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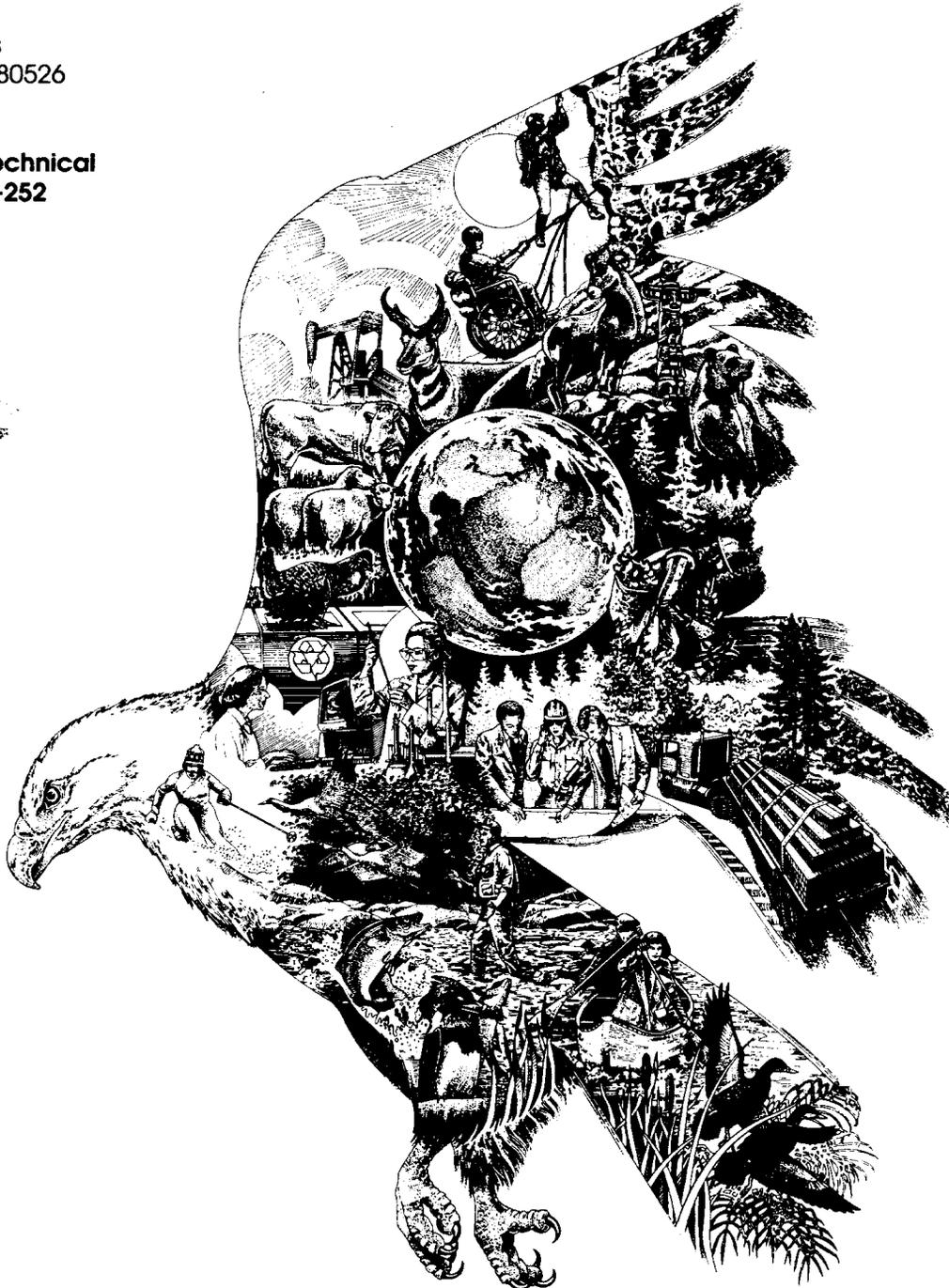
# Customer Diversity and the Future Demand for Outdoor Recreation

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General Technical  
Report RM-252



### **Acknowledgements**

I thank Dr. James E. Christensen (The Ohio State University) and Dr. Joseph T. O'Leary (Purdue University) for their invaluable contributions to the work on which this report is based. Their contributions go well beyond the reports cited in this document. I also thank Deborah Carr, Dr. Deborah Chavez, Dr. Donald B.K. English, and Dr. Rod Warnick for their helpful comments on an earlier draft. I also thank the Illinois Department of Conservation, and the Survey Research Laboratory at the University of Illinois for providing the data for Illinois used in this report.

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# **Customer Diversity and the Future Demand for Outdoor Recreation**

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# Customer Diversity and the Future Demand for Outdoor Recreation

John F. Dwyer

## IMPLICATIONS

Changes in outdoor recreation preferences and behavior that may accompany projected increases in aging, racial and ethnic diversity, and urban residence have important implications for recreation resource planners and managers.

The U.S. population, which grew at 2% per year in the 1950s and 1% per year in the 1980s, is expected to grow at about 0.5% per year over the next several decades, before reaching a maximum around 2030-2040, and then will decline slowly.

Increased aging of the population is accompanying slower population growth and longer life spans. The age distribution of the population is shifting from younger to older; and there are implications for all age classes. In 1900, the median age was 23; it increased to 30 in 1980, and is expected to reach 36 by the year 2000, and 41 by the year 2025. The short-term projections are for an increasing proportion in "middle age," while the long-term trend projects a decrease in the portion of the population under 45 years of age and an increase in the proportion over 45.

There will be increased racial and ethnic diversity. Between 1990 and 2025, the U.S. population is expected to increase by 50 million, of whom 17 million will be Hispanic Americans, 14 million African Americans, and 10 million from other groups. Thus, 81% of the increase in population will be in minority groups.

There are prospects for increased urban residence, also. The 1980s witnessed a return to the long-term trend of greater growth in metropolitan areas than in non-metropolitan areas. The nation's non-metropolitan areas grew at only half the rate of their metropolitan counterparts, with many of the Nation's largest Standard Metropolitan Statistical Areas (SMSAs) attaining increases of 20% or more.

Predicting the implications of demographic change for future outdoor recreation behavior is a difficult challenge for several reasons. There is limited information available on trends in recreation participa-

tion over time. Recreation behavior is complex and difficult to explain and interpret. There are several important trends in lifestyles that appear to influence outdoor recreation participation. Many of the variables thought to influence recreation behavior are correlated with each other, making it difficult to sort out the association between a particular variable and recreation participation.

Examination of the percent of U.S. adults participating in recreation activities at the national, state, regional, and local levels, from several household surveys, reveals distinct patterns that are associated with the current distribution of population with respect to age, race and ethnicity, and urban or rural residence. When we examine the participation patterns of groups at different ages, there is usually a decided decrease in the proportion of older groups participating in most outdoor recreation activities; and the major differences between activities is when the decline starts and how steep it is. For example, one-fifth of adults age 18-24 reported participation in running and jogging; but for those age 45-54, participation is one-half of that rate; and individuals over 65 participate at one-tenth of that rate. Alternately, the percent of adults participating in birdwatching rises steadily to a peak of 10% for adults age 55-64, but then decreases slowly (fig. 1 and table 5).

There also are significant differences in participation across racial and ethnic groups, with significantly lower participation for African Americans in activities taking place in a wildland environment, far from urban areas, or involving water, ice, or snow. For example, African Americans report participation in hiking and backpacking at one-tenth the rate of whites; but Hispanic Americans and other groups report higher participation than whites. However, for the more urban-oriented athletic activity of running and jogging, African Americans report higher participation than whites, as do Hispanic and "other" groups (fig. 2 and table 1).

There are significant differences in participation across a rural to urban continuum, with participation patterns reflecting the availability of opportunities in these areas as well as lifestyles. For example, there is a higher rate of participation in hunting and fishing in rural areas, and higher participation in activities requiring specialized facilities in urban areas (i.e., golf and tennis) (fig. 3 and table 9).

Many of the differences in recreation participation associated with age, race and ethnicity, and urban residence remain significant when other individual, household, and location variables are considered. However, it is not clear to what extent these associations, derived from analysis of a wide range of individuals at a given point in time, will provide useful predictions of recreation behavior in the future.

The cohort-component projection model developed by Murdock et. al. (1990a, 1990b, 1991, 1992) is a useful tool to project the implications of demographic changes for participation in outdoor recreation activities. The application of their model on the national scale (Murdock et. al. 1991) shows that with U.S. Bureau of the Census projections on aging and increases in racial and ethnic minority groups, and participation rates by age and ethnic group derived from the 1986 survey for the President's Commission on Americans Outdoors (assuming no changes in these rates over time), there will be important changes in outdoor recreation participation and in the age and racial and ethnic structure of participants. Under these assumptions, they project a decline in the number of individuals participating in backpacking, in-

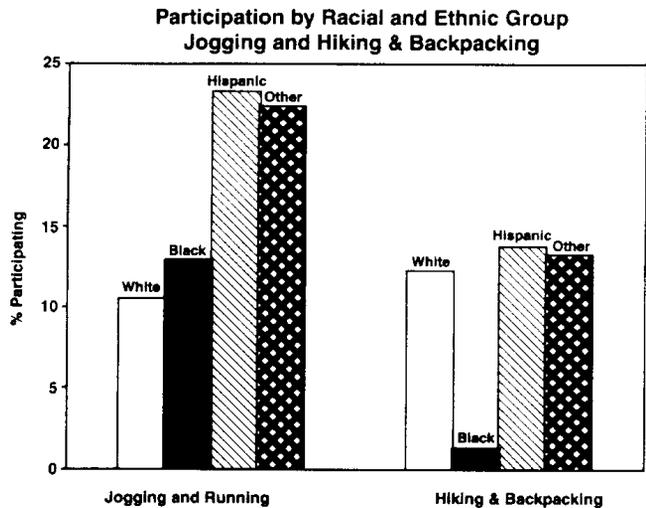


Figure 2.—Participation by racial and ethnic group, for jogging and hiking and backpacking (based on table 1).

creases in the numbers participating in birdwatching at greater rate than the projected growth in population, and increases in other activities at a slower rate than population growth (i.e., hunting, day hiking, camping in a tent, walking for pleasure, and picnicking). Much of the differences between projected changes in participation and projected increases in population are attributed to aging of the population instead of increased racial and ethnic diversity. Minority participants are projected to make up 75% or more of the growth in participants in each of the seven activities studied.

When they apply their cohort-component projection model to Texas (Murdock et. al. 1990), which has a relatively young population and a large and rapidly growing proportion of minority groups, the implications of shifts in age and racial and ethnic structure on participation in selected recreation activities are even more significant. For all 10 activities included in the analysis, rates of growth in participation between 1986 and 2025 are substantially less than the growth rate of the population during that same period (i.e., 45% to 89% of population growth); and minority groups (particularly Hispanic Americans) are projected to make up a substantial portion of the growth in number of participants (i.e., 63% to 97%). It is not difficult to speculate that with some urban areas, where we expect major increases in minority populations, the model would project even more substantial changes.

Murdock et. al. (1990a, 1990b, 1991, 1992) have done a good job of projecting the changes in outdoor

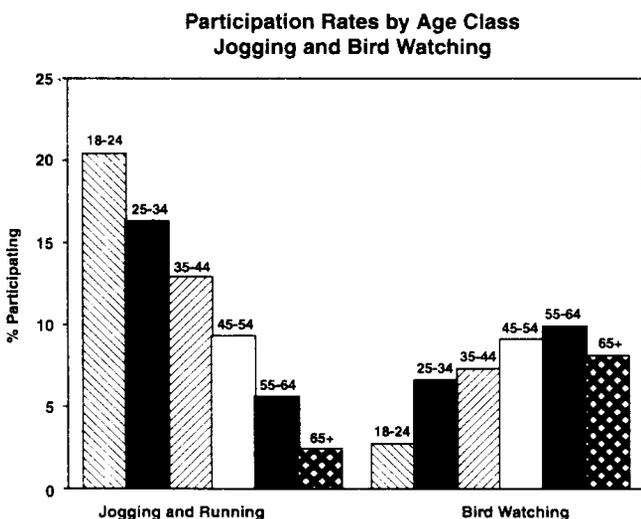


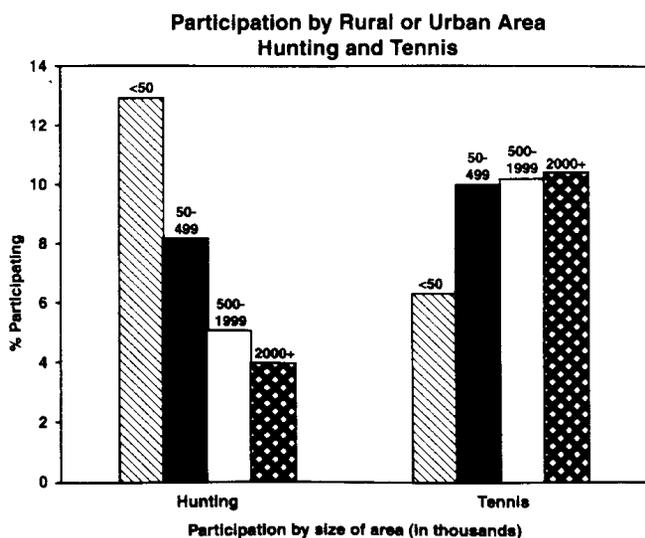
Figure 1.—Participation rates, by age class, for jogging and bird watching (based on table 5).

recreation participation that might accompany changing age and racial and ethnic structure, assuming all else remains constant. However, in outdoor recreation, all else is not constant. There are important concerns about the appropriateness of using participation data from a single year, in conjunction with population projections, to project participation over the years ahead.

The use of participation rates by age classes from a single survey to predict future participation by age groups assumes that today's younger adults will behave much like today's older adults, when the former reach the age of the older. If this were the case in the past, we would expect to find constant activity-specific participation rates by age class over time; but this does not seem to be the case. English and Cordell (1985) report increasing participation rates by age class across three national surveys (1960, 1972, 1982) and five outdoor recreation activities, and suggest that those increases are the result of significant period and cohort effects. Christensen (1992a) confirms strong cohort effects in four out of the five activities analyzed by English and Cordell (1985). The work of Christensen (1992a) and Warnick and Loomis (1990) (both using Simmons Market Data) suggests declining participation rates by age class, for a number of activities in the 1980s. The longest time series of participation data by age class comes from the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (1955-1985), which offers mixed results on trends in participation rates by age classes. Christensen (1992a) reports that changing

rates are more useful than changing distribution of the population in explaining the trend in hunting and fishing participation over time. Percent participating in hunting by age class has been stable to downward over the period 1955-1985, with no suggestion of an increase in participation rates by age class over time. For fishing, the pattern is different, with fairly regular increases in percent participating until 1975, and then a drop to 1980, and then a leveling off. Perhaps the fishing data offers some explanation for the differences in trends in participation rates found by English and Cordell (1985) and Christensen (1992a, 1992b). It is possible that participation rates by age group increased in the past; but in the 1980s they leveled off and perhaps began to decline. There is little historical evidence to suggest changes in the pattern of participation rates across racial and ethnic groups over time. Christensen's use of Simmons Market data suggest similar patterns of change over time for African Americans and whites, as does limited data from the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation for 1980 and 1985. Christensen's (1992b) projection of participation rates for hunting and fishing over the period 1985-2005 reflect, in all age classes, an increase in fishing participation rates and slight declines for hunting. Christensen's (1992b) use of projected participation rates from that data and U.S. population projections (Spencer 1989) projects an 11% increase in hunters and a 57% increase in fishers. If participation rates for 1885 had been used, projections would have been an 18% increase in hunters and a 19% increase in fishers.

While there are ample grounds to challenge using constant participation rates by age class and racial and ethnic groups over time, there is very little evidence to guide the estimation of rates for the future. It is possible to argue that there will be a convergence of activity-specific participation rates by racial and ethnic groups that will accompany increasing affluence and the assimilation process. Alternately, it can be argued that there will be maintenance of differences between groups, as minority groups seek to preserve racial and ethnic identity. Discrimination plays a key role in outdoor recreation participation; and future trends in participation rates will also depend on trends in relations between various racial and ethnic groups. It also can be argued that participation rates of older adults will be higher than in the past, in response to high levels of



**Figure 3.—Participation by rural or urban area, for hunting and tennis (based on table 9).**

participation in their younger years, as well as improved health care and changing attitudes towards recreation behavior of this group. At the same time, it also can be argued that some aspects of the aging process will continue to limit participation of older Americans in particular activities.

Possible changes in activity-specific participation rates for age and racial and ethnic groups are the major point of uncertainty in cohort-component projections of participation in particular activities in the future. Changes in these rates could have an important influence on participation in activities, the characteristics of those participants, and their preferences for outdoor recreation opportunities.

At the same time, it is important to recognize that it is reasonable to expect that, over the next several decades, the U.S. population will grow at a somewhat slower rate than in the past, and will become increasingly older, racially and ethnically diverse, and urban. These are significant changes in the market from which outdoor recreation participants come. If current participation rates by age, racial and ethnic background, and urban or rural residence remain relatively constant in the years ahead, participants in many outdoor recreation activities will reflect that change in the population, and the number of participants in a number of activities will grow at a slower rate than the total population. If participation rates for older Americans, racial and ethnic minority groups, and urban residents increase relative to other groups, there will be a relative increase in the number of participants; but participants will be increasingly older, racially and ethnically diverse, and urban.

Although there may be some uncertainty about future participation, because of limited information on future changes in participation rates, there are likely to be changes in the number and characteristics of participants. The implications of these changes are likely to go well beyond participation to other aspects of the recreation experience, and to have implications for design and management of settings and facilities, resource management, focus of visitor programs, information and marketing, and selection and training of staff.

## MANAGEMENT IMPLICATIONS

### Prepare for Change

1. **Outdoor recreation customers are likely to increase in numbers at a slower rate than in the past, and will be increasingly older, urban, and from racial and ethnic minority groups.** The future will bring slower growth in the U.S. population, aging of the population, increased number of racial and ethnic minorities, and increased concentration of the population in urban areas. A significant portion of the growth in outdoor recreation participants will be from racial and ethnic minority groups. Change will be the hallmark of recreation resource management programs even more than in the past, with flexibility and responsiveness becoming increasingly important.
2. **It will be increasingly difficult to predict future outdoor recreation behavior.** Important changes in customers will make it increasingly difficult to predict future demands and preferences. Consequently, it will be critical that researchers, managers, and planners stay in touch with users and user trends. Firms, agencies, associations, and other groups concerned with outdoor recreation often are well aware of changing demographics and their possible implications for outdoor recreation. Many of these groups are undertaking marketing and product development programs aimed at responding to these changes and attempting to alter some of the changes that are currently underway. This adds to the difficulty of making predictions and increases the uncertainty over the accuracy of these predictions.

### Possible Responses to Change

3. **The changes in customers that are currently underway will have wide-ranging implications for recreation resource management programs.** If current participation patterns for individuals of particular ages, race and ethnicity, and urban or rural residence re-

main much as they are, expected changes in the structure of the population will bring important changes in outdoor recreation behavior. Because there will be important changes in activity participation patterns, serious consideration may need to be given to major changes in the design and management of recreation settings, the focus of visitor programs, information and marketing, and the selection and training of those who work with visitors.

4. **Particular attention must be given to the management and use of resources in or near urban centers.** While increases in age, racial and ethnic minorities, and urban residents are nationwide trends, their impacts on recreation behavior may be felt more in some areas than others. With increased concentration of the population in urban areas, increasing numbers of individuals from minority groups in those cities, reduced long-distance recreation travel for all groups, and a tendency for racial and ethnic groups to stay close to home, there are important implications for those who manage outdoor recreation areas in or near cities. This has been recognized in a number of instances, perhaps most noteworthy in southern California, where researchers and managers are working together to meet the needs of a diverse population of users on the national forests and other public lands; and in the increasing attention that is being given to "urban national forests." The experiences in southern California and other urban national forests may provide useful guidance for the management of other areas.

#### **Some Reflections Beyond Participation**

5. **It may be necessary to review fee structures in the years ahead.** With an increasing portion of participants in the older age classes and a fairly widespread practice of offering reduced fees to older Americans, we are moving toward a smaller portion of users paying for the use of particular resources (Murdock et. al. 1990, 1991, 1992). This may call for a reassessment of fee schedules.

6. **The selection of staff and the development of training programs should address the needs of increasingly diverse customers.** If customers are to be increasingly urban, older, and from racial and ethnic minority groups, there are important implications for staffing to meet the needs of these groups. This calls for increased use of minority and older American staff, as well as training all staff to meet the needs of diverse customers, including urbanites. Particular attention should be given to the substantial portion of new customers that are projected to be from racial and ethnic minority groups.
7. **Managers and planners must expand their regular dialogue with their diverse customers, both on site and off site, to be certain that management plans and programs are in tune with customer needs.** "Change" will be the watchword of the years ahead, and keeping in touch with current and prospective customers will be essential. Focus group discussions with users and non-users may be particularly useful.

## **RESEARCH IMPLICATIONS**

### **Improve Models**

1. **Use cohort-component projection models to predict the possible implications of demographic changes on participation in selected outdoor recreation activities at the national, regional, state, and local levels.** In many instances these models will provide useful estimates of changes in customers and recreation behavior that may accompany demographic changes. It may be particularly useful to follow up on the work of Christensen (1992b) and explore changes in future participation that might accompany changes over time in activity-specific participation rates, by age and race and ethnicity. If such an effort is to be effective, it is critical to develop activity-specific participation rates by age and racial and ethnic groups for these models. The model can be expanded to include other demographic variables, such as urban or rural residence and family life cycle, provided

that projections of these variables over time can be obtained and that activity-specific participation rates can be developed for individuals in these categories. Significant variation in racial and ethnic structure of the population at the regional and local levels calls for analysis at these levels, as well as at the national level. However, lack of projections of the size and age structure of racial and ethnic minority groups (i.e., Vietnamese Americans) are likely to limit the use of cohort-component projection models to the major racial and ethnic groups (i.e., Asian Americans).

2. **Explore the effectiveness of alternative models to predict future participation on the basis of demographic variables.** This could include modifications of cohort-projection models, or perhaps other approaches. Recreation participation is complex and is influenced by a wide range of factors. There is unlikely to be one best approach to predicting participation in all instances. Site demand and site choice models are useful for predicting changes in participation with changes in recreation sites; but demographic variables seldom are important in these models. Cohort-projection models provide good estimates of the association between demographic variables and participation; but it is difficult to explicitly reflect changes in the availability or character of sites in these models. It is important that managers and planners decide what kinds of predictions are most important for guiding their key decisions, so that research efforts can be targeted to develop models and approaches to provide that information.

### Analyze Trends

3. **Analyze trends in outdoor recreation participation over time and attempt to identify the components of change.** This effort, which will initially be limited by available data sources, is essential to understand current trends. This can include cohort analysis (English and Cordell 1985), including the extension by Christensen (1992a); as well as addi-

tional work along the lines of Christensen (1992a) to break down changes in participation over time into components such as changing structure of the population and changing participation rates. This effort will provide useful guidance for improvements in predictive models as well as for predicting activity-specific participation rates for use in cohort-component projection models.

4. **Develop cost-effective systems for monitoring site users and obtaining information about where they came from, their age, and their race and ethnicity, what they do at the area, and what attracts them to it.** Find out what users most like and least like about an area. Gather socio-demographic information using definitions that facilitate comparison with the general population to see what segments are being served by existing facilities, programs, and marketing efforts. Summaries of user characteristics, such as those provided by Hartmann and Overdevest (1990), can help managers and planners better understand their customers.

### Improve Data and Interpretation

5. **Work with data from general surveys of the population to better identify the behavior of the general population.** Use data from general population surveys at the national, state, and local levels to monitor recreation participation of various segments of the general population. Information from these kinds of studies has formed the basis for much of this report. It might be useful to archive recreation household studies from the national, state, and local levels in a designated recreation data center. We should also move towards standard definitions of activities and demographic variables that facilitate comparisons across studies and use of U.S. Bureau of the Census data. Household or population surveys can be used to generate activity-specific participation rates for age classes and racial and ethnic groups for use in cohort-component projection models. Where possible, variations in participation patterns

by demographic characteristics and location should be analyzed to help guard against stereotyping the recreation needs and behaviors of groups of individuals.

6. **Initiate studies that focus directly on the recreation behavior and needs of minority groups.** Most household surveys include a relatively small number of representatives of minority groups. This limits the analysis to activities with a fairly high rate of participation by minorities, missing some of the most critical issues. An effort to contact a larger sample of minority users is needed if we are to have realistic assessments of the recreation needs, preferences, and behavior of these rapidly-growing components of the recreation market. This effort is crucial and should be continued over time to establish a base for the evaluation of trends in recreation preferences and behavior by particular groups.
7. **Look carefully at the variations in recreation behavior within racial and ethnic groups, age categories, and urban or rural residence.** Avoid generalizations or stereotypes in discussing recreation behavior of demographic groups. Take particular note of the recreation preferences and behavior of ethnic groups within the broad racial and ethnic categories that are often used, for example Jamaican Americans, Vietnamese Americans, or Mexican Americans. Examples of efforts that begin to focus on ethnic groups include Blahna (1991a, 1991b, 1991c, 1992), Blahna and Black (1993), Carr and Williams (1992), Floyd and Noe (1993), Gobster and Delgado (1993), Taylor (1990), and Woodard (1988). Look at more detailed breakdowns within age categories, particularly for older Americans. Avoid grouping everyone over 65 into a single category, given that people are living longer, staying active, and there appears to be substantial variations in recreation behavior among those over 65. Gobster (1990) points out important differences in how older Americans of various ages use urban trails. Look carefully at breakdowns within an urban to rural continuum, including suburbs, small cities located near large cities, and retirement

communities. Follow up on the work of Kellert (1984) and Schroeder (1983) to further identify variations in preferences and behavior across the urban-suburban continuum in large cities, as well as between cities of varying sizes and locations. These efforts should look for patterns and variation and not develop group stereotypes.

8. **Expand in-depth studies of users and the general public (i.e., including non-users) to help understand current trends and to develop better predictions for the years ahead.** Analyses of user and general population surveys often helps identify the situation and trends, but does not provide a great deal of insight into what is behind the changes that are underway. That insight is most effectively gained from more focused and in-depth studies. These studies are especially critical with ethnic minorities, older Americans, and others who face significant barriers to their use and enjoyment of outdoor recreation opportunities. Meaningful analysis often calls for studies that focus directly on these important groups and their concerns. Focus group discussions appear to be an effective way of identifying these concerns and outlining ways to overcome them. These studies should involve both participants and non-participants. Such studies can help us understand trends and provide greater insight into possible future developments. It might be particularly useful to focus attention on members of particular groups that exhibit preferences and behaviors that go beyond "tradition," to try to explore ways to facilitate involvement in a wider range of activities. In-depth studies often are most effective when interpreted in context with household surveys.
9. **Expand the scope of analysis beyond percent participating to number of participants (market size), and number of participant days (market volume).** Although it is useful to know the likelihood of participation in an activity by individuals in a particular demographic group, many management decisions require information on the number of participants and the amount of participation.

## Look Beyond Activities

10. **Look beyond outdoor recreation activities to other aspects of the recreation experience.** Much of the work on trends has stressed prediction of participation in activities. Although this is useful, there needs to be increased work on predicting future expectations for settings, facilities, programs, staffing, information, etc. In fact, the most significant implications of increased aging, racial and ethnic diversity, and urban residence may be in these areas. Careful consideration should be given to efforts to predict the kinds of outdoor recreation environments (habitats) and programs that will be sought. Such information could provide useful guides for environmental management, as well as for facility and program development. This can build on some promising recent work in this area by Allison (1988), Baas (1992a, 1992b), Carr and Williams (1993), Carr and Chavez (1993), Chavez (1993), Dwyer and Gobster (1991, 1992), Ewert and Pfister (1992), Gobster (1991a, 1991b), Hutchison (1987, 1988), Irwin, Gartney, and Phelps (1990), Kaplan and Talbot (1988), Medina (1983), Pfister and Simcox (1992), Simcox (1990), Simcox and Pfister (1990), and Talbot and Kaplan (1993, 1984).
11. **We need to understand more about recreation travel.** Nearly all outdoor recreation involves some travel; and a fundamental aspect of recreation choice is where to go to engage in recreation. However, little is known

about travel decisions, despite their profound significance. We predict future participation in activities, but do not specify where that participation will take place. We ask people what they do, but are less likely to ask them where they go; and when we do ask where, we have difficulty capturing and analyzing where people go. We need to be able to provide better information on where people are likely to go for outdoor recreation, so that managers of particular areas can have a better idea of what to expect, and planners will know where to develop new opportunities. This effort might help explain substantial increases in recreation use on the national forests (fig. 4) at a time when participation in many outdoor activities is increasing at a slow rate.

12. **We need to understand more about what attracts people to particular sites or makes them avoid others.** What attributes of outdoor recreation sites and programs are likely to influence people's choices of what sites to visit? There is evidence to suggest that changing age and racial and ethnic structure of the population will influence people's preferences for sites; that kind of information is important to site managers. Analysis of site choices should include the physical, biological, managerial, and social attributes of the site, as well as the outdoor environment that surrounds the site, so that the implications of resource management programs on recreation experiences can be evaluated.

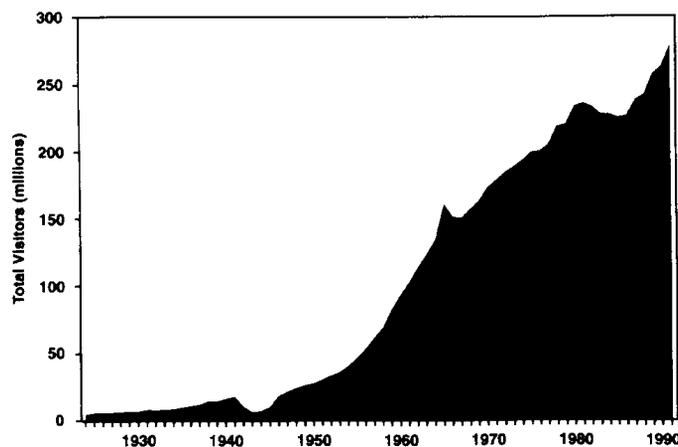


Figure 4.—Recreational use of the national forests, 1924-1991.

## INTRODUCTION

Recreation resource planners and managers, who must deal with the challenges of rapidly increasing and diversifying use of recreation facilities and programs, need information about the implications of population changes for the future demands of recreation users. Early recreation research gave considerable attention to predicting future participation in recreation activities from demographic variables. Increasing recreation activity was tied to increases in population, income, mobility, and leisure time. That work was widely reported and often used to support expansion of outdoor recreation facilities and programs (Clawson 1985). More recently, substantially lower rates of growth in population, income, mobility, and leisure time have brought less emphasis on growth, and more attention to the increasing diversity of the population and its implications for recreation resource management.

Identifying the likely change in recreation participation and the associated resource demands that might accompany demographic changes, such as aging, growth in racial and ethnic minorities, and increased urbanization, is a difficult challenge that is complicated for several reasons.

1. **Limited information is available on trends in recreation participation over time.** There have been relatively few studies of recreation trends. Those that were carried out usually focused on participation in selected activities, with little attention to trends in preferences for settings, facilities, locations, programs, or other attributes of the recreation experience. Available studies often lack comparability, partly because of significant changes in outdoor recreation over time. Also, they have not always included variables that are currently of interest, such as race and ethnicity. Most studies have concentrated on site or program users, rather than the general public. Consequently, there is limited information on the characteristics of those who do not participate in recreation activities or use particular types of sites, their perceptions and preferences, or barriers to their participation. A notable exception to the lack of continuing studies of trends is the National Survey of Fishing, Hunting, and Wildlife-Asso-

ciated Recreation, a household survey conducted every 5 years since 1955. However, racial and ethnic variables have been included in only the last two reports of the surveys (1980 and 1985); and those reports only provide information by white, African American, and "other" race and ethnicity. Wildlife-associated recreation has been included since 1975; but, in 1980, there was a major change in definitions. There are other problems interpreting trends from that data (and other studies), given the changing character of hunting, fishing, and wildlife-associated recreation, and changes in the definitions of the demographic variables (including urban and rural) collected.

2. **Recreation behavior is complex and difficult to explain and interpret.** Recreation behavior is influenced by many variables, in addition to the socio-demographic characteristics of individuals, including the physical, biological, managerial, and social attributes of recreation opportunities; individual and group goals and preferences; the availability of equipment, skills and experience, leisure time, and companions to participate with; and knowledge of and accessibility to recreation opportunities. Demographic variables generally explain only a relatively small portion of the variation in participation in recreation activities (Kelly 1980), and have been even less useful for predicting preferences for settings, facilities, programs, locations, etc.
3. **Several important trends in lifestyles appear to influence outdoor recreation participation.** These include changes in the availability of leisure time, the cost of travel, the propensity to take long vacation trips, family size and structure, and interest in and concern for the natural environment. Each of these trends can be associated with some aspects of recreation behavior; but, it often is difficult to separate that association from the other trends. Under these circumstances, it is difficult to understand current trends in outdoor recreation participation or to make predictions about the future.

4. **Many of the variables thought to influence recreation behavior are correlated with each other, making it difficult to sort out the association between a particular variable and recreation participation.** For example, some members of racial and ethnic minority groups tend to live in urban areas, have low incomes, and include a relatively large proportion of younger people. If the recreation behavior of these groups differs from others, then what portion of that difference can be attributed to ethnic background, urban location, relatively low incomes, or relatively young ages? Also, to what extent was the rapid growth in outdoor recreation participation during the 1960s attributable to population growth, increasing income, and increased leisure; as compared to changing tastes and preferences and increases in the availability of facilities?

This report examines the implications of increased aging, racial and ethnic diversity, and urban residence for outdoor recreation behavior. It draws heavily from the works of others and the analysis of data previously collected by others. The discussion includes variation in outdoor recreation behavior at the national, state, and local levels associated with age, race and ethnicity, and urban residence, both singly and with other individual, household, and location variables taken into account. Cohort-component projection models are presented as one means of projecting changes in participation in outdoor recreation activities and the characteristics of participants that may accompany demographic changes.

## FINDINGS

### DEMOGRAPHIC TRENDS

The U.S. population will grow more slowly than in the past, will age significantly, will have larger minority components, and will be more urban. The overview of demographic trends presented is drawn from Spencer (1984, 1986, 1989) and Murdock et. al. (1990a, 1990b, 1991, 1992)

The U.S. population, which grew at 2% per year in the 1950s and 1% per year in the 1980s, is expected to grow at about 0.5% per year over the next several decades before reaching a maximum around 2030-2040, when it will begin to decline slowly.

The age distribution of the population is shifting from younger to older. In 1900, the median age was 23; it increased to 30 in 1980; and it is expected to reach 36 by the year 2000, and 41 by the year 2025. The short-term trend calls for more of the population to be made up by those in "middle age," while long-term trends call for a decrease in the portion of the population under 45 years of age, and an increase in the proportion over 45. In 1990, 36% of the population was less than 25 years old; but that percentage is expected to decrease to 34% in 2000 and 29% in 2025. Individuals 18-24 years of age accounted for 10.4% of the population in 1990, but are expected to make up only 8.3% of the total by the year 2025. The number of individuals less than 25 years of age is expected to decline by 6 million between 1980 and 2025. Individuals 65 and older are expected to increase from 12.6% of the population in 1990 to 21% of the total in 2025. The number older than 65 is expected to start to increase markedly after 2010, with entry of the post WWII "baby boomers" who will continue to swell the ranks of the "middle aged" until that time.

During the 1990s there is expected to be a decrease in the proportion of the population age 34 and younger (except for a slight increase in the proportion age 14-17), but an increase in the proportion of the population age 35 and above.

Racial and ethnic diversity will increase. Between 1990 and 2025, the U.S. population is expected to increase by 50 million, of whom 17 million will be Hispanic Americans, 14 million African Americans, and 10 million will be from "other" groups. Thus, 81% of the increase in population will be in minority groups. The number of whites in the U.S. population will increase by 12%; African Americans will increase by 47%; those of "other" races will increase by 90%; and persons of Spanish origin will increase by 77%. During the period 1990-2025, the portion of the U.S. population that is minority will increase from 24% to 35%, with African Americans increasing from 12% to 15% of the total, Spanish origin from 9% to 13.1% of the total, and "others" from 3.8% to 6.5% of the total. Projections call for increasing proportions of the population in "minority" groups through at least the year 2080. While growth in racial and ethnic minority groups will be widespread, there will be areas of concentration as well. Murdock et. al. (1992) point out that the three fastest growing states during the 1980s (California, Florida, and Texas) are among the most diverse states. California and Texas are projected to have more than 50% minority residents by 2025.

More Americans will be urban residents (Luloff and Krannich 1990). The 1980s witnessed a return to the long-term trend of greater growth in metropolitan areas than in non-metropolitan areas. The Nation's non-metropolitan areas grew at only half the rate of the metropolitan areas, with many of the Nation's largest standard metropolitan statistical areas (SMSA's) increasing by 20% or more (including Atlanta, Dallas, Houston, Phoenix, Riverside-San Bernadino, San Diego, and Tampa - St. Petersburg). Eight states had at least 90% of their population residing in metropolitan areas in 1987. In contrast, the Nation's most rural states experienced only moderate rates of growth (e.g., Idaho 8%, Vermont 11%, Montana 4%, South Dakota 3%, and Wyoming 9.5%).

Other demographic changes at work, including changes in household size and composition, also have important implications for recreation behavior.

### SIMPLE COMPARISONS

This section examines simple comparisons between each demographic variable and participation in outdoor recreation activities. Throughout this report, participation is defined as percent of the population engaging in an activity, using a site, or taking a trip one or more times in the previous 12 months.

### Racial and Ethnic

Comparisons of the outdoor recreation participation patterns of racial and ethnic groups mostly focused on African Americans and whites (Edwards 1981, O'Leary and Benjamin 1982, Stamps and Stamps 1985, Washburne 1978, Washburne and Wall 1980). With more Hispanic Americans, Asian Americans, and "other" racial and ethnic groups, and prospects for substantial increases in their populations, the analysis reported here also includes these "other" racial and ethnic groups.

Table 1 presents the percent of a large, nationwide sample of African Americans, Hispanic Americans, whites, and "other" groups who reported participation in a wide range of recreation activities (Nadkarni and O'Leary 1992a). These data, which include responses from 18,450 individuals, were derived from the U.S. Pleasure Travel Market Study, conducted in 1989, by Longwoods Research Group Ltd. There are

Table 1.—Recreation activities of U.S. adults-1989; percent participating by racial and ethnic group.

Activity	White (14,787)	Black (2,024)	Hispanic (1,184)	Other (455)
Swimming	36.6+-	15.1---	37.3+-	45.9+++
Bicycling	27.7+-	17.3---	36.3++	40.7++
Freshwater fishing	21.3+	10.3---	21.4+	20.8+
Camping	20.6++	2.7---	15.5+-	19.5++
Aerobics	15.0---	19.6+	20.0+	22.8+
Jogging/running	10.5---	12.9++	23.3++	22.4++
Golf	13.1++	2.3---	6.3+-	10.8++
Weight lifting	10.2--	11.2--	21.0++	22.4++
Hiking/backpacking	12.3+	1.3---	13.8+	13.3+
Tennis	8.7--	8.0--	12.1++	25.0+++
Power boating	9.5+++	1.7---	3.8+	5.6+
Hunting	8.3+++	2.4--	6.0++	2.3--
Saltwater fishing	7.2+-	3.1---	12.7++	11.5++
Bird watching	7.9++	2.2---	7.0+	5.3+
Downhill skiing	6.3+-	1.3---	8.1++	10.9++
Waterskiing	6.8++	0.3---	7.0++	4.3+-
Horseback riding	5.9+-	3.8--	7.1+	8.4++
Canoeing	6.4++	1.1---	2.4+-	4.7++
Racquetball	4.9+-	2.7---	11.0++	12.3++
Sailing	4.4+	0.8---	5.1+	4.3+
Cross-country skiing	3.5+	0.5---	3.8+	2.0+
Mountain climbing	3.1++	0.0---	1.6+-	3.8++
Snowmobiling	2.3++	0.4--	2.7++	0.8--
Whitewater rafting	2.1++	0.3---	1.1+-	1.3+
Scuba diving	2.0+	0.2---	2.7+-	5.8+++
Wind surfing	0.9++	0.0--	1.0++	0.0--
Hot air ballooning	0.8+	0.2--	0.5	0.4
Squash	0.3+-	0.0---	0.3+	1.0++
Hang gliding	0.1-	0.0--	0.4+-	1.3+++

Differences among racial and ethnic groups are significant at 0.05 level for each activity.

+ Percent participating is significantly higher than another group.

- Percent participating is significantly lower than another group.

Derived from the Travel USA Data for 1989 (See Nadkarni and O'Leary 1992a).

statistically significant differences across racial and ethnic groups for each of the 29 activities. The most distinct pattern among these racial and ethnic groups is that African Americans are significantly less likely than the three other groups to participate in many of the outdoor recreation activities studied, particularly those that take place in a wildland setting (i.e., mountain climbing, hiking and backpacking, camping, canoeing), or involve water, snow, and ice (i.e., swimming, scuba diving, waterskiing, whitewater rafting, fresh-water fishing, salt-water fishing cross-country skiing, downhill skiing, powerboating, sailing). African Americans also are significantly less

likely than the three other groups to participate in bicycling, bird watching, horseback riding, golf, racquetball, and squash. In some athletic activities (aerobics, running and jogging), African Americans are significantly more likely than whites to participate. There is a tendency for one or more of the three "minority groups" to have significantly greater participation than whites in sports and athletic activities such as swimming, bicycling, aerobics, jogging and running, weight lifting, racquetball, and tennis; as well as saltwater fishing, downhill skiing, scuba diving, squash, and hang gliding. Patterns of similarities and differences between whites, Hispanics, and "other" groups are not as clear; but, in many instances, Hispanics or "others" are most likely to participate in a particular activity. There are relatively fewer research observations of Hispanics and "other" groups, which may have hampered efforts to identify recreation patterns of these groups, or to compare them to others. Also, recent immigration has added to the diversity of the Hispanic and "other" groups.

The percent participating in 22 widely-ranging events or using particular sites, by African Americans, Hispanic Americans, whites, and "others" is presented in table 2 (Nadkarni and O'Leary 1992a). There are significant differences across racial and ethnic groups for every event or site. There is a tendency for African Americans to have the lowest participation of the four groups, with "other" or Hispanic groups most often having the highest participation. African American participation was particularly low, relative to the other groups, in visiting a national or state park or attending a NHL Hockey game. This is consistent with the previously-mentioned tendency for African Americans to have relatively lower participation in activities that involve a wildland environment or water, snow, or ice.

A nationwide comparison of participation in natural-resource oriented outdoor recreation, for 1985, is provided by the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (1988) (table 3). With hunting and fishing, the pattern of participation across racial and ethnic groups is similar to that previously observed for a wide range of recreation activities, with African Americans having the lowest percent participating, whites the highest, and the "other" group in between. However, with wildlife-associated recreation other than hunting and fishing (feeding, photographing, and observing fish and other wildlife), while whites have the highest

**Table 2.—Attendance at recreation events by U.S. adults - 1989; percent reporting attendance by racial and ethnic group.**

Event or site	White (14787)	Black (2024)	Hispanic (1184)	Other (455)
A national or state park	45.4++	24.0--	37.7+-	48.7++
An historic site	43.3++	23.8--	33.1+-	49.5+++
A museum	33.8+-	19.9--	34.4+-	51.1+++
A zoo	32.3+-	23.3--	39.2++	43.8++
A club offering				
live music	28.5+-	25.1--	34.1++	34.2++
A theme park	23.8+-	18.2--	33.2++	36.4++
Live theater	24.0+++	21.7--	20.9--	30.1+++
An art gallery	19.0+-	13.2--	22.1+-	32.8+++
Major league				
baseball game	18.4+-	9.7--	24.9+	26.4++
Gambling casino	16.8--	16.7--	23.3+-	29.0+++
A rock concert	14.1+-	11.4--	23.5+	21.5++
Symphony concert	11.8+-	6.7--	10.7+-	18.5+++
Horse race	9.7+	6.5--	11.1+	8.6
NFL football game	8.2--	8.1--	17.0+++	11.4+++
Car race	8.8++	3.9--	9.9++	4.7--
NBA basketball game	5.0--	11.1+	12.7+	14.1+
Dog race	5.0+	4.2	4.0	2.9-
The ballet	4.4+-	2.9--	5.2+-	7.9+++
The opera	3.7+-	2.2--	4.8+	6.9++
NHL hockey game	3.5+	0.5--	3.3+	4.6+
Professional golf				
tournament	2.7+++	0.2--	0.7+-	1.0+
Professional tennis				
tournament	1.1-	1.0-	2.1++	1.9

*Differences among racial and ethnic groups are significant at 0.05 level for each event or site.*

*+ Percent participating is significantly higher than another group.*

*- Percent participating is significantly lower than another group.*

*Derived from the Travel USA Data for 1989 (See Nadkarni and O'Leary 1992a).*

percent participating, the lowest percent participating alternates between the African American and "other" groups. African American and white differences in percent participating in wildlife-associated recreation are greater for non-residential activities (take place more than 1 mile away from home) than residential activities, which is consistent with the observation made in other studies, that African Americans tend to stay closer to home than whites when engaging in outdoor recreation (Dwyer 1992, 1993; Dwyer and Hutchison 1990). O'Leary and Benjamin (1982) report that for a wide ranging set of recreation activities, African Americans were more likely than whites to use city and town resources than rural resources. Greater use by African Americans of local parks and less use of state and national parks is reported by Yancey and Snell (1971) and

Craig (1972). A study of African American and white, fifth grade, Chicago public school children indicates that African American students who had visited forests were more likely to have done so close to home than were their white counterparts (Metro, Dwyer, and Dreschler 1981).

McCreedy and O'Leary's (1992b) analysis of the National Family Opinion Travel Survey, for the summers of 1988, 1989, and 1990, indicates that African Americans are significantly less likely than other racial and ethnic groups (white, Asian and Pacific Islander, "other", Spanish origin or descent) to have taken a summer pleasure trip of 100 miles or more and one or more overnights. The pattern of travel among the groups was similar to that observed in earlier comparisons of recreation participation, i.e., whites were most likely to travel, with African Americans least likely, and with the other groups falling in between those two groups.

In their analysis of visitors to public outdoor recreation sites during 1985-1987, Hartmann and Overdeest (1990) report that African Americans had the shortest travel distance to the site, and whites

the longest travel distance, with Native Americans, Asians, Hispanics, and "others" falling in between. Kornegay and Warren (1969) and Enosh, Christiansen, Staniforth, and Cooper (1975) report vacation travel to be less frequent among African American households; and even when vacations are taken, the distance was much shorter than for white households.

The national comparisons of participation patterns for racial and ethnic groups presented (tables 1-3) are sometimes difficult to interpret, because the groups being considered tend to be concentrated in different parts of the country and, consequently, have different access to recreation opportunities. To help account for the availability of different opportunities, we analyzed participation patterns by individuals living in six major cities around the U.S. (Los Angeles, New York, San Francisco, Philadelphia, Detroit, and Chicago), using data on participation in a wide range of activities and use of a wide range of sites, from the U.S. Pleasure Travel Market study, conducted in 1989 by Longwoods Research Group Ltd. (Nadkarni and O'Leary 1992a). While all racial and ethnic groups were sampled throughout the U.S., relatively small sample sizes for these groups made comparisons difficult for some cities; and, in several instances, we were only able to make comparisons between whites and African Americans. The pattern of similarities and differences identified on the national scale are mostly the same at the city level. The tables for each city on which this analysis is based can be found in appendix A. African American participation is consistently lower than the other groups (particularly in activities that ordinarily take place in a wildland setting, as well as those involving water, snow, and ice). Hispanic Americans and "other" Americans generally have higher rates of participation than African Americans, and sometimes have higher participation than whites. Similarly, African Americans tended to have the lowest participation of all groups in visits to a national or state park and attendance at a hockey game. An earlier comparison of the participation of African American and white Chicago residents in outdoor recreation produced similar results, using data from a different source (Dwyer and Hutchison 1990).

A recent study of participation in a wide range of outdoor recreation activities, by 3,029 Illinois residents sampled in 1987, 1989, or 1991 (Dwyer 1992, 1993), reveals a somewhat similar pattern of gener-

**Table 3.—1985 percent participation in selected fishing, hunting, and wildlife-associated recreation activities in the U.S. by racial and ethnic group.**

Activity	White	Black	Other
<b>Fishing</b>	27	13	18
Freshwater	24	11	13
Saltwater	8	4	8
<b>Hunting</b>	10	2	3
Big game	8	1	3
Small game	7	2	2
Migratory birds	3	-	1
Other animals	2	1	1
<b>Wildlife-Associated Recreation</b>			
<b>Primary activities</b>	65	36	32
Residential	62	35	30
Observe	38	17	15
Photograph	11	3	6
Feed wild birds	49	27	22
Non-residential	18	4	7
Observe	18	4	7
Photograph	8	2	5
Feed	8	2	2
<b>Secondary activities</b>	75	40	40
Residential	69	37	35
Non-residential	54	22	27

Source: 1985 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (1988).

- Less than 0.5%

ally lower African American participation in outdoor recreation activities than do whites, Hispanic Americans, or Asian Americans (table 4). There are significant differences across racial and ethnic groups in 26 out of 31 activities. In no instance is participation by African Americans significantly higher than all other groups; but, in three instances, it is significantly lower than all other groups (i.e., non-pool swimming, motorboating, and canoeing). There are no activities where participation by any of the other groups (i.e., whites, Hispanics, or Asians) is significantly higher or lower than all other groups. Again,

**Table 4.—Outdoor recreation activities of Illinois adults, by racial and ethnic background, 1987, 1989, and 1991.**

Activity	All (3029)	White (2510)	Black (342)	Hispanic (87)	Asian (56)
Pleasure walking*	73	74+	68-	71	64
Pleasure driving*	62	64+	51--	59	66+
Picnicking*	55	54--	56	66+	68+
Outdoor pool swimming*	45	47+	29--	49+	30
Bicycling	42	42	41	46	32
Non-pool swimming*	27	29+	11--	34+	21+
Fishing*	28	30++	16--	26+	14-
Softball or baseball*	27	26--	39++	41++	16--
Motorboating*	24	27++	5--	11--	13--
Running or jogging*	27	26-	32+	33	30
Observe/photo, nature*	21	22++	15-	11-	23
Golf*	21	23++	8--	13-	14+
Tennis*	17	16--	18-	25+	36++
Outdoor basketball*	16	15--	24+	28+	16
Tent camping*	13	14+	6--	11	20+
Hiking*	15	16+	8-	14	9
Water skiing*	11	12+	2-	7	5
Off - road vehicles	10	10+	7	11+	2--
Horseback riding*	9	9	10	5	4
ice skating*	9	10+	3--	11+	7
Canoeing*	9	9+	3--	8+	14+
Downhill skiing*	8	9++	2-	1-	9++
Vehicle camping*	8	8+	2--	11++	2-
Sailing	7	7	0	6	7
Hunting*	6	6	4	2	0
Cross - country skiing*	5	5+	2-	3	2
Snowmobiling*	4	5	0-	7+	2
Soccer*	4	4-	4-	14++	5
Backpacking	4	4	4	6	5
Ice fishing*	2	3+	1-	0	0
Trapping	1	1	1	0	0

\*There are significant differences in this activity across the four groups.

+ Percent participating is significantly higher than another group.

- Percent participating is significantly lower than another group.

there is not a clear pattern of differences between the white, Hispanic, and Asian groups; but, in a number of instances, participation by Hispanics or Asians is significantly higher than whites. Examples include high levels of Asian participation in picnicking and tennis; and high levels of Hispanic participation in picnicking, outdoor basketball, softball and baseball, tennis, and soccer. However, there is one instance where Asian participation was significantly lower than that of African Americans (i.e., softball and baseball); but it is difficult to draw major conclusions from this, given the limited number of Asian Americans in the sample.

The Illinois surveys also indicate that, while all four racial and ethnic groups gave similar responses when asked to rate the significance to outdoor recreation, African Americans are significantly less likely than whites to take vacation or overnight trips where the main reason was to enjoy the outdoors or participate in outdoor activities (Dwyer 1993).

### Age

Age generally has a high correlation with the likelihood of participating in recreation activities. English and Cordell (1985, 97) present a useful perspective on the pattern of association between age and participation in recreation activities.

“It appears possible that age may have a hyperbolic effect on participation rates, first causing an increase in participation as the individual moves from adolescence into young adulthood and acquires new experiences and knowledge, increased freedom (car) and ability to participate (income from job). Younger people may also be more likely to respond to fads and social changes, causing bigger swings in their participation rates. Leveling of participation rates seems to occur as the individual reaches middle age. The pressure and time commitments to home, family, social groups, and clubs as well as settling into a few favorite activities may keep these people from trying new activities and thus increasing participation rates. Old age then has a reducing effect on participation.”

Table 5 presents percent participating by age class, for a wide range of recreation activities, from the U.S. Pleasure Travel Market Study conducted by

**Table 5.—Recreation activities of U.S. adults - 1989; percent participating by age class.**

Activity	18-24 (2667)	25-34 (4652)	36-44 (3663)	45-54 (2408)	55-64 (2258)	65+ (2782)	All (18450)
Swimming	44.8	45.0	39.0	31.0	23.5	13.3	34.5
Bicycling	36.2	36.7	32.7	23.7	16.5	8.8	27.5
Freshwater fishing	23.3	26.6	21.9	19.9	13.6	9.1	20.1
Camping	21.6	25.5	21.8	16.7	10.8	5.9	18.3
Aerobics	22.7	23.6	18.0	12.4	7.9	4.1	16.0
Jogging/running	20.4	16.3	12.9	9.3	5.6	2.4	11.9
Golf	14.2	12.8	12.3	10.2	9.4	7.7	11.4
Weight lifting	24.5	17.8	11.1	4.8	3.0	.6	11.3
Hiking/backpacking	13.2	15.7	15.2	9.8	5.2	2.6	11.2
Tennis	17.9	12.7	9.2	7.0	3.8	1.4	9.2
Power boating	10.6	11.0	8.1	8.2	5.9	2.9	8.2
Hunting	9.4	9.9	8.0	7.5	4.9	2.1	7.3
Saltwater fishing	8.7	7.8	7.7	9.0	6.0	3.4	7.2
Bird watching	2.7	6.6	7.3	9.1	9.9	8.1	7.1
Downhill skiing	12.1	8.9	6.1	4.8	1.2	.3	6.0
Water skiing	12.8	9.9	5.9	2.9	1.1	.2	6.1
Horseback riding	8.0	9.3	7.2	3.9	2.0	.8	5.8
Canoeing	6.7	7.9	7.5	4.6	2.5	1.0	5.5
Racquetball	12.6	8.0	4.5	3.0	.6	.1	5.2
Sailing	5.4	5.0	4.2	4.6	2.5	1.5	4.0
Cross country skiing	4.1	4.1	3.9	3.8	1.8	.4	3.2
Mountain climbing	3.2	3.3	3.6	2.6	1.8	.8	2.7
Snowmobiling	4.1	3.2	1.9	1.4	.9	.4	2.1
Whitewater rafting	2.0	3.0	2.5	1.1	.5	.4	1.8
Scuba diving	3.6	3.4	2.0	1.0	.4	.2	2.0
Wind surfing	1.3	1.2	.8	.5	.3	.0	.8
Hot air ballooning	1.0	.8	.8	1.3	.5	.2	.7
Squash	.4	.5	.3	.1	.0	.0	.3
Hang gliding	.2	.3	.2	.1	.1	.0	.2

*Differences significant at 0.05 level for all activities.*

*Derived from Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).*

Longwoods Research Group LTD in 1989 (Nadkarni and O'Leary 1992a). There are significant differences in participation across the six age categories, for every activity. The general trend is a decrease in participation with increasing age, with the difference between activities being when that decrease begins. The information presented in table 5 and other parts of this section is based on observations of individuals of widely different ages, at a given point in time, and is not the result of following individual or group participation over time. This point is important in subsequent discussions of future projections of participation by age categories.

For nearly half of the activities, there is a fairly steady decline in percent participating by each age class after the first (18-24 years), with nearly all of the other activities starting to decline after the second age class (25-34). A notable exception is bird watching, where percent participating increases with age

class until age 55-64, and then decreases quite slowly. Activities where the decline in participation starts right after the first age class are primarily athletics.

English and Cordell (1985) report similar declines in percent participating by age class for downhill skiing, fishing, camping, hiking and backpacking, and hunting, across three national surveys (1960, 1972, 1982)

There is a similar pattern of association between age and attendance at recreation events or sites — significant differences across age classes for all events or sites, and a general decline in participation across the higher age classes (table 6). The major difference is the age at which that decline begins. With some events or sites it starts very young, such as with a theme park, rock concert, football game, or car race. With other events and sites, it may start much later, such as going to a horse race, a symphony, live theater, an art gallery, or a professional golf tourna-

**Table 6.—Attendance at recreation events by U.S. adults - 1989; percent reporting attendance by age class.**

Event or site	18-24 (2667)	25-34 (4652)	35-44 (3663)	45-54 (2408)	55-64 (2258)	65+ (2782)	All (18450)
A national or state park	44.2	50.7	50.1	42.4	34.1	24.8	42.6
An historic site	39.1	43.5	47.9	43.7	37.9	27.6	40.7
A museum	28.7	35.6	40.2	35.2	29.3	22.6	32.7
A zoo	33.2	42.9	38.1	29.8	22.1	14.8	32.1
A club offering							
live music	38.4	39.8	31.3	26.8	16.3	8.4	28.6
A theme park	33.8	29.7	31.7	19.7	13.8	7.6	24.1
Live theater	18.3	22.4	24.5	26.4	23.0	16.0	21.9
An art gallery	16.0	15.4	19.4	19.8	16.1	12.4	16.5
Major league							
baseball game	20.9	21.3	21.6	17.0	13.9	9.5	18.1
Gambling casino	14.8	17.6	16.5	19.3	23.2	15.4	17.5
A rock concert	38.1	21.9	13.4	4.6	1.6	0.4	14.6
Symphony concert	6.7	9.5	13.9	15.9	13.1	10.0	11.3
Horse race	8.8	9.8	8.8	10.4	10.8	8.1	9.4
NFL football game	11.2	10.5	10.1	8.9	6.6	4.1	8.9
Car race	12.6	10.5	8.9	8.1	4.9	2.4	8.3
NBA basketball	7.5	8.9	7.4	6.7	3.7	1.9	6.4
Dog race	6.7	4.3	4.6	4.8	5.3	3.5	4.8
The ballet	4.0	4.2	5.5	5.0	3.7	3.5	4.4
The opera	3.5	2.9	3.8	5.3	3.5	3.6	3.7
NHL hockey game	3.8	4.5	3.8	3.2	1.6	0.8	3.2
Professional golf tournament	1.8	2.0	2.2	2.2	2.5	3.0	2.2
Professional tennis tournament	1.4	1.2	1.4	1.0	1.4	0.4	1.2

*Differences across age classes significant at 0.05 level for all events or sites.  
Based on the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).*

ment. Visiting a national or state park peaks at 51% participating for those between 25 and 34; but drops off steadily to less than half that level for those 65 years and older.

The 1985 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (1988) provides an opportunity to look at patterns in percent of the population participating in natural-resource oriented activities by age class (table 7). For hunting, there is a fairly steady decline in percent participating from the youngest age class (16-17) to the oldest (65+). For fishing, percent participating is relatively stable up to age 44, then it drops steadily. Percent participating in wildlife-associated recreation (other than hunting and fishing) often peaks between 25-44 years of age and declines thereafter; but at a slower rate than fishing and hunting. Residential wildlife-associated recreation, including feeding wild birds, is at relatively high levels for those 55 and above, with non-residential activities (i.e., involving travel) peaking

at a much earlier age. The overall pattern suggests that, for older age groups, there may be a tendency to shift from "consumptive" activities, such as hunting and fishing, to "non-consumptive" activities, such as observing, photographing, and feeding animals, and to shift the focus of these non-consumptive activities closer to home.

Data for Illinois households, gathered in 1987 and 1989 (the 1991 survey did not include age), suggests a pattern of variation in participation by age similar to that found at the national level (table 8). There are significant differences across the five age groups for 28 out of 31 activities. Nearly three-fourths of the activities show a decline in percent participating after the first age class (18-24 years), with most of the remaining indicating a drop in percent participating after the second age class (26-39 years). The exceptions include observing nature, vehicle camping, and sailing, which drop after the third age class (40-55 years), and pleasure walking which drops after

**Table 7.—1985% participation in selected fishing, hunting, and wildlife - associated recreation activities in the U.S. by age group.**

Activity/Age Class	16-17	18-24	25-34	35-44	45-54	55-64	65+
<b>Fishing</b>	31	27	32	31	24	21	13
Freshwater	28	24	27	26	20	18	11
Saltwater	7	7	10	10	8	7	4
<b>Hunting</b>	14	11	12	11	9	7	3
Big game	9	8	9	8	7	5	2
Small game	11	8	8	7	5	4	2
Migratory birds	5	4	4	3	2	2	1
Other animals	3	2	2	2	1	1	-
<b>Wildlife-Associated Recreation</b>							
<b>Primary activities</b>	54	50	62	66	61	64	60
Residential	50	47	58	63	59	63	59
Observe	27	27	36	40	37	38	35
Photograph	12	9	13	12	10	9	5
Feed wild birds	34	33	42	50	49	52	51
Non-residential	17	17	23	21	13	11	6
Observe	17	16	23	21	13	11	6
Photograph	5	7	12	11	6	4	2
Feed	8	8	12	9	5	4	2
<b>Secondary activities</b>	66	62	73	78	73	71	64
Residential	60	55	66	71	69	68	61
Non-residential	50	48	59	59	49	43	31

Source: 1985 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (1988).

- = Less than 0.5%.

the 26-39 year age class, but then increases again in the 65 year and above age class. As with the national data, the activities that experience a steep drop in the early age classes are primarily athletic and sports activities. Observing and photographing nature and birdwatching stand out as activities where the percent participating increases with age (up through 55 years) and then exhibits a very slow decline. This corresponds to the results from the 1985 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (table 7).

Older adults in Illinois also were significantly less likely than others to take vacation or overnight trips where the main reason was to enjoy the outdoors or to participate in outdoor activities.

McCreedy and O'Leary (1992b) report that age of the household head was not significantly correlated with the likelihood of taking a pleasure trip during the summers of 1988, 1989, or 1990.

### Urban or Rural Residence

Differences in percent participating in outdoor recreation activities by urban or rural residence appear to reflect different lifestyles and the availability of opportunities to participate in these activities fairly close to home. Table 9 indicates percent of the U.S. adult population participating in a wide range of recreation activities, according to the size of the area where the individual lived (Nadkarni and O'Leary 1992a). There are significant differences in percent participating by size of area for 25 out of 29 activities, with the exceptions being activities usually engaged in very close to home, such as squash, or those usually associated with extended trips, such as whitewater rafting, mountain climbing, and canoeing. Activities generally associated with substantial wildland areas, such as freshwater fishing, camping, hunting, horseback riding, mountain climbing, and snowmobiling, are more likely to be participated in by individuals living in an area with a

**Table 8.—Outdoor recreation activities of Illinois adults; percent participating by age group (combined data for 1987 and 1989).**

Activity	18-25 (196)	26-39 (607)	40-55 (365)	56-64 (209)	65+ (246)
Pleasure walking*	67	75	72	66	70
Pleasure driving/sightseeing*	64	65	64	61	50
Picnicking*	49	64	55	47	33
Swimming in outdoor pool*	61	56	42	22	13
Bicycling*	58	54	44	26	10
Non-pool outdoor swimming*	42	34	25	14	4
Fishing*	31	29	30	26	13
Softball or baseball*	46	40	22	8	2
Motorboating*	31	27	28	17	7
Running of jogging*	53	34	29	13	7
Observe/photo nature, birdwatch	24	29	32	26	23
Golf*	28	27	23	16	10
Tennis*	36	23	17	6	2
Outdoor basketball*	32	24	14	5	2
Tent camping*	20	17	10	4	2
Hiking*	15	17	16	8	2
Water skiing*	19	15	10	1	-
Off-road vehicles*	17	11	7	1	2
Horseback riding*	19	11	8	2	1
Ice skating*	18	15	7	1	0
Canoeing*	18	11	9	3	-
Downhill skiing*	19	12	7	2	0
Vehicle camping	7	7	9	3	5
Sailing*	8	10	10	5	2
Hunting*	7	7	5	6	1
Cross-country skiing*	11	6	6	3	-
Snowmobiling*	9	6	3	1	0
Soccer*	10	6	3	0	0
Backpacking*	6	4	4	1	0
Ice fishing	4	3	1	2	-
Trapping	1	1	-	0	-

\*significant differences across the age groups at the 0.05 level.

- less than 0.5%

population of less than 50,000 than in areas with a larger population. Activities requiring the development of specialized facilities or programs are more likely to be participated in by individuals living in large urban areas, where there usually are substantial recreation facilities and programs (i.e, aerobics, golf, tennis, racquetball).

In terms of sites or events visited, there are significant differences by area of residence across all 22 categories (table 10). With the exception of visiting a state or national park, participation generally tended to be the highest for those living in larger cities (over 500,000). Again, this appears to reflect the availability of facilities, with state and national parks often non-urban resources.

The 1985 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (1988) indicates higher portions of the rural population (living outside urbanized areas and places of 2,500 or more

inhabitants) participating in hunting, fishing, and other wildlife-associated recreation than those in urban areas, with the lowest participation in the largest cities in standard metropolitan statistical areas (i.e., large metropolitan areas) (table 11). Urban or rural differences are particularly great with hunting, somewhat less with fishing, and lowest for other wildlife-associated recreation. This again seems to reflect the availability of opportunities, although it also may be that hunting and fishing are more a part of the of lifestyle in rural areas than in urban areas. Kellert and Berry (1980) pointed out significant urban or rural differences in perceptions of animals and the natural environment. Kellert (1984) identified a wide range of variation in those perceptions across urban areas, with environmental and wildlife knowledge high in suburban areas, particularly compared to large cities with 1,000,000 or more people.

**Table 9.—Recreation activities of U.S. adults - 1989; percent participating by size of area.**

Activities	<50,000 (4812)	50,000- 499,999 (3689)	500,000- 1,999,999 (2952)	2,000,000+ (6997)
Swimming*	31.4	34.6	35.0	36.5
Bicycling*	24.3	26.6	29.0	29.5
Freshwater fishing*	26.2	21.7	19.7	15.2
Camping*	19.8	19.5	18.5	16.6
Aerobics*	13.3	14.6	16.8	18.3
Jogging/running*	9.0	10.9	13.5	13.8
Golf*	9.8	12.9	13.7	10.7
Weight lifting*	9.1	10.2	11.5	13.4
Hiking/backpacking*	10.1	10.9	11.2	12.1
Tennis*	6.3	10.0	10.2	10.4
Power boating*	7.6	8.5	9.3	7.9
Hunting*	12.9	8.2	5.1	4.0
Saltwater fishing*	6.1	7.1	6.6	8.3
Bird watching*	8.4	7.6	7.2	6.0
Downhill skiing*	3.4	5.7	5.8	8.1
Waterskiing*	5.8	6.0	6.6	6.1
Horseback riding*	6.3	4.5	6.0	6.1
Canoeing	5.5	5.4	6.0	5.3
Racquetball*	3.2	5.7	4.7	6.5
Sailing*	2.0	3.8	4.9	5.2
Cross-country skiing*	3.1	3.9	2.7	3.1
Mountain climbing	3.0	2.7	2.8	2.4
Snowmobiling*	2.9	1.8	1.5	2.0
Whitewater rafting	1.3	2.2	1.4	2.0
Scuba diving*	1.6	1.7	1.4	2.6
Wind surfing*	0.3	0.9	0.8	1.0
Hot air ballooning*	0.5	0.6	1.2	0.8
Squash	0.3	0.2	0.3	0.3
Hang gliding*	0.1	0	0	0.3

\*Differences significant at 0.05 level across areas.

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

Schroeder (1983) identified significant differences in environmental preferences depending on whether individuals grew up in urban or rural areas.

We evaluated more detailed urban or rural breakdowns for Illinois, including Chicago, its northern suburbs, its southern suburbs, and northern, central, and southern Illinois (table 12). There were significant differences in participation across these areas, in 20 out of 31 activities. Activities where there were few differences across the urban to rural spectrum included those that are readily available in most areas: pleasure walking, picnicking, non-pool outdoor swimming, observing nature, outdoor basketball, hiking, horseback riding, and soccer. Again, the percent of individuals living in an area who participated in a particular activity appeared to reflect the availability of resources in and near that area. The only activity where there was a higher percentage

participation in Chicago than in other areas of the state was softball and baseball. This may reflect the extensive and well-developed opportunities for this sport in Chicago parks. Vehicle camping, hunting, off-road vehicles, fishing, and pleasure driving and sightseeing were most common among the residents of southern Illinois, an area well known for its opportunities for these activities. Some water-based and snow-based activities were especially popular among those living in the northern suburbs of Chicago. This probably is at least partly because of the availability of opportunities for these activities in that area as well in nearby Wisconsin. The northern suburbs of Chicago also tend to be fairly affluent (table B-3), which often contributes to good local resources for activities such as golf and tennis, as well as incomes high enough to afford to participate in these and other facilities in nearby or more distant areas.

**Table 10.—Attendance at recreation events by U.S. adults - 1989; percent reporting attendance by size of area.**

Activities	<50,000 (4812)	50,000- 499,999 (3689)	500,000- 1,999,999 (2952)	2,000,000+ (6997)
A national or state park	41.7	45.2	44.3	41.2
An historic site	37.5	40.3	43.1	42.0
A museum	25.0	31.7	33.1	38.5
A zoo	24.9	32.0	37.2	34.9
A club offering live music	21.7	30.2	31.2	31.4
A theme park	19.3	23.6	25.5	27.1
Live theater	14.6	23.2	22.6	30.8
An art gallery	11.3	18.8	19.1	24.0
Major league baseball game	9.2	13.5	14.8	27.9
Gambling casino	10.6	15.1	14.5	24.9
A rock concert	9.7	12.8	16.0	18.2
Symphony concert	6.1	11.1	13.5	14.2
Horse race	6.5	8.4	10.6	11.4
NFL football game	4.4	6.5	10.7	12.4
Car race	8.8	9.3	9.6	6.7
NBA basketball game	1.9	3.5	8.5	10.2
Dog race	3.4	6.0	8.9	3.4
The ballet	2.0	4.0	5.1	5.9
The opera	1.5	2.8	3.9	5.5
NFL hockey game	0.8	1.7	3.4	5.5
Professional golf tournament	1.3	2.8	3.2	2.3
Professional tennis tournament	0.2	1.2	1.4	1.7

\*Differences significant at 0.05 level for all events or sites.

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**Table 11.—Percent of the U.S. population 16 years and older participating in selected fishing, hunting, and wildlife - associated recreation activities in the U.S., by urban or rural residence, 1985.**

Activity	Urban	Rural	All	SMSA			
				1,000K+	250K-999K	50K-249K	Non-SMSA
<b>Fishing</b>	22	33	22	20	25	27	33
Freshwater	18	30	18	15	22	23	31
Saltwater	7	8	8	8	8	8	6
<b>Hunting</b>	6	16	6	5	8	10	16
Big game	4	13	5	3	6	8	12
Small game	4	11	4	3	5	6	10
Migratory birds	2	4	2	2	3	3	4
Other animals	1	3	1	1	1	2	3
<b>Wildlife-Associated Recreation</b>							
<b>Primary activities</b>	57	69	58	56	63	59	66
Residential	54	67	56	53	60	56	64
Observe	32	42	33	32	34	32	40
Photograph	9	13	10	9	11	10	11
Feed wild birds	43	51	44	42	47	44	50
Non-residential	15	18	16	15	17	16	18
Observe	15	18	15	15	17	15	17
Photograph	7	8	8	7	8	8	7
Feed	8	7	8	8	8	7	6
<b>Secondary activities</b>	66	80	67	64	73	67	77
Residential	60	76	61	58	66	61	73
Non-residential	47	55	48	46	53	49	52

*SMSA refers to standard metropolitan statistical area.*

*K = Thousands of individuals.*

*Source: 1985 National Survey of Fishing, Hunting, and Wildlife Associated Recreation (1988).*

McCreedy and O'Leary's (1992b) analysis of the National Family Opinion Travel Survey for the summers of 1988, 1989, and 1990 indicates that urbanites are more likely to have taken a summer pleasure trip of 100 miles or more and one or more overnights than are those in rural areas.

#### COMPARISONS IN A MULTIVARIATE FRAMEWORK

Previous discussion of the association between participation in selected outdoor recreation activities and race and ethnicity, age, and urban or rural residence looked at each of these population characteristics individually. However, these variables frequently are correlated with each other and with other variables, making it difficult — and sometimes misleading — to look in isolation at the correlation between a particular variable such as race and ethnicity, and participation in an activity. This section takes a multivariate approach and looks at several variables or

groups of variables simultaneously, including individual, household, and location characteristics.

#### Illinois Data

In the Illinois household surveys of 1987 and 1989, there tended to be correlations between many of the explanatory variables already focused on, as well as with other important variables, such as household income and composition of the household. See appendix B for tables summarizing some of the key associations. Hispanic and Asian respondents tended to be younger than African American or white respondents (table B-1). Asian American respondents tended to have the highest incomes and African Americans the lowest incomes (table B-2). Individuals with high levels of income made up the largest portion of respondents from the Chicago suburbs — particularly its northern suburbs, and the lowest percent of respondents from northern and southern

**Table 12.—Outdoor recreation activities of Illinois adults; percent participating by area of the State where they reside (combined data for 1987, 1989, and 1991).**

Activity	North subs.	Chicago	South subs.	North IL	Central IL	South IL
Pleasure walking	72	71	69	75	73	76
Pleasure drive/sightsee.*	64	54	62	66	69	71
Picnicking	57	52	54	64	56	51
Swimming in outdoor pool*	50	37	52	41	45	43
Bicycling*	48	44	43	33	42	32
Non-pool outdoor swimming	31	25	25	31	28	25
Fishing*	27	18	27	30	35	39
Softball or baseball*	31	32	26	18	23	24
Motorboating*	30	14	28	30	27	25
Running or jogging*	33	31	23	21	24	25
Observe/photo nature	31	24	29	33	30	24
Golf*	33	15	21	21	20	16
Tennis*	25	18	15	12	13	10
Outdoor basketball	17	17	17	17	15	15
Tent camping*	15	9	12	13	17	13
Hiking	13	10	13	16	16	12
Water skiing*	14	8	9	15	10	10
Off-road vehicles*	10	5	11	8	10	14
Horseback riding	11	9	9	10	8	8
Ice skating*	12	8	15	8	7	5
Canoeing*	12	4	9	11	13	7
Downhill skiing*	12	7	7	11	7	2
Vehicle camping*	7	3	6	10	10	15
Sailing*	11	9	3	4	5	5
Hunting*	5	2	4	8	9	13
Cross-country skiing*	11	4	5	4	4	2
Snowmobiling*	6	1	8	5	5	3
Soccer	5	5	5	4	3	3
Backpacking	3	3	2	1	5	1
Ice fishing	3	1	2	2	3	3
Trapping	1	-	-	1	0	2

\*Significant differences across areas at 0.05 level

Illinois (table B-3). Individual respondents from outside the Chicago area tended to be older than those from Chicago and its suburbs (table B-4). African American respondents were more concentrated in Chicago than any other racial and ethnic group, while white respondents were less likely to come from Chicago and more widely distributed over the state than any other group. A larger portion of Hispanic American and Asian American respondents came from Chicago's suburbs than was the case with African Americans (table B-5). Minority groups tended to have larger family sizes than whites (table B-6). Individuals who were "middle aged" tended to have the highest levels of income (table B-7).

To look at the association between population characteristics and participation in selected outdoor recreation activities with other variables held constant, we estimated a probit model for each of 31 outdoor recreation activities in Illinois, to explain

participation on the basis of 24 characteristics of individuals, their households, and where they lived (i.e., race, age, residence, household income, gender, and household size). The coefficients of individual explanatory variables in the probit model can be interpreted as an indication of the association between that variable and participation in the particular recreation activity, given that all other individual, household, and location variables included in the analysis are held constant (subsequently referred to as "all else constant"). This technique approaches comparing groups of individuals that are similar in every variable included in the model, except for the particular variable of interest. With the probit model, the coefficients for categorical variables measure differences in association with participation from a specified classification within that category. For example, race is measured in terms of differences from white, urban or rural location in terms of deviation

**Table 13.—Coefficients from probit analysis of 1987-1989 data, from the Illinois Statewide Comprehensive Outdoor Recreation Survey.**

	Jog	Walk	Drive	Picnic	Nature	Fish	Icefish	Xcski	Dhski	Ice skate	Pool swim	Lake swim	Water ski	Boat	Sail	
Constant	0.16	-0.2	-0.01	-0.44	-0.97	-0.8	-1.64	1.35	-0.78	-0.9	0.015	-0.02	-0.64	-0.62	-1.43	
Race																
White																
Black	0.11	-0.19	-0.26*	-0.02	-0.30*	-0.17	-0.58	-0.49*	-0.75*	-0.70*	-0.57*	-0.83*	-0.89*	-0.80*	-0.34*	
Hispanic	-0.17	0.04	0.01	0.32	-0.33	0.13	-2.03	-0.46	-0.91*	-0.27	-0.21	-0.13	-0.78*	-0.76*	-0.76	
Asian	-0.01	-0.31	0.28	0.31	0.13	-0.5	-1.96	-0.46	0.0	-0.21	-0.43*	-0.34	-0.54	-0.45	-0.08	
Other	0.18	2.62	0.42	-0.26	0.3	0.5	1.94	-2.02	-2.46	0.84	0.84	0.47	-2.4	0.41	1.86	
Not given	0.21	-0.31	-0.28	-0.15	0.02	0.0	-1.91*	-0.02	-0.1	-0.15	-0.53	0.08	0.14	-0.23	-0.27	
Age																
<26																
26-39	-0.49*	0.19	-0.06	0.29*	0.11	-0.1	-0.18	-0.33	-0.35*	-0.18	-0.33*	-0.39*	-0.25	-0.21	0.1	
40-55	-0.65*	0.07	-0.11	0.11	0.18	-0.09	-0.52	-0.40*	-0.71*	-0.60*	-0.66*	-0.65*	-0.62*	-0.23	0.16	
56-65	-1.17*	-0.07	-0.06	0.05	0.05	-0.07	-0.21	-0.80*	-1.24*	-1.41*	-1.01*	-0.90*	-1.68*	-0.57*	-0.24	
65+	-1.41*	0.01	-0.31*	-0.27*	-0.01	0.52*	-0.8	-1.48*	-2.88*	-2.66*	-1.32*	-1.61*	-1.91*	-1.08*	-0.65*	
Not given	-0.78*	0.17	-0.01	0.23*	-0.05	-0.04	-0.25	-0.51*	-0.78*	-0.51*	-0.48*	-0.34*	-0.44*	-0.21	-0.3	
Residence																
Chicago																
N. Sub	0.04	-0.03	0.13	0.12	0.12	0.18	0.35	0.36*	0.18	0.08	0.13	-0.05	0.16	0.37*	-0.04	
S. Sub	-0.25*	-0.11	-0.09	0.03	0.04	0.26*	0.26	0.02	-0.06	0.26	0.27*	-0.2	0.03	0.38*	-0.68*	
North	-0.21	0.1	0.25*	0.36*	0.21	0.36*	0.29	0.03	0.28	-0.06	0.05	0.1	0.39*	0.49*	-0.49*	
Central	-0.13	0.05	0.34*	0.16	0.09	0.51*	0.48*	-0.05	0.0	-0.16	0.17	-0.03	0.1	0.35*	-0.46*	
South	-0.01	0.13	0.46*	-0.03	-0.03	0.66*	0.4	-0.22	-0.53*	-0.24	0.18	-0.32	0.16	0.38*	-0.37*	
Household income																
>15																
15-25	-0.08	-0.05	0.17	-0.02	0.14	0.06	-0.12	-0.01	-0.03	-0.03	0.11	0.0	-0.16	0.04	0.22	
26-40	-0.01	0.02	0.28*	0.23*	0.25*	0.19	-0.1	0.15	0.24	-0.04	0.29*	0.28*	0	0.17	0.27	
<40	0.16	0.28*	0.43*	0.11	0.35*	0.25*	-0.03	0.44*	0.44*	0.23	0.56*	0.47*	0.32*	0.48*	0.55*	
Not given	-0.13	-0.06	0.07	0.0	0.05	-0.05	-0.48	0.33	0.22	0.02	0.17	0.08	-0.06	0.0	0.26	
Gender																
Male																
Female	-0.28*	0.41*	0.01	0.12*	0.15*	-0.48*	-0.65*	0.08	-0.1	-0.03	-0.04	-0.15*	-0.35*	-0.17*	0.14	
Household Size																
Total	0.01	0.03	0.04	0.15*	0.0	0.07	0.1	-0.10*	-0.13*	0.08*	0.18*	0.06*	-0.03	-0.04	-0.10*	
Adults	0.03	-0.03	-0.03	-0.12*	-0.01	0.0	-0.14	0.07	0.08	-0.1	-0.21*	-0.13*	0.01	0.01	0.07	
	Canoe	Back pack	Hike	Tent camp	RV camp	Golf	Tennis	Baseball	Soccer	Basketball	Bike	Horse	Snowmobile	ORV	Hunt	Trap
Constant	-1.14	-1.45	-1.03	-0.9	-1.42	2.95	-0.5	-0.142	-1.12	-0.78	-0.06	-0.89	-1.98	-0.91	-1.53	-2.54
Race																
White																
Black	-0.42*	-0.12	-0.54*	-0.37*	0.42*	-0.58*	0.12	0.27*	-0.04	0.43*	-0.08	0.23	-2.2	0.09	0.19	0.4
Hispanic	-0.18	0.15	-0.05	-0.26	0.19	-0.19	0.22	-0.1	0.35	0.3	-0.36*	-0.65	0.02	-0.08	-0.44	-2.05
Asian	0.21	0.22	-0.25	0.25	-0.37	-0.4	0.41	-0.65*	-0.3	-0.06	-0.60*	-0.73	-0.34	-0.63	-2.14	-1.86
Other	0.92	-2.12	-1.93	-2.08	-1.78	0.46	-2.43	-2.59	1.32	-2.27	-0.13	-2.03	-2.65	0.9	-2.07	-2.03
Not given	-1.98	-2.04	0.16	-2.1	-2.03	-0.32	0.04	-0.12	0.13	0	-0.33	-1.94	-2.31	-1.94	0.3	-2.07
Age																
<26																
26-39	-0.37*	-0.16	0.01	-0.13	-0.06	-0.08	-0.44*	-0.22	-0.27	-0.24*	-0.24*	-0.54	-0.27	-0.33*	-0.04	0.18
40-55	-0.52*	-0.22	-0.05	-0.46*	0.08	-0.29*	-0.65*	-0.73*	-0.60*	-0.66*	-0.48*	-0.69*	-0.61*	-0.64*	0.24	-0.41
56-65	-1.06*	-0.78*	-0.40*	-0.83*	-0.50*	-0.41*	-1.20*	-1.23*	-2.43*	-1.12*	-0.78*	-1.32*	-0.98*	-1.31*	-0.02	-2.13
65+	-1.80*	-2.31	-1.10*	-1.25*	-0.32	-0.59*	-1.74*	-1.82*	-2.43*	-1.40*	-1.36*	-1.49*	-2.67	-1.34*	-0.87*	-0.91
Not given	-0.50*	-0.48*	-0.15	-0.22	0.07	-0.43*	-0.86*	-0.49*	-0.42*	-0.60*	-0.49*	-0.49*	-0.35	-0.26	-0.04	-0.14
Residence																
Chicago																
N. Sub	0.43*	0.0	-0.02	0.21	0.30*	0.42*	0.29*	0.0	-0.02	0.06	0.01	0.17	0.67*	0.39*	0.39*	0.4
S. Sub	0.31*	-0.23	0.0	0.13	0.24	0.16	-0.07	-0.12	-0.04	0.1	-0.11	0.12	0.84*	0.50*	0.36	0.18
North	0.48*	-0.51	0.17	0.19	0.53*	0.21	-0.09	-0.41*	-0.09	0.14	-0.29*	0.25	0.59*	0.33	0.75*	0.54
Central	0.58*	0.2	0.19	0.39*	0.54*	0.15	-0.06	-0.125	-0.09	0.15	-0.02	0.07	0.60*	0.50*	0.78*	-1.67
South	0.28	-0.3	0.33	0.23	0.78*	0.11	-0.11	-0.06	-0.16	0.18	-0.24*	0.18	0.48	0.73*	1.08*	0.86
Household Income																
>15																
15-25	-0.02	0.29	-0.21	-0.17	-0.32	0.24	0.07	0.17	-0.05	0.08	0.12	0.11	0.03	-0.17	-0.06	-0.31
26-40	0.02	0.0	0.09	-0.01	-0.1	0.46*	0.14	0.12	-0.23	0.12	0.31*	0.25	0.11	-0.19	-0.02	-0.26
<40	0.16	0.08	0.14	-0.13	-0.17	0.94*	0.34*	0.15	-0.03	0.19	0.48*	0.3	0.2	-0.1	0.01	-0.59
Not given	0.25	0.24	0.02	-0.22	-0.08	0.54*	0.32*	0.07	0.17	0.27	0.12	0.26	0.21	-0.03	0.06	-0.3
Gender																
Male																
Female	-0.23*	-0.25*	-0.06	-0.25*	-0.24*	-0.54*	-0.04	-0.50*	-0.41*	-0.71*	0.08	-0.00	-0.16	-0.29*	-1.21*	-0.37
Household Size																
Total	0.03	0.0	0.07*	0.08*	0.01	-0.07*	0.01	0.15*	0.11*	0.13*	0.15*	0.04	0.04	0.02	0.01	-0.2
Adults	-0.04	-0.02	-0.08	-0.03	-0.03	-0.1	-0.04	-0.09	-0.1	-0.01	-0.16*	-0.14*	0.02	-0.06	-0.01	0.37

\*Indicates significance at the 0.05 level.

from Chicago, and age in terms of deviation from age 18-25 years. Income is measured in terms of differences from less than \$15,000 per year, and gender in terms of differences from male. Household size and number of adults in the household were expressed in numbers of individuals. The coefficients for all variables used in the model are summarized in table 13. Positive signs indicate that the variable is associated with increased likelihood of participation. The size of the coefficients (which usually range from 0 to 1) reflect the relative magnitude of the variable's association with participation, with all other variables held constant.

### Racial and Ethnic

The coefficients for African Americans, Hispanic Americans, and Asian Americans in the probit model for an activity reflect the difference in probability of participation in the activity between that group and whites (all else constant). In most instances, these coefficients are negative, suggesting a lower probability of participation for each of these groups than is expected for whites. Of the relatively few exceptions, where the model suggests higher participation for African Americans, Hispanics, Asians, or "other" groups, only three are significantly different at the 0.05 level. African Americans are significantly more likely than whites to participate in outdoor basketball, softball and baseball, and vehicle camping.

There are 14 activities where African Americans were significantly less likely than whites to participate (all else constant). These activities tend to fall into three distinct categories: rural and wildland activities (i.e., hiking, observe and photo nature, tent camping, driving for pleasure); activities involving water, ice, or snow (i.e., swimming at outdoor pools, swimming at other areas, water skiing, motorboating, sailing, canoeing, downhill skiing, ice skating, cross-country skiing); and activities that are relatively expensive to participate in (i.e., golf).

Asian Americans were significantly less likely than whites to participate in three activities: swimming at pools, bicycling, and softball and baseball (all else constant).

Hispanic Americans were significantly less likely than whites to participate in four activities: downhill skiing, water skiing, motorboating, and bicycling (all else constant).

The limited number of significant differences between whites and Hispanic, Asian, and "other" groups probably is partly the result of small sample sizes for these groups, although in the simple comparisons discussed previously, the differences between whites and Hispanics or Asians were not as great as the differences between African Americans and whites.

These results, which closely parallel the simple comparisons by race that were made earlier, suggest that there are differences in proportion of racial and ethnic groups in Illinois participating in selected activities that are not accounted for by the individual, household, and location variables included in the probit model.

The differences in the statistical significance of coefficients for race and ethnicity in the probit model, compared to the simple comparisons of mean participation rates between the groups, are largely the result of correlations between race and ethnicity and other variables used in the probit model.

The relatively younger ages of Hispanic American respondents, compared to whites, helped to explain differences in participation between these groups. In simple comparisons, Hispanics have significantly higher participation rates than whites in outdoor basketball and soccer. Participation in each of these activities is highest for the youngest respondents, and drops off sharply after that. Consequently, a portion of the higher participation in each of these activities by Hispanics is attributed to their relatively younger ages. When age and other variables are accounted for in the model, race and ethnicity are no longer a significant variable in explaining participation in these activities (i.e., with all else constant). Age also appears to be a factor, together with income, in explaining why the probit model suggests no significant difference between whites and Asian Americans in participation in tennis, when a simple comparison suggested higher participation by Asians.

The inclusion of age in the model also can help reveal significant differences between racial and ethnic groups that did not emerge in simple comparisons. For example, the significantly lower participation in bicycling and downhill skiing by Hispanic Americans, and significantly lower participation by Asian Americans in pool swimming, bicycling, and baseball, emerged once age and other variables were included in the model. Simple comparisons did not reveal significant differences between these groups and whites; but when age and other variables were included in the model, the coefficient for the groups

became significant and negative. This suggests that, given the relatively young age of these groups, we would have expected significantly higher participation in these activities. Consequently, there is a significant difference in participation between these groups when all other variables are held constant.

Location also figures prominently in probit models for many activities. At least one location variable was significant for 22 out of the 31 activities. The lower participation in fishing by African Americans and Asian Americans that was identified as significant in simple comparisons, was not significant in the probit model. This is partly because of the concentration of African Americans and Asian Americans in Chicago and its suburbs, and not in other areas of the State, particularly downstate, where residents are more likely to engage in fishing. Because African Americans and Asian Americans are concentrated in the Chicago area, we would not expect a high proportion of these groups to participate in fishing. Thus an important component of the differences in participation in fishing between these two groups and whites is attributed to where they live. A significantly lower participation in sailing by African Americans emerged when location was accounted for in the probit model. This is because African Americans are concentrated in Chicago, which has a higher participation in sailing than other areas of the state. Thus we would expect a significantly higher participation in sailing for African Americans, and a significant difference emerges (all else held constant).

## Age

The dominant pattern for participation in the 31 activities used in the Illinois study is for the probability of participation to decrease with age (all else constant). The coefficients in the probit model (table 13) compare participation in selected age groups with participants 18-25.

There was a significant and steady decrease (all else constant) in participation with age group after age 26 in each of the following activities, which can easily be associated with young adults: running and jogging, downhill skiing, swimming at pools, swimming at other areas, canoeing, tennis, outdoor basketball, bicycling, and riding off-road vehicles.

There was a significant and steady decrease in participation with age group (all else constant) after

age 39, in each of the following activities: cross-country skiing, ice skating, water skiing, tent camping, golf, softball and baseball, soccer, and horseback riding.

There was a significant and steady decrease in participation with age group (all else constant), after age 55, in motorboating and hiking.

There was a significant decrease in participation with age group (all else constant) after age 65, in hunting, sailing, picnicking, and driving for pleasure. These activities can be associated with older adults.

There were no significant differences with age class for walking or observing nature (all else constant), two activities that can be associated with individuals of any age.

## Urban or Rural Residence

The coefficients for suburban and other Illinois residents in the probit models estimate the difference in probability of participation in an activity between individuals living in these areas and those who reside in Chicago (all else constant). The general pattern across all 31 activities is a higher probability of participation for individuals living outside Chicago. Sailing is a notable exception, in that the portion of respondents participating in sailing is highest in Chicago, only slightly lower in the northern suburbs, and significantly lower elsewhere in the State. This apparently reflects the opportunities for sailing on Lake Michigan and other lakes in northeastern Illinois. The likely availability of resources is useful in explaining differences in participation in various locations. Fishing follows the opposite pattern to sailing, with significantly higher participation outside Chicago and its northern suburbs. Participation in motorboating and canoeing is significantly higher everywhere outside Chicago. Apparently, Lake Michigan and other lakes and rivers in northeastern Illinois do not have as strong an influence on the probability of going fishing or motorboating as they do on sailing. Driving for pleasure and hunting are significantly more popular among individuals living outside of the Chicago area. There are no significant differences by location in Illinois for activities that can take place in most environments, such as observing nature, outdoor basketball, soccer, walking, swimming in a lake, horseback riding, ice skating, backpacking, and hiking.

## National Data

Nadkarni and O'Leary (1992b) conducted a discriminant analysis, that used a wide range of individual and household variables, to classify individuals as participants and non participants in 12 selected outdoor recreation activities and 5 events or sites, from the Travel USA data (used for the national comparisons of diverse activities and places (i.e., tables 1 and 2)). The results indicate that race and ethnicity, age, and urban or rural residence are statistically significant variables for classifying participants and non-participants, when all other individual and household variables are considered simultaneously. This is similar to the results of the probit analysis of the Illinois data. Crosstabulations of variables from that same data set illustrate that racial and ethnic, age, and urban or rural variables have associations with participation in selected recreation activities that are independent of the effects of other variables. These crosstabulations are presented in appendix C.

Tables C-1 to C-4 present participation in outdoor recreation activities for each racial and ethnic group, according to income class. With each racial and ethnic group, there are significant differences in participation by income class in nearly all activities, illustrating significant within-group variation. However, as illustrated in table C-5, the basic pattern of differences between racial and ethnic groups persists within each income category (i.e., less than \$25,000). Participation in recreation activities and use of recreation sites by age class, for each racial and ethnic group, are presented in tables C-6 to C-11. The basic patterns of significant differences in participation by age class persist across nearly all activities for each racial and ethnic group, reflecting the diversity within each group. Tables C-12 and C-13 illustrate that the patterns of racial and ethnic differences in participation reported earlier persist within a particular age group (i.e., 18-24 years). There are also summaries of participation in recreation activities and use of recreation sites by urban or rural residence and racial and ethnic group in tables C-14 to C-21. Significant differences in recreation participation in nearly all activities among racial and ethnic groups persist across the full range of rural to highly urban locations. There are significant differences in percent participating across racial and ethnic groups by income category, age class, and urban or rural residence; reflecting the significant

variation in recreation behavior within each group. However, in all of these analyses, the basic patterns of association between participation behavior and age, race and ethnicity, and urban residence identified in the previous analyses remain largely intact.

McCreedy and O'Leary (1992c) conducted a discriminant analysis of the National Family Opinion Travel Survey for the summers of 1988, 1989, and 1990, which indicates that with all else constant, African Americans are significantly less likely than whites to have taken a summer pleasure trip of 100 miles or more and one or more overnights, and that urban residents are significantly more likely than rural residents to have taken such a pleasure trip.

## PROJECTIONS FOR THE FUTURE

Participation in outdoor recreation activities often differs significantly among racial and ethnic groups, age classes, and urban or rural residence. These differences often remain significant when other individual, household, and location variables are taken into account. This suggests that aging of the population, increased racial and ethnic diversity, and increased urbanization might significantly influence future participation. The question remains concerning the actual impact of aging, increasing racial and ethnic diversity, and increased urban residence on outdoor recreation behavior in the future.

Murdock et. al. (1991) developed a cohort-component projection model that uses projections of the population by age and race and ethnicity, together with activity-specific rates of participation by age and race and ethnicity, to project number of participants in recreation activities in the future.

Projections were made by Murdock et. al. (1991) to assess the likely effects of demographic changes (age and race and ethnicity) on the number of persons who will participate in seven selected recreation activities, in the U.S., through the year 2025 (backpacking, birdwatching, hunting, dayhiking, camping in a tent, walking for pleasure, and picnicking). Activity participation rates for combinations of age and race and ethnicity, in each of the seven activities, were derived from the survey conducted for the President's Commission on Americans Outdoors, by Market Opinion Research Survey Organization (1986). The small number of minority respondents in that survey limited the number of activities that

could be included in the analysis, and made it necessary to group ages into 5-year age cohorts, and to combine genders. Given the projections of population characteristics provided by the U.S. Bureau of the Census, projections were developed for three racial groups (white, African American, and "other") and one ethnic group (Spanish origin). In the Census, individuals were classified separately by race and ethnicity; consequently, those of Spanish origin could be of any race; but most reported that they were white. The single set of activity-specific participation rates for age and racial and ethnic groups was used for all years in the projection period. The general pattern in these activity-specific participation rates is for the proportion participating in an activity to decrease with increasing age and racial and ethnic minority background. This is consistent with previ-

ous discussions of participation patterns of racial and ethnic and age class groups.

The projections of future participation suggest that, given U.S. Bureau of the Census assumptions concerning future growth of the population and changes in its age and racial and ethnic structure, as well as constant activity participation rates for particular age and racial and ethnic groups (derived for the President's Commission on Americans Outdoors (1986)), growth in number of U.S. participants in six of the seven outdoor recreation activities, during the period 1990-2025, will be lower than expected growth in the U.S. population. The number of participants in backpacking is projected to decrease slightly. Birdwatching participants are projected to grow in numbers at a slightly faster rate than the U.S. population (table 14).

**Table 14.—Percent change in total number of additional persons projected to be involved in selected outdoor recreation activities in the United States from 1990 - 2025, by race and ethnicity.**

Activity	Total population	Race			Ethnic
		White	Black	Other	Spanish origin
Backpacking	-0.3	-6.1	16.2	46.5	43.0
Birdwatching	23.4	13.7	31.1	54.9	50.7
Hunting	11.4	4.8	24.4	49.9	46.5
Day Hiking	10.0	3.8	22.4	50.2	46.6
Camping in a tent	3.2	-4.0	22.6	47.1	45.0
Walking for pleasure	18.3	9.9	27.6	53.0	48.5
Picnicking	16.0	8.0	26.2	52.2	47.6

Source: Murdock et. al. (1991).

Note: During the period 1990 - 2025 the U.S. population is projected to increase by 19.7%.

**Table 15.—A decomposition of the projected differences in the rate of participation in selected outdoor recreation activities among residents of the United States, by activity, 1990 - 2025.**

Activity	Percent of absolute change in total effect resulting from		
	Population	Age	Race
Backpacking	1.7	91.2	7.1
Birdwatching	4.5	94.9	0.7
Camping in a tent	2.5	95.0	2.6
Day hiking	5.1	84.1	10.8
Hunting	14.2	77.5	0.3
Picnicking	22.8	76.8	0.4
Walking for pleasure	25.3	65.3	9.4

Source: Murdock et. al. (1991).

Given that Murdock et. al.'s (1991) cohort-component projection model uses the same activity-specific participation rates for age and racial and ethnic groups, for all time periods, projected rates of change in participants at a different rate than the U.S. population are the result of changing age structure and changing racial and ethnic composition of the population. The projected changes in number of participants in selected activities were attributed primarily to changing age structure, and to a much lesser extent, to population growth and changing race and ethnicity. In essence, growth of participation in an activity at a rate lower than population growth is attributable to shifts of the population into age and racial and ethnic groups with lower rates of participation.

Across the seven activities, age accounted for 65-95% of the projected absolute change in number of participants between 1990 and 2025; population growth explained 2-25%, and race 1-11% (table 15). Birdwatching participants increased at a higher rate than population growth, largely because the activity has relatively high popularity with older individuals. Birdwatching stood out among 29 activities at the national scale (table 5), and among 31 activities in Illinois (table 8), for its relatively high popularity with older Americans. Relatively high rates of increase in pleasure walking and picnicking also are attributable to their popularity with older Americans. The projected drop in backpacking participation is largely attributable to its relatively high popularity with young adults. For backpacking and camping in a tent, there is a projected decrease in the

**Table 16.—Projected percent of persons in the United States participating in selected outdoor recreation activities in 1990 and 2025, by age group.**

Age group	Back-packing		Bird-watching		Hunting		Dayhiking		Camping		Walking		Picnicking	
	'90	'25	'90	'25	'90	'25	'90	'25	'90	'25	'90	'25	'90	'25
0 - 29	66.6	62.4	38.2	29.3	54.9	46.4	51.0	43.6	61.9	56.4	44.5	35.6	46.6	38.6
30 - 39	18.5	16.9	17.4	13.0	16.4	13.5	20.4	17.0	19.8	17.5	17.7	13.8	17.9	14.4
40 - 59	11.8	15.0	23.7	26.2	19.6	24.1	18.2	21.7	13.9	17.7	21.7	25.1	21.4	24.7
60 +	3.0	5.7	20.7	31.5	9.2	16.0	10.4	17.7	4.4	8.3	16.1	25.5	14.1	22.4

Source: Murdock et. al. (1991).

number of white participants. This is partly because of slow growth in the number of young whites (15-19 years of age) and an absolute decline in whites age 20-24 years. Activities in which participation is higher among younger population groups are projected to experience slow rates of increase in the future, particularly among whites.

Projections provided by the cohort-component projection model also suggest changes in the demographic characteristics of participants, with higher ages and larger proportions of minorities among participants in each of the seven activities.

For all seven activities, there is projected to be a decrease in the proportion of participants 39 years of age and younger; but an increase in the proportion of participants age 40 and above, with the increases in participants 40 and older ranging from 6% (backpacking) to 13% (birdwatching) across the seven activities. This is not to suggest that young people will not be important participants; the proportion of participants under 40 in the year 2025 is expected to

range from 42% (birdwatching) to 79% (backpacking) across the seven activities (table 16). While young people will make up a smaller portion of the population than in the past, their relatively high participation rates will continue to make them an important, although somewhat smaller, component of participants. The highest percentage growth in participants for all racial and ethnic groups, and for all activities, is projected for the oldest age group.

Minority participants are projected to make up a significant portion of the increase in participants in all seven activities. This is a result of higher birth rates and higher rates of immigration for minorities relative to the white population, which will experience low birth rates, aging, and increased mortality. With a decrease in white participants in backpacking and camping in a tent, all of the increases for those activities will come from minority groups. Across the other five activities, the increase in Hispanic participants ranges from 34% to 50%; the other group ranges from 20% to 42%; and the African Americans range from 23% to 28% (table 17). In all activities, the "other" racial group had the highest projected percent increase in number of participants between 1990 and 2025, followed by the Hispanic ethnic group, with whites having the lowest percentage rate of growth in number of participants. In all seven activities, there is projected to be an increase in the proportion of participants from the African American and "other" racial categories and the Hispanic ethnic group (table 18).

There is projected to be a decrease in the number of white participants under 40 for all activities; but an increase in the number of participants from all other age and racial and ethnic group combinations is projected for all seven activities, between 1990 and 2025.

**Table 17.—Projections of the increase in number (in thousands) of U.S. residents participating in selected outdoor recreation activity, 1990 - 2025, by race and ethnicity.**

Activity	All	Race			Ethnic
		White	Black	Other	Hispanic
Backpacking	-147	-2,705	754	1,804	2,300
Birdwatching	19,130	10,872	4,450	3,808	6,435
Hunting	6,499	2,507	1,645	2,347	2,183
Day Hiking	9,784	3,381	2,317	4,086	4,933
Camping in a tent	2,660	-2,701	2,370	2,991	4,493
Walking for pleasure	38,009	19,010	9,889	9,110	15,754
Picnicking	30,435	13,830	8,495	8,110	14,178

Source: Murdock et. al. (1991).

National analyses, such as Murdock et. al. (1991), do not reflect the relative magnitudes of change that are at work at the regional and local levels. This is important with increases in racial and ethnic minorities, which can be concentrated in particular areas of the U.S. Some insight into regional developments is provided by projections of recreation participation in Texas, where there is a large minority component of the population that is expected to increase substantially, to reach more than half of the population by 2025 (Murdock et. al. 1990a). Their analysis presents another opportunity to look at the implications of changing age and racial and ethnic structure of the population on participation projections. If we assume the intermediate immigration scenario (Murdock et. al. 1990a), the growth in participation among Texas residents 10-64 years of age, between 1986 and 2025, across 10 outdoor recreation activities is projected to range from 37% (hiking) to 68% (saltwater fishing) (table 19). These rates are below the expected Texas population growth rate of 76% during the same time period. Given the assumption of constant activity-specific participation by age and racial and ethnic groups over time, these changes in participation at a rate different from population growth result from changing age and racial and ethnic structure of the population.

Minority groups will be an important part of the increases in participation, ranging from 93% of the increase in horseback riding to 63% of the increase in golf. Hispanic groups are particularly significant in

**Table 18.—Projected racial and ethnic breakdown of U.S. residents participating in selected outdoor recreation activities, 1990 and 2025.**

Activity	Race						Ethnic	
	White		Black		Other		Hispanic	
	1990	2025	1990	2025	1990	2025	1990	2025
Backpacking	88.7	83.8	7.4	8.8	3.9	7.4	6.0	10.4
Birdwatching	84.1	78.9	12.1	14.2	3.8	6.9	7.7	12.6
Hunting	87.0	82.0	8.9	10.6	4.1	7.4	4.4	7.4
Day hiking	87.7	82.9	8.2	9.6	4.2	7.6	5.8	9.8
Camping in a tent	86.0	80.1	9.9	12.4	4.1	7.5	6.7	11.8
Walking for pleasure	83.7	78.5	12.5	14.6	3.9	7.0	8.0	13.2
Picnicking	83.5	78.3	12.6	14.7	3.9	7.0	8.2	13.5

Source: Murdock et. al. (1991).

**Table 19.—Projected percent increase in the number of Texas residents 10-64 years of age participating in selected leisure activities, between 1986-2025, and portion of that increase accounted by racial and ethnic groups (middle net migration scenario).**

Activity	%increase	%increase attributable to			
		Anglo	Black	Hispanic	Other
Bicycling	47.8	10.0	14.8	74.7	0.6
Saltwater swimming	56.8	12.6	4.6	82.2	0.6
Golf	37.5	37.0	8.8	52.6	1.6
Horseback riding	34.0	7.1	16.6	75.6	0.7
Camping	44.2	27.9	7.5	63.3	1.2
Hiking	37.3	35.9	8.8	53.6	1.7
Hunting	45.6	30.5	13.0	55.2	1.3
Nature study	56.0	31.3	9.5	57.9	1.2
Fresh-water fishing	46.7	28.5	15.9	54.4	1.2
Salt-water fishing	68.4	19.2	11.7	68.3	0.8

Source: Murdock et. al. (1990a).

Texas, and are expected to account for between 53% (golf) and 82% (saltwater fishing) of the increase. Projected increases in Hispanic participants range from 144 to 166% over the 10 activities.

Analysis of the age distribution for participants indicates that there will be a decrease in the proportion under 40 years of age, and an increase in the proportion aged 40 and higher (Murdock et. al. 1990b).

Warnick and Vander Stoep (1990) also report different trends in recreation participation by regions.

## SOME REFLECTIONS ON THE PROJECTIONS

The cohort-component projection model developed by Murdock et. al. (1990a, 1990b, 1991, 1992) provides estimates of the number of participants in recreation activities over time, and makes it possible to evaluate the association between changes in age and racial and ethnic structure of the population and these estimates, as well as the demographic characteristics of participants. Those projections must be evaluated in light of two key assumptions of their model.

1. Participation rates by age group and racial and ethnic groups will not change over time.
2. Variables other than age group and race and ethnicity that influence participation are not explicitly considered.

Murdock et. al. (1991, 245) acknowledge these assumptions and the limitations that they place on the results of the analysis; but point out that

(a) "no information was available on which to base projections of changes in rates," and

(b) "Although limited in several ways, we believe that the projections presented here are nevertheless useful because they allow one to examine the effects of demographic change, which although not necessarily the most important factor in determining future recreation patterns, will clearly be an important factor affecting participation in recreational activities in the coming years."

Use of the cohort-component projection model requires information on (1) population predictions by selected demographic categories (i.e., age, racial and ethnic group, etc., and (2) activity-specific participation rates by those demographic categories. The model can be expanded beyond age and race and ethnicity to include other demographic variables, as long as projections of the number of individuals by demographic category are available, and activity-specific participation rates associated with these categories can be obtained. It is possible to use changing activity participation rates over time, by demographic categories, if estimates of those rates can be obtained.

Murdock et. al. (1990a, 1990b, 1991, 1992) do not assume that activity-specific rates of participation for the total population will stay constant over time, but that rates for each age and racial and ethnic group will stay constant over time. With changing age and racial and ethnic structure of the population, and activity-specific participation rates that are lower for older adults and racial and ethnic minority groups, they project a slight decline in activity-specific participation rates for the total population and, consequently, growth rates in participation for most activities that fall below the rate of population growth.

The cohort-component projection model uses activity-specific participation rates for age and racial and ethnic groups, developed from the responses of individuals surveyed at a particular time, to estimate future recreation participation. That activity-specific pattern is applied to projections of the numbers of individuals in particular age and racial and ethnic groups, at future points in time, to predict recreation participation that can be expected to accompany aging and increasing

racial and ethnic diversity of the population. For example, the current participation of 60- to 65-year-old African Americans is used to predict the level of participation that those African Americans who are currently 40-45 years old will have in 20 more years. This assumes that the leisure patterns of present young adults will resemble those of older adults as the former grow older. However, there are cohort and period effects associated with age that may influence variations in recreation activity participation rates of individuals. Much of the following discussion draws heavily on the work of English and Cordell (1985).

**"Cohort"** — An age cohort is a group of individuals who were born during the same time period, and have been subject to the same events and social forces, at the same times in their lives. People born at different times often are exposed to different values, norms, behaviors, fads, and recreation opportunities; and may experience them at different times in their lives. Thus, different cohorts may have varying recreation perceptions and behaviors that are carried through life. Cohorts that were heavily involved in outdoor recreation activities in the early and middle portions of their lives might continue those patterns. To the extent that cohort effects are important, the leisure activities of present young adults are likely to provide a good basis for predicting what their leisure activities will be when they are older.

**"Period"** — Changes that influence the recreation behavior of individuals regardless of the cohort to which they belong (i.e., individuals of different ages at a given point in time) are referred to as period effects. These include changes in the availability of areas and facilities, and technological changes in recreation equipment and facilities. Examples of period influences identified by English and Cordell (1985) include upward shifts of participation in camping, fishing, and hunting, that might be attributed to increases in public opportunities for these activities, and increases in hiking that may be attributed to new equipment and facilities.

**"Aging"** — If age were the only effect influencing participation rates over time, there would be little differences in participation between persons of the same age at different points in time (i.e., a 60-year-old interviewed in 1970 would have the same participation rate as another 60-year-old interviewed in 1960). To the extent that age effects exist, the leisure activities of the present young adults should resemble those of older adults as the former grow older.

There are often interactions between cohort, period, and aging effects. An example of cohorts interacting with period might be older groups being less likely to respond to period changes, such as new technology, facilities, or social values. For example, English and Cordell (1985) report that participation in hiking increased over time with all but the two oldest cohorts, and for skiing, there have been increases over time with the younger cohorts, but decreases with the older cohorts. Age appears to eventually outpace the period effect and reduce participation for older individuals.

Cohort analysis can be visualized in terms of following the participation patterns (percent participating in an activity) of particular age cohorts over time. When each cohort is more or less active than the next older cohort over the range of ages, this is an indication that a cohort effect is present. When each cohort "jumps" up or down in participation at a particular point in time, this is an indication of a period effect.

Age and period effects also can be detected by examining participation rates by age, in an activity that is measured in different years (i.e., cross-sectional data). If only age effects are present, there would be a similar participation rate for a given age group in a particular activity, regardless of the year in which the measurement was taken. If only period effects are present, there would be similar participation rates for all age groups during a particular year, but different rates for each age group for the different years when individuals were sampled.

English and Cordell (1985) track cohorts over time and present cross-sectional analyses of participation in several outdoor recreation activities. They conclude that there are substantial cohort and period effects that have tended to increase participation rates during the period 1960 to 1982, in downhill skiing, fishing, camping, hiking and backpacking, and hunting. Christensen (1992a) extended their analysis by using techniques developed by Fienberg and Mason (1979) to fit separate logistic models for the cohort, age, and period effect for each activity, and to compare the models for goodness of fit. He found that the cohort model fit best for all activities except hiking and backpacking, where the age effect model was best. This reaffirms English and Cordell's (1985) conclusion that there were effects other than age at work with those activities, over that period.

**Table 20.—Percent of the U.S. population participating in recreation activities in selected years, 1980-1988.**

Activity	1980	1981	1985	1988
Camping	12.5	12.4	11.6	10.8
Salt-water-fishing	6.2	5.3	4.4	3.8
Ice-skating	5.0	4.9	3.2	2.4
Jogging	12.8	11.8	13.4	8.9
Roller skating	9.1	10.5	6.0	4.4
Horseback riding	4.7	4.4	4.2	5.7

*Source: Christensen (1992a).*

To further test the assumption of constant activity-specific participation rates by age and racial ethnic group over time, Christensen (1992a) analyzed participation in six diverse activities (camping, salt-water fishing, ice skating, jogging, roller skating, and horseback riding) during the 1980s (1980, 1981, 1985, and 1988), using Simmons Market Data. He broke down variation in participation over that period into components attributable to (1) changing distribution of the population among age classes and racial and ethnic groups, (2) changes in age-specific or racial and ethnic-specific participation, and (3) interactions between distribution and rate effects. With all activities, with both age and race and ethnicity (separate analyses), and between all time intervals (80-81, 80-85, 80-88, 81-86, 81-88, 85-88), the overwhelming portion of the changes were attributed to changing participation rates over time. This suggests that, for these six activities and four observations in the 1980s, a major component of the change in participation over time was attributable to changes in the activity-specific rate of participation for age and racial and ethnic specific groups. The overall trend in five out of six activities was a decline in participation rates over time (table 20).

An extension of Christensen's (1992b) analysis to participation in hunting and fishing during the period 1955 to 1985 (data collected at 5-year intervals) brought similar results, in that changing participation rates by age were the key component in changing overall participation. Changes in participation rates by age class and with racial and ethnic groups, over time, are evident in an examination of the participation rates by year, in each activity, using the Simmons Market Data and the National Hunting and Fishing Data (appendix D, tables D-7 to D-12).

Warnick and Loomis (1990) present participation rates by age classes, from 1975 to 1987, for tennis and golf, and make projections of those rates over time (i.e., 1988, 1989, 1990, 1992). There are important changes in the participation rates by age class from year to year, suggesting that there are influences other than age at work. Warnick and Vander Stoep (1990, 312) examined annual data for 1979-1987 (excluding 1981), for 13 diverse outdoor recreation activities (land-based, water-based, and winter activities), and report declining participation rates in many activities.

“There also appears to be a relatively widespread decline in participation rates in many outdoor recreation activities, at least for most of the activities examined in this study. These declines have been sustained over both long and short time periods. While participation rates have increased in some regions, the dominant overall pattern in many activities has been one of decline.”

Christensen’s analysis (1992a) suggests that in making participation projections, significant attention should be given to changing participation rates for age and racial and ethnic groups over time. He points out that with the information included in his analysis, using models that assume a constant structure of the population over time and changing participation rates might give better predictions of participation than assuming constant participation rates and changing structure of the population. His projections of the number of participants age 18 and older in hunting and fishing, using participation rates that are adjusted for age structure and changing age-specific rates over time (Christensen 1992b) (tables 21 and 22), point to a 11% increase in the number of individuals engaging in hunting, and a 57% increase in the number of individuals engaged in fishing over the period 1985 to 2005 (table 23). During that period, a smaller portion of the population over 18 years is expected to hunt, but a larger portion is expected to fish. Both hunters and fishers are expected to be older, with an actual decrease in the number of hunters under age 35. By capturing the trend in per-capita participation by age class, Christensen (1992b) predicted 1,000,000 fewer hunters and 17,000,000 more fishers than would have been the case if constant participation rates (for 1985) had been used (table 24).

**Table 21.—Actual and projected percent of the U.S. population participating in fishing, by age class, 1955 - 2005.**

	18-24	25-34	35-44	45-64	65+
1955	0.149	0.197	0.218	0.158	0.085
1960	0.194	0.220	0.216	0.173	0.084
1965	0.179	0.240	0.230	0.175	0.093
1970	0.204	0.266	0.246	0.182	0.081
1975	0.263	0.313	0.292	0.218	0.121
1980	0.263	0.313	0.292	0.218	0.121
1985	0.266	0.318	0.305	0.229	0.132
1990	0.295	0.340	0.311	0.226	0.146
1995	0.335	0.380	0.341	0.236	0.156
2000	0.375	0.420	0.371	0.246	0.166
2005	0.415	0.460	0.401	0.256	0.176

Source: (Christensen 1992b).

**Table 22.—Actual and projected percent of the U.S. population participating in hunting, by age class, 1955 - 2005.**

	18-24	25-34	35-44	45-64	65+
1955	0.132	0.125	0.113	0.081	0.032
1960	0.153	0.139	0.123	0.087	0.039
1965	0.124	0.138	0.109	0.075	0.032
1970	0.111	0.131	0.112	0.066	0.023
1975	0.136	0.130	0.120	0.076	0.035
1980	0.136	0.130	0.120	0.076	0.035
1985	0.114	0.116	0.106	0.078	0.032
1990	0.103	0.123	0.113	0.073	0.032
1995	0.098	0.121	0.112	0.072	0.032
2000	0.093	0.119	0.112	0.071	0.031
2005	0.088	0.117	0.111	0.070	0.031

Source: (Christensen 1992b).

Predicting future outdoor recreation activity participation rates for different racial and ethnic groups presents a dilemma similar to that faced with aging, although we do not have a long time series of data available for analysis. The data that are available from Simmons (tables D-7 to D-12) seem to suggest parallel changes in participation rates for African Americans and whites, as do the limited national data on hunting and fishing (1980, 1985) (table D-13); but it is difficult to identify clear trends from limited data over a short time period.

It is possible to argue that differences in participation rates between racial and ethnic groups will narrow over time, as minority individuals become more affluent and are increasingly exposed to broader aspects of the U.S. culture, including opportunities for outdoor recreation. There is some support for this

trend, because part of the differences in recreation participation and pleasure travel among racial and ethnic groups is attributed to differences in income and other social variables. This is supported by the probit and discriminant models discussed previously, which suggest that some of the differences in participation between racial and ethnic groups are attributable to socio-demographic and locational factors. To the extent that these variables become more similar for racial and ethnic groups, we might expect participation patterns to become somewhat more similar.

Perhaps a more difficult question concerns changing preferences of minority groups over time. Will members of particular groups want to behave more like other groups, or will they retain traditional recreation patterns? There is ample evidence of outdoor recreation fulfilling each of these important roles. Recreation activities may be one way that individuals in a minority group seek to retain aspects of their traditional culture (i.e., Jamaicans playing cricket, Central and South Americans playing soccer, Italians playing bocce, and Asian groups engaged in traditional exercise programs). There is also traditional "ethnic" music, food, and games at picnics and other group outings. At the same time, we see ready adaptation of many individuals to

**Table 23a.—Actual and projected number of participants in hunting in the U.S., by age class, 1985 - 2005.**

	18-24	25-34	35-44	45-64	65+	All
1985	2,896	4,588	3,597	3,650	897	15,628
1990	2,692	5,387	4,267	3,432	1,065	16,843
1995	2,380	4,948	4,746	3,804	1,129	17,007
2000	2,346	4,419	4,900	4,378	1,158	17,201
2005	2,369	4,216	4,550	5,023	1,195	17,353

*Projections are based on predicted participation rates presented in table 22.*

**Table 23b.—Actual and projected number (in thousands) of participants in fishing in the U.S., by age class, 1985 - 2005.**

	18-24	25-34	35-44	45-64	65+	All
1985	6,782	12,538	10,312	10,658	3,703	43,993
1990	7,711	14,934	11,786	10,588	4,898	49,917
1995	8,134	15,566	14,437	12,418	5,578	56,133
2000	9,461	15,603	16,291	15,100	6,123	62,578
2005	11,171	16,559	16,422	18,273	6,737	69,162

*Projections are based on predicted participation rates presented in table 21.*

**Table 24.—Projected number of participants in hunting and fishing, in 2005, under alternative assumptions.**

Age	Population projection for 2005	Hunting		Fishing	
		With 1985 rates	With projected rates	With 1985 rates	With projected rates
18-24	26,919	3,069	2,369	7,160	11,171
25-34	35,998	4,176	4,216	11,447	16,559
35-44	40,952	4,341	4,550	12,490	16,422
45-64	71,380	5,568	5,023	16,346	18,273
65+	38,279	1,225	1,195	5,053	6,737
Total	213,528	18,379	17,353	52,496	69,162

*Participation rates are from tables 21 and 22.*

the traditions of their new country (i.e., softball, basketball, and football).

Warnick (1991), using Simmons Market Data, reports that over the period 1980-1988, adult African American participation rates increased for golf and tennis, but appeared to be declining or marginally stable for basketball, swimming, and participation in fitness programs.

It is likely that with participation in recreation activities by minority groups, we will see both a retention of some traditional activities and practices and the adoption of some of the new. The pattern in particular activities will depend largely on how those activities fit into the culture of each group. Carr and Williams (1993), Floyd and Gramann (1993), and Gramann and Floyd (1991) provide a discussion of ethnic assimilation theory.

Discrimination has been identified as an important barrier to participation in outdoor recreation activities and the use of sites (Blahna and Black 1993, Lee 1972, Taylor 1989, West 1989, White 1991, Woodard 1988). The extent to which relations between various racial and ethnic groups improve also will be an important force affecting the participation in recreation activities and the use of recreation sites.

It also is possible that there could be increased participation over time for older adults. Improvements in health care, increased participation in younger years, and changing attitudes of older adults towards outdoor recreation could support such a trend. The limited data available for the 1980s does not support such a trend (tables D-1 to D-6), other than perhaps with wildlife-associated recreation activities, where there are increases across all age categories (table D-14).

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### APPENDIX A.—OUTDOOR RECREATION PARTICIPATION BY ADULT RESIDENTS OF MAJOR U.S. CITIES, BY RACIAL AND ETHNIC GROUP, 1989

**Table A-1.—Recreation activities of New York adults-1989; percent participating by racial and ethnic group.**

Activity	White (1096)	Black (222)	Hispanic (169)	Other (44)
Swimming*	42.9+++	28.2--	34.8--	71.7+++
Bicycling*	28.1-	22.2-	24.9-	78.3+++
Freshwater fishing*	8.4+	6.7+	0.0--	10.1+
Camping*	11.6+++	0.9--	2.6--	14.2+++
Aerobics*	14.6--	23.8+-	23.4+-	41.0+++
Jogging/running*	9.7--	17.4+-	31.1++	36.8++
Golf*	11.2+++	0.0-	0.0-	0.0-
Weight lifting*	8.3--	16.8+-	17.1+-	33.0+++
Hiking/backpacking*	9.7++	0.0-	10.5++	0.0--
Tennis*	9.7-	7.0-	5.3-	56.0+++
Power boating*	8.3+++	1.0-	0.0-	0.0-
Hunting*	2.0-	1.1-	5.0++	0.0-
Saltwater fishing*	11.6+++	4.5--	5.8--	44.0+++
Bird watching*	7.1++	2.0-	2.6-	1.9
Downhill skiing*	7.2+	2.1-	5.3	0.0
Waterskiing*	4.9++	0.9-	0.0-	0.0
Horseback riding*	7.2+-	3.3--	6.8-	18.3+++
Canoeing*	7.4+	1.1--	4.2+	0.0
Racquetball*	6.8++	1.1-	2.6-	5.1
Sailing*	6.0++	1.9-	0.0-	0.0
Cross-country skiing*	2.0	1.2	0.0	0.0
Mountain climbing	2.6++	0.0-	0.0-	5.1++
Snowmobiling*	1.5	2.1	0.0	0.0
Whitewater rafting	2.9++	0.0-	0.0-	7.0++
Scuba diving*	1.7-	0.0-	6.8++	0.0
Wind surfing*	0.8-	0.0-	2.7++	0.0
Hot air ballooning	0.9	0.9	2.6	0.0
Squash	0.3-	0.0-	0.0-	10.1+++
Hang gliding	0.3	0.0	0.0	0.0

\*Differences between racial and ethnic groups are significant at 0.05 level.

+ Percent participating is significantly higher than another group.

- Percent participating is significantly lower than another group.

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**Table A-2.—Attendance at recreation events by New York adults - 1989; percent reporting attendance by racial and ethnic group.**

Event or site	White (1096)	Black (222)	Hispanic (196)	Other (44)
A national or state park*	42.1+++	18.1--	28.4+-	73.5+++
An historic site*	47.6+++	25.8--	27.4--	51.1++
A museum*	39.8+-	24.7--	36.3+-	72.3+++
A zoo*	31.4+++	21.3--	20.7--	53.4+++
A club offering				
live music*	29.8-	41.7++	33.2+	17.3--
A theme park*	25.2+-	16.8--	42.9++	40.8++
Live theater*	34.6--	43.6++	29.3--	59.3++
An art gallery*	22.3-	20.0-	28.1-	54.0+++
Major league				
baseball game*	26.7+-	14.4--	41.7+++	20.7-
Gambling casino*	29.4--	46.5++	42.4++	18.5--
A rock concert*	18.2+	10.7--	20.0+	21.2
Symphony concert*	15.5+++	7.6--	6.2--	40.2+++
Horse race*	13.3++	4.0-	4.7-	6.3
NFL football game	8.0	4.3	7.1	7.0
Car race	5.2+	2.1-	2.3	7.0
NBA basketball game*	5.0--	23.7+	18.0+	15.6+
Dog race	2.7+	1.1	0.0-	0.0
The ballet*	5.6+-	7.4+	1.9--	15.6++
The opera	6.6-	9.1	9.8	15.6+
NHL hockey game	7.9+	1.1--	4.9+	0.0
Professional golf				
tournament	1.6	0.0	0.0	0.0
Professional tennis				
tournament	3.3	0.9-	5.1+	0.0

\*Differences between racial and ethnic groups are significant at 0.05 level.

+ Percent participating is significantly higher than another group.

- Percent participating is significantly lower than another group.

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a)

**Table A-3.—Recreation activities of Philadelphia adults; percent participating by racial and ethnic group.**

Activity	White (430)	Black (68)
Swimming	37.9	27.6
Bicycling	26.7	19.7
Freshwater fishing	15.2	9.9
Camping*	13.9+	0.0-
Aerobics	14.1	19.1
Jogging/running	5.3	6.0
Golf*	8.8+	1.5-
Weight lifting*	6.5+	0.0-
Hiking/backpacking*	9.9+	0.0-
Tennis	9.7	12.1
Power boating*	8.3+	1.5-
Hunting	4.2	4.8
Saltwater fishing	12.1	13.0
Bird watching	8.5	2.5
Downhill skiing	4.3	0.0
Waterskiing	4.3	0.0
Horseback riding	6.3	4.8
Canoeing*	5.4+	0.0-
Racquetball	3.5	0.0
Sailing*	5.7+	0.0-
Cross-country skiing	1.8	0.0
Mountain climbing	2.1	0.0
Snowmobiling	0.7	4.8
Whitewater rafting*	1.1	0.0
Scuba diving	2.9	0.0
Wind surfing	1.1	0.0
Hot air ballooning	1.8	0.0
Squash	0.4	0.0
Hang gliding	0.3	0.0

\*Differences significant at 0.05 level.

+ Percent participating is significantly higher than another group.

- Percent participating is significantly lower than another group.

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**Table A-4.—Attendance at recreation events by Philadelphia adults - 1989; percent reporting attendance by racial and ethnic group.**

Event or site	White (430)	Black (68)
A national or state park*	42.4+	25.8-
An historic site	48.9	38.7
A museum	37.0	33.8
A zoo	33.6	29.6
A club offering live music	27.9	33.3
A theme park	21.4	27.8
Live theater*	29.4-	44.9+
An art gallery	21.6	23.0
Major league baseball game*	25.3+	14.1-
Gambling casino	38.0	45.9
A rock concert	12.1	4.8
Symphony concert	12.2	6.8
Horse race	8.8	14.7
NFL football game	9.3	5.7
Car race	7.1	1.9
NBA basketball game	3.1-	20.5+
Dog race	2.6	0.0
The ballet*	5.5+	0.0-
The opera	1.7	1.7
NFL hockey game	6.4	0.0
Professional golf tournament	2.3	0.0
Professional tennis tournament	1.9	0.0

\*Differences significant at 0.05 level.

+ Percent participating is significantly higher than another group.

- Percent participating is significantly lower than another group.

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**Table A-5.—Recreation activities of Detroit adults - 1989; percent participating by racial and ethnic group.**

Activity	White (288)	Black (46)
Swimming*	37.1+	19.8-
Bicycling	34.7	22.6
Freshwater fishing*	26.5+	12.4-
Camping*	26.0+	6.1-
Aerobics	17.0	23.4
Jogging/running	10.8	15.6
Golf*	18.9+	3.7-
Weight lifting	12.9	3.9
Hiking/backpacking	11.2	3.7
Tennis	8.4	6.7
Power boating*	16.6+	2.4-
Hunting	10.4	3.7
Saltwater fishing	2.7	3.1
Bird watching*	10.1+	0.0-
Downhill skiing	6.7	0.0
Waterskiing	7.5	0.0
Horseback riding	6.8	13.9
Canoeing	13.4	6.3
Racquetball	6.3	11.2
Sailing	5.3	0.0
Cross-country skiing	7.1	0.0
Mountain climbing	2.4	0.0
Snowmobiling	6.0	0.0
Whitewater rafting	2.6	0.0
Scuba diving	4.0	0.0
Wind surfing	0.3	0.0
Hot air ballooning	0.7	0.0
Squash	0.0	0.0
Hang gliding	0.7	0.0

\*Differences between racial and ethnic groups are significant at 0.05 level.

+ Percent participating is significantly higher than another group.

- Percent participating is significantly lower than another group.

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**Table A-6.—Attendance at recreation events by Detroit adults - 1989; percent reporting attendance by racial and ethnic group.**

Event or site	White (288)	Black (46)
A national or state park	46.1	31.2
An historic site	41.1	24.6
A museum	35.6	39.4
A zoo	35.3	34.0
A club offering live music	31.6	17.6
A theme park	26.4	34.5
Live theater	26.7	35.4
An art gallery	22.1	21.0
Major league baseball game	30.8	32.9
Gambling casino	10.3	15.9
A rock concert	20.5	11.4
Symphony concert	12.3	16.8
Horse race	9.5	15.2
NFL football game*	11.7	24.3
Car race	10.3	5.9
NBA basketball game*	16.2-	28.4+
Dog race*	2.3-	10.2+
The ballet*	2.2-	7.6+
The opera	3.8	7.8
NHL hockey game	14.8	6.8
Professional golf tournament	2.7	0.0
Professional tennis tournament	0.6	0.0

\*Differences between racial and ethnic groups significant at 0.05 level.

+ Percent participating is significantly higher than another group.

- Percent participating is significantly lower than another group.

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**Table A-7.—Recreation activities of Chicago adults - 1989; percent participating by racial and ethnic group.**

Activity	White (515)	Black (147)
Swimming*	34.6+	8.2-
Bicycling*	34.0+	22.5-
Freshwater fishing*	21.3	10.5
Camping*	14.2+	4.0-
Aerobics	16.1	22.6
Jogging/running*	9.1	21.3
Golf*	14.6+	2.7-
Weight lifting	11.8	12.2
Hiking/backpacking*	11.7+	1.4-
Tennis*	10.4+	4.8-
Power boating*	10.9+	0.0-
Hunting*	5.4+	0.0-
Saltwater fishing	1.7	2.8
Bird watching	5.2	4.1
Downhill skiing	4.2	2.7
Waterskiing*	5.8+	0.0-
Horseback riding	5.9	4.8
Canoeing*	6.1+	1.4-
Racquetball	5.6	4.7
Sailing	6.1	5.5
Cross-country skiing*	5.8+	1.4-
Mountain climbing	2.6	0.0
Snowmobiling* <sup>4</sup>	5.2+	0.0-
Whitewater rafting	2.1	0.0
Scuba diving	2.8	1.3
Wind surfing	1.3	0.0
Hot air ballooning	1.3	0.0
Squash	0.0	0.0
Hang gliding	0.4	0.0

\*Differences between racial and ethnic groups are significant at 0.05 level.

+ Percent participating is significantly higher than another group.

- Percent participating is significantly lower than another group.

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**Table A-8.—Attendance at recreation events by Chicago adults - 1989; percent reporting attendance by racial and ethnic group.**

Event or site	White (515)	Black (147)
A national or state park*	42.3+	14.1-
An historic site*	36.5+	24.1-
A museum	38.5	27.0
A zoo*	38.7+	27.0-
A club offering live music	27.9	22.6
A theme park	21.5	17.8
Live theater	34.2	30.7
An art gallery	25.0	20.3
Major league baseball game*	28.2+	13.8-
Gambling casino*	14.1+	5.6-
A rock concert*	13.9+	4.3-
Symphony concert	13.4	11.5
Horse race	12.1	13.9
NFL football game	12.7	8.2
Car race*	8.6+	2.6-
NBA basketball game*	4.7+	16.7-
Dog race	2.2	2.6
The ballet	4.4	3.4
The opera	4.5	2.0
NHL hockey game*	6.3+	1.4-
Professional golf tournament*	3.0+	0.0-
Professional tennis tournament*	0.8-	2.8+

\*Differences between racial and ethnic groups are significant at 0.05 level.

+ Percent participating is significantly higher than another group.

- Percent participating is significantly lower than another group.

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**Table A-9.—Recreation activities of San Francisco adults - 1989; percent participating by racial and ethnic group.**

Activity	White (323)	Black (39)	Hispanic (75)	Other (32)
Swimming*	36.6+-	6.0--	53.6++	39.0+
Bicycling*	34.9+	14.1--	46.4	38.0+
Freshwater fishing*	13.8-	3.2--	42.2+++	21.9+-
Camping*	28.8+	3.4--	37.3+	33.7+
Aerobics*	17.7-	28.4	17.3	34.3+
Jogging/running*	14.2--	11.0-	26.0+	33.3++
Golf*	10.6+	0.0--	15.9+	21.7+
Weight lifting*	11.6--	28.6+	34.0+	24.8+
Hiking/backpacking*	21.0+	0.0--	20.1+	31.4+
Tennis*	7.5-	0.0-	11.9+-	38.7+++
Power boating*	11.9+	0.0-	6.9	6.0
Hunting*	2.0	0.0	0.0	0.0
Saltwater fishing*	5.9--	3.2--	20.8++	21.5++
Bird watching*	5.9	0.0	6.8	5.2
Downhill skiing*	14.5-	7.9--	30.0++	25.2+
Waterskiing*	8.7-	0.0-	19.8++	8.1
Horseback riding*	6.3-	6.7	16.5+	8.3
Canoeing*	4.4	6.6	6.0	8.3
Racquetball*	4.7	10.0	9.2	7.2
Sailing*	5.1+	0.0	0.0-	8.3+
Cross-country skiing*	5.4+	0.0	0.0-	4.2
Mountain climbing	1.4	0.0	2.8	0.0
Snowmobiling*	2.3	0.0	3.4	0.0
Whitewater rafting	4.0-	0.0-	11.3+++	0.0-
Scuba diving*	2.3-	0.0-	0.0-	11.7+++
Wind surfing*	1.9	0.0	3.2	0.0
Hot air ballooning	2.0	0.0	0.0	0.0
Squash	0.1	0.0	0.0	0.0
Hang gliding	0.0	0.0	0.0	0.0

\*Differences between racial and ethnic groups are significant at 0.05 level across groups

+ Percent participating is significantly higher than another group.

- Percent participating is significantly lower than another group.

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**Table A-10.—Attendance at recreation events by San Francisco adults - 1989; percent reporting attendance by racial and ethnic group.**

Event or site	White (323)	Black (39)	Hispanic (75)	Other (32)
A national or state park	53.7	38.5	48.3	51.1
An historic site	52.2	37.3	40.8	49.4
A museum*	44.6++	15.2--	25.7++	47.3++
A zoo*	35.0-	20.3--	62.3++	49.7+
A club offering				
live music*	31.9+-	15.4--	47.0++	36.3+
A theme park*	25.0--	47.8+	49.1+	35.5
Live theater*	35.1++	11.1-	5.0-	22.3+
An art gallery*	31.3++	10.2--	16.8-	28.4+
Major league				
baseball game	35.6	46.2	33.8	52.4
Gambling casino*	41.1+-	20.3--	31.0-	64.5+++
A rock concert*	17.3-	30.1	38.2+	24.5
Symphony concert*	21.2++	6.2-	10.6-	17.4
Horse race	10.6	3.9	8.5	2.5
NFL football game	12.5-	22.6	22.4+	19.7
Car race*	7.7-	0.0-	15.7+++	0.0-
NBA basketball game*	5.9--	24.1++	8.5--	26.7++
Dog race	1.0	0.0	0.0	0.0
The ballet	8.8	3.6-	8.7	18.7+
The opera	7.8	0.0	3.1	8.2
NHL hockey game	1.1	0.0	0.0	0.0
Professional golf				
tournament	2.9	0.0	0.0	0.0
Professional tennis				
tournament*	0.7--	6.2++	0.0--	8.3++

\*Differences between racial and ethnic groups are significant at 0.05 level.

+ Percent participating is significantly higher than another group.

- Percent participating is significantly lower than another group.

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**Table A-11.—Recreation activities of Los Angeles adults - 1989; percent participating by racial and ethnic group.**

Activity	White (659)	Black (92)	Hispanic (223)	Other (111)
Swimming*	39.5+	14.0--	34.5+	38.0+
Bicycling*	34.1+	9.0--	46.6+++	31.1++
Freshwater fishing*	13.4++	11.4-	30.5+++	5.6-
Camping*	25.9+	7.4--	29.6++	18.5+-
Aerobics*	17.6-	13.2-	30.0++	20.4
Jogging/running*	12.6--	16.8-	33.3+++	20.5+-
Golf*	12.9++	2.6++	0.0--	6.9+
Weight lifting*	11.9--	25.3+	25.3+	32.4+
Hiking/backpacking*	18.9+++	5.9-	25.5+++	11.1--
Tennis*	10.1+	20.9++	4.3--	12.3+
Power boating*	8.3++	0.0-	0.0-	3.2+
Hunting*	2.0-	1.6	6.2+	1.7
Saltwater fishing	6.6	4.2	9.7	7.8
Bird watching	5.6	3.8	6.3	4.5
Downhill skiing*	10.2+-	1.6--	18.6++	10.8+
Waterskiing*	7.4+-	0.0-	12.5+++	3.7-
Horseback riding*	7.6+	5.1+	0.0--	4.4+
Canoeing*	1.8	0.0	1.2	3.7
Racquetball*	7.3--	3.8--	16.3++	24.5++
Sailing*	6.5+	0.0-	5.4+	2.8
Cross-country skiing*	1.5-	0.0-	14.3+++	2.8-
Mountain climbing	4.2+	0.0-	1.5	4.2+
Snowmobiling*	1.1-	0.0-	10.0+++	2.2-
Whitewater rafting	1.0	1.6	0.0-	2.8+
Scuba diving*	2.9+	0.0-	0.0-	6.4++
Wind surfing*	1.9+	0.0	0.0-	0.0
Hot air ballooning	1.1	2.6+	0.0-	1.0
Squash	0.4-	0.0	1.8+	0.0
Hang gliding	0.4	0.0	1.2	0.0

\*Differences between racial and ethnic groups are significant at 0.05 level.

+ Percent participating is significantly higher than another group.

- Percent participating is significantly lower than another group.

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**Table A-12.—Attendance at recreation events by Los Angeles adults - 1989; percent reporting attendance by racial and ethnic group.**

Event or site	White (659)	Black (92)	Hispanic (223)	Other (111)
A national or state park*	44.2++	16.9--	27.1--	40.3++
An historic site*	45.0+++	34.1++	22.1--	33.0++
A museum*	40.3-	37.1-	36.0-	61.8+++
A zoo	35.0	30.1	39.5	36.9
A club offering				
live music*	32.1+-	28.2-	20.8--	51.5+++
A theme park*	40.6+-	21.9--	37.6+-	50.6+++
Live theater	33.2+	33.6	25.9-	29.6
An art gallery*	26.4+	21.5	17.7--	32.5+
Major league				
baseball game*	31.0+	12.1--	32.9+	39.3+
Gambling casino*	41.1++	27.0--	30.9--	48.0++
A rock concert*	18.8--	17.6--	38.0++	45.5++
Symphony concert*	18.0++	3.0--	12.2+-	20.8++
Horse race	14.5	11.0	17.2+	7.9-
NFL football game*	11.8+	17.6+	26.3++	5.4--
Car race*	8.9+	4.7-	16.2+++	1.0--
NBA basketball game*	6.5--	9.9--	27.9++	26.9++
Dog race	1.9+	2.4+	0.0-	1.6
The ballet*	8.2++	1.1-	3.6-	5.0
The opera	6.6+	1.1-	5.7	2.2
NHL hockey game	3.9	2.0	6.1	6.7
Professional golf				
tournament*	3.1+	0.0	0.0-	0.0
Professional tennis				
tournament*	1.6	3.0	1.2	0.0

\*Differences between racial and ethnic groups are significant at 0.05 level.

+ Percent participating is significantly higher than another group.

- Percent participating is significantly lower than another group.

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**APPENDIX B.—CROSSTABULATIONS OF DEMOGRAPHIC VARIABLES OF RESPONDENTS TO ILLINOIS STATEWIDE COMPREHENSIVE OUTDOOR RECREATION SURVEYS IN 1987, 1989, AND 1991**

**Table B-1.—Percent of respondents to the 1987 and 1989 Illinois SCORP surveys by age and racial and ethnic background.**

	White (n=1335)	Black (n=195)	Hispanic (n=48)	Asian (n=27)
18-25 years	12	12	27	19
26-39 years	37	39	48	52
40-55 years	23	23	17	22
56-65 years	13	16	6	7
More than 65 years	17	10	2	0

*Differences significant at 0.05 level*

**Table B-2.— Percent of respondents to the 1987 and 1989 Illinois SCORP surveys by household income and racial and ethnic background.**

Household income per year	White (n=1433)	Black (n=206)	Hispanic (n=56)	Asian (n=34)
<\$15,000	16	29	23	6
\$15,000 - \$25,000	17	32	18	0
\$26,000 - \$40,000	31	18	36	47
>\$40,000	34	20	23	47

*Differences significant at 0.05 level*

**Table B-3.— Percent of respondents to the 1987 and 1989 Illinois SCORP surveys by area of Illinois where they live, and by household income.**

	Household income			
	<\$15,000	\$15,000- \$25,000	\$26,000- \$40,000	>\$40,000
Northern Chicago Suburbs	9	16	31	44
City of Chicago	20	21	26	32
Southern Chicago Suburbs	9	19	38	33
Northern Illinois*	17	26	32	25
Central Illinois	17	18	34	30
Southern Illinois	29	21	27	24

*\*Excludes Chicago and its suburbs.*

*Differences significant at 0.05 level.*

**Table B-4.— Percent of respondents to the 1987 and 1989 Illinois SCORP surveys by area of Illinois where they live, and age.**

	18-25	26-39	40-55	56-65	>65
Northern Chicago Suburbs	15	43	21	10	12
City of Chicago	13	41	22	13	11
Southern Chicago Suburbs	16	36	24	13	11
Northern Illinois*	6	40	22	13	18
Central Illinois	11	26	28	15	19
Southern Illinois	5	33	21	14	27

*\*Excludes Chicago and its suburbs.*

*Differences significant at 0.05 level.*

**Table B-5.— Respondents to the 1987, 1989, and 1991 Illinois SCORP surveys by area of Illinois where they live, and racial and ethnic background.**

	White (2471)	Black (331)	Hispanic (87)	Asian (55)
Northern Chicago Suburbs	24	7	16	29
City of Chicago	19	76	59	42
Southern Chicago Suburbs	13	7	15	16
Northern Illinois*	11	3	3	0
Central Illinois	20	5	5	7
Southern Illinois	13	3	2	5

*\*Excludes Chicago and its suburbs.*

*Differences significant at 0.05 level.*

**Table B-6.—Family characteristics (averages) for respondents to 1987 and 1989 Illinois SCORP surveys.**

	Family size	# adults	# children
White	2.7	2.0	0.7
African American	3.0	2.0	1.0
Hispanic American	3.2	2.3	0.9
Asian American	3.6	2.4	1.2

**Table B-7.—Percent of respondents to the 1987 and 1989 Illinois SCORP surveys by age and household income.**

	<\$15,000	\$15,000- \$25,000	\$26,000- \$40,000	>\$40,000
18-25 years	22	22	28	27
26-39 years	10	18	37	36
40-55 years	7	16	33	44
56-65 years	25	22	25	28
More than 65 years	47	27	15	12

*Differences significant at 0.05 level.*

**APPENDIX C.—CROSSTABULATIONS OF PARTICIPATION IN OUTDOOR RECREATION, OF U.S. ADULTS, 1989, BY INCOME, AGE, AND SIZE OF RESIDENCE AREA**

**Table C-1.—Recreation activities of White U.S. adults - 1989; percent participating by income class.**

Activity	<24,999 (6685)	25,000- 29,999 (1092)	30,000- 39,999 (2319)	40,000- 44,999 (848)	45,000- 59,999 (1778)	60,000> (2067)
Swimming*	27.8	39.2	41.7	43.9	46.4	46.7
Bicycling*	20.9	33.3	29.7	33.8	34.5	36.4
Freshwater fishing*	19.1	24.1	25.0	26.6	22.2	19.8
Camping*	17.8	23.1	25.0	23.7	23.7	19.7
Aerobics*	11.2	18.8	16.5	18.4	18.8	19.0
Jogging/running*	7.6	10.4	10.5	13.1	13.9	16.0
Golf*	7.8	13.9	14.4	18.9	17.9	21.7
Weight lifting*	7.7	13.2	11.8	12.5	11.3	13.3
Hiking/backpacking*	9.5	12.1	13.9	14.3	15.6	16.1
Tennis*	5.4	9.7	9.3	10.8	12.0	14.5
Power boating*	6.4	8.8	10.4	13.5	13.1	14.0
Hunting*	6.8	10.5	10.3	10.2	9.3	8.1
Saltwater fishing*	5.4	5.6	7.8	8.0	8.6	11.4
Bird watching*	6.8	8.7	7.3	8.3	9.7	9.7
Downhill skiing*	3.3	4.4	5.9	8.3	10.1	13.6
Water skiing*	4.6	5.5	8.1	9.4	10.1	9.7
Horseback riding*	4.6	5.4	7.0	6.4	7.2	7.9
Canoeing*	4.6	7.6	7.9	7.2	7.6	8.2
Racquetball*	3.3	4.2	5.8	4.7	6.0	8.2
Sailing*	2.7	3.4	3.9	5.5	5.8	9.1
Cross country skiing*	2.1	3.7	3.2	4.0	5.3	6.7
Mountain climbing*	2.5	3.1	2.7	3.0	4.1	4.6
Snowmobiling*	1.8	2.4	2.3	3.2	3.3	3.0
Whitewater rafting*	1.1	2.2	2.5	2.7	2.4	4.2
Scuba diving*	1.4	1.6	2.0	2.1	2.6	3.9
Wind surfing*	0.4	0.6	0.8	1.3	1.7	1.8
Hot air ballooning*	0.5	1.1	0.7	1.7	0.6	1.7
Squash	0.3	0.3	0.1	0.3	0.3	0.4
Hang gliding	0.1	0	0.2	0.2	0.1	0.6

\*Differences significant at 0.05 level across the income classes.

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**Table C-2.—Recreation activities of Black U.S. adults - 1989; percent participating by income class.**

Activity	<24,999 (1259)	25,000- 29,999 (159)	30,000- 39,999 (229)	40,000- 44,999 (76)	45,000- 59,999 (156)	60,000> (146)
Swimming*	10.0	23.8	17.0	9.7	34.4	29.1
Bicycling*	13.5	21.5	19.6	20.1	34.0	22.1
Freshwater fishing*	9.7	19.4	10.4	7.4	7.7	9.4
Camping*	1.1	3.4	7.8	0	3.3	8.3
Aerobics*	15.2	26.8	19.6	17.3	35.2	34.3
Jogging/running*	10.1	20.8	15.7	15.3	13.2	22.3
Golf*	0.6	6.9	2.3	5.2	4.0	8.5
Weight lifting*	8.2	16.9	13.4	17.2	24.3	9.7
Hiking/backpacking*	1.0	0.7	3.4	1.1	1.3	1.0
Tennis*	5.3	13.3	11.2	9.4	8.9	19.0
Power boating*	1.5	8.3	1.2	0	0	0
Hunting*	1.7	8.6	2.8	0	2.1	3.5
Saltwater fishing*	3.0	4.8	3.2	1.8	4.0	1.6
Bird watching*	1.5	6.8	2.3	2.7	1.9	3.2
Downhill skiing*	0.7	1.2	0.3	2.5	2.2	6.9
Water skiing*	0.2	0	0.4	2.5	0	0
Horseback riding*	2.6	4.7	5.6	0	7.4	8.0
Canoeing*	0.3	1.5	2.1	1.5	2.5	4.4
Racquetball*	0.9	9.5	4.4	0	3.3	9.1
Sailing*	0.7	0	1.0	2.6	1.3	1.4
Cross country skiing*	0.5	1.5	0	0	1.3	0
Mountain climbing*	0	0	0	0	0	0
Snowmobiling	0.2	0	0	2.5	2.1	0
Whitewater rafting*	0	0	0.8	0	0	3.5
Scuba diving*	0	0	1.1	0	0	1.3
Wind surfing*	0	0	0	0	0	0
Hot air ballooning*	0	0	0	2.5	0	1.6
Squash	0	0	0	0	0	0
Hang gliding	0	0	0	0	0	0

\*Differences significant at 0.05 level across the income classes.

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**Table C-3.—Recreation activities of Hispanic U.S. adults - 1989; percent participating by income class.**

Activity	<24,999 (591)	25,000- 29,999 (78)	30,000- 39,999 (229)	40,000- 44,999 (40)	45,000- 59,999 (121)	60,000> (125)
Swimming*	31.2	38.5	42.7	40.1	49.4	42.4
Bicycling*	30.7	39.0	41.5	53.0	35.2	47.4
Freshwater fishing*	24.3	7.1	12.5	27.2	25.2	27.0
Camping*	12.4	26.3	13.1	17.0	16.3	26.8
Aerobics*	12.7	31.7	25.8	9.8	26.3	33.5
Jogging/running*	26.6	20.3	12.9	23.6	16.7	34.7
Golf*	3.7	11.8	6.0	9.8	10.5	10.2
Weight lifting*	19.8	22.2	21.0	0	17.1	36.4
Hiking/backpacking*	11.8	25.5	11.5	0	17.6	21.2
Tennis*	9.8	9.4	15.0	21.0	9.4	19.5
Power boating*	2.2	0	5.0	10.2	11.8	1.7
Hunting*	4.7	10.0	9.9	10.2	5.2	2.1
Saltwater fishing*	14.9	0	5.8	7.2	25.7	11.5
Bird watching*	2.8	9.7	16.7	0	7.0	9.4
Downhill skiing*	5.9	9.6	6.3	18.4	7.4	18.6
Water skiing	6.0	9.4	5.0	7.2	11.6	9.3
Horseback riding*	4.9	11.5	10.2	0	5.5	13.2
Canoeing*	1.4	0	0.3	0	9.9	5.6
Racquetball*	11.5	1.7	11.1	11.2	6.1	18.8
Sailing*	3.7	1.8	7.2	10.2	2.1	11.5
Cross country skiing*	4.5	0	3.2	0	0	8.9
Mountain climbing*	0.6	11.8	0.5	0	1.3	3.0
Snowmobiling*	4.5	0	1.9	0	0.4	0
Whitewater rafting*	0.1	7.8	0.8	0	0	3.3
Scuba diving*	2.9	5.7	0	0	1.5	7.0
Wind surfing*	0	0	2.3	0	0	5.5
Hot air ballooning*	0	5.7	0.8	0	0	0
Squash*	0	0	0	0	0	3.2
Hang gliding*	0	0	0	0	0	3.6

\*Differences significant at 0.05 level across the income classes.

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**Table C-4.—Recreation activities of Other U.S. adults - 1989; percent participating by income class.**

Activity	<24,999 (199)	25,000- 29,999 (38)	30,000- 39,999 (54)	40,000- 44,999 (38)	45,000- 59,999 (42)	60,000> (84)
Swimming*	31.3	77.4	48.4	42.8	62.1	57.9
Bicycling*	31.7	56.6	61.9	41.0	66.7	28.1
Freshwater fishing*	18.4	16.2	12.4	43.3	4.2	32.2
Camping*	15.1	26.1	26.9	19.0	8.1	28.4
Aerobics*	16.7	29.0	23.8	12.1	68.3	16.2
Jogging/running*	11.5	29.5	28.0	0	35.0	45.5
Golf*	2.5	13.5	7.5	16.9	13.1	27.4
Weight lifting	24.5	20.9	24.5	10.9	33.5	16.6
Hiking/backpacking	17.2	12.9	12.7	0	10.8	11.8
Tennis*	11.4	29.5	29.9	46.7	42.1	33.4
Power boating*	3.0	21.8	0	13.4	5.7	4.4
Hunting	1.1	7.9	3.6	0	0	3.8
Saltwater fishing	9.2	18.0	5.8	13.2	22.1	11.6
Bird watching	5.0	13.3	1.6	0	7.1	6.4
Downhill skiing	8.9	15.0	3.6	7.7	16.4	17.6
Water skiing	1.9	6.3	0	0	18.1	6.9
Horseback riding	6.9	6.3	19.8	8.7	5.7	6.9
Canoeing*	2.2	0	3.6	0	9.0	13.6
Racquetball	12.0	13.9	11.9	15.7	14.0	9.9
Sailing*	3.5	0	3.6	0	14.7	5.1
Cross country skiing	3.1	0	3.6	0	0	1.3
Mountain climbing	4.4	0	3.6	5.9	0	5.3
Snowmobiling*	0	9.6	0	0	0	0
Whitewater rafting*	0	0	3.6	0	0	4.9
Scuba diving*	7.7	0	0	13.2	0	7.4
Wind surfing*	0	0	0	0	0	0
Hot air ballooning	0.3	0	0	0	0	1.3
Squash*	0	0	0	11.6	0	0
Hang gliding	3.1	0	0	0	0	0

\*Differences significant at 0.05 level across the income classes.

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**Table C-5.—Recreation activities of U.S. adults with income less than \$25,000 - 1989; percent participating by racial and ethnic group.**

Activity	White (6685)	Black (1259)	Hispanic (591)	Other (199)
Swimming	27.8	10.0	31.2	31.3
Bicycling	20.9	13.5	30.7	31.7
Freshwater fishing	19.1	9.7	24.3	18.4
Camping	17.8	1.1	12.4	15.1
Aerobics	11.2	15.2	12.7	16.7
Jogging/running	7.6	10.1	26.6	11.5
Golf	7.8	0.6	3.7	2.5
Weight lifting	7.7	8.2	19.8	24.5
Hiking/backpacking	9.5	1.0	11.8	17.2
Tennis	5.4	5.3	9.8	11.4
Power boating	6.4	1.5	2.2	3.0
Hunting	6.8	1.7	4.7	1.1
Saltwater fishing	5.4	3.0	14.9	9.2
Bird watching	6.8	1.5	2.8	5.0
Downhill skiing	3.3	0.7	5.9	8.9
Waterskiing	4.6	0.2	6.0	1.9
Horseback riding	4.6	2.6	4.9	6.9
Canoeing	4.6	0.3	1.4	2.2
Racquetball	3.3	0.9	11.5	12.0
Sailing	2.7	0.7	3.7	3.5
Cross-country skiing	2.1	0.5	4.5	3.1
Mountain climbing	2.5	0	0.6	4.4
Snowmobiling	1.8	0.2	4.5	0
Whitewater rafting <sup>6a</sup>	1.1	0	0.1	0
Scuba diving	1.4	0	2.9	7.7
Wind surfing	0.4	0	0	0
Hot air ballooning	0.5	0	0	0.3
Squash	0.3	0	0	0
Hang gliding	0.1	0	0	3.1

*Differences between racial and ethnic groups significant at 0.05 level for all activities.*

*Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).*

**Table C-6.—Recreation activities of Black U.S. adults - 1989; percent participating by age class.**

Activity	18-24 (351)	25-34 (523)	35-44 (412)	45-54 (251)	55-64 (275)	65+ (213)
Swimming*	22.9	17.4	12.8	13.4	14.6	4.0
Bicycling*	19.9	24.1	16.5	20.6	8.0	5.7
Freshwater fishing*	9.7	12.7	9.9	11.9	9.6	4.9
Camping*	0.7	3.8	3.5	6.6	0.5	0
Aerobics*	19.0	28.8	24.8	16.3	6.2	9.3
Jogging/running*	17.2	17.2	15.0	6.0	9.4	3.4
Golf*	2.4	0.7	3.8	4.1	2.2	1.0
Weight lifting*	19.0	17.2	11.1	4.7	3.7	0.7
Hiking/backpacking*	0	2.8	1.5	2.2	0	0
Tennis*	8.8	13.5	7.2	5.3	4.0	3.1
Power boating*	2.5	3.5	1.1	0	0	1.5
Hunting*	3.4	2.2	2.3	4.6	1.4	0.6
Saltwater fishing*	3.7	2.6	0.5	8.6	4.2	0.6
Bird watching*	3.2	2.8	0.4	1.4	1.8	4.2
Downhill skiing*	1.5	1.1	3.1	0	1.0	0
Water skiing*	0.7	0.6	0	0	0	0
Horseback riding	3.6	4.8	4.3	1.9	4.7	1.5
Canoeing	0	1.9	1.5	1.6	1.0	0
Racquetball*	4.0	3.5	3.9	2.6	0	0
Sailing*	1.3	1.2	1.5	0	0	0
Cross country skiing*	0	0.7	0.3	1.3	1.0	0
Mountain climbing*	0	0	0	0	0	0
Snowmobiling*	0	1.0	0	0	1.0	0
Whitewater rafting*	0	0.4	1.2	0	0	0
Scuba diving*	0	0	1.1	0	0	0
Wind surfing*	0	0	0	0	0	0
Hot air ballooning	0	0.4	0	0.9	0	0
Squash*	0	0	0	0	0	0
Hang gliding*	0	0	0	0	0	0

*\*Differences significant at 0.05 level across the age classes.*

*Derived from Travel Data USA for 1989 (Nadkarni and O'Leary 1992a).*

**Table C-7.—Attendance at recreation events by Black U.S. adults - 1989; percent reporting attendance by age class.**

Event or site	18-24 (351)	25-34 (523)	35-44 (412)	45-54 (251)	55-64 (275)	65+ (213)
A national or state park*	21.1	28.3	29.8	26.5	13.8	17.0
An historic site	24.5	22.9	27.6	25.0	20.1	20.6
A museum*	9.8	23.8	20.5	30.5	16.6	17.9
A zoo*	7.1	29.3	29.8	31.5	22.2	14.6
A club offering live music*	22.2	33.8	31.0	25.0	15.5	9.4
A theme park*	22.7	22.9	24.5	15.3	9.4	2.1
Live theater*	14.8	21.4	27.0	26.7	27.7	20.1
An art gallery*	17.8	9.4	14.1	17.1	11.0	11.6
Major league baseball game*	4.4	8.7	7.8	17.3	13.6	10.5
Gambling casino*	11.8	15.1	14.2	19.0	26.8	17.7
A rock concert*	20.1	17.6	12.5	2.2	3.2	1.1
Symphony concert*	2.5	5.2	8.5	11.6	6.8	8.0
Horse race*	2.3	6.0	7.4	11.0	8.9	4.6
NFL football game*	0.8	7.8	12.8	13.5	8.9	4.2
Car race*	2.5	6.1	5.4	3.4	1.0	2.3
NBA basketball game*	8.1	14.0	12.3	13.3	9.9	5.4
Dog race*	0	2.6	6.9	6.5	8.1	2.3
The ballet	2.8	3.7	3.2	1.7	2.8	2.2
The opera	1.8	3.6	1.1	2.3	1.9	1.9
NHL hockey game	0	0.9	0.9	0.5	0.5	0
Professional golf tournament	0	0.2	0.8	0	0	0
Professional tennis tournament*	1.1	0.9	2.4	0	0.5	0

\*Differences significant at 0.05 level across the age classes.

Based on the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**Table C-8.—Recreation activities of Hispanic U.S. adults - 1989; percent participating by age class.**

Activity	18-24 (259)	25-34 (365)	35-44 (252)	45-54 (162)	55-64 (84)	65+ (61)
Swimming*	37.3	42.4	43.5	38.8	12.7	10.4
Bicycling*	44.8	42.5	47.6	17.4	6.6	8.7
Freshwater fishing*	28.2	25.1	14.8	29.3	2.2	4.0
Camping*	18.2	16.0	14.1	20.2	9.8	2.9
Aerobics*	21.5	24.9	19.3	17.3	15.6	0
Jogging/running*	25.8	27.7	18.9	25.6	20.3	2.7
Golf*	4.1	8.1	5.4	4.0	13.8	4.1
Weight lifting*	34.1	29.1	14.9	10.4	0	0
Hiking/backpacking*	18.8	13.8	17.1	12.5	1.3	0
Tennis*	7.4	20.8	14.0	6.7	3.0	0
Power boating	1.8	4.8	3.2	6.2	5.7	0
Hunting*	0	7.6	3.1	16.4	8.2	3.5
Saltwater fishing*	10.6	8.5	16.3	25.7	10.0	0
Bird watching*	0	4.8	14.0	13.9	6.0	4.0
Downhill skiing*	14.4	9.7	3.2	9.6	0	0
Water skiing*	13.4	9.4	2.6	1.9	5.7	0
Horseback riding*	1.7	14.3	7.2	5.6	0	0
Canoeing	1.7	2.7	3.0	3.9	0	0
Racquetball*	17.2	13.7	7.3	10.5	0	0
Sailing*	0	9.7	5.0	7.8	0	0
Cross country skiing*	8.6	2.3	3.5	3.4	0	0
Mountain climbing	0	1.9	3.2	2.1	1.3	0
Snowmobiling*	8.6	1.9	0	1.6	0	0
Whitewater rafting*	2.4	0	2.7	0	0	0
Scuba diving*	0	6.6	1.4	2.7	0	0
Wind surfing*	0	1.4	2.7	0	0	0
Hot air ballooning*	0	0	0.7	2.7	0	0
Squash	0	1.1	0	0	0	0
Hang gliding	0	0.8	0.7	0	0	0

\*Differences significant at 0.05 level across the age classes.

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**Table C-9.—Attendance at recreation events by Hispanic U.S. adults - 1989; percent reporting attendance by age class.**

Event or site	18-24 (259)	25-34 (365)	35-44 (252)	45-54 (162)	55-64 (84)	65+ (61)
A national or state park*	24.5	45.2	46.0	47.4	24.3	7.7
An historic site*	22.1	33.4	45.9	38.5	30.5	15.4
A museum*	26.6	35.3	46.5	33.2	28.3	23.2
A zoo*	40.1	48.8	39.3	39.8	11.3	13.3
A club offering						
live music*	37.0	45.1	31.0	36.9	5.6	0
A theme park*	46.7	34.5	42.8	22.3	2.4	0
Live theater*	7.0	22.8	30.7	35.6	8.4	6.5
An art gallery*	11.1	21.2	31.2	33.2	23.8	4.0
Major league						
baseball game*	37.3	27.7	23.6	16.9	9.0	4.1
Gambling casino*	17.0	31.6	19.8	22.5	25.1	14.1
A rock concert*	48.0	27.4	18.9	4.0	0	0
Symphony concert*	0	6.4	21.1	27.8	6.0	0
Horse race*	19.6	9.8	8.5	10.9	4.2	2.9
NFL football game*	27.9	12.6	17.9	19.6	3.8	4.1
Car race*	12.3	10.0	9.3	12.6	5.7	0
NBA basketball						
game*	12.3	18.7	12.6	9.4	3.9	0
Dog race	5.3	4.6	3.4	0.4	6.1	4.1
The ballet*	1.7	4.6	8.7	11.6	0	0
The opera*	3.6	3.0	4.6	15.2	0	0
NHL hockey game*	0	5.4	6.1	2.4	0	0
Professional golf						
tournament*	0	0.3	1.3	0	1.3	4.1
Professional tennis						
tournament	1.3	2.4	3.4	0	4.8	0

\*Differences significant at 0.05 level across the age classes.

Based on the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**Table C-10.—Recreation activities of Other U.S. adults - 1989; percent participating by age class.**

Activity	18-24 (92)	25-34 (155)	35-44 (87)	45-54 (64)	55-64 (41)	65+ (17)
Swimming	53.2	46.9	49.8	36.2	39.2	27.5
Bicycling*	36.3	48.7	48.8	33.5	19.9	27.5
Freshwater fishing	20.1	24.6	20.5	21.1	4.3	31.9
Camping	19.4	19.5	25.9	20.1	2.4	27.5
Aerobics*	24.0	31.5	28.6	7.8	7.7	0
Jogging/running*	37.2	20.9	23.8	13.4	15.6	0
Golf*	5.4	6.9	26.1	6.4	14.7	3.0
Weight lifting*	31.8	31.1	19.4	10.4	2.9	0
Hiking/backpacking*	5.2	15.2	22.9	8.6	5.3	27.5
Tennis*	47.4	22.0	30.3	12.9	3.2	0
Power boating*	0	8.2	5.2	13.0	0	0
Hunting	0	3.4	5.9	0	0	0
Saltwater fishing*	15.5	5.3	8.3	17.5	16.7	27.5
Bird watching	4.4	5.3	5.1	7.2	5.8	2.9
Downhill skiing*	14.9	10.8	19.6	1.9	2.4	0
Water skiing	3.8	2.7	6.4	10.0	0	0
Horseback riding*	2.9	15.1	14.3	0	0	0
Canoeing*	2.9	2.4	17.5	0	0	0
Racquetball*	31.1	12.5	8.9	0	0	0
Sailing*	2.9	4.8	10.7	0	0	0
Cross country skiing	0	3.4	4.5	0	0	0
Mountain climbing*	0	2.6	9.4	1.1	0	27.5
Snowmobiling	0	1.5	1.4	0	0	0
Whitewater rafting*	0	2.0	0	4.8	0	0
Scuba diving	8.3	8.2	5.9	1.8	0	0
Wind surfing*	0	0	0	0	0	0
Hot air ballooning	0	0.7	0	1.1	0	0
Squash	0	2.8	0	0	0	0
Hang gliding*	0	4.0	0	0	0	0

\*Differences significant at 0.05 level across the age classes.

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**Table C-11.—Attendance at recreation events by Other U.S. adults - 1989; percent reporting attendance by age class.**

Event or site	18-24 (92)	25-34 (155)	35-44 (87)	45-54 (64)	55-64 (41)	65+ (17)
A national or state park*	55.7	52.4	65.4	34.3	12.2	33.4
An historic site*	44.2	53.4	61.4	48.5	26.3	42.8
A museum*	73.7	44.3	68.2	40.0	13.3	36.2
A zoo*	45.7	57.4	41.8	34.6	8.1	41.4
A club offering live music*	53.0	38.6	33.9	24.2	4.6	2.9
A theme park*	62.5	30.3	42.7	25.0	4.9	35.5
Live theater*	37.0	26.1	27.2	46.2	19.7	8.7
An art gallery*	46.1	34.0	33.3	23.2	8.9	40.6
Major league baseball game*	46.6	24.1	21.8	27.7	8.4	0
Gambling casino*	43.4	24.9	30.9	21.3	27.9	8.9
A rock concert*	73.4	17.1	1.8	1.8	2.2	0
Symphony concert*	21.8	18.8	24.6	21.9	0	0
Horse race	5.4	11.4	14.1	6.1	1.3	0
NFL football game*	16.8	8.0	17.4	13.5	0	0
Car race*	5.4	3.0	3.3	13.6	0	0
NBA basketball game*	22.4	13.9	10.2	20.6	0	0
Dog race	5.8	2.1	2.7	3.2	0	0
The ballet*	5.8	10.6	1.9	16.0	4.6	2.9
The opera	6.4	7.5	5.5	12.9	2.4	0
NHL hockey game	5.8	5.5	2.7	7.4	0	0
Professional golf tournament*	0	0	0	0	0	0
Professional tennis tournament*	6.9	0	2.7	0	0	0

\*Differences significant at 0.05 level across the age classes.

Based on the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**Table C-12.—Recreation activities of U.S. adults 18-24; percent participating by racial and ethnic group.**

Activity	White (2667)	Black (351)	Hispanic (259)	Other (92)
Swimming	44.8	22.9	37.3	53.2
Bicycling	36.2	19.9	44.8	36.3
Freshwater fishing	23.3	9.7	28.2	20.1
Camping	21.6	0.7	18.2	19.4
Aerobics	22.7	19.0	21.5	24.0
Jogging/running	20.4	17.2	25.8	37.2
Golf	14.2	2.4	4.1	5.4
Weight lifting	24.5	19.0	34.1	31.8
Hiking/backpacking	13.2	0	18.8	5.2
Tennis	17.9	8.8	7.4	47.4
Power boating	10.6	2.5	1.8	0
Hunting	9.4	3.4	0	0
Saltwater fishing	8.7	3.7	10.6	15.5
Bird watching	2.7	3.2	0	4.4
Downhill skiing	12.1	1.5	14.4	14.9
Waterskiing	12.8	0.7	13.4	3.8
Horseback riding	8.0	3.6	1.7	2.9
Canoeing	6.7	0	1.7	2.9
Racquetball	12.6	4.0	17.2	31.1
Sailing	5.4	1.3	0	2.9
Cross-country skiing	4.1	0	8.6	0
Mountain climbing	3.2	0	0	0
Snowmobiling	4.1	0	8.6	0
Whitewater rafting	2.0	0	2.4	0
Scuba diving	3.6	0	0	8.3
Wind surfing	1.3	0	0	0
Hot air ballooning	1.0	0	0	0
Squash	0.4	0	0	0
Hang gliding	0.2	0	0	0

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**Table C-13.—Attendance at recreation events by U.S. adults age 18-24 - 1989; percent reporting attendance by racial and ethnic group.**

Event or site	White (2667)	Black (351)	Hispanic (259)	Other (92)
A national or state park	44.2	21.1	24.5	55.7
An historic site	39.1	24.5	22.1	44.2
A museum	28.7	9.8	26.6	73.7
A zoo	33.2	7.1	40.1	45.7
A club offering live music	38.4	22.1	37.0	53.0
A theme park	33.8	22.7	46.7	62.5
Live theater	18.3	14.8	7.0	37.0
An art gallery	16.0	17.8	11.1	46.1
Major league baseball game	20.9	4.4	37.3	46.6
Gambling casino	14.8	11.8	17.0	43.4
A rock concert	38.1	20.1	48.0	73.4
Symphony concert	6.7	2.5	0	21.8
Horse race	8.8	2.3	19.6	5.4
NFL football game	11.2	0.8	27.9	16.8
Car race	12.6	2.5	12.3	5.4
NBA basketball game	7.5	8.1	12.3	22.4
Dog race	6.7	0	5.3	5.8
The ballet	4.0	2.8	1.7	5.8
The opera	3.5	1.8	3.6	6.4
NHL hockey game	3.8	0	0	5.8
Professional golf tournament	1.8	0	0	0
Professional tennis tournament	1.4	1.1	1.3	6.9

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**Table C-14.—Recreation activities of U.S. adults in rural and RMA'S under 50,000 - 1989; percent participating by racial and ethnic group.**

Activity	White (4280)	Black (309)	Hispanic (176)	Other (47)
Swimming*	32.1	17.7	37.9	31.6
Bicycling	24.3	22.0	26.7	28.4
Freshwater fishing*	27.2	10.7	27.4	29.3
Camping*	21.3	2.3	11.9	23.0
Aerobics*	12.7	17.2	21.9	10.5
Jogging/running*	8.6	13.4	13.0	3.9
Golf*	10.7	0.2	8.2	0.7
Weight lifting*	8.4	12.3	20.5	7.9
Hiking/backpacking*	10.2	0.3	18.5	27.7
Tennis*	5.9	9.1	13.4	0.7
Power boating*	7.9	3.9	7.5	0
Hunting*	13.9	1.9	10.1	4.8
Saltwater fishing*	6.0	1.5	15.6	9.8
Bird watching*	8.6	3.4	12.4	6.9
Downhill skiing*	3.7	0	0.8	6.2
Waterskiing*	6.1	0	8.5	3.9
Horseback riding	6.4	3.9	7.6	6.2
Canoeing*	5.9	1.8	3.6	3.9
Racquetball*	3.1	0	14.1	0
Sailing*	2.0	0	5.7	0
Cross-country skiing*	3.4	0.4	0	1.8
Mountain climbing*	3.1	0	2.7	14.2
Snowmobiling*	3.1	0	2.2	0
Whitewater rafting*	1.5	0	0	0
Scuba diving*	1.6	0	4.9	0
Wind surfing	0.3	0	0	0
Hot air ballooning	0.6	0	0	0
Squash	0.3	0	0	0
Hang gliding	0.1	0	0	0

\*Differences between racial and ethnic groups are significant at 0.05 level.

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**Table C-15.—Recreation activities of U.S. adults in RMA'S between 50,000 - 499,999 — 1989; percent participating by racial and ethnic group.**

Activity	White (3120)	Black (313)	Hispanic (204)	Other (52)
Swimming*	36.4	14.3	35.4	46.9
Bicycling*	26.6	15.1	42.8	30.7
Freshwater fishing*	22.6	17.3	11.9	32.3
Camping*	22.0	1.6	9.4	21.1
Aerobics	14.5	17.6	10.5	19.3
Jogging/running	10.7	12.6	12.6	5.3
Golf*	13.9	4.8	9.0	18.6
Weight lifting*	10.6	3.9	10.7	19.7
Hiking/backpacking*	12.5	1.4	2.6	9.5
Tennis*	8.8	9.7	25.3	24.5
Power boating*	9.3	3.0	2.6	19.5
Hunting*	8.7	6.5	3.4	5.7
Saltwater fishing*	7.7	4.1	3.6	3.9
Bird watching	7.8	5.4	8.3	4.3
Downhill skiing*	6.5	1.5	0	3.4
Waterskiing*	6.6	0	6.2	3.9
Horseback riding*	4.6	1.5	8.7	0
Canoeing*	6.4	0	0.3	3.8
Racquetball*	5.0	5.3	14.6	13.3
Sailing*	3.8	0	10.0	3.8
Cross-country skiing	4.2	1.4	3.5	1.8
Mountain climbing*	2.7	0	0	0
Snowmobiling*	2.1	0	1.0	2.3
Whitewater rafting	2.4	1.2	1.2	3.8
Scuba diving*	2.0	0	0	0
Wind surfing*	0.8	0	0.2	0
Hot air ballooning	0.7	0	0	0
Squash	0.2	0	0	0
Hang gliding	0	0	0	0

*Differences between racial and ethnic groups are significant at 0.05 level.*

*Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).*

**Table C-16.—Recreation activities of U.S. adults in RMA'S between 500,000 - 1,999,999 - 1989; percent participating by racial and ethnic group.**

Activity	White (2336)	Black (366)	Hispanic (194)	Other (56)
Swimming*	37.6	10.8	39.2	65.5
Bicycling*	31.3	12.4	31.9	32.1
Freshwater fishing*	20.0	6.9	33.9	39.2
Camping*	21.2	1.1	15.0	29.7
Aerobics	16.7	15.7	19.7	19.2
Jogging/running*	12.1	11.9	23.0	50.2
Golf*	15.7	2.9	6.9	24.2
Weight lifting*	11.4	9.1	17.3	10.7
Hiking/backpacking*	13.0	1.2	10.5	5.9
Tennis*	10.0	6.7	13.0	31.6
Power boating*	11.1	1.2	10.5	5.9
Hunting*	5.7	2.3	3.8	0
Saltwater fishing*	6.4	0.4	21.8	0
Bird watching*	8.5	0	4.9	8.0
Downhill skiing*	6.3	1.4	5.5	14.9
Waterskiing*	7.7	0.3	5.6	4.2
Horseback riding*	6.0	3.0	10.6	11.2
Canoeing*	6.8	0.3	3.6	16.5
Racquetball*	4.9	1.7	7.4	0
Sailing*	5.8	0	4.8	0
Cross-country skiing*	3.2	0	3.2	0
Mountain climbing*	3.3	0	2.4	1.2
Snowmobiling*	1.8	0	0	4.2
Whitewater rafting	1.7	0.3	1.4	0
Scuba diving	1.6	0.7	1.2	0
Wind surfing	1.0	0	0	0
Hot air ballooning	1.4	0	0.9	1.2
Squash	0.3	0	0	0
Hang gliding	0	0	0	0

*Differences between racial and ethnic groups are significant at 0.05 level.*

*Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).*

**Table C-17.—Recreation activities of U.S. adults in RMA'S 2,000,000 and over - 1989; percent participating by racial and ethnic group.**

Activity	White (5050)	Black (1037)	Hispanic (610)	Other (300)
Swimming*	40.2	16.2	37.1	44.2
Bicycling*	29.7	18.2	38.4	46.0
Freshwater fishing*	16.0	9.2	18.9	14.1
Camping*	18.9	3.7	18.8	16.8
Aerobics*	16.5	22.3	22.6	26.0
Jogging/running*	11.4	13.1	29.9	23.1
Golf*	13.3	2.0	4.6	8.5
Weight lifting*	11.0	13.7	25.8	27.4
Hiking/backpacking*	13.6	1.5	17.3	13.1
Tennis*	10.4	7.6	7.1	27.6
Power boating*	10.2	0.9	3.6	3.1
Hunting*	4.4	1.4	6.4	1.7
Saltwater fishing*	8.2	4.3	12.0	15.2
Bird watching*	7.0	1.7	5.7	4.7
Downhill skiing*	8.5	1.6	13.8	12.2
Waterskiing*	7.2	0.4	7.3	4.5
Horseback riding*	6.3	4.7	5.3	9.7
Canoeing*	6.6	1.6	2.3	2.8
Racquetball*	6.3	3.1	10.0	14.9
Sailing*	6.1	1.6	3.4	5.8
Cross-country skiing*	3.4	0.5	5.2	2.5
Mountain climbing*	2.9	0	1.7	3.4
Snowmobiling*	2.1	0.8	4.3	0
Whitewater rafting*	2.6	0.2	3.4	8.9
Scuba diving*	2.7	0.2	3.4	8.9
Wind surfing*	1.3	0	0.7	0
Hot air ballooning	0.9	0.4	0.7	0.4
Squash*	0.3	0	0.7	1.5
Hang gliding*	0.3	0	0.7	2.0

*Differences between racial and ethnic groups are significant at 0.05 level.*

*Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).*

**Table C-18.—Attendance at recreation events by U.S. adults in RMA'S under 50,000 - 1989; percent reporting attendance by racial and ethnic group.**

Event or site	White (4280)	Black (309)	Hispanic (176)	Other (47)
A national or state park*	42.5	25.9	48.1	46.5
An historic site*	38.7	23.9	31.7	43.7
A museum*	25.3	11.0	39.1	30.7
A zoo*	24.8	17.8	40.7	24.1
A club offering live music*	21.4	10.2	27.3	12.4
A theme park*	19.1	15.1	29.9	18.4
Live theater*	14.4	10.2	27.3	12.4
An art gallery*	10.7	10.5	23.9	24.4
Major league baseball game*	9.5	1.2	20.0	2.3
Gambling casino*	10.7	5.8	16.4	8.8
A rock concert*	9.2	12.7	18.2	3.0
Symphony concert*	6.4	1.9	6.6	5.3
Horse race	6.4	6.2	11.0	1.9
NFL football game*	4.4	0.2	13.6	0
Car race*	9.3	3.7	9.4	0.8
NBA basketball game*	1.8	1.7	6.1	0
Dog race	3.5	2.4	1.2	4.6
The ballet*	1.9	0.4	6.0	1.9
The opera*	1.5	0.2	3.3	4.6
NHL hockey game	0.8	0	0	0
Professional golf tournament	1.4	0	0.6	0
Professional tennis tournament	0.2	0	0	0

*\*Differences between racial and ethnic groups are significant at 0.05 level for all events of sites.*

*Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).*

**Table C-19.—Attendance at recreation events by U.S. adults in RMA'S between 50,000-499,999 - 1989; percent reporting attendance by racial and ethnic group.**

Event or site	White (3120)	Black (313)	Hispanic (204)	Other (52)
A national or state park*	46.8	28.6	46.4	42.4
An historic site*	42.7	18.9	36.5	39.7
A museum*	33.2	20.3	27.0	29.9
A zoo*	32.4	20.9	42.5	36.2
A club offering live music*	30.4	23.9	38.3	26.8
A theme park*	23.7	17.0	27.9	39.0
Live theater*	24.1	13.0	25.2	18.6
An art gallery*	19.0	7.5	32.9	19.7
Major league baseball game*	13.9	4.3	22.8	11.2
Gambling casino*	15.7	6.5	16.3	26.7
A rock concert*	12.9	12.9	13.3	6.1
Symphony concert*	11.5	5.0	13.5	14.7
Horse race*	8.6	6.3	6.1	18.3
NFL football game*	6.0	6.3	11.2	15.7
Car race*	10.4	1.5	6.0	3.4
NBA basketball game*	3.2	7.0	1.4	8.9
Dog race*	6.2	1.9	8.4	6.7
The ballet*	4.1	0.2	9.4	0
The opera	2.9	1.5	1.9	7.2
NHL hockey game*	1.9	0	3.0	0
Professional golf tournament*	3.0	0	1.2	8.9
Professional tennis tournament*	1.2	0.5	1.2	7.2

\*Differences significant at 0.05 level across the racial and ethnic groups.

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**Table C-20.—Attendance at recreation events by U.S. adults in RMA'S between 500,000 - 1,999,999 - 1989; percent reporting attendance by racial and ethnic group.**

Event or site	White (2336)	Black (366)	Hispanic (194)	Other (56)
A national or state park*	48.0	21.4	39.7	57.3
An historic site*	46.0	23.0	39.2	62.9
A museum*	36.9	14.5	22.2	36.1
A zoo*	38.9	23.2	41.1	45.2
A club offering live music*	32.3	25.5	26.5	38.8
A theme park*	25.8	14.5	39.4	34.3
Live theater*	23.9	18.7	11.8	33.8
An art gallery*	21.4	11.2	9.1	11.4
Major league baseball game*	16.5	8.8	1.5	26.1
Gambling casino*	14.9	10.2	11.2	35.7
A rock concert	16.7	12.0	14.9	16.8
Symphony concert	14.0	10.4	14.1	8.1
Horse race*	11.2	4.4	15.1	11.6
NFL football game	10.8	11.2	11.4	2.6
Car race*	9.7	5.7	15.6	11.1
NBA basketball game	8.2	9.2	9.4	15.6
Dog race	8.4	10.4	10.7	10.0
The ballet*	5.5	4.5	0.7	4.2
The opera	4.3	2.3	3.2	2.4
NHL hockey game*	4.0	0	3.5	2.6
Professional golf tournament*	4.0	0.8	0	0
Professional tennis tournament	1.3	0.8	3.2	0

\*Differences significant at 0.05 level across the racial and ethnic groups.

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**Table C-21.—Attendance at recreation events by U.S. adults in RMA'S 2,000,000 and over - 1989; percent reporting attendance by racial and ethnic group.**

Event or site	White (5050)	Black (1037)	Hispanic (610)	Other (300)
A national or state park*	45.8	22.9	31.2	48.5
An historic site*	46.4	25.5	30.5	49.6
A museum*	39.9	24.4	39.4	60.8
A zoo*	35.7	25.7	37.0	47.9
A club offering live music*	31.4	27.1	35.3	37.1
A theme park*	26.9	20.8	34.0	39.1
Live theater*	32.2	28.9	20.5	34.2
An art gallery*	24.9	16.5	22.0	40.4
Major league baseball game*	29.6	14.2	34.4	32.8
Gambling casino*	23.6	25.3	31.4	31.2
A rock concert*	17.7	10.4	31.2	27.9
Symphony concert*	15.6	7.3	9.9	23.2
Horse race*	12.5	7.4	11.4	7.4
NFL football game*	11.7	10.0	21.6	14.0
Car race*	7.1	4.0	9.5	4.3
NBA basketball game*	7.5	15.8	19.4	16.9
Dog race*	3.8	3.3	1.2	0.6
The ballet*	6.1	3.9	5.1	10.9
The opera*	5.8	3.0	6.7	8.0
NHL hockey game*	6.4	1.0	4.3	6.5
Professional golf tournament*	2.9	0.1	0.7	0.0
Professional tennis tournament	1.7	1.5	2.6	1.7

\*Differences significant at 0.05 level across the racial and ethnic groups.

Derived from the Travel USA Data for 1989 (Nadkarni and O'Leary 1992a).

**APPENDIX D.—PERCENT OF THE U.S. POPULATION PARTICIPATING IN SELECTED RECREATION ACTIVITIES BY AGE CLASS AND RACIAL AND ETHNIC GROUP**

**Table D-1.—Percent of the U.S. population participating in horseback riding by age class and year.**

Age class	1980	1981	1985	1988
18-24	12.1	10.1	6.8	8.3
25-34	5.6	5.6	5.9	7.8
35-44	4.4	4.4	5.7	7.1
45-54	1.5	1.9	3.3	5.1
55-64	1.6	1.4	1.1	2.8
65+	0.6	0.6	0.5	1.3

Source: Christensen (1992a).

**Table D-2.—Percent of the U.S. population participating in roller skating by age class and year.**

Age class	1980	1981	1985	1988
18-24	18.8	19.1	9.9	8.1
25-34	13.6	15.9	9.6	6.6
35-44	9.2	13.7	7.6	5.8
45-54	4.5	4.8	2.8	1.7
55-64	2.0	2.8	1.6	1.5
65+	1.4	1.2	0.9	0.4

Source: Christensen (1992a).

**Table D-3.—Percent of the U.S. population participation in jogging by age class and year.**

Age class	1980	1981	1985	1988
18-24	23.1	20.0	23.0	13.1
25-34	18.0	17.9	18.6	13.0
35-44	15.4	14.3	13.8	10.0
45-54	8.4	7.3	10.6	7.1
55-64	4.0	3.5	6.0	4.9
65+	1.9	1.5	3.4	2.4

Source: Christensen (1992a).

**Table D-4.—Percent of the U.S. population participating in ice skating by age class and year.**

Age class	1980	1981	1985	1988
18-24	9.4	9.7	5.6	3.6
25-34	6.9	6.6	4.9	3.1
35-44	6.5	5.5	2.9	3.4
45-54	3.1	3.1	1.7	1.3
55-64	1.2	1.5	1.8	1.2
65+	0.9	0.9	0.8	0.8

Source: Christensen (1992a).

**Table D-5.—Percent of the U.S. population participating in salt-water fishing by age class and year.**

Age class	1980	1981	1985	1988
18-24	7.5	7.1	4.0	4.0
25-34	7.6	5.3	5.3	3.7
35-44	6.1	6.0	5.3	4.2
45-54	5.8	5.2	5.0	4.2
55-64	6.2	5.6	4.0	4.5
65+	3.1	2.3	2.2	2.0

Source: Christensen (1992a).

**Table D-6.—Percent of the U.S. population participating in camping by age class and year.**

Age class	1980	1981	1985	1988
18-24	16.4	17.1	14.5	10.6
25-34	18.0	18.3	16.0	15.6
35-44	15.3	14.6	15.3	14.2
45-54	11.2	10.2	9.5	9.1
55-64	6.4	6.9	7.3	7.3
65+	3.2	2.9	2.8	3.9

Source: Christensen (1992a).

**Table D-7.—Percent of the U.S. population participating in horseback riding by racial and ethnic group and year.**

Racial and ethnic group	1980	1981	1985	1988
White	5.0	4.3	4.6	6.1
Black	2.8	4.3	1.3	3.4
Other	2.9	5.6	3.6	3.4

Source: Christensen (1992a).

**Table D-8.—Percent of the U.S. population participating in roller skating by racial and ethnic group and year.**

Racial and ethnic group	1980	1981	1985	1988
White	9.2	10.6	6.0	4.5
Black	8.3	9.6	6.0	4.1
Other	8.9	9.1	5.3	3.9

Source: Christensen (1992a).

**Table D-9.—Percent of the U.S. population participating in jogging by racial and ethnic group and year.**

Racial and ethnic group	1980	1981	1985	1988
White	13.0	11.9	13.2	9.0
Black	10.3	9.8	13.8	8.2
Other	16.3	16.1	19.4	11.2

Source: Christensen (1992a).

**Table D-10.—Percent of the U.S. population participating in ice skating by racial and ethnic group and year.**

Racial and ethnic group	1980	1981	1985	1988
White	5.5	5.2	3.4	2.6
Black	1.8	2.5	1.7	1.5
Other	2.7	7.1	3.2	0.5

Source: Christensen (1992a).

**Table D-11.—Percent of the U.S. population participating in salt-water fishing by racial and ethnic group and year.**

Racial and ethnic group	1980	1981	1985	1988
White	6.4	5.4	4.7	4.0
Black	4.5	4.6	2.7	2.4
Other	6.5	3.0	3.4	2.7

Source: Christensen (1992a).

**Table D-12.—Percent of the U.S. population participating in camping by racial and ethnic group and year.**

Racial and ethnic group	1980	1981	1985	1988
White	13.6	13.5	12.6	11.9
Black	3.3	4.5	4.0	3.7
Other	15.1	7.6	7.3	7.5

Source: Christensen (1992a).

**Table D-13.—Percent participation in selected fishing, hunting, and wildlife - associated recreation activities in the U.S. by racial and ethnic group, 1980 and 1985.**

	White		Black		Other	
	1980	1985	1980	1985	1980	1985
<b>Fishing</b>	26	27	14	13	17	18
Freshwater	24	24	13	11	11	13
Saltwater	8	8	4	4	9	8
<b>Hunting</b>	11	10	3	2	4	3
Big game	8	8	1	1	3	3
Small game	8	7	3	2	3	2
Migratory birds	4	3	-	-	1	1
Other animals	2	2	1	1	1	1
<b>Wildlife-Associated Recreation</b>						
<b>Primary activities</b>	53	65	26	36	28	32
Residential	50	62	25	35	26	30
Observe	36	38	14	17	17	15
Photograph	8	11	3	3	5	6
Feed wild birds	40	49	19	27	18	22
Non-residential	19	18	5	4	11	7
Observe	19	18	5	4	10	7
Photograph	8	8	2	2	5	5
Feed	9	8	2	2	5	2
<b>Secondary activities</b>	56	75	26	40	32	40
Residential	51	69	24	37	28	35
Non-residential	44	54	18	22	23	27

Sources: 1985 National Survey of Fishing, Hunting, and Wildlife Associated Recreation (1988); 1980 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (1982).

**Table D-14.—Percent participation in selected fishing, hunting, and wildlife - associated recreation activities in the U.S. by age group, 1980 and 1985.**

	16-17		18-24		25-34		35-44		45-54		55-64		65+	
	80	85	80	85	80	85	80	85	80	85	80	85	80	85
<b>Fishing</b>	29	31	26	27	31	32	29	31	24	24	20	21	12	13
Freshwater	27	28	24	24	29	27	26	26	21	20	17	18	11	11
Saltwater	8	7	7	7	9	10	10	10	7	8	6	7	3	4
<b>Hunting</b>	15	14	14	11	13	12	12	11	9	9	7	7	3	3
Big game	9	9	9	8	9	9	9	8	6	7	4	5	2	2
Small game	12	11	11	8	9	8	8	7	5	5	4	4	2	2
Migratory birds	5	5	5	4	5	4	3	3	2	2	1	2	1	1
Other animals	3	3	3	2	2	2	2	2	1	1	1	1	-	-
<b>Wildlife-Associated</b>														
<b>Primary activities</b>	39	54	42	50	57	62	53	66	48	61	50	64	45	60
Residential	38	50	38	47	53	58	50	63	47	59	49	63	44	59
Observe	24	27	25	27	38	36	35	40	34	37	36	38	32	35
Photograph	10	12	8	9	11	13	8	12	7	10	5	9	3	5
Feed wild birds	24	34	27	33	40	42	39	50	38	49	43	52	39	51
Non-residential	16	17	21	17	25	23	18	21	15	13	11	11	7	6
Observe	16	17	21	16	24	23	18	21	15	13	11	11	6	6
Photograph	7	5	9	7	11	12	7	11	6	6	4	4	1	2
Feed	7	8	9	8	12	12	8	9	7	5	5	4	3	2
<b>Secondary activities</b>	45	66	49	62	61	73	56	78	50	73	50	71	43	64
Residential	41	60	44	55	55	66	52	71	47	69	45	68	40	61
Non-residential	38	50	42	48	51	59	47	59	38	49	36	43	26	31

Sources: 1985 National Survey of Fishing, Hunting, and Wildlife Associated Recreation (1988); 1980 National Survey of Fishing, Hunting, and Wildlife Associated Recreation (1982).

- = Less than 0.5%

### **Abstract**

Dwyer, John F. 1994. Customer diversity and the future demand for outdoor recreation. General Technical Report RM-252. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 58 p.

The fastest growth in outdoor recreation participation is projected for activities that are popular with older adults, and the slowest growth for those activities popular with younger adults. Nationally, changing age distribution is the main reason for change in participation; but, in some areas of the U.S., changing racial and ethnic structure and urban residence also are very important. Cohort component projection models estimate that participants be older and will include more racial and ethnic minorities, with minorities a substantial portion of increases in participants. Changes in participants will be especially great in areas where there will be sizable growth in the number of racial and ethnic minority individuals and older Americans — such as in and near cities. Although there is limited information on outdoor recreation participation trends, there is some indication of declining participation rates in some activities, for age and racial and ethnic groups during the 1980s. If these persist, they may slow increases in the growth of participants. Participation rates for racial and ethnic minorities and for older adults may increase, thereby increasing the number of participants as well as the proportion of racial and ethnic minorities and older adults among participants. Outdoor recreation managers may face reduced growth in the number of customers, increased customer diversity (older, more racial and ethnic minorities, more urban), and changing demands for activities, the design of settings and facilities, resource management, visitor programs, fees, communication between managers and users, information and marketing, staffing, and training. Researchers can explore the use of cohort component projection models and other approaches to predicting recreation behavior, to analyze ongoing trends, and to generate better data for use in predictive models. Research is needed to develop guidelines for plans and programs to meet the needs of customers who are increasingly older, urban, and more racially and ethnically diverse.

**Key words:** outdoor recreation, demand, forecast, trends, racial, ethnic, urban, age, RPA, assessment