Santa Monica Mountains National Recreation Area

Recreational Trail Use Survey

Report to the National Park Service

March, 2003

USC

Executive summary

This report discusses the findings of a recreational trail use survey conducted within the Santa Monica Mountains National Recreation Area, over the weekends of July 13-14 & July 20-21, 2002 and on two weekdays – July 16 & 18, 2002. The survey was undertaken by the Sustainable Cities Program at the University of Southern California under contract with the Western National Parks Association in cooperation with the National Park Service (NPS). The purpose of the survey was to obtain trail user information for the purpose of developing an interagency trail management plan for the Santa Monica Mountains National Recreation Area (SMMNRA). The survey was funded by a grant from the Santa Monica Mountains Conservancy to the Western National Parks Association. Partners in the plan were the California Department of Parks & Recreation, the Santa Monica Mountains Conservancy and the National Park Service.

Sample

Over the course of the survey 12,388 visitors were counted at 33 park entrances to the National Recreation Area's trail network. Approximately 10% of those counted, 1,228 trail users, were asked to participate in the survey, which was strictly voluntary. Only 242 people out of those approached by surveyors who declined to participate in the survey, resulting in an 80% response rate. This yielded a sample of 986 respondents, of which 912 surveys furnished usable data. Potential respondents were restricted to those visitors who were 18 years or older.

Information collected

In addition to gathering demographic data about trail users, information was collected about their recreational behavior, including visitation rates and recreational activity patterns; their attitudes towards the protection of the Santa Monica Mountains; trail user interaction patterns (user conflicts); travel distance and barriers to access to trails within the NRA.

Results

The dominant trail users were white, middle-aged men (59% of those surveyed were male), who were born in the United States, spoke English, were college–educated, relatively affluent, owned their own homes, did not have children under 18 years of age, and lived in single person households. They typically visited the SMMNRA with friends and were return visitors. People of color and low-income earners were noticeably under-represented in the survey sample. Nevertheless, the survey did reveal considerable variation in park users, particularly with regard to the nationalities of users, with 56 different nations being represented in the data.

<u>Visitation patterns</u>

Findings highlighted the fact that the Santa Monica Mountains National Recreation Area is a popular year-round recreational destination. An unexpected finding was the high

proportion of respondents who visited the SMMNRA during the summer. Survey results demonstrated that many park users take advantage of the cooler mornings and evenings in the summer months to enjoy the trails. Particular user groups such as picnickers and sightseers were more likely to use the SMMNRA during the summer than other seasons. Winter was the season that many survey respondents reported as their least frequent period of park visitation. The research also revealed that weekend park use was elevated compared to weekday use. It was also clear than many park users were return visitors and that they visited the SMMNRA on average four times a month and the duration of their visit was on average two hours long. Visitors to the SMMNRA typically were accompanied by friends and family or came by themselves. Surprisingly few trail users came with organized groups or religious groups.

Trail use

Insofar as trail use is concerned, results of the survey have specific implications for trail management. The most frequently reported activity was hiking. Indeed, it clearly outranked all other trail uses. The next most often reported activity was a passive recreational pursuit - sightseeing, followed by mountain biking, jogging and then dog walking. While other activities such as horse riding were undertaken by visitors, they did not represent a large proportion of the sample. Being outdoors was the most frequently listed reason for visiting. Exercising was second, followed by enjoying the scenic beauty of the SMMNRA, getting fresh air, escaping the city and suburbs, communing with nature and socializing.

The National Recreation Area is used by some trail users as if it was a local or neighborhood park – that is, visitors used the park for activities that would normally be undertaken at a local park and not a larger area of regional open space such as the SMMNRA. Indeed, an important finding of the survey was the emergence of a portrait of localized trail use. Many respondents (12.2%) indicated that they did not use their local parks or that the question about local park use was not applicable to them. The low median travel time to the SMMNRA also highlights the residential proximity of trail users. In particular, joggers, equestrians and dog walkers and to some extent mountain bikers all use the SMMNRA on a regular, high frequency basis. Equestrians were the group that most frequently reported never using a local or neighborhood park. It should be noted here that other uses of the SMMNRA such as picnicking did attract users who lived further away from the National Recreation Area.

Attitudes towards nature

The high level of ecocentricism (attitudes where nature is of highest importance) among surveyed trail users was an unexpected finding of this study. The majority of respondents (53.2%) felt that the preservation of habitat for plants and animals was the most important reason for protecting the Santa Monica Mountains. When this is combined with those respondents who refused to, or were unable to, decide between recreation and habitat protection as the most important reason, over 70% of park users considered the ecological integrity of the Santa Monica Mountains a priority. Only one-fifth of respondents felt that recreation was the most important reason to protect the mountains.

Thus the imperative for maintaining the ecological integrity of the Santa Monica Mountains National Recreation Area is unequivocal.

Sources of knowledge

Corroborating the ecocentricism of trail users was the finding that nature observation was the most frequently cited source of knowledge about plants and animals in the Santa Monica Mountains. Furthermore, trail users involved in active recreation, including equestrians and mountain bikers, relied upon nature observation for their knowledge. Another key finding was the growing importance of the Internet as a source of information for the SMMNRA, with many trail users writing it into the survey as an information source. In addition, a large number of trail users were dependent upon park signs and park brochures for their environmental information.

Trail user interaction

A key purpose of this survey was to investigate the incidence of conflict between trail users and to attempt to gauge its causes. The majority of respondents reported that their trail experience was affected by the presence of other trail users. For some this impact was positive whereas for others it was not. Nevertheless, all respondents reported either a favorable or at worst slightly below neutral reaction to other trail users activities and behaviors. When comparisons are made between trail users, mountain bikers, picnickers and dog walkers emerged as being less well regarded by other trail users. Mountain biking in particular was the activity that attracted the least favorable responses. On the other hand, hiking received the most positive reviews. The issues that attracted the most concern were uncooperative behavior, leaving animal wastes and litter. Corroborating the evidence of substantial ecocentricism amongst trail users were the results that damaging plants and scaring animals were regarded by many trail users as problematic.

Mode of travel

The overwhelming majority of respondents to the survey traveled to the Santa Monica Mountains National Recreation Area by private automobile. Public transit was either avoided by visitors to the SMMNRA, or more likely was too difficult and inconvenient as a means of access to the SMMNRA. This may also account for the under-representation of particular socio-economic and race/ethnic groups in the survey.

Barriers to access

A very low proportion of trail users reported having a physical disability. Although few trail users reported experiencing barriers to access at the trailheads where they were surveyed, a higher percentage (almost 10%) reported experiencing accessibility issues elsewhere within the SMMNRA. However, these barriers related to minor obstacles such as fallen trees across trails or lack of parking in some locations as opposed to concerns over personal safety or access for disabled users.

Recommendations

Management recommendations include: outreach to people of color and low income earners, who were under-represented in the survey; development of an integrated public transportation service to facilitate greater access to the SMMNRA and to reduce the car dependence of trail users; development of a code of conduct for trail users to reduce user conflict; developing multilingual park signs and brochures, particularly in Spanish, Mandarin and Farsi and giving consideration to aged persons facilities, to cater to increasing diversity amongst patrons of the SMMNRA. It is also recommended that trail management planners investigate the feasibility of implementing an animal waste management program within the SMMNRA, which may include mandatory waste receptacles for horses and fines for dog-walkers who do not pick up their pet's droppings.

Issues requiring further research include the anecdotal reports of trail users about criminal behavior at trail heads, particularly car break-ins and drug dealing. Qualitative research such as the use of focus groups could address these and other personal safety issues such as the need for lighting, the provision of secure parking areas and trail safety. Given the poor response to questions on the survey pertaining to barriers to access, further research could also be undertaken into the factors that trail users perceive as constituting impediments to trail use. Finally, residents in the SMMNRA's catchment area who do not visit the SMMNRA should be surveyed to explore barriers to access and other reasons for lack of utilization.

Disclaimer

This report has been produced for the National Park Service with the express intent of informing their recreational trail-use planning program. Anyone intending to act upon material contained within the report, or the findings of the survey, should first confirm the veracity of those findings. The Sustainable Cities Program at the University of Southern California, the authors, employees and respective agents of the University of Southern California and National Park Service do not accept any responsibility for any injury, loss or damage caused to any person acting or failing to act arising from the use of material contained within this report.

Copyright

First published in March 2003.

The National Park Service is on the web at:

http://www.nps.gov

For information on the Santa Monica Mountains National Recreation Area:

http://www.nps.gov/samo

Authors

This report was prepared by:

Jennifer Wolch (principal investigator)	University of Southern California
Jason Byrne (co-principal investigator)	University of Southern California
Chris Kahle (secondary investigator)	University of Southern California
Jin Zhang (co- investigator)	University of Southern California
Iris Ahronowitz (summer fellow)	Harvard University
Max Joel (summer fellow)	Columbia University
David Woollard (summer fellow)	University of Southern California

Maps

Jed Fehrenbach (cartographer)	University of Southern California

Research for the report was undertaken as a part of the ongoing investigations of the Sustainable Cities Program at the University of Southern California pertaining to the connections between green space and ecological sustainability. For more information on the program please write to:

Center for Sustainable Cities
University of Southern California
2620 South Vermont Avenue, KAP 416
Los Angeles, CA 90089-0255.

On the web at:

www.usc.edu/dept/geography/ESPE

Acknowledgements

We gratefully acknowledge the contributions of Melanie Beck, Brian Forist and Gary Machlis from the National Park Service.

The forty National Park Service volunteers who worked over the course of the survey, giving up their precious time in the interest of the National Recreation Area are gratefully acknowledged.

Thanks are also due to the Santa Monica Mountains Conservancy (SMMC) and the Western National Parks Association (WNPA), for providing the funding for this project and to WNPA's Scott Aldrich for facilitating this support.

Special thanks are given to John Wilson who generously provided us with space in the University of Southern California's GIS Research Laboratory for the summer and to Denise Steiner from the Sustainable Cities Program who handled administrative issues with diligence and efficiency.

We would also particularly like to thank Steven Yoon from the Centers for Disease Control, Epidemiology Program Office, who kindly provided us with a copy of EpiInfo2000™, the software used for data analysis in this report.

Without the help of the above people, this report would not have been possible.

Further Information

Should you have any questions about the survey, this report or the National Recreation Area, please refer to the following telephone numbers. They are provided for your assistance.

Questions about the Santa Monica Mountains National Recreation Area and / or Interagency Regional Trail Management Plan:

National Park Service Visitor Center: (805) 370-2301

Questions on Trail Management Plan:

should be e-mailed to: **SAMO_TRAILS@nps.gov**

Questions about State Parks:

State Department of Parks and Recreation, Angeles District Office: (818) 880-0350

Questions about Santa Monica Mountains Conservancy (SMMC) or Mountains Recreation and Conservation Authority (MRCA) Parks:

SMMC Headquarters, Ramirez Canyon Park: (310) 589-3200

Table of Contents

Executive summary ..... **i**

Disclaimer ..... **v**

Copyright ..... **v**

Authors ..... **vi**

Maps ..... **vi**

Acknowledgements ..... **vii**

Further Information ..... **vii**

Table of Contents ..... **viii**

1 Introduction **1**

Previous Surveys 2
Purpose of the 2002 Survey 2
Key Findings of the Survey 3
Format of the Report 4

2 Review of the Relevant Literature **5**

Park User Attitudes, Values and Benefits 5
User Conflict 8
Park User Demographics 9
Equity and Justice in Outdoor Recreation 18
Park Activities and Management 22

3 Methodology **25**

Nature of the Survey 25
Respondent Universe and Response Rate 26
Instrument Administration Procedures 27
Data Entry 28
Statistical and Geographical Analysis 28

4 Analysis of Aggregated Survey Results **30**

General Overview of Results 30
Aggregate Analysis of the Survey Results 31
Demographics 32
Recreational trail use 37
Environmental Knowledge and Sources of Information 43
User Group Interaction Patterns 47
Mode of Transit and Barriers to Access 55
Future Growth Projections 56

5 Trailhead Comparisons **58**

Primary and Secondary Trailheads 58
Secondary Trails 61
Primary (Destination) Trails 69
Eastern and Western Trails 77
Western Trails 79
Qu. 2a: Activities engaged in during visit 81
Eastern Trails 86
Travel Patterns 91

6 Conclusion and policy recommendations 98

Recommendations for Trail Management 98
Recommendations for Further Research 103

Bibliography 105

Appendix 1 – Survey Instrument 112

Appendix 2 – Descriptive statistics 125
Appendix 3 – User Group Cross Tabulations 135
Appendix 4a – Frequencies: Small Sites 141
Appendix 4b – Cross Tabulations: Small Sites 151
Appendix 5a – Frequencies for Large Sites 157
Appendix 5b – Cross Tabulations for Large Sites 167
Appendix 6a – Frequencies: western Trails 173
Appendix 6b – Cross Tabulations: eastern Trails 182
Appendix 7a – Frequencies: eastern Trails 189
Appendix 7b – Cross Tabulations: eastern Trails 198

Table of Photographs

PLATE 1: MALIBU CREEK STATE PARK 3
PLATE 2: TRAILHEAD AT LEO CARILLO STATE PARK 4
PLATE 3: ORIENTEERING GROUP, MALIBU CREEK STATE PARK 6
PLATE 4: CAMPING – SYCAMORE CANYON 17

Table of Tables

TABLE 1 NON-RESPONDENT ACTIVITIES 32
TABLE 2 RACE OF VISITORS TO SMMNRA 34
TABLE 3 EDUCATION LEVEL OF VISITORS 36
TABLE 4 HOME OWNERSHIP (OVERALL) 36
TABLE 5 HOUSEHOLD COMPOSITION 37
TABLE 6 USER ACTIVITIES 39
TABLE 7 PRINCIPAL ACTIVITIES 40
TABLE 8 REASON FOR VISIT 41
TABLE 9 SOURCES OF NATURE KNOWLEDGE 44
TABLE 10 PROTECTION OF SMMNRA 45
TABLE 11 IMPACT OF ACTIVITIES UPON OTHER USERS 48
TABLE 12 PROBLEM ACTIVITIES 50
TABLE 13 TRAVEL MODE 56
TABLE 14 GROWTH PROJECTIONS 57
TABLE 15 SECONDARY (NEIGHBORHOOD) TRAILS 59
TABLE 16 PRIMARY (DESTINATION) TRAILS 60
TABLE 17 USER ACTIVITIES (SECONDARY TRAILS) 63
TABLE 18 PRINCIPAL ACTIVITY 63
TABLE 19 REASON FOR VISIT 64

TABLE 20 REASON FOR LOCAL PARK VISIT 65
TABLE 21 SOURCES OF NATURE INFORMATION 66
TABLE 22 PROTECTION OF SMMNRA 67
TABLE 23 IMPACT OF TRAIL USER BEHAVIORS 67
TABLE 23 REASON FOR NEGATIVE IMPACT 68
TABLE 25 PRIMARY TRAIL VISITATION 70
TABLE 26 USER ACTIVITIES 70
TABLE 27 PRINCIPAL ACTIVITY 71
TABLE 28 REASON FOR VISIT 72
TABLE 29 REASON FOR LOCAL PARK VISIT 73
TABLE 30 SOURCES OF NATURE INFORMATION 74
TABLE 31 PROTECTION OF SMMNRA 75
TABLE 32 IMPACT OF TRAIL USER BEHAVIORS 75
TABLE 33 REASON FOR NEGATIVE IMPACT 76
TABLE 36 USER ACTIVITIES 81
TABLE 37 PRINCIPAL ACTIVITY 81
TABLE 38 REASON FOR VISIT 82
TABLE 39 REASON FOR LOCAL PARK VISIT 83
TABLE 40 SOURCES OF NATURE INFORMATION 83
TABLE 41 PROTECTION OF SMMNRA 84
TABLE 42 IMPACT OF TRAIL USER BEHAVIORS 84
TABLE 43 REASON FOR NEGATIVE IMPACT 85
TABLE 44 EASTERN TRAIL VISITATION 86
TABLE 45 USER ACTIVITIES 87
TABLE 46 PRINCIPAL ACTIVITY 87
TABLE 47 REASON FOR VISIT 88
TABLE 48 REASON FOR LOCAL PARK VISIT 89
TABLE 49 SOURCES OF NATURE INFORMATION 89
TABLE 50 PROTECTION OF SMMNRA 90
TABLE 51 IMPACT OF TRAIL USER BEHAVIORS 90
TABLE 52 REASON FOR NEGATIVE IMPACT 91
TABLE 53 CATCHMENT RADII 93

Table of Figures

FIGURE 1 THE SANTA MONICA MOUNTAINS NATIONAL RECREATION AREA 1
FIGURE 2 NON-RESPONDENT ACTIVITIES 32
FIGURE 3 COMPARISON OF SEX RATIOS 33
FIGURE 5 HOUSEHOLD INCOME 35
FIGURE 6 EDUCATION OF TRAIL USERS 36
FIGURE 7 HOUSEHOLD COMPOSITION 37
FIGURE 8 VISITOR ACTIVITIES 39
FIGURE 9 PRINCIPAL ACTIVITIES 40
FIGURE 11 LOCAL/NEIGHBORHOOD PARK USE 42
FIGURE 12 USER GROUP INFORMATION SOURCES 45
FIGURE 13 REASONS FOR PROTECTION 45
FIGURE 14 USER GROUPS REASONS FOR PROTECTION 46
FIGURE 15 IMPACT OF ACTIVITIES ON OTHER USERS 48
FIGURE 16 TRAIL USERS RATING OF OTHER USER GROUPS 49
FIGURE 17 PROBLEM ACTIVITIES 50
FIGURE 17A UNCOOPERATIVE BEHAVIOR AND GROUPS RESPONSIBLE 51
FIGURE 17B ANIMAL WASTES AND THE GROUPS RESPONSIBLE 51
FIGURE 17C LITTER AND THE GROUPS RESPONSIBLE 52
FIGURE 17D POTENTIAL COLLISIONS AND THE GROUPS RESPONSIBLE 52
FIGURE 17E STARTLING PEOPLE AND THE GROUPS RESPONSIBLE 53
FIGURE 17F DAMAGING PLANTS AND THE GROUPS RESPONSIBLE 53
FIGURE 17G FRIGHTENING WILDLIFE AND THE GROUPS RESPONSIBLE 54

FIGURE 17H MAKING NOISE AND THE GROUPS RESPONSIBLE 54
FIGURE 17I SCARING HORSES AND THE GROUPS RESPONSIBLE 55
FIGURE 18 MODE OF TRANSIT 56
FIGURE 19 VISITATION ON SECONDARY TRAILS 62
FIGURE 20 PRINCIPAL TRAIL USER ACTIVITY 63
FIGURE 21 REASON FOR VISIT 64
FIGURE 22 REASON FOR LOCAL PARK VISIT 65
FIGURE 23 PROTECTION REASONS 67
FIGURE 24 REASON FOR NEGATIVE IMPACT 68
FIGURE 25 PRIMARY TRAIL VISITATION 70
FIGURE 26 PRIMARY TRAILS: MAIN ACTIVITY 71
FIGURE 27 REASON FOR VISIT: PRIMARY TRAILS 72
FIGURE 28 REASON FOR LOCAL PARK VISIT 73
FIGURE 29 REASON FOR PROTECTION 75
FIGURE 30 REASONS FOR NEGATIVE IMPACT 76
FIGURE 31 WESTERN PORTION OF SMMNRA 77
FIGURE 32 EASTERN PORTION OF SMMNRA 78
FIGURE 33 VISITATION ON WESTERN TRAILS 80
FIGURE 34 PRINCIPAL ACTIVITY 81
FIGURE 35 REASON FOR VISIT 82
FIGURE 36 LOCAL PARK VISIT 83
FIGURE 37 REASON TO PROTECT MOUNTAINS 84
FIGURE 38 EASTERN TRAIL VISITATION 86
FIGURE 39 PRINCIPAL TRAIL USE ACTIVITY 87
FIGURE 40 REASON FOR VISIT 88
FIGURE 41 REASON FOR LOCAL PARK VISIT 89
FIGURE 42 REASON FOR PROTECTION 90
FIGURE 43 USER TRAVEL ORIGINS TO THE SMMNRA 92
FIGURE 44 VISITOR FREQUENCIES BY DISTANCE AT RANCHO SIERRA VISTA 93
FIGURE 45 CATCHMENT AREAS OF WESTERN TRAILHEADS 94
FIGURE 46 COMPARISON OF TRAIL USERS AND CATCHMENT DEMOGRAPHICS: WEST TRAILS 95
FIGURE 47 CATCHMENT AREAS OF EASTERN TRAILHEADS 96
FIGURE 48 COMPARISON OF TRAIL USERS AND CATCHMENT DEMOGRAPHICS: EAST TRAILS 97

1 Introduction

Established by Congress as a part of the National Park System in 1978, the Santa Monica Mountains National Recreation Area (SMMNRA) is a diverse landscape of beaches, canyons, rugged peaks and breath-taking scenery (National Park Service, u.d.). There are over 320 miles of public hiking trails within the SMMNRA, facilitating access to a unique array of flora and fauna, and to dramatic landscapes. This unique resource is located on the 'doorstep' of the nation's second largest urban area, Los Angeles (see **Figure 1**, below). Inner city residents and people of color have disproportionately low access to open space in Los Angeles. Indeed, it is putatively one of the county's most park-poor cities (Wolch, Wilson and Fehrenbach, 2002). Although the Santa Monica Mountains National Recreation Area is well positioned to alleviate this paucity of open space in Los Angeles, it is not accessible to everyone. Those who do have access to the National Recreation Area may have differing needs and hold varying expectations as to how the recreation area and associated trails should be used.

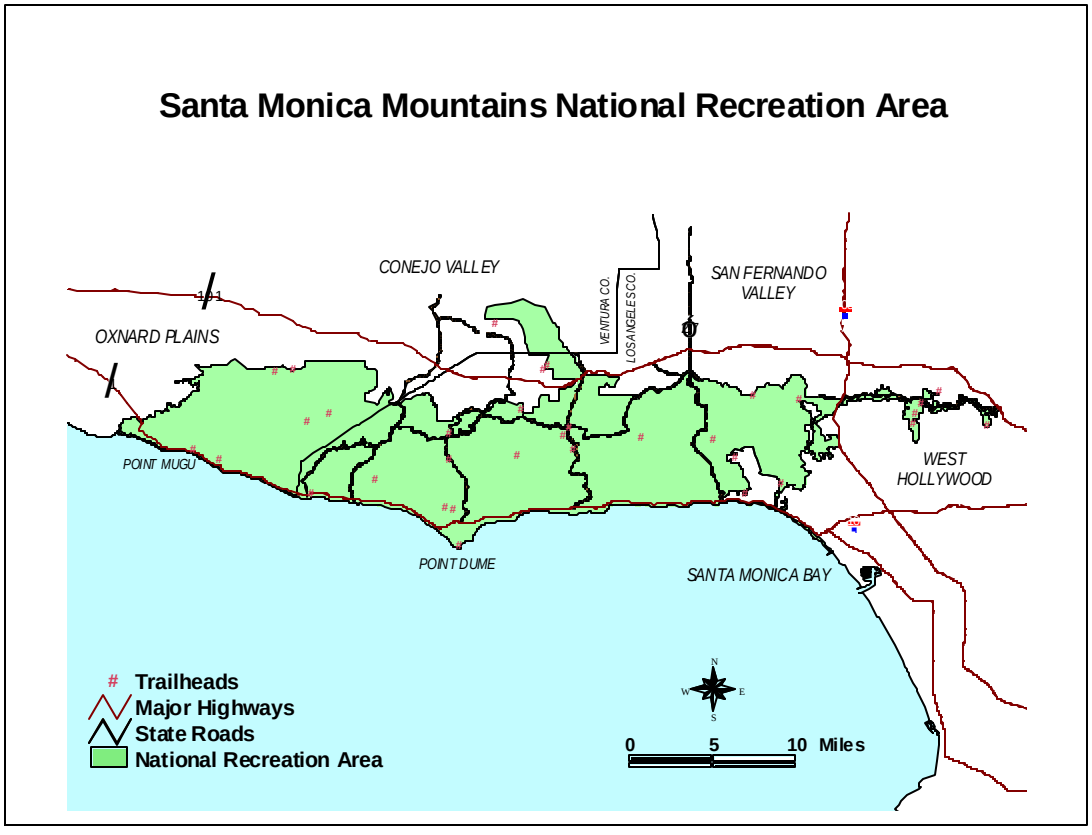


Figure 1 The Santa Monica Mountains National Recreation Area

This report presents the findings of a recreational trail use survey conducted within the Santa Monica Mountains National Recreation Area during the summer of 2002. The

survey and report were commissioned by the National Park Service as a component of research into trail use within the SMMNRA, in preparation for the development of a Trail Management Plan. This Plan will ultimately designate trails within the SMMNRA for specific activities to minimize conflict over trail use, and will enable the National Park Service to maximize the efficiency of trail maintenance and service provision within the SMMNRA. Gaining an understanding of who uses the SMMNRA and for what purposes is critical for effective management of the Santa Monica Mountains National Recreation Area's facilities and resources. However, the study also has a role to play in the development of more equitable provision of, and access to, open space in Los Angeles in general.

Previous Surveys

Four previous surveys have been undertaken within the SMMNRA. The first, in the winter and early spring of 1980, examined recreational use within the SMMNRA. It considered park attendance and park use, together with sources of conflict between users and the "unfulfilled needs of existing users" (Lee, 1980). The second report done in 1981, based upon 132 personal interviews with key organizations, considered the potential rates of visitor use among what were then described as "urban minority" and "handicapped" populations. A third report, done in May 1993, examined two distinct sets of visitors to the SMMNRA. The first group was visitors attending the Topanga Banjo-Fiddle Contest; the second were general visitors to nine designated sites within the SMMNRA. The same survey instrument was used for both of these populations (Littlejohn, 1993). The final survey focusing on transport, was undertaken in 2000 by ORCA Consulting under contract with Parsons Brinckerhoff (ORCA Consulting, 2000). This latter survey had a relatively small sample. It considered both visitor information and potential visitor use of a proposed shuttle bus system that was under consideration by the National Park Service. The findings of these surveys are reviewed as a component of section two of this report.

The July 2002 visitor use survey enhances these earlier surveys. Although the survey instrument touched on aspects highlighted in previous studies, the survey complements rather than replicates earlier efforts. An important point of departure is that the present survey instrument was administered on-site, at a far greater number of sites than previously investigated, and addressed a wider variety of issues than those considered in previous surveys. Importantly, the survey met a key recommendation of the 1993 visitor services survey project – that future surveys reflect actual behavior of visitors, by "having visitors fill out the questionnaire as they visit the park" (Littlejohn, 1993: 3; emphasis in the original).

Purpose of the 2002 Survey

The present visitor trail use survey gathered statistics on park visitors to the SMMNRA. The survey was administered at 23 trailheads located in destination areas of the SMMNRA, and at 10 neighborhood entrances identified by National Park Service staff. The survey took place on the weekends of July 13-14 and July 20-21, 2002, along with two weekday survey periods during the intervening week on Tuesday July 16 and

Thursday July, 18, 2002. Data collected included: demographic information on visitors (age, sex, ethnicity etc); the reason for their SMMNRA visit; activities conducted whilst in the SMMNRA; distance traveled to get to the SMMNRA site; mode of travel (car, public transport etc); visitor safety issues and visitor attitudes towards nature. The survey also sought to ascertain which trails were most frequently visited during the survey period, as well as the recreational activities that occurred on those trails.

J. Byrne

Plate 1: Malibu Creek State Park

Three agencies manage most of the recreational trails in the SMMNRA – the National Park Service, the State Department of Parks and Recreation and the Santa Monica Mountains Conservancy. A central function of the survey and associated report is to provide information to park planners from these agencies to assist in the development of an Interagency Regional Trail Management Plan for the Santa Monica Mountains National Recreation Area. The Trail Management Plan will establish the basis for trail use designation and management standards among the parkland management agencies. The survey will assist these agencies in the formulation of a program that will enhance protection of natural, cultural and recreational resources within the Santa Monica Mountains National Recreation Area while offering a diversity of recreational opportunities for park visitors. The survey provides one component of three sources of information upon which these management decisions will be based. The other two sources are a natural and cultural resource constraints analysis, and an assessment of current physical trail conditions. The survey is therefore of fundamental importance to trail planning and management within the SMMNRA.

Key Findings of the Survey

There were 12,388 people counted on trails within the National Recreation Area during the survey period. A total of 1,228 visitors (almost 10%) were invited to participate in the survey and of these only 242 declined to participate, yielding an 82%

response rate. Although 986 surveys collected, just over 7% were unusable due to response errors, inaccuracies or illegible content, leaving a functional sample of 912 surveys.

M. Joel

Plate 2: Trailhead at Leo Carillo State Park

Format of the Report

The report is divided into six sections. Following a review of the relevant literature in section two and a consideration of the survey methodology in section three, results of the survey are presented in sections four and five. The final section of the report outlines policy implications of the survey findings, and provides recommendations for the Interagency Regional Trail Management Plan Team. A comprehensive bibliography is presented at the end of the report, providing additional sources of information pertaining to, among other things, equity, accessibility, user conflict and trail management. The report also contains several appendices that present raw data in tabular form.

2 Review of the Relevant Literature

This section outlines literature relevant not just to visitor surveys in the Santa Monica Mountains National Recreation Area, but also to international examples of such surveys and to the broader field of leisure research. Reviewing pertinent literature enables the findings of the SMMNRA survey to be situated in the broader context of leisure research. This facilitates comparison with international data and enables the consideration of solutions to similar problems that have been experienced in trail management within national parks in other countries.

Park User Attitudes, Values and Benefits

People develop different conceptions of recreation based on the attitudes and values they hold concerning the role of nature and parks in their lives. These attitudes and values shape the way in which individuals use park space such as the SMMNRA, from the activities they pursue to their interactions with other users. While specific attitudes towards parks and their use may vary, it is clear that many of the ways in which people value and benefit from parks transcends national and cultural boundaries. These benefits range from increased personal psychological well-being to an enhanced sense of local or national identity.

User attitudes and values

A review of the park use literature reveals a range of attitudes and values held by park visitors, including aesthetic, recreational, social, and environmental values. In general, such values and attitudes vary between those that are anthropocentric, i.e., primarily oriented toward the benefits of parks for their users (individually or for society collectively), and those that are more biocentric or ecocentric, i.e., oriented toward the ecological importance of parklands for non-humans. However, most people, across all demographic lines, value a range of park features and benefits from park use. Moreover, the presence of nature within parks, and visitor appreciation for all other park aspects or activities is often contingent on the natural setting.

Research into aesthetic values suggests that park users value "natural" landscapes within parks, expressing a preference for such features as varied terrain and topography, water features, diverse vegetation and the presence of tree cover (Gold 1986; Yuen 1996; Burgess, Harrison and Limb 1988). An equally high value was placed on natural landscapes and settings by recreational users in a study of forest preserve trails in Chicago (Lieber and Allton 1983). More extensive studies of park users, however, conducted by social researchers in England (Burgess, Harrison and Limb 1988) and Singapore (Yuen 1996) found that individuals do not take an exclusive view of parks as a place for passive appreciation of nature and, indeed, value parks for the range of recreational and social opportunities they provide in a natural setting. These studies found that attitudes included aesthetic appreciation and recreational enjoyment, as well as a desire to feel close to nature, whether in a nearby neighborhood park or a remote wilderness park.

The influence of age

Younger park users also hold many of these same values, but at the same time they also demonstrate unique attitudes towards parks and recreation. National Park Service researcher F.P. Noe and his associates conducted extensive research into conceptions and attitudes toward recreation, often focusing on younger park users. One of these surveys (Noe, McDonald and Hammitt 1983) of inner tube river floaters in the southeast United States found that individuals in groups comprised of young friends were most likely to engage in risk taking behavior. Another study of white, middle class suburban high school students by Noe (1978) found that youth value opportunities for active recreation and sociability, termed "playfulness," and the chance to personally experience nature, termed "solitariness," in their experiences in National Parks. Ulrich and Addoms (1981) confirmed similar attitudes toward parks in a study of college students, who valued the opportunity for sociability in a nearby park, as well as the chance for passive relaxation in a natural setting.

J. Byrne

Plate 3: Orienteering Group, Malibu Creek State Park

Park benefits

There are a range of benefits that may be derived from parks. These include psychological benefits, material and economic benefits, health and fitness, identity formation and lifestyle. Some of these benefits are reviewed here in greater detail.

Psychological benefits

Many park users when interviewed in other surveys expressed the belief that parks have important psychological benefits for them as a place to find relaxation and relief from stress (Yuen 1996, Burgess, Harrison and Limb 1988; Ulrich and Addoms 1981). In addition, Ulrich and Addoms (1981) found that the mere presence of a park had a positive

psychological effect on nearby residents, even if they were not park users. A more in-depth examination of the psychological benefits of parks in reducing stress has been made by Ulrich and his associates in a series of psycho-physiological studies, where physiological indicators such as breathing rate and blood pressure were used to determine a subject's psychological response to particular activities. In one such study, subjects were found to relax more quickly when exposed to images of natural rather than urban settings, after exposure to a stress producing video (Ulrich et al. 1991). In a similar psycho-physiological study, Tarrant, Manfredo and Driver (1994) found that memories of past outdoor recreation experiences, both active and passive, had stress relieving effects. These findings have particular relevance for the SMMNRA as a natural area located in close proximity to an urban area, as many trail users may be seeking to escape the stress of the city and suburbs.

Material and economic benefits

In addition to enhancing personal wellness, greenspace such as parks and greenways also has material and economic benefits. For example, John Crompton, an academic planner specializing in recreation, park and tourism sciences, has undertaken a substantial comparative literature review examining property owners' perceptions of the impact of greenway trails upon property values. Crompton (2001) found that in all cases, studies into the relationship between greenways and property values, ranging across places as different as San Francisco, Seattle, Santa Rosa, Maryland, Denver and North Carolina, found that they had either a neutral or positive affect. This work was corroborated by Crompton (2001) in his assessment of the impact of parks on property values, in which he found that parks have very real material benefits for adjoining owners and also significantly increased the economic value of their properties.

Identity formation

Another benefit of parks is their ability to provide a sense of identity and place on a local, regional, and even national scale. In a study of neighborhood parks in Singapore, Yuen (1996) examined how parks and park activities become the focal point of local identity. On a larger scale, Mels (2002) has traced historical links between Swedish conception of national parks and nature and Swedish national identity. Mels also examined how the Saami people of northern Sweden have found their traditional lands incorporated into a broader conception of Swedish identity, often to the exclusion of their native culture. A similar situation is found in the United States, where the National Park Service has had to mediate between Native American groups and rock climbers who have very different conceptions over the identity and use of Devils Tower National Monument (Dustin and Schneider 2001).

As a major park and wilderness area in the Los Angeles metropolitan area, the SMMNRA has the potential to play a significant role in fostering a sense of identity that incorporates the region's natural resources. Given the importance of parks for identity formation, and the strong emotions reported by users towards park space, it is unsurprising that conflicts may occur between users of the same park space, where those users have very different ideas of how that space should be used.

User Conflict

The proximity and accessibility of the SMMNRA to the large and diverse urban citizenry of metropolitan Los Angeles is perhaps its greatest asset. The challenge for managing this open space is that visitors bring many different attitudes and values towards parks and recreation, which can lead to conflicts between different types of users. Other research has shown that differences in attitudes toward recreation are at the heart of many conflicts between users in parks, a situation sometimes exacerbated by over-crowding. Many of these conflicts are rooted in cultural differences, an issue of growing importance in an area as diverse as the Los Angeles metropolis.

Conflicting user activities

The literature generally reflects two explanations for user conflict within parks: user preferences and users' attitudes. Insofar as preferences are concerned, given the wide variety of recreational uses present in urban wilderness areas and parks in general, it is not surprising that conflicts can arise between different user groups and individuals. This is particularly the case for shared spaces such as recreational trails. Some conflict has been attributed to differences in preferences between users. For example, an assessment of the preferences of hikers, joggers, bikers and cross-country skiers in the forest preserve system of the Chicago metropolitan area found that, while all users preferred similar terrain and landscape features, each group of users had different, and often incompatible, preferences for recreational facilities and trail management (Lieber and Allton 1983). Other commentators have posited attitudes as the underlying source of conflict.

Users' attitudes

Conflict may stem from the presence of multiple user groups with different attitudes toward recreation. Jackson and Wong (1982) argue that the most intractable of this type of conflict is that between mechanized and non-mechanized recreational activities, as they are based on inherently different conceptions of recreation. Their study of urban dwelling snowmobile riders and cross country skiers in Alberta found that while snowmobile riders enjoyed adventurous, sociable recreational experiences, skiers felt that obtaining solitude and tranquility was the purpose of recreation. The authors note that such conflicts are marked by asymmetrical attitudes among the two groups of users, with cross-country skiers expressing a strong dislike of encounters with snowmobile riders, while snowmobilers mainly registered indifference toward skiers. It is interesting to note that a similar concern emerged in the SMMNRA survey regarding attitudes towards mountain bikers. Both Lieber and Allton (1983) and Jackson and Wong (1982) concluded that designating separate trails and facilities for specific types of uses might prove necessary if a compromise between users could not be reached.

Crowding

It is uncertain to what extent crowding on trails affects the recreation experience of users or leads to user conflicts. Stewart and Cole (2001) confirmed the findings of earlier studies, including Kuss, Graefe and Vaske (1990) and Manning (1999), that most

trail users perceive only a very slight negative effect on the quality of their experience as the frequency of encounters with other groups or individuals increases. However, this study was based on a survey of hikers in the Grand Canyon backcountry and may not adequately reflect the more congested conditions that are present in urban areas, such as the SMMNRA. Studies of crowding at popular sites in national parks indicate that once a certain level of crowding is reached, visitors become increasingly dissatisfied with the quality of their experience (Flint 1998). Likewise, the vast majority of longtime users of popular Acadia National Park were found to employ some sort of coping strategy in response to increasingly crowded conditions. These strategies included rationalizing the changes as improving their own experience, altering their perception of their own activities within the park, or simply reducing use (Manning and Valliere 2001).

In regard to park facilities other than trails, crowding appears to be less of an issue. For example, Heywood (1993), found that groups in crowded picnic areas in Southern California were largely tolerant of others walking through their own picnic site, an attitude especially prevalent among users of Latino or Hispanic ethnicity. Given the diverse population of the metropolis, the SMMNRA survey should offer further insight into the extent of differences in activity preferences and attitudes held by members of different racial and ethnic groups.

Cultural conflicts

In a study of urban wilderness areas in Southern California, including the SMMNRA, Hester, Blazej and Moore (1999) concluded that the changing demographics of park users had led to many emerging cultural conflicts. The authors categorized users as "traditional" and "non-traditional" users based on culture and park activities. By their definition, traditional users tend to be white, affluent and enjoy small group recreational activities such as hiking and biking, while non-traditional users are usually lower income Hispanic and African-American users and participate in large group, concentrated activities such as picnicking. Their study notes that traditional users frequently object to non-traditional users and uses of recreation areas, often suggesting that non-traditional uses have a negative ecological effect on park areas. However, the authors assert that no scientific evidence for this belief exists and instead conclude that cultural and social misunderstandings and fears were at the root of conflicts between the two groups.

Cultural conflicts are not simply a concern in the United States, as demonstrated by Wong (1996), who argues that opposition to tourist development in an Australian national park was at least partially based on prejudice against Japanese tourists, rather than ecological concerns. Despite these suggestive studies, there is a notable paucity of research on cultural conflicts between different groups of park users. Further research is clearly needed for a more complete understanding of user activities and potential conflicts in the SMMNRA and other park spaces.

Park User Demographics

The United States has experienced a demographic shift, especially in its urban centers, over the last 30 years. Not only has the ethnic composition of America's cities

changed to reflect increased diversity, but also, as the baby-boomer generation has aged and life spans have increased due to improvements in medical science, the median age of Americans has shifted upwards. These shifts translate into changes in the demographics of park users, especially for parks at the urban-wildlands interface.

Much of the park research surveyed in this chapter reflects to some degree these demographic trends. In addition, it focuses on the underlying demographic and socioeconomic reasons for differences in park use rates and patterns, especially differences due to class, race/ethnicity, age, and gender. Although social and environmental justice implications of demographic change are beginning to be addressed in park literature, these are still in an early stage of development. Such issues are addressed later (under the Equity, Justice, and the National Park Service section of this literature review).

Situated in Los Angeles, one of the most ethically diverse cities in the United States, the SMMNRA has the potential to attract users with varied ethnic backgrounds, ages, and socioeconomic status, who have a range of land ethics, attitudes toward nature, and leisure preferences. With increased diversity of park visitors comes a variety of land ethics (and associated behaviors towards both other trail users and non-human species and their habitats) that may differ from those held by park management, making dialog between visitors and park management critical in order to effectively manage park resources and reduce user conflict. The purpose of this section is to review past studies of SMMNRA user demographics, and then examine demographic components of more general research on recreational patterns, with a view to informing the present research.

Prior studies of SMMNRA user demographics

To date only three published studies on the demographics of Santa Monica Mountains National Recreation Area users have been conducted. Lee (1980) divided up the SMMNRA into discrete use areas, grouped these areas into types, and aimed to determine existing use levels at these various sites. Some raw data was reported, although very little of it was numerical – use was simply reported as low, medium, or high. No statistical analysis was performed. Numerical data were obtained from management but the validity of the data is uncertain, since estimates were made by numerous methods, including "eyeball estimates" and counts of parked cars. Information was also obtained from unstructured interviews with field personnel and unobtrusive observation of visitor behavior. Data were collected during one of the lowest usage periods of the year (December 1979 - March 1980), limiting their overall representativeness and applicability.

One year later, Mark and Holmes (1981), field researchers for the National Park Service, published a report titled *Potential Visitor Use of Urban Minority and Handicapped Populations in the Santa Monica Mountains National Recreation Area.* Their project, conducted entirely away from the field, included interviews with leaders of 132 ethnic and community organizations in order to gather information about these groups' interests, concerns, and needs in terms of outdoor recreation availability. The investigators' purpose was not to collect statistics for inference but to gain a strong sense of concerns,

needs, and perceptions of different groups. The organizations studied were not selected randomly but were actually recommended to the researchers by members of the particular ethnic/social groups. Although this may have introduced potential bias, it was a good way to ensure "quality control" – to insure that the organizations interviewed would be active and actually composed of people of the social group they purported to represent. The researchers aggregated, analyzed and reported specific response data and recommendations by ethnic/interest group and extensively documented responses of different groups to the open-ended questions on their perceptions, needs, and concerns.

This study thus did not generate statistical inference but it did result in a very extensive and candid collection of recommendations and impressions from different groups, which could be valuable in increasing awareness and access to the park facilities. The study was particularly notable, because it contacted advocacy groups, enabling the researchers to obtain some of the most well-articulated renditions of the issues affecting different groups. It also emphasized the needs and views of disabled users – a particularly important aspect since any study reliant upon a random sample of visitors would be unlikely to include a significant number of physically disabled persons from which to draw inferences.

The most recent and comprehensive SMMNRA study was Littlejohn (1993), a parks researcher for the NPS based at the University of Idaho. It consisted of a mail survey conducted on a maximum-traffic festival day at Paramount Ranch and then at a variety of sites the following week. A substantial amount of data was collected and displayed: visitor group sizes, types, visitor ages, ethnicity, state or country of origin, frequency of visits, usual days of visit and usual time of visit, length of stay at site, activities, knowledge about park, sources of park information, other sites visited, forms of transportation, reasons for visiting, and visitor views on quality and importance of different programs and services. This study was also the most extensive published collection of visitor perceptions and behavior information conducted in the SMMNRA, but its largely descriptive nature precluded the testing of hypotheses concerning the dominant factors shaping SMMNRA visitor use patterns or factors explaining differential accessibility to the SMMNRA. Further, the study was predicated upon mail-back responses, which could have biased the sample. Indeed, the report recommended conducting an on-site survey where respondents fill out the questionnaire in situ.

Race/ethnicity and class[1]

A number of different theories have been proposed to account for differential use of recreational facilities across demographic subgroups, particularly those differing by race/ethnicity. These include marginality theory, ethnicity theory, and broader post-structural approaches that recognize the interaction of race, class, gender, and other individual characteristics, as well as the structural and institutional factors that shape recreational activity patterns.

Marginality theory

Marginality theory postulates that neither race nor class per se explain use patterns, but rather discriminatory side effects of one's physical characteristics, including job discrimination, discriminatory social interactions, and other circumstances whose effect is to minimize the resources and opportunities available to members of these groups and therefore decrease their use of recreational sites (Floyd et al, 1994). Under the banner of discrimination, there are two schools of thought: the first is the pure discrimination model, and the second is the institutional racism model (Floyd and Johnson, 2002). The discrimination model assumes conscious, intentional, clearly definable, and eradicable discrimination. In contrast, institutional racism approaches posit a more subtle, subconscious, structurally embedded and difficult-to-isolate phenomenon that pervades society, shapes socioeconomic status and opportunities, and influences recreational behavior.

Ethnicity theory

A competing theory is ethnicity theory, which instead holds that differences in leisure patterns and behavior are caused by cultural factors. Differences in the values placed on recreation and different attitudes toward nature are seen as explanations for leisure preferences and use patterns (Floyd et al., 1994). Washburne (1987) gave memorable expression to this view in his statement that there was a "black subculture" that explained their different leisure preferences and behaviors. Floyd (1998) noted that whereas both of these theories are useful, they remain underdeveloped, and both need to do a better job of explaining how race/class/culture actually translate into less opportunity, interest, and or/access to outdoor recreation.

1 It is important to note that the terms race and ethnicity are problematic. Perhaps the single most trenchant issue is that these terms are often used pejoratively in the wider social milieu and can be a source of stigmatization. Early literature on nature, the environment and leisure was replete with racist connotations, where people of color were seen to naturally prefer human-modified settings whilst whites could appreciate so-called pristine nature (Hurley, 1995). Although previous surveys have followed race categories defined by the US Census Bureau, such as African-American (or Black), whites (or Anglos), and Hispanics, their results and conclusions are not without concern. The present survey also employs the US Census Bureau categories, but it is important to note that it provides respondents with the opportunity for self-identification as Latino/a, in reference to people who may previously have been identified as Hispanic and includes a race category of Black/African-American (refer to Appendix 1 for more information about the survey instrument).

Race

Several recent empirical studies have explored the ways in which race/ethnicity and class are related to recreational activity patterns. For example, several studies of leisure preferences indicated that African-Americans, whites and Hispanics have different notions of leisure activity (Hutchison, 1987 and Baas, Ewert, and Chavez, 1993). The first studies to notice this phenomenon assumed that race was the most important factor in determining the differences observed. Findings indicated that African-Americans tended to spend leisure time in more developed (urban) surroundings while whites put more of a premium on undisturbed nature (Stamps and Stamps, 1985). Additionally, those surveys concluded that Hispanics put more emphasis on the social dimension of leisure activity than whites, participating more heavily in group sports and picnicking, for example (Hutchison, 1987 and Baas, Ewert, and Chavez, 1993). However, these studies tended to uncritically accept the notion of leisure preference, without accounting for deeper social, economic and cultural explanations – such as racial discrimination in housing allocation, which affects access to recreation opportunities.

New directions

Much recent empirical research suggest that neither marginality theory or ethnicity theory adequately account for the variety of different leisure preference and activity patterns observed among people from different racial backgrounds. Instead there has been a move toward the development of explanatory models that seek to integrate a wider variety of causal factors into their explanatory schemas. For example, historical research suggests that cultural attitudes toward nature and outdoor areas may be ingrained from an earlier history of discrimination, with marginalizing experiences embedded in collective memory becoming incorporated into a group's culture (Lee et al. 2001, Virden and Walker 1999). Downey (1998) takes this idea further, arguing that treating race and class as separate indicator variables falsely distinguishes between two phenomena that are intimately connected, and therefore this practice should be abandoned. Floyd et al. (1994) strongly advocate that efforts be made to model the actual patterns and mechanisms of past and present discrimination to get a better understanding of how these translate to different leisure preferences and recreational behaviors among different racial groups.

Race and class

Several commentators have begun to investigate the interaction between class and race in determining leisure preferences. For example, economic differences, and consequently access to livable neighborhoods, may play a more important role in leisure preferences, park access and recreational activities than has previously been theorized (Woodard, 1988). Floyd et al (1994), for example, addressed the issue of the relationship between race and class differences in leisure preferences. Floyd et al's (1994) findings departed from those of their predecessors (particularly Stamps and Stamps, 1985 and Pesavento-Raymond and Kelly, 1991 – cited in Floyed et al), in showing more similarity than difference in the recreational preferences of blacks and whites in the same social class. They found that both race and class mattered.

Floyd et al (1994, 169) reported that in some ways, the results of their study corroborated earlier findings. African-Americans were seen to be more involved in team sports, fitness, social activities and voluntary associations and less involved in outdoor leisure pursuits such as camping and hiking. However, they also found considerable intra-group variation, noting that for middle class respondents, camping and hiking were the preferred leisure activities, irrespective of race, whereas for the poor and working class respondents, hunting and fishing were consistent ranked higher. Floyd et al (1994) concluded that although these results corroborated the findings of earlier researchers (Yancey and Snell, 1976; McPherson, 1977), their results "did not offer compelling evidence for the superiority of either the marginality or ethnicity perspective" (p. 170). They called for a re-conceptualization of the "…relationship between race, class and leisure" because these factors "exhibit an interactive effect on leisure preferences" (Floyd et al, 1994, 171).

Floyd (1998) further developed his critique of marginality and ethnicity explanations in a special issue of the *Journal of Leisure Studies*. He noted that both perspectives suffered from a lack of critical appraisal of the monolithic constructs of marginality, race and ethnicity. He challenged theorists to think more critically about the socially constructed and highly contested nature of the categories race and ethnicity and continued to call for a re-conceptualization of the relationship between class, race and ethnicity, pointing to emerging work on assimilation as a guide.

Assimilation

Carr and Williams (1993), working with the USDA Forest Service, concluded that the Hispanic population was not nearly as monolithic as had been initially assumed by leisure researchers. Surveying four urban - wildlands interface parks in the Los Angeles area in 1993, they found that by dividing race into ancestral group membership, generational status, and acculturation, intra-racial differences could also be found. More acculturated Hispanics tended to share many more preferences and views with whites than with less-acculturated Hispanics (Carr and Williams, 1993). The effects of acculturation on Hispanics were corroborated in another study through a telephone survey of households in Central and Southern California in 1998 (Shaull and Gramann, 1998).

Just as earlier surveys concluded that there are noticeable intra-racial differences in the Hispanic population, later surveys have started to examine other possible factors that could contribute to the observable differences between whites and people of color. This debate has been particularly animated with regard to comparisons between the leisure experiences and recreation patterns of whites and African-Americans. Commentators such as Floyd et al (1994), Floyd (1998) and Floyd and Shinew (1999) have attempted to break away from explanations based upon marginality or ethnicity. Unfortunately, to a large extent their efforts have been pervaded by an undercurrent of "Anglo-normativity", and largely ignore both socio-cultural and socio-economic determinants. At worst this kind of thinking risks racist essentializing, and at best fails to acknowledge the contributions of post-structural and post colonial theorists.

Interracial contact

Continuing to break away from traditional approaches to theorizing race and leisure, Myron Floyd continued his search for alternative explanations, this time teaming up with Kimberly Shinew from the Department of Leisure Studies at the University of Illinois. Floyd and Shinew (1999), through their analysis of inter-racial recreational patterns, asserted that the divergence of leisure preferences between African-Americans and whites is attributable to varying interracial contact. Drawing on the work of Blau (1977), Bourdieu (1977) and Burch (1969), they noted that many theorists have attribute differences in leisure preferences and recreational patterns to the interactions of historical patterns of racial discrimination coupled with class distinctions and the predilections for particular leisure activities that accompany socio-economic status. Thus, people of a similar class will be more likely to share leisure preferences, regardless of their race, due to shared norms, conventions and behaviors (cultural capital) that are possessed by virtue of being members of that class, and which structure and differential access to resources, including recreational opportunities (Floyd and Shinew, 1999: 362-367).

However, Floyd and Shinew (1999) questioned these assertions, postulating that greater interracial contact is responsible for convergence in leisure pursuits. They argued that interracial contact enhances the opportunity for social interaction across racial boundaries, and in the process exposes individuals to the norms, behaviors and "frames of reference" of others (Floyd and Shinew, 1999: 379). They concluded that interracial contact will lead "African-Americans' preferences…to become more like those of whites rather than vice versa". The result is a convergence in leisure patterns. Unfortunately in their struggle to challenge entrenched paradigms in leisure studies, Floyd and Shinew (1999) fell into the familiar trap of Anglo-normativity that underpins much leisure research.[2] We return to the topic of race and ethnicity in our discussion of equity in outdoor recreation. First however, we make a short departure to consider issues of age and gender and then briefly examine environmental attitudes, as these issues are central to conceptions of equity.

Age and gender

Leisure research has recently expanded from questions of race and ethnicity to encompass the broader concerns of age and gender in shaping leisure patterns. As with race and ethnicity, these issues are often imbricated and complex. For example, not only is an increasing proportion of the US population aged 55 and over, a phenomenon that is shaping contemporary patterns of recreation, but the active lifestyles and health of this group have also improved. Mature Americans are more active than were previous generations and more interested in what Dychtward, terms "intensely gratifying recreation" (McCormick, 1991).

A study of local neighborhood parks conducted by Godbey and Blazey (1983), found that many seniors utilize urban parks to engage in much the same activities as younger

[2] Ironically this was one of the criticisms leveled by Floyd (1998) against those who pursued explanations based upon conceptions of marginality and ethnicity.

visitors. Walking, socializing, enjoying nature, and exercising were commonplace activities amongst seniors at urban parks in Atlanta, Boston, Chicago, Houston, and San Francisco. Additionally, Cordell, et al. (2002) speculated that, while active recreation such as mountain biking, surfing, and team sports are currently very popular, the increasing median age of the population will eventually shift recreation emphasis over to less physically challenging activities such as walking and hiking.

Lee et al. (2001) conducted a telephone survey of a stratified sample of 3000 Texas residents in 1998 to determine the individual and interaction effects of four factors on leisure participation, including age. One limitation of this study is that it was area-specific, thus failing to take account of regional variations. Results showed that age was the most important factor in determining outdoor recreation participation levels.

A recent study by Payne et al. (2002) employed telephone interviews with 800 Cleveland residents to determine if and how race, age, and residential location affected, among other things, the perceived need for more parkland, preferences for desired function of that land, preferences for style of recreation, and level of existing visitation to local parks. The study encompassed three psychological variables as well as a behavioral variable, but was limited by the fact that all variables had to be collapsed into dichotomous categorical variables (again, the race category included only black and white respondents). The study also found that although race was the strongest predictor of preference for park land use, age was the strongest predictor of support for additional parkland, as well as the strongest predictor of visitation levels, corroborating Lee et al's 2001 results.

Environmental attitudes

Few studies of cultural diversity and recreation behavior explore the ways in which differential environmental values or attitudes might influence recreation choices. This is despite the fact that race/ethnic differences in environmental attitudes have been documented (Noe and Snow, 1989/90), as well as differences in attitudes toward animals (Kellert, 1984), and that it might be expected that patterns of leisure could be expected to vary with attitudes. Those with stronger biocentric or ecocentric environmental values for instance, may be more likely to participate in nature-oriented outdoor recreation, whereas people with a more anthropocentric orientation make recreational choices that emphasize social interaction, exercise, or mastery over nature. It might also be expected that knowledge of the recreation zones, especially wildlands or coastal areas, could foster appreciation and interest in spending time at such sites, while access to information about recreation opportunities could influence behavior; given differential levels of educational attainment across race/ethnic groups, this could be related to differential recreational behavior, yet no studies have explored this connection.

J. Byrne

Plate 4: Camping – Sycamore Canyon

Cordell, et al. (2002) is one of the few studies to focus on recreation patterns and environmental attitudes. Analysis of the 2000-2001 National Survey on Recreation and the Environment (NSRE) revealed that attitudes were, in fact, related to recreational activities patterns and preferences. Moreover, class was linked to attitudes toward nature. Low-income individuals tended to trust the ability of humans to eventually control nature and exert influence upon it, while high-income individuals tended to have more ecocentric attitudes towards nature-society relations.[3] This suggests that attitudes toward the outdoors, either independent and/or in interaction with income or class, could play a role in understanding patterns of trail use in the SMMNRA. Results presented in ***Section 4*** of this report corroborate this assertion. The majority of respondents to the survey were relatively affluent, and ecocentric attitudes were remarkably prevalent across the full range of SMMNRA user groups. Indeed, the majority of respondents (53.2%) expressed strong concerns for the protection of habitat in the Santa Monica Mountains, with a further 21.6% advocating a balance between habitat protection and recreation. However, the virtual absence of people of color and low income earners from the survey sample raises important questions with regard to the equitable provision of greenspace in Los Angeles, the ability of traditionally disadvantaged user groups to gain access to the National Recreation Area (especially given the lack of public transport options) and issues pertaining to the comparative scarcity of passive recreation opportunities in the inner city.

3 Respondents to the NSRE were asked to react to 10 questions representing the 5 New Ecological Paradigm (NEP) domains--ecological limits, balance of nature, anti-anthropocentrism, rejection of exemptionalism, and ecological catastrophe--using a 5 point scale ranging from 1=strongly agree to 5=strongly disagree.

Equity and Justice in Outdoor Recreation

With unprecedented population growth in urban areas, and shifting demographics of park users at the urban-wildlands interface across many cities, questions of equity and justice have recently received increasing attention within the field of leisure studies. Research in this area suggests that in many cases failure to attend to equity considerations have patterns of recreational services provision that have not kept up with the changing needs of the citizenry. The National Park Service (NPS) in particular has faced criticism for being unresponsive to broader changes in society and for being unrepresentative in its internal structure and employee recruiting (NPCA, 2002). Whilst partly defending such criticism from the perspective of career preferences and salary maximization among people of color, the National Park Service has acknowledged this concern (Roberts and Rodriguez, 2001). The original mandate of the Park Service was captured by President Roosevelt's famous arch that once graced the entrance to Yellowstone National Park when automobiles were first allowed to enter, which read: "For the benefit and enjoyment of the people" (Everhart, 1983). Yet, some commentators asserted that from their inception, National Parks were only accessible to the affluent, able to afford expensive train or stagecoach fares needed to visit remote park locations.

A critical moment in National Park history was the development in the 1930s of the concept of a new kind of public space: a "national recreation area" (Sellars, 1997) that was less single-mindedly oriented toward nature preservation and more concerned with the recreational needs of the public, particularly those who were not wealthy enough to enjoy outdoor recreation opportunities on private property. Another important development was President Lyndon Johnson's Great Society program (Everhart, 1983:69) that focused on accessibility for the economically disadvantaged and the creation of new parks closer to urban centers. The latter goal was realized with the emergence of the first NPS-run national urban park in 1972, when, in the spirit of "bringing parks to people," the NPS opened Gateway Park in New York, followed by Golden Gate National Recreation Area in San Francisco (Everhart, 1983). The Santa Monica Mountains National Recreation Area was likewise created under this "parks for people" movement.

Despite the creation of National Recreation Areas, a large gap remains between the outdoor recreational needs of a fast-changing public and the current status of outdoor recreation facilities and opportunities. Moreover, very few studies of recreation behavior control for geographic accessibility across groups. So, for example, do people of color living in cities visit nearby mountains less frequently because they are more apt to live in central cities situated further from those mountain zones, or because they are more apt to be dependent upon public transport that offers opportunities for visiting urban-proximate wildland areas? The first steps towards ameliorating such problems is the collection of empirical evidence to evaluate the current makeup of park users compared with available data on the demographic composition of the local population, as well as differential rates of geographic access to park facilities.

Environmental justice

One of the greatest challenges faced by the National Park Service was the environmental justice movement. This social movement emerged in the 1980s in response to a civil rights-oriented outcry against racial and class-based discrimination in the exposure to environmental harms such as pollution; the disproportionate provision of government environmental services, environmental policy making and environmental law enforcement; and in low access to environmental benefits such as greenspace (Bullard: 1990, 1993, 1994, 1995, 1999; Bryant, 1995; Laituri and Kirby, 1994; Perhac, 1999; Pollock and Vittas, 1995; Pulido et al, 1996; Pulido, 2000, and Westra and Wenz, 1995). The movement also arose in response to an environmental movement that many poor and minority citizens saw as being elitist, and favoring the preservation of inaccessible nature enclaves over the welfare of less privileged human beings (Di Chiro, 1996).

Environmental justice has been defined as a state whose realization requires the fulfillment of three types of equity: procedural, geographic, and social (Bullard, 1994). While in most cases it has been characterized by protest over the distributive outcomes of government policy, particularly with regard to environmental harms such as pollution, others have defined it with a greater emphasis on procedural justice (Lake, 1996) or newer, feminist-influenced non-distributive models of justice that place primary importance on the processes and power relations that underlie the various distributive outcomes of public policy rather than on the distributive outcomes themselves (Warren, 1999). The movement defined itself as a catalyst for awareness and correction of "unevenness in the distribution of environmental costs and benefits" (Floyd and Johnson, 2002) but in practice, the movement's initial concerns centered mainly around costs – claims of disproportionate siting of toxic facilities and effluents in poor and minority neighborhoods. These claims were corroborated by empirical evidence, which in turn prompted further study into patterns and mechanisms of environmental discrimination or, as it is more often termed, "environmental racism." [4]

The environmental justice movement has recently expanded its concerns to include the disproportionately low availability and accessibility of greenspace (an environmental amenity or benefit) among low-income and minority urban residents. This has been accompanied by a nascent but rapidly growing body of academic literature on recreation equity. Access to greenspace by urban residents has been shown to be a very highly valued mental and social asset, affording a sense of escape from the fast pace of urban life and a place for solitude and contemplation among people who often have very little private space to themselves (Everhart, 1983; Wolch and Wilson, 2002). Researchers have

4 The term "environmental racism" became popular after the 1990 Michigan Conference on Race and the Incidence of Environmental Hazards (Taylor 2000) when it was associated with conscious, deliberate forms of discrimination. However, Pulido (1996) has more recently argued that environmental racism should be seen as an often unintentional phenomenon that has pervaded the social system to such an extent that it can not be neatly identified and extracted. As for use of the terms environmental "justice" versus environmental "equity," which were initially interchangeable, at the 1991 First National People of Color Environmental Leadership Summit, it was decided that the term "justice" was more appropriate because it had broader scope and inclusivity (Taylor, 2000).

characterized and quantified open space/natural resources as benefits in a number of ways, as discussed in the section on benefits in this report .[5]

In 1994 the federal government responded to the demands of the environmental justice movement (and the corroborating findings of numerous researchers) by issuing Executive Order 12898, which formally brought the demands of environmental justice to bear on the recreational and tourism development components of federal land management agencies (Floyd and Johnson 2002). Executive Order 12898 had enormous significance because public lands management decisions affect nearly one-third of all land in the US and approximately 40% of all recreation in the US occurs on federal public lands (Loomis 1993). With the issuance of EO 12898, issues of equity have come to the forefront of the National Park Service's mission. These crucial steps in the evolution of the National Park Service inform this study.

Studies of equity in outdoor recreation

The earliest park user demographic studies documenting lower park access, use, and interest among minority and low-income citizens from an environmental justice standpoint appeared in the late 1980s (Floyd and Johnson, 2002). Since then, several studies have explored unequal use and preferences along dimensions of class, race, ethnicity, age, gender, residential location, and education levels. This section contains an overview of several of the most influential of these studies and their implications for the present research.

A differentiation is evident between psychological and behavioral factors in studies of park use (explicitly noted in Lee et al., 2001). Psychological factors (individual preferences and perceptions) were the sole emphasis at first for a number of reasons, not the least of which was convenience in data collection. Studies of psychological factors avoided the complication of speaking to people on site or asking them to recall detailed information about their past recreational activities. Studies investigating behavioral factors (actual park use activity) have until recently lagged. Yet it is important to note that the two are causally intertwined in ways that have yet to be fully elucidated or acknowledged in any of the studies completed to date. Clearly, park use behavior patterns directly impact perceptions of nature and park preferences, and similarly park use patterns may be explained by preferences that may or may not be related to more easily measurable demographic factors.

Tarrant and Cordell (1999) conducted a study of environmental equity in spatial accessibility of park recreation sites by identifying the socioeconomic characteristics (race, income, heritage, occupation) of census block groups within 1500 meters of the Chattahoochee National Forest in Georgia to see if there was any correlation of specific socioeconomic characteristics with spatial relationship to the park. Statistical analysis revealed that in fact park recreation sites were disproportionately closer to census block groups with higher proportions of lower income residents. This was one of very few

5 For example, Driver developed a model for quantifying both the benefits of natural resource management (1991) and of outdoor leisure activity (1996), while Aldy (1999) examined the distribution of the outdoor leisure benefits in Southern Appalachia.

studies whose findings seemed to challenge the claims of the environmental justice movement. The study did not, however, investigate actual use patterns or attempt any comparison with other, perhaps more urban locations to see whether these results were generalizable or merely anomalous.

Equity mapping

A practical application of the research into equity and justice has been the development of "equity maps". Emily Talen, a former land use planner turned academic, developed an application of geographic information systems (GIS) to map equity in the allocation of greenspace amongst urban residents. At a basic level, equity refers to that which is considered to be fair by society. However, Talen notes that such a conception of equity is problematic because it pivots on the question "fair for whom?" Talen reviews four separate conceptions of equity – equitable distribution in which all members of society receive the same benefits regardless of existing levels of need based on disadvantage; compensatory equity where resources are redistributed to those most in need to mitigate inequalities created by class and race distinctions; demand distribution where the most vocal members of the community are given the most resources and finally market based distribution where those who can afford the most to pay for a service get those resources (Talen, 1998: 24) It was the second conception of equity that Talen (1998) employed in her examination of the spatial relationship between resource distribution (the location of parks) and resource need (when people who most need access to parks live) as a way to "explicitly reveal the distributional choices being made about 'who gets what' (Talen, 1998: 23). Using the City of Pueblo, Colorado as a case study, Talen (1998, 24) developed a technique for mapping a "need-based distributional standard" for park space.

Talen used accessibility to parks as the key determinant in understanding the (in)equitable distribution of greenspace throughout the city of Pueblo. Accessibility was measured based on four parameters – the gravity model where demand for parks falls off at a negative rate with increasing distance, minimizing travel cost, covering objectives – which establish a critical distance for service provision and minimum distance which seeks to minimize inequality by minimizing the distance traveled to access greenspace. She found that the central city had more access to park space, and suggested that this was the result of the trend towards increased private greenspace in the form of private gardens and other facilities such as tennis courts in the suburbs. She also found that greenspace was equitably distributed amongst needy residents within the city.

Sarah Nicholls, who investigates park and tourism-related issues at Texas A&M University, recently utilized the work of Talen. Nicholls (2001) applied Talen's model to issues of accessibility and distributional equity in a study that used GIS to examine the distribution of public parks in Bryan, Texas. Nicholls similarly employed a compensatory or needs based assessment of greenspace, and was specifically interested in testing the application of the National Recreation and Park Association (NRPA) recommendation for a standard of 10 acres of open space per 1000 residents. Nicholls (2001, 211) identified those groups most in need of greenspace access as being: "non-whites, those earning low incomes (approximated by those who rent as opposed to own their home, and whose property or rental value is lower than average), the young and the elderly, and those

residing in more densely populated areas and less likely to have access to a private garden". Nicholls found that the distribution of parks in Bryan was equitable, but accessibility was another matter. Less than 40% of residents were found to have good access to any form of open space. Furthermore, only 12% were able to reach a neighborhood park within easy walking distance of their place of residence. Her analysis thus revealed a "lack of sufficient open space" (Nicholls, 2001: 217).

Building upon the work of Talen (1998) and Nicholls (2001), a recent study by Wolch and Wilson (2002) found that in the city of Los Angeles, a very different pattern of greenspace distribution prevails. Census and local parks data in combination with geographical information systems mapping revealed a disturbing, but not unexpected pattern of lower access to local parks among people of color and low-income residents. This disparity has been exacerbated by unequal allocation of new public funding for parks within the city. Areas already well endowed with park space continue to receive funding for new parks, whilst those areas with a dearth of greenspace, park development is still comparatively poorly funded. This has serious implications for park planning in Los Angeles and for the equitable provision of greenspace throughout the city.

Park Activities and Management

Park management must accommodate the wide variety of activities pursued by users with diverse attitudes and values while at the same time mediating conflicts among these groups. In this final part of the literature review, we examine some of the models that have been suggested for managing user conflict, differing expectations among park patrons and competing expectations with regard to park utilization. One current theoretical framework for park management that is receiving considerable attention is the ecosystems management model. It shares many characteristics with other management strategies being used internationally and in domestic activity management and conflict resolution and presents itself as a model worthy of consideration for the Santa Monica Mountains National Recreation Area.

Management strategies

The most important recent theory of park management is ecosystems management. The defining quality of ecosystem management, as stated by Lope and Dunstan (1996), is that natural resources and social conditions are conceived of as a dynamic system, rather than a static set of individual factors. In a review of the development of the ecosystem management concept and its application to parks, Agee (1996) accepts the goal of park management put forward by Grumbine (1994), of "preserving native ecosystem integrity" using management strategies that adapt to new conditions and challenges. This approach is also applied to conflicts among user groups and outside groups, such as neighboring property owners. Consensus and cooperation are stressed, and the role of park managers is to attempt to find a solution that meets the needs of all parties (Agee 1996).

In practice, park managers must address both the technical problems of different groups sharing space as well as clashing conceptions of recreation and parks. Lieber and Allton

(1983) suggest that, given the incompatibility of certain activities based on technical preferences, such as trail surface material, parks should include multiple single use trails with common access points and terrain rather than multiple use trails. However, parks management can be equally effective in mediating conflicts based on differing conceptions of recreation, such as that between snowmobile riders and skiers (Jackson and Wong 1982) and that between traditional and nontraditional users (Hester, Blazej and Moore 1999), or other conflicts rooted in cultural differences. During the 1990s, the United States National Park Service successfully addressed conflicts around rock climbing on Devils Tower National Monument, a site sacred to many Native American groups. Through the process of collaborative conflict resolution, where all concerned parties were involved in negotiation with each other and the Park Service, a voluntary ban on climbing was agreed to that has effectively diffused a cultural conflict through mutual understanding (Dustin and Schneider 2001). An extension of the ecosystem management concept, this approach to conflict resolution has great potential for park management.

Other management strategies in use around the world attempt to strike a balance between ecological preservation and visitor activities while developing an understanding of how each influences the other. The United States National Park Service's Visitor Experience and Resource Protection (VERP) project determines "a set of desired ecological and social conditions" for an individual park and, using regularly collected ecological data and visitor surveys, monitors whether the ecology or recreational experience of the park is being harmed through overuse (Flint 1998). Graham, Nilsen and Payne (1988) explain a similar management strategy developed earlier by Canada's national park system, named the Visitor Activity Management Process (VAMP), which they suggest will allow the park system to take a marketing approach to park management. Looking at park planning in the international arena, Lomax (1988) has described how New Zealand addresses economic, ecological and social concerns over tourism in national parks by incorporating the national, regional and local levels of government administration into a system of planning that balances large scale priorities and the needs of individual groups of citizens.

In each of these strategies, and ecosystem management in general, effective collection and application of data concerning user activities, preferences and conflicts is critical to evaluating park management and procedures. The data provided by the SMMNRA survey should help determine to what extent the goals of the trail management plan are being met and what changes in the plan may be necessary.

Managing park activities

Activity choices are based on particular attitudes towards recreation and parks and have important implications for park management. For example, Noe (1978), in a study of youth attitudes towards parks, found that positive experiences with parks personnel gave youth, particularly young women, more confidence in the ability of parks to provide "solitariness," a common activity sought by youth (Noe 1978). In a similar study with college students, Galloway and Lopez (1999), found that individuals with "sensation seeking" personalities conceived of recreation as an opportunity for excitement and new

experience. Thus the college students preferred activities in national parks such as encountering wildlife and visiting remote areas of parks. The authors suggest that future research might allow park managers to use personality based marketing techniques to attract visitors to particular activities. Evidence that this approach can be effective is given by Shultis (1989) who documents the correspondence between the activities pursued in New Zealand's national parks and the images of New Zealand's parks put forward in international tourist marketing campaigns, indicating the campaign had attracted visitors with particular recreational attitudes.

Attitudes, however, are not the only factor that must be considered in activity management. Hammitt, Knauf and Noe (1989), in a survey of horseback riders at a national park in Tennessee, found that experience level, as determined objectively by the researchers through a questionnaire, was inversely related to a desire for more equestrian facilities and programs. However, this relationship was not found when subjects were asked to subjectively rate their own level of experience. This study demonstrates both that user experience is an important factor in park use, and that user perception of their own experience and abilities can sometimes be misleading, an important issue to consider in interpreting the results of the SMMNRA survey. How much of a role in park planning different types of measures, such as user attitudes and experience, should play, and how these measures can be accurately gauged, is an important target for future research.

3 Methodology

The following section of the report discusses the methodology employed for the trail use survey. This is important not only insofar as interpreting the results is concerned, but also to assist in the design of future surveys. Aspects of the methodology that are considered in this section include the respondent universe, the sampling procedures, administering the survey instrument, weaknesses associated with the survey instrument, expected versus actual response rates, and controlling for bias.

Nature of the Survey

The survey was developed in consultation with staff from the National Park Service and Professor Gary Machlis of the University of Idaho, the Park Service's visiting chief social scientist. The survey was submitted to, and approved by, the Office of Management and Budget. Minor modifications to the instrument were made based upon feedback received during the training sessions for interview staff. In addition, the survey instrument was reviewed and approved by the University of Southern California's Institutional Review Board (IRB) to ensure that it met Federal standards for ethical research involving human subjects.

The survey sought to capture information on the following five broad categories (see ***Appendix 1*** for the instrument):

- User demographics;
- Visitation rates and recreational activity patterns;
- Attitudes toward the Santa Monica Mountains;
- User group interaction patterns; and
- Access to the SMMNRA.

User demographics

Demographic characteristics of park users were collected, including age, race/ethnicity, sex, household composition, and presence and number of children. Socioeconomic status items were designed to capture educational attainment, housing tenure, and household income. A series of items on country of origin, duration of residence in the US among non-native born respondents, and language spoken at home were structured to understand the extent to which immigrants, recent arrivals or long-term, used the SMMNRA trails.

Visitation and recreational activity pattern items

The survey instrument included items on how often respondents visited the SMMNRA, how long they spent or were planning to spend during the visit on which the survey was taken, season and temporal patterns of use, and the extent to which the trail site where they were surveyed was their regular destination within the SMMNRA. Reasons why visitors came to the SMMNRA were also queried. Respondents were also

asked about the number of members in their party or group (whether human or animal), and whether the groups were comprised of family members, friends, clubs or other organized groups. Two forms of park use were considered – active recreation including: walking, jogging, exercising dogs, riding horses; and passive recreation – bird watching, communing with nature, painting, picnicking, sunbathing, photography, research and the like. Usage patterns were also compared to those for respondents' local or neighborhood parks.

Attitudes toward the Santa Monica Mountains

Part of the purpose of the survey was to gain a better understanding of perceptions about the SMMNRA and attitudes toward conservation and recreational uses of the Santa Monica Mountains. The survey therefore included items about where visitors obtained their knowledge of the mountains' flora and fauna, and their opinion as to why the Santa Monicas should be protected – for example, for ecocentric reasons (such as habitat protection) or anthropocentric reasons (such as recreation).

User group interaction patterns

An important component of trail use planning is gaining an understanding of how various trail users interact. Several items on the survey instrument addressed trail user interactions and sources of conflict. Questions asked respondents to indicate whether other users impacted their trail experience, and whether impacts were positive or negative. In addition, the range of problems that other users created (for example, damage to plants, animal waste and litter) were taken into account.

Access to the SMMNRA

The survey included questions regarding the time that trail users spent traveling to the SMMNRA. For residents of Southern California, additional questions were directed towards the nearest intersection to their place of residence. All respondents were asked for their residential zip code. In addition, items addressed the mode of arrival of park users, including: automobile, motorcycle, bicycle, public transport, and walking. Attention was given to physically challenged users. Questions on the survey also specifically addressed barriers to access that respondents had encountered in the SMMNRA.

Respondent Universe and Response Rate

The survey was targeted at visitors 18 years of age or older visiting the 23 trailheads at destination parks, and 10 secondary neighborhood entrances that were identified by the National Park Service Trail Management Plan planning staff. In total, 12,388 people were counted on the trails during the survey period. A total of 1,193 people or 9.2%[6] of trail users were approached over the course of the survey. Of these,

[6] This number should be treated with some caution as the percentage of people surveyed out of overall trail users varied significantly from site to site.

986 people responded by filling out the survey form and 242 were non-respondents, yielding a response rate of 82%. Of the 986 surveys completed, 912 or 92.5% were usable in the final analysis.

Instrument Administration Procedures

The survey instrument was an on-site questionnaire. The survey was administered by two doctoral students from the University of Southern California, together with three undergraduate students in the USC Sustainable Cities Summer Fellows Program and 40 volunteers from the National Park Service. Respondents returned the survey forms to the administering staff upon completion of the questionnaires. A copy of the survey instrument is provided in ***Appendix 1***.

Survey procedures

Trail users were surveyed on site, rather than utilizing a mail-back survey, because experience suggested that response rates of a mail-back survey would be lower than on-site surveys. Surveys were administered at trail heads over the course of two weekends, July 13-14 and July 21-22, 2002 during early (8am-1pm) and late (3pm-7pm) shifts, to capture the times of highest utilization and also to avoid the hottest hours of the day. Wherever possible, nearby trees and / or picnic tables were utilized to protect respondents from the summer heat and to encourage completion of the survey. Although respondents were not paid for taking the survey, they were offered a gift bag from REI™ as an incentive for participation, which included a bottle of water, snack bar and promotional materials.

Potential respondents, selected randomly from the visitor stream, were greeted either as they approached the trails for afternoon users or in the case of early morning visitors, as they returned from being out on the trails. Most surveyors were stationed immediately adjacent to the trail heads, but some surveys were administered along the trails over the course of the two consecutive weekends. For high-volume trails, particularly destination park sites, there were often multiple trail heads, and user groups are sometimes differentiated by the specific trail heads through which they enter the SMMNRA (e.g., dog walkers entering at one portal, mountain bikers at a second portal at the same trail head). This may have biased the sampling to a small extent.

A standardized greeting sheet (refer to ***Appendix 1***) was distributed to all people who were administering the survey. All potential respondents were advised about the nature of the survey and invited to participate. Participation in the survey was strictly voluntary and those trail users who declined to answer the survey were recorded on a non-response sheet (see ***Appendix 1***), together with the time of their visit, their sex, the number of people in their group, whether any children were in the group and in what activity the non-respondent was engaging (e.g. cycling, hiking etc.). Information regarding the total number of visitors to the trail head being surveyed was also entered on a log sheet (refer to ***Appendix 1***). Most respondents completed the survey in approximately 8-9 minutes. Data including the survey time, the survey location and the person administering the survey were recorded on the front page of the questionnaire by the interviewer.

For those trail users who declined to participate in the survey, data was logged solely for non-respondent numbers, non-respondent trail use and basic demographic information, in order to estimate non-respondent bias. Observed characteristics of non-respondents gathered by surveyors included group size, the trail head visited, time of day, presence or absence of children, gender and type of user (e.g. equestrian or jogger). ***Section 4*** presents an assessment of non-response information and comparisons with the respondent sample.

Trail user volume was also estimated by the surveyor or, at busy trail heads, a separate counter. In addition, during the intervening week between the two survey weekends, surveyors noted midweek trail user volumes, demographics and activities.

Data Entry

Returned questionnaires were collected and taken back to USC for data entry. Each question on the questionnaires was assigned a code prior to administering the survey. These codes were used to enter the data into a database. Fields within the database were used to prevent entry of aberrant data, or data that was not consistent with expected responses (i.e. outside of the set range for possible answers). A standard statistical software package was used to calculate frequency distributions and cross-tabulations. Tables were generated based on responses to the questions and responses were summarized. Unanswered questions, errors in responses or in data entry have all been reported as errors.

Statistical and Geographical Analysis

The software package chosen for data entry and analysis was EPI INFO 2000™ Version 1.1.2. This is a statistical package frequently used in epidemiological investigations, public health research, and biomedical database and statistics applications. However, the software is also increasingly used in social science research due to its flexibility and special features. This software was chosen because it enabled data entry into a form that replicated the original questionnaire. The advantage of this is that it enabled those entering the data to follow responses on the questionnaire, thus assisting in minimizing errors. The software also enabled the rapid generation of simple statistics, graphs and tables.

As issues of equity are so pervasive throughout park management today, it was important not only to analyze the demographic makeup of SMMNRA trail users, but also to know about their travel times and geographic origin. Travel models of various sorts are commonly used to determine the catchment of a park or park system such as the SMMNRA. Using the information from a travel model, the user information gathered by the most recent user survey can be augmented to discover under-represented groups within potential catchment areas and also further analysis of non-users (those that live beyond the catchment area).

Multiple questions on the survey instrument were designed to gather the necessary information to perform this sort of travel model analysis, including a question regarding

the user's residential zip code, nearest major intersection, and travel time to the park. Geographic mapping of data was conducted, and a distance decay model was used. (Though beyond the scope of this analysis, more elaborate travel modeling schemas have been developed, including gravity models, intervening opportunity models, and retail trade zone analysis. Using the nearest major intersection question from the survey, absolute distances from the SMMNRA to user residences were estimated and a frequency analysis was performed. With increasing distance, the frequency of visitors falls, ultimately delimiting the radius of the SMMNRA's catchment area. This allowed basic analysis of demographic differences between those falling within the SMMNRA catchment, and those components of the population who have little effective access to trails in the Santa Monica Mountains.

4 Analysis of Aggregated Survey Results

Results of the survey are discussed in the following two sections of the report. In this first section, discussion focuses upon the results of the descriptive statistical analysis that was undertaken for all survey items. It provides an overall demographic profile of people using the National Recreation Area, together with frequencies and cross tabs for each survey question. Data were also analyzed to ascertain the temporal and spatial distribution of visitors – how many visitors went to specific places within the park at particular times of the day, and certain days of the week. We discuss these results and then turn to an examination of statistics for the different types of trail users.

In the next section of the report (***section 5***) the survey data is considered based upon a geographic analysis of trail function within the SMMNRA (neighborhood vs. destination sites) and trailhead location within the SMMNRA (eastern versus western sites). Data are also examined based upon trail users' activities (e.g. horseback-riding, mountain biking or hiking).

General Overview of Results

The survey data is discussed under six broad topical headings, reflecting the terms of reference for the survey. These are: (i) user demographics, (ii) user activities, (iii) user knowledge of flora and fauna, (iv) user group interactions, (v) travel behavior and (vi) barriers to access. The demographic characteristics of trail users are partitioned by age, sex, nationality, languages spoken at home, race, income, education, home ownership and household composition. Prior to a discussion of the results however, it is useful to briefly examine the limitations of the survey.

Limitations of the survey

Several weaknesses of survey instrument design emerged following completion of the survey. A small number of items suffered from some ambiguity or a tendency for respondents to fail to follow written instructions. For example, the question about local park use (Q6a) elicited responses based on actual practice, as well as hypothetical conclusions about why respondents would or would not, in theory, use local parks. In addition some respondents were confused about what constitutes a "local park" versus which sites are within the National Recreation Area. The household composition item (Q18) confused some respondents. For others, the distinction between household types was ambiguous, especially for respondents unused to these categories. Even though race/ethnicity questions (Q21, 22) were designed to be consistent with US census items, they were met with some confusion, with most Hispanic/Latino respondents electing to leave the race question blank, suggesting that they may not have felt themselves to be adequately accounted for among the choices provided.

The question about knowledge of local flora and fauna (Q7), in contrast, raised the problem of eliciting both responses based on knowledge and those based on familiarity with more general information on natural habitat (acquired through National Geographic

and Discovery Channel programming, for example) as well as specific knowledge about the flora and fauna of the SMMNRA. Also although respondents were forced to choose either conservation or recreation as primary reasons for protecting the Santa Monica Mountains (Q8), many ignored the directions and ticked both categories. Lastly, many respondents when answering the question on user impacts (Q9) said that they were not affected by other users. They then ignored the skip prompt and proceeded to answer Q9b, which inquired how they were affected, oftentimes detailing substantial impacts. Another problem with this item was that some respondents seemed to be answering the question not on the basis of how they were personally impacted by other users, but instead what their opinion of other users was in regard to trail use. Future questions on this issue of user conflict should be designed to enable respondents to identify what aspect of each use group impacted upon them.

Finally, it is necessary to add a word or caution with regard to interpreting results where the sample size is less than 30, as attempts to draw statistical inferences from such small samples will be prone to erroneous conclusions (Littlejohn, 1993: 3).

Aggregate Analysis of the Survey Results

The following discussion assesses the overall survey data. We commence by briefly statistically profiling the "typical" park user, before considering overall park user demographic information. For ease of interpretation, our discussion addresses broad categories of survey responses rather than examining each question in detail. As mentioned earlier in the report, the survey sample consists of 912 responses. All frequency statistics for survey data are presented in tabular form, aggregated by question, in ***Appendix 2***. User group statistics are tabulated in ***Appendices 3-5.*** *It is important to note that the sample size may vary for some of the survey questions as not all respondents answered all of the questions.* Where this occurred, it is indicated by the symbol "n=" and then a number showing the sample population for the question.

The survey results indicate that the type of visitor most frequently represented in visitor statistics for the SMMNRA was white (72%), male (59.3%), middle aged (median age was 40yrs), born in the United States (77.3%), English-speaking (86.6%), college - educated (85.6%), relatively affluent - owned his own home (63.1%), earned between $50, 000 and $75, 000 per annum, did not have children under 18 years of age (70.7%), lived in a single household (33%), visited the SMMNRA with friends (34.6%) and was a return visitor (87%).

Non-response data

Only limited information was collected for non-respondents. This included their sex, the number of adults, children under 18 and animals in the group, and the type of user. The majority of non-respondents were male (60.3%), largely reflecting the sex ratio of the overall survey sample. This information is presented in ***Table 1*** and ***Figure 2*** below. The number of people within groups that did not respond to the survey was 746. They were accompanied by 36 companion animals and 220 children.

Table 1 Non-respondent activities

Non-respondent trail user activities			
Activity (N=242)	*%*	*Activity*	*%*
Sightseeing	5.37	Horseback riding	3.3
Hiking	52.48	Rock climbing	1.65
Picnicking	4.54	Painting / crafts	0
Mountain biking	15.28	Photographing	0
Bird watching	1.23	Sunbathing	0
Walking dog(s)	7.02	Wading swimming	0
Jogging	7.85	Other	0
Camping	0		

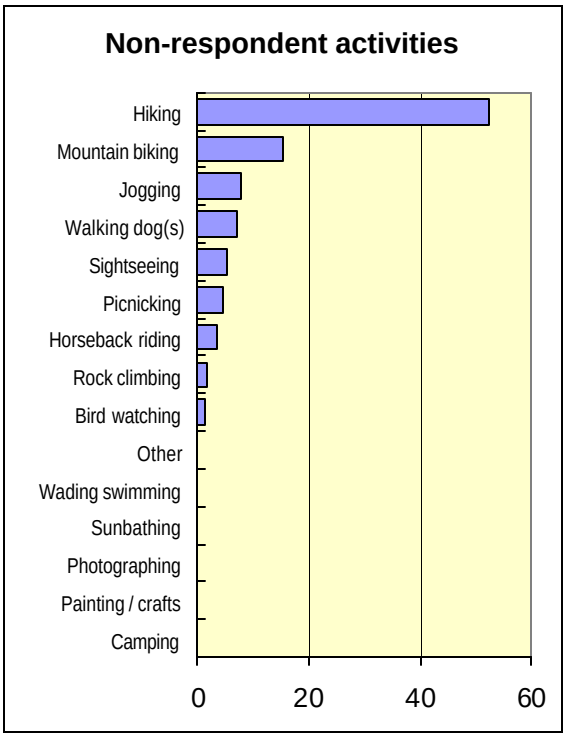


Figure 2 Non-respondent activities

Although the introduction above has statistically profiled the "typical" SMMNRA visitor, analysis of the survey sample reveals that a wide variety of people visit the SMMNRA. The demographic data for these visitors are now examined in greater detail.

Demographics

The survey collected a broad range of demographic data from trail users. These data included the respondent's age, sex and nationality, languages spoken at home, their race, income, education, home ownership status and their household composition.

Age

The median age of park users was 40. The youngest group visiting the SMMNRA was picnickers with a median age of 34.5 followed by sightseers (median age 37.6). The oldest group was equestrians with a median age of 46.1 followed by hikers (42.3). Mountain bikers (38.0), joggers (39.6), and dog walkers (39.8) were all somewhere in the middle.

Sex

Over half of visitors surveyed were male (59.3%). Women comprised 40.7% of the sample. This slightly skewed ratio is perhaps reflective of the high proportion of visitors pursuing adventure sports such as mountain biking, typically a male dominated sport – a trend reflected in the statistics revealing that 86.1% of mountain bikers surveyed being male. However, sightseers were also predominantly male (70.4%) whereas equestrians were mostly women; 80% of equestrians were female. These results are illustrated in ***Figure 3*** below.

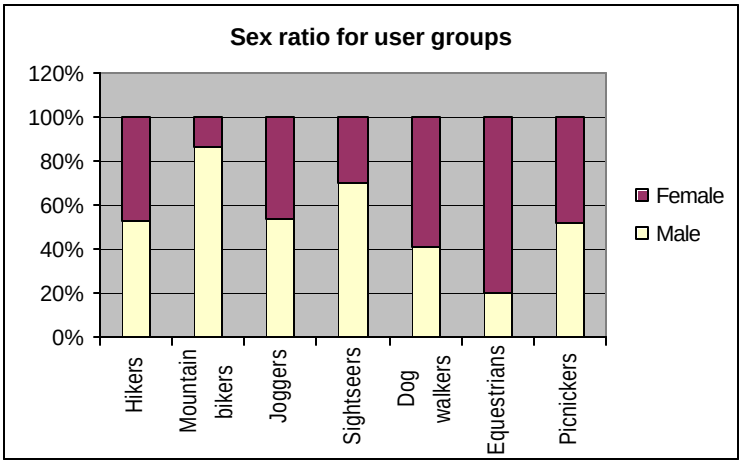


Figure 3 Comparison of sex ratios

Nationality

Most respondents were born in the United States (77.3%). Mexico (2.2%) was the second highest country of origin for respondents to the survey followed by Iran (1.6%), the Philippines (1.1%) and the United Kingdom (1%). The remainder of visitors (16.8%), were born in a wide range of other countries. In all, 56 different nations were represented by visitors to the SMMNRA.

For those visitors whose country of origin was not the United States, the median duration of residence in the United States was 20 years.

Language spoken at home

Most respondents spoke English at home. Other languages spoken at home included Spanish (7.8%), Farsi (1.8%) and French (1.3%). In ***Appendix 2***, it can be seen that there were a wide variety of other languages spoken at home, but these are statistically of low significance.

Race

Most of the respondents to the survey were white (72%; refer to ***Table 2*** and ***Figure 4*** below). Asian visitors comprised the next most frequently represented race, with 5.5% of respondents identifying themselves as Asian. Only 1.6% of SMMNRA visitors surveyed were Black or African-American and an even smaller percentage (1.3%) were American Indian or Alaskan natives. Native Hawaiians/Pacific Islanders were least represented in the sample, comprising only 0.5% of park visitors. It should be noted however, that a high proportion of respondents (17.3%) did not wish to answer the question about race. Perhaps this is indicative of some level of personal disaffection on the part of respondents regarding practices of differentiating between individuals based upon social constructs such as 'race'.

Insofar as user group breakdowns are concerned, analysis by racial composition yields some interesting results. For those respondents identifying themselves as Hispanic/Latino, the highest proportions of visitors to the SMMNRA were picnickers (52%) followed by dog walkers and sightseers (16.2% and 16.0% respectively). For respondents self-identifying as white, the highest proportion were in the equestrian group (86.7%) followed by joggers (79.5%). For black or African-American respondents, the highest percentages were in the dog-walking group (4.8%) followed by sightseers (1.9%). For Asian respondents, the highest percentages were mountain bikers (7.8%) followed by hikers (5.7%). Native Americans were generally poorly represented in the survey, but the highest proportion of respondents was the sightseeing group (3.7%) followed by joggers (2.7%). Finally, for Hawaiians / Pacific Islanders, who were also poorly represented in the survey, picnicking (4.0%) and jogging (1.4%) were the most popular activities.[7]

Table 2 Race of visitors to SMMNRA

Race (N=912)	%
White	72.0
Asian	5.5
African-American / Black	1.6
American Indian / Native Alaskan	1.3
Native Hawaiian / Pacific Islander	0.5
Did not want to answer	17.3
Total	**98.2**

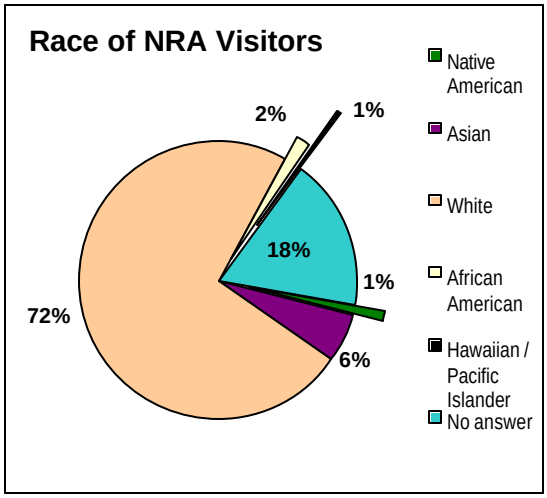


Figure 4 Race of visitors

[7] It should be noted that since respondents chose multiple categories for the trail use activity, percentages add up to greater than 100%.

Income

Most respondents were in the middle income bracket, with the highest percentage of park visitors earning between $50,000 to $75,000 per annum (18.6%), followed by those in the $25,000 to $50,000 bracket (15.7%), then those in the $75,000 to $100,000 bracket (14.7%). However, aggregating this data reveals that the majority of park visitors earned between $50,000 and $100,000 per annum (see ***Figure 5*** below). It should be noted that 10.4% of those surveyed did not wish to answer the question about household income.

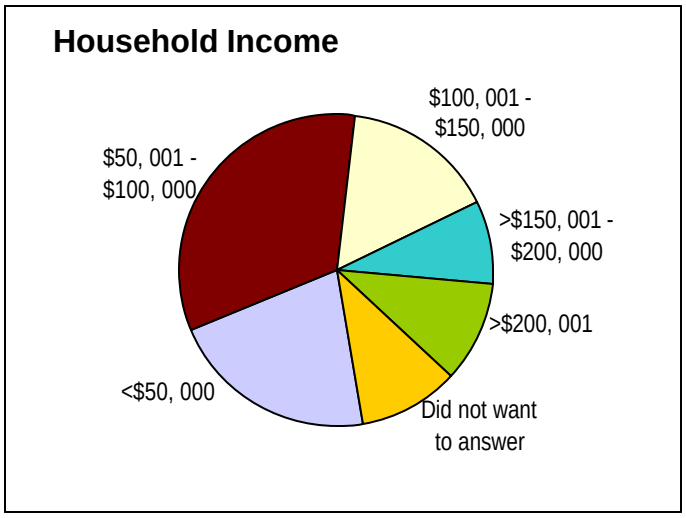


Figure 5 Household income

When income data are analyzed by user group, no distinctive pattern emerges. For mountain bikers, joggers and picnickers, the median income was in the $75,000 to $100,000 bracket. Hikers, sightseers and equestrians all had median incomes in the $50,000 to $75,000 bracket, and dog walkers had the lowest median income range ($25,000 to $50, 000).

Education

The majority of visitors to the National Recreation Area possessed a college level education. The second most frequently reported level of education was that of high school graduate, followed by high school student. Only a very small proportion of visitors to the SMMNRA (0.9%) did not have a high school diploma or GED (refer to ***Table 3*** and ***Figure 6*** below).

Table 3 Education level of visitors

Educational attainment (N=898)	%
High school student	5.8
No high school diploma or GED	0.9
High school graduate or GED	7.7
College	85.6
Total	**100**

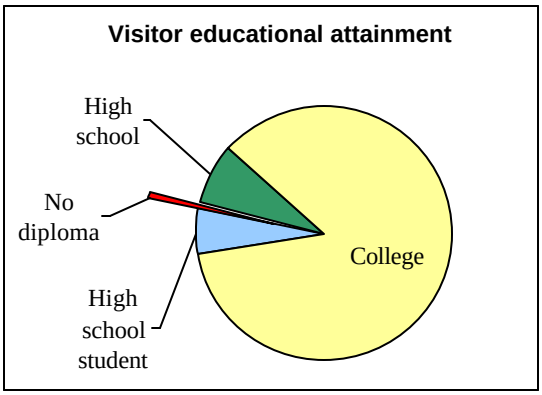


Figure 6 Education of trail users

When examined by group, the user group with the highest level of education was equestrians, with 100% of the group possessing a college degree. Hikers (89.6%) and then dog walkers (87.5%) were the groups with the next highest percentage of college graduates. Picnickers were the users with the smallest percentage of college graduates (68%), which is still relatively high. In comparison, the user group with the highest proportion of high school students was sightseers (15.1%).

Home ownership

Just over two-thirds (63.1%) of visitors to the SMMNRA were homeowners, with the balance renting their housing (36.9%; refer to ***Table 4*** below). The user groups with the highest percentage of homeowners were horseback riders (89.7%) followed by mountain bikers (75.3%) and dog walkers (61.5%). User groups with the highest percentage of renters were picnickers (59.3%) followed by sightseers (51.0%) and joggers (41.1%).

Table 4 Home ownership (overall)

Home ownership (N=891)	%
Owned	63.1
Rented	36.9
Total	**100**

Household composition

The majority of respondents live in single person household, followed by couples without children under 18, and then two parents with children under 18. Only 9.1% of respondents lived in households comprised of unrelated adults, but the lowest percentage of respondents (8.0%) lived in multi-generational households (*see* ***Table 5*** and ***Figure 7*** below).

Table 5 Household composition

Household composition (N=891)	%
Single	33.0
Unrelated adults	9.1
Couple without children under 18	26.0
Single parent with children under 18	4.7
Two parents with children under 18	19.2
Multigeneration household	8.0
Total	**100**

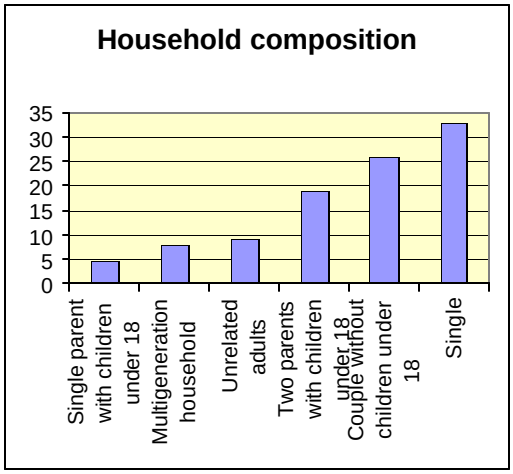


Figure 7 Household composition

As far as user group household composition is concerned, the group with the highest percentage of members who lived in single person households was sightseers (42%). The user group with the next highest percentage of single person households was hikers (35.4%). Those households with the highest percentage of unrelated adults were dog walkers (17.9%) and this user group also had the highest percentage of households comprised of couples without children under 18 (41%). The user group with the highest percentage of single parents with children under 18 was equestrians (10.3%) but this user group also had the highest percentage of households comprised of two parents with children under 18 (31%). They were followed by mountain bikers at 26.8%. The user group characterized by multigenerational households was picnickers at 20%. The next highest multi-generation household user group had only half this percentage - hikers at 9.7%.

Recreational Trail Use

If the demographic characteristics of visitors to the SMMNRA were not entirely unexpected, the results for park use are perhaps similarly unsurprising. Only thirteen percent of those surveyed were first time visitors with the majority (87%) being return visitors. The median time spent on trails was 2 hours and visitors on average visited the SMMNRA four times a month. The most popular time of day for visiting the SMMNRA was the morning (63.8%); the most popular time of the week was the weekend (72.5%), with the most popular seasons being summer (71%) and spring (62.6%).[8]

[8] It should be noted that percentages in these categories add up to more than 100% as respondents checked all categories that applied. It is also important to note that since the survey was conducted in the summer, there is the possibility that those respondents with a predilection for summer visits are over represented in the sample.

User visitation rates and patterns

The majority of visitors to the SMMNRA came either with friends (34.6%) or by themselves (29.3%). The next highest category was respondents visiting with family (25.4%) Very few visitors responded that they were visiting with clubs or organizations (see ***Appendix 2***). The median number of people in groups was 2 and out of the total sample, just over one third (395 people) were visiting with companion animals. When analyzed by user group, picnickers were the group that most often responded that they were visiting with an organization or club (28.0%). No group reported high rates of attendance for religious groups, educational groups or youth clubs. Joggers were most often accompanying family and friends (8%) and picnickers were most often visiting with family (52%). The highest percentage of dog-walkers visiting the SMMNRA were people who were by themselves (47.6%). On the other hand, mountain bikers were most often with their friends (49.1%) as were sightseers (42.6%). However, a high percentage of sightseers were also with their families (35.2%) as were hikers (28.3%).

User activities

Respondents to the National Recreation Area engaged in a wide variety of activities during their visit (refer to ***Table 6*** and ***Figure 8*** below). Hiking was the most popular of these activities with 77.3% of visitors stating that they had hiked or were intending to hike during their visit. Sightseeing was another popular activity with over half of the respondents surveyed engaging in this activity during their visit to the SMMNRA (55.0%). About a quarter of respondents participated in mountain biking and jogging, whilst other popular activities included picnicking, bird watching and walking dogs.[9]

There were some surprises with regard to recreational trail use activities. One of the most interesting findings of the survey is that equestrians were relatively poorly represented among trail users. Historically equestrians have been an active user group involved in many aspects of decision-making about the SMMNRA. Horseback riding constituted only 5% of all activities trail users engaged in during their visit, falling to 3.4% as the principal undertaken by respondents. However, the activity that was least often selected by respondents as something they intended to do during their visit was painting and crafts. This result is somewhat surprising given that the Santa Monica Mountains are renowned for their impressive scenic vistas and for the unusual quality of the natural light. Another relatively infrequently undertaken activity, which was also surprising, was wading and swimming. However, this was perhaps due to two factors. First, the majority of the trailheads surveyed did not have permanent water features. Second, it is possible that many respondents were unaware that beaches adjoining the National Recreation Area are located within State Parks and thus are technically part of the SMMNRA.

[9] It should be noted here that these figures add up to greater than 100% as respondents checked all applicable categories.

Table 6 User activities

Qu. 2a: Activities engaged in during visit			
Activity (N=912)	*%*	*Activity*	*%*
Sightseeing	55.0	Horseback riding	5.0
Hiking	77.3	Rock climbing	8.1
Picnicking	16.1	Painting / crafts	1.6
Mountain biking	26.3	Photographing	13.2
Bird watching	16.0	Sunbathing	5.5
Walking dog(s)	14.9	Wading swimming	4.7
Jogging	21.9	Other	7.8
Camping	8.6		

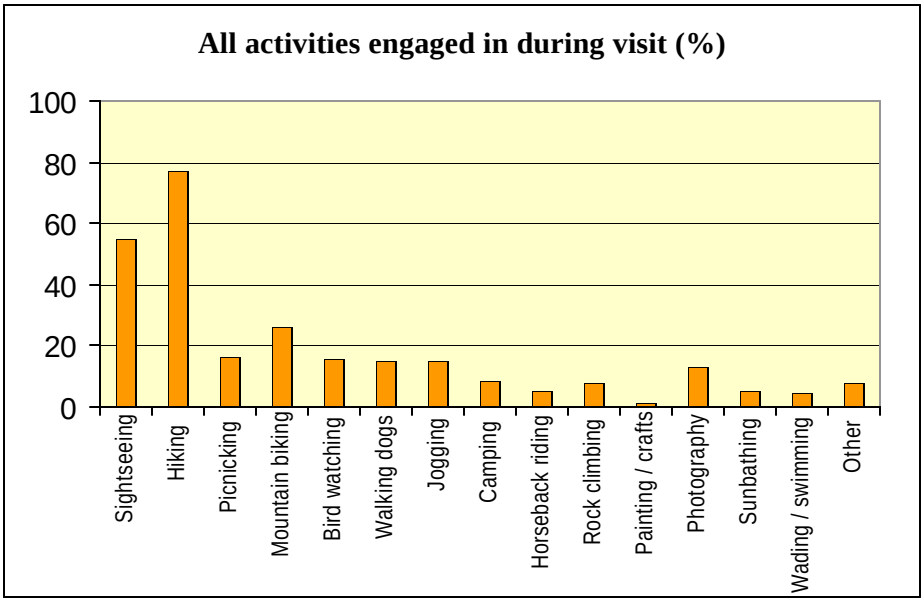


Figure 8 Visitor activities

With regard to the principal engaged in by visitors to the Santa Monica Mountains hiking was the most frequently selected (49%), with almost half of the respondents listing it as their primary intended activity. Almost a fifth of respondents listed mountain biking as their principal and the next most popular was jogging, with almost 10% of trail users listing it as their principal (refer to ***Table 7*** and ***Figure 9*** below). Activities such as sightseeing, dog walking, horse back riding and picnicking comprised a much smaller proportion of recreational trail use.

Table 7 Principal activities

Qu. 2b: Principal activity during visit	
Activity (N=888)	*%*
Hiking	49.5
Mountain biking	18.7
Jogging	8.2
Sightseeing	6.1
Dog walking	4.7
Horseback riding	3.4
Picnicking	2.8
Total	**92.3**

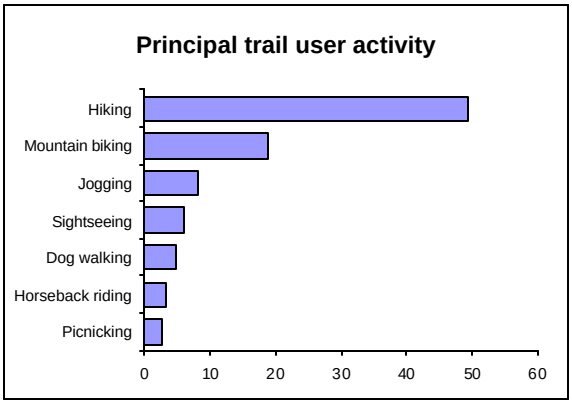


Figure 9 Principal activities

Reason for visit to the SMMNRA

The foremost reason given by respondents to the survey for their visit to the SMMNRA was to be outdoors, with 88.3% of respondents selecting this option (refer to ***Table 8*** and ***Figure 10*** below) Exercising was the next most popular reason followed by enjoying the scenic beauty, breathing fresh air and enjoying the quiet. Very few trail users stated that they were in the National Recreation Area to attend an organized event (only 5.5%) but the option that was least often selected was undertaking school research (0.5%). However, this is quite understandable as the survey was conducted during school holidays and was restricted to visitors 18 years of age and older. Options that received a moderate response rate were related to seeking solitude including: escaping the city, communing with nature and experiencing fewer people. Other popular reasons were related to encountering the flora and fauna of the SMMNRA: experiencing wildlife (47.1%) and seeing wildflowers (37.5%). The exception to this pattern was the option socializing with family and friends, which received a 36.1% selection rate. Relatively few respondents indicated that their reason for visiting the SMMNRA was to engage in adventure sports, be with companion animals or educate children about nature.

Table 8 Reason for visit

Qu. 3: Reason for visiting the SMMNRA	
Reason (N=912)	*%*
To exercise	84.5
To be outdoors	88.3
To enjoy the quiet	66.1
To breathe fresh air	73.4
To see wildflowers	37.5
To see / hear wildlife	47.1
To enjoy scenic beauty	73.8
To escape the city / suburbs	54.1
To commune with nature	51.0
To experience fewer people	40.1
To attend and organized event	5.5
To undertake school research	0.5
To engage in adventure sports	18.2
To be with companion animals	13.8
To socialize with family / friends	36.1
To educate children about nature	7.8
Other	2.5

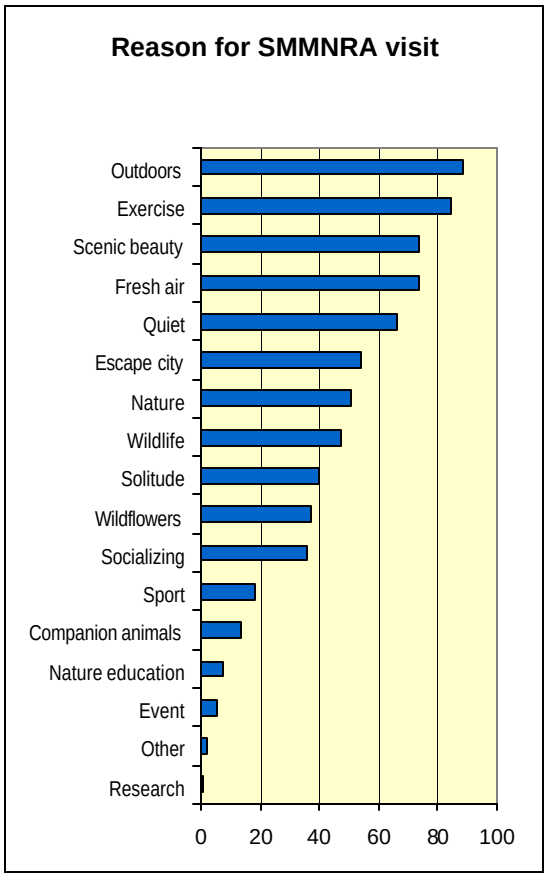


Figure 10 SMMNRA visit reasons

Local park use

When the sample is analyzed using a combination of responses to questions pertaining to regular trail use, the use of local or neighborhood parks, and travel time to the SMMNRA, a portrait of localized use of the National Recreation Area emerges. Most respondents (71.1%) stated that the trail at which they were surveyed was the trail they normally visited, although the majority of respondents (72.7%) also visited other trails within the SMMNRA. The reasons most often given for visiting a local park instead of the SMMNRA were limited time (48.8%), easier access (33.7%) and different recreation opportunities (26.5%). It is interesting to note that 12.2% of respondents stated that either the question was not applicable to them or they did not use local parks, as the SMMNRA fulfills this recreational function (see ***Figure 11*** below). Furthermore, the median travel time to the National Recreation Area was only 20 minutes, highlighting the residential proximity of trail users. An examination of user activities on the trails provides further insights into recreational patterns within the SMMNRA.

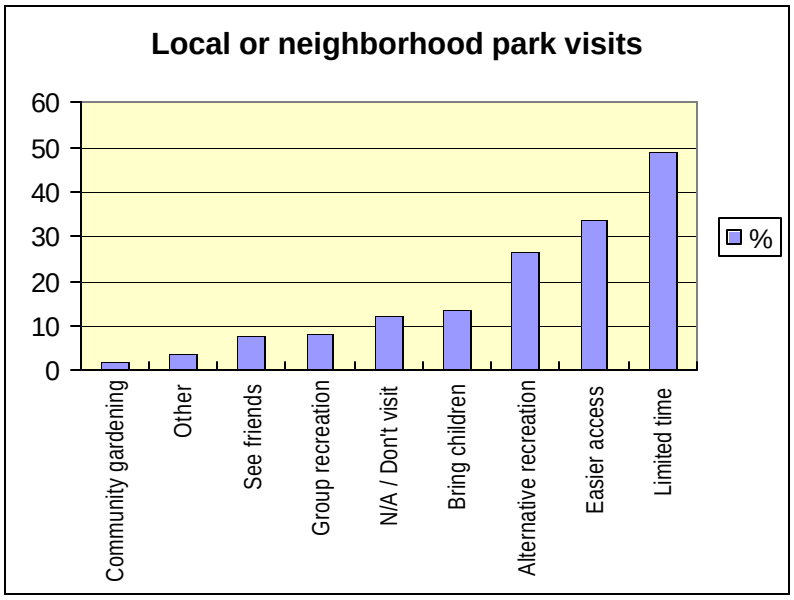


Figure 11 Local/neighborhood park use

User group analysis

The user groups with the highest percentage of regular and localized trail users were joggers (91.2%) and equestrians (90%) followed closely by dog walkers (88%) then mountain bikers (76.9%). Users who returned to specific trailheads relatively infrequently were predominantly picnickers (47.6%), reflecting the periodic nature of this activity. On the other hand, those users who were more nomadic, tending to visit alternative trails more often, were predominantly sightseers (66.7%) and hikers (63.3%). These patterns are supported by statistics for frequency of visit to the SMMNRA. Equestrians were the most frequent visitors, with on average almost 13 visits per month, followed by dog walkers (11.3), and joggers (10.2). Picnickers were the least likely to visit the SMMNRA on a regular basis with on average only two visits per month, whilst mountain bikers, hikers and sightseers made between 4 and 7 visits per month to the SMMNRA.

Seasonality

User groups also exhibited seasonal trends in use of the National Recreation Area. Although the survey results surprisingly indicate that all user groups favored summer, sightseers and dog walkers also strongly favored the spring. The most frequent summer users were equestrians (93.3%) followed by joggers (90.4%) with the least frequent summer visitors being sightseers (46.3%). The most frequent visitors to the SMMNRA during the fall were also equestrians (90.0%) who similarly dominated other groups for the winter (83.3%) and spring (90%), though clearly equestrians favored winter the least in terms of their seasonal use. The next most frequent fall users were joggers (75.3%) followed by dog walkers (73.8%). Picnickers were the least frequent visitors in the fall at only 12%, with their usage rates predictably declining even further in the winter to just 8%. Visitation rates by sightseers were also low in the fall at only 22.2% rising

understandably in the spring with wildflower season, to 46.3%. The most frequent visitors in the winter were still equestrians, followed by joggers (74%) and dog walkers (71.4%) and during the spring after equestrians the next most frequent visitors were joggers (80%) and dog walkers (78.6%).[10]

Local park use

As far as local/neighborhood park use is concerned, equestrians were the group that most frequently reported never using a local park (30%). A high percentage of equestrians also reported that they would only visit their local park for different recreational opportunities (26.7%) or due to limited time (23.3%). Joggers and hikers also reported lower rates of local park use when compared to mountain bikers, sightseers, dog walkers and picnickers. The most frequently cited reason across all groups for visiting a local park instead of the National Recreation Area was limited time. This was followed by easier access, different recreational opportunities and the ease of bringing along children. The reasons given least often for visiting a local park were community gardening, seeing neighborhood friends and group recreation opportunities. Given the localized use of the National Recreation Area and the opportunities for group recreation that it presents, these results are unsurprising (refer to ***Appendix 2*** for full data).

Environmental Knowledge and Sources of Information

One of the unexpected findings of the survey was the considerable ecological awareness of visitors to the Santa Monica Mountains National Recreation Area. For instance, the most frequently cited source of information on plants and animals in the Santa Monica Mountains was nature observation (46.1%). This finding is emphasized by responses given to the question regarding the most important reason for protecting the Santa Monica Mountains, which revealed remarkably strong ecocentric attitudes among trail users.

Sources of knowledge

Visitors to the SMMNRA obtained their knowledge about the flora and fauna of the Santa Monica Mountains from a wide variety of sources (refer to ***Table 9*** below). However, one of the unexpected findings of the survey was the high percentage of visitors who derived their knowledge from personal experience. For instance, the most frequently listed source was nature observation (46.1%). This supports the emerging pattern of localized use and is strong corroborating evidence for ecocentric attitudes among park users. Other frequently cited sources of knowledge were books (40.4%) and

10 A cautionary note is appropriate here. Data pertaining to seasonal trends are partly an artifact of the timing of the survey. In holding the survey during the summer, there was a greater chance of sampling trail users who favor the summer months. Earlier surveys for the SMMNRA together with National Park Service visitor entrance numbers for the SMMNRA should be used in conjunction with data from the current survey when planning for periods of peak trail use. Nevertheless, the survey does address a lacunae in previous sampling, which was predominantly undertaken during the spring and the fall.

magazines (28.2%). Prosaic information such as previous visits to the park (35.7%), information passed on by family and / or friends (33.0%) or knowledge gained from living in the area (30.6%) was also popular. It is interesting to note though that information sources provided within the SMMNRA itself were frequently selected by respondents as providing them with knowledge about nature in the SMMNRA. Examples include park signs (33.6%) and park brochures (32.0%). The media and formal education were less likely to be cited - television (21.4%) and school (19.8%). The sources of information that were least often listed were ranger led nature walks (9.8%), organized groups (6.7%), and the Internet (1.6%). However, it is important to note that with regard to the latter option, it was written in as a response by visitors because it was not provided as a choice within the survey. This makes it a particularly noteworthy response.

Table 9 Sources of nature knowledge

Qu. 7: Source of knowledge of SMM fauna and flora			
Reason (N=912)	*%*	*Reason*	*%*
Ranger-led nature walks	9.8	Television	21.4
School	19.8	Previous visits	35.7
Park brochures	32.0	Family / friends	33.0
Park signs	33.6	Live in the area	30.6
Nature observation	46.1	Organized groups	6.7
Books	40.4	Internet	1.6
Magazines	28.2	Other	1.9

User group knowledge sources

A comparison of user group knowledge sources further underscores identifiable trends pertaining to the ecocentric attitudes of trail users. As can be see from Table 9 above, nature observation was the most frequently cited source of knowledge about plants and animals in the Santa Monica Mountains. This category was most often cited by dog walkers (52.4%), followed by equestrians and hikers (50%), then mountain bikers (42.8%; see ***Figure 12*** below). Books (40.7%) and magazines (28.6%) were also highly favored sources of information, particularly by equestrians (43.3%), joggers (42.3%) and hikers (41.0%). Park signs (34.2%) and brochures (33.1%) were similarly preferred information sources, particularly for mountain bikers and hikers, with equestrians preferring brochures over signs (refer to ***Appendix 3***). Ranger-led nature walks (9.6%) and school (19.8%) were the least utilized sources of information about the SMMNRA, understandably for joggers (1.4%) who are engaged in exercise and typically live in the area, but surprising for sightseers (1.9%) who one might have expected to be more dependent upon local sources of information and guided tours. This could be an indication of awareness about the availability of such information.

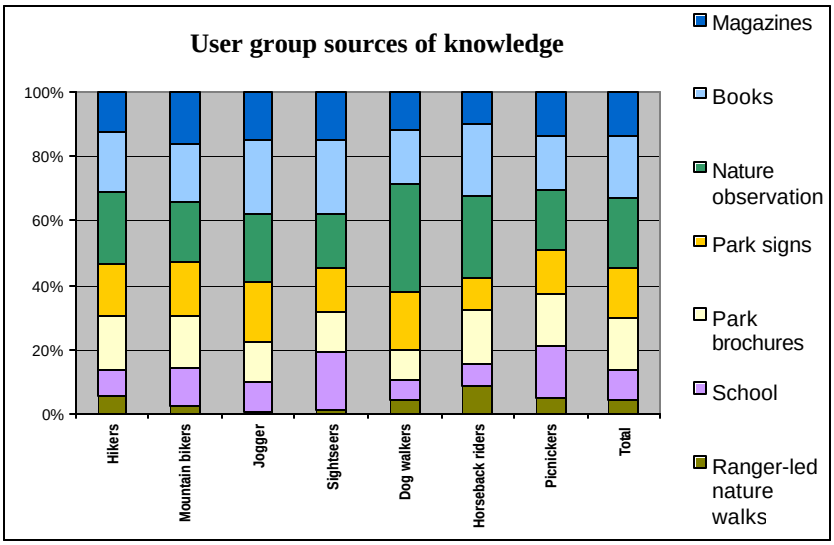


Figure 12 User group information sources

Reasons for protecting the Santa Monica Mountains

One of the key findings of the survey has been the significant ecological awareness of visitors to the SMMNRA. A strong ecocentric ethic is reflected in responses to the question pertaining to protection of the Santa Monica Mountains (refer to ***Table 10*** and ***Figure 13*** below). A majority of visitors (53.2%) stated that providing habitat for plants and animals was the most important reason. When combined with those visitors who were unable to choose between conservation and recreation (21.6%), strongly positive attitudes towards nature are clearly dominant among park users. Only 22% of park visitors listed recreation as being the single most important reason to protect the Santa Monica Mountains. Perhaps even more surprising, and underscoring the intensity of these attitudes, is the fact only 2% of visitors stated that they had no opinion with regard to protecting the mountains.

Table 10 Protection of SMMNRA

Qu. 8: Reason to protect Santa Monica Mountains*	
Reason (N=912)	*%*
To provide recreational opportunities	22.0
To provide habitat for plants and animals	53.2
Both	21.6
No opinion	2.0
Other	0.5
Total	99.3

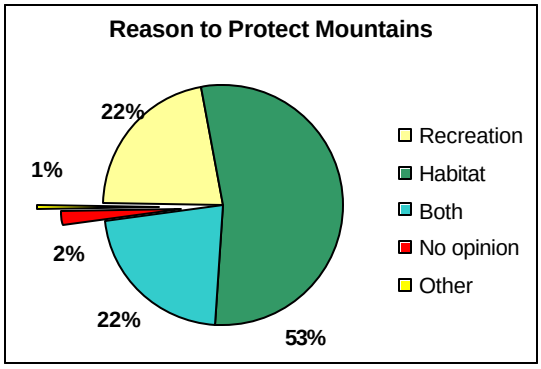


Figure 13 Reasons for protection

User group attitudes

An analysis of data by user group highlights these ecocentric attitudes (see ***Figure 14***). Providing habitat for plants and animals was given as the most important reason to protect the Santa Monica Mountains. Exactly 63% of sightseers, 58% hikers and 57.5% of joggers cited habitat preservation as the principal reason to protect the Santa Monica Mountains. These user groups were clearly the most ecocentric of all surveyed trail users within the SMMNRA, although picnickers also exhibited strong ecocentric attitudes with 52% citing habitat protection. Only 36% of equestrians favored habitat protection alone, followed by 42.8% of mountain bikers. The user groups that most supported recreation as the reason for protecting the Santa Monica Mountains were dog walkers, equestrians and mountain bikers (33% respectively), then picnickers (28%) and joggers (20.5%). However, equestrians were most likely to choose both reasons (30%), followed by mountain bikers (22.3%) and hikers and joggers (20%). Sightseers (5.6%) and dog walkers (4.8%) were the user groups with members who tended towards responding that they did not have an opinion on the matter, but the percentages were comparatively quite low.

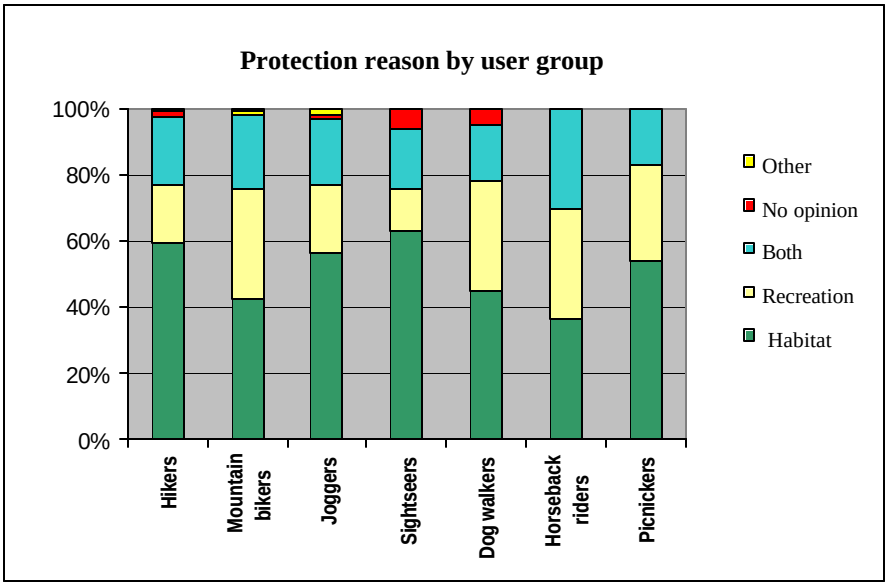


Figure 14 User groups reasons for protection

An issue addressed in the next section, but one that is of some relevance here, is that over a third of respondents reported that trail users damaging plants (18.9%) or frightening wildlife (17.8%) were problems within the SMMNRA. This further highlights the concern of trail users within the SMMNRA for the natural environment. Given that ecocentric attitudes are so prevalent among certain trail users, it is possible that this could account for some of the conflict that occurs on the trails. Certainly, as discussed in ***section 2*** of the report, the literature on leisure research and recreation studies supports this assertion.

User Group Interaction Patterns

One of the important tasks of this survey was ascertaining whether or not there was conflict among users on multiple use trails within the SMMNRA, and attempting to quantify the extent of that conflict. The survey addressed this issue by asking respondents if the activities of other users impacted upon their park experience. If the answer was affirmative, respondents were then asked to rate the degree of the impact on a scale ranging from 1 to 5 with 5 being strongly positive and 1 being strongly negative. For those respondents who found other trail users' activities to negatively impact on their recreational experiences whilst visiting the SMMNRA, they were asked to list the activities that caused them discomfort.

Impact of other trail users

Overall, a majority of respondents (77%) reported being impacted by other trail users, but this information in itself does not reveal much about user conflict, as the structure of the survey questions pertaining to this issue meant that the impact could be either positive or negative. However, where members of particular user groups stated that they were negatively impacted by other users, they were asked to specify the source of the impact and the group responsible. We have compared the problems identified by trail users overall, and not surprisingly there are patterns that emerge from the data. Of course, many of these would appear to be commonsense (e.g. hikers identifying animal wastes as a nuisance, and dog walkers and equestrians as the groups responsible.) Also unsurprisingly, user groups often rated members of their own group more favorably than those of other groups. We have controlled for this by providing an exclusive mean when comparing across groups, to ensure that this potential source of bias is ameliorated (see ***Table 11***).

Degree of impact

All survey groups generally reported either a favorable or at worst slightly below a neutral response to other trail users (refer to ***Table 11***). However, mountain biking, picnicking and dog walking received a comparatively worse rating than other users. When the exclusive mean is taken into account (e.g. the rating by a user of their own group is deprecated) these results are even more accentuated. Mountain biking is clearly the activity that has attracted the least positive review from other users, receiving a slightly negative rating.

Table 11 Impact of activities upon other users

Category	*N*	*Mean*	*Exclusive mean*	*Key*
Mountain biking	677	3.25	2.93	
Horseback riding	660	4.47	3.41	***5 = Strongly positive***
Hiking	688	4.50	4.41	***4 = Somewhat positive***
Running / jogging	674	4.26	4.21	***3 = Neither positive or negative***
Picnicking	671	3.93	3.92	***2 = Somewhat negative***
Dog walking	678	3.42	3.38	***1 = strongly negative***
Other	79	2.18		

From ***Figure 15*** below, it is evident that equestrians were also less favorably perceived by other users once their self appraisals had been controlled for in the data. Indeed, there was the greatest difference between the mean and the exclusive mean for equestrians. However, equestrians still received a neutral to somewhat positive rating overall.

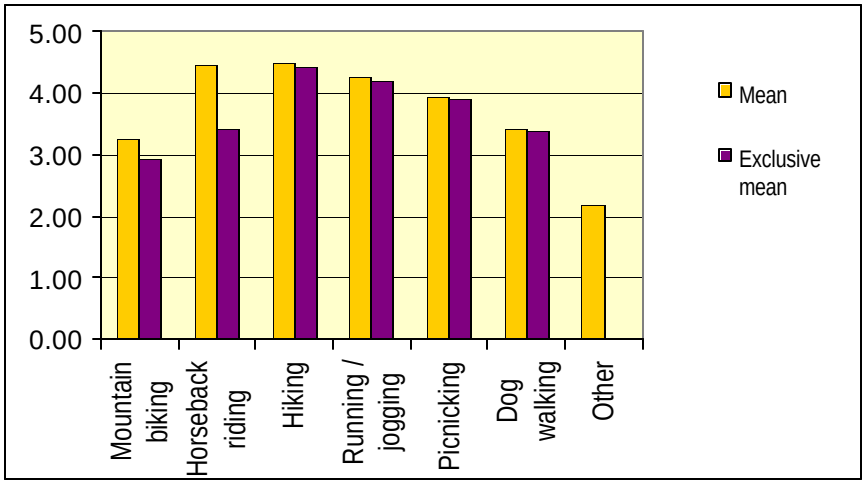


Figure 15 Impact of activities on other users

It is possible to develop a clearer picture of the feelings of trail user groups for other trail users, in terms of their impact upon the recreation experience, by calculating how the overall mean rating of user groups varies from the neutral score of 3. Thus, if a score of 3 represents a neutral rating, by subtracting 3 from the mean rating score, a clearer representation of trail users attitudes towards specific user groups emerges (refer to ***Figure 16*** below). As can be see from the diagram below, mountain bikers were perceived slightly negatively compared to dog walkers and equestrians who were received somewhat positively. Hikers were the most favorably perceived of all user groups, followed by runners/joggers and then picnickers.

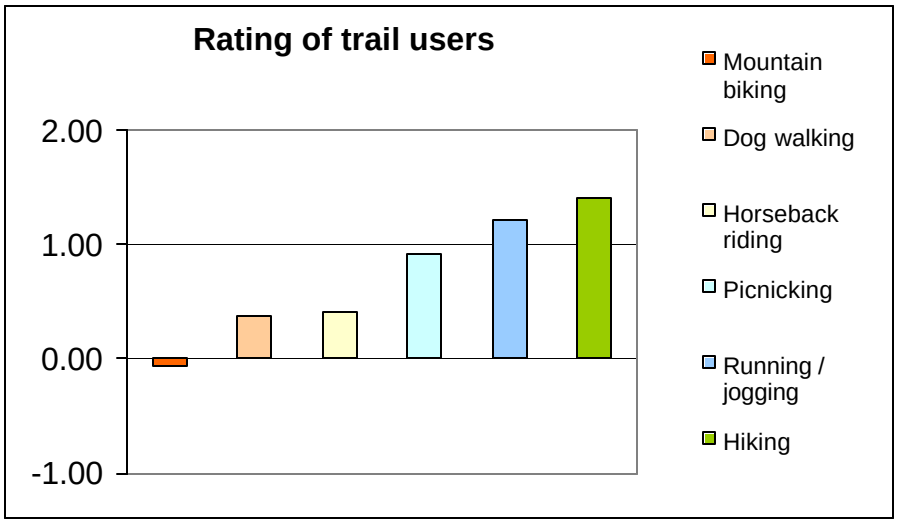


Figure 16 Trail users rating of other user groups

Problem activities

There was no single problem activity reported by respondents that stood out over others (refer to ***Table 12*** and ***Figure 17*** below). The most frequently reported issue was uncooperative behavior, with almost 30% of respondents selecting this category. This was followed by animal wastes, litter, startling people, potential collisions / injury, damaging plants, frightening wildlife, and making too much noise. The problems that drew the least attention were scaring horses and dogs being off leash (1.6%).[11] It is obvious from the results that there is a substantial difference between dogs being off leash or users scaring horses, compared to the other problems. These two issues might be considered more as nuisance factors than the other problems, which clearly require further attention.

The high degree of responses to the other categories suggests that uncooperative behavior together with animal wastes, litter, noise, the risk of injury and users harming the environment are matters warranting greater scrutiny in trail management planning. One possible solution might be to post a code of conduct or code of ethics at the trailheads, advising users to be considerate of other people visiting the National Recreation Area, and to act responsibly by keeping their noise levels down, appreciating that it is a habitat area that requires special care so as not to harm plants and animals, and by looking out for other users. There might also be a need for more trash receptacles and animal waste bags on the trails.

[11] It should be noted that since respondents were able to selected more than one category, percentages will add up to over 100.

Table 12 Problem activities

Reason (N=912)	*%*
Dogs off leash	1.6
Other	3.6
Scare horses	5.9
Make too much noise	15.4
Frighten wildlife	17.8
Damage plants	18.9
Potential collisions / injury	19.4
Startle people	20.5
Litter	21.3
Leave animal wastes	24.6
Uncooperative behavior	27.1

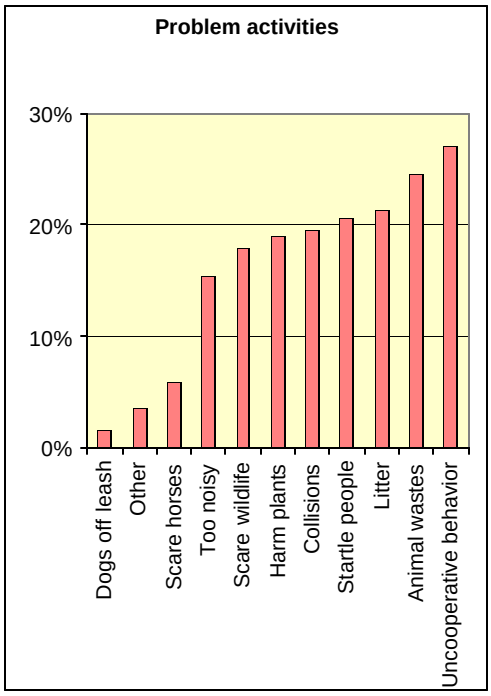


Figure 17 Problem activities

Conflict comparisons by user group

Respondents who answered 'yes' to question 9a about conflict with other users were asked supplementary questions to determine the nature of user conflict in the SMMNRA. The second supplementary question, asked respondents to rate the impact of other users and was discussed above. The third supplementary question on this section of the survey asked respondents to select from a list of reasons the category that best described the problem caused by other users.

Although there were a broad variety of answers to this question, it was apparent that respondents to the survey attributed certain problems to particular groups. While some trail users were regarded as being relatively innocuous, others were identified as being a source of conflict. In the following section, a series of diagrams are presented as a means of graphically representing which trail user group was seen as being a source of conflict, the problem that was attributed to that group, and the trail users who cited this activity and group as being problematic.

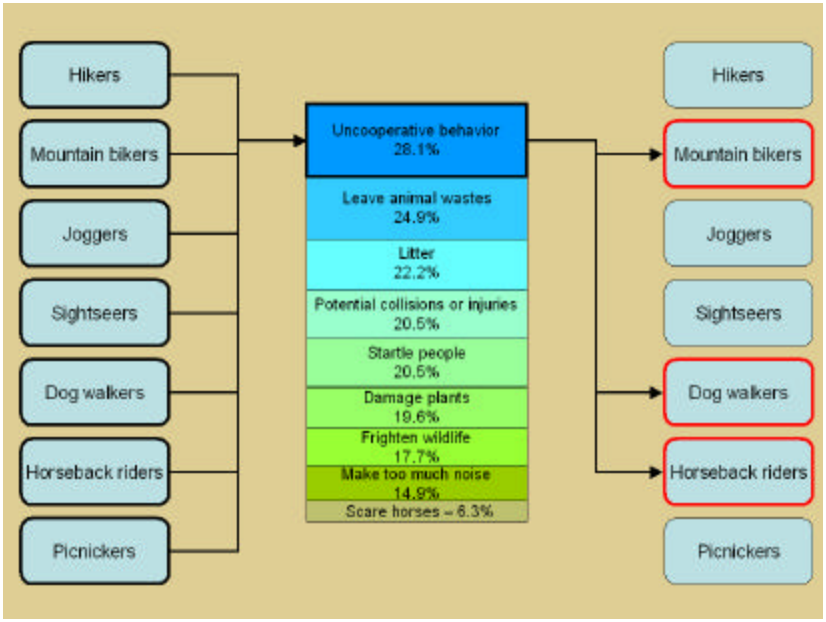


Figure 17a Uncooperative behavior and groups responsible

Thus, from ***Figure 17a***, it can be seen that uncooperative behavior was identified as a problem by all trail users, but the groups identified as being responsible were mountain bikers, dog walkers and equestrians.

Animal wastes were seen as a problem by hikers, mountain bikers, joggers, sightseers and picnickers and unsurprisingly this issue was attributed to dog walkers and equestrians ***Figure 17b***.

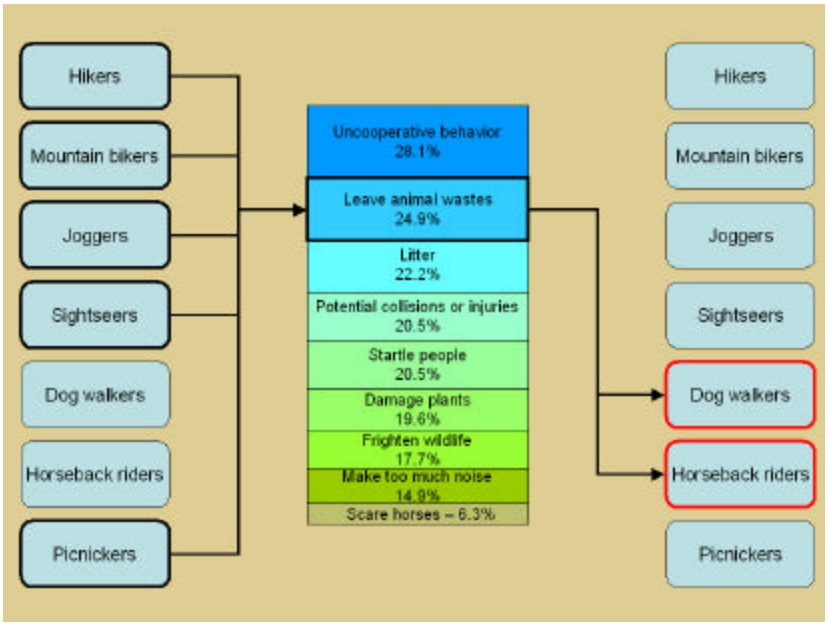


Figure 17b Animal wastes and the groups responsible

Litter (***Figure 17c***) emerged as the problem most often attributed to dog walkers and picnickers. The groups affected by this were hikers and sightseers

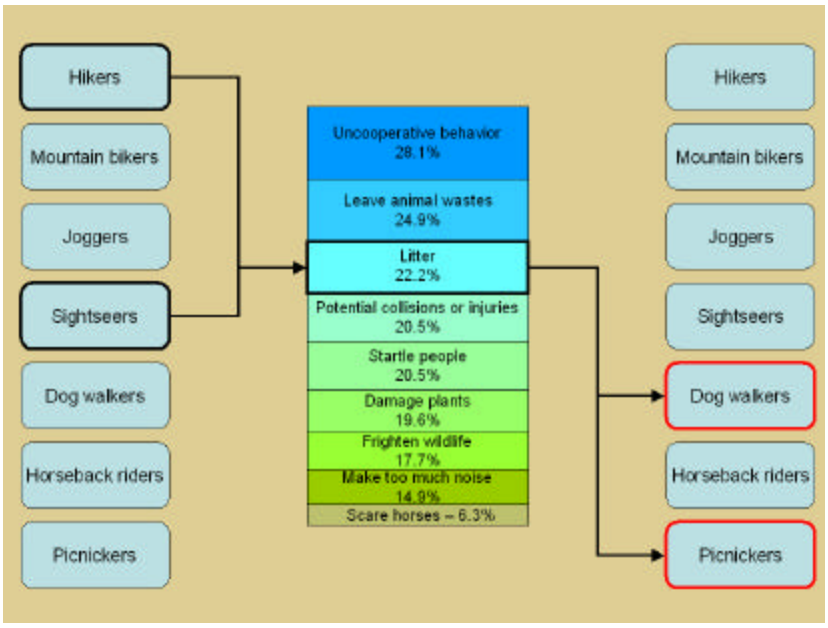


Figure 17c Litter and the groups responsible

Again unsurprisingly, hikers, sightseers and equestrians attributed the potential for collisions and injury to equestrians and mountain bikers. Equestrians identified potential collisions with mountain bikers as problematic, but mountain-bikers did not list collisions with equestrians as a problem (***Figure 17d***).

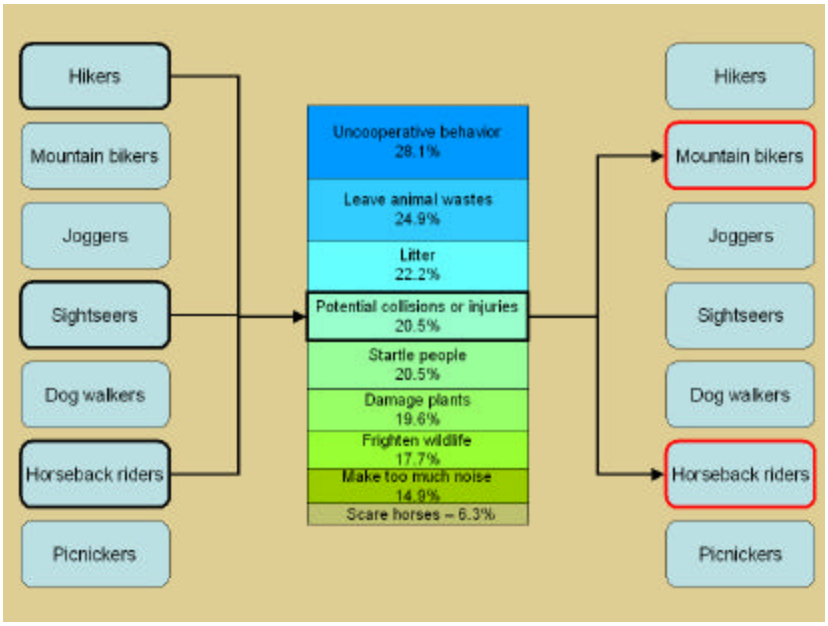


Figure 17d Potential collisions and the groups responsible

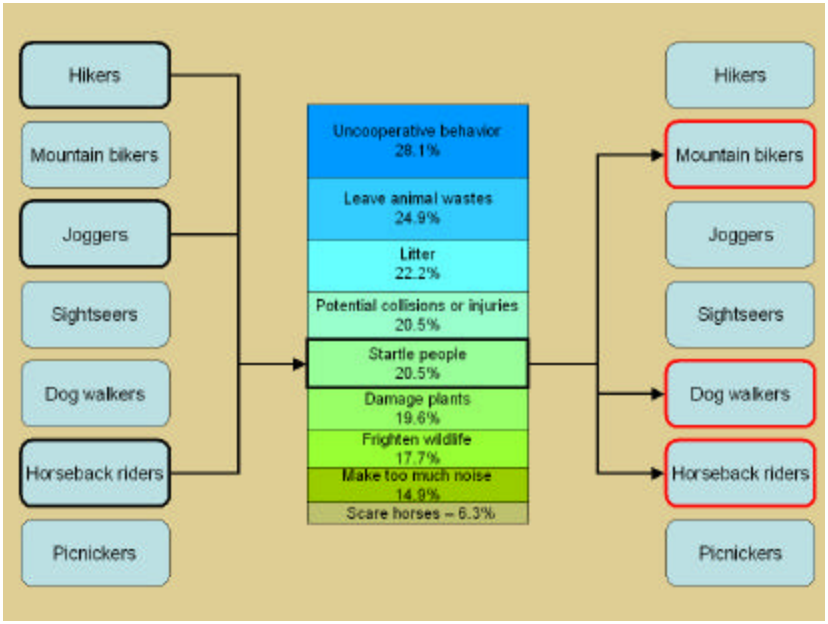


Figure 17e Startling people and the groups responsible

Equestrians, joggers and hikers were the groups most concerned about being startled on the trails. They identified the source of the problem as dog walkers, equestrians and mountain bikers, with equestrians being concerned about dog walkers (***Figure 17e***).

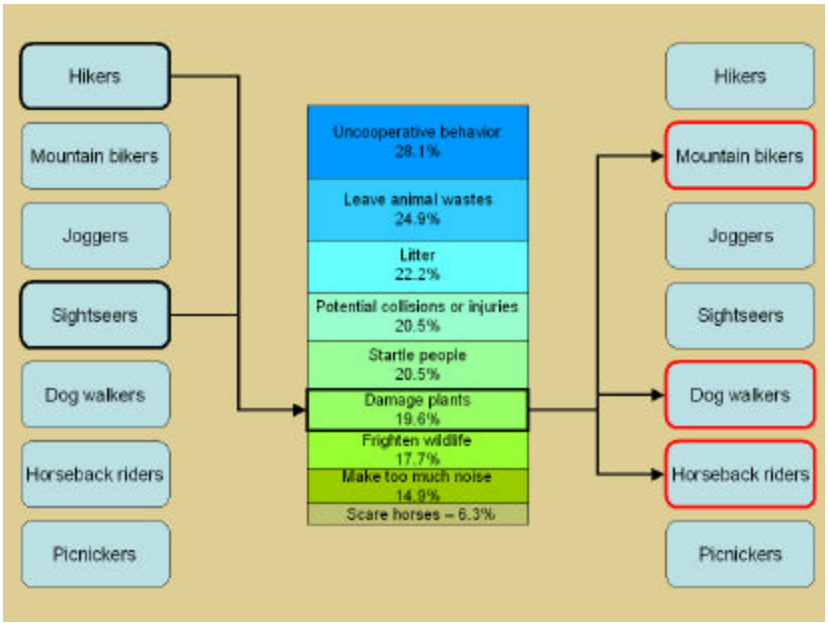


Figure 17f Damaging plants and the groups responsible

Concerns about damage to plants were expressed by hikers and sightseers. They saw equestrians, dog walkers and mountain bikers as the user groups responsible for this damage (***Figure 17f***).

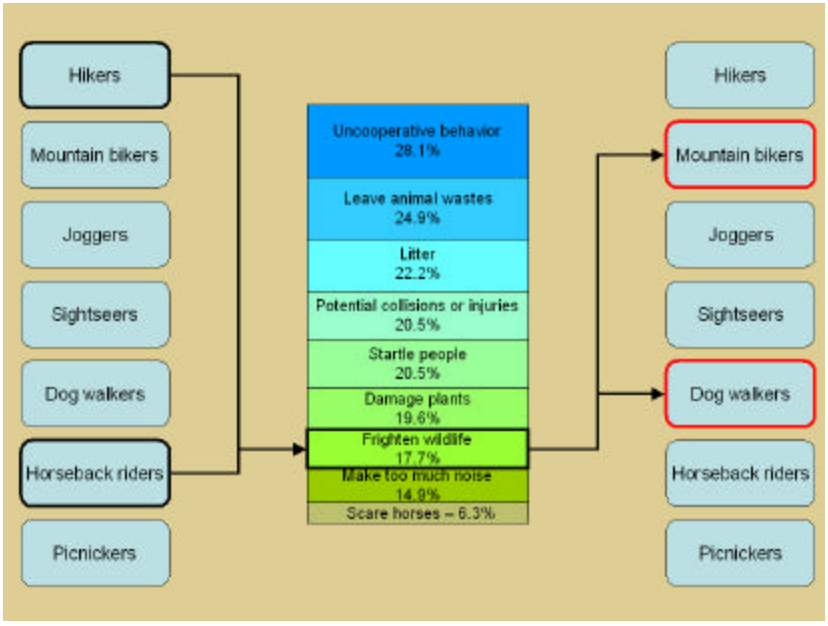


Figure 17g Frightening wildlife and the groups responsible

Hikers and sightseers also expressed concerned about noise levels on the trails. They felt that all other trail users except themselves were responsible for this problem (***Figure 17g***).

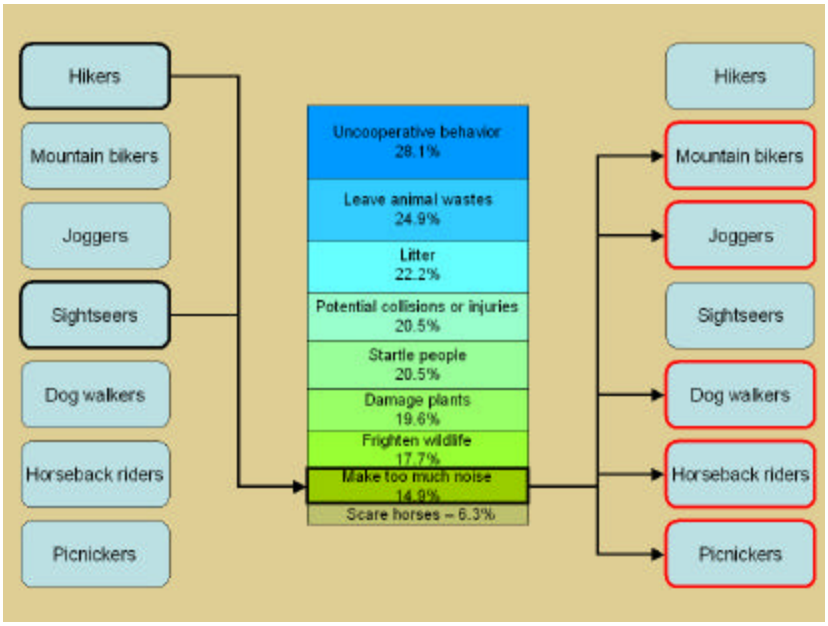


Figure 17h Making noise and the groups responsible

Equestrians and hikers were the groups most concerned about wildlife being startled on the trails. They attributed this issue to mountain bikers and dog walkers (***Figure 17h***).

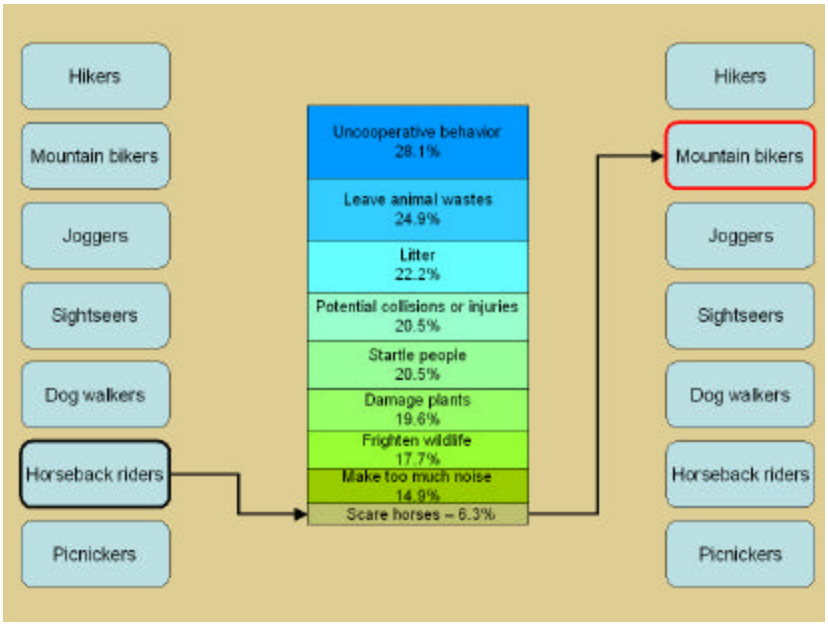


Figure 17i Scaring horses and the groups responsible

Finally and perhaps not surprisingly, equestrians were also the group most concerned about horses being startled on the trails. They identified mountain bikers as their biggest cause for concern in this regard (***Figure 17i***).

Mode of Transit and Barriers to Access

The results of the 2000 Transportation Survey for the SMMNRA highlighted the automobile dependence of park users. That survey found that 93% of visitors traveled to the National Recreation Area by private automobile (ORCA Consulting, 2000, p.2:6). Although the results from that survey do note that 1% visitors arrived by 'bus', this mode of transit was qualified as being comprised of either transit or tour busses. The results of the 2002 recreational trail use survey reinforce earlier findings. Nevertheless, and somewhat encouragingly, this survey has found that a greater percentage, cumulatively 9.8% of visitors, came by alternative transport modes (walking, bicycling, jogging or on horseback) than was reported in the 2000 transportation survey. Whether or not this reflects a change in travel mode is a moot point. It does however, show that alternative travel modes are feasible within the SMMNRA and that there is potential to decrease car dependence. Despite these results, it is very clear that public transit is either eschewed by visitors to the SMMNRA or more likely is not a convenient travel mode – due to poor accessibility or infrequent timetables.

Mode of transit

It is unsurprising that in a city as auto-dependent as Los Angeles, 89.8% of respondents to the survey traveled to the SMMNRA via private automobile. The next highest category was walking or jogging at a meager 4.8% of respondents. Even less represented were those who came by bicycle, on horseback, or by motorcycle. There were no respondents who used public transport to access the National Recreation Area (refer to ***Table 13*** and ***Figure 18*** below). This could indeed be regarded as constituting a barrier to access, perhaps accounting to some degree for the under-representation of particular socio-economic groups in the survey sample.

Table 13 Travel mode

Travel Mode (N=912)	*%*
Public transportation	0.0
Group transportation (club or organization)	0.1
Other	0.3
Motorcycle / scooter	0.4
Horseback	1.0
Bicycle	3.6
Walk / jog	4.8
Car / truck / SUV / van	89.8
Total	100

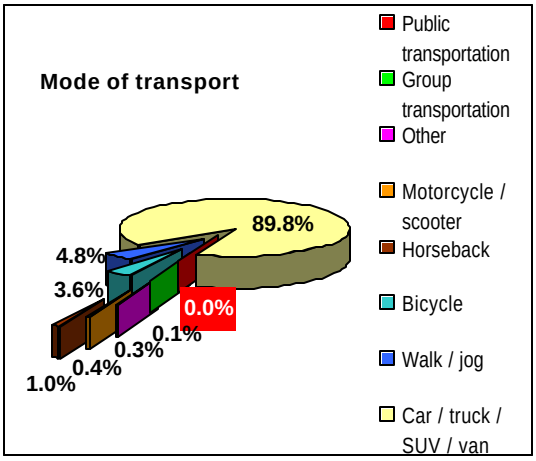


Figure 18 Mode of transit

Barriers to access

Responses to survey questions pertaining to barriers to access and disability were disappointingly somewhat uninformative. The position and sequence of questions pertaining to barriers to access within the survey, together with the wording of the actual questions, may have contributed to respondents' poor understanding of these questions, and hence the dearth of information on barriers.

Disability

Only 2% of respondents reported having a disability of some kind. Furthermore, a very small percentage (4.5%) reported experiencing barriers to access at the trailhead where the survey was undertaken or at other trailheads within the SMMNRA (8.9%) although this latter category is worthy of attention with almost 10% of respondents reporting a barrier to access. This is an issue that certainly merits further investigation.

Future Growth Projections

Projections for park user growth rates have been determined through an analysis of residential zip code data derived from the survey. These data were aggregated into

Southern California Association of Governments (SCAG) designated cities, where there were 5 or more respondents for a particular zip code. Where this threshold was not met, zip codes were aggregated at the county level. The proportion of residents from each zip code was assumed to remain constant. SCAG growth projections for each city were then scaled by the proportion of SMMNRA visitors residing in the city. For those zip codes aggregated at the county level, SCAG county growth projections were scaled accordingly.

It is important to note that SCAG provides no base for its year 2010, 2015, 2020 and 2025 growth projections. Year 2000 US Census numbers were used to generate a base number from which percentage increases could be calculated.

From these calculations, it can be seen that visitor growth projections for the Santa Monica Mountains National Recreation Area closely resemble growth projections for Los Angeles County (refer to ***Table 14*** below). This is understandable because many of the visitors surveyed resided in zip codes within Los Angeles County.

Table 14 Growth projections

County	2010	2015	2020	2025
Ventura County	111 %	116 %	121 %	126 %
Los Angeles County	113 %	118 %	124 %	130 %
SMMNRA Visitor Growth	114 %	119 %	124 %	129 %

5 Trailhead Comparisons

The previous section of the report examined the aggregate results for the survey. This section of the report considers the data based on pattern analysis. The section is divided into three sub-sections, which present the data based on two comparative analyses and a spatial analysis. The basis for data analysis in the first subsection is primarily functional, wherein trailheads were divided into primary and secondary trailheads. The second subsection presents a spatial analysis, comparing the trailheads utilizing their geographic characteristics such as proximity to either urban or suburban areas. To this end, it is useful to think of the trails as having catchments – geographically delimited areas from which trail users are drawn. The third subsection presents a geographic information analysis to determine trail user residential locations. In regard to this last form of data analysis, a question on the survey that asked respondents to identify their residential zip code enabled the visitor data to be geo-coded. The areal extent and current population of the National Recreation Area's catchment was also modeled using census data. The catchment area model enabled a projection of future catchment area population, based on SCAG sub-area 2020 population projections.

Primary and Secondary Trailheads

This section provides an analysis of what we term primary or destination trailheads and secondary or neighborhood trailheads. The analysis is directed towards making meaningful recommendations for future trail management. It is predicated upon a functional division of the trailheads. Some trails had a local function – acting as de facto local parks, whereas others were more regional in nature. By this, we mean that some trails such as Paramount Ranch or Malibu Creek State Park are destination trails and draw visitors from all over Southern California, who are attracted to the trails due to their cultural and historical significance (Paramount Ranch was a place of movie production and Malibu Creek State Park was the set for the popular television series MASH). Other trails, such as Runyon Canyon or the Wendy Trailhead typically provide a more localized recreational resource for those living in close proximity to the National Recreation Area – these we term secondary trails.

Sample size

Destination or primary trail sites had a sample size of 587 respondents (64% of the total sample for the survey) and over the course of the survey 8,439 visitors were counted at these sites. Secondary trails on the other hand had a sample size of only 325 respondents (35% of the total sample for the survey) and a total of 3,674 visitors were counted at trailheads for these trails. The primary trails are identified in ***Table 15*** and secondary trails in ***Table 16***.

Comparison of the trailheads

When the demographic characteristics of visitors surveyed at secondary trails are compared to those at primary trails, few important differences are observed. The samples

for the trails had approximately the same median age and sex ratios. Perhaps the greatest distinction concerns household composition. A higher proportion of respondents at primary trails lived in households comprised of couples with children, both over and under 18 (including single parent households), whereas a higher proportion of trail users at secondary trails lived in single person households and multigenerational households. Household income was higher in the low to medium range at primary trailheads, but higher in the upper range at secondary sites. A slightly higher percentage of respondents at primary trails had a college education, compared to secondary trails, but the difference is statistically not significant.

Table 15 Secondary (Neighborhood) Trails

Location #	Trail name	Number	Count
15	Tapia Park	18	744
35	Reseda	19	431
34	San Vincente	13	419
33	Los Liones	9	364
31	Point Dume	11	304
21	La Jolla	45[12]	220
42	Circle x	31	216
41	Zuma-Total	28	191
29	Corral Canyon	16	178
24	Kanan Backbone	25	150
18	Santa Ynez	25	121
28	Las Virgenes	10	84
16	Stunt Ranch	14	73
20	Charmlee Natural Area	21	65
12	Cheeseboro- China Flat	14	54
23	Leo Carillo	20	43
6	Rocky Oaks	6	17
		Total#	**3674**

As far as race and residence are concerned, the two types of trails were remarkably similar. The only real difference was nationality, with the second highest nationality at secondary trails being Mexican whereas at primary trails it was Iranian. Large trails also had a higher proportion of Canadians whilst secondary trails generally had more European visitors. Large trails were characterized by a slightly longer average duration of residency among non-US born respondents than at secondary trails.

Turning to visitation patterns, a higher proportion of respondents at primary trails were return visitors; the difference being 8 percent. In addition, respondents were much more likely to return to these trails when compared to secondary trail users, with return visitation being 50% higher at primary trails. Visitation rates were also a third higher at the destination trails. Equestrians were the most frequent visitors at secondary trails and dog walkers were the most frequent at destination trails. Hiking was the most popular activity at both types of trails, but mountain biking and jogging were more popular at

[12] Note that the large number of surveys collected at La Jolla represents an anomaly in data collection and should be treated as such.

destination (primary) trails whereas sightseeing and picnicking were more popular at local (secondary) trails. The reasons for visiting the trails were remarkably similar at both types of trails with a comparable proportion of visitors distributed across almost all the categories. A slightly higher proportion of respondents visited destination trails to exercise and breathe fresh air than their secondary trail counterparts. The important difference is that of solitude related uses at secondary trails: communing with nature attracted 10% more respondents at secondary trails, and there was an 8 percent difference in experiencing fewer people.

Table 16 Primary (Destination) Trails

Location #	Trail name	Number	Count
40	Runyon	29	1880
36	Wilacre	71	1219
27	Malibu Canyon-Main	39	1212
32	Temescal	42	968
45	Franklin Canyon	44	813
44	Rancho Sierra Vista	102	644
22	Sycamore Canyon	40	546
43	Cheeseboro	98	505
8	Paramount Ranch	41	375
17	Trippet Ranch	81	277
		Total	**8439**

With regard to neighborhood park visits, the overall distribution of respondents across response categories was once again remarkably similar for the two types of trails. When compared to primary trails there was a very slight difference in the proportion of users at secondary trails who visited their local park due to limited time and easier access, about five percent for the former and three percent for the latter. At the larger trails there was a slightly higher proportion of respondents who listed the ease of bringing children along as the reason for visiting their neighborhood park instead of the SMMNRA. However, when analyzed by user group, significant differences were observed. There were several user groups at secondary trails with high percentages of respondents who reported never using their local park. Seeking out different recreational opportunities on the other hand was more important for respondents at primary trail sites.

Differences also exist between trail users' sources of knowledge at secondary and primary trail sites. Respondents at primary trails had slightly higher percentages gaining information from ranger-led nature walks, but a much higher percentage – 5 percent more - gained their information from school, compared to secondary trail users. At secondary trails, there were slightly higher percentages of respondents who obtained their knowledge from the Internet, organized groups, family and friends, books and nature observation. At primary trails, slightly higher percentages of respondents gained their information from park brochures, television and living in the area. Once again, when examined by user group, important differences emerged. At secondary trails, 70% of dog walkers cited nature observation as an important source of knowledge whereas at primary trails 30% less dog walkers cited this source. At primary trails 60% of equestrians

reported reliance upon this nature observation but at secondary trail only half the number of equestrians cited this source.

Insofar as reasons for protecting the mountains are concerned, a slightly higher percentage of primary trail respondents cited either recreation of both recreation and habitat preservation as the principal reasons. Small trail users were comparatively more ecocentric, but the difference of four percent is statistically not significant. The most anthropocentric user group at secondary trails was equestrians whereas at primary trails it was dog walkers and mountain bikers.

A comparison of user group interaction patterns reveals that approximately the same proportion of respondents at both types of trails were impacted by the activities of other trail users. Mountain biking received the lowest rating at both types of trails. Leaving animal waste followed by uncooperative behavior were the most frequently cited problems at both trails, but the order was reversed between secondary and primary trails.

Slightly more respondents arrived by automobile at primary trails than at secondary trails. Walking, jogging and horseback were more popular modes of transit at secondary trails and cycling was citied more often at primary trails as the mode of transit. Public transit was eschewed by respondents at both types of trailhead.

A very small percentage of respondents at both trailhead types reported having a physical disability. In addition, barriers to access were cited at both trails by approximately five percent of respondents. Almost 10% pf trail users also reported encountering barriers to access elsewhere in the park.

A complete set of tables on results from both the secondary trailheads and primary trailheads within the SMMNRA are presented in ***Appendices 4a – 5a***.

Secondary Trails

User demographics

The median age of trail users who responded to the survey for secondary sites was just over 40, and two-thirds (60.9%) of those surveyed were men. Only 21% reported having children; those who did on average had two children. This is not surprising, given the distribution of household types in the sample. Approximately 36% of respondents were in single person households, over 20% were in two-person households without children, and 17.4% were in two-person households with children under 18. However, only 9.2% of households were multigenerational, and the smallest proportion (4%) of respondents lived in single parent households.

Most respondents were affluent, but approximately a quarter (24.3%) reported household incomes of less that $50,000. Over half the sample (52.7%) had household incomes of in the $50, 00 - $200, 000 range, and 11.4% were in the $200,000 plus range. Reflecting the relative affluence of the sample's respondents, about two-thirds 62.6% owned their homes, and 83.2% were college educated.

With respect to race/ethnicity, immigration status, and duration of residence in the US, only 13.2% of respondents identified themselves as Latino or Hispanic; with the majority considering themselves white (68.8). Less than 6% were Asian, and African-Americans constituted just over 1% of the sample at these neighborhood / secondary trailheads. Not surprisingly, just under three-quarters (74.5%) of respondents were born in the United States, with the remainder originating (in rank size order) from Mexico, Iran, France, the Philippines, Belize and various other countries (see ***Appendix 4a***). In total, visitors from 32 different nationalities were represented in the sample for secondary sites. On average, respondents who were not native-born had lived in the USA for 17 years. Almost three-quarters (73.5%) spoke English at home, with most of the small remainder speaking either Chinese (presumably Mandarin) or Spanish. Demographic information is broken down by user group in ***Appendix 4b***.

User visitation rates and patterns

At these secondary trailheads, 325 respondents completed surveys but responses were not provided for some of the questions. Most visitors (81.9%) were return users (***Figure 19*** below).

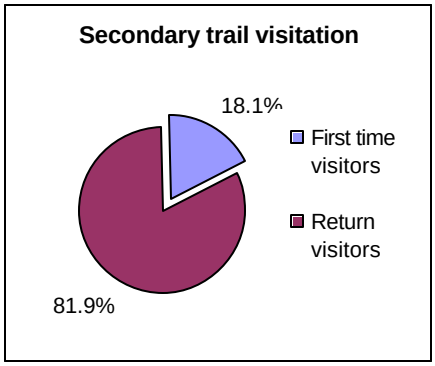


Figure 19 Visitation on secondary trails

Just over a quarter of the visitors surveyed (26.8%) arrived alone, another quarter was with family members (25.2%) and about a third (36.3%) was with both family and friends. The median group size was over 3 people, and altogether, 124 animals (mostly dogs) accompanied trail visitors.

User activities

Most visitors surveyed reported that they intended to undertake more than one activity whilst visiting the National Recreation Area. The dominant activities at secondary sites were hiking, sightseeing, and mountain biking. Hiking was particularly popular, with 84% of respondents reporting that they had, or planned to, hike during their visit to the SMMNRA. However, jogging, bird watching, photography and picnicking were also relatively common activities (see ***Table 17*** below).

Table 17 User activities (secondary trails)

Qu. 2a: Activities engaged in during visit			
Activity (N=325)	*%*	*Activity*	*%*
Sightseeing	62.2	Horseback riding	5.2
Hiking	84.0	Rock climbing	10.2
Picnicking	20.3	Painting / crafts	1.8
Mountain biking	22.2	Photographing	16.6
Bird watching	14.8	Sunbathing	7.4
Walking dog(s)	13.2	Wading swimming	7.7
Jogging	18.5	Other	9.5
Camping	9.8		

The most often reported principal activity at secondary sites however, was hiking with mountain biking a popular, but comparatively much smaller second activity (see ***Table 18*** and ***Figure 20*** below). Over half of all respondents indicated that hiking was their main planned activity. Other activities such as sightseeing (7.2%), were less apt to be cited as visitors' principal activity at the SMMNRA.

Table 18 Principal activity

Qu. 2b: Principal activity during visit	
Activity (N=318)	*%*
Hiking	55.3
Mountain biking	14.8
Jogging	4.7
Sightseeing	7.2
Dog walking	3.1
Horseback riding	3.1
Picnicking	4.1
Total	**92.3**

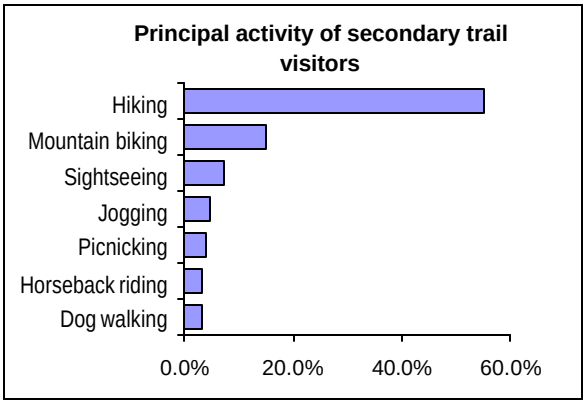


Figure 20 Principal trail user activity

Reason for visit to the SMMNRA

Survey respondents at secondary trail sites provided a large variety of reasons for visiting the SMMNRA (see ***Table 19*** and ***Figure 21*** below). The most frequently cited reason was to be outdoors, closely followed by the desire to exercise, the need to breathe fresh air, and the need to venture out to the SMMNRA to enjoy the scenic beauty. However, almost 50% also indicated that they came to see or hear wildlife; and close to two-thirds to escape the city/suburbs and commune with nature. Socializing with family or friends,

experiencing fewer people, and engaging in adventure sports were also relatively common responses.

On average, trail users at secondary trails had either spent, or planned to spend, 2.85 hours at the SMMNRA. Almost two-thirds (59.8%) reported that the trail where the survey had been administered was the trail that they normally visited. However, over 80% indicated that they did, at times, visit other trails in the mountains. The average number of visits per month reported by respondents was six. This is comparatively quite high, indicating that many visitors were regular trail users. Almost three-quarters of visitors went to the SMMNRA on the weekend (75.4%) and two-thirds (62.5%) of respondents preferred to visit in the morning. Summer was the most popular season in which to visit, followed by spring then fall. However, almost half of respondents (43.4%) also visited the SMMNRA throughout all seasons.

Table 19 Reason for visit

Qu. 3: Reason for visiting the SMMNRA	
Reason (N=320)	*%*
To exercise	80.6
To be outdoors	90.2
To enjoy the quiet	70.2
To breathe fresh air	77.8
To see wildflowers	39.2
To see / hear wildlife	47.1
To enjoy scenic beauty	75.7
To escape the city / suburbs	58.2
To commune with nature	56.9
To experience fewer people	45.5
To attend and organized event	4.9
To undertake school research	0.6
To engage in adventure sports	18.2
To be with companion animals	14.5
To socialize with family / friends	37.8
To educate children about nature	7.1
Other	1.8

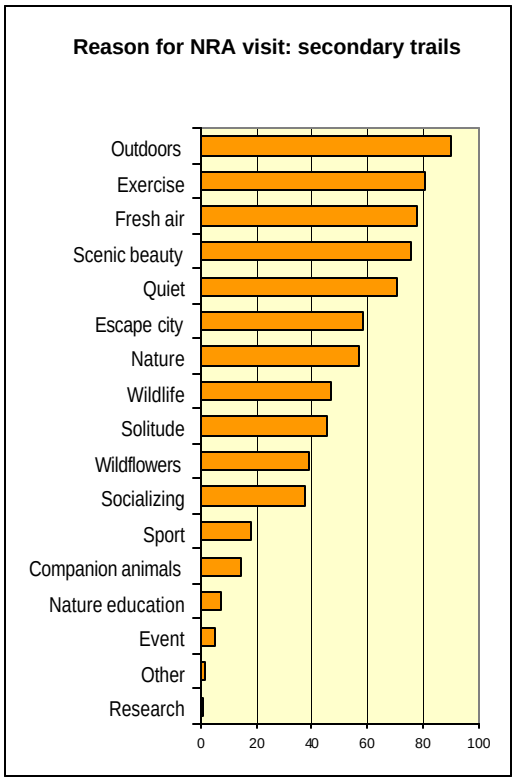


Figure 21 Reason for visit

Insofar as individual user groups are concerned, mountain bikers and equestrians were the most likely to regularly visit the same trail, whilst picnickers were inclined to visit other trails within the SMMNRA. Hikers, joggers, sightseers and dog walkers all reported regular use of the surveyed trailhead, with occasional forays to other trails (refer to ***Appendix 4b*** for data). Equestrians were also the most regular visitors to the SMMNRA with on average 4 visits per week. Dog walkers similarly reported very high visitation rates - approximately 3 visits per week, and joggers on average visited twice weekly. On

the other hand, sightseers and picnickers on average visited only twice a month. It is interesting that equestrians were also the most regular seasonal users of the SMMNRA, with 90% of equestrians who were surveyed visiting during the fall, winter and spring and 100% in the summer. On the other end of the spectrum, the seasonal use of the SMMNRA by sightseers was both variable and low. As with the overall survey, the season in which sightseers visited least frequently was winter.

Local park use

Respondents were also asked about their use of secondary or neighborhood parks, and why they visited such parks rather than the SMMNRA. Although the SMMNRA is a large-scale regional recreation area, it is situated in close proximity to adjacent urban communities. For this reason, it is conceivable that many trail users consider the SMMNRA as their local park and use it accordingly. However, only 35.4 % indicated that they never used local or neighborhood parks (***Table 20*** and ***Figure 22*** below). The average number of visits to the local park was also comparatively high with respondents using their local park about 4 times a month. Approximately half of the respondents favored local parks when they had limited time (51.7%), about a third (35.7%) because such parks were more accessible, and over a quarter (26.8%) because they provided different recreational opportunities. Only 12.3% of respondents indicated that local parks were easier to take children for recreational activities.

User group analysis

When examined by user group, some interesting results were found (***Appendix 4b*** presents data for user groups). Notably 30% equestrians reported never visiting a local park and 40% of equestrians said they only visited their local or neighborhood park to experience different recreational opportunities, as did 46.2% of picnickers. Dog walkers reported using their local park due to limited time (30%) and easier access (30%). Finally, almost 60% of hikers, mountain bikers and sightseers reported that they visit their local park in preference to the SMMNRA only due to time constraints.

Table 20 Reason for local park visit

Qu. 6a: Reason for visiting local or neighborhood park	
Reason (N=325)	*%*
Limited time	51.7
Easier access	35.7
Different recreation opportunities	26.8
Community gardening	1.5
Group recreation opportunities	8.3
See neighborhood friends	7.4
Easier to take children	12.3
Other	3.4

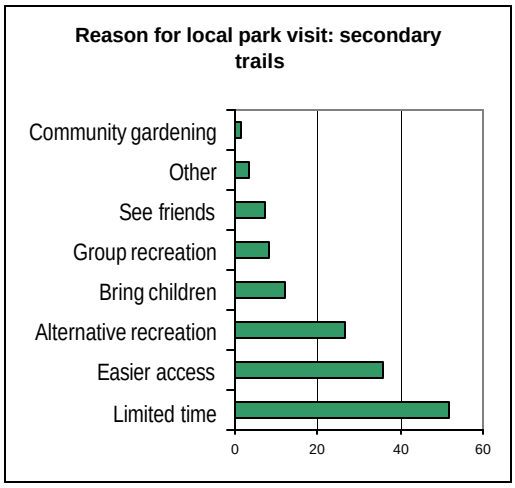


Figure 22 Reason for local park visit

Environmental knowledge and sources of information

Respondents obtained information about the Santa Monica Mountains, and their flora and fauna, from a wide variety of sources. The most commonly cited ways of learning about the area was through nature observation and by reading books and magazines. But clearly SMMNRA signs and brochures were also important information sources (refer to ***Table 21*** below). In addition, previous visits and information provided by family and friends were frequently cited sources of information. Approximately a third (29.2%) of respondents indicated that they lived in the vicinity and thus knew about the mountains from their daily experience.

Table 21 Sources of nature information

Qu. 7: Source of knowledge of SMM fauna and flora			
Reason (N=325)	*%*	*Reason*	*%*
Ranger-led nature walks	8.6	Television	19.7
School	16.3	Previous visits	35.4
Park brochures	31.7	Family / friends	35.7
Park signs	33.2	Live in the area	29.2
Nature observation	47.1	Organized groups	8.6
Books	41.8	Internet	1.8
Magazines	26.2	Other	1.2

User group knowledge sources

When data for secondary trails are examined based upon user groups, equestrians once again emerge as an unusual group. A considerable proportion (30%) of equestrians reported that they derived their information from ranger-led nature walks. They also cited park brochures (30%) as a source of information about nature in the mountains and nature observation (30%). However, the most notable group was dog walkers, with 70% citing nature observation as a source of information, and roughly half also reporting park signs and books as important sources of information. It is also interesting that over two-thirds (66%) of joggers reported books as an important source of knowledge about the Santa Monica Mountains. Full data is available in ***Appendix 4b***.

Reasons for protecting the mountains

As far as user's attitudes towards nature are concerned, over half of the respondents (56.3%) expressed ecocentric attitudes. Anthropocentric views were much less common, with only a fifth of respondents prioritizing recreation as the main reason to protect the mountains (see ***Table 22*** and ***Figure 23*** below). However, a fifth of respondents were unwilling to choose one of the options (despite survey directions), suggesting that they placed an equivalent valuation on both habitat and recreation. Analyzed by user group, over 70% of sightseers expressed ecocentric attitudes, as did

60% of hikers and just over half (53%) of the mountain bikers and joggers surveyed. Equestrians were the group that most strongly favored recreation opportunities as the reason to protect the mountains (40%). Full data is available in ***Appendix 4b***.

Table 22 Protection of SMMNRA

Qu. 8: Reason to protect Santa Monica Mountains	
Reason (N=325)	*%*
To provide recreational opportunities	20.9
To provide habitat for plants and animals	56.3
No opinion	2.5
Other	0.6
Both	19.4
To provide recreational opportunities	20.9

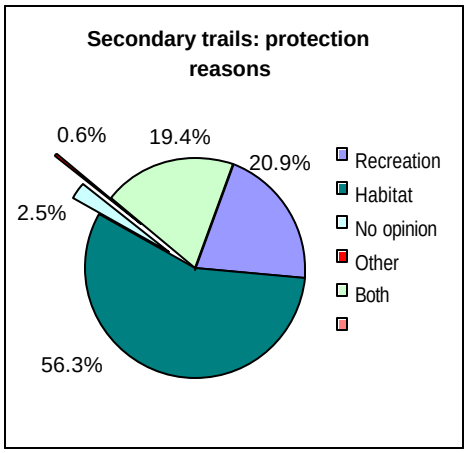


Figure 23 Protection reasons

User Group Interaction Patterns

Questions were placed on the survey asking respondents if they felt that other users on the trails affected their experience. Indeed, 75.6% of those surveyed indicated that their trail visits were influenced by the presence, activities, or behavior of other trail users. Nonetheless, this was not necessarily due to negative impacts; hiking and running/jogging were, on average, seen somewhat positively, whereas mountain biking, equestrian activities, picnicking, and dog walking were seen as ranging from neutral to somewhat positive (***Table 23***). Many respondents reported that even though they had negative experiences with some types of activities, the numbers of problematic incidents was very small, and they were unwilling to complain about incidents that were infrequent.

Table 23 Impact of trail user behaviors

Qu. 9b: Impact of other users on trail experience			
Category	*N =*	*Mean*	
Mountain biking	232	3.52	*Key*
Horseback riding	225	3.91	
Hiking	238	4.64	*5 = Strongly positive*
Running / jogging	231	4.56	*4 = Somewhat positive*
Picnicking	231	4.21	*3 = Neither*
Dog walking	232	3.61	*2 = Somewhat negative*
Other	33	2.30	*1 = strongly negative*

Nevertheless, respondents did note that some trail user activities presented problems, even if this was infrequently (see ***Table 23*** and ***Figure 24*** below). The most often-cited problem was leaving animal wastes. Uncooperative behavior, such as rudeness or unwillingness to yield on the trail, was the second most frequently reported problem. Given that the predominant activity at secondary trails was hiking the above-mentioned problems are perhaps unsurprising. Hikers appeared more likely to object to other users when their expectations were that the trail should be primarily used for hiking. Other types of problems however, were important when examined together. For example, over a quarter of the respondents were concerned that trail users' activities either damaged plants or frightened animals, corroborating the finding that many trail users' attitudes were ecocentric. Other complaints included potential for collisions and resulting injury (almost one-fifth reported this as a problem), as well as litter, being startled by other people, and excessive noise from some. Interestingly, encountering dogs off leash was cited as a problem for only 1.5% of respondents.

Table 23 Reason for negative impact

Qu. 9c: Why do other trail user activities present a problem	
Reason (N=325)	*%*
Damage plants	21.8
Uncooperative behavior	25.8
Frighten wildlife	20.0
Startle people	20.3
Make too much noise	16.6
Litter	23.1
Scare horses	6.2
Leave animal wastes	26.5
Potential collisions / injury	19.4
Other	3.4
Dogs off leash	1.5

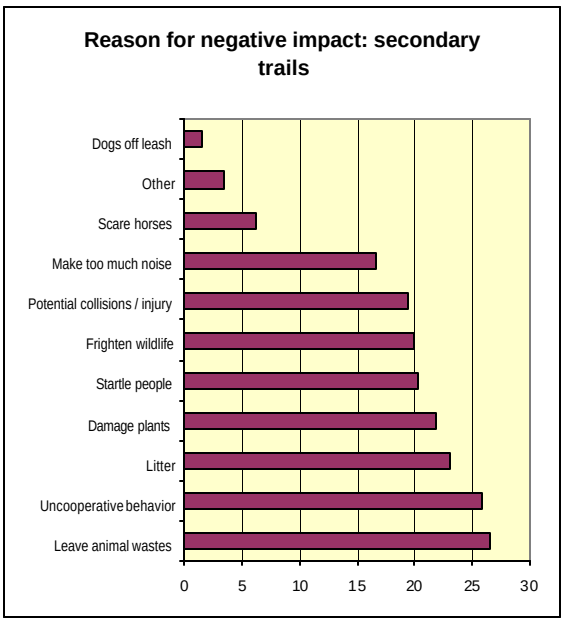


Figure 24 Reason for negative impact

Mode of transit and barriers to access

On average, it took visitors over half an hour to get to secondary trails (35 minutes). Almost all visitors arrived by automobile (88.6%) and those who did not come by car traveled to the SMMNRA by walking or jogging (5.5%), by bicycle (3.1%) or by horseback (1.2%). These results suggest that access to the SMMNRA via public transportation is unavailable or sufficiently time-consuming and/or inconvenient to justify regular use. A lack of public transport may constitute a barrier to access for those people who are under-represented in the survey sample, and this has equity implications that need to be taken into account during future trail management planning exercises (see ***Section 6*** of the report).

Less than 2% of visitors surveyed at secondary trails reported having a physical disability, but a slightly higher proportion (6%) reported that they had experienced some sort of barrier to trail use unrelated to their physical condition at the survey location. Some respondents (8%) also reported experiencing barriers to access at other SMMNRA locations.

Primary (Destination) Trails

User demographics

The median age of survey respondents at primary or destination trails was 41 years of age, with a sex ratio of 58.4% males to 41.6% female visitors. Approximately 30% of respondents reported having children under 18 years of age, with a median of 2 children. These values were consistent with the distribution of household types reported, which were 31.5% single and 27.9% couples without children under 18, leaving 20.2% of respondents in the two parents with children under 18 category. A much smaller proportion of the sample was comprised of single parents with children under 18 and people living in multigenerational households. They constituted only 5.1% and 7.2% respectively.

Respondents at the primary / destination trails were slightly more affluent than those who used secondary trails, with only 19.9% reporting annual incomes below $50,000 and almost 60% falling within the $50,001 to $200,000 income range. However, slightly fewer respondents earned over $200, 000 (9.7%) when compared with those who visited secondary trails. The rate of home ownership (63%) is comparable with that of secondary trail users, as is the ratio of visitors with a college education (86.6%).

Eleven percent of respondents at the destination trails identified themselves as Hispanic or Latino, while 73% of respondents reported their race as white. Asians comprised 5.3% of destination trail users and only 1.9 % stated that they were black or African-American. An even smaller fraction - just 1.2% were Native American and only 0.2 % were Native Hawaiian or Pacific Islander. Notably, almost a fifth (17%) of respondents did not wish to identify themselves as belonging to any particular racial group. As far as nationality is concerned, over 78% of people surveyed were born in the United States, with the next most frequent countries of origin being Iran (1.7%), Canada (1.2%) and England (1%).

However, visitors to the primary trails came from a wide variety of countries, representing 45 different nationalities (see ***Appendix 5a***). For those respondents born outside of the USA, the median residency was almost 24 years. With regard to language, approximately 80 percent of visitors spoke English at home, while 2.4% reported speaking English and Spanish and 1.7% reported speaking only Spanish. Interestingly, 7.7% of respondents stated that they were Amharic speakers.

User visitation rates and patterns

Of the 587 survey respondents at the destination trail sites, nearly 89.7% were return visitors (see ***Table 25*** and ***Figure 25*** below). A third of visitors (30.7%) came to the trail by themselves, a quarter (24.8%) came with family members, over a third (33.6%) were with friends and only 7% were with friends and family. Very few visitors came to the trails with an organized group or club. The median group size was 3 people and 271 respondents brought pets or companion animals to the trail with them.

Table 25 Primary trail visitation

Visitor type (N=587)	*%*
Return visitors	89.7
First time visitors	10.3
Total	100.0

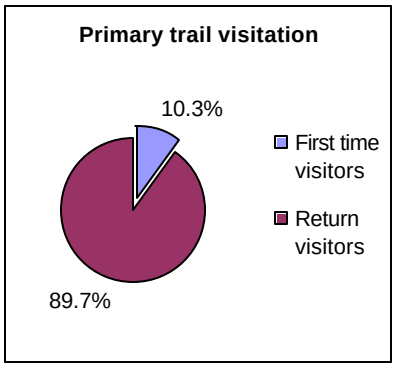


Figure 25 Primary trail visitation

User activities

The most popular activities on the destination trails were hiking (73 %), sightseeing (52 %), mountain biking (28 %), and jogging (24 %). Bird watching, picnicking, walking dogs and photography were all somewhat popular pursuits (***Table 26***).

Table 26 User activities

Qu. 2a: Activities engaged in during visit			
Activity (N=587)	*%*	*Activity*	*%*
Sightseeing	51.1	Horseback riding	4.9
Hiking	73.6	Rock climbing	7.0
Picnicking	13.8	Painting / crafts	1.5
Mountain biking	28.6	Photographing	11.2
Bird watching	16.7	Sunbathing	4.4
Walking dog(s)	15.8	Wading swimming	3.1
Jogging	23.9	Other	6.8
Camping	7.8		

As far as principal planned activity was concerned, hiking was the most popular pursuit, chosen by 46.3 % of visitors. Mountain biking was the next most frequently listed principal activity (20.9%) followed by jogging, which was selected by just over 10% of destination trail users who responded to the survey (see ***Table 27*** and ***Figure 26*** below).

Table 27 Principal activity

Qu. 2b: Principal activity during visit	
Activity (N=261)	*%*
Hiking	46.3
Mountain biking	20.9
Jogging	10.2
Sightseeing	5.4
Dog walking	5.6
Horseback riding	3.5
Picnicking	2.0
Total	**93.9**

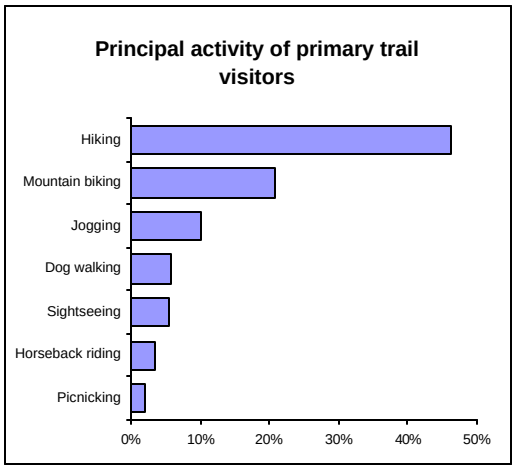


Figure 26 Primary trails: main activity

Reason for visit to the SMMNRA

The most common reasons given for visiting the SMMNRA were, in descending order, to be outdoors, to exercise, to enjoy scenic beauty, to breathe fresh air, and to enjoy the quiet (see ***Table 28*** and ***Figure 27*** below). Communing with nature, escaping from the city/suburbs and to see / hear wildlife were also important reasons for visiting destination trails, indicating that many respondents find that trail visits are a way to discover serenity and enjoy nature within the city limits.

On average, survey respondents either spent or planned to spend 2.31 hours on the primary trails. Almost 80% of respondents indicated that the trail where they were surveyed was the trail they normally visited, but most interestingly only 30% reported that they visited other trails in the National Recreation Area. The frequency of visits was quite high, with the average visits being almost eight per month. Respondents reported that they visited most often in the summer and spring, and mostly on weekends, especially in the morning.

In regard to the user groups' visitation behaviors, dog walkers (96.9%), equestrians (95%) and joggers (92.6%) were the most regular and consistent users of the primary trails, preferring to return to the same trail rather than visiting other trails. As with the secondary trails, picnickers reported a strong tendency to visit other trails, with only 22% returning to the surveyed trail on a regular basis. Dog walkers were also the most frequent visitors, averaging almost 3 visits per week. Equestrians were likewise frequent visitors averaging almost 3 visits per week and joggers regularly visited more than twice

a week. Picnickers and sightseers were less frequent visitors, coming to destination trails within the SMMNRA on average twice a month. In terms of seasonal visitation, equestrians consistently visit during all seasons, with a slightly lower visitation rate in winter. Dog walkers were also consistent visitors across all seasons. The greatest season variation by user group occurred within picnickers. Although 66.7% of picnickers reported visiting the destination SMMNRA trails in the summer, this declined precipitously to just 8.3% in the spring and fall and no visits were reported for the winter. In contrast to the secondary sites, sightseers reported moderate visitation rates year round. For further details, refer to ***Appendix 5b***.

Table 28 Reason for visit

Qu. 3: Reason for visiting the SMMNRA	
Reason (N=587)	*%*
To exercise	86.7
To be outdoors	87.2
To enjoy the quiet	63.9
To breathe fresh air	70.9
To see wildflowers	37.1
To see / hear wildlife	47.2
To enjoy scenic beauty	72.7
To escape the city / suburbs	51.8
To commune with nature	47.7
To experience fewer people	37.1
To attend and organized event	5.8
To undertake school research	0.5
To engage in adventure sports	18.2
To be with companion animals	13.5
To socialize with family / friends	35.1
To educate children about nature	8.2
Other	2.9

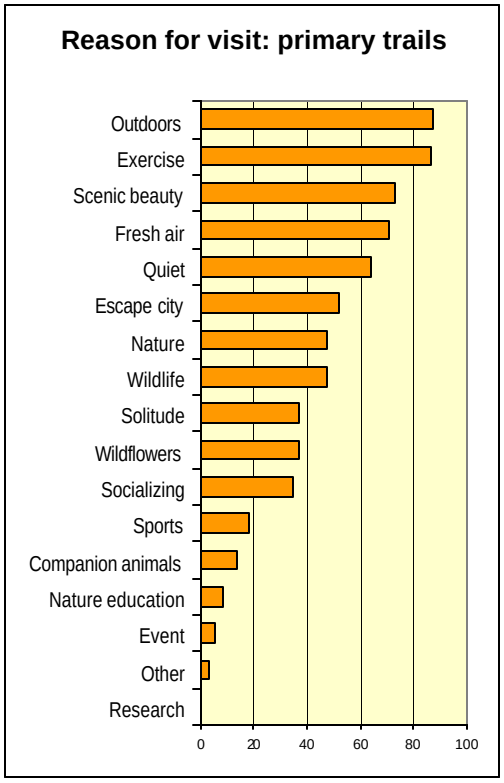


Figure 27 Reason for visit: primary trails

Local park use

On average, respondents reported that they visit local or neighborhood parks four times a month. The principal reason that respondents gave for visiting a local or neighborhood park, rather than the SMMNRA, was limited time. Easier access and different recreation opportunities were also frequently listed reasons (see ***Table 28*** and ***Figure 28*** below).

A considerably higher number of respondents (14%) for destination trails than for secondary trails cited the ease of taking children to the park as a reason for visiting the local park in preference to the National Recreation Area. This evidence supports the assertion that secondary trails within the SMMNRA are used as a substitute for neighborhood parks.

Table 29 Reason for local park visit

Qu. 6a: Reason for visiting local or neighborhood park	
Reason (N=587)	*%*
Limited time	47.2
Easier access	32.5
Different recreation opportunities	26.4
Community gardening	1.9
Group recreation opportunities	7.8
See neighborhood friends	8.0
Easier to take children	14.0
Other	3.7

Figure 28 Reason for local park visit

User group analysis

For primary sites, the user group data pertaining to local park visits is characterized by quite different patterns to that for secondary sites. Most interestingly, the patterns for primary park use reflect the regional nature of the trailheads. Whereas for secondary trailhead sites there were several user groups characterized by a significant percentage of individuals who reported never visiting their local park, or only when time was limited, or for different recreational opportunities (for example equestrians and dog walkers), the user group data for primary sites emphasizes their regional function. Although a high proportion of equestrians (30%) still reported never visiting their local park, all other user groups were below 15% for non-use of local parks.

Instead, the category that received proportionally greater attention from trail users was different recreational opportunities. Hikers, mountain bikers, joggers, sightseers and equestrians all had selection rates above 20% for this category, with many groups approaching 30% of their constituency reporting that they sought different recreational opportunities in their local parks. The group with the highest composition for this category was picnickers (41.7%). The most frequently listed reason for visiting local parks instead of the National Recreation Area, across all user groups, was limited time. This was followed by easier access and then different recreational opportunities. Almost half of the sightseers surveyed at primary sites (48.4%) reported using their local parks due to limited time and easier access. Complete cross-tabulated data are presented in

Appendix 5b). 'Picnickers' was the group with the highest proportion reporting that they visited their local parks for group recreational opportunities.

Environmental knowledge and sources of information

The most frequently indicated sources of knowledge about the Santa Monica Mountains wildlife were nature observation, books, and previous visits. However, as with secondary trails, park signs and park brochures were also important sources of information for respondents, as was information derived from living in the area (***Table 30***). Interestingly, school was cited by a fifth of respondents as a source of information, a higher rate than for the overall survey results, and a slightly higher rate than the secondary trailheads. Ranger-led nature walks played a slightly more important role as they did at secondary trailheads, perhaps due to the prominent nature of destination trailheads.

User group knowledge sources

Examining this data by user group reveals that equestrians reported the highest reliance on nature observation (60%). This was a noticeable difference when compared to secondary trailheads, where dog walkers reported the highest reliance. At secondary trailheads only 30% of equestrians listed nature observation as an important source of information. Dog walkers (46.9%) and hikers (49.2%) also responded that they depended more on nature observation. Hikers depended most strongly on ranger led nature walks, sightseers and picnickers most strongly on school, as did mountain bikers and hikers upon park brochures and hikers, mountain bikers and joggers upon park signs (refer to ***Appendix 5b***).

Table 30 Sources of nature information

Qu. 7: Source of knowledge of SMM fauna and flora			
Reason (N=587)	*%*	*Reason*	*%*
Ranger-led nature walks	10.4	Television	22.3
School	21.8	Previous visits	35.9
Park brochures	32.2	Family / friends	31.5
Park signs	33.7	Live in the area	31.3
Nature observation	45.5	Organized groups	5.6
Books	39.5	Internet	1.5
Magazines	29.3	Other	2.2

Reasons for protecting the mountains

Just over half of the respondents at destination trails exhibited ecocentric attitudes toward Santa Monica Mountains. The protection of plants and animals was very important to respondents, with 51.4% citing habitat preservation as the most important reason for protection. Only a fifth (22.7%) of respondents cited recreation as the key reason for protection (see ***Table 31*** and ***Figure 29*** below). Approximately twenty-three percent of respondents were not willing to select ecocentric or anthropocentric priorities

exclusively. They answered that both reasons were equally important. The user groups exhibiting the strongest ecocentric attitudes were hikers, joggers, sightseers and picnickers, all with about 60% of respondents favoring this option. The user groups with the most anthropocentric attitudes at primary trailheads were dog walkers and mountain bikers, each with about 40% of respondents favoring this reason.

Table 31 Protection of SMMNRA

Qu. 8: Reason to protect Santa Monica Mountains	
Reason (N=587)	*%*
To provide recreational opportunities	22.7
To provide habitat for plants and animals	51.4
No opinion	1.7
Other	0.5
Both	22.8
Total	99.1

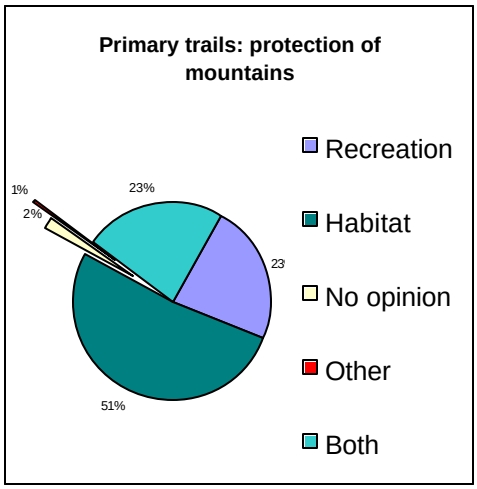


Figure 29 Reason for protection

User Group Interaction Patterns

Approximately 80% of survey respondents indicated that other users impacted their trail experience, although the impacts were just as often positive as negative. Mountain biking received the most negative reviews, averaging between somewhat negative and neutral and dog walking was also not as favorably perceived as other activities. Horseback riding hiking, running and jogging, and picnicking had mean scores between somewhat positive and strongly positive levels (***Table 32***). As might be expected, average scores of different activity groups were consistently lower when the those users self-ratings were excluded from the mean, suggesting that user groups often have a more positive view of fellow users than others do of them.

Table 32 Impact of trail user behaviors

Qu. 9b: Strength of impact of other users on trail experience			
Category	*N =*	*Mean*	*Key*
Mountain biking	445	3.66	
Horseback riding	435	4.14	
Hiking	450	4.57	*5 = Strongly positive*
Running / jogging	443	4.42	*4 = Somewhat positive*
Picnicking	440	4.32	*3 = Neither*
Dog walking	446	3.68	*2 = Somewhat negative*
Other	46	2.09	*1 = strongly negative*

Among the reasons given for negative impacts, uncooperative behavior was the most common, followed by leaving animal wastes, startling people and leaving litter on trails (***Table 33*** and ***Figure 30***). Although the top complaints were behaviors that obviously impacted the recreational experience, there was also clearly a strong sensitivity to the effects of trail users upon wildlife and its habitat.

Table 33 Reason for negative impact

Qu. 9c: Why do other trail user activities present a problem	
Reason (N=587)	*%*
Damage plants	17.2
Uncooperative behavior	27.8
Frighten wildlife	16.5
Startle people	20.6
Make too much noise	14.7
Litter	20.3
Scare horses	5.8
Leave animal wastes	23.5
Potential collisions / injury	19.4
Other	3.7

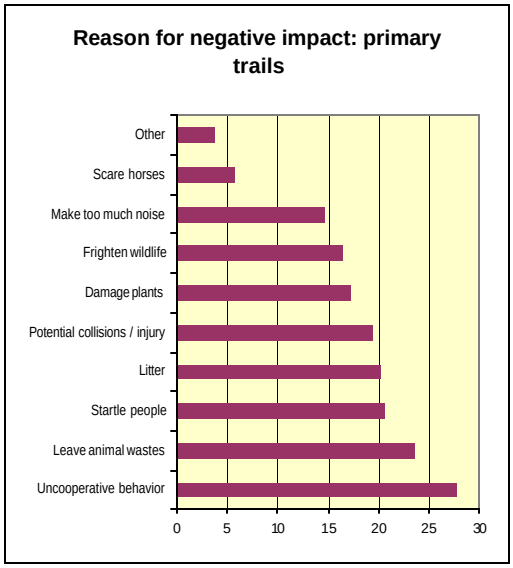


Figure 30 Reasons for negative impact

Mode of transit

The median travel time for survey respondents was almost 24 minutes. This is surprising when compared to secondary trailheads where the median travel time was 35 minutes. Initially one would think that primary trailheads would have a larger catchment area due to regional attractions at many of the trailheads – such as Paramount Ranch, and hence longer travel times. However, it appears that people were willing to travel longer to visit more secluded or less popular trails. Almost 91% of trail users arrived by private car, truck, SUV, or van. However, 4.4% walked or jogged to the trailhead, and over 3.9% biked. Less than 1% of trail users at destination / primary trails arrived on horseback. None of the trail users surveyed arrived via public or group transportation, which is an issue that warrants further attention in future planning for the SMMNRA.

Barriers to access

Only 2% of survey respondents reported a physical disability, but almost 5% indicated that they had experienced barriers to access at their survey location. Approximately 9% of respondents also reported encountering encountered barriers at other National Recreation Area trails, clearly an issue that warrants further investigation.

Eastern and Western Trails

There is an extensive network of trails within the SMMNRA, providing good access to much of the SMMNRA. These trails are located within the area bounded by Point Mugu at the western extremity of the SMMNRA, to the Hollywood district of the City of Los Angeles at the eastern extent. In general, western trail sites are proximate to the suburban communities of the San Fernando and Conejo Valleys, and affluent areas of Santa Monica, Malibu, and West Los Angeles. The western sites that we identified were also based upon a combination of size determined by observed count numbers and survey returns over 30 surveys. Eastern sites, in contrast, are closer to the dense urban communities of metropolitan Los Angeles, and the central and eastern portions of the San Fernando Valley (see ***Figure 31 below***). We consider survey responses from these two portions of the SMMNRA separately, with a view towards making meaningful recommendations for future trail management.

The western, and much larger portion of the SMMNRA, is comprised of those trail sites west of Topanga Canyon Boulevard, illustrated in ***Table 34*** below.

Table 34 Western Trails

Trail number	Trail name
44	Rancho Sierra Vista
8	Paramount Ranch
43	Cheeseboro Canyon (inner & outer lots)
22	Sycamore Canyon
21	Malibu Creek State Park

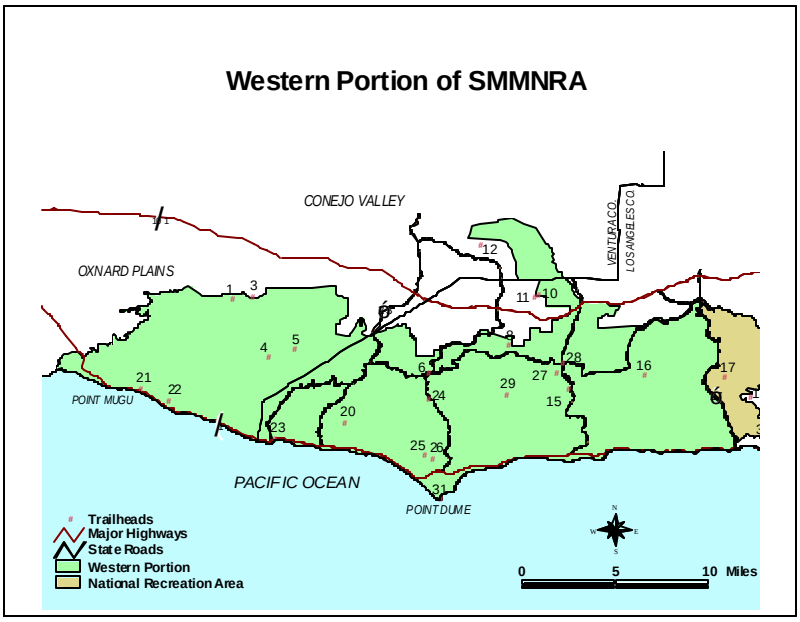


Figure 31 Western portion of SMMNRA

The eastern portion (***Table 25*** and ***Figure 32***), east of the Topanga Canyon Boulevard, includes:

Table 35 Eastern Trails

Trail number	Trail name
45	Franklin Canyon
40	Runyon Canyon
36	Wilacre
32	Temescal Gateway Park
17	Topanga State Park - Trippet Ranch

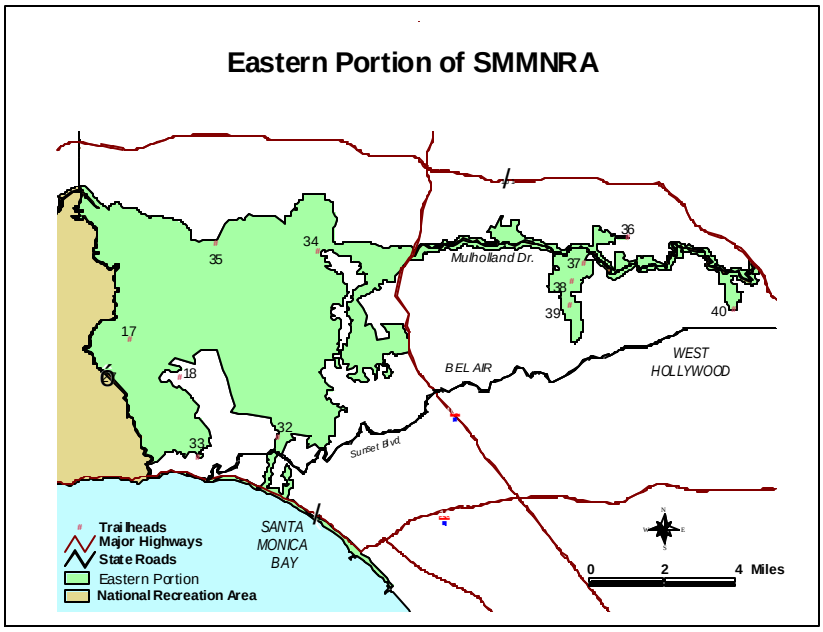


Figure 32 Eastern portion of SMMNRA

Despite the much larger number of trail sites in the western portion of the SMMNRA, usage rates of the eastern sites are very high. Sample sizes for the western and eastern portions of the SMMNRA were 320 and 267 respectively.

Comparison of the trails

The demographics of users at trails in these two regions of the SMMNRA differed significantly. Males were over-represented at western trail sites, and western respondents were more apt to have children under 18, less likely to live in single person households or with unrelated adults. eastern trail respondents were far less affluent, and less apt to be homeowners, although more had attended or graduated from college, and the respondent

sample from these trailheads was more racially and ethnically diverse, and included more immigrants. At both sites, immigrants were long-term US residents.

Certain user visitation patterns were similar, with most respondents in both regions being return visitors, and most arriving either alone, or with family or friends. However activity patterns varied sharply, with hiking being far more common at the eastern sites, along with dog walking. Mountain biking was far less frequent. Although reasons for visiting the trails were similar, there were differences that might be expected given that the eastern sites are closer to heavily urbanized areas – reasons associated with getting away from the city and enjoying various aspects of nature were somewhat more important to eastern site users. Visits were longer among western site users, and they were more apt to visit other trails, but on average users of trails in both regions visited 4 times per month. Reasons for visiting a local or neighborhood park, as well as frequency of such visits, were quite similar, although eastern trail visitors were less apt to indicate that different recreation opportunities drew them to local parks rather than the SMMNRA.

Turning to attitudes toward the Santa Monica Mountains, sources of knowledge varied somewhat between respondents surveyed at sites in the two regions, with school, ranger-led walks, park brochures and signs, and books being less often cited as sources among those at eastern trailheads. eastern site respondents were, however, somewhat more apt to cite habitat protection for plants and animals as the primary reason for protecting the Santa Monica Mountains.

Similar shares of users indicated that other trail users impacted their experience. However, respondents from the eastern sites expressed more negative influences with respect to mountain biking. This might be due to high rates of trail congestion on eastern trailhead locations. The nature of problems cited did, indeed, vary between the two regions' trailhead sites. eastern respondents were more likely to be concerned about plant damage, frightening wildlife and people, noise, but were especially apt to cite litter and animal waste as problems.

Reflecting the more urban aspect of eastern trails, median travel times to the SMMNRA were lower than for respondents at western trails, but travel modes were similar. Slightly more respondents reported a physical disability at the eastern sites, but the incidence of barriers was similar.

A complete set of tables on results from both the western and eastern portions of the SMMNRA are presented in ***Appendices 6a to 7b***.

Western Trails

User demographics

The median age of trail users who responded to the survey was 41, and almost two-thirds were men. Only 37% reported having children; those who did on average had two children. This is not surprising, given the distribution of household types in the sample. A

quarter of respondents were in single person households, and 28% were in two-person households without children.

Most respondents were affluent, with less than 15% reporting household incomes of less that $50,000. In fact, over 55% had household incomes of $75,000 or more, and 10% were in the $200,000 plus range. Reflecting the relative affluence of the sample's respondents, over 70% owned their homes, and over 80% had attended or graduated from college.

With respect to race/ethnicity, immigration status, and duration of residence in the US, only about 11% of respondents identified themselves as Latino or Hispanic; three-quarters of the respondents considered themselves white. Less than 6% were Asian, and African-Americans constituted less than 1% of the sample at these western sites. Thus not surprisingly, over 80% were native-born, with the remainder originating (in declining rank order) from the United Kingdom, Canada, Mexico, Italy, the Philippines, and other countries. On average, respondents who were not native-born had lived in the US for 20 years. Over 90% spoke English at home, with most of the small remainder speaking Spanish.

User visitation rates and patterns

At these sites, 320 respondents completed surveys. The vast majority were return users (***Figure 33***).

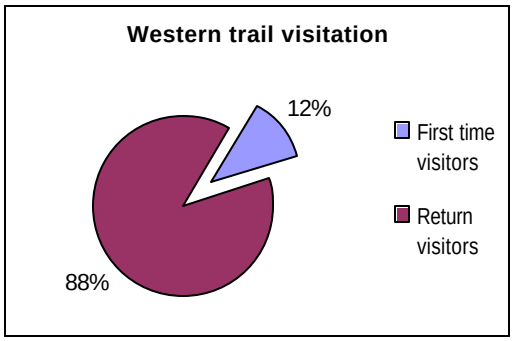


Figure 33 Visitation on Western Trails

Many people (over 25%) arrived either on their own, or with a small number of people; the median group size was 2. Altogether, 166 animals (mostly dogs) also accompanied trail visitors. The most common type of group was composed of friends (35%), followed by family (27%).

The dominant activities at these sites were hiking, sightseeing, and mountain biking. Hiking was particularly popular, with almost 60% of respondents reporting that they had, or planned to, hike during their visit to the SMMNRA. However, jogging, bird watching, photography and picnicking were also relatively common activities (***Table 36***).

Table 36 User activities

Qu. 2a: Activities engaged in during visit			
Activity (N=320)	*%*	*Activity*	*%*
Sightseeing	50.0	Horseback riding	7.5
Hiking	59.4	Rock climbing	7.5
Picnicking	13.4	Painting / crafts	1.6
Mountain biking	42.8	Photographing	12.2
Bird watching	16.9	Sunbathing	2.5
Walking dog(s)	10.3	Wading / swimming	5.0
Jogging	21.9	Other	6.9
Camping	10.3		

The most common single activity, however, was mountain biking, with over a third of all respondents indicating that this was their main planned activity. Hiking was a close second, but other activities were much less apt to be cited as their principal activity at the SMMNRA (***Table 37*** and ***Figure 34***).

Table 37 Principal activity

Qu. 2b: Principal activity during visit	
Activity (N=309)	*%*
Hiking	29.8
Mountain biking	34.6
Jogging	11.7
Sightseeing	6.8
Dog walking	1.9
Horseback riding	5.2
Picnicking	2.6
Other	7.4
Total	**100.0**

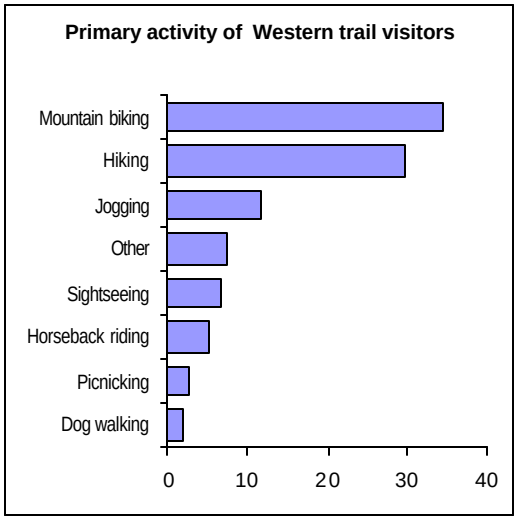


Figure 34 Principal activity

Survey respondents at western trail sites provided a variety of reasons for visiting the SMMNRA (***Table 38*** and ***Figure 35***). The most oft-cited reason was to be outdoors, closely followed by the desire to exercise, breathe fresh air, enjoy the quiet and enjoy scenic beauty. However, between 40-50% also indicated that they came to see or hear wildlife, escape the city/suburbs, and commune with nature. Socializing with family or friends, experiencing fewer people, and engaging in adventure sports were also relatively common responses (25-46%).

Table 38 Reason for visit

Qu. 3: Reason for visiting the SMMNRA	
Reason (N=320)	*%*
To exercise	84.4
To be outdoors	85.9
To enjoy the quiet	62.8
To breathe fresh air	68.8
To see wildflowers	38.1
To see / hear wildlife	50.0
To enjoy scenic beauty	73.4
To escape the city / suburbs	47.5
To commune with nature	43.1
To experience fewer people	34.4
To attend and organized event	8.1
To undertake school research	0.6
To engage in adventure sports	25.6
To be with companion animals	13.1
To socialize with family / friends	36.6
To educate children about nature	9.7
Other	3.4

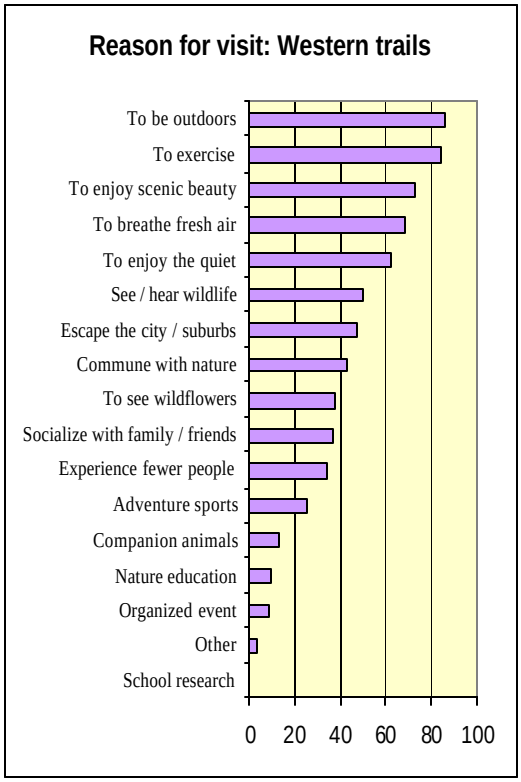


Figure 35 Reason for visit

On average, trail users who responded to the survey had either spent, or planned to spend, 2 hours at the SMMNRA. Almost three-quarters reported that the trailhead where the survey had been administered was the trail that they normally visited (74%). But a similar share indicated that they did, at times, visit other trails in the mountains. The average number of visits per month reported – four – was surprisingly high, indicating that many were regular, frequent trail users.

Respondents were also asked about their use of local or neighborhood parks, and why they visited such parks rather than the SMMNRA. Because the SMMNRA, while being a large-scale regional recreation area, is nonetheless in close proximity to adjacent urban communities, it is conceivable that many users consider the SMMNRA as their local park and use it accordingly. However, only 11% indicated that they never used local or neighborhood parks (***Table 39*** and ***Figure 36***). Most favored local parks when they had limited time, because such parks were more accessible, and because they provided different recreational opportunities. Almost one-fifth indicated that local parks were easier to take children for recreational activities.

Table 39 Reason for local park visit

Qu. 6a: Reason for visiting local or neighborhood park	
Reason (N=320)	*%*
Limited time	46.6
Easier access	33.8
Different recreation opportunities	31.3
Community gardening	0.9
Group recreation opportunities	9.4
See neighborhood friends	9.4
Easier to take children	18.3
Other	5.0
Not applicable/ Don't visit	10.9

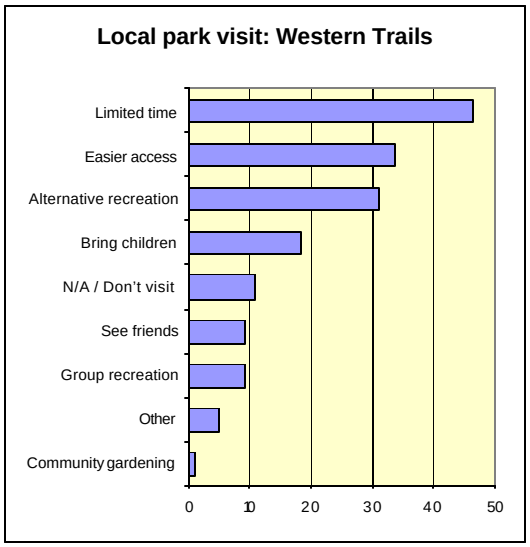


Figure 36 Local park visit

Despite the fact that almost 90% of respondents indicated that they did use local or neighborhood parks to some extent, median visits per month were half that reported for SMMNRA visits.

Attitudes toward the Santa Monica Mountains

Respondents obtained information about the Santa Monica Mountains and their flora and fauna from a wide variety of sources. The most commonly cited ways of learning about the area was through nature observation, and by reading books. But clearly SMMNRA signs and brochures were important sources, as were previous visits, and information provided by family and friends. Over one-third indicated that they lived in the vicinity, and thus knew about the mountains from everyday experience (***Table 40***).

Table 40 Sources of nature information

Qu. 7: Source of knowledge of SMM fauna and flora			
Reason (N=320)	*%*	*Reason*	*%*
Ranger-led nature walks	13.4	Television	23.1
School	24.1	Previous visits	36.9
Park brochures	38.8	Family / friends	32.2
Park signs	35.9	Live in the area	35.9
Nature observation	45.3	Organized groups	6.9
Books	43.1	Internet	1.9
Magazines	30.0	Other	3.1

Ecocentric attitudes toward nature were expressed by respondents; anthropocentric views were much less common. When asked about the most important reason to protect the

Santa Monicas, almost half indicated that protection was justified in order to provide habitat for plants and animals (***Table 41*** and ***Figure 37***). Only 25% saw recreational opportunities afforded by the mountains as more critical as a rationale for protection. Almost a quarter, however, were unwilling to prioritize (despite survey directions), suggesting that they placed an equivalent valuation on both habitat and recreational purposes fulfilled by the Santa Monica Mountains.

Table 41 Protection of SMMNRA

Qu. 8: Reason to protect Santa Monica Mountains	
Reason (N=320)	*%*
Recreation opportunities	24.7
Habitat: flora & fauna	49.4
Both	24.4
No opinion	1.3
Other	0.6
Total	100

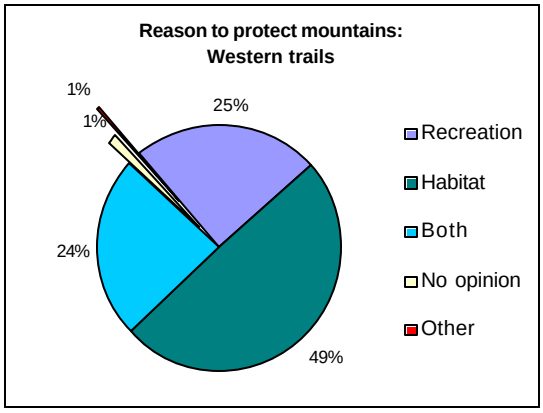


Figure 37 Reason to protect mountains

User group interaction patterns

Survey respondents were asked if other users on the trail impacted their experience. Over three-quarters indicated that indeed, their trail visits were influenced by the presence, activities, or behavior of other SMMNRA visitors. Nonetheless, this was not necessarily due to negative impacts; hiking and running/jogging were, on average, seen somewhat positively, and mountain biking, equestrian activities, picnicking, and dog walking were seen as ranging from neutral to somewhat positive (***Table 42***). Anecdotal reports from many respondents suggest that even though respondents had negative experiences with some types of activities, the overall number of serious incidents was very small.

Table 42 Impact of trail user behaviors

Qu. 9b: Strength of impact of other users on trail experience				
Category	*N =*	*Mean*	*Exclusive mean*	*Key*
Mountain biking	233	3.52	3.05	
Horseback riding	222	3.52	3.44	*5 = Strongly positive*
Hiking	236	4.28	4.22	*4 = Somewhat positive*
Running / jogging	228	4.19	4.08	*3 = Neither*
Picnicking	227	3.82	3.81	*2 = Somewhat negative*
Dog walking	228	3.39	3.39	*1 = strongly negative*
Other	18	2.22	***	

Nevertheless, respondents did note that some trail user activities presented problems, if infrequently (***Table 43***). The most frequently cited problem was uncooperative behavior, such as rudeness, unwillingness to yield on the trail, and so on. Other sorts of problems, however, were important when taken together: for example, over a quarter of the respondents were concerned that activities either damaged habitat or frightened animals – revealing awareness of how trail users can degrade habitat and disrupt wild animals. Other complaints included potential for collisions and resulting injury (almost one-fifth reported this as a problem), as well as the presence of animal wastes and litter, users startling other people (and to a much lesser extent, horses), and users making excessive noise. Encountering dogs off leash was only cited as a problem by 1% of the respondents.

Table 43 Reason for negative impact

Qu. 9c: Why do other trail user activities present a problem	
Reason (N=320)	*%*
Damage plants	13.8
Uncooperative behavior	27.5
Frighten wildlife	13.8
Startle people	18.4
Make too much noise	12.8
Litter	16.9
Scare horses	5.9
Leave animal wastes	17.8
Potential collisions / injury	19.4
Dogs off leash	0.9
Other	4.4

User access to the SMMNRA

The median travel time for visitors who responded to the survey was 20 minutes. Almost 90% of users arrived by private car, truck, sport utility vehicle, or van. The remainder walked or jogged, and rode in on bicycles or horses. These results suggest that access to the SMMNRA via public transportation is either not available, or sufficiently time-consuming and/or inconvenient for regular use.

Barriers to access

Less than 2% of visitors surveyed reported having a physical disability, but a slightly higher share (6%) reported that they had experienced some sort of barrier to trail use unrelated to the physical condition of the trail at the survey location, as well as at other SMMNRA sites (8%).

Eastern Trails

User Demographics

The median age of survey respondents at the eastern sites was 38, with a 51-49 percent male-female split. Among the 21 percent of respondents with children under 18, a median of two children was reported. These values were consistent with the distribution of household types reported, which were 38 percent single, 28 percent couples without children under 18, leaving 14 percent two parents with children under 18, just 3 percent single parents with children under 18, and 5 percent multigenerational households.

Respondents at the eastern sites were less affluent than their western counterparts, with 26 percent reporting annual incomes below $50,000 and only 18 percent in the $150,000 and above range. The median income range was $75,000-$100,000. Although the 53 percent home ownership rate was consistent with lower income levels in the East, the 90 percent college graduate rate was surprisingly high.

Twelve percent of respondents at the eastern sites identified themselves as Hispanic or Latino, while 71 percent of respondents reported their race as white. Five percent of respondents were Asian, 3 percent were Black or African-American, and 19 percent of respondents did not wish to identify themselves as belonging to any particular racial group. Over 77 percent of people surveyed were born in the United States, with nearly 4 percent born in Iran, 2 percent from the United Kingdom, and nearly 2 percent from Germany, followed by diminishing numbers from South Africa, France, and a notable 12 percent from other countries. The median number of years in the United States was 22 for non-native born respondents. Almost 94 percent of people spoke English at home, while 9 percent reported speaking Spanish and nearly 3 percent each speaking Farsi and French.

User visitation rates and patterns

Of the 267 survey respondents at the eastern sites, nearly 92 percent were return visitors (***Table 44*** and ***Figure 38***).

Table 44 Eastern trail visitation

Visitor type (N=267)	*%*
First time visitors	8.2
Return visitors	91.8
Total	100.0

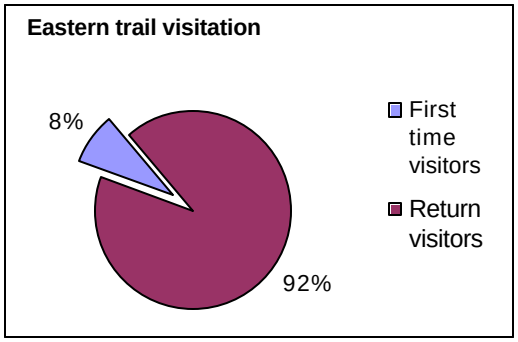


Figure 38 Eastern trail visitation

Thirty-seven percent of people came to the trailhead on their own, nearly 32 percent came with friends, and 23 percent with family members. The median group size was 2 people, zero pets although 105 respondents brought pets or companion animals to the trailhead with them.

The most popular activities at the eastern trailhead sites were hiking (90 percent), sightseeing (52 percent), jogging (26 percent), and walking dogs (23 percent). Bird watching, picnicking, and mountain biking were somewhat popular pursuits (see ***Table 45*** below).

Table 45 User activities

Qu. 2a: Activities engaged in during visit			
Activity (N=267)	*%*	*Activity*	*%*
Sightseeing	52.4	Horseback riding	1.9
Hiking	90.6	Rock climbing	6.4
Picnicking	14.2	Painting / crafts	1.5
Mountain biking	11.6	Photographing	10.1
Bird watching	16.5	Sunbathing	6.7
Walking dog(s)	22.5	Wading / swimming	0.7
Jogging	26.2	Other	6.7
Camping	4.9		

As far as primary planned activity, hiking was the most popular, chosen by 66 percent of visitors. Dog walking was the principal activity for 10 percent of trail users, followed by jogging, chosen by over 8 percent of visitors (***Table 46*** and ***Figure 39***).

Table 46 Principal activity

Qu. 2b: Principal activity during visit	
Activity (N=261)	*%*
Hiking	65.9
Mountain biking	4.6
Jogging	8.4
Sightseeing	3.8
Dog walking	10.0
Horseback riding	1.5
Picnicking	1.5
Other	4.3
Total	**100.0**

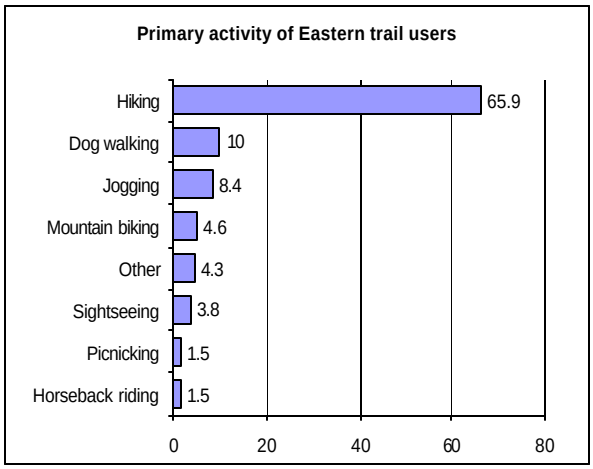


Figure 39 Principal trail use activity

The most common reasons given for visiting the SMMNRA were, in descending order, to exercise, to be outdoors, to breathe fresh air, and to enjoy scenic beauty (see ***Table 47***

and ***Figure 40*** below). Between 50 and 70 percent cited the quiet, communing with nature, and escape from the city/suburbs as reasons for their visit, indicating that many people find trail visits to be a way to achieve a sense of peace and escape into nature within city limits, in some cases just a block away from a heavily commercialized urban thoroughfare (Wilacre Park, adjacent to Ventura Boulevard).

Table 47 Reason for visit

Qu. 3: Reason for visiting the SMMNRA	
Reason (N=267)	*%*
To exercise	89.5
To be outdoors	88.8
To enjoy the quiet	65.2
To breathe fresh air	73.4
To see wildflowers	36.0
To see / hear wildlife	43.8
To enjoy scenic beauty	71.9
To escape the city / suburbs	56.9
To commune with nature	53.2
To experience fewer people	40.4
To attend and organized event	3.0
To undertake school research	0.4
To engage in adventure sports	9.4
To be with companion animals	13.9
To socialize with family / friends	33.3
To educate children about nature	6.4
Other	2.2

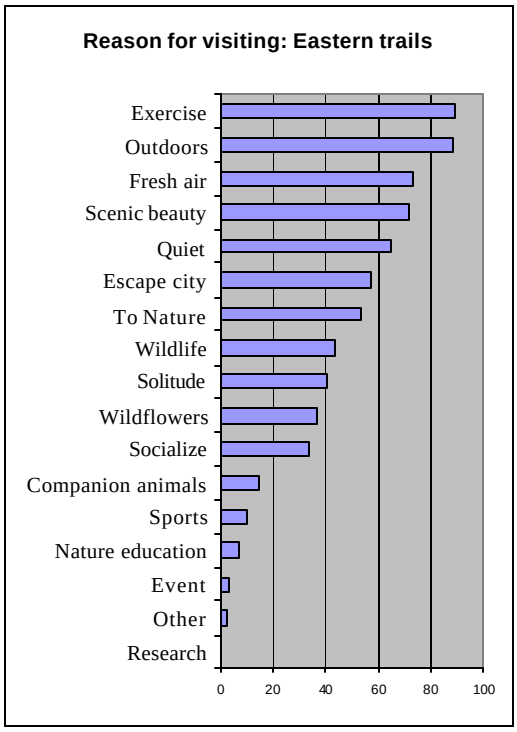


Figure 40 Reason for visit

On average, survey respondents either spent or planned to spend 1.5 hours on the trail. Over 80 percent of respondents indicated that the trailhead where they were surveyed was the trail they normally visited, but over 60 percent nonetheless reported that they visited other trails in the SMMNRA as well. Thirteen percent said they never visited a local or neighborhood park instead of the SMMNRA, although a sizable number of respondents live so close to SMMNRA trailheads that that they consider the SMMNRA to be their local park. The top reason for visiting a local or neighborhood park rather than the SMMNRA was limited time, followed by easier access and different recreation opportunities (***Table 48*** and ***Figure 41***).

Table 48 Reason for local park visit

Qu. 6a: Reason for visiting local or neighborhood park	
Reason (N=267)	*%*
Limited time	47.9
Easier access	31.1
Different recreation opportunities	20.6
Community gardening	3.0
Group recreation opportunities	6.0
See neighborhood friends	6.4
Easier to take children	11.2
Other	2.2
Not applicable/ Don't visit	13.1

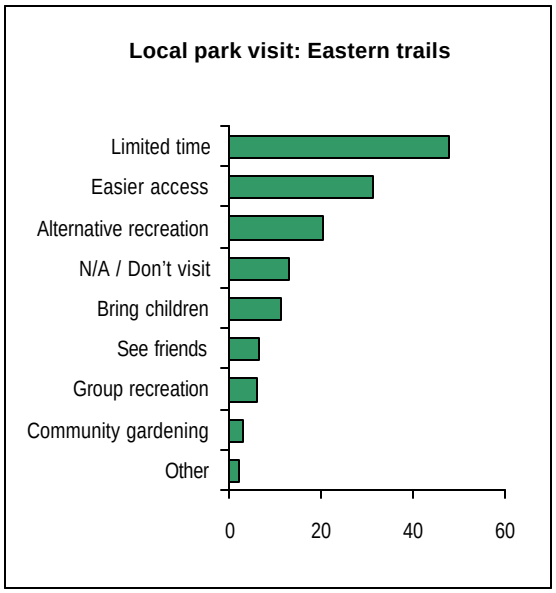


Figure 41 Reason for local park visit

Despite the fact that almost 90% of respondents indicated that they did use local or neighborhood parks to some extent, median visits per month were half that reported for SMMNRA visits.

Attitudes toward the Santa Monica Mountains

The most frequently indicated sources of knowledge about Santa Monica Mountains wildlife were nature observation, books, and previous visits, although over a quarter of respondents indicated that their knowledge came from living in the area (***Table 49***).

Table 49 Sources of nature information

Qu. 7: Source of knowledge of SMM fauna and flora			
Reason (N=320)	*%*	*Reason*	*%*
Ranger-led nature walks	6.7	Television	21.3
School	19.1	Previous visits	34.8
Park brochures	24.3	Family / friends	30.7
Park signs	31.1	Live in the area	25.8
Nature observation	45.7	Organized groups	4.1
Books	35.2	Internet	1.1
Magazines	28.5	Other	1.1

Ecocentric attitudes toward Santa Monica Mountains protection were strongly dominant, with 54% citing habitat provision as the most important reason for protection and only 20 percent citing recreation (***Table 50*** and ***Figure 42***). Twenty-one percent of respondents

were not willing to select ecocentric or anthropocentric priorities exclusively, answering that both reasons were equally important.

Table 50 Protection of SMMNRA

Qu. 8: Reason to protect Santa Monica Mountains	
Reason (N=267)	*%*
Recreation opportunities	20.2
Habitat: flora & fauna	53.9
Both	21.0
No opinion	2.2
Other	0.4
Total	100

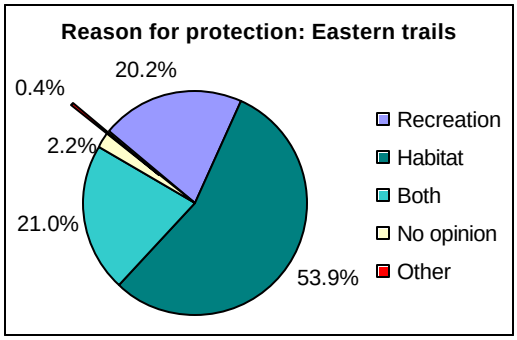


Figure 42 Reason for protection

User group interaction patterns

Eighty percent of survey respondents indicated that other users impacted their trail experience, although the impacts were just as often positive as negative. Mountain biking received the most negative reviews, averaging between somewhat negative and neutral. Horseback riding and dog walking were rated between neutral and somewhat positive, and picnicking, hiking, and jogging had mean scores between somewhat positive and strongly positive levels (***Table 51***). As might be expected, average scores of different activity groups were consistently lower when those users self-ratings were excluded from the mean, suggesting that user groups often have a more positive view of fellow users than others do of them.

Table 51 Impact of trail user behaviors

Qu. 9b: Strength of impact of other users on trail experience				
Category	*N =*	*Mean*	*Exclusive mean*	*Key*
Mountain biking	180	2.90	2.83	
Horseback riding	165	3.56	3.51	*5 = Strongly positive*
Hiking	204	4.68	4.73	*4 = Somewhat positive*
Running / jogging	198	4.29	4.27	*3 = Neither*
Picnicking	179	4.07	4.08	*2 = Somewhat negative*
Dog walking	198	3.48	3.40	*1 = strongly negative*
Other	27	2.00	***	

Among the reasons given for negative impacts, leaving animal wastes was the most common, followed by uncooperative behavior, leaving litter on trails, startling other people, and damaging plants (see ***Table 52*** below). Although the top complaints were behaviors that most immediately affect the recreational experience, there was also clearly a strong sensitivity to effects on quality of wildlife habitat.

Table 52 Reason for negative impact

Qu. 9c: Why do other trail user activities present a problem	
Reason (N=267)	*%*
Damage plants	21.3
Uncooperative behavior	28.1
Frighten wildlife	19.9
Startle people	23.2
Make too much noise	16.0
Litter	24.3
Scare horses	5.6
Leave animal wastes	30.3
Potential collisions / injury	19.5
Dogs off leash	2.6
Other	3.0

User Access to the SMMNRA

The median travel time for survey respondents was 15 minutes. Ninety-two percent of trail users arrived by private car, truck, SUV, or van, but a significant 5 percent either walked or jogged to the trailhead, and over 2 percent biked, contributing to an important minority of neighborhood resident users. None of the trail users surveyed arrived via public or group transportation.

Thirty-seven percent of people came to the trailhead on their own, nearly 32 percent came with friends, and 23 percent with family members. The median group size was 2 people, zero pets although 105 respondents brought pets or companion animals to the trailhead with them.

Barriers to access

Nearly 3 percent of survey respondents had a physical disability, and exactly 3 percent indicated that they had experienced barriers to access at their survey location. Over 9 percent said they had encountered barriers at other SMMNRA sites.

Travel Patterns

One principal component of the survey was the determination of the distance that visitors were prepared to travel to utilize the National Recreation Area. Whilst some visitors traveled from outside the United States, and some from interstate, they cannot be considered regular users, and were omitted from analysis. Visitors traveling from cities as far away as San Francisco and San Diego were also omitted on this basis.

Data were gathered from each survey respondent regarding the nearest major intersection to their origin (home, or in some cases, another location being the geographic point from which the respondent started their trip to the SMMNRA). This data was geo-coded, meaning that it was matched against a discernable geographic location using a

Geographic Information System (GIS). This information is presented in ***Figure 43***. The result is a snapshot view of the geographic location of SMMNRA visitor origins. However, by itself, this information is of limited value. To facilitate a better understanding of the distances that visitors are prepared to travel so as to use the SMMNRA on a regular basis, it was necessary to calculate the distance decay for the SMMNRA.

Distance decay model

The range that regular visitors to the SMMNRA are prepared to travel varies as a function of distance. The distance traveled has an inverse relationship with the number of visitors, because there is a point at which distance from the SMMNRA becomes prohibitive. Beyond that point, the frequency of park visitors drops off dramatically, because it is not worth the time or stress to travel to the SMMNRA on a regular basis. This is what is generally known as distance decay. Thus, many more visitors will use the National Recreation Area on a regular basis because they live in close proximity, compared to those visitors who have to travel a considerable distance. The areas in which these visitors reside can be regarded as the *catchment* for the National Recreation Area.

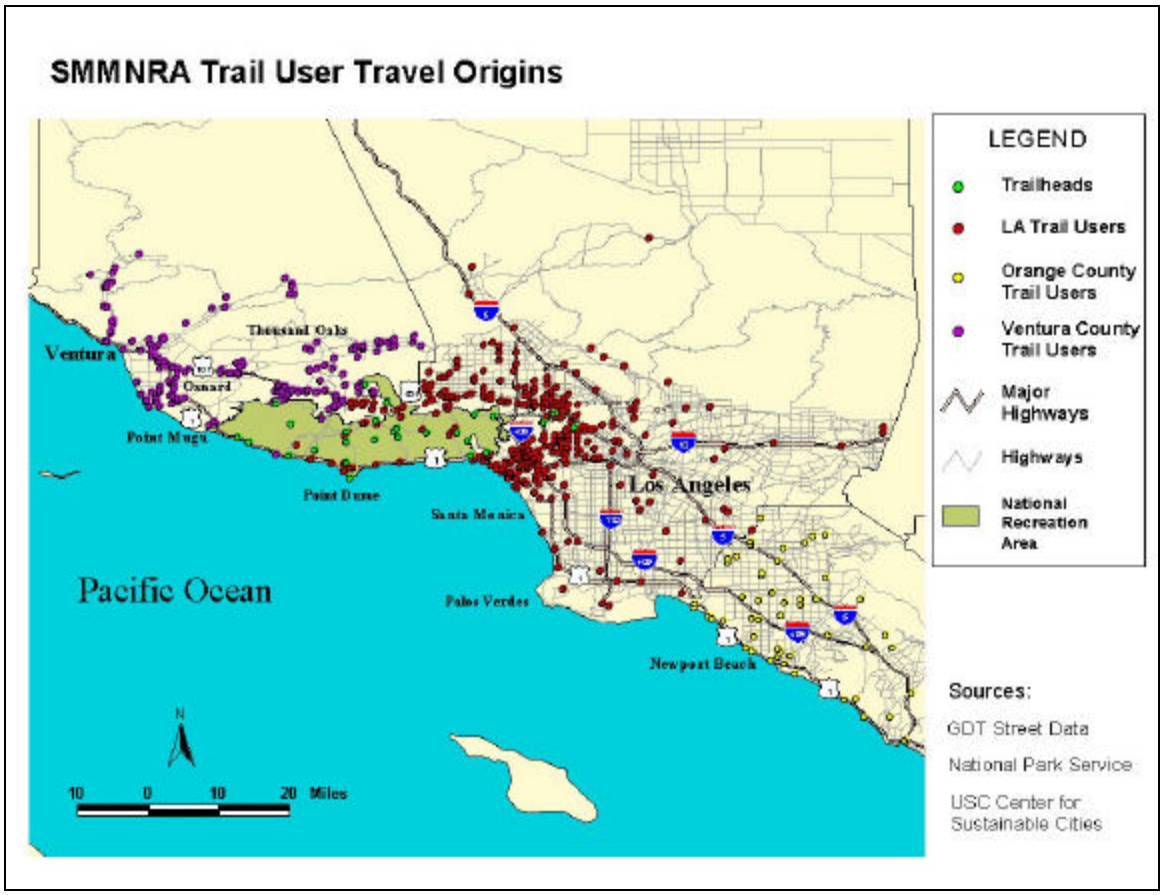


Figure 43 User Travel Origins to the SMMNRA

Using the methods proposed by Talen (1998), frequencies of distances traveled by park users were fitted to a gravity model (Darragh, et. al., 1983)[13]. Absolute distances were determined between the visitor's point of origin and their destination within the SMMNRA. A radius of circular catchment areas for each trailhead was determined by taking the limit of the gravity model as the frequency of visits drops to zero.[14] This modified gravity model was fitted to the survey data for each of the trailheads. The results are illustrated in ***Figure 44*** below. As can be seen, the critical point beyond which travel becomes problematic is approximately 22 miles from the SMMNRA.

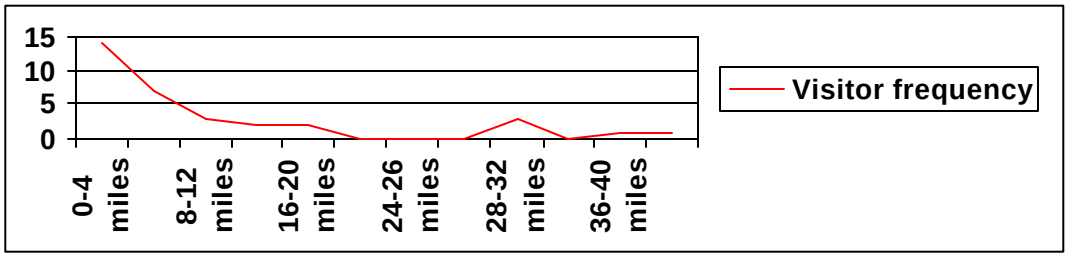


Figure 44 Visitor Frequencies by Distance at Rancho Sierra Vista

Catchment determinations

The radius of catchment area for each primary trailhead was determined to be the distance at which the frequency of visitors dropped to zero. By extending a buffer of the determined radius around each of the trailheads, an area is mapped that contains all origins that a park visitor could reasonably travel from in order to visit the particular trailhead (see ***Table 53***).

Table 53 Catchment Radii

Catchment Radii for Large Sites	
Site	*Radius (Miles)*
Rancho Sierra Vista	18.8
Malibu Creek State Park	19.2
Sycamore Canyon	14.9
Paramount Ranch	26.6
Cheeseboro (Inner & Outer Lot)	16.7
Trippet Ranch	13.2
Franklin Canyon	6.6
Wilacre	6.0
Temescal Canyon	9.3
Runyon Canyon	8.2

[13] This general principle is simply 'the farther the distance, the fewer people willing to make the trip'.

[14] Essentially, the gravity model, when thus constrained, becomes: $V = aD^{ß,}$ where V is the visitor frequency, D is distance, and a and ß are parameters to be fitted.

The catchment areas are generally much larger from western sites (Rancho Sierra Vista, Malibu Creek State Park, Sycamore Canyon, Paramount Ranch, and Cheeseboro) than for eastern sites (Topanga State Park - Trippet Ranch, Franklin Canyon, Wilacre, Temescal Canyon, and Runyon Canyon; see ***Figures 45 and 46*** below). This observation concurs with the determination that many SMMNRA visitors, especially visitors to the eastern Sites, view the SMMNRA as their local park. The westerns Sites, especially Paramount Ranch, have a more regional draw.

An important consideration in trail management planning is the notion of representativeness. This is an evaluation of how representative SMMNRA visitors are of the overall catchment area from which visitors are drawn. In order to determine the representativeness of park user demographics, it was first necessary to determine the catchment area of the SMMNRA, and from that determination gather a demographic profile of potential park users (those residents living inside catchment areas). After the radius of the circular catchment area[15] for each primary trailhead was determined, demographic information was gathered from the 1990 US Census using the zip codes encompassed by the catchment area as the unit of measure.

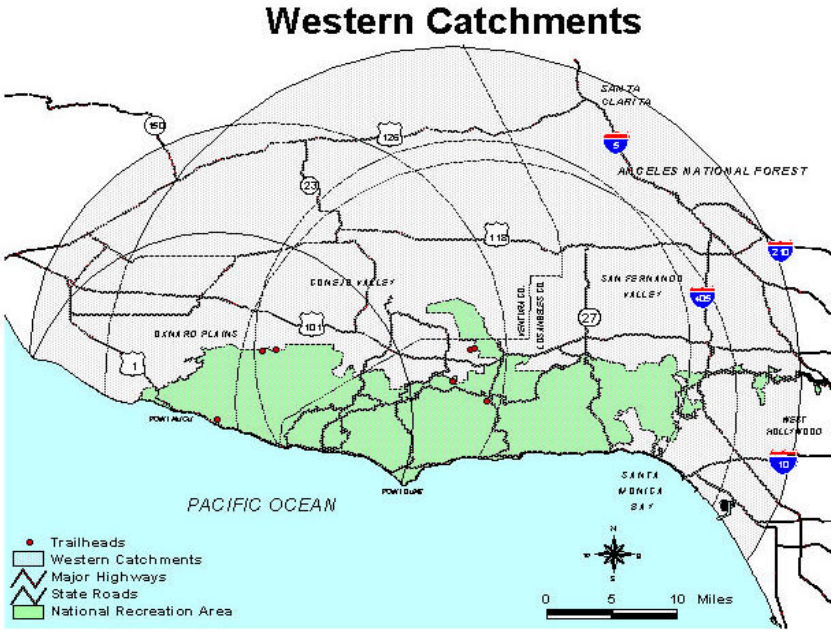


Figure 45 Catchment Areas of Western Trailheads

Catchment demographics for western trails

The park user demographics for western catchments (derived from 1990 US census data) were skewed toward white, non-Hispanic, upper income individuals. While

[15] Determining a circular catchment area is problematic because, underlying the circular area is a transportation network with nodes of population density. This pitfall is negated slightly due to the highly developed, urban nature of the Los Angeles area, but it nonetheless exists.

the catchment demographics for each of the major western trailheads are roughly in line with the demographics of Los Angeles County, whites are over-represented (comprising 75% of the park user population compared to 66% for the overall catchment) and people of color are significantly under-represented amongst SMMNRA visitors (in the survey Asians comprised only 5.6%, African-Americans 0.9%, Hispanics 10.7% while other races or respondents who did not wish to answer comprised 18.5%). Demographic comparisons between catchment residents and the trailhead user data for people of color are revealing. Asian residents in the western catchment comprised 9%, African-American catchment residents comprised 10% and Hispanic / Latino residents comprised 27%. Other races comprised 15% of the western catchment overall population. There is little doubt that African-American and Latino residents within the park catchment do not use the SMMNRA to the same extent as their white counterparts.

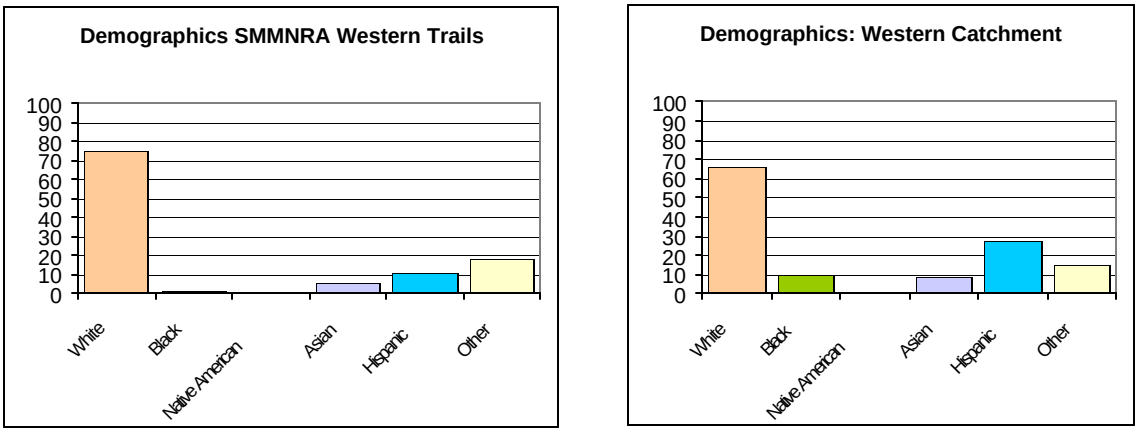


Figure 46 Comparison of Trail Users and Catchment Demographics: West Trails

Perhaps more striking still, was the disparity between the average income of the population residing in the catchment area compared to the average income of SMMNRA visitors derived from survey data. While the average income of survey respondents was between $100,000 and $125,000[16] the average annual income of the population residing in the catchment area is only approximately $40,000.

Catchment demographics for eastern trails

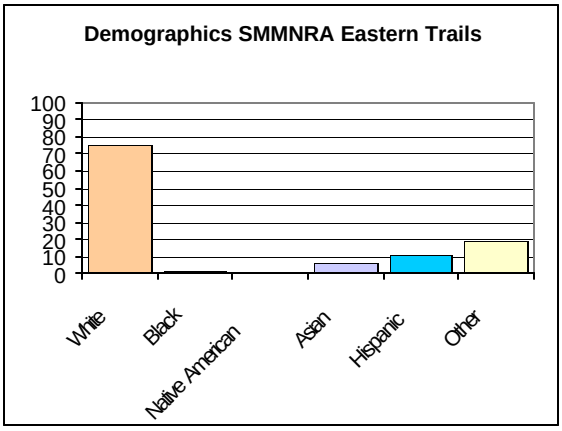
Demographics for the catchment area of eastern trailheads were also compiled using 1990 US Census data. Again the park user demographics were skewed toward white, non-Hispanic, upper income individuals. Whites were over-represented (comprising 71.2%[17] of park users compared to 61% of the catchment population) and

[16] This figure was calculated by converting the ordinal data gathered from the survey to numeric.
[17] Note that this figure refers to eastern trail users, not the overall survey respondents.

other races were under-represented (Asians 4.9%, African-Americans 3.0%, Hispanics 11.5% and other races or respondents who did not wish to answer comprised 21%).

Figure 47 Catchment Areas of Eastern Trailheads

Once again, comparisons between people of color living within the eastern catchment for the SMMNRA trails and the actual trail users are dramatic. With regard to demographic comparisons with the trailhead data, Asian residents in the catchment comprised 10%, African-American catchment residents comprised 11% and Hispanic / Latino residents comprised 30%. Other races comprise 17% of catchment residents. This is a significant disparity. It is evident that eastern trail users are not representative of the population living within the trail catchment area.



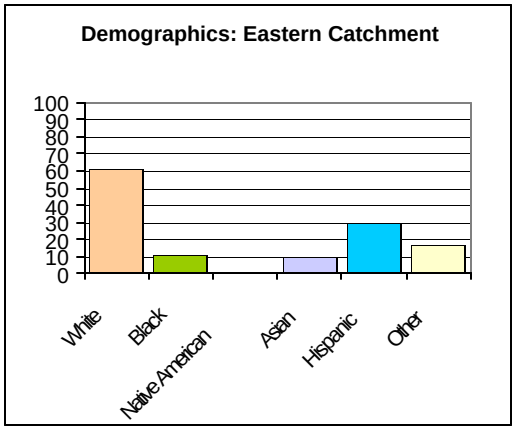


Figure 48 Comparison of Trail Users and Catchment Demographics: East Trails

Finally, in regard to comparison of average incomes between eastern trail users and eastern catchment demographics, it is clear that a disparity is once again present. The average income of survey respondents visiting eastern trailheads was identical to survey respondents visiting large western trailheads, and again, this income is much higher than the average income of residents of the eastern trails overall catchment area, which was $35,000 per annum – five thousand less than for their western catchment counterparts.

These data have implications for effective trail management. The patterns of park use and leisure preferences identified in the literature review in ***Chapter 2*** are confirmed by this survey. There are evident disparities between the socio-economic characteristics of trail users within the SMMNRA and the broader population residing within the trailhead catchments. Clearly people of color are under-represented amongst the trail users of the SMMNRA. Whether this is due to social marginalization, economic reasons, culturally influenced leisure preferences or other factors cannot be readily determined, and should be the subject of further research. However, there are actions that can be taken by the National Park Service and its partner agencies to redress these disparities in the interim, and this is the subject to which we turn in the final section of this report.

6 Conclusion and policy recommendations

This research was commissioned by the National Park Service to inform preparation of an Interagency Trail Management Plan for the Santa Monica Mountains National Recreation Area. The purpose of the research was to determine visitor trail use patterns throughout the trail network within the SMMNRA. Specifically, findings of the research should enable the trail management planning committee to make informed decisions with regard to establishing management policies for the trails and for designating particular trails for single or multiple use purposes. The research should also enable the National Park Service and partnership agencies to enhance the protection of key natural, cultural and recreational resources within the National Recreation Area.

Recommendations for Trail Management

Based on the findings of our research, we now turn towards making some policy-oriented recommendations for trail management. These recommendations address:

(i) user demographics

(ii) recreational activities

(iii) user knowledge of flora and fauna

(iv) trail user interactions

(v) visitor travel behavior

(vi) barriers to access

A brief summary of survey findings precedes each recommendation.

Demographics of trail users

The type of trail user most frequently represented in visitor statistics for the SMMNRA was a white, middle-aged man, who was born in the United States, spoke English, was college–educated, relatively affluent, owned his own home, did not have children under 18 years of age, and lived in a single person household. He typically visited the SMMNRA with friends and was a return visitor. People of color were under-represented in the survey as well as lower income people. In particular, African-Americans, Latinos, Native Americans and Native Hawaiians/Pacific Islanders, and to a lesser extent Asians were all very poorly represented in the survey data. The literature review for this report pointed to connections between leisure behaviors, ethnicity and marginality, and thus it was expected that visitors of color would be under-represented. However, despite the characterization of the sample as largely white, male, affluent and well-educated, there is still considerable diversity among respondents.

Recommendation 1

It is recommended that the National Park Service undertake an assessment of its current outreach programs to people of color and low-income earners living within the SMMNRA catchment area. This assessment should evaluate the success of these programs in raising awareness of the SMMNRA as a recreational resource. The assessment should also identify any impediments to access that might prevent people of color and low-income earners from using the SMMNRA. Based on this assessment, the National Park Service should then modify its outreach programs to ensure that every possible effort is being made to ameliorate the under-representation of people of color and low-income earners amongst trail users.

Recommendation 2

There may also be a need for the provision of additional facilities for aged persons, given the sizeable share of older users in the SMMNRA and the overall trend towards an aging population in the United States.

Recommendation 3

It may be appropriate for the provision of multi-lingual signage at destination trail sites, including Spanish, Farsi and Mandarin. Research demonstrated that many park users obtained information about the National Recreation Area from park signs and brochures, and it is appropriate for the National Park Service to consider multi-lingual signs and brochures.

Recreational activities

Our research has revealed that the Santa Monica Mountains National Recreation Area is a popular year-round recreational destination. An unexpected finding was the high proportion of respondents who visited the SMMNRA during the summer. From our interaction with National Park Service staff, it was evident that there was a preconception that trail use would be lower in the summer than during other cooler seasons. However, the results from this research demonstrate that many park users take advantage of the cooler mornings and evenings to enjoy the trails during the summer. Temperatures during the survey were typical for the summer and yet attendance at the trails was undiminished when compared to the results of previous surveys that were undertaken during the spring. Perhaps unsurprisingly the research also revealed that weekend park use was elevated, but that particular user groups such as picnickers and sightseers were more likely to use the SMMNRA during the summer than other seasons. Winter was the season that many survey respondents reported as their least frequent period of park visitation. It was also clear than many park users were return visitors and that they visited the SMMNRA on average four times a month and the duration of their visit was on average two hours long.

Visitors to the SMMNRA typically were accompanied by friends and family or came by themselves. Surprisingly few trail users came with organized groups or religious groups. Whilst many park facilities such as camping areas are targeted towards organized groups, proportionally fewer are provided for small groups or individuals. A greater number of

camping sites at destination trail sites would provide the opportunity for overnight stays for people traveling longer distances to get to the SMMNRA.

Recommendation 4

It is recommended that trail planning take into account the high level of summer park use and that the provision of facilities are designed accordingly. It is also recommended that closer attention be given to facilities for small groups or individuals, such as additional individual camping opportunities at destination trail sites.

Insofar as user groups are concerned, results of the survey have specific implications for trail management. The most frequently reported activity was hiking. Indeed, it clearly outranked all other trail uses. The next most often reported activity was sightseeing, followed by mountain biking, jogging and dog walking. As far as primary activities on the trails are concerned, hiking was still the most popular activity, followed by mountain biking and jogging. Sightseeing and dog walking were the next most popular activities.[18] Respondents stated that the reason for their visit was most often to be outdoors. Exercising was second, followed by enjoying the scenic beauty of the SMMNRA, getting fresh air, escaping the city and suburbs, communing with nature and socializing.

It was also noted in the report that although beaches and popular swimming areas are present within the SMMNRA, few users reported swimming/wading as an activity. This could be ameliorated by increasing the community's awareness of the SMMNRA and the various attractions it offers.

Recommendation 5

Trail planners should take account of the popularity of the various types of recreational pursuits on the trails, and direct management efforts accordingly.

Recommendation 6

Trail planners need to promote greater awareness amongst the community of the attractions offered by the SMMNRA and the boundaries of the SMMNRA, so that people availing themselves facilities and attractions within the SMMNRA of are cognizant of this recreation asset.

Local park use

An important finding of the survey was the emergence of a portrait of localized use. The National Recreation Area is used by some trail users as if it was a local or neighborhood park. Indeed, 12.2% of respondents indicated that they did not use their local parks or that the question about local park use was not applicable to them. The low median travel time

[18] Interestingly, although equestrians have a history as a prominent lobby group within the SMMNRA, they only constituted 5% of trail users and horseback riding constituted only 3.4% of primary recreational activities. Trail use planners should therefore be attendant to the risks of catering to vocal user groups over the needs of more popular recreational activities.

to the SMMNRA has highlighted the residential proximity of trail users. In particular, joggers, equestrians and dog walkers and to some extent mountain bikers all use the SMMNRA on a regular, high frequency basis. Equestrians were the group that most frequently reported never using a local or neighborhood park.

Recommendation 7

Trail management planners should be cognizant of the role that the SMMNRA plays for the various recreational user groups, and the way it is treated as a de facto neighborhood park by these groups. This use characteristic has implications for facilities provision and trail maintenance.

Environmental attitudes and knowledge and information sources

Perhaps the most surprising finding of this study was the high level of ecocentricism among surveyed trail users. The majority of respondents (53.2%) felt that the preservation of habitat for plants and animals was the most important reason for protecting the Santa Monica Mountains. When this is combined with those respondents who refused to, or were unable to, decide between recreation and habitat protection, over seventy percent of park users prioritized the ecological integrity of the Santa Monica Mountains. Only one-fifth of respondents felt that recreation was the most important reason to protect the mountains.

Recommendation 8

The preservation of habitat for flora and fauna should receive paramount attention in trail management planning.

Nature observation was the most frequently cited source of knowledge about plants and animals in the Santa Monica Mountains. In addition, many users were dependent upon park signs and park brochures for their environmental information. When these three knowledge sources are considered as being interdependent, an imperative emerges for trail managers. Another key finding was the growing importance of the Internet as a source of information for the SMMNRA, with trail users writing it into the survey as an information source.

Recommendation 9

Park signs and brochures should be easily accessible and should contain information that will augment trail users' own observations. This information should be interpretative, enabling trail users to link their observations to park information. Non-intrusive interpretative signage placed along the most popular trails should assist trail users in broadening their understanding of plants and animals within the park and the unique needs of these species. The use of the Internet should also be considered as a means of disseminating nature information for the SMMNRA.

Trail user interactions

A key purpose of this survey was to ascertain whether or not conflict was occurring between trail users and to gauge the causes of conflict. Although the majority of respondents reported that their trail experience was affected by the presence of other trail users, for some this impact was positive whereas for others it was not. In the aggregate, respondents reported either a favorable or at worst slightly below neutral reaction to other trail users activities and behaviors. However, compared to other users, mountain bikers, picnickers and dog walkers were less well-regarded. Mountain biking was the activity that attracted the least positive responses, and hiking received the most positive reviews. The issues that attracted the most concern were uncooperative behavior, leaving animal wastes and litter. Corroborating the evidence supporting ecocentricism amongst trail users, damaging plants and scaring animals also attracted considerable attention as problems requiring attention.

Recommendation 10

It is recommended that a multilingual code of conduct be developed in consultation with trail users, and that this code of conduct be posted at all trailheads, advising users to be considerate of the needs other trail users and the need to protect the habitat of plants and animals living in the mountains.

Recommendation 11

The code of conduct for the trails should be supported by a wide-ranging community outreach and education program. This program should provide in-class school programs, downloadable Internet information and workshops at equipment suppliers and community organization and special interest group meetings to raise awareness of ethical and responsible conduct on the trails.

Recommendation 12

There is a clear need to develop a management strategy to address trail users concerns with animal wastes. Trail management planners might consider requiring equestrians to have horses equipped with waste receptacles and fines might be considered for dog owners who do not use the bags supplied at trailheads.

Visitor travel behavior

An issue indirectly related to trail management, but allied to park use, and one that patently requires further attention by trail management planners, is mode of travel to the National Recreation Area. The overwhelming majority of respondents traveled to the National Recreation Area by private automobile. Visitors avoid public transit to the SMMNRA, or more likely find it too difficult and inconvenient to use to access the SMMNRA. The public transit routes are on the northern and southern perimeters of the Santa Monica Mountains National Recreation Area, and do not afford easy access to most trailheads. This may also account for the under-representation of particular socio-economic and race/ethnic groups in the survey, together with families with children.

Recommendation 13

Trail management planners need to investigate the feasibility of either extending public transit into the National Recreation Area or affording better connection between the proposed shuttle service and public transit connections once the shuttle service becomes operational. Particular attention should be given to those trailheads with the highest visitor counts and to those trails that are of historic, cultural or ecological significance.

Barriers to access

Although a very small proportion of respondents reported experiencing barriers to access at the surveyed trails, a higher percentage reported experiencing barriers to access elsewhere within the SMMNRA. However, the sequence of questions on the survey, and survey language itself, resulted in findings about barriers to access being inconclusive. Further research on this topic is warranted.

Recommendation 14

Further research should be undertaken into barriers to access within the National Recreation Area. The lack of public transportation should be considered as an important issue when prioritizing this research.

Recommendations for Further Research

It would be useful to follow up this survey with qualitative research. Many trail users discussed their experiences with volunteers whilst completing the survey. Some of the issues they discussed included vandalism of cars and car break-ins, concerns about personal safety, fears surrounding the reputed sale of drugs at particular trailheads, gang-related concerns, and adjoining residents' concerns with pedestrian and vehicular traffic past their houses - disrupting residential amenity. Unfortunately there were no provisions made within this survey to capture qualitative data. However, given that the majority of people completing the survey were enthusiastic about the survey, and willing to discuss their concerns with surveyors, it is likely that qualitative research through focus groups or in-depth interviewing would be a worthwhile and useful complement to this survey.

It is obvious that some socio-economic groups were poorly represented in the survey sample. It is imperative to follow up this issue with under-represented groups. Research should be undertaken, particularly with African-American park users, to ascertain if there are transportation or other issues that present impediments to their use of the National Recreation Area.

The National Park Service should also conduct further research regarding female trail users, to ascertain if there may be barriers to access that this survey did not reveal. Such barriers may include personal safety, fear of property-related crime and the need for additional facilities such as lighting, toilets and secure parking facilities. It is important that the safety issues raised in accounts of trail users be investigated in greater detail. Anecdotal evidence suggested that trail users were concerned by car break-ins, gangs,

drug use, vandalism, loud music, parking shortages, lack of toilet facilities and loss of residential amenity. These issues did not emerge in the survey data.

An important type of information that has been missing from surveys of the National Recreation Area thus far is data about people who do not use the SMMNRA. It is crucial that future research is directed towards understanding the reasons why residents who live in the catchment of the SMMNRA do not use this recreational resource. Such research will provide valuable insights into visitor utilization patterns and barriers to access.

Finally, the weekday data set was very limited in size and coverage of trailheads within the SMMNRA. This raises concerns with regard to the representativeness of weekday data. Future research should be targeted towards better capturing weekday park use.

Bibliography

General references on Leisure

Crandall, R., Altengarten, S.M., Carson, M.M. and Dixon, J.T., 1977, "A General Bibliography of Leisure Publications", *Journal of Leisure Research*, Vol. 9 (1), pp. 15-54.

Frank, D.J., Hironaka, A. and Schofer, E., 2000, "The Nation-State and the Natural Environment over the Twentieth Century", *American Sociological Review*, Vol. 65 (1), pp. 96-116.

General references on National Parks

Beck, M., 2002, Personal Communication, Comments on the Draft Recreational Trail Use Survey Report, December, 2002.

Sellars, R.W., 1997, *Preserving Nature in National Parks: A History*, New Haven, Yale University Press.

Park User Attitudes, Values and Benefits

Burgess, J., Harrison, C.M. and Limb, M., 1988, "People, Parks and the Urban Green: A Study of Popular Meanings and Values for Open Space in the City", *Urban Studies*, Vol. 25, pp. 455-473.

Flint, D., 1998, "US National Parks: visitor experience and resource protection", *Geography Review*, Vol. 11 (5), pp. 20-24.

Galloway, G. and Lopez, K., 1999, "Sensation seeking and attitudes to aspects of national parks: a preliminary empirical investigation", *Tourism Management*, Vol. 20 (6), pp. 665-671.

Harris, L.K., Shaw, W.W., and Schelhas, J., 1997, "Urban neighbors' wildlife-related attitudes and behaviors near federally protected areas in Tucson, Arizona, USA", *Natural Areas Journal*, Vol. 17 (2), pp. 144-148.

Leal, D. and Fretwell, H.L., 1997, "Users must pay to save our national parks", *Consumer's Research Magazine*, Vol. 80, pp. 16-19.

Liston-Heyes, C. and Heyes, A., 1999, "Recreational benefits from the Dartmoor National Park, Journal of Environmental Management, Vol. 55 (2), pp. 69-81.

Mels, T. 2002, "Nature, home and scenery: The official spatialities of Swedish national parks", *Environment and Planning D: Society and Space*, Vol. 20, pp. 135-154.

Noe, F.P. 1978, "Identifying Attitudinal Predictors among Youth toward National Parks", *Journal of Leisure Research*, Vol. 10 (3), pp. 203-213.

Solecki, W.D., 1998, "Local Attitudes on regional ecosystem management: Astudy of New Jersey Pinelands residents", *Society and Natural Resources*, Vol. 11 (5), pp. 441-463.

Trakolis, D., 2001, "Perceptions, preferences, and reactions of local inhabitants in Vikos-Aoos National Park, Greece, *Environmental Management*, Vol. 28 (5), pp. 665-676.

Ulrich, R.S., 1979, "Visual landscapes and psychological well-being (National Parks)", Landscape Research, Vol. 4 (1), pp. 17-23. [*architecture and fine arts*]

Ulrich, R.S. and Addoms, D.L., 1981, "Psychological and Recreational Benefits of a Residential Park", *Journal of Leisure Research*, Vol. 13 (1), pp. 43-65

Ulrich, R.S., Dimberg, U. and Driver, B.L., 1990, "Psychophysiological Indicators of Leisure Consequences", *Journal of Leisure Studies*, Vol. 22 (2), pp. 154-166.

Wohwill, J.F. and Heft, H., 1977, "A Comparative Study of User Attitudes Towards Development and Facilities in Two Contrasting Natural Recreation Areas", *Journal of Leisure Research*, Vol. 9 (4), pp. 264-280.

User Conflict

Beeton, S. 1999, "Hoofing it – on four or two feet? Managing multi-use trails and sites", *Current Issues in Tourism*, Vol. 2, (2-3), pp. 211-225.

Bell, P.J.P., 2000, "Contesting rural recreation: the battle over access to Windermere", *Land Use Policy*, Vol. 17 (4), pp. 295-303.

Hester, R.T. Jr., Blazej, N.J. and Moore, I.S., 1999, "Whose Wild? Resolving Cultural and Biological Diversity Conflicts in Urban Wilderness", Landscape Journal, Vol. 18 (2), pp. 137 – 146.

Heywood, J.L., 1993, "Behavioral Conventions in Higher Density, Day Use Wildland / Urban Recreation Settings: A Preliminary Case Study", *Journal of Leisure Research*, Vol. 25 (1), pp. 39-52.

Jackson, E.L. and Wong, R.A.G., 1982, "Perceived Conflict Between Urban Cross-Country Skiers and Snowmobilers in Alberta, *Journal of Leisure Research*, Vol. 14 (1), pp. 47-62.

Manning, R.E. and Valliere, W.A., 2001, "Coping in Outdoor Recreation: Causes and Consequences of Crowding and Conflict Among Community Residents", *Journal of Leisure Research*, Vol. 33 (4), pp. 410-426.

Noe, F.P., McDonald, C.D. and Hammitt, W.E., 1983, "Comparison of Perceived Risk Taking in Groups and Implications Drawn from the Risky-Shift Paradigm", *Perceptual and Motor Skills*, Vol. 56, pp 199-206.

Noe, F.P., 1992, "Further Questions about the Measurement and Conceptualization of Backcountry Encounter Norms", *Journal of Leisure Research*, Vol. 24 (1) pp. 86-92.

Schneider, I.E. and Hammitt, W.E., 1995, "Visitor response to outdoor recreation conflict: A conceptual approach", *Leisure Sciences*, Vol. 17 (3), pp. 223-234.

Schneider, I.E., 2000, "Revisiting and revising recreation conflict research", *Journal of Leisure Research*, Vol. 32 (1), pp. 129-132.

Stewart, W.P. and Cole, D.N., 2001, "Number of Encounters and Experience Quality in Grand Canyon Backcountry: Consistently Negative and Weak Relationships", *Journal of Leisure Research*, Vol. 33 (1), pp. 106-120.

Multiple use conflict

Badola, R., 1998, "Attitudes of local people towards conservation and alternatives to forest resources: A case study from the lower Himalayas", *Biodiversity and Conservation*, Vol. 7 (10), pp. 1245-1259.

Baker, W.L., Munroe, J.A., and Hessl, A.E., 1997, "The effects of elk on aspen in the winter range in Rocky Mountains National Park", *Ecography*, Vol. 20(2), pp. 155-165.

Boyce, M. S., 1998, "Ecological-process management and ungulates: Yellowstone's conservation paradigm", *Wildlife Society Bulletin*, Vol. 26 (3), pp. 391-398.

Grau, A. and Brown, A.D., 2000, "Development threats to biodiversity and opportunities for conservation in the mountain ranges of the Upper Bermejo River Basin, NW Argentina and SW Bolivia", *Ambio*, Vol. 29 (7), pp. 445-450.

Huber, O., 2001, "Conservation and environmental concerns in the Venezuelan Amazon", *Biodiversity and Conservation*, Vol. 10 (10), pp. 1627-16434.

Tobias, D. and Mendelsohn, R., 1991, "Valuing Ecotourism in a tropical rainforest reserve", *Ambio*, Vol. 20 (2), pp. 91-93.

Park User Demographics, Age, Race, Sex, & Income

Baas, J.M., Ewert, A., and Chavez, D.J., 1993, "Influence of Ethnicity on Recreation and Natural Environment Use Patterns: Managing Recreation Sites for Ethnic and Racial Diversity", *Environmental Management*, Vol. 17 (4), pp. 523-529.

Bowker, J.M., 1998, "Accounting for Ethnicity in Recreation Demand: a Flexible Count Data Approach", *Journal of Leisure Research*, Vol. 30 (1), pp. 64-78.

Carr, D.S. and Williams, D.R., 1993, "Understanding the Role of Ethnicity in Outdoor Recreation Experiences", *Journal of Leisure Research*, Vol. 25 (1), pp. 23-38.

Cordell, K. H., Betz, C.J. and Green, G.T., 2002, "Recreation and the Environment as Cultural Dimensions in Contemporary American Society, *Leisure Sciences*, Vol. 24 (1), pp. 13-41.

Floyd, M.F., 1999, "Convergence and Divergence in Leisure Style among Whites and African-Americans: Towards an Interracial Contact Hypothesis", *Journal of Leisure Research*, Vol. 31 (4), pp. 359-384.

Godbey, G. and Blazey, M., 1983, "Old People in Urban Parks: An Exploratory Investigation", *Journal of Leisure Research*, Vol. 15 (3), pp. 229-244.

Husbands, W. and Idahosa, P., 1995, "Ethnicity and Recreation Behavior: A Review and Critique of the Literature", *Canadian Ethnic Studies*, Vol. 27 (1), pp. 84-98.

Hutchison, R., 1987, "Ethnicity and Urban Recreation: Whites, Blacks and Hispanics in Chicago's Public Parks", Journal of Leisure Research, Vol. 19 (3) pp. 205-222.

Hutchison, R., 1988, "A Critique of Race, Ethnicity, and Social Class in Recent Leisure-Recreation Research", *Journal of Leisure Research*, Vol. 20 (1), pp. 10-30.

Johnson, C.Y., Bowker, J.M., English, D.B.K.,and Worthen, D., 1998, "Wildland Recreation in the Rural South: An Examination of Marginality and Ethnicity Theory", *Journal of Leisure Research*, Vol. 30 (1), pp. 101-120.

Loukaitou-Sideris, A. and Stieglitz, O., 2001, Children in Los Angeles Parks: A Study of Equity, Quality and Children (sic) Satisfaction with Neighborhood Parks, Unpublished Paper Presented to the 43rd. ACSP Planning Conference, Cleveland, November 8 – 11.98

McMillen, J.B., 1983, "The Social Organization of Leisure Among Mexican-Americans", *Journal of Leisure Research*, Vol. 15 (2), pp. 164-173.

McCormick, S., 1991, "The Greying of Parks and Recreation", *Parks and Recreation*, March, pp. 60-64.

Shaull, S.L. and Gramann, J.H., 1998, "The Effect of Cultural Assimilation on the Importance of Family-Related and Nature-Related Recreation among Hispanic Americans", *Journal of Leisure Research*, Vol. 30 (1), pp. 47-63.

Stamps Jr., S.M., and Stamps, M.B., 1985, "Race, Class and Leisure Activities of Urban Residents", *Journal of Leisure Research*, Vol. 17 (1), pp. 40-56.

Tierney, P.T., Dahl, R. and Chavez, D., 2001, "Cultural diversity in use of undeveloped natural areas by Los Angeles County residents, *Tourism Management*, Vol. 22 (3), pp. 271-277.

Woodard, M.D., 1988, "Class, Regionality and Leisure Among Urban Black Americans: The Post-Civil Rights Era", *Journal of Leisure Research*, Vol. 20 (2), pp. 87-105.

Park Use, Park Activities and Park Management

Dee, N. and Liebman, J.C., 1970, "A Statistical Study of Attendance at Urban Playgrounds", *Journal of Leisure Research*, Vol. 2 (3), pp. ?

Flint, D., 1998, "US National Parks: Visitor experience and resource protection", *Geography Review*, Vol. 11 (5), pp. 20-31.

Gold, S.M., 1986, "User Characteristics and Response to Vegetation in Neighborhood Parks", *Arboricultural Journal*, Vol. 10 (4), pp. 275-287.

Graham, R., Nilsen, P. and Payne, R.J., 1988, "Visitor management in Canadian national parks", *Tourism Management*, Vol. 9 (1), pp. 44-62.

Hammitt, W.E., Knauf, L.R. and Noe, F.P., 1989, "A Comparison of User vs. Researcher Determined Level of Past Experience on Recreation Preference", *Journal of Leisure Research*, Vol. 21 (2), pp. 202-213.

Harris, C.M. and Orams, M.B., 1990, "Summer Visitors to Auckland's Regional Parks: Characteristics, Motivations, Information Sources and Activities", *New Zealand Geographer*, Vol. 46 (2), pp. 60-74.

Lieber, S.R. and Allton, D.J., 1983, "Modeling Trail Area Evaluations in Metropolitan Chicago, *Journal of Leisure Research*, Vol. 15 (3), pp. 184-202.

Lomax, H., 1988, "Planning for Recreation in National Parks", *New Zealand Journal of Geography*, October, pp. 14-16.

Mowen, A.J., Graefe, A.R., and Williams, D.R., 1998, "An assessment of activity and trail type as indicators of trail user diversity", *Journal of Park and Recreation Administration*, Vol. 16 (1), pp. 80-96.

Shultis, J.D., 1989, "Images and Use of New Zealand's Protected Areas by Domestic and International Visitors", *GeoJournal*, Vol. 19 (3), pp. 329-335.

Wong, D.T.S., 1996, "The Political Nature of Tourism in Sensitive Areas", *Australian Parks and Recreation*, Vol. 32 (3), pp. 20-26.

Yuen, B., 1996, "Use and Experience of Neighborhood Parks in Singapore", *Journal of Leisure Research*, Vol. 28 (4), pp. 293-311.

Parks and social control

Taylor, D.E., 1999, "Central Park as a Model for Social Control: Urban Parks, Social Class and Leisure Behavior in Nineteenth-Century America", *Journal of Leisure Research*, Vol. 31 (4), pp. 420-477.

Park Accessibility (Equity / Justice)

Curry, N., 2001, "Rights of access to land for outdoor recreation in New Zealand: dilemmas concerning justice and equity", *Journal of Rural Studies*, Vol. 17 (4), pp. 409 – 419.

Floyd, M.F., Shinew, K.J., AcGuire, F.A. and Noe, F.P., 1994, "Race, Class, and Leisure Activity Preferences: Marginality and Ethnicity Revisited", *Journal of Leisure Research*, Vol. 26 (2), pp. 158-173.

Floyd, M.F., 1998, "Getting Beyond Marginality and Ethnicity: The Challenge for Race and Ethnic Studies in Leisure Research", *Journal of Leisure Research*, Vol. 30 (1), pp. 3-22.

Floyd, M.F. and Johnson, C.Y., 2002, "Coming to Terms with Environmental Justice in Outdoor Recreation: A Conceptual Discussion with Research Implications", *Leisure Sciences*, Vol. 24 (1), pp. 59-77.

Gobster, P.H., 1995, "Perception and use of a metropolitan greenway system for recreation", *Landscape and Urban Planning*, Vol. 33, pp. 401-413.

Lee, J-H and Scott, D., 2001, "Structural Inequalities in Outdoor Recreation Participation: A Multiple Hierarchy Stratification Perspective", *Journal of Leisure Research*, Vol. 33 (1), pp. 427-449.

More, T. A. and Stevens, T., 2000, "Do user fees exclude low-income people from resource-based recreation?", *Journal of Leisure Research*, Vol. 32 (3), pp. 341-357.

More, T.A., 2002, "The Marginal User as the Justification for Public Recreation: A Rejoinder to Crompton, Driver and Dustin", *Journal of Leisure Research*, Vol. 34 (1), pp. 103-118.

Moncur, J.E.T., 1975, "Estimating the Value of Alternative Outdoor Recreation Facilities within a small area", *Journal of Leisure Research*, Vol. 7 (4), pp. 301-311.

Payne, L., Mowen, A.J. and Orsega-Smith, E., "An Examination of Park Preferences and Behaviors Among Urban Residents: The Role of Residential Location, Race and Age, *Leisure Sciences*, Vol. 24 (2), pp. 181-198.

Scott, D. and Munson, W., 1994, "Perceived constraints to park usage among individuals with low incomes", *Journal of Park and Recreation Administration*, Vol. 12(4), pp. 79-96.

Shaw, S.M. and Bonen, A., and McCabe, J.F., 1991, "Do more Constraints mean less Leisure?: Examining the Relationahip Between Constraints and Participation", *Journal of Leisure Research*, Vol. 23 (4), pp. 286-300.

Shaw, S.M., 1994, "Gender, Leisure, and Constraint: Towards a Framework for the Analysis of Women's Leisure", *Journal of Leisure Research*, Vol. 26 (1), pp. 8-22.

Solecki, W.E. and Welch, J.M., 1995, "Urban Parks: Greenspaces or Green Walls?", *Landscape and Urban Planning*, Vol. 32 (2), pp. 93-106.

Spotts, D.M. and Stynes, D.J., 1985, "Measuring the Public's Familiarity with Recreation Areas", *Journal of Leisure Research*, Vol. 17 (4), pp. 253-265.

Talen, E., 1998, "Visualizing Fairness: Equity Maps for Planners", *Journal of the American Planning Association*, Vol. 64, pp. 22-38.

Talen, E. and Anselin, L., 1998, "Assessing Spatial Equity: An Evaluation of Measures of Accessibility to Public Playgrounds", *Environment and Planning A*, Vol. 30, pp. 595-613.

Tarrant, M.A., and Cordell, H.K., 1999, "Environmental Justice and the Spatial Distribution of Outdoor Recreation Sites: An Application of Geographic Information Systems", *Journal of Leisure Research*, Vol. 31, pp. 18-31.

Travel Behavior

Darragh, A.J., Peterson, G.L. and Dwyer, J.F., 1983, "Travel Cost Models at the Urban Scale", *Journal of Leisure Research*, Vol. 15 (2), pp. 89-94.

Douglas, A.J. and Taylor, J.G., 1999, "A new model for the travel cost method: the total expenses approach", *Environmental Modeling and Software*, Vol. 14 (1), pp. 81-92.

Hanik, D.M. and White, K., 1999, "Distance effects in the demand for wildlife recreational services: the case of national parks in the United States", *Environment and Planning A*, Vol. 31 (3), pp. 477-492.

Shaw, W.D. and Shonkwiler, J.S., 2000, "Brand choice and purchase frequency revisited: An application to recreation behavior", *American Journal of Agricultural Economics*, Vol. 82 (3), pp. 515-526.

Siderelis, C., Moore, R. and Lee, J.H., 2000, "Incorporating users' perceptions of site quality in a recreation travel cost model", *Journal of Leisure Research*, Vol. 32 (4), pp. 406-414.

Smith, S.L.J., 1980, "Intervening Opportunities and Travel to Urban Recreation Centers", *Journal of Leisure Research*, Vol. 12 (4), pp. 296-308.

Appendix 1 – Survey Instrument

University of Southern California

Department of Geography

INFORMATION SHEET FOR NON-MEDICAL RESEARCH

Santa Monica Mountains National Recreation Area Visitor Survey – Recreational Trail Use

You are asked to participate in a research study conducted by Dr. Jennifer Wolch (BA., MA., PhD.) and Mr. Jason Byrne (BA. Hons.) from the Department of Geography at the University of Southern California. Results will be contributing towards a research project investigating attitudes towards nature and the provision of open space together with improving the knowledge of the National Park Service in regards to park visitors. You were selected as a possible participant in this study because you are a visitor to the Santa Monica Mountains National Recreation Area. Your participation is voluntary.

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may also refuse to answer any questions you don't want to answer and still remain in the study. Completion and return of the questionnaire or response to the interview questions will constitute consent to participate in this research project. **The investigator may withdraw you from this research if circumstances arise which warrant doing so.**

We are asking you to take part in a research study because we are trying to learn more about what type of people visit the Santa Monica Mountains National Recreation Area, why they visit this area, the visitor's attitudes towards nature, whether there are any conflicts between various park visitors, and whether park visitors have any safety concerns.

You will be asked to complete a survey questionnaire, which should take approximately 15 minutes of your time. Filling in this survey will not pose any risks to you. We will **not** gather personal information or any other data that could be traced back to you. The research will be beneficial to you in that the survey results will inform park planning, visitor evaluation and recreational programs. You will **not** receive payment for completion of the survey.

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Data gathered in the survey will be provided to the National Park Service to assist them with their park planning.

No information will be included that would reveal your identity. Furthermore, when the results of the research are published and / or discussed in conferences, there will not be any discussion of information that could be traced back to you.

Information regarding the number of visitors, their time of visit and their demographic data, will be entered on a log sheet. Statistical analysis will be undertaken for all survey items, to provide a detailed overall profile of users, profiles of users by general park location, and by user types (bikers, hikers, etc.). The data will be stored electronically and will be provided to the National Park Service.

If you have any questions or concerns about the research, please feel free to contact Mr. Jason Byrne: Secondary Investigator, at the Department of Geography, University of Southern California, Kaprielian Hall, Room 416, 3620 South Vermont Avenue, Los Angeles, CA 90089-0255, Telephone (213) 740-5298, e-mail: jbyrne@usc.edu or Dr. Jennifer Wolch Principal Investigator, Department of Geography, University of Southern California, Kaprielian Hall, Room 416, 3620 South Vermont Avenue, Los Angeles, CA 90089-0255,Telephone (213) 740-0521.

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your rights as a research subject, contact the University Park IRB, Office of the Vice Provost for Research, Bovard Administration Building, Room 300, Los Angeles, CA 90089-4019, (213) 740-6709 or upirb@usc.edu.

Santa Monica Mountains NRA Trail Survey Form

TO BE FILLED IN BY THE INTERVIEWER.

OFFICE USE ONLY

Trail survey site: _____

Date/time of interview: _____

Interviewer: _____

1. Is this your first visit to the Santa Monica Mountains National Recreation Area (SMMNRA)?

Yes ❑ No ❑

2a. Which of the following activities will you engage in, or have you engaged in, during your visit today?

(*Check all that apply*)

Sightseeing	❑	2a1	Horseback riding	❑	2a9
Hiking	❑	2a2	Rock climbing	❑	2a10
Picnicking	❑	2a3	Painting/crafts	❑	2a11
Mountain biking	❑	2a4	Photographing	❑	2a12
Bird watching	❑	2a5	Sunbathing	❑	2a13
Walking dog(s)	❑	2a6	Wading/swimming	❑	2a14
Jogging	❑	2a7	Other	❑	2a15
Camping	❑	2a8	(type?)	_____	

2b. Of these activities identified in question 2a, what were the three main activities that you came to the SMMNRA to engage in?

Activity 1_____ 2b.1

Activity 2_____ 2b.2

Activity 3 _____ 2b.3

3. Why did you choose to visit the SMMNRA today?

(*Check all that apply*)

To exercise	❑ 3a	To experience fewer people	❑ 3j
To be outdoors	❑ 3b	To attend an organized event	❑ 3k
To enjoy the quiet	❑ 3c	To undertake school research	❑ 3l
To breathe fresh air	❑ 3d	To engage in adventure sports	❑ 3m
To see wildflowers	❑ 3e	To be with companion animals	❑ 3n
To see/hear wildlife	❑ 3f	To socialize with family/friends	❑ 3o
To enjoy scenic beauty	❑ 3g	To educate children about nature	❑ 3p
To escape city/suburbs	❑ 3h	Other	❑ 3q
To commune with nature	❑ 3i	(type?)_____	

4a. About how long will/did you spend on the trail today? _____ hrs.

IF THIS IS YOUR FIRST VISIT TO THE SMMNRA, PLEASE SKIP TO QUESTION 6a.

4b. Is this the trail you normally visit in the SMMNRA?

Yes ❑ No ❑

4c. Do you visit other SMMNRA trails?

Yes ❑ No ❑

4d. If so, where? _____

_____

5a. How often do you visit the Santa Monica Mountains NRA? _____ visits/month

5b. What time of year do you visit most? _____ season

5c. What day of the week do you normally visit? _____ day

5d. What time of day do you normally visit?

morning ❑
afternoon ❑
evening ❑

6a. Why would you choose to visit a local or neighborhood community park instead of coming to the Santa Monica Mountains NRA?

(*Check all that apply*)

Limited time	❑ 6a1
Easier access	❑ 6a2
Different recreation opportunities	❑ 6a3
Community gardening	❑ 6a4
Group recreation opportunities	❑ 6a5
See neighborhood friends	❑ 6a6
Easier to take children	❑ 6a7
Other (type)_____	❑ 6a8

6b. How often do you visit your local or neighborhood community parks?

_____ visits/month

6c. What time of year do you visit most? _____ season

6d. What day of the week do you normally visit? _____ day

6e. What time of day do you normally visit?

morning	❑
afternoon	❑
evening	❑

7. Where does your knowledge of wildlife and/or plants in the Santa Monica Mountains come from?

(*Check all that apply*)

Ranger-led nature walks	❑ 7a	TV	❑ 7h
School	❑ 7b	Previous visits	❑ 7i
Park brochures	❑ 7c	Family / friends	❑ 7j
Park signs	❑ 7d	Live in the area	❑ 7k
Nature observation	❑ 7e	Organized groups	❑ 7l
Books	❑ 7f	Other	❑ 7m
Magazines	❑ 7g	(type)_____	

8. In your opinion, the most important reason to protect the Santa Monica Mountains is:

(*select one only*)

To provide recreational opportunities	❑ 8a
To provide habitat for plants and wildlife	❑ 8b
No opinion	❑ 8c
Other (type) _____	❑ 8d

9a. Do the activities or behaviors of other trail users affect your experience at the Santa Monica Mountains NRA?

Yes	❑ 9a1
No	❑ 9a3

IF YOU ANSWERED NO TO QUESTION 9a, PLEASE SKIP TO QUESTION 10a.

9b. If the activities or behaviors of other trail users do affect your experience, identify how these user activities impact you.

(*select one box only for each activity type*)

Mountain biking	Strongly positive	❑ 9b1
	Somewhat positive	❑
	Neither positive nor negative	❑
	Somewhat negative	❑
	Strongly negative	❑
	No opinion	❑
Horseback riding	Strongly positive	❑ 9b2
	Somewhat positive	❑
	Neither positive nor negative	❑
	Somewhat negative	❑
	Strongly negative	❑
	No opinion	❑

Hiking

Strongly positive ❑ 9b3
Somewhat positive ❑
Neither positive nor negative ❑
Somewhat negative ❑
Strongly negative ❑
No opinion ❑

Running/jogging

Strongly positive ❑ 9b4
Somewhat positive ❑
Neither positive nor negative ❑
Somewhat negative ❑
Strongly negative ❑
No opinion ❑

Picnicking

Strongly positive ❑ 9b5
Somewhat positive ❑
Neither positive nor negative ❑
Somewhat negative ❑
Strongly negative ❑
No opinion ❑

Dog walking

Strongly positive ❑ 9b6
Somewhat positive ❑
Neither positive nor negative ❑
Somewhat negative ❑
Strongly negative ❑
No opinion ❑

Others (type)_____

Strongly positive _____ ❑ 9b7
Somewhat positive _____ ❑
Neither positive nor negative _____ ❑
Somewhat negative _____ ❑
Strongly negative _____ ❑
No opinion _____ ❑

9c. For any user activities you selected in Question 9b as having a negative impact on your experience, why do they present a problem to you?

(*Check all that apply*)

Damage plants ❑ 9c1
Uncooperative behavior (*rude, obstructing trail, etc.*) ❑ 9c2
Frighten wildlife ❑ 9c3
Startle people ❑ 9c4
Make too much noise ❑ 9c5
Litter ❑ 9c6
Scare horses ❑ 9c7
Leave animal wastes ❑ 9c8
Potential collisions/injury ❑ 9c9
Other (type)_____ ❑ 9c10

10a. If you are a resident of the southern California region, approximately how long did it take for you to get from home to the trail today?

_____ minutes _____ hours

If you are not a Southern California resident, SKIP to Question 11.

10b. To determine the distance you live from the trail, what is the closest major intersection to your home?

_____
Write intersection here

11. What is your residential zip code? _____

12. How did you travel to the trail today? (*select one only*)

Car/truck/SUV/van	❑ 12a
Public transportation	❑ 12b
Group transportation (club/organization)	❑ 12c
Motorcycle/scooter	❑ 12d
Bicycle	❑ 12e
Walk/jog	❑ 12f
Horseback	❑ 12g
Other (type) _____	❑ 12h

13. How many participants are in your group?

people _____ 13a

pets/animals _____ 13b

14. What type of group are you here with? (*select one only*)

Alone	❑ 14a
Family	❑ 14b
Friends	❑ 14c
Family & friends	❑ 14d
Religious organization / Church	❑ 14e
Youth Club	❑ 14f
Educational	❑ 14g
Other organization or club	❑ 14h
Other (type) _____	❑ 14i

15. What is your age? _____

16. What is your sex ? Female ❑ 16a Male ❑ 16b

17a. Do you have children under 18 years of age? Yes ❑ No ❑

17b. If you answered yes to question 17a, how many children under 18 years of age do you have? _____

18. Which of the following best describes your household?

(*select one only*)

Single	❑ 18a
Unrelated adults	❑ 18b
Couple without children under 18	❑ 18c
Single parent with children under 18	❑ 18d
Two parents with children under 18	❑ 18e
Multigenerational household	❑ 18f

19. Is your home: (*select one only*)

Owned by you or someone in your household?	❑ 19a
Rented?	❑ 19b

20. What is your highest level of educational attainment?

(*select one only*)

High school student	❑ 20a
No high school diploma or GED	❑ 20b
High school graduate or GED	❑ 20c
College	❑ 20d

21. Are you Hispanic or Latino?

Yes, Hispanic or Latino	❑ 21a
No, Not Hispanic or Latino	❑ 21b

22. What is your race?

(*Check one or more races to indicate what you consider yourself to be)*

American Indian or Alaska native	❑22a
Asian	❑22b
Black or African-American	❑22c
Native Hawaiian or other Pacific Islander	❑22d
White	❑22e
Do not wish to answer	❑22f

23a. What is your country of origin?

_____

Write country where you were born here

23b. If you were not born in the United States, how many years have you lived in the USA? _____ years

24. What language(s) do you speak at home?

_____

Write language here

25. What is your household income? (*select one only*)

Less than $25,000	❑25a
$25,000 - $50,000	❑25b
$50,001 - $75,000	❑25c
$75,001 - $100,000	❑25d
$100,001 - $125,000	❑25e
$125,001 - $150,000	❑25f
$150,001 - $175,000	❑25g
$175,001 - $200,000	❑25h
Greater than $200,000	❑25i
Do not wish to answer	❑25j

26. Do you have a physical disability?

Yes ❑ No ❑

27. Have you experienced any barriers to access at this location?

Yes ❑ No ❑

28a. Have you experienced any barriers to access at other Santa Monica Mountain NRA sites?

Yes ❑ No ❑

28b. If yes, what are the barriers and where are they?

_____

_____

_____

_____

That's all the questions in the survey. Do you have any questions? Thank you very much for your time and participation. Enjoy your trail visit.

PRIVACY ACT and PAPERWORK REDUCTION ACT statement: 16 U.S.C. 1a-7 authorizes collection of this information. This information will be used by park managers to better serve the public. Response to this request is voluntary. No action may be taken against you for refusing to supply the information requested. Permanent data will be anonymous. Data collected through visitor surveys may be disclosed to the Department of Justice when relevant to litigation or anticipated litigation, or to appropriate Federal, State, local or foreign agencies responsible for investigating or prosecuting a violation of law. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

Burden estimate statement: Public reporting for this form is estimated to average 15 minutes per response. Direct comments regarding the burden estimate or any other aspect of this form to the Information Collection Clearance Officer, WASO Administrative Program Center, National Park Service, 1849 C Street, Washington, D.C. 20240.

Appendix 2 – Descriptive statistics

Descriptive statistics for Total Sample Data (N=912)

Qu. 1 Visitors to SMMNRA

Visitor type (N=906)	*%*
First time visitors	13.0
Return visitors	87.0

Qu. 2a Activities engaged in during visit

Activity (N=912)	*%*	*Activity*	*%*
Sightseeing	55.0	Horseback riding	5.0
Hiking	77.3	Rock climbing	8.1
Picnicking	16.1	Painting / crafts	1.6
Mountain biking	26.3	Photographing	13.2
Bird watching	16.0	Sunbathing	5.5
Walking dog(s)	14.9	Wading swimming	4.7
Jogging	21.9	Other	7.8
Camping	8.6		

Qu. 2b Primary activity engaged in during visit

Activity (N=888)	*%*
Hiking	49.5
Mountain biking	18.7
Jogging	8.2
Sightseeing	6.1
Dog walking	4.7
Horseback riding	3.4
Picnicking	2.8

Qu. 3 Reason for visiting the SMMNRA

Reason (N=912)	*%*	*Reason*	*%*
To exercise	84.5	To experience fewer people	40.1
To be outdoors	88.3	To attend and organized event	5.5
To enjoy the quiet	66.1	To undertake school research	0.5
To breathe fresh air	73.4	To engage in adventure sports	18.2
To see wildflowers	37.5	To be with companion animals	13.8
To see / hear wildlife	47.1	To socialize with family / friends	36.1
To enjoy scenic beauty	73.8	To educate children about nature	7.8
To escape the city / suburbs	54.1	Other	2.5
To commune with nature	51.0		

Qu. 4a Time spent on trail today?

Mean	*Median*	*SD*	*Min*	*Max*	*N*
2.51	2	2.6	0	24	833

Qu. 4b Trail normally visited

Response (N=810)	*%*
Yes	71.1
No	28.9

Qu.4c Visit other trails

Response (N=809)	*%*
Yes	72.7
No	27.3

Qu. 5a Frequency of visits to the SMMNRA?

Mean	*Median*	*SD*	*Min*	*Max*	*N*
7.0	4	7.2	0	30	780

Qu. 5b Time of year most often visiting SMMNRA

Category (N=912)	*%*
Spring	62.6
Summer	71.8
Fall	55.5
Winter	51.9
All seasons	47.9

Qu. 5c Day of week most often visiting SMMNRA

Category (N=912)	*%*
Weekends	72.5
Weekdays	25.7

Qu. 5d Time of day most often visiting SMMNRA

Category (N=912)	*%*
Morning	63.8
Afternoon	34.8
Evening	21.1

Qu. 6a Reason for visiting local or neighborhood park

Reason (N=912)	*%*
Limited time	48.8
Easier access	33.7
Different recreation opportunities	26.5
Community gardening	1.8
Group recreation opportunities	8.0
See neighborhood friends	7.8
Easier to take children	13.4
Other	3.6
Not applicable/ Don't visit	12.2

Qu. 6b Frequency of visits to the Local park?

Mean	*Median*	*SD*	*Min*	*Max*	*N*
4.4	2	6.2	0	30	691

Qu. 6c Time of year most often visiting Local park

Category (N=912)	*%*
Summer	40.8
Fall	56.5
Winter	36.6
Spring	34.9
All seasons	32.3

Qu. 6d Day of week most often visiting Local park

Category (N=912)	*%*
Weekends	48.7 ???
Weekdays	21.5 ???

Qu. 6e Time of day most often visiting Local park

Category (N=912)	*%*
Morning	33.9
Afternoon	34.0
Evening	22.6

Qu. 7 Knowledge of Fauna and Flora

Reason (N=912)	*%*	*Reason*	*%*
Ranger-led nature walks	9.8	Television	21.4
School	19.8	Previous visits	35.7
Park brochures	32.0	Family / friends	33.0
Park signs	33.6	Live in the area	30.6
Nature observation	46.1	Organized groups	6.7
Books	40.4	Internet	1.6
Magazines	28.2	Other	1.9

Qu. 8 Most important reason to protect SMM

Reason (N=912)	*%*
To provide recreational opportunities	22.0
To provide habitat for plants and animals	53.2
Both	21.6
No opinion	2.0
Other	0.5

Qu. 9 a Do other users impact on trail experience?

Response (N=907)	*%*
Yes	77.7
No	22.3

Qu. 9 b How do other users impact on trail experience?

Category	*N*	*Mean*	*Exclusive mean*	*Key*
Mountain biking	677	3.25	2.93	
Horseback riding	660	4.47	3.41	***5 = Strongly positive***
Hiking	688	4.50	4.41	***4 = Somewhat positive***
Running / jogging	674	4.26	4.21	***3 = Neither positive or negative***
Picnicking	671	3.93	3.92	
Dog walking	678	3.42	3.38	***2 = Somewhat negative***
Other	79	2.18	***	***1 = strongly negative***

Qu. 9 c Why do other trail user activities present a problem?

Reason (N=912)	*%*
Damage plants	18.9
Uncooperative behavior	27.1
Frighten wildlife	17.8
Startle people	20.5
Make too much noise	15.4
Litter	21.3
Scare horses	5.9
Leave animal wastes	24.6
Potential collisions / injury	19.4
Dogs off leash	1.6
Other	3.6

Qu. 10a Travel minutes

Mean	*Median*	*SD*	*Min*	*Max*	*N*
27.9	20	24.8	1	180	858

Qu. 12 Mode of travel to trail

Travel Mode (N=912)	*%*
Car / truck / SUV / van	89.8
Public transportation	0
Group transportation (club or organization)	0.1
Motorcycle / scooter	0.4
Bicycle	3.6
Walk / jog	4.8
Horseback	1.0
Other	0.2

Qu. 13 Participants in group

Type	*Mean*	*Median*	*SD*	*Min*	*Max*	*N*
People	3.2	2	10.7	0	300	910
Animals	0.5	0	0.9	0	7	395

Qu. 14 Type of group

Group type (N=909)	*%*
Alone	29.3
Family	25.0
Friends	34.6
Family and Friends	6.8
Religious Organization / Church	0.1
Youth club	0.6
Educational	0.8
Other organization or club	2.8
Other	0.1

Qu. 15 Age

Mean	*Median*	*SD*	*Min*	*Max*	*N*
40.8	40	12.0	18	83	912

Qu. 16 Sex

Sex(N=912)	*%*
M	59.3
F	40.7

Qu. 17a Children under 18

Response (N=909)	*%*
Yes	29.3
No	70.7

Qu. 17b How many children under 18

Mean	*Median*	*SD*	*Min*	*Max*	*N*
1.8	2	0.9	1	6	260

Qu. 18 Type of household

Group type (N=891)	*%*
Single	33.0
Unrelated adults	9.1
Couple without children under 18	26.0
Single parent with children under 18	4.7
Two parents with children under 18	19.2
Multigenerational household	8.0

Qu. 19 Own/rent house

Response (N=891)	*%*
Owned by you or someone in your household	63.1
Rented	36.9

Qu. 20 Highest Level of Educational Attainment

Response (N=898)	*%*
High school student	5.8
No high school diploma or GED	0.9
High school graduate or GED	7.7
College	85.6

Qu. 21 Hispanic/Latino

Response (N=871)	*%*
Yes	11.8
No	88.2

Qu. 22 Race

Race (N=912)	*%*
American Indian or Alaska native	1.3
Asian	5.5
Black or African-American	1.6
Native Hawaiian or Pacific Islander	0.5
White	72.0
Do not wish to answer	17.3
Other	16.8

Qu. 23a Country of origin

Country (N=912)	*% of total*
USA	77.3
Mexico	2.2
Iran	1.6
Philippines	1.1
United Kingdom	1

Qu. 23b Years in USA

Mean	*Median*	*SD*	*Min*	*Max*	*N*
20.47	20	11.46	0	63	178

Qu. 24 Language

Language (N=845)	*% of total*	*Count*
English	86.5	789
Spanish	7.8	71
Farsi	1.8	16
French	1.3	12
German	0.8	7
Other	5.9	50

Qu. 25 Household income

Response ***(N=884)***	***%***
>$25k	5.8
$25k-50k	15.7
$50k-75k	18.6
$75k-100k	14.7
$100k-125k	8.9
$125k-150k	6.8
$150k-175k	5.1
$175k-200k	3.7
<$200k	10.3
Do not wish to answer	10.4

Qu. 26 Physical disability

Response ***(N=905)***	***%***
Yes	2.0
No	98.0

Qu. 27 Barriers at this location

Response ***(N=903)***	***%***
Yes	4.5
No	95.5

Qu. 28a Other site barriers

Response ***(N=895)***	***%***
Yes	8.9
No	91.1

Appendix 3 – User Group Cross Tabulations

Appendix 3 – Cross tabs: all sites

4b Is this the trail you normally visit

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Yes***	63.3	76.9	91.2	66.7	88.1	90.0	47.6	70.9

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

5a Frequency of SMMNRA visits

User Group	Hikers	Mountain bikers	Jogger	Sightseers	Dog walkers	Horseback riders	Picnickers	Total
Mean Hours on trail ***	6.21	7.74	10.26	4.06	11.27	12.77	2.35	7.28

[1] One-way ANOVA was used to examine the mean difference across user groups.

* p<.05, ** p<.01, *** p<.001

5b Time of year SMMNRA visited most often

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Summer***	69.3	80.7	90.4	46.3	81.0	93.3	76.0	73.6
Fall***	55.7	59.0	75.3	29.6	73.8	90.0	12.0	57.2
Winter***	51.8	56.6	74.0	22.2	71.4	83.3	8.0	53.6
Spring***	64.1	63.9	80.8	46.3	78.6	90.0	16.0	64.6

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

6a Reason for visiting local or neighborhood park

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Limited time	52.0	46.4	43.8	53.7	42.9	23.3	44.0	48.6
Easier access***	35.7	30.1	23.3	48.1	31.0	3.3	44.0	33.1
Different recreation opportunities	25.0	31.9	21.9	25.9	19.0	26.7	44.0	26.5
Community gardening	2.0	0	0	3.7	0	3.3	4.0	1.6
Group recreation opportunities**	8.6	6.6	8.2	5.6	0	6.7	28.0	8.1
See neighborhood friends	7.0	9.0	8.2	13.0	7.1	3.3	12.0	8.0
Easier to take children	14.8	14.5	15.1	11.1	0	13.3	16.0	13.7
Other	3.2	3.0	5.5	3.7	9.5	0	4.0	3.6
Not applicable/ Don't visit	13.6	8.4	17.8	11.1	11.9	30.0	12.0	13.3

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

6c Time of year most often visiting local park

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Summer	54.1	60.8	56.2	61.1	45.2	46.7	68.0	55.7
Fall	38.0	33.1	39.7	35.2	38.1	43.3	16.0	36.5
Winter	35.7	33.7	41.1	29.6	38.1	40.0	12.0	34.9
Spring	41.6	38.0	49.3	38.9	38.1	43.3	24.0	40.7

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

Source of knowledge of SMM fauna and flora

	User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Source	Ranger-led nature walks**	13.2	6.0	1.4	1.9	7.1	16.7	8.0	9.6
	School*	17.0	26.5	17.8	31.5	9.5	13.3	28.0	19.8
	Park brochures**	37.3	35.5	23.3	22.2	14.3	33.3	28.0	33.1
	Park signs	35.9	38.0	35.6	24.1	28.6	20.0	24.0	34.2
	Nature observation*	50.0	42.8	39.7	29.6	52.4	50.0	32.0	45.9
	Books	42.3	41.0	42.5	40.7	26.2	43.3	28.0	40.7
	Magazines	27.7	36.1	28.8	25.9	19.0	20.0	24.0	28.6

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

8 Most important reason to protect SMM

	User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Reason	To provide recreational opportunities**	17.3	33.1	20.5	13.0	33.3	33.3	28.0	22.2
	To provide habitat for plants and animals**	58.9	42.8	57.5	63.0	45.2	36.7	52.0	54.1
	Both	20.2	22.3	20.5	18.5	16.7	30.0	16.0	20.6
	No opinion	1.8	1.2	1.4	5.6	4.8	0	0	1.9
	Other	0.7	0.6	1.4	0	0	0	0	0.6
	Total	98.9	100	101.3	100.1	100	100	96	99.4

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

14 Type of group

	Hikers	Mountain	Jogger	Sightseers	Dog	Horseback	Picnickers	Total

*Type of Group****	(%)	bikers (%)	(%)	(%)	walkers (%)	riders (%)	(%)	(%)
Alone	30.4	30.3	39.7	13.0	47.6	36.7	8.0	30.5
Family	28.3	11.5	15.1	35.2	23.8	16.7	52.0	24.3
Friends	30.8	49.1	37.0	42.6	26.2	36.7	8.0	35.1
Family and friends	6.4	5.5	8.2	5.6	2.4	6.7	4.0	6.0
Religious Organization / Church	0	0	0	1.9	0	0	0	0.1
Youth club	0.9	0	0	0	0	0	0	0.5
Educational	1.1	0.6	0	0	0	0	0	0.7
Other organization or club	2.1	2.4	0	1.9	0	3.3	28.0	2.7

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

18 Type of household

*Type of Household **	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Single	35.4	32.3	23.6	42.0	25.6	17.2	28.0	32.8
Unrelated adults	10.0	4.3	13.9	12.0	17.9	6.9	0	9.2
Couple without children under 18	23.8	25.6	29.2	26.0	41.0	27.6	32.0	26.0
Single parent with children under 18	5.3	3.0	5.6	4.0	2.6	10.3	4.0	4.8
Two parents with children under 18	15.7	26.8	26.4	10.0	12.8	31.0	16.0	19.0
Multigenerational household	9.7	7.9	1.4	6.0	0	6.9	20.0	8.1

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

19 Housing tenure

*Housing tenure****	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Owned	59.6	75.3	58.9	49.0	61.5	89.7	41.7	62.6
Rented	40.4	24.7	41.1	51.0	38.5	10.3	59.3	37.4

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

Demographics

User group	Mean Age[1]*	Sex (%) [2] ***		Education completed (%) ***				Race/Ethnicity (%)							Median Income Range*
		M	F	HS Student	No HS	HS/GED	College	Nat	Asian	Hisp	Afr/Am	PacIsl	White	Other	
Hikers	42.39	53.0	47.0	3.7	0.5	6.0	89.6	0.7	5.7	9.5	1.6	0	73.0	1.6	$50,001-$75,000
Mt. bikers	38.01	86.1	13.9	9.1	0.6	7.3	82.9	0.6	7.8	11.3	0.6	0	74.1	1.8	$75,001-$100,000
Joggers	39.60	53.4	46.6	6.8	0	12.3	80.8	2.7	1.4	11.0	1.4	1.4	79.5	1.4	$75,001-$100,000
Sightseers	37.69	70.4	29.6	15.1	0	7.5	77.4	3.7	1.9	16.0	1.9	0	70.4	3.8	$50,001-$75,000
Dog walkers	39.88	40.5	59.5	2.5	2.5	5.0	87.5	2.4	4.8	16.2	4.8	0	69.0	0	$25,000-$50,000
Horseback riders	46.13	20.0	80.0	0	0	0	100.0	0	0	0	0	0	86.7	3.3	$50,001-$75,000
Picnickers	34.52	52.0	48.0	4.0	8.0	20.0	68.0	0	0	52.0	0	4.0	56.0	4.0	$75,001-$100,000
Total	40.73	58.9	41.1	5.6	0.7	7.1	86.3	1.1	5.1	11.7	5.1	0.2	73.4	1.7	$50,001-$75,000

[1] For sex, education level, race and income, Chi-Square test was used to examine the difference across user groups.

[2] For age, one-way ANOVA was used to test the difference across user groups.

* p<.05, ** p<.01, *** p<.001

Appendix 4a – Frequencies: Small Sites

Appendix 4a – Descriptive statistics (Small site)

Qu. 1 Visitors to SMMNRA

Visitor type ***(N=321)***	***%***
First time visitors	18.1
Return visitors	81.9

Qu. 2a Activities engaged in during visit

Activity ***(N=325)***	***%***	***Activity*** ***(N=325)***	***%***
Sightseeing	62.2	Horseback riding	5.2
Hiking	84.0	Rock climbing	10.2
Picnicking	20.3	Painting / crafts	1.8
Mountain biking	22.2	Photographing	16.6
Bird watching	14.8	Sunbathing	7.4
Walking dog(s)	13.2	Wading swimming	7.7
Jogging	18.5	Other	9.5
Camping	9.8		

Qu. 2b Three primary activities engaged in during visit

Activity ***(N=318)***	***%***
Hiking	55.3
Mountain biking	14.8
Jogging	4.7
Sightseeing	7.2
Dog walking	3.1
Horseback riding	3.1
Picnicking	4.1

Qu. 3 Reason for visiting the SMMNRA

Reason ***(N=325)***	***%***	***Reason*** ***(N=325)***	***%***
To exercise	80.6	To experience fewer people	45.5
To be outdoors	90.2	To attend and organized event	4.9
To enjoy the quiet	70.2	To undertake school research	0.6
To breathe fresh air	77.8	To engage in adventure sports	18.2
To see wildflowers	39.2	To be with companion animals	14.5
To see / hear wildlife	47.1	To socialize with family / friends	37.8
To enjoy scenic beauty	75.7	To educate children about nature	7.1
To escape the city / suburbs	58.2	Other	1.8
To commune with nature	56.9		

Qu. 4a Trail normally visited

Mean	***SD***	***Min***	***Max***	***N***
2.85	2.74	0	24.0	304

Qu. 4b Trail normally visited

Response ***(N=281)***	***%***
Yes	59.8
No	40.2

Response ***(N=280)***	***%***
Yes	80.7
No	19.3

Qu.4c Visit other trails

Qu. 5a Frequency of visits to the SMMNRA?

Mean	***SD***	***Min***	***Max***	***N***
6.02	6.69	0	30	267

Qu. 5b Time of year most often visiting SMMNRA

Category ***(N=325)***	***%***
Summer	68.6
Fall	51.1
Winter	46.8
Spring	59.4
All seasons	43.4

Qu. 5c Day of week most often visiting SMMNRA

Category ***(N=325)***	***%***
Weekends	75.4
Weekdays	21.1

Qu. 5d Time of day most often visiting SMMNRA

Category ***(N=325)***	***%***
Morning	62.5
Afternoon	37.8
Evening	19.1

Qu. 6a Reason for visiting local or neighborhood park

Reason ***(N=325)***	***%***
Limited time	51.7
Easier access	35.7
Different recreation opportunities	26.8
Community gardening	1.5
Group recreation opportunities	8.3
See neighborhood friends	7.4
Easier to take children	12.3
Other	3.4

Qu. 6b Frequency of visits to the Local park?

Mean	***SD***	***Min***	***Max***	***N***
4.15	5.92	0	30	250

Qu. 6c Time of year most often visiting Local park

Category ***(N=325)***	***%***
Summer	58.2
Fall	34.8
Winter	32.0
Spring	37.5
All seasons	29.5

Qu. 6d Day of week most often visiting Local park

Category ***(N=325)***	***%***
Weekends	50.2
Weekdays	21.2

Qu. 6e Time of day most often visiting Local park

Category ***(N=325)***	***%***
Morning	35.7
Afternoon	35.7
Evening	21.8

Qu. 7 Knowledge of Fauna and Flora

Reason ***(N=325)***	***%***	***Reason***	***%***
Ranger-led nature walks	8.6	Television	19.7
School	16.3	Previous visits	35.4
Park brochures	31.7	Family / friends	35.7
Park signs	33.2	Live in the area	29.2
Nature observation	47.1	Organized groups	8.6
Books	41.8	Internet	1.8
Magazines	26.2	Other	1.2

Qu. 8 Most important reason to protect SMM

Reason ***(N=325)***	***%***

To provide recreational opportunities	20.9
To provide habitat for plants and animals	56.3
No opinion	2.5
Other	0.6
Both	19.4

Qu. 9 a Do other users impact on trail experience?

Response ***(N=324)***	***%***
Yes	75.6
No	24.4

Qu. 9 b How do other users impact on trail experience?

Category ***(N=221)***	***Mean***	***Exclusive mean***	*Key* ***5 = Strongly positive*** ***4 = Somewhat positive*** ***3 = Neither positive or negative*** ***2 = Somewhat negative*** ***1 = strongly negative***
Mountain biking	3.24		
Horseback riding	3.36		
Hiking	4.57		
Running / jogging	4.32		
Picnicking	3.92		
Dog walking	3.39		
Other	2.30		

Qu. 9 c Why do other trail user activities present a problem?

Reason ***(N=325)***	***%***
Damage plants	21.8
Uncooperative behavior	25.8
Frighten wildlife	20.0
Startle people	20.3
Make too much noise	16.6
Litter	23.1
Scare horses	6.2
Leave animal wastes	26.5
Potential collisions / injury	19.4
Other	3.4
Dogs off leash	1.5

Qu. 10a Travel minutes

Mean	***SD***	***Min***	***Max***	***N***
35.19	28.15	1	180	302

Qu. 12 Mode of travel to trail

***Travel Mode** (N=325)*	***%***
Car / truck / SUV / van	88.6
Public transportation	0.0
Group transportation (club or organization)	0.3
Motorcycle / scooter	0.9
Bicycle	3.1
Walk / jog	5.5
Horseback	1.2
Other	0.3

Qu. 13 Participants in group

Type	***Mean***	***SD***	***Min***	***Max***	***N***
People	3.51	5.42	1	65	324
Animals	0.50	0.96	0	4	124

Qu. 14 Type of group

***Group type** (N=325)*	***%***
Alone	26.8
Family	25.2
Friends	36.3
Family and Friends	6.5
Religious Organization / Church	0.3
Youth club	0.9
Educational	1.2
Other organization or club	2.8
Other	0.0

Qu. 15 Age

Mean	***SD***	***Min***	***Max***	***N***
40.52	12.59	18	83	325

Qu. 16 Sex

***Sex**(N=325)*	***%***
M	60.9
F	39.1

Qu. 17a Children under 18

***Response** (N=323)*	***%***
Yes	28.2
No	71.8

Qu. 17b How many children under 18

Mean	***SD***	***Min***	***Max***	***N***
1.76	0.89	1	6	89

Qu. 18 Type of household

***Group type** (N=322)*	***%***
Single	35.7
Unrelated adults	10.9
Couple without children under 18	22.7
Single parent with children under 18	4.0
Two parents with children under 18	17.4
Multigenerational household	9.3

Qu. 19 Own/rent house

***Response** (N=318)*	***%***
Owned by you or someone in your household	62.6
Rented	37.4

Qu. 20 Education

***Response** (N=322)*	***%***
High school student	5.9
No high school diploma or GED	1.9
High school graduate or GED	8.7
College	83.2

Qu. 21 Hispanic/Latino

***Response** (N=311)*	***%***
Yes	13.2
No	86.8

Qu. 22 Race

***Race** (N=325)*	***%***
American Indian or Alaska native	1.5
Asian	5.8
Black or African-American	1.2
Native Hawaiian or Pacific Islander	1.2
White	68.8
Do not wish to answer	17.8
Other	2.4

Qu. 23a Country of origin

***Country** (N=325)*	***% of total***
USA	74.5
Mexico	4.6
Iran	1.5

Qu. 23b Years in USA

Mean	***SD***	***Min***	***Max***	***N***
18.22	9.94	1	45	72

Qu. 24 Language

***Language** (N=325)*	***% of total***	***Count***
English	73.5	239
Spanish	3.7	12
English & Spanish	2.8	9
Spanish & English	2.2	7

Qu. 25 Household income

***Response** (N=317)*	***%***
>$50k	24.3
$50,001-$100k	30.0
$100,001-$200k	22.7
Greater than $200k	11.4
Do not wish to answer	11.7

Qu. 26 Physical disability

***Response** (N=321)*	***%***
Yes	1.9
No	98.1

Qu. 27 Barriers at this location

***Response** (N=323)*	***%***
Yes	4.0
No	96.0

Qu. 28a Barriers at other SMMNRA sites

***Response** (N=318)*	***%***
Yes	9.7
No	90.3

Appendix 4b – Cross Tabulations: Small Sites

Appendix 4b – Cross tabs for small sites

4b Is this the trail you normally visit

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Yes***	83.1	95.6	78.6	76.9	70.0	90.0	33.3	82.2

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

5a Frequency of SMMNRA visits

User Group	Hikers	Mountain bikers	Jogger	Sightseers	Dog walkers	Horseback riders	Picnickers	Total
Mean Hours on trail ***	5.23	7.11	9.07	2.17	11.22	16.90	2.33	6.23

[1] One-way ANOVA was used to examine the mean difference across user groups.

* p<.05, ** p<.01, *** p<.001

5b Time of year SMMNRA visited most often

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Summer***	66.5	85.1	80.0	30.4	60.0	100.0	84.6	69.0
Fall***	54.5	61.7	66.7	13.0	60.0	90.0	15.4	52.7
Winter***	48.9	55.3	73.3	4.3	50.0	90.0	15.4	47.6
Spring**	63.1	61.7	66.7	39.1	90.0	90.0	23.1	61.2

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

6a Reason for visiting local or neighborhood park

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Limited time	54.0	59.6	33.3	60.9	40.0	20.0	38.5	52.0
Easier access	38.6	27.7	20.0	47.8	40.0	0	38.5	35.4
Different recreation opportunities	26.7	27.7	20.0	17.4	30.0	40.0	46.2	27.2
Community gardening	1.7	0	0	0	0	10.0	0	1.4
Group recreation opportunities	9.7	4.3	0	4.3	0	10.0	23.1	8.2
See neighborhood friends	9.7	6.4	0	4.3	10.0	0	0	7.5
Easier to take children	14.2	10.6	20.0	8.7	0	10.0	15.4	12.9
Other	4.0	2.1	0	0	10.0	0	7.7	3.4
Not applicable/ Don't visit	13.6	8.5	26.7	8.7	20.0	30.0	15.4	13.9

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

6c Time of year most often visiting local park

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Summer	53.4	68.1	60.0	65.2	50.0	60.0	61.5	57.5
Fall	34.7	36.2	33.3	30.4	50.0	40.0	7.7	34.0
Winter	31.8	34.0	33.3	26.1	40.0	40.0	7.7	31.3
Spring	37.5	40.4	46.7	34.8	40.0	40.0	7.7	37.1

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

Source of knowledge of SMM fauna and flora

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Ranger-led nature walks*	11.4	2.1	0	0	0	30.0	7.7	8.5
School	15.3	19.1	6.7	21.7	10.0	10.0	23.1	16.0
Park brochures	39.2	29.8	20.0	21.7	10.0	30.0	23.1	33.3
Park signs	34.7	40.4	33.3	30.4	50.0	20.0	15.4	34.4
Nature observation	51.1	55.3	40.0	30.4	70.0	30.0	38.5	49.0
Books	44.9	38.3	66.7	43.5	50.0	20.0	23.1	43.2
Magazines	23.9	36.2	40.0	21.7	40.0	10.0	23.1	26.5

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

8 Most important reason to protect SMM

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
To provide recreational opportunities	17.6	29.8	20.0	8.7	20.0	40.0	30.8	20.4
To provide habitat for plants and animals	60.2	53.2	53.3	73.9	50.0	30.0	46.2	57.8
Both	19.3	12.8	20.0	13.0	20.0	30.0	15.4	18.0
No opinion	2.3	4.3	0	4.3	10.0	0	0	2.7
Other	0.6	0	6.7	0	0	0	0	0.7

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

14 Type of group

*Type of Group***	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Alone	25.6	31.9	60.0	13.0	50.0	50.0	7.7	28.2
Family	30.1	8.5	13.3	13.0	10.0	0	69.2	24.5
Friends	31.8	51.1	20.0	65.2	40.0	50.0	15.4	37.1
Family and friends	5.1	8.5	6.7	4.3	0	0	7.7	5.4
Religious Organization / Church	0	0	0	4.3	0	0	0	0.3
Youth club	1.1	0	0	0	0	0	0	0.7
Educational	1.7	0	0	0	0	0	0	1.0
Other organization or club	4.5	0	0	0	0	0	0	2.7

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

18 Type of household

Type of Household	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Single	36.6	34.0	20.0	54.5	33.3	20.0	38.5	36.1
Unrelated adults	10.9	6.4	6.7	22.7	33.3	10.0	0	11.0
Couple without children under 18	22.3	25.5	33.3	4.5	22.2	40.0	15.4	22.3
Single parent with children under 18	5.1	0	0	4.5	0	0	7.7	3.8
Two parents with children under 18	12.6	27.7	40.0	9.1	11.1	20.0	23.1	16.8
Multigenerational household	12.6	6.4	0	4.5	0	10.0	15.4	10.0

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

19 Housing tenure

*Housing Tenure****	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Owned	62.2	68.1	86.7	28.6	88.9	90.0	30.8	62.4
Rented	37.8	31.9	13.3	71.4	11.1	10.0	69.2	37.6

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

Demographics

User group	Mean Age[1]***	Sex (%) [2]***		Education completed (%)				Race/Ethnicity (%)							Median Income Range
		M	F	HS Student	No HS	HS/GED	College	Nat	Asian	Hisp	Afr/Am	PacIsl	White	Other	
Hikers	42.61	59.7	40.3	4.6	1.1	6.9	86.8	1.1	6.3	9.5	1.7	0	71.6	2.3	$50,001-$75,000
Mt. bikers	37.66	89.4	10.6	6.4	0	8.5	85.1	0	8.5	11.1	2.1	0	74.5	2.1	Greater than $200,000
Joggers	42.73	26.7	73.3	13.3	0	6.7	80.0	0	0	13.3	0	0	93.3	0	$75,001-$100,000
Sightseers	32.30	56.5	43.5	13.0	0	8.7	78.3	4.3	4.3	22.7	0	0	60.9	8.6	$25,000-$50,000
Dog walkers	38.70	40.0	60.0	11.1	11.1	0	77.8	0	10.0	37.5	0	0	50.0	0	$25,000-$50,000 & $100,001-$125,000
Horseback riders	47.40	20.0	80.0	0	0	0	100.0	0	0	0	0	0	70.0	10.0	Greater than $200,000
Picnickers	27.31	61.5	38.5	7.7	15.4	23.1	53.8	0	0	69.2	0	7.7	53.8	0	$25,000-$50,000
Total	40.37	60.5	39.5	6.2	1.7	7.6	84.2	1.0	5.8	14.3	1.4	0.3	70.7	2.7	$50,001-$75,000

[1] For sex, education level, race and income, Chi-Square test was used to examine the difference across user groups.

[2] For age, one-way ANOVA was used to test the difference across user groups.

* p<.05, ** p<.01, *** p<.001

Appendix 5a – Frequencies for Large Sites

Appendix 5a – Descriptive statistics (Large Sites)

Qu. 1 Visitors to SMMNRA

Visitor type ***(N=585)***	***%***
First time visitors	10.3
Return visitors	89.7

Qu. 2a Activities engaged in during visit

Activity ***(N=587)***	***%***	***Activity*** ***(N=587)***	***%***
Sightseeing	51.1	Horseback riding	4.9
Hiking	73.6	Rock climbing	7.0
Picnicking	13.8	Painting / crafts	1.5
Mountain biking	28.6	Photographing	11.2
Bird watching	16.7	Sunbathing	4.4
Walking dog(s)	15.8	Wading swimming	3.1
Jogging	23.9	Other	6.8
Camping	7.8		

Qu. 2b Three primary activities engaged in during visit

Activity ***(N=570)***	***%***
Hiking	46.3
Mountain biking	20.9
Jogging	10.2
Sightseeing	5.4
Dog walking	5.6
Horseback riding	3.5
Picnicking	2.0

Qu. 3 Reason for visiting the SMMNRA

Reason ***(N=269)***	***%***	***Reason*** ***(N=?)***	***%***
To exercise	86.7	To experience fewer people	37.1
To be outdoors	87.2	To attend and organized event	5.8
To enjoy the quiet	63.9	To undertake school research	0.5
To breathe fresh air	70.9	To engage in adventure sports	18.2
To see wildflowers	37.1	To be with companion animals	13.5
To see / hear wildlife	47.2	To socialize with family / friends	35.1
To enjoy scenic beauty	72.7	To educate children about nature	8.2
To escape the city / suburbs	51.8	Other	2.9
To commune with nature	47.7		

Qu. 4a Trail normally visited

Mean	***SD***	***Min***	***Max***	***N***
2.31	2.44	0	24	529

Qu. 4b Trail normally visited

Response ***(N=529)***	***%***
Yes	77.1
No	22.9

Response ***(N=529)***	***%***
Yes	31.6
No	68.4

Qu.4c Visit other trails

Qu. 5a Frequency of visits to the SMMNRA?

Mean	***SD***	***Min***	***Max***	***N***
7.50	7.35	0	30	513

Qu. 5b Time of year most often visiting SMMNRA

Category ***(N=587)***	***%***
Summer	73.6
Fall	57.9
Winter	54.7
Spring	64.4
All seasons	50.4

Qu. 5c Day of week most often visiting SMMNRA

Category ***(N=587)***	***%***
Weekends	28.1
Weekdays	70.9

Qu. 5d Time of day most often visiting SMMNRA

Category ***(N=587)***	***%***
Morning	64.6
Afternoon	33.0
Evening	22.1

Qu. 6a Reason for visiting local or neighborhood park

Reason ***(N=587)***	***%***
Limited time	47.2
Easier access	32.5
Different recreation opportunities	26.4
Community gardening	1.9
Group recreation opportunities	7.8
See neighborhood friends	8.0
Easier to take children	14.0
Other	3.7

Qu. 6b Frequency of visits to the Local park?

Mean	***SD***	***Min***	***Max***	***N***
4.53	6.32	0	30	441

Qu. 6c Time of year most often visiting Local park

Category ***(N=587)***	***%***
Summer	55.5
Fall	37.6
Winter	36.5
Spring	42.6
All seasons	33.9

Qu. 6d Day of week most often visiting Local park

Category ***(N=587)***	***%***
Weekends	47.9
Weekdays	21.6

Qu. 6e Time of day most often visiting Local park

Category ***(N=587)***	***%***
Morning	32.9
Afternoon	33.0
Evening	23.0

Qu. 7 Knowledge of Fauna and Flora

Reason ***(N=587)***	***%***	***Reason***	***%***
Ranger-led nature walks	10.4	Television	22.3
School	21.8	Previous visits	35.9
Park brochures	32.2	Family / friends	31.5
Park signs	33.7	Live in the area	31.3
Nature observation	45.5	Organized groups	5.6
Books	39.5	Internet	1.5
Magazines	29.3	Other	2.2

Qu. 8 Most important reason to protect SMM

Reason ***(N=587)***	***%***

To provide recreational opportunities	22.7
To provide habitat for plants and animals	51.4
No opinion	1.7
Other	0.5
Both	22.8

Qu. 9 a Do other users impact on trail experience?

Response ***(N=583)***	***%***
Yes	78.8
No	21.2

Qu. 9 b How do other users impact on trail experience?

Category ***(N=?)***	***Mean***	***Exclusive mean***	*Key*
Mountain biking	3.25		***5 = Strongly positive***
Horseback riding	3.53		***4 = Somewhat positive***
Hiking	4.47		***3 = Neither positive or negative***
Running / jogging	4.23		***2 = Somewhat negative***
Picnicking	3.93		***1 = strongly negative***
Dog walking	3.43		
Other	2.09		

Qu. 9 c Why do other trail user activities present a problem?

Reason ***(N=587)***	***%***
Damage plants	17.2
Uncooperative behavior	27.8
Frighten wildlife	16.5
Startle people	20.6
Make too much noise	14.7
Litter	20.3
Scare horses	5.8
Leave animal wastes	23.5
Potential collisions / injury	19.4
Other	3.7

Qu. 10a Travel minutes

Mean	***SD***	***Min***	***Max***	***N***
23.91	21.82	1	180	556

Qu. 12 Mode of travel to trail

Travel Mode ***(N=587)***	***%***
Car / truck / SUV / van	90.5
Public transportation	0.0
Group transportation (club or organization)	0.0
Motorcycle / scooter	0.2
Bicycle	3.9
Walk / jog	4.4
Horseback	0.9
Other	0.2

Qu. 13 Participants in group

Type	***Mean***	***SD***	***Min***	***Max***	***N***
People	3.10	12.76	0	300	586
Animals	0.47	0.93	0	7	271

Qu. 14 Type of group

Group type ***(N=?)***	***%***
Alone	30.7
Family	24.8
Friends	33.6
Family and Friends	7.0
Religious Organization / Church	0.0
Youth club	0.3
Educational	0.5
Other organization or club	2.7
Other	0.2

Qu. 15 Age

Mean	***SD***	***Min***	***Max***	***N***
40.94	*11.75*	*18*	*80*	*587*

(587)	
M	*58.4*
F	*41.6*

Qu. 16 Sex

Sex	***%***

Qu. 17a Children under 18

***Response** (N=586)*	***%***
Yes	29.9
No	70.1

Qu. 17b How many children under 18

Mean	***SD***	***Min***	***Max***	***N***
1.77	0.85	1	5	171

Qu. 18 Type of household

***Group type** (N=569*	***%***
Single	31.5
Unrelated adults	8.1
Couple without children under 18	27.9
Single parent with children under 18	5.1
Two parents with children under 18	20.2
Multigenerational household	7.2

Qu. 19 Own/rent house

***Response** (N=573*	***%***
Owned by you or someone in your household	63.4
Rented	36.6

Qu. 20 Education

***Response** (N=576)*	***%***
High school student	5.7
No high school diploma or GED	0.3
High school graduate or GED	7.1
College	86.6

Qu. 21 Hispanic/Latino

***Response** (N=560*	***%***
Yes	11.1
No	88.9

Qu. 22 Race

***Race** (N=587)*	***%***
American Indian or Alaska native	1.2
Asian	5.3
Black or African-American	1.9
Native Hawaiian or Pacific Islander	0.2
White	73.3
Do not wish to answer	17.0
Other	1.2

Qu. 23a Country of origin

***Country** (N=587)*	***% of total***
USA	78.9
Mexico	0.9
Iran	1.7

Qu. 23b Years in USA

Mean	***SD***	***Min***	***Max***	***N***
23.91	21.82	1	180	556

Qu. 24 Language

***Language** (N=587)*	***% of total***	***Count***
English	79.7	468
English & Spanish	2.4	14
Spanish	1.7	10

Qu. 25 Household income

***Response** (N=567)*	*%*
>$50k	19.9
$50,001-$100k	35.1
$100,001-$200k	25.6
Greater than $200k	9.7
Do not wish to answer	9.7

Qu. 26 Physical disability

Response ***(N=584)***	***%***
Yes	2.1
No	97.9

Qu. 27 Barriers at this location

Response ***(N=580)***	***%***
Yes	4.8
No	95.2

Qu. 28a Barriers at other SMMNRA sites

Response ***(N=580)***	***%***
Yes	8.5
No	91.5

Qu. 28b What barriers

Barrier type ***(N=?)***	***%***

Appendix 5b – Cross Tabulations for Large Sites

Appendix 5b – Cross tabs for primary sites

4b Is this the trail you normally visit

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Yes***	73.4	79.1	92.6	72.0	96.9	95.0	22.2	78.2

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

5a Frequency of SMMNRA visits

User Group	Hikers	Mountain bikers	Jogger	Sightseers	Dog walkers	Horseback riders	Picnickers	Total
Mean Hours on trail ***	6.82	8.00	10.56	5.04	11.28	10.70	2.38	7.82

[1] One-way ANOVA was used to examine the mean difference across user groups.

* p<.05, ** p<.01, *** p<.001

5b Time of year SMMNRA visited most often

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Summer***	71.2	79.0	93.1	58.1	87.5	90.0	66.7	76.1
Fall***	56.4	58.0	77.6	41.9	78.1	90.0	8.3	59.7
Winter***	53.8	57.1	74.1	35.5	78.1	80.0	0	56.9
Spring***	64.8	64.7	84.5	51.6	75.0	90.0	8.3	66.4

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

6a Reason for visiting local or neighborhood park

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Limited time	50.8	41.2	46.6	48.4	43.8	25.0	50.0	46.6
Easier access*	33.7	31.1	24.1	48.4	28.1	5.0	50.0	31.9
Different recreation opportunities	23.9	33.6	22.4	32.3	15.6	20.0	41.7	26.1
Community gardening	2.3	0	0	6.5	0	0	8.3	1.7
Group recreation opportunities*	8.0	7.6	10.3	6.5	0	5.0	33.3	8.0
See neighborhood friends*	5.3	10.1	10.3	19.4	6.3	5.0	25.0	8.2
Easier to take children	15.2	16.0	13.8	12.9	0	15.0	16.7	14.2
Other	2.7	3.4	6.9	6.5	9.4	0	0	3.7
Not applicable/ Don't visit	13.6	8.4	15.5	12.9	9.4	30.0	8.3	12.9

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

6c Time of year most often visiting local park

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Summer	54.5	58.0	55.2	58.1	43.8	40.0	75.0	54.9
Fall	40.2	31.9	41.4	38.7	34.4	45.0	25.0	37.9
Winter	38.3	33.6	43.1	32.3	37.5	40.0	16.7	36.9
Spring	44.3	37.0	50.0	41.9	37.5	45.0	41.7	42.7

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

Source of knowledge of SMM fauna and flora

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Ranger-led nature walks	14.4	7.6	1.7	3.2	9.4	10.0	8.3	10.3
School*	18.2	29.4	20.7	38.7	9.4	15.0	33.3	21.8
Park brochures	36.0	37.8	24.1	22.6	15.6	35.0	33.3	33.0
Park signs	36.7	37.0	36.2	19.4	21.9	20.0	33.3	34.1
Nature observation	49.2	37.8	39.7	29.0	46.9	60.0	25.0	44.2
Books	40.5	42.0	36.2	38.7	18.8	55.0	33.3	39.4
Magazines	30.3	36.1	25.9	29.0	12.5	25.0	25.0	29.7

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

8 Most important reason to protect SMM

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
To provide recreational opportunities**	17.0	34.5	20.7	16.1	37.5	30.0	25.0	23.1
To provide habitat for plants and animals*	58.0	38.7	58.6	54.8	43.8	40.0	58.3	52.1
Both	20.8	26.1	20.7	22.6	15.6	30.0	16.7	22.0
No opinion	1.5	0	1.7	6.5	3.1	0	0	1.5
Other	0.8	0.8	0	0	0	0	0	0.6

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

14 Type of group

*Type of Group****	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Alone	33.6	29.7	34.5	12.9	46.9	30.0	8.3	31.7
Family	27.1	12.7	15.5	51.6	28.1	25.0	33.3	24.2
Friends	30.2	48.3	41.4	25.8	21.9	30.0	0	34.0
Family and friends	7.3	4.2	8.6	6.5	3.1	10.0	0	6.4
Religious Organization / Church	0	0	0	0	0	0	0	0
Youth club	0.8	0	0	0	0	0	0	0.4
Educational	0.8	0.8	0	0	0	0	0	0.6
Other organization or club	0.4	3.4	0	3.2	0	5.0	58.3	2.6

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

18 Type of household

*Type of Household**	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Single	34.6	31.6	24.6	32.1	23.3	15.8	16.7	31.0
Unrelated adults	9.3	3.4	15.8	3.6	13.3	5.3	0	8.3
Couple without children under 18	24.9	25.6	28.1	42.9	46.7	21.1	50.0	28.1
Single parent with children under 18	5.4	4.3	7.0	3.6	3.3	15.8	0	5.4
Two parents with children under 18	17.9	26.5	22.8	10.7	13.3	36.8	8.3	20.2
Multigenerational household	7.8	8.5	1.8	7.1	0	5.3	25.0	7.1

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

19 Housing tenure

*Housing Tenure****	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Owned	57.9	78.3	51.7	63.3	53.3	89.5	54.5	62.8
Rented	42.1	21.7	48.3	36.7	46.7	10.5	45.5	37.2

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

Demographics

User group	Mean Age[1]*	Sex (%) [2]***		Education completed (%) **				Race/Ethnicity (%) ***							Median Income Range
		M	F	HS Student	No HS	HS/GED	College	Nat	Asian	Hisp	Afr/Am	PacIsl	White	Other	
Hikers	42.24	48.5	51.5	3.1	0	5.4	91.5	0.4	5.3	9.5	1.5	0	73.9	1.2	$50,001-$75,000
Mt. bikers	38.14	84.9	15.1	10.3	0.9	6.8	82.1	0.8	7.6	11.4	0	0	73.9	1.6	$75,001-$100,000
Joggers	38.79	60.3	39.7	5.2	0	13.8	81.0	3.4	1.7	10.3	1.7	1.7	75.9	1.7	$25,000-$50,000 & $75,001-$100,000
Sightseers	41.68	80.6	19.4	16.7	0	6.7	76.7	3.2	0	10.7	3.2	0	77.4	0	$50,001-$75,000
Dog walkers	40.25	40.6	59.4	0	0	6.5	90.3	3.1	3.1	10.3	6.3	0	75.0	0	$125,001-$150,000
Horseback riders	45.50	20.0	80.0	0	0	0	100.0	0	0	0	0	0	95.0	0	$50,001-$75,000 & $125,001-$150,000
Picnickers	42.33	41.7	58.3	0	0	16.7	83.3	0	0	33.3	0	0	58.3	8.3	$75,001-$100,000
Total	40.93	58.0	42.0	5.3	0.2	6.8	87.5	1.1	4.7	10.4	1.5	0.2	74.8	1.4	$50,001-$75,000

[1] For sex, education level, race and income, Chi-Square test was used to examine the difference across user groups.

[2] For age, one-way ANOVA was used to test the difference across user groups.

* p<.05, ** p<.01, *** p<.001

Appendix 6a – Frequencies: western Trails

Appendix 6a – Descriptive statistics for western Sites

1 Visitors to SMMNRA

Visitor type (N=318)	*%*
First time visitors	11.9
Return visitors	88.1
Total	100.0

2a Activities engaged in during visit*

Activity (N=320)	*%*	*Activity*	*%*
Sightseeing	50.0	Horseback riding	7.5
Hiking	59.4	Rock climbing	7.5
Picnicking	13.4	Painting / crafts	1.6
Mountain biking	42.8	Photographing	12.2
Bird watching	16.9	Sunbathing	2.5
Walking dog(s)	10.3	Wading / swimming	5.0
Jogging	21.9	Other	6.9
Camping	10.3		

2b Primary activity during visit

Activity (N=309)	*%*
Hiking	29.8
Mountain biking	34.6
Jogging	11.7
Sightseeing	6.8
Dog walking	1.9
Horseback riding	5.2
Picnicking	2.6
Other	7.4
Total	100.0

3 Reason for visiting the SMMNRA*

Reason (N=320)	*%*
To exercise	84.4
To be outdoors	85.9
To enjoy the quiet	62.8
To breathe fresh air	68.8
To see wildflowers	38.1
To see / hear wildlife	50.0
To enjoy scenic beauty	73.4
To escape the city / suburbs	47.5
To commune with nature	43.1
To experience fewer people	34.4
To attend and organized event	8.1

To undertake school research	0.6
To engage in adventure sports	25.6
To be with companion animals	13.1
To socialize with family / friends	36.6
To educate children about nature	9.7
Other	3.4

4a Time spent on trail today

Median Hours on trail N=285	2.0

4b Is this the trail you normally visit

Normal trail (N=289)	*%*
Yes	73.7
No	26.3
Total	100.0

4c Visit other trails

Other trails (N=291)	*%*
Yes	73.5
No	26.5
Total	100.0

5a Frequency of SMMNRA visits

Median visits per month N=275	4.0

5b Time of year SMMNRA visited most often*

Category (N=320)	*%*
Summer	70.6
Fall	54.7
Winter	50.6
Spring	60.6
All seasons	45.6

5c Day of week most often visiting SMMNRA*

Category (N=320)	*%*
Weekends	66.9
Weekdays	28.8

5d Time of day most often visiting SMMNRA*

Category (N=320)	*%*
Morning	66.3

Afternoon	30.6
Evening	28.4

6a Reason for visiting local or neighborhood park*

Reason (N=320)	*%*
Limited time	46.6
Easier access	33.8
Different recreation opportunities	31.3
Community gardening	0.9
Group recreation opportunities	9.4
See neighborhood friends	9.4
Easier to take children	18.3
Other	5.0
Not applicable/ Don't visit	10.9

6b Frequency of visits to the local park

Median visits per month N=243	2.0

6c Time of year most often visiting local park*

Category (N=320)	*%*
Summer	58.8
Fall	39.4
Winter	37.8
Spring	44.4
All seasons	34.7

6d Day of week most often visiting local park*

Category (N=320)	*%*
Weekends	50.6
Weekdays	23.1

6e Time of day most often visiting local park*

Category (N=320)	*%*
Morning	34.7
Afternoon	35.6
Evening	25.9

7 Source of knowledge of SMM fauna and flora*

Reason (N=320)	*%*	*Reason*	*%*
Ranger-led nature walks	13.4	Television	23.1
School	24.1	Previous visits	36.9
Park brochures	38.8	Family / friends	32.2
Park signs	35.9	Live in the area	35.9
Nature observation	45.3	Organized groups	6.9
Books	43.1	Internet	1.9
Magazines	30.0	Other	3.1

8 Most important reason to protect SMM*

Reason (N=320)	*%*
To provide recreational opportunities	24.7
To provide habitat for plants and animals	49.4
Both	24.4
No opinion	1.3
Other	0.6

9 a Impact of other users on trail experience

Impact (N=319)	*%*
Yes	78.1
No	21.9
Total	100.0

9 b Strength of impact of other users on trail experience

Category	*N =*	*Mean*	*Exclusive mean*	*Key*
Mountain biking	233	3.52	3.05	*5 = Strongly positive*
Horseback riding	222	3.52	3.44	*4 = Somewhat positive*
Hiking	236	4.28	4.22	*3 = Neither*
Running / jogging	228	4.19	4.08	*2 = Somewhat negative*
Picnicking	227	3.82	3.81	*1 = strongly negative*
Dog walking	228	3.39	3.39	
Other	18	2.22	***	

9 c Why do other trail user activities present a problem*

Reason (N=320)	*%*
Damage plants	13.8
Uncooperative behavior	27.5
Frighten wildlife	13.8
Startle people	18.4

Make too much noise	12.8
Litter	16.9
Scare horses	5.9
Leave animal wastes	17.8
Potential collisions / injury	19.4
Dogs off leash	0.9
Other	4.4

10a Travel time to trail

Median Minutes N=300	20.0

Mode of travel to trail

Travel Mode (N=320)	*%*
Car / truck / SUV / van	89.1
Public transportation	0.0
Group transportation (club or organization)	0.0
Motorcycle / scooter	0.3
Bicycle	5.3
Walk / jog	4.1
Horseback	0.9
Other	0.3
Total	100.0

13 Participants in group

Group Type	*N =*	*Median*
People	319	2.0
Animals	166	0.0

Type of group

Group type (N=318)	*%*
Alone	25.2
Family	26.7
Friends	35.2
Family and Friends	6.9
Religious Organization / Church	0.0
Youth club	0.3
Educational	0.3
Other organization or club	4.7
Other	0.6
Total	100.0

Age

Median Age N=320	41.0

16 Sex

Sex (N=320)	*%*
M	65.0
F	35.0
Total	100.0

17a Children under 18

Children (N=320)	*%*
Yes	36.9
No	63.1
Total	100.0

17b Number of children under 18

Median Number of Children N=114	2.0

18 Type of household

Household Type (N=308)	*%*
Single	25.6
Unrelated adults	5.5
Couple without children under 18	27.9
Single parent with children under 18	6.5
Two parents with children under 18	25.6
Multigenerational household	8.8
Total	100.0

19 Housing tenure

Tenure (N = 311)	*%*
Owned	72.3
Rented	27.7
Total	100.0

20 Education

Educational Attainment (N=315)	*%*
High school student	6.7
No high school diploma or GED	0.6
High school graduate or GED	8.9
College	83.8
Total	100.0

21 Hispanic/Latino

Hispanic/Latino (N=307)	*%*
Yes	10.7
No	89.3
Total	100.0

22 Race

Race (N=320)	*%*
American Indian or Alaska native	1.6
Asian	5.6
Black or African-American	0.9
Native Hawaiian or Pacific Islander	0.0
White	75.0
Do not wish to answer	15.3
Other	1.6
Total	100.0

23a Country of origin

Country (N=310)	*%*
USA	83.9
United Kingdom	2.3
Canada	1.6
Mexico	1.3
Italy	1.3
Philippines	1.3
Other	8.3
Total	100.0

23b Years in USA

Median Years in USA N=49	20.0

Language(s) spoken at home*

Language (N=300)	*%*
English	93.7
Spanish	6.0
German	1.0

(a bunch of other ones tied with a third of a percent)

5 Household income

Household Income (N=312)	*%*
>$25k	3.8
$25k-50k	11.2
$50k-75k	20.5
$75k-100k	18.9
$100k-125k	9.9
$125k-150k	6.7
$150k-175k	5.1
$175k-200k	4.8
<$200k	9.9
Do not wish to answer	9.0
Total	100.0

26 Physical disability

Disability (N=317)	*%*
Yes	1.6
No	98.4
Total	100.0

27 Barriers at this location

Barriers – this site (N=316)	*%*
Yes	6.3
No	93.7
Total	100.0

28a Barriers at other SMMNRA sites

Barriers – other sites (N=314)	*%*
Yes	8.0
No	92.0
Total	100.0

*Percentages will not add up to 100%, since respondents checked all categories that applied.

Appendix 6b – Cross Tabulations: eastern Trails

Appendix 6b – Cross tabs for western Sites

4b Is this the trail you normally visit

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Yes***	63.5	81.6	94.1	62.5	100.0	93.8	0	75.5

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

5a Frequency of SMMNRA visits

User Group	Hikers	Mountain bikers	Jogger	Sightseers	Dog walkers	Horseback riders	Picnickers	Total
Mean Hours on trail ***	5.58	8.01	11.29	4.29	10.67	11.13	0.80	7.56

[1] One-way ANOVA was used to examine the mean difference across user groups.

* p<.05, ** p<.01, *** p<.001

5b Time of year SMMNRA visited most often

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Summer**	67.4	77.6	91.7	47.6	83.3	87.5	75.0	74.5
Fall***	51.1	55.1	77.8	38.1	83.3	87.5	12.5	56.6
Winter***	50.0	53.3	72.2	28.6	83.3	75.0	0	53.1
Spring***	60.9	61.7	83.3	47.6	66.7	87.5	0	62.9

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

6a Reason for visiting local or neighborhood park

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Limited time	53.3	39.3	52.8	47.6	50.0	31.3	50.0	46.2
Easier access	39.1	29.9	25.0	47.6	33.3	6.3	50.0	32.9
Different recreation opportunities	30.4	33.6	25.0	33.3	16.7	25.0	37.5	30.8
Community gardening	1.1	0	0	4.8	0	0	0	0.7
Group recreation opportunities	10.9	7.5	11.1	4.8	0	6.3	37.5	9.4
See neighborhood friends*	3.3	10.3	16.7	14.3	33.3	6.3	25.0	9.8
Easier to take children	20.7	16.8	8.3	14.3	0	12.5	25.0	16.4
Other	4.3	3.7	11.1	4.8	16.7	0	0	4.9
Not applicable/ Don't visit	13.0	9.3	13.9	9.5	16.7	31.3	0	12.2

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

6c Time of year most often visiting local park

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Summer	58.7	57.9	58.3	47.6	66.7	50.0	87.5	58.0
Fall	45.7	30.8	41.7	33.3	50.0	56.3	25.0	38.8
Winter	42.4	32.7	44.4	23.8	66.7	43.8	12.5	37.4
Spring	48.9	36.4	50.0	38.1	50.0	56.3	50.0	44.1

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

Source of knowledge of SMM fauna and flora

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Ranger-led nature walks***	25.0	8.4	2.8	0	33.3	12.5	12.5	13.3
School*	15.2	31.8	22.2	38.1	0	18.8	50.0	24.8
Park brochures	48.9	38.3	33.3	28.6	33.3	43.8	50.0	40.9
Park signs	40.2	38.3	38.9	23.8	33.3	25.0	50.0	37.4
Nature observation	53.3	35.5	41.7	33.3	100.0	56.3	25.0	44.1
Books	44.6	43.0	36.1	52.4	16.7	50.0	50.0	43.4
Magazines	25.0	37.4	27.8	33.3	16.7	25.0	37.5	30.8

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

8 Most important reason to protect SMM

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
To provide recreational opportunities**	14.1	37.4	19.4	14.3	33.3	37.5	12.5	25.2
To provide habitat for plants and animals**	63.0	35.5	52.8	52.4	66.7	43.8	62.5	49.7
Both	21.7	26.2	27.8	28.6	0	18.8	25.0	24.1
No opinion	0	0	2.8	4.8	0	0	0	0.7
Other	1.1	0.9	0	0	0	0	0	0.7

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

14 Type of group

Type of Group***	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Alone	29.7	26.4	36.1	9.5	33.3	31.3	0	27.1
Family	31.9	14.2	22.2	61.9	33.3	25.0	12.5	25.4
Friends	30.8	50.0	36.1	14.3	16.7	31.3	0	36.3
Family and friends	5.5	3.8	5.6	9.5	16.7	12.5	0	5.6
Religious Organization / Church	0	0	0	0	0	0	0	0
Youth club	1.1	0	0	0	0	0	0	0.4
Educational	0	0.9	0	0	0	0	0	0.4
Other organization or club	1.1	3.8	0	4.8	0	0	87.5	4.6

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

18 Type of household

Type of Household	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Single	34.5	27.4	19.4	21.1	0	20.0	0	26.4
Unrelated adults	6.9	3.8	11.1	0	0	6.7	0	5.4
Couple without children under 18	19.5	27.4	30.6	47.4	60.0	13.3	50.0	27.2
Single parent with children under 18	8.0	4.7	11.1	5.3	0	13.3	0	6.9
Two parents with children under 18	24.1	27.4	25.0	15.8	40.0	40.0	12.5	25.7
Multigenerational household	6.9	9.4	2.8	10.5	0	6.7	37.5	8.3

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

19 Housing tenure

Housing Tenure	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Owned	62.2	80.8	63.9	80.0	83.3	86.7	71.4	72.7
Rented	37.8	19.2	36.1	20.0	16.7	13.3	28.6	27.3

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

Demographics

User group	Mean Age*[1]	Sex (%) ***[2]		Education completed (%)				Race/Ethnicity (%)*							Median Income Range
		M	F	HS Student	No HS	HS/GED	College	Nat	Asian	Hisp	Afr/Am	PacIsl	White	Other	
Hikers	43.47	53.3	46.7	2.2	0	6.7	91.1	1.1	6.5	8.0	0	0	75.0	2.2	$50,001-$75,000
Mt. bikers	38.38	83.2	16.8	9.4	0.9	7.5	82.1	0.9	7.5	11.4	0	0	74.8	1.8	$75,001-$100,000
Joggers	40.00	61.1	38.9	5.6	0	16.7	77.8	2.8	0	8.3	0	0	83.3	0	$75,001-$100,000
Sightseers	43.48	71.4	28.6	15.0	0	5.0	80.0	4.8	0	11.1	4.8	0	81.0	0	$50,001-$75,000
Dog walkers	45.00	50.0	50.0	0	0	16.7	83.3	0	0	0	0	0	83.3	0	$75,001-$100,000
Horseback riders	44.81	18.8	81.3	0	0	0	100.0	0	0	0	0	0	93.8	0	$50,001-$75,000
Picnickers	41.88	25.0	75.0	0	0	25.0	75.0	0	0	37.5	0	0	62.5	0	$50,001-$100,000
Total	41.19	64.0	36.0	6.0	0.4	8.5	85.1	1.4	4.9	9.8	0.3	0	77.3	1.7	$50,001-

															$75,000

[1] For sex, education level, race and income, Chi-Square test was used to examine the difference across user groups.
[2] For age, one-way ANOVA was used to test the difference across user groups.
* p<.05, ** p<.01, *** p<.001

Appendix 7a – Frequencies: eastern Trails

Appendix 7a – Descriptive statistics for eastern large sites

1 Visitors to SMMNRA

Visitor type (N=267)	*%*
First time visitors	8.2
Return visitors	91.8
Total	100.0

2a Activities engaged in during visit*

Activity (N=267)	*%*	*Activity*	*%*
Sightseeing	52.4	Horseback riding	1.9
Hiking	90.6	Rock climbing	6.4
Picnicking	14.2	Painting / crafts	1.5
Mountain biking	11.6	Photographing	10.1
Bird watching	16.5	Sunbathing	6.7
Walking dog(s)	22.5	Wading / swimming	0.7
Jogging	26.2	Other	6.7
Camping	4.9		

2b Primary activity during visit

Activity (N=261)	*%*
Hiking	65.9
Mountain biking	4.6
Jogging	8.4
Sightseeing	3.8
Dog walking	10.0
Horseback riding	1.5
Picnicking	1.5
Other	4.3
Total	100.0

3 Reason for visiting the SMMNRA*

Reason (N=267)	*%*
To exercise	89.5
To be outdoors	88.8
To enjoy the quiet	65.2
To breathe fresh air	73.4
To see wildflowers	36.0
To see / hear wildlife	43.8
To enjoy scenic beauty	71.9
To escape the city / suburbs	56.9
To commune with nature	53.2
To experience fewer people	40.4
To attend and organized event	3.0

To undertake school research	0.4
To engage in adventure sports	9.4
To be with companion animals	13.9
To socialize with family / friends	33.3
To educate children about nature	6.4
Other	2.2

4a Time spent on trail today

Median Hours on trail N=244	1.5

4b Is this the trail you normally visit

Normal trail (N=240)	*%*
Yes	81.3
No	18.8
Total	100.0

4c Visit other trails

Other trails (N=238)	*%*
Yes	62.2
No	37.8
Total	100.0

5a Frequency of SMMNRA visits

Median days per month N=238	4.0

5b Time of year SMMNRA visited most often*

Category (N=267)	*%*
Summer	77.2
Fall	61.8
Winter	59.6
Spring	68.9
All seasons	56.2

5c Day of week most often visiting SMMNRA*

Category (N=267)	*%*
Weekends	75.7
Weekdays	27.3

5d Time of day most often visiting SMMNRA*

Category (N=267)	*%*
Morning	62.5

Afternoon	36.0
Evening	14.6

6a Reason for visiting local or neighborhood park*

Reason (N=267)	*%*
Limited time	47.9
Easier access	31.1
Different recreation opportunities	20.6
Community gardening	3.0
Group recreation opportunities	6.0
See neighborhood friends	6.4
Easier to take children	11.2
Other	2.2
Not applicable/ Don't visit	13.1

6b Frequency of visits to the local park

Median Days per Year N=198	2.0

6c Time of year most often visiting local park*

Category (N=267)	*%*
Summer	51.7
Fall	35.6
Winter	34.8
Spring	40.4
All seasons	33.0

6d Day of week most often visiting local park*

Category (N=267)	*%*
Weekends	44.6
Weekdays	19.9

6e Time of day most often visiting local park*

Category (N=267)	*%*
Morning	30.7
Afternoon	30.0
Evening	19.5

7 Source of knowledge of SMM fauna and flora*

Reason (N=267)	*%*	*Reason*	*%*
Ranger-led nature walks	6.7	Television	21.3
School	19.1	Previous visits	34.8
Park brochures	24.3	Family / friends	30.7
Park signs	31.1	Live in the area	25.8
Nature observation	45.7	Organized groups	4.1
Books	35.2	Internet	1.1
Magazines	28.5	Other	1.1

8 Most important reason to protect SMM*

Reason (N=267)	*%*
To provide recreational opportunities	20.2
To provide habitat for plants and animals	53.9
Both	21.0
No opinion	2.2
Other	0.4

9 a Impact of other users on trail experience

Impact (N=264)	*%*
Yes	79.9
No	20.1
Total	100.0

9 b Strength of impact of other users on trail experience

Category	*N =*	*Mean*	*Exclusive mean*	*Key*
Mountain biking	180	2.90	2.83	*5 = Strongly positive*
Horseback riding	165	3.56	3.51	*4 = Somewhat positive*
Hiking	204	4.68	4.73	*3 = Neither*
Running / jogging	198	4.29	4.27	*2 = Somewhat negative*
Picnicking	179	4.07	4.08	*1 = strongly negative*
Dog walking	198	3.48	3.40	
Other	27	2.00	***	

9 c Why do other trail user activities present a problem*

Reason (N=267)	*%*
Damage plants	21.3
Uncooperative behavior	28.1

Frighten wildlife	19.9
Startle people	23.2
Make too much noise	16.9
Litter	24.3
Scare horses	5.6
Leave animal wastes	30.3
Potential collisions / injury	19.5
Dogs off leash	2.6
Other	3.0

10a Travel time to trail

Median Minutes N=256	15.0

Mode of travel to trail

Travel Mode (N=267)	*%*
Car / truck / SUV / van	92.1
Public transportation	0.0
Group transportation (club or organization)	0.0
Motorcycle / scooter	0.0
Bicycle	2.2
Walk / jog	4.9
Horseback	0.7
Other	0.0
Total	100.0

13 Participants in group

Group Type	*N =*	*Median*
People	267	2.0
Animals	105	0.0

Type of group

Group type (N=266)	*%*
Alone	37.2
Family	22.6
Friends	31.6
Family and Friends	7.1
Religious Organization / Church	0.0
Youth club	0.4
Educational	0.7
Other organization or club	0.4

Other	0.0
Total	100.0

Age

Median Age N=267	38.0

16 Sex

Sex (N=267)	*%*
M	50.6
F	49.4
Total	100.0

17a Children under 18

Children (N=266)	*%*
Yes	21.4
No	78.6
Total	100.0

17b Number of children under 18

Median Number of Children N=57	2.0

18 Type of household

Household Type (N=261)	*%*
Single	38.3
Unrelated adults	11.1
Couple without children under 18	28.0
Single parent with children under 18	3.4
Two parents with children under 18	13.8
Multigenerational household	5.4
Total	100.0

19 Housing tenure

Tenure (N = 262)	*%*
Owned	52.7
Rented	47.3
Total	100.0

20 Education

Educational Attainment (N=260)	*%*
High school student	4.6
No high school diploma or GED	0.0
High school graduate or GED	5.0
College	90.3
Total	100.0

21 Hispanic/Latino

Hispanic/Latino (N=253)	*%*
Yes	11.5
No	88.5
Total	100.0

22 Race

Race (N=267)	*%*
American Indian or Alaska native	0.7
Asian	4.9
Black or African-American	3.0
Native Hawaiian or Pacific Islander	0.4
White	71.2
Do not wish to answer	19.1
Other	0.8
Total	100.0

23a Country of origin

Country (N=262)	*%*
USA	77.5
Iran	3.8
United Kingdom	2.3
Germany	1.9
South Africa	1.1
France	1.1
Other	12.3
Total	100.0

23b Years in USA

Median Years in USA N=57	22.0

24 Language(s) spoken at home*

Language (N=242)	*%*
English	93.8
Spanish	9.0
Farsi	2.9
French	2.5

25 Household income

Household Income (N=255)	*%*
>$25k	6.7
$25k-50k	19.2
$50k-75k	17.6
$75k-100k	12.2
$100k-125k	7.5
$125k-150k	8.2
$150k-175k	5.1
$175k-200k	3.5
<$200k	9.4
Do not wish to answer	10.6
Total	100.0

26 Physical disability

Disability (N=267)	*%*
Yes	2.6
No	97.4
Total	100.0

27 Barriers at this location

Barriers – this site (N=264)	*%*
Yes	3.0
No	97.0
Total	100.0

28a Barriers at other SMMNRA sites

Barriers – other sites (N=263)	*%*
Yes	9.1
No	90.9
Total	100.0

*Percentages will not add up to 100%, since respondents checked all categories that applied.

Appendix 7b – Cross Tabulations: eastern Trails

Appendix 7b – Cross tabs for eastern Sites

4b Is this the trail you normally visit

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Yes	78.9	58.3	90.0	88.9	96.2	100.0	66.7	81.4

[1] Chi-Square test was used to examine the difference across user groups.
* p<.05, ** p<.01, *** p<.001

5a Frequency of SMMNRA visits

User Group	Hikers	Mountain bikers	Jogger	Sightseers	Dog walkers	Horseback riders	Picnickers	Total
Mean Hours on trail	7.52	7.92	9.38	6.22	11.42	9.00	5.00	8.11

[1] One-way ANOVA was used to examine the mean difference across user groups.
* p<.05, ** p<.01, *** p<.001

5b Time of year SMMNRA visited most often

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Summer	73.3	91.7	95.5	80.0	88.5	100.0	50.0	78.0
Fall**	59.3	83.3	77.3	50.0	76.9	100.0	0	63.2
Winter**	55.8	91.7	77.3	50.0	76.9	100.0	0	61.2
Spring*	66.9	91.7	86.4	60.0	76.9	100.0	25.0	70.4

[1] Chi-Square test was used to examine the difference across user groups.
* p<.05, ** p<.01, *** p<.001

6a Reason for visiting local or neighborhood park

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Limited time	49.4	58.3	36.4	50.0	42.3	0	50.0	47.2
Easier access	30.8	41.7	22.7	50.0	26.9	0	50.0	30.8
Different recreation opportunities	20.3	33.3	18.2	30.0	15.4	0	50.0	20.8
Community gardening	2.9	0	0	10.0	0	0	25.0	2.8
Group recreation opportunities	6.4	8.3	9.1	10.0	0	0	25.0	6.4
See neighborhood friends*	6.4	8.3	0	30.0	0	0	25.0	6.4
Easier to take children	12.2	8.3	22.7	10.0	0	25.0	0	11.6
Other	1.7	0	0	10.0	7.7	0	0	2.4
Not applicable/ Don't visit	14.0	0	18.2	20.0	7.7	25.0	25.0	13.6

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

6c Time of year most often visiting local park

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Summer	52.3	58.3	50.0	80.0	38.5	0	50.0	51.2
Fall	37.2	41.7	40.9	50.0	30.8	0	25.0	36.8
Winter	36.0	41.7	40.9	50.0	30.8	25.0	25.0	36.4
Spring	41.9	41.7	50.0	50.0	34.6	0	25.0	41.2

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

Source of knowledge of SMM fauna and flora

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Ranger-led nature walks	8.7	0	0	10.0	3.8	0	0	6.8
School	19.8	8.3	18.2	40.0	11.5	0	0	18.4
Park brochures	29.1	33.3	9.1	10.0	11.5	0	0	24.0
Park signs	34.9	25.0	31.8	10.0	19.2	0	0	30.4
Nature observation	47.1	58.3	36.4	20.0	34.6	75.0	25.0	44.4
Books	38.4	33.3	36.4	10.0	19.2	75.0	0	34.8
Magazines	33.1	25.0	22.7	20.0	11.5	25.0	0	28.4

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

8 Most important reason to protect SMM

User Group	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
To provide recreational opportunities	18.6	8.3	22.7	20.0	38.5	0	50.0	20.8
To provide habitat for plants and animals	55.2	66.7	68.2	60.0	38.5	25.0	50.0	54.8
Both	20.3	25.0	9.1	10.0	19.2	75.0	0	19.6
No opinion	2.3	0	0	10.0	3.8	0	0	2.4
Other	0.6	0	0	0	0	0	0	0.4

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

14 Type of group

*Type of Group****	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Alone	35.7	58.3	31.8	20.0	50.0	25.0	25.0	36.9
Family	24.6	0	4.5	30.0	26.9	25.0	75.0	22.9
Friends	29.8	33.3	50.0	50.0	23.1	25.0	0	31.3
Family and friends	8.2	8.3	13.6	0	0	0	0	7.2
Religious Organization / Church	0	0	0	0	0	0	0	0
Youth club	0.6	0	0	0	0	0	0	0.4
Educational	1.2	0	0	0	0	0	0	0.8
Other organization or club	0	0	0	0	0	25.0	0	0.4

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

18 Type of household

Type of Household	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Single	34.7	72.7	33.3	55.6	28.0	0	50.0	36.1
Unrelated adults	10.6	0	23.8	11.1	16.0	0	0	11.5
Couple without children under 18	27.6	9.1	23.8	33.3	44.0	50.0	50.0	29.1
Single parent with children under 18	4.1	0	0	0	4.0	25.0	0	3.7
Two parents with children under 18	14.7	18.2	19.0	0	8.0	25.0	0	13.9
Multigenerational household	8.2	0	0	0	0	0	0	5.7

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

19 Housing tenure

Housing Tenure	Hikers (%)	Mountain bikers (%)	Jogger (%)	Sightseers (%)	Dog walkers (%)	Horseback riders (%)	Picnickers (%)	Total (%)
Owned	55.6	54.5	31.8	30.0	45.8	100.0	25.0	51.6
Rented	44.4	45.5	68.2	70.0	54.2	0	75.0	48.4

[1] Chi-Square test was used to examine the difference across user groups.

* p<.05, ** p<.01, *** p<.001

Demographics

User group	Mean Age[1]	Sex (%) ***[2]		Education completed (%)				Race/Ethnicity (%)							Median Income Range
		M	F	HS Student	No HS	HS/GED	College	Nat	Asian	Hisp	Afr/Am	PacIsl	White	Other	
Hikers	41.58	45.9	54.1	3.5	0	4.7	91.8	0	4.7	10.3	2.3	0	73.3	0.6	$50,001-$75,000
Mt. bikers	36.00	100.0	0	18.2	0	0	81.8	0	8.3	11.1	0	0	66.7	0	$25,000-$50,000
Joggers	36.82	59.1	40.9	4.5	0	9.1	86.4	4.5	4.5	13.6	4.5	4.5	63.6	4.5	$25,000-$50,000
Sightseers	37.90	100.0	0	20.0	0	10.0	70.0	0	0	10.0	0	0	70.0	0	$25,000-$75,000
Dog walkers	39.15	38.5	61.5	0	0	4.0	92.0	3.8	3.8	13.0	7.7	0	73.1	0	Greater than $200,000
Horseback riders	48.25	25.0	75.0	0	0	0	100.0	0	0	0	0	0	100.0	0	$75,001-$100,000 & $125,001-$150,000
Picnickers	43.25	75.0	25.0	0	0	0	100.0	0	0	25.0	0	0	50.0	0	$75,001-$100,000
Total	40.63	51.2	48.8	4.5	0	4.9	90.2	0.8	4.4	11.0	2.8	0.4	72.8	0.8	$25,000-$75,000

[1] For sex, education level, race and income, Chi-Square test was used to examine the difference across user groups.

[2] For age, one-way ANOVA was used to test the difference across user groups.

* p<.05, ** p<.01, *** p<.001