\_\_\_\_\_ Yes \_\_\_\_\_ No

If yes, could you describe them? \_\_\_\_\_

\_\_\_\_\_

9. Are you a member of an OHV group?

\_\_\_\_\_ Yes \_\_\_\_\_ No If yes, which one? \_\_\_\_\_

THESE FINAL QUESTIONS ARE ABOUT YOU.

10. Gender?  Male  Female

11. Age?  Years

12. How many years of education have you completed?

<input type="checkbox"/> 8th grade or less	<input type="checkbox"/> Bachelor's degree
<input type="checkbox"/> Some high school, no diploma	<input type="checkbox"/> Master's degree
<input type="checkbox"/> High school, diploma	<input type="checkbox"/> Doctoral degree
<input type="checkbox"/> Associate degree	

13. Do you have any of the following disabilities?

Hearing impaired	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Visually impaired	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Mobility impaired	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Mentally or learning impaired	<input type="checkbox"/> Yes	<input type="checkbox"/> No

14. What cultural group do you prefer to have others think of you as?

<input type="checkbox"/> Anglo	<input type="checkbox"/> American Indian
<input type="checkbox"/> Black	<input type="checkbox"/> Asian or Pacific Islander
<input type="checkbox"/> Mexican	<input type="checkbox"/> Central American
<input type="checkbox"/> Hispanic	<input type="checkbox"/> Other _____ (Please specify)

15. Place of birth (state and country) \_\_\_\_\_

16. What language(s) do you speak?  English  Both  
 Spanish  Other \_\_\_\_\_  
(Please specify)

17. What is the ZIP code of your home residence? \_\_\_\_\_

IS THERE ANYTHING ELSE THAT WE SHOULD KNOW ABOUT YOUR VISIT?

THANKS FOR YOUR HELP!!

WELCOME TO THE IMPERIAL SAND DUNES RECREATION AREA. TO BETTER MEET YOUR NEEDS WE WOULD LIKE TO KNOW MORE ABOUT YOU. ALL RESPONSES YOU GIVE WILL BE ANONYMOUS AND CONFIDENTIAL. THANK YOU FOR YOUR PARTICIPATION.

1. People have a variety of reasons for visiting an area. What first attracted you to the Imperial Sand Dunes?  
\_\_\_\_\_

2. Is this your first visit here? \_\_\_\_\_ Yes \_\_\_\_\_ No

3. How often do you come here on:

	NEVER	SOMETIMES	FREQUENTLY
Non-holiday weekends?	_____	_____	_____
Three day, holiday weekends?	_____	_____	_____
Weekdays that ARE NOT holidays?	_____	_____	_____
Thanksgiving?	_____	_____	_____
Christmas vacations?	_____	_____	_____

4. PLEASE INDICATE HOW IMPORTANT IT WOULD BE TO ADD THESE FEATURES/FACILITIES TO THE IMPERIAL SAND DUNES AREA.

	VERY UNIMPORTANT	UNIMPORTANT	NEITHER	IMPORTANT	VERY IMPORTANT	DONT KNOW
Educational programs	1	2	3	4	5	6
Group facilities	1	2	3	4	5	6
More camping sites	1	2	3	4	5	6
Recreation equipment rentals	1	2	3	4	5	6
Telephones	1	2	3	4	5	6
Picnic tables	1	2	3	4	5	6
Fire rings	1	2	3	4	5	6
Cooking grills	1	2	3	4	5	6
Water availability	1	2	3	4	5	6
Other _____	1	2	3	4	5	6

5. YOUR VIEWS ABOUT ANY PROBLEM YOU MAY HAVE ENCOUNTERED DURING YOUR VISIT WOULD BE HELPFUL TO US. PLEASE INDICATE HOW SERIOUS A PROBLEM YOU FOUND EACH ITEM TO BE.

To what extent did you find:	Not a Problem	Slight Problem	Moderate Problem	Serious Problem	Very Serious Problem	Don't Know
a. Too few garbage cans	1	2	3	4	5	6
b. Too few parking places	1	2	3	4	5	6
c. Litter	1	2	3	4	5	6
d. Graffiti	1	2	3	4	5	6
e. People shouting and yelling	1	2	3	4	5	6
f. People breaking the law	1	2	3	4	5	6
<hr/>						
g. People playing loud radios	1	2	3	4	5	6
h. People riding too fast	1	2	3	4	5	6
i. People riding without a helmet	1	2	3	4	5	6
j. Too many rules/regulations	1	2	3	4	5	6
k. Inadequate toilet facilities	1	2	3	4	5	6
<hr/>						
l. People drinking alcoholic beverages while riding	1	2	3	4	5	6
m. Not enough information about things to see and do	1	2	3	4	5	6
n. Someone in your group being injured	1	2	3	4	5	6
o. Damage or loss of personal property	1	2	3	4	5	6
p. Conflicts between your group and other groups	1	2	3	4	5	6
q. Not knowing who to contact in an emergency	1	2	3	4	5	6
r. No: enough camping spots	1	2	3	4	5	6

THE FOLLOWING QUESTIONS CONCERN INFORMATION SERVICES YOU HAVE USED OR MIGHT USE ON A VISIT TO IMPERIAL SAND DUNES.

6. How did you first learn about this area? (Please check the **ONE** best response)

- From friends or family
- Brochure
- OHV newsletter
- Radio ad
- T.V. ad
- Map
- Information from California State Parks
- Information from the Bureau of Land Management
- Other \_\_\_\_\_ (Please specify)

7. Are you aware there is a visitor center at Imperial Sand Dunes?

- Yes (Continue on with question 8)
- No (Skip question 8, go to question 9)

8. a. Have you visited it?  Yes  No

b. If you stopped at the visitor center, what kind of information or services were you looking for? \_\_\_\_\_

9. What types of information would you like to see offered at Imperial Sand Dunes? (Please check all that apply)

- Information about safety (eg-who to contact in case of emergency)
- Information about things to see and do
- Information about natural features of the area
- Information about cultural and historic features of the area
- Information about agency management practices that could affect OHV riding opportunities
- Information about the area's rules and regulations
- Other \_\_\_\_\_ (Please specify)

10. How would you like to get information of interest to you?

	DISLIKE	LIKE
Brochure given at entrance	1	2
Ranger who stops by for visit	1	2
A radio broadcast	1	2
Notes on bulletin board	1	2
Signs along the road	1	2
Evening program at information center	1	2
Other _____ (Please specify)		

THESE FINAL QUESTIONS ARE ABOUT YOU.

11. Gender?  Male  Female

12. Age?  Years

13. How many years of education have you completed?

<input type="checkbox"/> 8th grade or less	<input type="checkbox"/> Bachelor's degree
<input type="checkbox"/> Some high school, no diploma	<input type="checkbox"/> Master's degree
<input type="checkbox"/> High school, diploma	<input type="checkbox"/> Doctoral degree
<input type="checkbox"/> Associate degree	

14. Do you have any of the following disabilities?

Hearing impaired	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Visually impaired	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Mobility impaired	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Mentally or learning impaired	<input type="checkbox"/> Yes	<input type="checkbox"/> No

15. What cultural group do you prefer to have others think of you as?

<input type="checkbox"/> Anglo	<input type="checkbox"/> American Indian
<input type="checkbox"/> Black	<input type="checkbox"/> Asian or Pacific Islander
<input type="checkbox"/> Mexican	<input type="checkbox"/> Central American
<input type="checkbox"/> Hispanic	<input type="checkbox"/> Other <input type="text"/> (Please specify)

16. Place of birth (state and country)

17. What language(s) do you speak?  English  Both  
 Spanish  Other   
(Please specify)

18. What is the ZIP code of your home residence?

IS THERE ANYTHING ELSE THAT WE SHOULD KNOW ABOUT YOUR VISIT?

THANKS FOR YOUR HELP!!

## Summary of Open-Ended Responses to Question at End of Questionnaire

Two major topics emerged from the open ended comments. Perhaps the strongest theme was that users were generally very happy with the dunes in their existing condition and did not want to see the Sand Dunes closed to OHV riding. Several respondents said they would be willing to pay fees to keep riding at the dunes. Improvements was the other major topic; the most frequently mentioned response was a need for toilets, followed by several comments about the need for showers and more camping spots.

### Green Questionnaire

#### *Write In Question At The End Of The Questionnaire*

<u>Case Number</u>	<u>Response</u>
5	I like it just the way it is. Thank You!
8	No bottles beverages.
11	Keep the dunes open to recreational riders. Need a store closer than Yuma.
12	We need facilities. Bad!
16	Drop all the new laws.
26	It's great.
34	Please make more camping area for campers and motorhomes so that people will not camp on sand.
41	Law should be enforced heavy on buggy whips.
42	Besides only getting to go on one ride & having to stay in an emergency room for 5 not 4 but 5 hours. I guess it was fun.
43	This place is bitchin!!! Great place for family gatherings.
48	This place is great but would be better with showers and control over wreckless drivers around campsites.
63	I wish there were more mechanics available to repair broken bikes.
67	Great place to bring family for family recreation.
77	More water!
78	This is a fun enjoyable place to ruin its simpleness would be a crime. People come to have fun and play in the sand. To regulate it too much will choke it.
80	I had a good time!
93	I come here because it is basically a place where I can get away. I like it the way it is.

- 99 Keep the Sierra Club out!!
- 114 Great time.
- 139 We have been coming to Glamis for 25 years. We just love it.
- 140 Solar heated shower facilities would be great.
- 161 Too many Arizonians not cleaning up their part of their trash. Most of the campers here do try to be conscious.
- 165 Need restroom.
- 175 Love it here.
- 186 We have fun, don't have to worry about gang related problems that seem to be in the balance of California.
- 195 Really enjoyable on unbusy weekends.
- 196 The trash needs be picked up & violators should be cited.
- 205 I have been coming to this area for 25 years and would like to see more paved parking space. Other than that, it doesn't need improving.
- 209 More bathroom & telephones & trash cans.
- 210 Leave Osborn Park alone-don't let developers buy the land, etc.
- 212 We love it here. Thank you.
- 216 Yes, I thoroughly enjoy the area & would like to see things for the visitor & children.
- 225 We always wear helmets - we are not \*\*\*\*heads riding out of control - off roaders have a right to the land as well as environmentalist do gooders! We also leave no trash in our site.
- 228 I think congress should keep their nose out of this business. People enjoy it, its their way of relaxing. We have been riding for years and enjoy it. Leave us alone.
- 243 This place is great. Let people know of the environmental things and people will listen (trash, animals, plants).
- 247 I would not like Glamis to become a controlled park with entrance fees & the like, this isn't KOA! I'm sure many of the regular visitors to this area would gladly make donations to help maintain the area.
- 251 This is a nice area for families. They have been coming here for years. It is something children will always remember.
- 252 Would appreciate control over unleashed animals.
- 258 Appreciate changes you've made. Would like phones at Gecko & Roadrunner. We love Roadrunner.
- 262 Get rid of Cranston, leave our dunes alone. They are the best.
- 265 Cleaner safer place to kick back and relax. Charge \$5 to enter to keep out undesirables.
- 269 It's the best place to ride, don't close it.
- 270 Let keep it safe for everyone. Thanks.
- 273 It would be nice if there were shower facilities. Maybe pay showers?
- 277 Like coming out to Glamis a lot.
- 289 It's a wonderful place for kids & adults!!

## Yellow Questionnaire

*Write In Question At The End Of The Questionnaire*

<u>Case Number</u>	<u>Response</u>
5	You're missing out
6	BLM was very visible and helpful. We enjoyed our first trip out to the dunes as sellers and will be back next year. Thank you!
10	Many rangers have nothing better to do than cause problems. Not as much this year as last.
12	Need more stores & bath rooms.
14	Need restrooms.
16	Need bathrooms.
33	I have never seen Glamis so filthy! We take care of our own trash. People should be fined heavily for leaving site thrashed.
34	More camping areas.
35	Leave the dunes as they are create additional sites like Roadrunner. Have one spot to load up with water.
38	Enforce buggy-whip law!!!
40	Need more parking and bathroom facilities. Rangers need to help more not police the area!
41	We party.
45	We love Glamis, our kids 15 & 12 love Glamis. It's a great place for families to be together and have fun.
48	Keep the sand dunes open to the public!!
53	Have fun!!!
56	I think there should be a store closer to the dunes
60	Provide more parking "hard pack."
65	I'm having a blast. Thank you
70	The rangers have bad attitudes. Keep rules to a minimum.
79	To have fun at the desert, you can't be a preppy- you have to learn to live with the dirt.
81	It's a great place, too many restrictions will mess it up. Thanks.
82	More facilities are needed in this area. More park land is needed.
89	We enjoyed the freedom this place offers.
91	Leave the dunes open and alone.
92	It would nice to have more facilities.
94	Sand gets in everything.
104	Here to relax.
108	Recreation should be limited to specific area, but not restricted all together.
109	Yes, I think that there should be more rangers enforcing new laws, & citing people driving too fast, wreckless or under the influence.
121	It has been fun.
122	Closed areas need more signs & better-understanding if accidental entrance.
129	Keep the dunes open for everyone.

- 134 No, but alcohol should not be permitted.
- 158 I think there should be tickets issued to those who drink and drive in the dunes.
- 172 Leave it open.
- 175 Rangers to patrol on a fast quad or buggy. No drinking in dunes.
- 179 Just as good as any other. Although nobody camped near us. Work on dune buggy all night, which was good.
- 180 People riding dunes out here should be left alone by people to ruin their fun.
- 185 It would be nice to have trash picks on the roads.
- 188 Closing down the area would be bad. We need more enforcement - tickets. Let people know your not going to stand for messing around.
- 189 Please keep Glamis open! Even if you charge to enter.
- 191 This is one of a few places left where you can relax and ride as a family without government personnel regulating the fun out of it. (Except Thanksgiving weekend where they steal your ride if its not registered.) Everyones got to make a buck!
- 197 Fine individuals for littering in dunes. No campfires in dunes. Have a quiet time at night, i.e., no riding of ORVs at 11pm or such, etc. Teach pack out what pack in/clean campsite.
- 201 Fine people for not picking up their trash.
- 209 Gordon's wells areas need paved areas.
- 213 Great family recreation. But sometimes people who don't use their heads, drinking, etc... can ruin things for the innocent families.
- 215 Please keep the dunes open. Very much enjoy riding within a reasonable distance from home. Cranston bill too restrictive.
- 217 Bathroom, shower, trash cans need to be more available.
- 218 Leave Glamis open.
- 226 Desperately need permanent facilities, i.e., medicine, parts, food, bathrooms!!
- 238 When green stickers are renewed, information on new reg's & general info should be mailed along with the green sticker.
- 239 If ATVs are used responsibly, the risk of danger is minimal (no more than the risk in crossing the street) to adults & children alike!
- 245 I believe additional camping facilities should be considered beyond Roadrunner.
- 259 The dunes are a wonderful place to explore & visit, please don't close them off.
- 260 The flag law should be outlawed as the rangers have said and I agree because there is no place for them on a motorcycle.
- 262 I feel United States citizens need someplace they can go as a family group & play! The endangered species in those areas will adapt or move. Many species became extinct before human race.
- 264 I think their should be a camp fee for all camping areas around Glamis dunes.
- 266 Need more black top camping areas.
- 267 More camping areas like Roadrunner.
- 272 Very nice improvement in the last two years.
- 273 See more of ranger's in the evening noisy hours. More asphalt camping.
- 281 Need more showers & more bathrooms.
- 285 Need restrooms and have them maintained.
- 307 Let us ride.