Outdoor Recreation Trends and Futures

A Technical Document Supporting the Forest Service 2010 RPA Assessment

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This national assessment report is one of several U.S. Department of Agriculture Forest Service reports done for the 2010 Renewable Resources Planning Act Assessment. The objectives of this assessment report are to review past trends in outdoor recreation participation and identify whether current participation trends represent a departure from trends previously reported. The intention is also to describe in detail current outdoor recreation participation patterns and compare these patterns across regional and demographic strata. Further, the objectives include describing recreation activity participation on public and private lands and providing projections of outdoor recreation participation out to the year 2060.

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Outdoor Recreation Trends and Futures: A Technical Document Supporting the Forest Service 2010 RPA Assessment

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ABSTRACT

This publication presents a national study of outdoor recreation trends as part of the 2010 Renewable Resources Planning Act Assessment by the Forest Service, U.S. Department of Agriculture. The objectives are to review past trends in outdoor recreation participation by Americans, to describe in detail current outdoor recreation participation patterns, and to compare patterns across regional and demographic strata. Further objectives include describing recreation activity participation on public and private lands and providing projections of outdoor recreation participation out to the year 2060. One overriding national trend is quite evident: the mix of outdoor activities chosen by Americans and the relative popularity of activities overall have been evolving over the last several decades. One general category of activity that has been showing growth in the first decade of the 21st century is nature-based recreation. Between 2000 and 2009, the number of people who participated in nature-based outdoor recreation grew by 7.1 percent and the number of activity days grew about 40 percent. Among types of nature-based recreation, motorized activities showed growth up to about 2005, but then ended up toward the end of the 2000-2009 decade at about the same level as in 2000. The trend in hunting, fishing, and backcountry activities remained relatively flat during this period. Various forms of skiing, including snowboarding, declined during this decade. The clear growth area was within the overall group of activities oriented toward viewing and photographing nature. Generally, outdoor recreation activities are projected to grow in number of participants out to 2060. Population growth is projected to be the primary driver of growth in number of adult participants under each Resources Planning Act Assessment scenario. The top five activities in terms of growth of number of participants are developed skiing, other skiing, challenge activities, equestrian activities, and motorized water activities. The lowest rates of participant growth are visiting primitive areas, motorized off-road activities, motorized snow activities, hunting, fishing, and floating water activities. At the same time, a number of activities are projected to decline in per-capita adult participation rates.

Keywords: Nature-based recreation, outdoor recreation, recreation projections, recreation trends, recreation visitation, 2010 RPA Assessment.

1. EXECUTIVE SUMMARY

This national assessment describes the status and trends in outdoor recreation participation across the United States. Tracking these trends is especially important because of the large role outdoor recreation plays in American lifestyles, and because of the large investments and management responsibilities of both the public and private sectors as providers of recreation opportunities.

When viewed through the lens of historical context, the first overriding trend seems clear. What people now choose to do for outdoor recreation is very noticeably different from choices made by and available to previous generations of Americans. The mix of outdoor activities and their relative popularity are different now than at any time in the past. For example, fishing and hunting are often thought of as widely popular, "traditional" outdoor activities. While still somewhat popular, participation in these activities generally has been declining, and they are being replaced by other activities, such as wildlife or bird watching and photography.

A second overall trend for outdoor recreation, including nature-based recreation, is growth, even though some traditional activities have been in decline. In looking at participation trends, we examined the overall trend across a list of 60 outdoor activities. Between 2000 and 2009, the total number of people who participated in one or more of these 60 grew by 7.5 percent, and the total number of activity days of participation increased over 32 percent. Within this list of 60 outdoor activities, 50 natured-based activities were examined. There was discernible growth in nature-based recreation between 2000 and 2009. The total

Viewing, photographing, or otherwise observing nature has been the fastest-growing type of nature-based recreation. Here, amateur photographers line up at Yosemite National Park's Tunnel View in August 2005. (Photo courtesy of James G. Lewis)

number of people who participated in one or more of these 50 nature-based activities grew by 7.1 percent, and number of activity days grew about 40 percent.

A third clear trend is that there is growth in the overall group of nature-based activities named "viewing and photographing nature." Nature-based outdoor activities from the National Survey on Recreation and the Environment (NSRE) were organized into seven groups and analyzed between two time periods within the first decade of this century. Substantial growth occurred in both participants and annual days for five nature-based viewing and photography activities: viewing birds, other wildlife (besides birds), fish, wildflowers/trees and other vegetation, and natural scenery. Visiting recreation and historic sites and non-motor boating showed moderate growth in total activity days. Three of the other activity groups—hunting and fishing, backcountry activities, and motorized activities—ended up toward the end of this decade at about the same level of participation as in 2000, while various forms of skiing, including snowboarding, declined in total days.

Viewing and photographing natural scenery. (Photo courtesy of Babs McDonald)

A fourth overall observed trend is that different segments of society chose different types and levels of participation in different mixes of outdoor activities. We found that visiting recreation or historic sites was significantly higher among non-Hispanic Whites, late teenagers, middle-aged people, people with some college to completion of advanced degrees, higher income people, and the foreign born. Viewing and photographing nature was higher among people with higher education, higher incomes, non-Hispanic Whites, people ages 35 to 54, those having some college to post graduate education, and those earning more than $50,000 per year. For backcountry activities, participation was highest among males, Whites, Native Americans, people under 55 years, people well-educated with higher incomes, and rural residents. Participation in hunting, fishing and motorized outdoor activities was higher among rural, non-Hispanic White males with middle-to-high incomes. Non-motorized boating activities and skiing/snowboarding participation tended to be greater for younger, non-Hispanic White urban males with higher incomes and education levels.

The fifth overall trend, despite some assertions to the contrary, shows evidence that America's youth do spend time outdoors, and that for some it is substantial. Some of that time is for outdoor recreation. From the National Kids Survey, we found that approximately 64 percent of youth ages 6 to19 reported spending two or more hours outdoors on a typical weekday, and over three-fourths reported two or more hours outdoors on typical weekend days. One half of kids surveyed reported spending as much as four or more hours outdoors on a typical weekend day. Less than five percent spent no time outdoors on either weekdays or weekend days. Regarding time spent outdoors relative to last year, across the entire sample of both boys and girls, only 15 percent reported spending less time, 44 percent reported spending about the same time, and 41 percent estimated spending more time outdoors this year than last.

During time outdoors, the NSRE provided data indicating that the youth outdoor activity with the highest participation rate was that of "just hanging out or playing outdoors." The second highest participation activity, with 80 percent youth participation, was being physically active by participating in biking, jogging, walking, skate boarding, or similar activity. Playing music or using other electronic devices outdoors was the third highest participation activity, followed by playing or practicing team sports and reading/studying outdoors. From the National Fishing, Hunting, and Wildlife-Associated Recreation Survey, we observed that the number of girls ages 6 to 15 years who hunt has nearly doubled between 1991 and 2006, and the number of boy hunters of that age stayed about level. However, as clearly shown by the national survey done by the Outdoor Foundation and the National Fishing, Hunting, and Wildlife-Associated Recreation surveys, the number of youth participating in the outdoor activities they track may be declining.

The sixth trend shows that public lands continue to be highly important for the recreation opportunities they offer. The percentage of population participating in visiting recreation and historic sites on public land is substantial in both the East (60 percent of annual days) and the West (69 percent). In the West, slightly more than 60 percent of viewing and photographing nature activity occurs on public land. In both

the East and West, around three-fourths of backcountry activity occurs on public lands. In the East, 43 percent of hunting occurs on public forest lands, while in the West that figure is 57 percent. The majority of cross-country skiing—57 percent of annual days in the East and 67 percent in the West—is estimated to occur on public lands. In the East, days of activity on private land across the six activity groups ranges from a low of 28 percent for backcountry activities to a high of 57 percent for hunting. Motorized land activity in the East follows closely with 54 percent of annual days occurring on private lands. When family or individual owners were asked specifically about recreation on their land, a third of the owners, who control just over half of the family forest land in the United States, reported that they, their family, and/or friends have recently—within the past 5 years—recreated on their land. A far smaller percentage of private forest land was open to the general public.

From the National Fishing, Hunting, and Wildlife-Associated Recreation Survey, estimates were produced showing that 39 percent of hunters used public lands, while 82 percent used privately owned lands. For wildlife watchers, publicly owned lands were the most popular destinations for observing, feeding, or photographing. Just 38 percent of wildlife watchers visited private areas. About 27 percent of trip-taking wildlife watchers visited both public and private land.

The seventh trend highlights visitation to public land. Visits to various units of the National Park System have been relatively stable, while visitation at National Wildlife Refuges and other areas managed by the U.S. Fish and Wildlife Service has shown fairly steady growth. Visitation at Bureau of Land Management areas has been relatively stable over the years, while visitation to national forests has been declining. State park visitation grew pretty steadily from 1992 up through 2000 then declined until 2005. Since 2005, State park visitation increased through 2008 before dipping again in 2009.

The eighth trend concerns a national study of constraints to participation and indicated that some segments of our society feel more constrained than others. A national study of motivations showed that there are different reasons why people seek different forms of outdoor recreation. Over all societal segments, the most important motivations for hiking are to be outdoors, to experience nature, to get away from the demands of everyday life, and to have physical exercise or training. For camping, the most important motivations are to be outdoors, to get away from the everyday demands of life, and to experience nature. For sightseeing, the most important motivations are to be with family, to be outdoors, and to get away from the everyday demands of life. For walking, the motivations are to be outdoors, to contribute to health, physical exercise, or training, and to get away from the demands of everyday life.

The final, and perhaps as important of any other trends described in this report, is our analysis of where future trends might take us in terms of per capita participation and of total number of participants. The five activities projected to grow fastest in per capita participation over the next 50 years are developed skiing (20 to 50 percent), undeveloped skiing (9 to 31 percent), challenge activities (6 to 18 percent increase), equestrian activities (3 to 19 percent), and motorized water activities (-3 to 15 percent). The activities projected to decline in per capita adult participation rates include visiting primitive areas (-5 to 0 percent), motorized off-road activities (-18 to 0 percent), motorized snow activities (-11 to 2 percent), hunting (-31 to -22 percent), fishing (-10 to -3 percent), and floating activities (-11 to 3 percent). Growth of per capita participation rates for the remaining activities will either hover around zero or grow minimally.

The five activities projected to grow the most in terms of number of participants are developed skiing (68 to 147 percent), undeveloped skiing (55 to 106 percent), challenge activities (50 to 86 percent), equestrian activities (44 to 87 percent), and motorized water activities (41 to 81 percent). The activities with the lowest growth in participant numbers are visiting primitive areas (33 to 65 percent), motorized off-road activities (29 to 56 percent), motorized snow activities (25 to 61 percent), hunting (8 to 23 percent), fishing (27 to 56 percent), and floating activities (30 to 62 percent). While activities currently having high participation levels may not show large percentage increases in participant numbers, even small percentage increases in already highly popular activities can mean quite large increases in participants. Generally, all of the 17 outdoor recreation activities examined in "U.S. Outdoor Recreation Participation Projections to 2060" of this report are projected to grow in the number of participants out to 2060, under each of the three Forest and Rangeland Renewable Resources Planning Act (RPA) Assessment scenarios.

A General Observation

This assessment points out that what people now choose to do for outdoor recreation is different from previous generations of Americans. It also points out that outdoor recreation, including nature-based recreation, is growing and is likely to continue to grow. But because Americans' recreation choices are changing, growth is and will likely

be spread across a different mix of activities, relative to one, two, or five decades ago, and in the future relative to today. Out of this changing mix we observed growth in nature-based recreation, especially viewing, photographing, or otherwise appreciating nature. This group of activities includes viewing birds, other wildlife (besides birds), fish, other natural vegetation, and natural scenery. Visiting recreation and historic sites and non-motor boating (e.g., kayaking) also showed moderate growth during the past decade. Adaptive management of public lands will be essential as change emerges in the future. It seems as if a current emphasis on venues for the public to see and appreciate nature could be a primary focus. Orienting overnight and day-use sites on public lands to emphasize nature viewing, photography, and study would seem to be an appropriate strategy.

Our projections for trends indicated that outdoor recreation choices will continue to grow and change in the future. Our changing demographics, lifestyles, reliance on digital technologies, economic fluctuations (e.g., from rapid growth in the 1990s to recession in the last half of the 2000s), changing landscape and natural land base, globalization, and many other changes will continue to drive changes in outdoor recreation. These changes will be important for public lands, e.g., Federal lands and State parks. The five activities projected to have the highest percentage growth in number of participants are developed skiing, undeveloped skiing, challenge activities, equestrian activities, and motorized water activities. At the same time, the lowest percentage growth in participant numbers is projected to be visiting primitive areas, motorized off-road activities, motorized snow activities, hunting, fishing, and floating activities. All of these activities very much depend on public lands. If these projections fairly well depict the future, how public lands are used for recreation will change over the next 50 years. Access for activities such as snow skiing, rock climbing, and horseback riding may rise in importance relative to other activities. Access for off-road and snowmobile driving, hunting, and fishing may decline in relative importance.

Drawing implications from our findings for all combinations of location in the country, kinds of private sector association, and types of public land is not straightforward; the iterations are too numerous. We recommend careful study of our findings with consideration of each State's situation and of each land management entity's authorities in order to interpret what the emerging and forecast changes will mean. Certainly the implications for an eastern State with little public land will differ from a western one which is made up mostly of public land. What is clear is that people appreciate nature and desire to experience it in many ways. The challenge for the United States, for States, and for land managers will be to maintain the integrity of natural places to the maximum extent possible.

2. INTRODUCTION, OBJECTIVES, AND ORGANIZATION OF THIS REPORT

The 2010 Resources Planning Act Assessment

The Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974 mandates a periodic assessment of the condition and trends of the Nation's renewable resources. The RPA assessment provides a snapshot of current U.S. forest and rangeland conditions and trends on all ownerships, identifies drivers of change, and projects 50 years into the future. Analyses of the status and trends for recreation, water, timber, wildlife (biodiversity), urban forest and range resources, as well as land use change and climate change, are included.

2010 RPA Assessment Scenarios—Future renewable resource conditions are influenced by common driving forces such as population change, economic growth, and land use change, while other drivers of change are unique to individual resources. The purpose of scenarios in the RPA assessment is to characterize the common demographic, socioeconomic, and technological driving forces underlying changes in resource condition, and to evaluate the sensitivity of resource trends to a feasible future range of these driving forces. The use of scenarios links underlying assumptions of the individual analyses and frames the future uncertainty in these driving forces within the integrated modeling and analysis framework of the 2010 RPA assessment.

Three scenarios were chosen that are linked to globally-consistent and well-documented scenarios used in the Intergovernmental Panel on Climate Change (IPCC) 4th Assessment (AR4) (IPCC 2007). The scenarios include a range of future global and U.S. socioeconomic and climate conditions that are likely to have different effects on future U.S. resource conditions and trends. The IPCC AR4 scenario designations have been maintained in the 2010 RPA assessment documentation for continuity: A1B, A2, and B2. The IPCC AR4 global data were scaled to the U.S. national level and subnational levels to facilitate the resources analyses for the 2010 RPA assessment. U.S. gross domestic product and population projections used in AR4 analyses were updated, and U.S. population and disposable personal income data were then downscaled to the U.S. county level (Zarnoch and others 2010). The associated climate

scenario output from several global circulation models were downscaled to the county level of resolution (Joyce and others, in press).

2010 RPA Assessment of Outdoor Recreation Trends and Futures

Working within the national RPA framework, this RPA assessment research provides a nationwide overview of outdoor recreation participation in the United States. Recreation and protected land resources will be covered in other reports to be published in the near future. A related RPA report will be published that provides descriptions and projections of the movement or migration of people to areas and regions of the United States rich in natural amenities, such as rivers, shorelines, and mountains.

This report provides an extensive overview of outdoor recreation participation, regional variation in participation, and differences in participation by demographic groups. We emphasize nature-based outdoor recreation and the natural amenity values driving these activities. Throughout this report, invited papers are included to add contextual dimension.

There has been considerable recent interest in better understanding trends in nature-based and other outdoor recreation (Cordell 2008). In an earlier national report, "Outdoor Recreation for 21st Century America," we reported that Americans' participation in outdoor activities, including nature-based recreation activities, had been increasing through the early part of the 2000s. There were observed declines in a few activities (Cordell and others 2004). These declines seemed to signal changes in Americans' outdoor recreation that had not been seen in the decades following World War II. However, since the first nationwide assessment of outdoor recreation trends (ORRRC 1962), almost all forms of outdoor activity and public land visitation were observed to be growing.

Jacobs and Manfredo (2008) also noted decreases in some forms of outdoor recreation, but they noted that other forms were showing growth. They concluded that there seems to be a shift in peoples' patterns of outdoor involvement, but not necessarily an overall decrease. Cordell (2008) also observed that there seem to be some shifts in the making:

> Both the National Survey on Recreation and the Environment (NSRE) and the National Survey on Fishing, Hunting, and Wildlife-Associated Recreation show that participation in some nature-based activities has declined. However, for many other activities there seems to be growing popularity. Some outdoor recreation activities have even demonstrated rather strong popularity growth. One such activity is visiting wilderness and other primitive areas (Cordell and others 2008).

Because trends in nature-based and other outdoor recreation have far reaching implications, a close look at those trends and projected futures is important. Historical perspective is offered to help understand how today's trends differ from the past. This contrast can provide insights for possible needs for adjustments in forest, other natural resource, and public land management programs and policies. This report offers the only public agency-sponsored long range forecasting of recreation demand for the United States.

Outdoor and Nature-Based Recreation Defined

Godbey (1985) has defined "leisure" as "Living in relative freedom from the external compulsive forces of one's culture and physical environment so as to be able to act … in ways which are personally pleasing, intuitively worthwhile, and provide a basis for faith." This definition of leisure is widely accepted and its author deeply respected by scholars in the leisure and recreation fields worldwide. Generally, it is agreed upon that recreation occurs during leisure and that recreation is activity that is done for the personal pleasure it provides. "Outdoor recreation" is recreation activity done out-of-doors, which can, of course, take many forms. Those many forms occur with different activities, settings, social engagements, equipment, and times which are chosen by the recreation participant. "Nature-based outdoor recreation" is defined as outdoor activities in natural settings or otherwise involving in some direct way elements of nature—terrain, plants, wildlife, water bodies, and even celestial bodies (Cordell 2008). Recreation and nature-based recreation can be physically active or sedentary. Nature-based recreation activities as referred to in this report include the following groups of activities:

- Visiting recreation and historic sites—visiting the beach, visiting prehistoric sites, visiting historic sites, developed camping, swimming in lakes/ponds/etc., visiting waterside besides beach
- Viewing/photographing nature—viewing/photographing birds, viewing/photographing natural scenery, viewing/photographing other wildlife (besides birds), viewing/photographing wildflowers/trees/etc., viewing/photographing fish, visiting nature centers/etc., sightseeing, gathering mushrooms/berries/etc., taking tours or excursions on boats
- Backcountry activities—backpacking, day hiking, horseback riding on trails, mountain climbing, visiting

a wilderness or primitive area, primitive camping, mountain biking, caving, rock climbing, orienteering
- Motorized activities—motorboating, off-highway vehicle driving, snowmobiling, using personal watercraft, waterskiing
- Hunting and fishing—anadromous fishing (salt-to-fresh-water migratory fish, e.g., salmon), coldwater fishing, warmwater fishing, saltwater fishing, big game hunting, small game hunting, and migratory bird hunting
- Non-motor boating and diving—canoeing, kayaking, rafting, rowing, sailing, surfing, windsurfing, snorkeling, scuba diving
- Snow skiing and other winter activities—cross-country skiing, downhill skiing, snowboarding, snowshoeing, ice fishing

Historical Importance of Outdoor Recreation in American Society

The agrarian way of life in the early part of the 19th century, and in earlier centuries, meant that the majority of people in the United States worked outside and had little desire to spend their leisure time outdoors. After the Great Depression and World War II, however, outdoor recreation became a more prominent part of American life. Americans in larger numbers shifted to manufacturing and other forms of livelihood. With shifting work lives and rapid advances in communication and transportation technology, especially the mass production of affordable automobiles, Americans took to the open road to see and experience "the great outdoors." This led to mounting pressures on recreation facilities and most public lands. Pressures from recreation demand were being recognized in the 1950s when Congress passed legislation to set up a commission that would conduct the first nationwide study of outdoor recreation resources and demand for them. This commission was named the Outdoor Recreation Resources Review Commission (ORRRC). The ORRRC was established in 1958 and charged to look in depth at present and future outdoor recreation trends.

The scale and depth of the work undertaken by the ORRRC, and the many researchers, policy analysts, management professionals, writers, and citizens affiliated with it were outstanding. Releasing its findings in early 1962, the ORRRC and its 27 comprehensive reports stimulated an unprecedented national movement to create more recreation opportunities in the United States (ORRRC 1962). One of the studies the ORRRC commissioned was a nationwide recreation participation survey. Administered in 1960, this was the first of this nation's outdoor recreation participation surveys, called the National Recreation Survey (NRS).

The release of the Outdoor Recreation Resources Review Commission Report in 1962 set off a chain of initiatives that redefined national and state policies and programs on outdoor recreation. As a direct result of the ORRRC studies, Congress passed a series of acts that included establishment of the National Wilderness Preservation System, the National Wild and Scenic Rivers System, the National Trails System, and a system of National Recreation Areas. Legislation funded acquisition of recreation land under the Land and Water Conservation Fund Act (LWCF) of 1965. Since then, LWCF has provided funding for Federal, State, and local governments for thousands of recreation projects and land purchases nationwide.

Among the many benefits of the ORRRC was stimulation of research on outdoor recreation trends, visitors to public lands, impacts of use on recreation resources, economic impacts of recreation-based tourism, travel patterns, recreation technology trends, and many other topics. Federal agencies, universities, and some States established recreation research programs which led to recreation curricula for professional study. Another benefit of the ORRRC was the establishment of the National Recreation Survey. This was an ongoing research project through the early 1980s that was housed in the U.S. Department of the Interior. As described later in this report, this national survey has been continued in various forms over the years since 1960, and was renamed the National Survey on Recreation and the Environment in the early 1990s.

Also as a result of the ORRRC, the Department of the Interior conducted studies in support of a published series of Nationwide Outdoor Recreation Plans. Each State conducted similar studies and published its own Statewide Comprehensive Outdoor Recreation Plan (SCORP). The nationwide plans ended in the early 1980s, but SCORPs have continued to today.

The ORRRC created the impetus for establishing a number of Forest Service, U.S. Department of Agriculture, research projects at various locations around the country. These projects were responsible for funding, stimulating, conducting, and publishing literally many hundreds of science studies across the country. In 1974, Congress passed the Forest and Rangeland Renewable Resources Planning Act, which mandated the Forest Service to conduct decennial nationwide assessments of the status and futures of forest and range resources. These assessments were and are conducted by the research arm of the Forest Service. This outdoor recreation report represents a continuation of the outdoor recreation portion of the mandated RPA Assessments. The first Outdoor Recreation Assessment,

done in 1975, was published by the Forest Service in 1978 (USDA Forest Service 1978). Subsequent national RPA Assessments of Outdoor Recreation and Wilderness were completed in 1980, 1990, and 2000, with 5-year interim updates in 1985, 1995, and 2005. This will represent the fifth nationwide assessment as mandated by RPA.

Following about 25 years after the ORRRC, the President's Commission on Americans Outdoors (PCAO) was established to revisit the overall status and trends in outdoor recreation in America. The PCAO released its nationwide report in December of 1986 (PCAO 1986). An overall conclusion of the PCAO was that greater attention was needed for providing outdoor recreation opportunities in and near cities and towns where a greater proportion of the population lived. The report provided a framework for national action and recommended a number of initiatives, including identification and protection of natural areas, more recreation sites close to urban areas, establishment of a network of scenic highways, building an outdoor ethic, involvement of students in outdoor activities, better environmental laws, establishment of an outdoor corps, and more involvement by the private sector.

In 2007, organizational efforts began for a nationwide study as a follow up to the PCAO's work of the 1980s. Vast overall societal change, huge population growth, rapidly changing technological lifestyles of Americans, and urban development on a massive scale seemed to mean a different relationship with the outdoors. In response, the Outdoor Resources Review Group (ORRG) was created to take another broad scale look at natural resources and outdoor recreation. In September 2009, the ORRG released its nationwide report entitled "The State of the Great Outdoors" (ORRG 2009). The ORRG report concluded that outdoor recreation in the United States is shifting. For example, more women are participating in outdoor activities now than in the past. Hunting and fishing seem to have declined in popularity over the past several years. Nature-based activities such as viewing, studying, and photographing birds and wildlife have gained in popularity. Mountain climbing, backpacking, and rock climbing, among others, have also gained as popular activities. Still, some of the traditional outdoor activities, including picnicking, hiking, team sports, tennis, and bicycling are widely popular. From the studies of the ORRG and of others throughout the 1990s and into the first years of this decade and new century, it is very clear that Americans' outdoor recreation has been changing at a very rapid rate, and in dramatic ways. This assessment of outdoor recreation will examine these changes and present forecasts of the future.

A Brief Overview of the People of the United States

This report concerns outdoor recreation demand by the population of the United States. It seems appropriate that we briefly examine the characteristics and trends of this country's population. Some of the tables show population statistics by region. Regions include: North—Connecticut, Delaware, District of Columbia, Illinois, Indiana, Iowa, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, West Virginia, Wisconsin; South—Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia; Rocky Mountains—Arizona, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, South Dakota, Utah, Wyoming; and Pacific Coast—Alaska, California, Hawaii, Oregon, Washington.

The race/ethnicity composition across the regions of the country, and the change in the composition between 1990 and 2008, are summarized in table 2.1. Race and ethnicity are important determinants of what people chose as outdoor recreation activities and settings. It is quite obvious that the race/ethnicity makeup of the U.S. population has been changing dramatically in the 18 years leading up to 2008 and since the 1990 Census. Although all races have been growing in number, Hispanic and Asian/Pacific Islander components of the population generally have been growing fastest. Numbers of non-Hispanic Whites have been growing slowly. By region, the greatest percent growth has been in the Rocky Mountains; the least growth has been in the North. The greatest percentage growth of a region's race group has been Asian or Pacific Islanders in the Rocky Mountain Region, with near identical growth in the South. There was loss of population of non-Hispanic Whites in the North and Pacific Coast Regions.

Similar to race/ethnicity, people's age also affects recreation choices. Like other demographic aspects, the age distribution of the U.S. population has been changing over time, as table 2.2 shows. Nationally, the fastest growing age group since 1990 (in percent) has been ages 44 to 54 and 55 to 64, in descending order. The next fastest growing is the age group 65 and older. Age group 44 to 54 is the fastest growing age group in all regions. There has been a decline in age group 25 to 34 nationally, driven by steep population declines in this age group in the North and Pacific Coast Regions. There has also been a decline in people ages 10 and younger in the North. The fastest growth of people ages 10 and younger has been in the Rocky Mountain Region.

Table 2.1—2008 population for the four RPA regions and by race/ethnicity with percent change since 1990

Race/ Ethnicity	North	Percent change	South	Percent change	Rocky Mountains	Percent change	Pacific Coast	Percent change	United States	Percent change
	thousands		*thousands*		*thousands*		*thousands*		*thousands*	
White	92,246.8	-0.2	63,478.5	14.0	19,479.6	25.3	24,286.6	-1.4	199,491.5	5.9
African American	14,780.5	18.7	18,866.8	35.4	952.9	69.4	2,571.6	8.9	37,171.8	26.8
American Indian	416.7	23.2	704.0	36.4	768.9	38.3	439.3	13.7	2,329.0	29.6
Asian or Pacific Islander	4,670.3	116.4	2,481.3	170.6	690.5	171.1	5,830.2	59.0	13,672.3	95.4
Two or more races	1,492.0	–	1,261.5	–	426.6	–	1,271.6	–	4,451.7	–
Latino or Hispanic	10,761.7	94.6	16,013.4	143.2	5,497.2	157.8	14,671.3	80.4	46,943.6	109.8
Total	124,368.0	10.1	102,805.6	32.5	27,815.7	46.0	49,070.4	25.2	304,059.7	22.2

Missing data are denoted with "–".

Note: Hispanics may be of any race, but are included in the Latino or Hispanic category only. Percent change for two or more races is missing because U.S. citizens could not select more than one until the 2000 Census.

Source: U.S. Census Bureau (2008), 2008 population estimates and 1990 Census of Population and Housing.

Table 2.2—2008 population by RPA region and by age group with percent change since 1990

Age group	North	Percent change	South	Percent change	Rocky Mtns.	Percent change	Pacific Coast	Percent change	United States	Percent change
	thousands		*thousands*		*thousands*		*thousands*		*thousands*	
Under 6	9,503.9	-3.0	8,825.9	27.1	2,555.8	37.7	4,196.7	10.4	25,082.3	12.0
Age 6-10	7,793.1	-1.2	6,939.6	21.7	1,941.7	24.1	3,222.9	11.4	19,897.3	10.2
Age 11-15	8,206.8	10.9	6,864.0	27.6	1,897.9	34.5	3,377.4	31.9	20,346.1	21.5
Age 16-24	15,645.9	3.7	12,740.3	19.2	3,544.3	41.8	6,442.8	18.6	38,373.4	13.8
Age 25-34	15,928.0	-17.6	14,037.8	5.6	3,965.7	22.7	7,000.0	-4.3	40,931.6	-5.2
Age 35-44	17,416.9	2.7	14,349.8	25.2	3,679.9	28.7	7,054.5	14.4	42,501.1	13.5
Age 44-54	18,933.9	63.2	14,586.3	86.8	3,861.1	111.2	6,990.7	82.6	44,372.1	77.0
Age 55-64	14,246.1	42.1	11,307.9	71.4	2,989.5	96.1	5,142.7	73.3	33,686.2	59.5
Age 65+	16,693.5	12.4	13,153.9	35.2	3,379.6	48.6	5,642.7	33.6	38,869.7	25.0
Total	124,368	10.1	102,805	32.5	27,815.7	46.0	49,070.4	25.2	304,059.0	22.2

Source: U.S. Census Bureau (2008), 2008 population estimates and 1990 Census of Population and Housing.

The population of the United States is distributed across the country as shown in figure 2.1 From this map of people per square mile, one can clearly see that the greatest density of population is in Florida, in the Piedmont areas of North Carolina to Georgia, along the coast of the Northeastern states, in the Great Lakes region, in eastern Texas, in the Denver Front Range area, and along the Pacific Coast to Arizona. The greatest density in Alaska (not shown) is in the Anchorage area.

Figure 2.2 shows the distribution of growth of the Hispanic population of the United States. Much of this growth has been in the Southeastern States and states bordering the Mississippi River. High rates of growth have also occurred through the upper Midwest and through Arizona, Utah, and Wyoming. Substantial growth can also be seen in coastal Oregon and Washington counties.

Growth of the non-Hispanic White population has been occurring in metropolitan areas such as Atlanta, Washington, DC, Minneapolis/St. Paul/Duluth, Albuquerque, Phoenix, and the Greater Salt Lake City area (fig. 2.3). Also, the non-Hispanic White population has been growing fastest in areas rich in natural amenities, such as the Rocky Mountains and Florida.

Overall, as figure 2.4 shows, much of the growth in concentration of population (people per square mile)

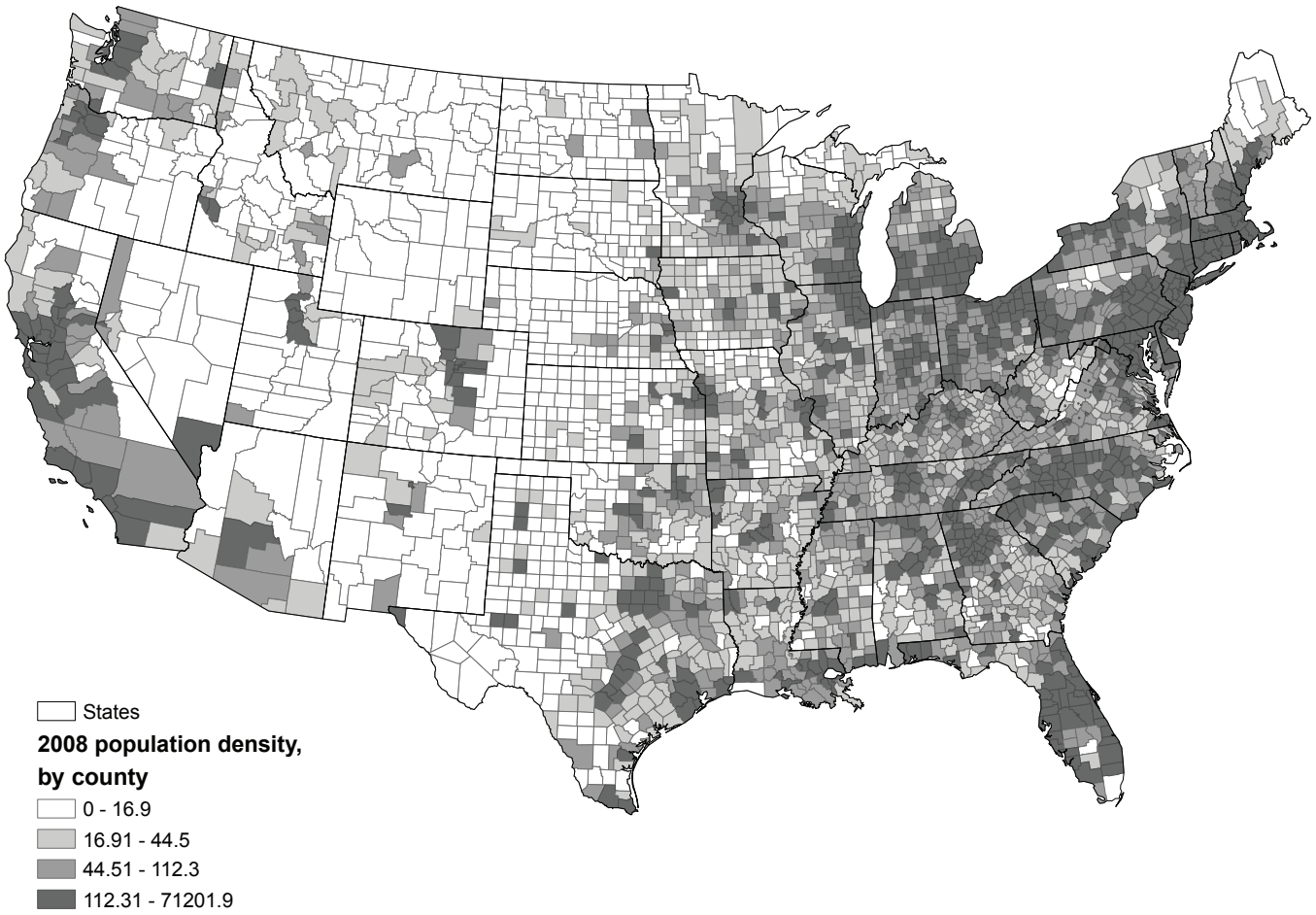

Figure 2.1—People per square mile by county in the contiguous United States, 2008. Source: U.S. Census Bureau (2008), 2008 Population Estimates.

has occurred along the Northeast coast, on both sides of the Southern Appalachians south through Atlanta, in the Chicago area, in the Denver and Salt Lake City areas, in the Southwest, in coastal California, and in the Portland and Seattle areas. Some of this growth in people per square mile is phenomenally large and exceeds the Census definition of an urban area, which is defined as 500 people per square mile. Eastern Texas and the greater Los Angeles area are examples. Greater concentrations of people in places near public lands and near water are likely to put increasing pressures on these limited resources.

Objectives of This Report

This report has six central objectives:

1. Review and present past trends in outdoor recreation participation to set a context for examining whether current participation patterns and trends represent a departure from trends reported in previous RPA assessments and in reports such as those done by the President's Commission on Americans Outdoors.
2. Describe in detail current outdoor recreation participation patterns and trends.

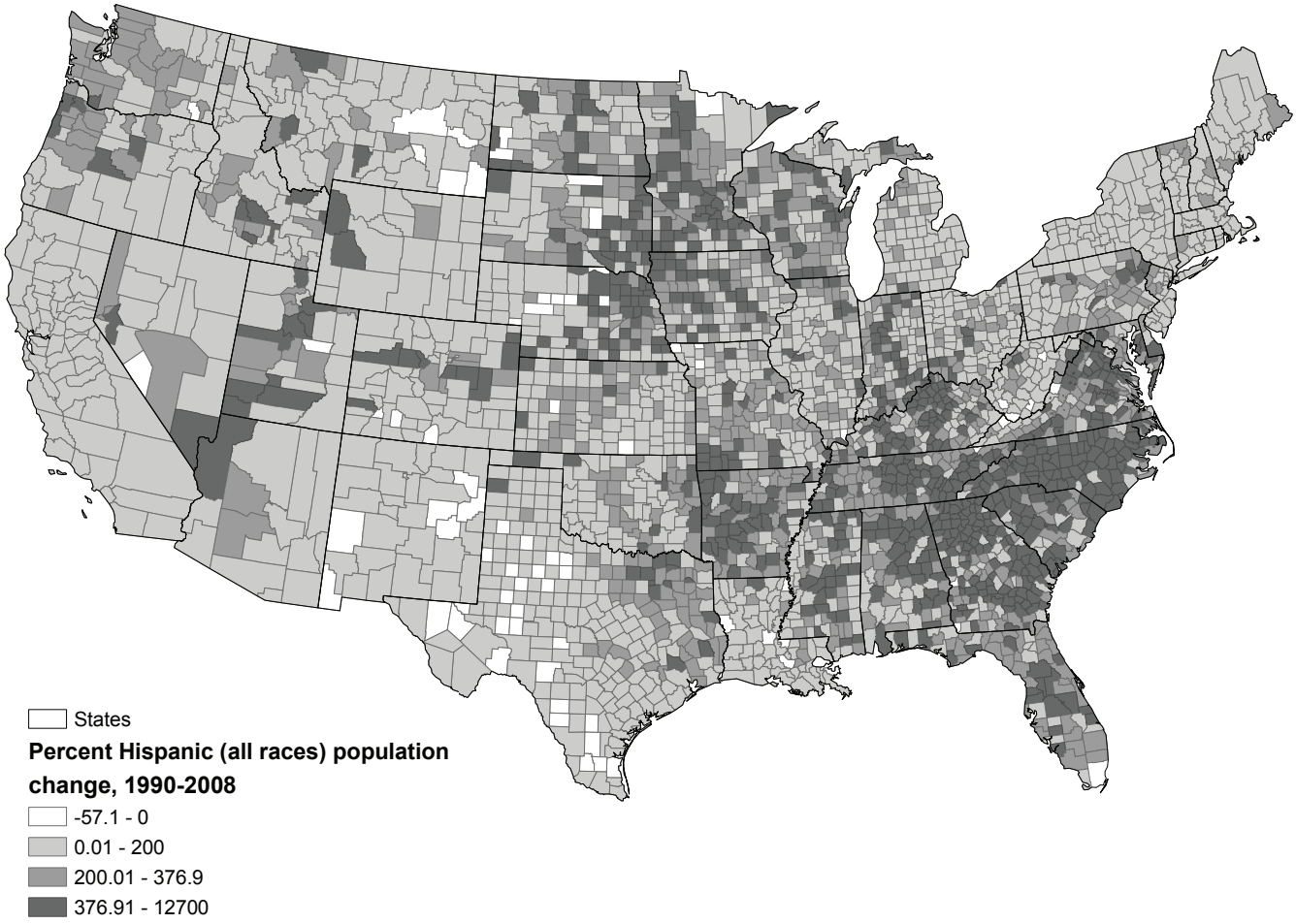

Figure 2.2—Percent change in Hispanic population by county in the contiguous United States, 1990-2008. Source: U.S. Census Bureau (2008), 1990 Census of Population and Housing and 2008 Population Estimates. Note: Hispanic or Latino people may be of any race.

3. Compare outdoor recreation participation patterns across regional and demographic strata.
4. Describe recreation activity participation on public and private lands.
5. Provide projections of outdoor recreation participation out to the year 2060.
6. Summarize national and regional trends and futures and highlight departures from past patterns to indicate potential public and private sector implications.

3. METHODS AND DATA

Overall Approaches

The principal approach for addressing the six objectives listed previously for studying outdoor recreation participation is the examination of results from analysis of previous and current data from the National Survey on Recreation and the Environment (NSRE). Formerly known as the National Recreation Survey (NRS), the NSRE offers a consistent, ongoing survey database comparable over time and across regions of the country. Results for two other ongoing surveys are also covered here; one is from

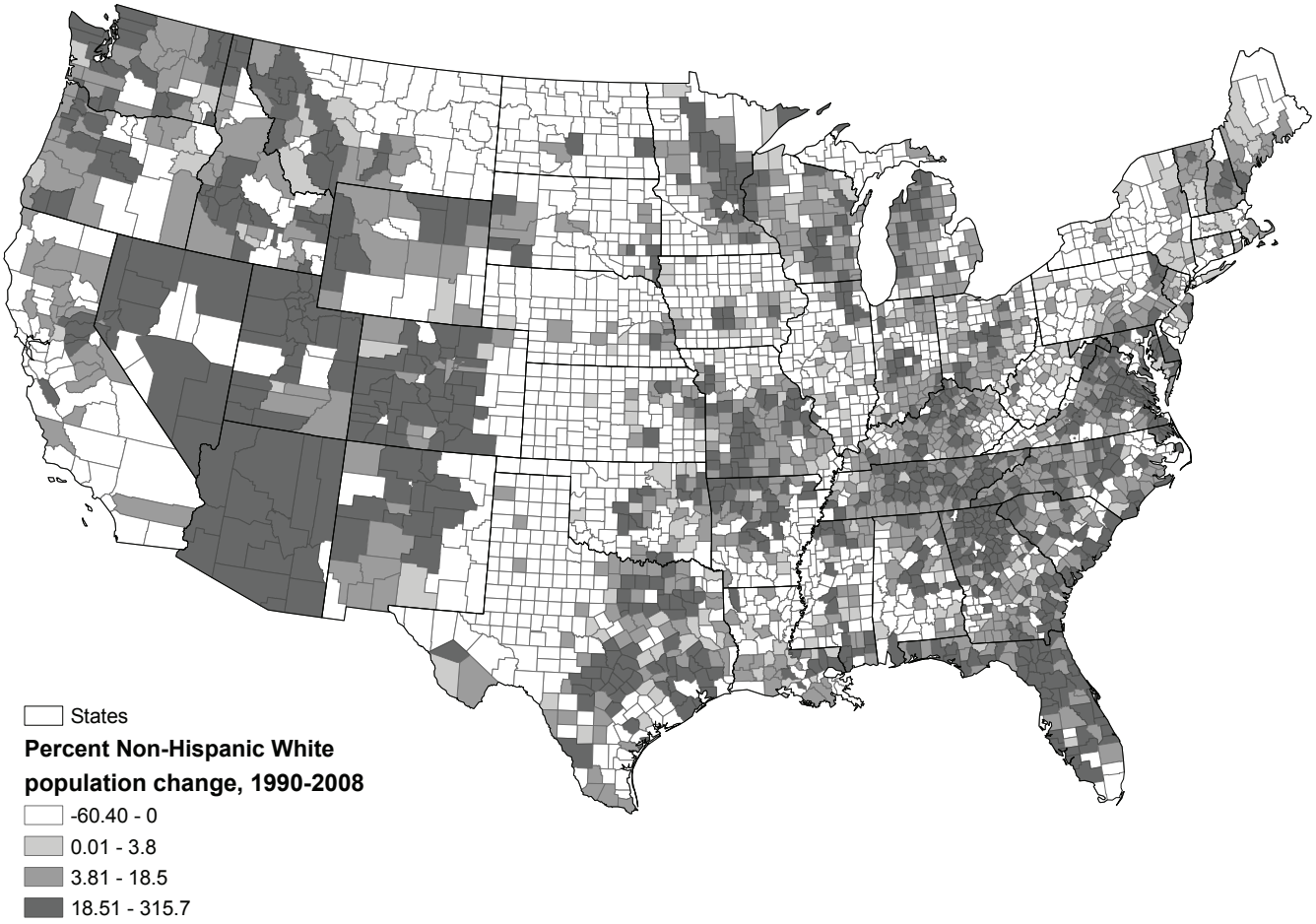

Figure 2.3—Percent change in non-Hispanic white population by county in the contiguous United States, 1990-2008. Source: U.S. Census Bureau (2008), 1990 Census of Population and Housing and 2008 Population Estimates.

the U.S. Fish and Wildlife Service. and the other is from not-for-profit the Outdoor Foundation. More information on these three surveys is provided below. Together, these three surveys give in-depth coverage for adult participation in outdoor recreation for the Nation. Added to each of these three surveys are data from the National Kids Survey, which covers youth from age 6 to 19. Results from these data are also presented.

The supporting approach for addressing the six objectives previously listed is to present papers invited by research experts in the field of outdoor recreation. These papers are interspersed within the main text of this report and are identifiable by their titles and authorship. They provide coverage of a wider diversity of topics in outdoor recreation, ranging from coverage of specific activities to motivations for participation. These papers represent a small sampling of the rich information available through the research by scientists across the country whose focus is outdoor recreation.

Recreation Use Data Sources

The Outdoor Recreation Resouces Review Commission (ORRRC) contracted the U.S. Census Bureau to conduct the first NRS in 1960. Subsequent NRS studies were conducted in 1965, 1972, 1977, and in 1982-83. Some of the results from these earlier surveys will be reviewed

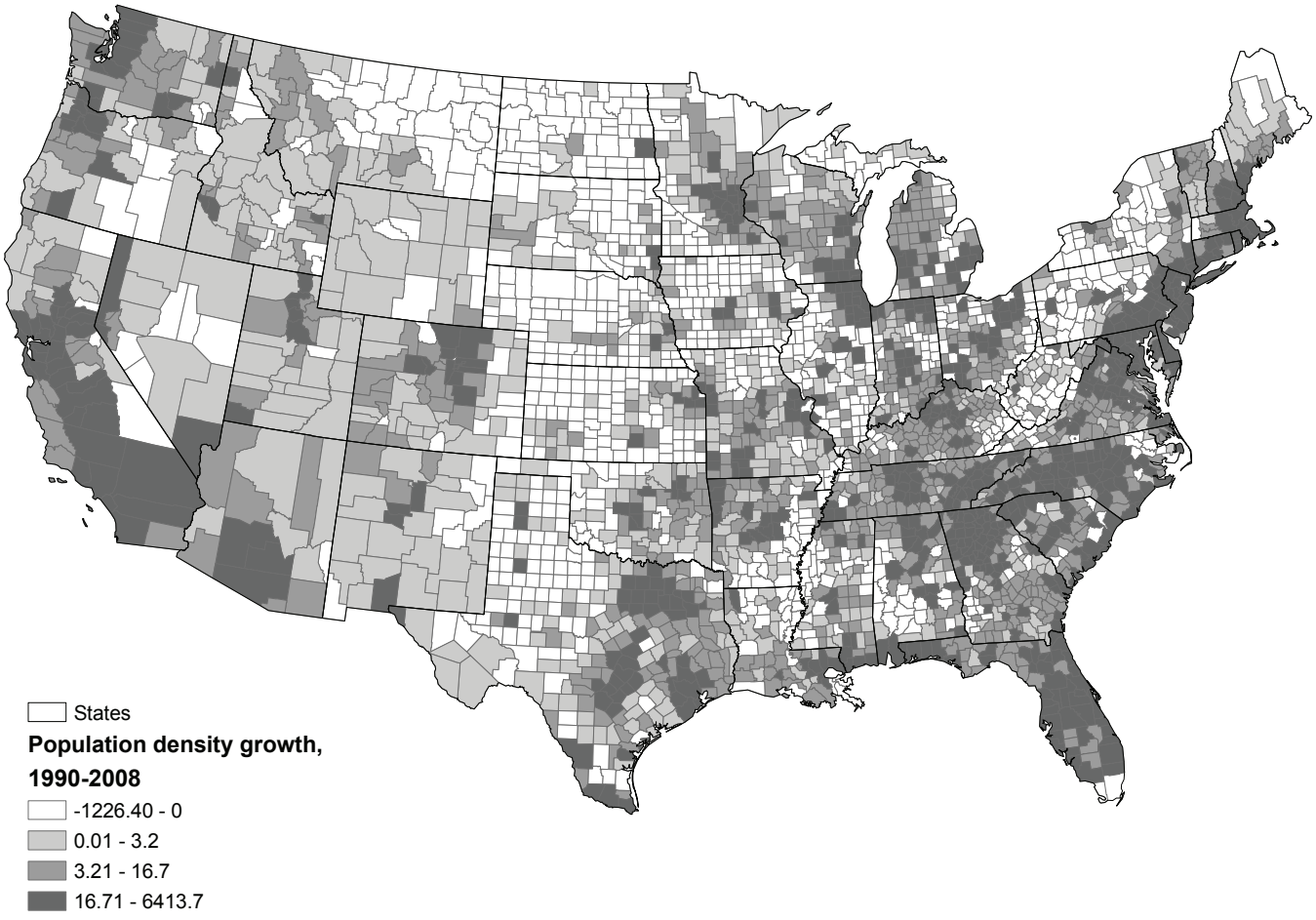

Figure 2.4—Change in the number of people per square mile by county in the contiguous United States, 1990-2008. Source: U.S. Census Bureau (2008), 1990 Census of Population and Housing and 2008 Population Estimates.

in this report, but not in detail. The NSRE represents a continuation of the NRS into contemporary time.

The National Fishing, Hunting, and Wildlife-Associated Recreation Survey is also conducted by the U.S. Census Bureau for the U.S. Fish and Wildlife Service. The survey was first conducted in 1955 and was the Nation's first countrywide recreation survey. The Outdoor Foundation is an industry-sponsored survey currently being conducted by the private firm Synovate. The National Kids Survey is conducted by a consortium of the University of Tennessee, University of Georgia, and the Forest Service's Southern Research Station. Each primary data source is presented in more detail below.

National Survey of Fishing, Hunting, and Wildlife-Associated Recreation—The National Survey of Fishing, Hunting, and Wildlife-Associated Recreation is one of the oldest and most comprehensive continuing recreation surveys. It has been conducted about every fifth year since 1955. The survey has collected information on the number of anglers, hunters, and wildlife watchers ages 16 years and older, how often they participate, and how much they spend on their activities in the United States. Recently, youth 6 to 15 years old have been added to the sampling. The data are collected by the U.S. Census Bureau in two phases.

For the latest survey conducted in 2006, the initial phase began with the U.S. Census Bureau interviewing 85,000 households to develop a listing of individual wildlife recreationists with whom to conduct in-depth interviews. The in-depth phase consisted of three detailed interview waves beginning in 2006 and continuing into 2007. Interviews were conducted primarily by phone. If unreachable by phone, in-person interviews were conducted. Sample sizes were designed to provide statistically reliable results at both the national and State levels. Altogether, interviews were completed with 21,938 anglers and hunters, and 11,279 wildlife watchers. The survey's content and methodology as used in 2006 is similar to that used in 2001, 1996, and 1991, so the estimates are comparable. Current and past survey reports are available on the Fish and Wildlife Service Web page at: http://wsfrprograms.fws.gov/Subpages/NationalSurvey/NatSurveyIndex.htm.

The Outdoor Foundation Annual Survey—The Outdoor Foundation's annual participation report captures responses from over 40,000 Americans ages 6 and older and covers 114 different activities, 40 of which are used to define participation in outdoor recreation (The Outdoor Foundation 2009). These outdoor activities are the focus for this report. In alphabetic order, the outdoor activities included were:

- adventure racing
- backpacking
- bicycling (BMX, mountain/non-paved surface, road/paved surface)
- birdwatching (more than ¼ mile from home/vehicle)
- boardsailing/windsurfing
- camping (backyard or car, within ¼ mile of home/vehicle and recreational vehicle)
- canoeing
- climbing (sport/indoor/boulder, traditional/ice/mountaineering)
- fishing (fly, freshwater, saltwater)
- hiking
- hunting (rifle, shotgun, handgun, bow)
- kayaking (recreational, sea/touring, whitewater)
- rafting
- running/jogging
- sailing
- scuba diving
- skateboarding
- skiing (alpine/downhill, cross-country, telemarking and snowboarding)
- snorkeling
- snowboarding
- snowshoeing
- surfing
- trail running
- triathlon (nontraditional/off road and traditional/road)
- wakeboarding
- wildlife viewing (more than ¼ mile from home/vehicle).

For the above activities, survey respondents were asked if they participated at least once during the past calendar year. The data presented in this report was for calendar year 2008. The Outdoor Foundation survey is a collaborative effort among six partner organizations including Snowsports Industries America, The Sporting Goods Manufacturers Association, National Golf Foundation, United States Tennis Association, and International Health, Racquet & Sports Club Association. It is based on 41,500 online surveys carried out each January with a nationwide sample of individuals and households from the U.S. Online Panel operated by Synovate. In 2009, a total of 15,013 individual and 26,487 household surveys were completed. The total panel has over 1 million members and is maintained to be representative of the U.S. population. Oversampling of some groups is done to boost response rates from typically underrepresented groups.

A post-sampling weighting method was applied to adjust the data to reflect the demographic profile of the total U.S. population ages 6 and above. The following variables were used for weighting: gender, age, income, household size,

region, and population density. The 2008 participation survey sample size of 41,500 completed surveys provides a high degree of statistical accuracy. All surveys are subject to some level of standard error—that is, the degree to which the results might differ from those obtained by a complete census of every person in the nation. For example, with the sample size achieved an outdoor activity with a participation rate of 5 percent of the total population has a confidence interval of ± 0.21 percentage points at the 95-percent confidence level.

The survey methodology changed slightly in 2007 to include household interviews in addition to individual interviews. The two methodologies are comparable and all results are seen by the Outdoor Foundation as indicative of the state of sports and leisure activity participation. Caution is recommended in comparing participation rates back to 2006, because some of the groups surveyed are relatively small in number.

The Outdoor Foundation uses data from this annual study to profile American participation in outdoor recreation in general, including participation in individual outdoor activities. In 2009, the Foundation released the "2009 Outdoor Recreation Participation Report, Special Report on Fishing and Boating, Special Report on Camping," and "Special Report on Paddlesports." All these reports were based on participation that occurred in 2008.

National Survey on Recreation and the Environment—The National Survey on Recreation and the Environment (USDA Forest Service 2000) is a general population, random-digit-dialed household telephone survey designed to measure participation in outdoor recreation activities and people's environmental behaviors and attitudes. Telephone numbers are selected to represent households and non-institutionalized residents of the United States, 16 years of age and older. Interviews are typically restricted to an average of 12 to 14 minutes. The Human Dimensions Research Laboratory in the Department of Forestry, Wildlife and Fisheries at the University of Tennessee-Knoxville, an ongoing NSRE cooperator, has conducted the survey since 1999 using samples of household telephone numbers purchased from a private research-sampling firm. The survey instrument consists of a script used with a computer-assisted telephone interview system.

Between the fall of 1999 and late April 2009, more than 97,000 Americans were interviewed for the NSRE. This most recent application of the NSRE is the eighth in the U.S. series of NRS studies. As noted earlier, the first such national survey was done in 1960 for the ORRRC. Since 1999, the survey has been conducted in many different versions, each of which interviews about 5,000 Americans.

Every version of the NSRE consists of "core" sections covering outdoor recreation activity participation and personal demographics, plus one or two additional sections or modules that address different data needs of sponsoring organizations. Many of these additional modules addressed a variety of environmental and natural resource topics.

Nearly 80 different recreation activities are tracked through various versions of the survey. Central to these activities are 50 that are considered to be traditional nature-based activities. These 50 activities are tracked to meet one of the primary objectives of the NSRE, which is to provide data for the periodic RPA Assessment. NSRE sampling occurs across both rural and urban areas of the country and includes all activity participation whether on public or private land and water.

Many agencies and organizations have been interested in the core module of recreation activity participation data from NSRE. It provides a baseline of data representing recreation participation by the U.S. population as it engages in a variety of outdoor activities. Questions are compatible with some of the previous NRS studies dating back to 1960. This comparability enables tracking long-term trends. Some of the NSRE versions also ask number of days in the past 12 months on which respondent participated in a given activity. This question is asked for only a subset of activities. Annual days of participation is an indicator of the level of participation across the United States. Days of participation is used in recreation resource planning and research to define the size and distribution of outdoor recreation markets, and to model participation sensitivity to social and economic trends.

The other core module, the demographic profile, describes both participant and non-participant populations and is included in all versions of the survey. These survey questions use the standard wording and groupings required for use by the U.S. Census Bureau and by other Federal agencies. Demographics are asked as the last section of the survey. The structure of the demographics questions have varied little over time and change only as mandated by the U.S. Office of Management and Budget, which oversees Federal surveys.

The NSRE data were weighted to assure that the demographic composition of the NSRE sample closely approximates the estimated composition of the U.S. population, as reported by the U.S. Census Bureau. Adjustments were made to correct for over or under sampling of various demographic segments. A composite of multivariate and multiplicative weights was used to account for age, race, sex, education, and urban/rural differences between the NSRE samples and Census data.

This composite weighting adjusts the sample estimates of recreation participation and other study variables to better represent what those estimates would have been had the sample been truly a proportionate distribution across U.S. social strata.

This type of weighting procedure is referred to as post-stratification (Holt and Smith 1979). It is a widely accepted method for adjusting sample proportions to mirror population distributions (Zhang 2000). Post-stratification has been successfully applied in similar national surveys in the United States and in other countries (Thomsen and Halmoy 1998). For NSRE, a total of 60 strata (6 age * 2 sex * 5 race) were identified to match identical strata in the U.S. Census. Each individual stratum weight, SW_i, is the ratio of the Census population proportion to the NSRE sample proportion:

$$SW_i = P_i / p_i \quad (1)$$

where
P_i = U.S. Census proportion for stratum i
p_i = NSRE 2000 sample proportion for stratum i

A weight of $SW_i > 1.0$ indicated that the particular stratum was a smaller proportion of the NSRE sample than it was of the U.S. population based on the latest available Census estimates. (The U.S. Census Bureau has an estimates program which provides estimates of population and other demographic variables in the years between the decennial Censuses.) Weights with a value < 1.0 indicated that the stratum was randomly sampled in greater numbers than their proportion of the U.S. population ages 16 and older. Each individual respondent was assigned to one, and only one, of the 60 age-sex-race strata and thus assigned the SW_i for that stratum.

We took an additional step to account for the sampling proportions of two other socioeconomic strata: educational attainment and place of residence (rural/urban). Weights for each of these were calculated separately in a similar fashion to the age-sex-race weight. The education weight, EW_i, is the ratio of Census/NSRE proportions for five different levels of educational attainment, ranging from "less than high school" to "postgraduate degree." The residence weight, RW_i, is a similar ratio of the proportion of the U.S. population living either in metropolitan statistical areas (urban) or not (rural) divided by the counterpart proportions in the NSRE data. This component adjusted for the under sampling of urban or metropolitan residents in the survey. A single weight, W_i, for each individual survey respondent was then calculated as the product of the three intermediate weights:

$$W_i = SW_i \bullet EW_i \bullet RW_i \quad (2)$$

where
W_i = NSRE composite weight
SW_i = Age/sex/race stratum weight
EW_i = Educational attainment weight
RW_i = Residence weight

The largest composite weights, therefore, were applied to survey respondents whose numbers were underrepresented as a proportion of the total sample. The smallest weights were applied to strata which were overrepresented. The sample had a potential total of 600 (60 strata * 5 race * 2 sex) unique weights, with each individual assigned a weight, W_i, depending on his or her combination of the three intermediate weights. The weights are used in national analyses only since they adjust the national sample to more closely approximate the true national population proportions. A series of regional weights was also derived for each of the four RPA regions. The same approach used for the national weights were applied to each of four regions. Regional weights adjust the demographic differences by region instead of nationally, thus producing more representative regional estimates.

National Kids Survey—The National Kids Survey is administered nationally to develop estimates of time spent outdoors and activities of youth ages 6 to 19 years. Demographics and reasons for not spending time outdoors are also asked. The survey is a general population, random-digit-dialed household telephone survey. Telephoning is accomplished by calling a random, cross-sectional sample of non-institutionalized youth in residences across the United States. The Human Dimensions Research Laboratory at the University of Tennessee-Knoxville conducted the National Kids Survey almost daily starting in September 2007 and running through August 2009.

The survey system uses computer-assisted telephone interviewing (CATI) so the trained interviewers work from a computer monitor and the data are automatically entered as telephone interviews proceed. The average length of this survey about youth was approximately 6 minutes. A proxy household member age 20 years or older (e.g., parent, guardian, grandparent, older sibling) is interviewed to speak for children ages 6 to 15 years old. Teens ages 16 to 19 years old are interviewed directly. If there is more than one child in the household, the child with the last birthday is selected for interviewing (directly or through proxy). The sample size as of April 2009, at the time the analysis for this report was begun, was 1,201.

Because the National Kids Survey is structured similarly to the NSRE, appropriate NSRE weights were applied as a first step in weighting the Kids Survey data. This assured that the sample demographic proportions closely approximate the true population proportions. A secondary weight was also applied to adjust the proportions of youth in the sample to align closely with the corresponding national population proportions of male and female age groups. The age groups are 6 to 9, 10 to 12, 13 to 15, and 16 to19. Proportions were derived for these eight groups for both the population (Census) and sample (National Kids Survey). The National Kids Survey weights are then simply the ratio of the population-to-sample proportions. This adjusts any age/sex group that is underrepresented (youth weight > 1.0) or overrepresented (youth weight <1.0) in the sample. The final weight used in National Kids Survey analyses is the product of the equivalent NSRE sample weight and the Kids Survey sample weight.

Federal and State Visitation Data

Federal land and water management agencies—Visitation estimates for Federal agencies are typically provided by the individual agencies. As of the writing of this report, there were some missing data for some of the agencies for some years. The Bureau of Reclamation and the Tennessee Valley Authority (not shown in table) do not annually collect agency-wide data on visitation at recreation areas. Bureau of Reclamation visitation for 2008 appeared in the 2009 Second Triennial Report to Congress under the Federal Lands Recreation Enhancement Act (U.S. Department of the Interior, USDA 2009), but no specific source was listed.

State parks system visitation—State Park System visitation data for all 50 states were obtained through the National Association of State Park Directors' Annual Information Exchange annual reports. Each report covers the previous 12-month period of July 1 to June 30 of the following year. For example, the 2009 report covers July 1, 2007, through June 30, 2008. Column headings refer to the latter year of data collection, not the report publication year. In a few cases, some States did not report visitation statistics for certain years. These included New Hampshire in 2005, and Illinois and Rhode Island in 2004. Where this occurred, previous year statistics were used as an approximation of the missing data.

Projecting Futures

In chapter 8, we develop and present national outdoor recreation participation projections for 17 recreation activities or activity composites through 2060. Past outdoor recreation trends are important indicators of what may happen with outdoor recreation in the near future, but they do not explore underlying factors which may be driving trends. Trend analysis can through use of projection models which can simulate future participation by combining external projections of relevant factors with estimated model parameters.

A two-step approach was used to develop projections for 17 individual outdoor recreation activities. The first step focused on the development of statistical models of per capita participation for each of the activities. These models are important because they allow a better understanding of how driving factors influence recreation activity choices and how choices may change over time. The recreation participation data used in estimation of these models is the National Survey on Recreation and the Environment.

The second step combined the estimated models with external projections of relevant model explanatory variables to generate estimated per capita participation probabilities for each activity at 10-year intervals to 2060. Per capita estimates were combined with population projections to derive national estimates of adult participants for each activity. These estimates were then used to create indices of estimated adult participation for each of the 17 activities across the three 2010 RPA Assessment scenarios as described in "Methods and Data" of this report. For projections, the activities were grouped into the broad categories of visiting developed sites; viewing and photographing nature; backcountry activities; motorized activities; hunting and fishing; non-motorized winter activities; and non-motorized water activities.

4. RECREATION PARTICIPATION TRENDS (NATIONAL AND REGIONAL)

In this chapter, outdoor recreation participation statistics are presented. The primary data sources for this chapter are the four major national outdoor recreation participation surveys as described earlier. The first survey results shown are from the Fish and Wildlife Service's National Survey of Fishing, Hunting and Wildlife-Associated Recreation Survey. This is followed by the Outdoor Foundation's Annual Recreation Participation Survey (an outdoor industry survey). Following this is the Forest Service's National Survey on Recreation and the Environment (NSRE), which represents a continuation of the National Recreation Survey (NRS) of the 1960s through the 1980s. For historical context, 1982-83 results from the NRS are compared with NSRE results

up through the 1990s. Then more recent NSRE trend results are shown for the first decade of this century. Following in chapter 6 are survey results from the National Kids Survey. These four surveys represent the Nation's major ongoing surveys aimed at estimating the American public's recreation participation patterns.

It should be noted that the metric in each of the four major surveys summarized here is different. The Fishing, Hunting and Wildlife-Associated Recreation survey metric was participation in a wildlife- or fish-associated activity that was the primary reason for an outing. If a wildlife- or fish-associated activity was not the primary reason for an outing, participation was not counted. The Outdoor Foundation survey focused on participation in 40 outdoor activities during the previous calendar year, whether or not the activity was the primary reason for an outing. Outdoor participation beyond these 40 activities was not counted. The NSRE measures activity participation across 62 outdoor activities that occurred any time during the past 12 months preceding the interview. The activities in the NSRE did not have to be the primary reason for an outing. The National Kids Survey asked about time and activities of youth outdoors during the week preceding the survey.

Invited Paper

Participation, Regional Distribution, and Trends in Wildlife-Related Recreation

by Anna Harris[1]

Anna Harris

In 2006, over 87 million Americans 16 years old or older enjoyed some form of wildlife-associated recreation. This section provides a summary of the U.S. Fish and Wildlife Service's 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (U.S. Department of the Interior, Fish and Wildlife Service; and U.S. Department of Commerce, Census Bureau 2007). It is the most comprehensive survey of wildlife recreation in the United States. This report presents overall participation rates, both nationally as well as regionally, and identifies trends in hunting, fishing, and wildlife watching. The participation reported is for outdoor occasions for which hunting, fishing, or wildlife watching in some form was the primary reason for the occasion.

Hunting Highlights

In 2006, 12.5 million people 16 years old or older enjoyed hunting a variety of game animals. Big game hunting was unquestionably the most popular type of hunting, with an estimated 10.7 million hunters pursuing animals such as deer and elk. There were 4.8 million hunters of small game, including squirrels and rabbits. Migratory bird hunters numbered around 2.3 million, and about 1.1 million hunters sought other animals, such as raccoons and groundhogs (fig. 4.1).

Hunting Participation by Geographic Region

Figure 4.2 reveals regional differences in the prevalence of hunting. Regionally, participation rates in hunting ranged from 2 percent in the Pacific region to 12 percent in the West North Central region. Coincidentally, the West North Central is also the region with the highest participation rates for both fishing and wildlife watching. The national hunting participation rate of 5 percent was exceeded in the West North Central, East North Central, East South Central, West South Central, and Mountain regions.

1996–2006 Comparison of Hunting Participation

The overall number of hunters in the United States declined from 1996 to 2006 (fig. 4.3). The downturn from 1996 to 2001 was 7 percent, a statistically significant change.[2] The downturn from 2001 to 2006 was 4 percent and was not statistically significant. Big game hunting remained relatively stable from 2001 to 2006, while small game and migratory bird hunting had significant declines from 2001

[1] Anna Harris, Economist, Fish and Wildlife Service, U.S. Department of the Interior, Arlington, VA.
[2] This report uses 95-percent confidence intervals to determine statistical validity. A non-significant change means that for 95 percent of all possible samples the estimate for one survey year is not different from the estimate for the other survey year.

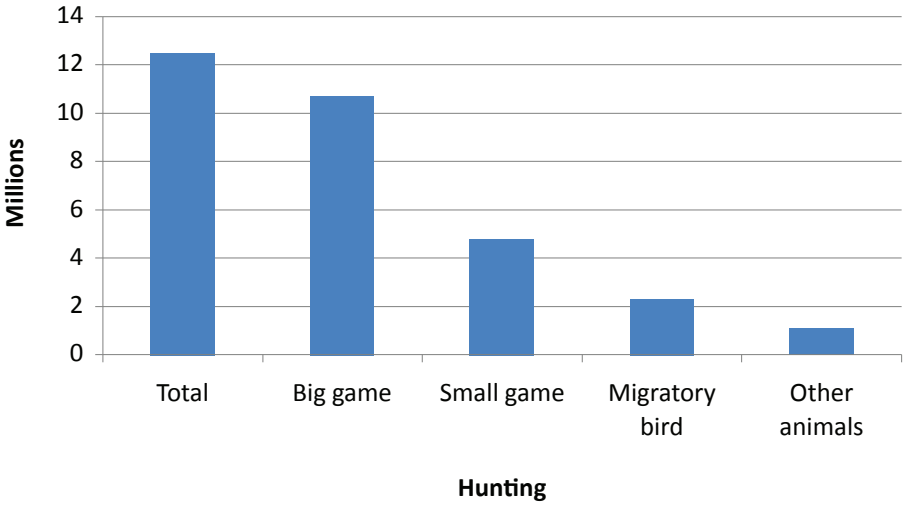

Figure 4.1—Hunting participation by type of hunting (population 16 years of age and older).
Note: The sum of the different types of hunting participants exceeds the total number of hunters because some people participated in more than one type of hunting.

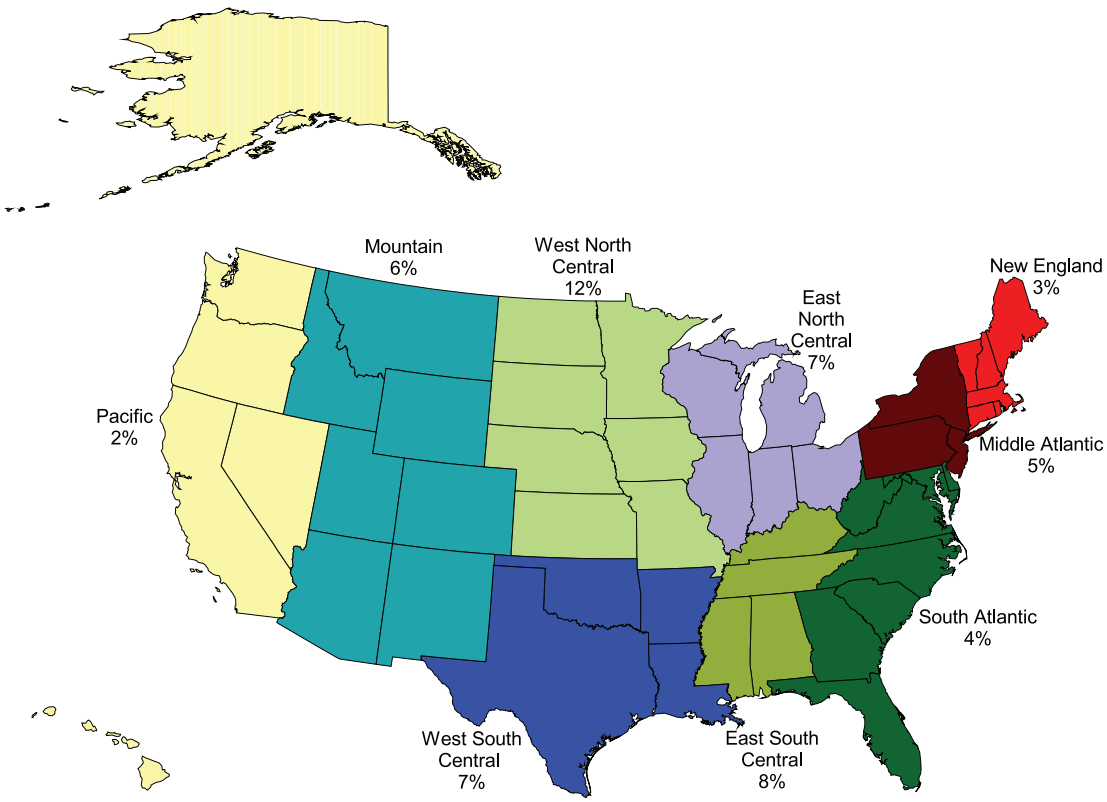

Figure 4.2—Percent of population that hunts by region (National participation rate: 5 percent).

to 2006 of 12 percent and 22 percent, respectively. There are abundant speculations about why hunting participation has declined; the loss of small game habitat may partially explain it.

Fishing Highlights

In 2006, 229 million people 16 years old or older lived in the United States, and one in every eight of these went fishing. As shown in figure 4.4, this equates to nearly 30.0 million people enjoying a variety of fishing opportunities.[3] Freshwater anglers (including Great Lakes anglers) numbered 25.4 million, while saltwater fishing attracted 7.7 million anglers.

Fishing Participation by Geographic Region

As outlined in figure 4.5, fishing is enjoyed by anglers in all regions of the United States. While the national participation rate was 13 percent, regional rates ranged from 8 percent in the Middle Atlantic and Pacific to 21 percent in the West North Central. The West North Central, East North Central, East South Central, West South Central, and South Atlantic regions all reported participation rates above the national average.

1996–2006 Comparison of Fishing Participation

Comparing overall fishing participation rates in 2006 with those in 2001 reveals significant declines (fig. 4.6). The majority of the downturn occurred over the 5-year period from 2001 to 2006. The total number of anglers fell 15 percent from 1996 to 2006 and 12 percent from 2001 to 2006. Over the 10 years from 1996 to 2006, fishing in the Great Lakes experienced the greatest downturn at 30 percent. Fishing in freshwater other than Great Lakes fared the best with a decline of 13 percent from 1996 to 2006 and a decline of 10 percent from 2001 to 2006. The decline in saltwater fishing was 18 percent from 1996 to 2006 and 15 percent from 2001 to 2006.

Wildlife Watching Highlights

Nearly a third of the U.S. population, or 71 million people, enjoyed wildlife watching in 2006.[4] The Survey uses a strict definition of wildlife watching. Participants must either take a "special interest" in wildlife watching around their homes or take a trip for the "primary purpose" of wildlife watching. The survey categorizes wildlife watching in two ways: (1) around the home (within a mile of home) or (2) away from home (at least one mile from home). In 2006,

[3]Three types of fishing are analyzed: (1) freshwater, excluding the Great Lakes, (2) Great Lakes, and (3) saltwater.

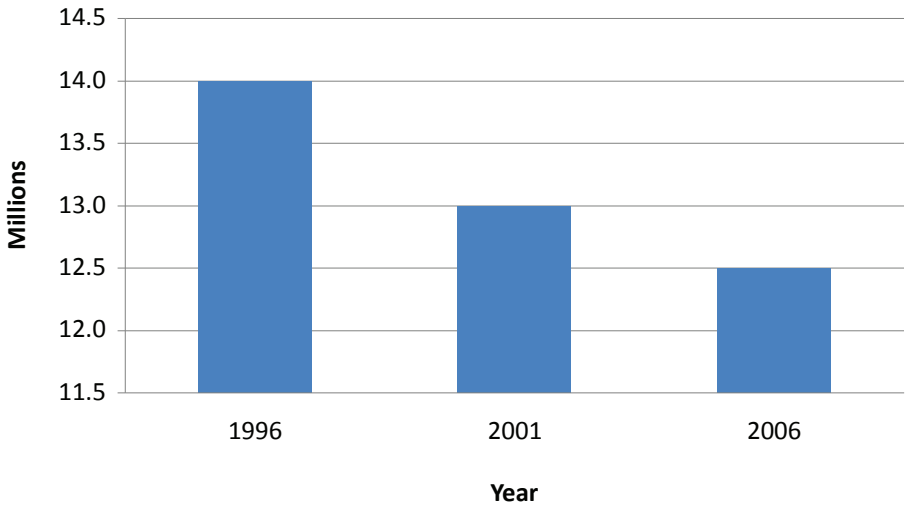

Figure 4.3—Hunting participation: 1996-2006 (Population 16 years of age and older).

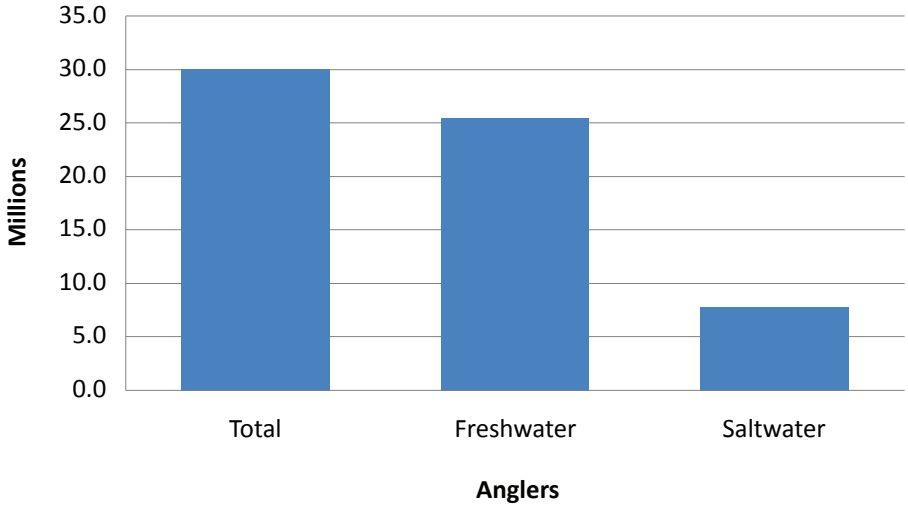

Figure 4.4—Fishing participation: 2006 (population 16 years of age and older).
Note: The sum of freshwater and saltwater anglers exceeds the total number of anglers because some people participated in both types of fishing.

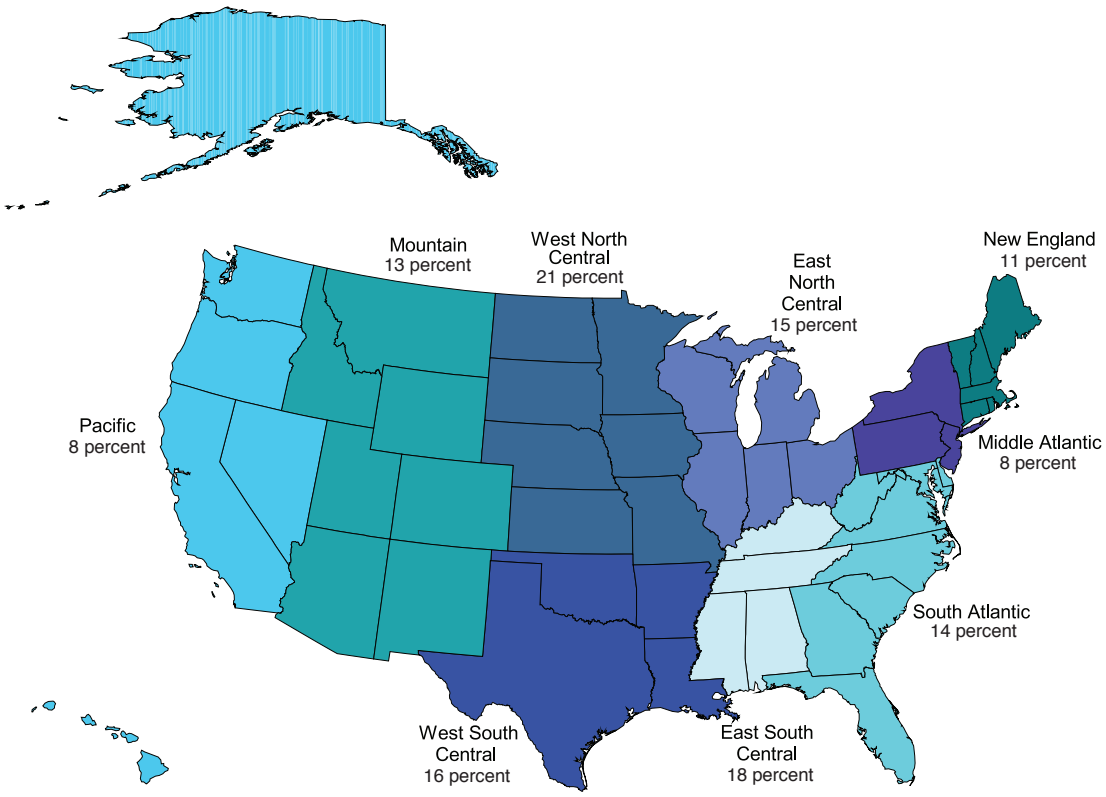

Figure 4.5—Percent of population that fishes by region (National participation rate: 13 percent).

nearly 68 million people took a special interest in wildlife watching around the home, while 23 million people enjoyed wildlife watching trips away from their home (fig. 4.7). Of all wildlife activities, birds attracted the greatest number of recreationists; about 48 million people observed birds around the home and on trips in 2006. A large majority of these individuals—88 percent (41.8 million people)—observed wild birds around the home, while 42 percent, or 19.9 million people, took trips away from home to observe wild birds.

Wildlife Watching by Geographic Region

The participation rates for both around-the-home and away-from-home wildlife watching varied by region of the country. As shown in figure 4.8, the percentages of regional populations that watched wildlife around their homes ranged from 24 percent in the Pacific to 42 percent in the West North Central. The away-from-home participation rate was lower, ranging from 7 percent in the South Atlantic region to 14 percent in the West North Central region (fig. 4.9). In both instances, the West North Central region had the highest participation rate of wildlife watchers. The New England, East South Central, East North Central, and West North Central regions all had participation rates above the national average for both away-from-home and around-the-home wildlife watching. Also, for away-from-home wildlife watching, the Pacific and Mountain regions both had participation rates higher than the national average.

1996-2006 Comparison of Wildlife Watching Participation

Comparing the number of wildlife watchers in 2006 with the two previous surveys shows a 5 percent increase from 1996 to 2001 and an 8 percent increase from 2001 to 2006. There were 62.9 million participants in 1996, 66.1 million in 2001, and 71.1 million in 2006 (fig. 4.10). Results from the last three surveys show differing trends for the two categories of wildlife watching. Around-the-home wildlife watching, the most popular type of wildlife watching, was the largest contributor to the overall upward trend with a 12 percent increase from 1996 to 2006. Photographing wildlife around-the-home had a noteworthy increase of 17 percent from 16.0 million in 1996 to 18.8 million in 2006. Unlike around-the-home wildlife watching, away-from-home wildlife watching did not increase from 1996 to 2006. From 1996 to 2001, participation decreased 8 percent, from 23.7 million to 21.8 million, while from 2001 to 2006 there was no change in participation. Of the three categories of away-from-home wildlife watching (observing, photographing, and feeding), the number of feeders dropped significantly in participation from 10.0 million to 7.1 million (29 percent) from 1996 to 2006.

[4]Wildlife watching is defined as closely observing, feeding, and photographing wildlife around the home or on trips away from home, visiting public parks around the home because of wildlife, and maintaining plantings and natural areas around the home for the benefit of wildlife.

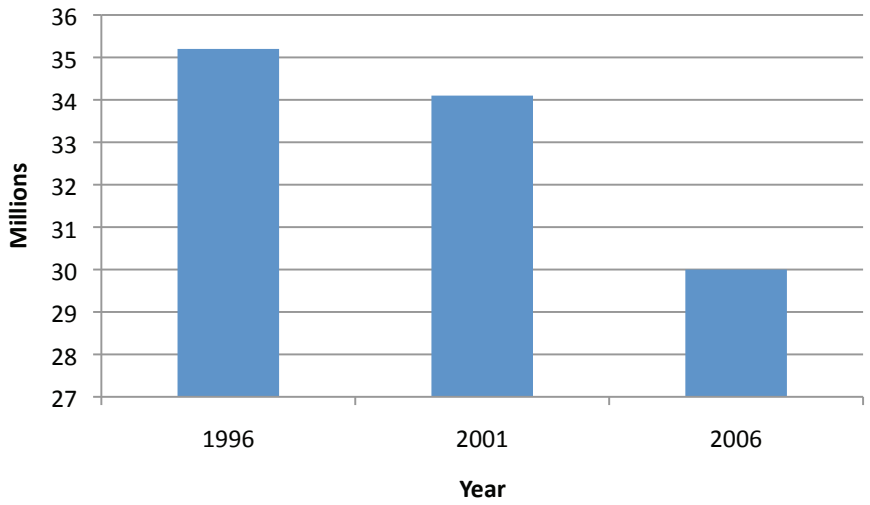

Figure 4.6—Fishing participation: 1996-2006 (Population 16 years of age and older).

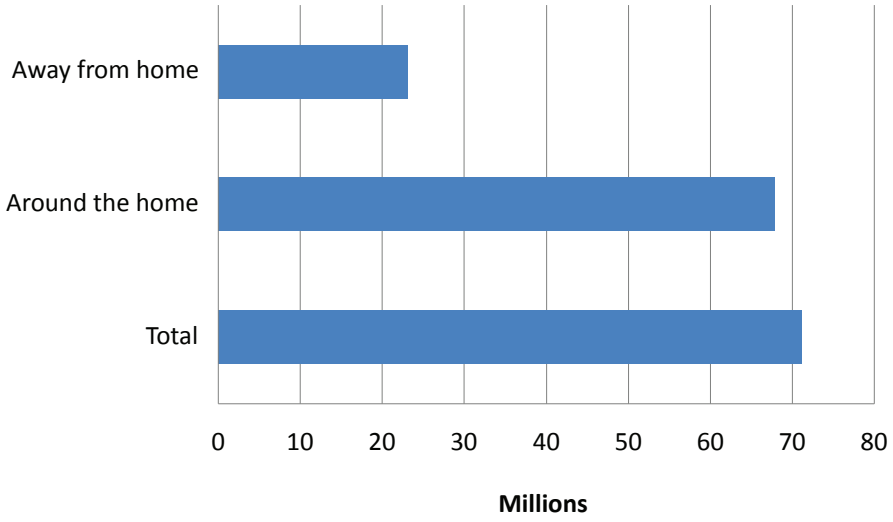

Figure 4.7—Wildlife watching participation: 2006 (population 16 years of age and older). Note: The sum of wildlife watching away from home and around the home exceeds the total number of wildlife viewers because some people participated in both types of wildlife watching.

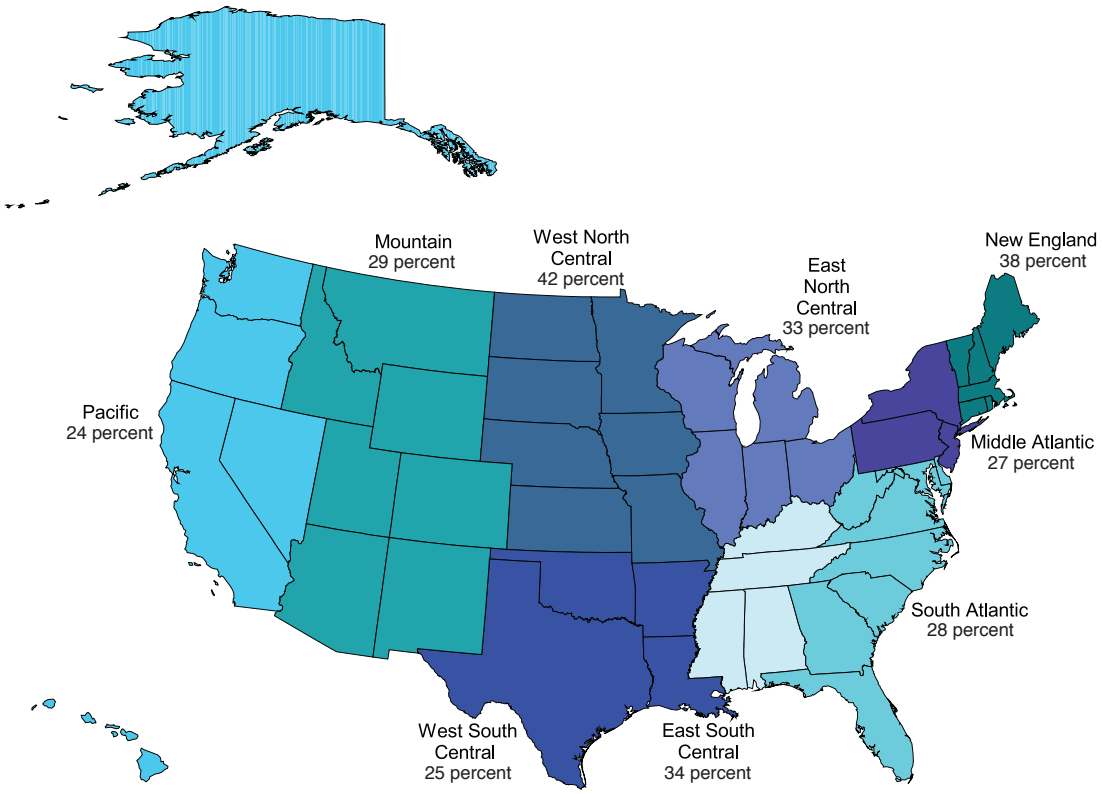

Figure 4.8—Percent of around-the-home wildlife watchers by region (National participation rate: 30 percent).

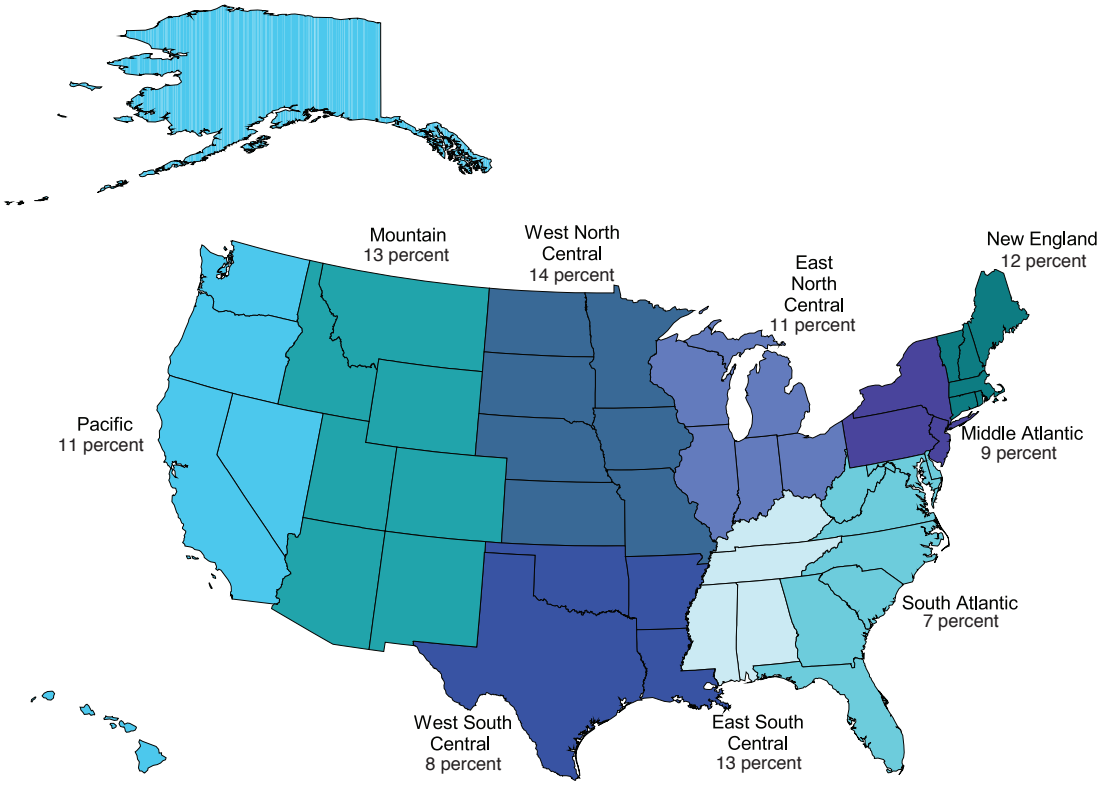

Figure 4.9—Percent of away-from-home wildlife watchers by region (National participation rate: 10 percent).

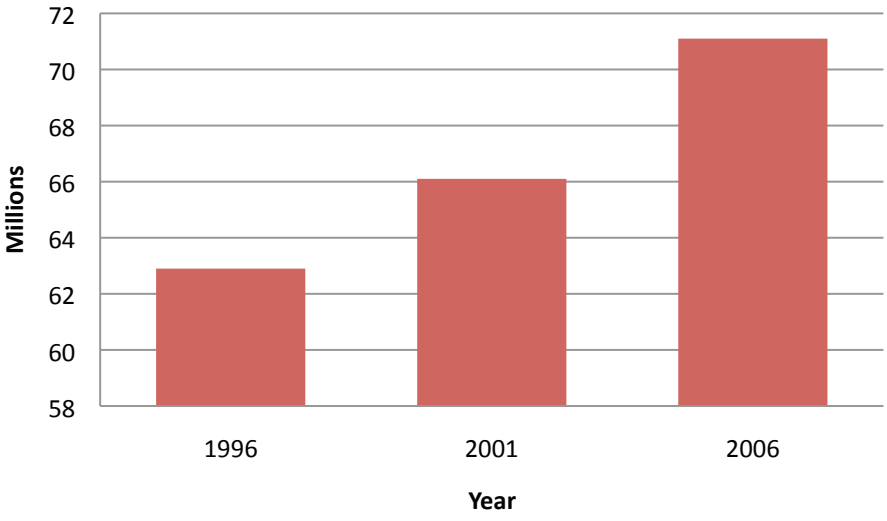

Figure 4.10—Wildlife watching: 1996-2006 (Population 16 years of age and older).

Wildlife Recreation Summary

With more than 87 million people 16 years of age and older participating in 2006, wildlife-related recreation is clearly an important leisure activity in the United States. This equates to almost 4 out of every 10 people one would meet at school, in a restaurant, or while strolling down a sidewalk. To put the 87 million people who participate in wildlife recreation into context with other leisure activities, consider that there are more wildlife recreationists in the United States than golfers, skiers, and tennis players combined (The Outdoor Foundation 2009). For more detailed survey information, including State participation rates, how wildlife-related recreation is a catalyst of economic growth and other reporting, visit the following Web site: http://wsfrprograms.fws.gov/Subpages/NationalSurvey/National_Survey.htm.

End Invited Paper

Invited Paper

Tracking American Participation In Outdoor Recreation

by Bryan Mahler[5]

Bryan Mahler

Each year, the Outdoor Foundation conducts an extensive survey of American participation in outdoor recreation in the United States. Over 40,000 Americans ages 6 and older are surveyed to examine their participation in 114 different outdoor, indoor, team, and fitness activities. This section focuses on the 40 outdoor activities included in the survey. The survey represents a collaborative effort among six partner organizations. In 2009, the Outdoor Foundation released its latest "Outdoor Recreation Participation Report," along with special reports on fishing and boating, camping, and paddle sports (The Outdoor Foundation 2009). All these reports were based on 2008 participation data collected in early 2009 and follow up surveys conducted in subsequent months.

American Participation in Outdoor Recreation

According to the most recent survey data collected by the Outdoor Foundation, 48.6 percent of all Americans participated in one or more of 40 outdoor activities at least once in 2008 (see "Methods and Data" in this report for a complete list of activities). From day hiking in an urban park to backpacking in a designated wilderness area to snowboarding at a mountain resort, 135.9 million Americans participated in one or more of the 40 outdoor activities surveyed. Participation ranged from a high of 64 percent among individuals ages 6 to 12, to a low of 38 percent among those ages 45 and older (fig. 4.11).

Since 2006, American participation in the 40 outdoor recreation activities included in the Outdoor Foundation survey has hovered at or just below 50 percent, from 49.0 percent in 2006, 50.0 percent in 2007, to 48.6 percent in 2008. In 2008, the most popular outdoor activities were (freshwater, saltwater, and fly) fishing with 17 percent of Americans ages 6 and older participating; (car, backyard, and RV) camping, 15 percent; running (which includes jogging and trail running), 15 percent; bicycling (road and mountain biking), 15 percent; and hiking, 12 percent.

Among the activities the Outdoor Foundation surveyed, Americans participated in an estimated total of 11.16 billion days of outdoor activity in 2008. These outings ranged from short day hikes to overnight trips in national parks. For many Americans, getting outdoors is viewed as part of a healthy lifestyle; 50 percent of outdoor participants considered outdoor activities as their main source of exercise (The Outdoor Foundation 2004). Yet in 2008, 43 percent of all participants in outdoor recreation participated in outdoor activities less than once every other week (less than 24 times per year), and only 23 percent of participants got out two times a week or more (104 times per year or more).

A return to nature—While participation in outdoor activities overall declined slightly in 2008, in many cases, participation in nature-based outdoor activities increased significantly. Activities like backpacking, mountain

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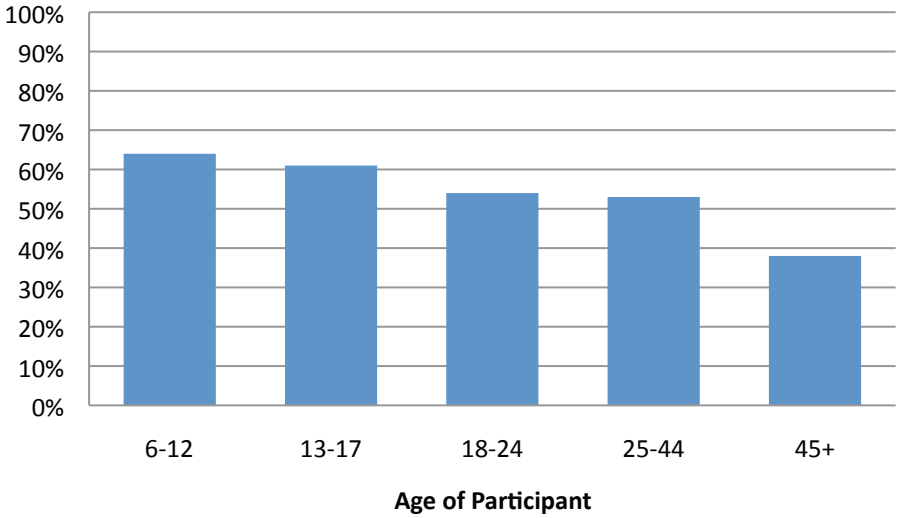


Figure 4.11—Participation in outdoor recreation by age, 2008.

biking, and trail running showed double-digit increases in participation; hiking and camping showed 9 percent and 7 percent increases, respectively.

These increases are particularly notable when trends in nature-based activity participation are compared to trends in their urban-based outdoor counterparts. While participation in bicycling and running on roads or paved surfaces decreased or remained relatively flat, participation in mountain biking and trail running both increased over 10 percent.

Demographics—Participants in outdoor recreation represent a demographic diversity. The full 2009 Outdoor Recreation Participation Report includes complete demographic information for outdoor participants, including age, gender, income, education, ethnicity and geography (available at www.outdoorfoundation.org/research). But while there is great variety among participants, females and ethnically diverse groups are significantly underrepresented in the outdoor activities surveyed. Only 43 percent of participants are female, and 80 percent of participants are White (see "Lifecycle" and "Ethnicity" below).

Lifecycle—The percent of people participating in outdoor recreation activities varies among different age groups. As individuals age, their lives are shaped by their evolving environment and life experiences. Participation rate in outdoor recreation by age group helps describe this lifecycle (table 4.1).

Although youth participation in outdoor activities is initially high, it declines sharply in adolescence and young adulthood. After this decline, participation among males ages 26 to 30 begins to climb again, increasing gradually until ages 36 to 40. Among females, participation begins to increase again among ages 21 to 25 but quickly resumes a gradual decline lasting through ages 66 and older.

Among men, outdoor activities are more popular than indoor fitness activities and team sports across all age groups, except ages 66 and older. Among women, indoor activities are most popular among those ages 21 to 25, and remain popular through to age 66 and older. Despite initial popularity with youth, participation in team sports declines quickly among males and females from ages 16 to 20 and older, and dipping below 5 percent among males ages 66 and older and among females ages 51 and older.

Gateway activities—Participants in outdoor recreation often begin with specific "gateway," or starter, outdoor activities. These activities—fishing, bicycling, running, camping, and hiking—are popular, accessible, and often lead to participation in other outdoor activities (fig. 4.12). Participants in gateway activities are much more likely to participate in multiple outdoor activities than they are likely to participate in one activity alone. Their participation in these activities often leads to higher overall activity levels and apparently a greater connection with the outdoors. Introducing non-participants to a gateway activity seems to be a powerful way to create lifelong outdoor enthusiasts (fig. 4.13).

Youth—Introducing youth to the outdoors at a young age is likely essential to ensuring future generations of outdoor

Table 4.1—Lifecycle of participation by age and gender (percent participating one or more times during 2008)

Gender/age	Outdoor activities	Team sports
	percent	
Males		
6-10	68	59
11-15	71	62
16-20	62	49
21-25	57	39
26-30	58	34
31-35	61	33
36-40	61	28
41-45	60	23
46-50	59	22
51-55	53	15
56-60	49	10
61-65	46	8
66+	36	4
Females		
6-10	56	38
11-15	59	48
16-20	48	29
21-25	52	19
26-30	48	14
31-35	48	12
36-40	47	9
41-45	43	9
46-50	40	7
51-55	37	4
56-60	32	4
61-65	26	2
66+	18	1

Source: The Outdoor Foundation (2009).

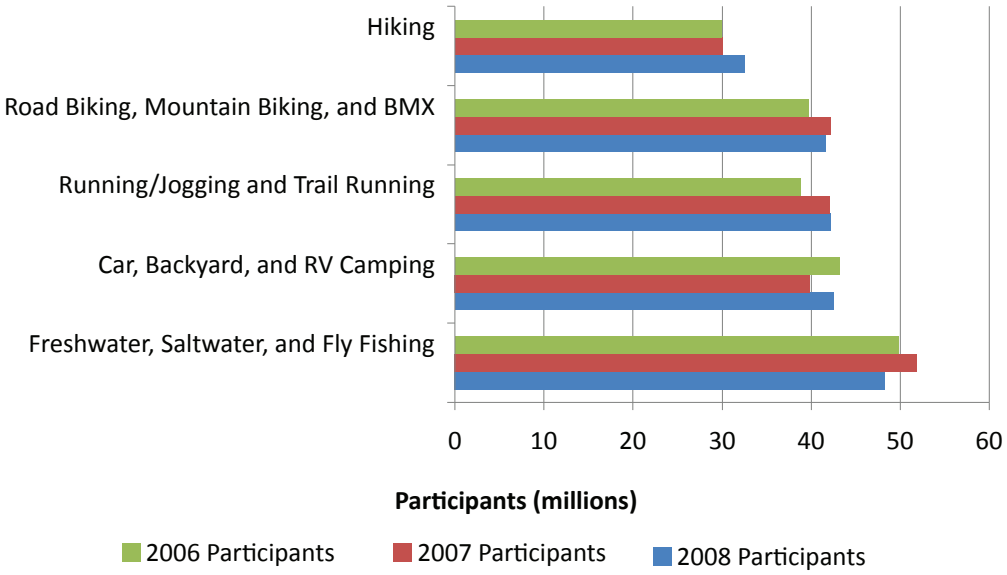


Figure 4.12—Participation in gateway activities, 2006 to 2008.

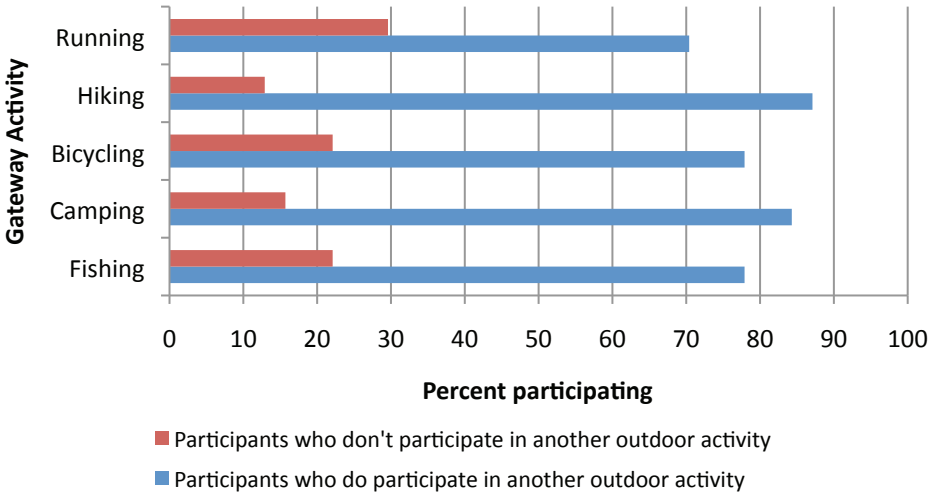


Figure 4.13—Participation in multiple outdoor activities vs. participation in one outdoor activity among participants in the gateway activities-contagious effect of gateway activities, all Americans, ages 6 and older.

enthusiasts. In the Outdoor Foundation's report "Exploring the Active Lifestyle," 90 percent of active adult participants in outdoor recreation reported that they were introduced to the outdoors between the ages of 5 and18 (The Outdoor Foundation 2004). Over the past 3 years of the Outdoor Foundation's annual participation survey, youth participation in outdoor recreation activities has dropped significantly. Between 2006 and 2007, participation among youth ages 6 to 17 dropped over 11 percent, and between 2007 and 2008, it dropped 6 percent. This was a total decline in participation of 16.7 percent over 3 years.

This drop in participation was most pronounced among the youngest age group, those ages 6 to 12. Participation by this age group fell from 78 percent in 2006 to 64 percent in 2008. While the declines among boys and girls in this age group were both significant, the decline among girls was sharper. From 2006 to 2008, boys' participation dropped from 79 to 69 percent, and girls' participation dropped from 77 to 58 percent (fig. 4.14). With these declines, there is now a significant gap between boys' and girls' participation that did not exist when the Outdoor Foundation's study began.

While all declines are of concern, the rate of decline in 2008 was not as dramatic as in 2007. This may reflect the positive impact of efforts nationwide to connect youth and the outdoors. In addition, there are a few signs of increased youth participation in some outdoor activities, including mountain biking (17 percent increase), hiking (5 percent) and backpacking (16 percent). Among youth ages 6 to 17, the most popular activities are biking (30 percent), fishing (23 percent), car and RV camping (22 percent), running (19 percent), and hiking (12 percent). Among all activities, youth made a total of 2.9 billion outdoor outings in 2009, averaging 94 outings per participant.

Influences, motivations, and barriers—In addition to surveying participation trends, the Outdoor Foundation also examined participant and non-participant behaviors. Among youth, the Outdoor Foundation examined the motivations and barriers to participation in outdoor activities, as well as influencing factors that introduce youth to outdoor activities. This research has provided important insights to help understand and perhaps reverse what appears to be a growing inactivity and disconnection with the outdoors among youth as well as adults.

Findings reveal several clear trends. Youth are most often introduced to the outdoors by their family and friends. For youth ages 6 to 12, parents are the top influencers by a large margin, followed by brothers, sisters, and relatives. Friends are next most important after parents among youth ages 13 to 17. Few youth cite the media, experienced mentors, or outdoor education programs as influencers.

Simple "fun" is the most often cited motivation for participation in outdoor recreation for youth of all ages, particularly youth ages 6 to 12. For youth ages 13 to 17, outdoor recreation is also valued for its relaxing qualities and ability to offer an escape from routine. This seems to point to the importance of outdoor recreation in helping adolescents manage stress. Youth ages 6 to 12 also enjoy opportunities for discovery and exploration, which were second in popularity to the fun outdoor activities offer (table 4.2).

Among young non-participants in outdoor recreation, a

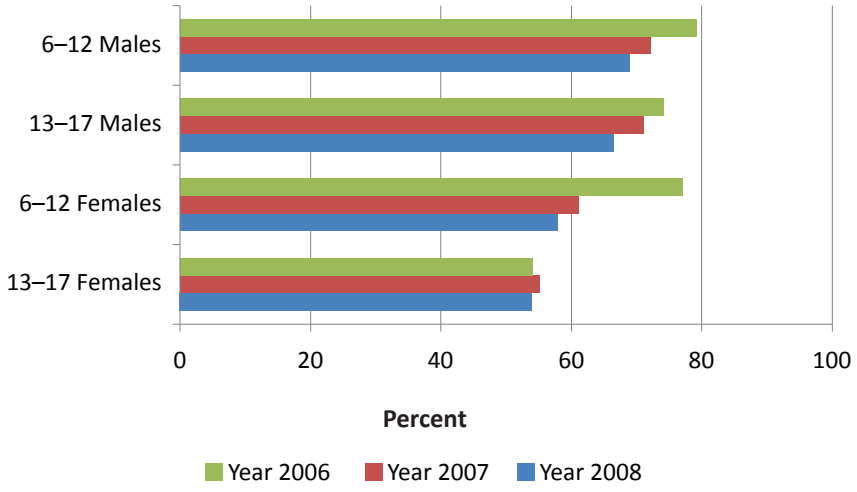


Figure 4.14—Youth participation in outdoor recreation by age and gender, 2006 to 2008.

general lack of interest was the most often cited motivation for their preference for indoor and team activities. Unlike more specific, considered responses, "I'm not interested" could simply be the result of a lack of experience with the outdoors and limited exploration of possible outdoor opportunities. After "lack of interest," young non-participants of all ages indicated they were kept indoors by schoolwork and a preference for screen media, such as TV, computers, and video games.

Ethnic participation—As populations of Hispanics, African Americans, and Asians/Pacific Islanders continue to grow in the United States, knowledge about their outdoor recreation preferences will become increasingly important. Even as the U.S. population is moving toward the time that Whites will no longer be in the majority, minority populations are still underrepresented in outdoor recreation.

Participation in outdoor activities is significantly higher among Whites than among any other ethnicity for all age groups. Whites make up 80 percent of all outdoor participants in the activities included in the OF survey in 2008; African Americans make up 7 percent, Asian/Pacific Islanders 5 percent, Hispanics 5 percent, and other ethnicities 3 percent (fig. 4.15).

Interestingly, although participation is lower among minority groups, those who do participate get out more often than Whites. African Americans take the most outdoor recreation outings per year, followed closely by Hispanics and Asian/Pacific Islanders. This finding is potentially important for organizations and businesses looking to connect with more active outdoor participants (table 4.3).

All four of the largest ethnic groups in the United States participate in biking, running, camping, fishing, and hiking more than any other outdoor activities, however, they participate in these activities at varying rates. Running is the most popular activity among African Americans, Asian Pacific Islanders, and Hispanics, but the fourth most popular activity among Whites, who most often participate in fishing. Hiking—while the fifth most popular activity among African Americans, Whites, and Hispanics—is the third most popular activity among Asians/Pacific Islanders (table 4.4).

Influences, motivations, and barriers among youth of different ethnicities—Comparing the influencing factors, motivations, and barriers of youth participants and non-participants of different ethnicities reveals some similarities as well as some significant differences.

Youth participants ages 6 to 17, no matter what their ethnicity, are all most often introduced to the outdoors by parents, friends, and family. Youth of all ethnicities also most often cite "fun" as their top motivation for participating in outdoor recreation. Hispanics, however, cite relaxation more frequently than other ethnic groups, while Whites cite opportunities for discovery and exploration more often. And again, while youth non-participants of all groups cite a lack of interest as their top barrier to outdoor recreation, Whites and Asians/Pacific Islanders are more likely to cite a preference for screen media—such as TVs, computers, and video games—as barriers. Whites and Asians/Pacific Islanders also cite time with friends as a barrier more often than Hispanics and African Americans. Hispanics mention a lack of access to opportunities for nearby outdoor recreation and a lack of interest in purchasing outdoor gear more often than the other ethnic groups (table 4.5).

End Invited Paper

Historic National Trends

1982 through the 1990s—The National Recreation Survey and NSRE

Using historic NRS data, a brief overview of past trends since the early 1980s is provided in table 4.6. Shown are activity participation trends from the early 1980s through the 1990s (up to the beginning of the first decade of the 21st century). Reported is the number of participants 16 years of age and older for the 27 outdoor recreation activities included in both the 1982-83 NRS study and the recent NSRE studies. Activities are listed in descending order of level of change in total number of participants between 1982 and 1983 and between 1999 and 2001.

Walking outdoors is at the top of the list in table 4.6, as it typically had been in previous surveys. The number of participants in this broadly popular activity has steadily increased over time as both the percentage of the population participating and the size of the U.S. population have increased. Following, in terms of growth of number of participants, is viewing or photographing wild birds, day hiking, picnicking, and visiting outdoor nature centers or zoos. The next highest growth activities, in terms of added number of participants, are swimming in natural waters, sightseeing, boating, bicycling, and developed camping. Some of the activities following after those involve use of

Table 4.2—Top influencers, motivations, and barriers among youth participants and non-participants in outdoor recreation, in percent

Question/answer	Ages 6-12	Ages 13-17
	percent	
Who influenced your decision to participate in outdoor activities?		
Parents	75	64
Brothers, sisters, or other relatives	36	26
Friends	33	44
Myself (no one else influenced me)	13	20
Community program (Boy Scouts, YMCA, neighborhood program)	13	10
School program	12	12
TV, movies, magazines, books, Web sites about the outdoors	5	4
Something else	3	3
What motivates you to participate in outdoor activities?		
It's fun.	73	52
I enjoy discovery and exploration.	42	32
It's relaxing.	28	37
I can do outdoor activities near my house.	28	21
It is a great way to get exercise.	28	32
I get to hang out with my friends.	27	32
I like new experiences.	27	26
I get away from my usual routine.	23	34
What motivates your decision NOT to participate in outdoor activities?		
I'm not interested.	39	54
My parents don't take me to go on outdoor activities.	17	11
I have too much schoolwork.	16	29
I don't have the time.	15	25
I would rather spend free time watching TV/movies, on a computer, or playing video games.	15	27
I'm involved in other activities such as team sports and fitness activities.	12	11
I'd rather hang out with my friends.	11	26
I don't want to spend the money on gear or equipment.	11	11

Source: The Outdoor Foundation (2009).

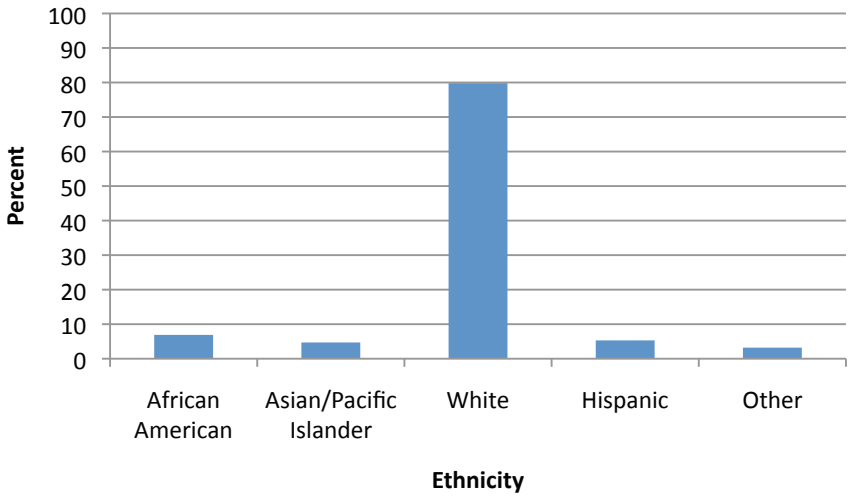


Figure 4.15—Outdoor participants by ethnicity.

Table 4.3—Average outings per participant by ethnicity

Ethnicity	Average outings per year
African American	90
Hispanic	89
Asian/Pacific Islander	85
White	80

Source: The Outdoor Foundation (2009).

Table 4.4—Top outdoor activities by ethnicity

African Americans, ages 6 and older
1. Running/jogging and trail running
2. Road biking, mountain biking, and BMX
3. Freshwater, saltwater, and fly fishing
4. Car, backyard, and RV camping
5. Hiking

Asian/Pacific Islanders, ages 6 and older
1. Running/jogging and trail running
2. Road biking, mountain biking, and BMX
3. Hiking
4. Freshwater, saltwater, and fly fishing
5. Car, backyard, and RV camping

Whites, ages 6 and older
1. Freshwater, saltwater, and fly fishing
2. Car, backyard, and RV camping
3. Road biking, mountain biking, and BMX
4. Running/jogging and trail running
5. Hiking

Hispanics, ages 6 and older
1. Running/jogging and trail running
2. Freshwater, saltwater, and fly fishing
3. Road biking, mountain biking, and BMX
4. Car, backyard, and RV camping
5. Hiking

Source: The Outdoor Foundation (2009).

Table 4.5—Top influencers, motivations, and barriers among youth participants and non-participants in outdoor recreation, by ethnicity, youth ages 6 to 17, in percent

Question/Answer	Hispanic	African American	Asian/ Pacific Islander	White
		percent		
Who influenced your decision to participate in outdoor activities?				
Parents	71	50	76	73
Friends	38	32	43	40
Brothers, sisters, or other relatives	34	26	30	32
School program	14	13	21	11
Community program (Boy Scouts, YMCA, neighborhood program)	10	12	11	11
What motivates you to participate in outdoor activities?				
It's fun.	64	64	60	63
I like new experiences.	36	22	27	27
I enjoy discovery and exploration.	35	24	31	40
It is a great way to get exercise.	33	24	32	30
I get to hang out with my friends.	33	27	29	30
It's relaxing.	30	31	32	32
I get away from my usual routine.	22	27	26	28
What motivates your decision NOT to participate in outdoor activities?				
I'm not interested.	40	44	28	52
I have too much schoolwork.	21	25	22	23
I don't have the time.	17	18	11	22
I don't want to spend the money on gear or equipment.	16	7	16	11
There aren't places to do outdoor activities near where I live.	16	14	0	5
I would rather spend free time watching TV/movies, on a computer, or playing video games.	14	18	22	24
My parents don't take me to go on outdoor activities.	10	16	31	13
I'd rather hang out with my friends.	10	15	17	22
I don't know how to get started, what to do, or where to go.	3	11	24	6

Source: The Outdoor Foundation (2009).

Table 4.6—Trends in number of people ages 16 and older participating in 27 outdoor recreation activities by historic period in the United States, 1982 to 2001

	Total participants			Change
Activity	1982-83	1994-95	1999-2001	1982-1983 to 1999-2001
		millions		
Walk for pleasure	91.9	138.5	175.6	83.7
View or photograph birds	20.8	54.3	68.5	47.7
Day hiking	24.3	53.6	69.1	44.8
Picnicking	83.3	112.1	118.3	35.0
Visit outdoor nature center/zoo	86.7	110.9	121.0	34.3
Swimming in lakes, streams, etc.	55.5	87.4	85.5	30.0
Sightseeing	79.8	117.5	109.0	29.2
Boating	48.6	76.2	75.0	26.4
Bicycling	55.5	77.8	81.9	26.4
Developed camping	29.5	46.5	55.3	25.8
Driving for pleasure	83.3	–	107.9	24.6
Motorboating	33.0	59.5	50.7	17.7
Off-highway vehicle driving	19.1	35.9	36.0	16.9
Primitive camping	17.3	31.4	33.1	15.8
Sledding	17.3	27.7	30.8	13.5
Backpacking	8.7	17.0	21.5	12.8
Fishing	59.0	70.4	71.6	12.6
Swimming in an outdoor pool	74.6	99.1	85.0	10.4
Canoeing or kayaking	13.9	19.2	23.0	9.1
Downhill skiing	10.4	22.8	17.4	7.0
Snowmobiling	5.2	9.6	11.3	6.1
Horseback riding	15.6	20.7	19.8	4.2
Ice skating outdoors	10.4	14.2	13.6	3.2
Hunting	20.8	25.3	23.6	2.8
Cross-country skiing	5.2	8.8	7.8	2.6
Waterskiing	15.6	22.7	16.0	0.4
Sailing	10.4	12.1	10.4	0.0

Missing data are denoted with "—" and indicate that participation data for that activity were not collected during that time period.

Note: The numbers in this table are *annual* participant estimates based on data collected during the three time periods.
1982-1983 participants based on 173.5 million people ages 16+ (U.S. Department of the Interior 1986).
1994-1995 participants based on 201.3 million people ages 16+ (Woods & Poole Economics, Inc. 2007).
1999-2001 participants based on 214.0 million people ages 16+ (U.S. Department of Commerce 2000).

Source: NRS 1982-1983 (n=5,757), USDA Forest Service (1995) (n=17,217), and USDA Forest Service (2001) (n=52,607).

motors and include driving for pleasure, motorboating, and off-highway vehicle driving. More details may be found in appendix table 1, including activities that are not nature-based, such as individual and team sports. These activities appear in a number of the appendix tables, but are not included in the main body of this report.

Some of the other fast growing activities from the early 1980s through the 1990s, in terms of added participants, were primitive camping, sledding, backpacking, fishing, and swimming in an outdoor pool.

Current Decade Participation Trends from the NSRE

Extensively presented below are recent survey results from the NSRE during the first decade of the 21st century. NSRE methods and protocols were described earlier.

Trends in Percent of Population and Number of People Participating—NSRE

Based on the NSRE, tables 4.7 through 4.10 summarize the trends in activity participation (number of people and percent of population ages 16 and older) since the 1990s to the present time. To break up the length, these are presented as four sequential tables, rather than one very long table. The tables represent statistics about outdoor activities for the periods 1999-2001 and 2005-2009. The activities in these tables are shown in descending order by number and percent of people ages 16 and older who participated. Number of participants is also shown for the earlier period 1994-95 only to provide the reader with the longer-term trend context, but the emphasis for the text and tables is on the period 1999-2009.

The NSRE surveying included some activities which are not nature-oriented, such as individual and team sports. These activities are reported in appendix tables for the purpose of continuing to monitor Americans' outdoor recreation participation of all forms, which began with the first National Recreation Survey in 1960. It is noteworthy that some nature-based activities, such as bird watching, rank high in number of people participating relative to activities such as yard games and team sports. The emphasis in this report will be on nature-based activities such as bird watching.

The most recent overall trends (percent change during the current decade since 1999) are summarized in the final column of each table (tables 4.7-4.10). See appendix table 2 for numbers of participants by region from 2005 to 2009 and appendix table 3 for more detail on U.S. participation trends. Based on the pooled NSRE data from 2005 to 2009, the 13 activities at the top of the list in table 4.7 had 100 million or more people participating at least once during a single year. Walking for pleasure, family gatherings outdoors, gardening or landscaping for pleasure, viewing/photographing natural scenery, and visiting outdoor nature centers or zoos occupy the top five slots, with each activity having over 130 million participants. Participation of between 100 and 130 million people ages 16 and older include the activities of sightseeing, picnicking, viewing/photographing flowers and trees, driving for pleasure, viewing/photographing wildlife (besides birds and fish), visiting historic sites and monuments, visiting a beach, and swimming in an outdoor pool. All of these activities have shown growth in this decade, but activities oriented toward viewing and photographing nature (e.g., scenery, flowers/trees, and wildlife) have been among the fastest growing.

Twelve activities have between 50 and 100 million participants, including swimming in lakes/streams/etc., bicycling, and viewing or photographing birds; these activities had more than 80 million people participating (table 4.7). All 12 of these activities showed growth in number of participants during the current decade of 2000-2009, though some grew very little, including developed camping and visiting watersides other than beaches. The fastest growing activities between 1999-2001 and 2005-09 were viewing/photographing wildflowers/trees, visiting farms or agricultural settings, gathering mushrooms and berries, viewing/photographing other wildlife, and viewing/photographing birds. These growth trends are highlighted in figure 4.16.

There are eight activities with 25 to 49 million participants (table 4.8). Prehistoric or archaeological sites visits, off-highway vehicle driving, boating tours and excursions, and mountain biking are at the top of this list. Except for bicycling on a mountain or hybrid bike, all of these activities have shown growth since 1999-2001. Driving motor vehicles off-highway was the fastest growing activity in the list of activities in table 4.8 by a wide margin. For public natural land managers, the growth in off-highway driving has been a management challenge. Moderate growth is shown for saltwater fishing, visiting prehistoric sites, and boat tours or excursions (such as whale spotting).

Table 4.9 shows outdoor activities with between 15 and 25 million participants. At the top with 20 or more million participants are backpacking, canoeing, horseback riding, waterskiing, using personal watercraft, and big game

Table 4.7—Trends in number and percentage of people ages 16 and older participating in outdoor recreation activities in 1999-2001 and 2005-2009 (for activities with greater than 50 million participants from 2005 through 2009)

	Total participants			Percent participating	Percent change
Activity	1994-1995	1999-2001	2005-2009	2005-2009	1999-2001 to 2005-2009
			millions		
Walk for pleasure	138.4	175.6	200.0	85.0	13.9
Gathering of family/friends	128.2	157.6	174.2	74.0	10.5
Gardening/landscaping for pleasure	–	140.8	157.9	67.1	12.1
View natural scenery	–	127.1	149.8	63.7	17.9
Visit outdoor nature center/zoo	110.9	121.0	133.3	56.6	10.2
Sightseeing	117.5	109.0	123.9	52.7	13.7
Picnicking	112.1	118.3	121.6	51.7	2.8
View wildflowers/trees	–	93.8	121.3	51.6	29.4
Driving for pleasure	–	107.9	120.5	51.2	11.6
View wildlife besides birds and fish	62.8	94.2	118.1	50.2	25.4
Visit historic sites/monuments	91.6	96.1	103.9	44.1	8.1
Swimming in an outdoor pool	99.0	85.0	102.0	43.3	20.0
Visit a beach	128.8	84.4	102.0	43.3	20.7
Swimming in lakes, streams, etc.	87.4	85.5	97.5	41.5	14.0
Bicycling	77.8	81.9	88.3	37.5	7.8
View or photograph birds	54.3	68.5	84.1	35.7	22.8
Day hiking	53.5	69.1	79.7	33.9	15.4
Visit a wilderness	–	67.2	79.1	33.6	17.7
Gather mushrooms/berries	–	60.0	77.2	32.8	28.6
Visit farm or agricultural setting	–	58.6	75.3	32.0	28.6
View salt/freshwater fish	27.6	52.3	63.5	27.0	21.4
Visit waterside besides beach	–	53.2	56.5	24.0	6.3
Developed camping	46.5	55.3	56.0	23.8	1.1
Warmwater fishing	49.3	47.6	55.7	23.7	17.1
Motorboating	59.5	50.7	55.0	23.4	8.6

Missing data are denoted with "—" and indicate that participation data for that activity were not collected during that time period. Percent change was calculated before rounding.

Note: The numbers in this table are annual participation estimates based on data collected during the three time periods. 1994-1995 participants based on 201.3 million people ages 16+ (Woods & Poole Economics, Inc. 2007). 1999-2001 participants based on 214.0 million people ages 16+ (U.S. Department of Commerce 2000). 2005-2009 participants based on 235.3 million people ages 16+ (U.S. Department of Commerce 2008).

Source: USDA Forest Service (1995) (n=17,217), USDA Forest Service (2001) (n=52,607), and USDA Forest Service (2009) (n=30,398).

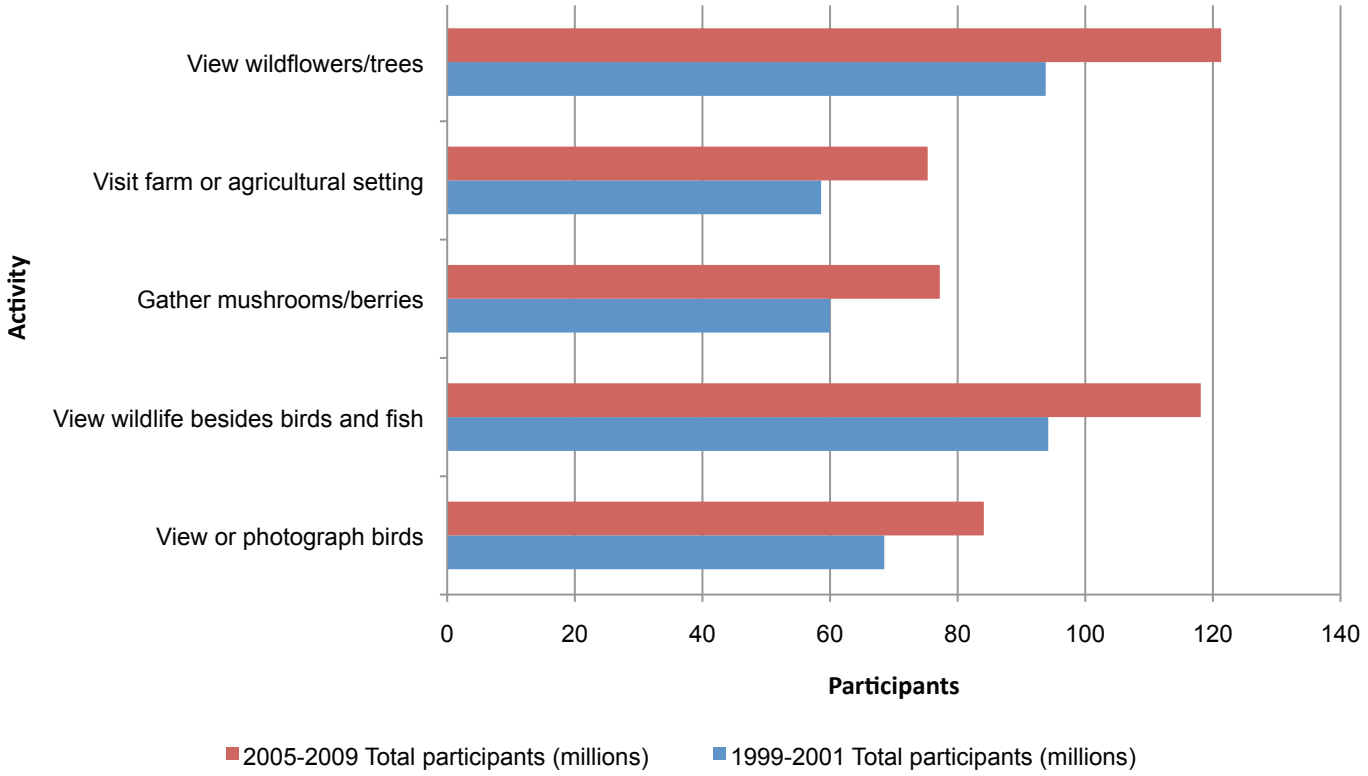


Figure 4.16—Total number of people participating in top five fastest growing activities in the periods 1999-2001 and 2005-2009.

Table 4.8—Trends in number and percentage of people ages 16 and older participating in outdoor recreation activities in 1999-2001 and 2005-2009 (for activities with between 25 and 49 million participants from 2005 through 2009)

	Total participants			Percent participating	Percent change
Activity	1994-1995	1999-2001	2005-2009	2005-2009	1999-2001 to 2005-2009
	---------- *millions* ----------				
Visit archaeological sites	36.1	44.0	48.8	20.8	11.1
Off-highway vehicle driving	35.9	36.0	48.4	20.6	34.5
Boat tours or excursions	–	40.8	46.1	19.6	13.1
Bicycling on mountain/hybrid bike	–	44.0	42.7	18.1	-3.0
Primitive camping	31.4	33.1	34.2	14.5	3.2
Sledding	27.7	30.8	32.0	13.6	3.9
Coldwater fishing	25.1	28.4	30.9	13.1	8.7
Saltwater fishing	22.9	21.4	25.1	10.7	17.2

Missing data are denoted with "—" and indicate that participation data for that activity were not collected during that time period. Percent change was calculated before rounding.

Note: The numbers in this table are annual participation estimates based on data collected during the three time periods. 1994-1995 participants based on 201.3 million people ages 16+ (Woods & Poole Economics, Inc. 2007). 1999-2001 participants based on 214.0 million people ages 16+ (U.S. Department of Commerce 2000). 2005-2009 participants based on 235.3 million people ages 16+ (U.S. Department of Commerce 2008).

Source: USDA Forest Service (1995) (n=17,217), USDA Forest Service (2001) (n=52,607), and USDA Forest Service (2009) (n=30,398).

Table 4.9—Trends in number and percentage of people ages 16 and older participating in outdoor recreation activities in 1999-2001 and 2005-2009 (for activities with between 15 and 25 million participants from 2005 through 2009)

	Total participants			Percent participating	Percent change
Activity	1994-1995	1999-2001	2005-2009	2005-2009	1999-2001 to 2005-2009
	---------- *millions* ----------				
Backpacking	17.0	21.5	23.2	9.9	7.9
Canoeing	17.9	19.3	22.8	9.7	18.2
Horseback riding	20.7	19.8	21.5	9.1	8.4
Waterskiing	22.7	16.0	21.3	9.0	33.1
Use personal watercraft	12.0	19.1	21.1	9.0	10.9
Big game hunting	19.0	17.8	20.9	8.9	17.1
Rafting	19.3	19.1	18.6	7.9	-2.8
Small game hunting	17.3	14.8	16.5	7.0	11.4
Horseback riding on trails	15.1	15.8	16.1	6.8	1.6
Downhill skiing	22.8	17.4	15.9	6.8	-8.5
Snorkeling	16.2	13.6	15.2	6.5	11.8

Note: The numbers in this table are annual participation estimates based on data collected during the three time periods. 1994-1995 participants based on 201.3 million people ages 16+ (Woods & Poole Economics, Inc. 2007). 1999-2001 participants based on 214.0 million people ages 16+ (U.S. Department of Commerce 2000). 2005-2009 participants based on 235.3 million people ages 16+ (U.S. Department of Commerce 2008). Snorkeling in 1994-1995 included scuba diving. Percent change was calculated before rounding.

Source: USDA Forest Service (1995) (n=17,217), USDA Forest Service (2001) (n=52,607), and USDA Forest Service (2009) (n=30,398).

hunting. Each of these activities except for backpacking and horseback riding experienced double-digit growth. Downhill skiing and rafting saw decreases in number of participants since 1999. Participants for some activities (e.g., big and small game hunting, horseback riding, waterskiing, and snorkeling) decreased between 1994 and 1999-2001, but then rebounded from 1999 to 2005-09.

Table 4.10 shows activities with fewer than 15 million participants. Most of these activities can be classified as physically challenging and in some cases risky. Some of these activities have shown growth in number of participants between 1999 and 2009, such as kayaking, snowboarding, orienteering, anadromous fishing, caving, and surfing. However, many of these activities have declined in number of participants. These declining activities include cross-country skiing, ice skating, snowshoeing, ice fishing, snowmobiling, windsurfing, and others.

The within-decade trends shown in tables 4.7 through 4.10 do not necessarily fully describe very recent, short-term trends. Some of these very recent trends likely are reflecting the rapid rise in gasoline prices of 2007-08 and of the recession which began in 2007 and continues as of the writing of this report. However, viewed over all the activities listed in these four tables, it is very clear that what people in the United States chose as activities is changing over time. Some of the activities that dominated in the 1960s, 1970s, and 1980s no longer dominate as society, lifestyles, information, and technology are shifting (Cordell and others 2008).

Figure 4.17 illustrates how rapidly outdoor activities can shift relative positions in terms of number of people who participate in them. For example, activities are graphed and include kayaking, snowboarding, snowmobiling, and cross-country skiing. Kayaking and snowboarding were well below participation levels of snowmobiling and cross-country skiing in 1994-95. By the 2005-09 period, however, kayaking and snowboarding had taken participation positions well above the other two activities.

Trends in Number of Days for Individual Activities from NSRE

Table 4.11 highlights recent trends for activities with greatest growth in total number of days on which people participated in them between 1999 and 2009. The metric of total days indicates overall participation as the product of mean annual days per participant multiplied by number of participants (as reported earlier in tables 4.7-4.10). The NSRE definition of a day is any day during which a person spent any amount of time participating in an activity. Participation in more than one activity on any given day is the typical pattern. For example, a person could walk for pleasure and view or photograph birds in the same day, or even during the same outing. This pattern of participation would thus count as two activity days. See appendix table 4 for current mean and total annual days by region for all activities, and appendix table 5 for more detail on U.S. annual days trend data.

Figure 4.18 shows the number of activity days for the five activities which grew by the greatest percentage between 1999-01 and 2005-09 as shown in table 4.11. These activities illustrate how outdoor recreation is changing over the years. There is heightened interest in viewing, photographing, learning about nature and farms, and riding off-highway motor vehicles.

Table 4.12 describes trends in days of participation for a number of very traditional outdoor activities. Fishing, hunting, backpacking, and water sports are among activities that grew between 20 and 100 million days since 1999-2001. Percentage growth in snowboarding and especially kayaking is high, although these activities had by far the smallest base number of days in 1999-2001. Activities such as these, which exhibit strong percentage growth, eventually enter the ranks of the more popular outdoor activities if that growth continues.

Table 4.13 shows the trend in days of participation for activities which added up to fewer than 20 million days. This table also shows activities which declined in days of participation. As well, this table reinforces the new faces of outdoor recreation in the 21st century (tables 4.11 and 4.12), relative to the last half of the 20th century. For example, downhill skiing has been declining while snowboarding has grown (table 4.12). Many of the traditional winter snow activities, such as snowmobiling and snowshoeing, have declined, as have mountain biking and horseback riding on trails. One of the main drivers of this change has been participants limiting themselves to fewer days of activity on average during the year. Gas prices, the state of the economy, and loss of open space for some activities are factors that likely are contributing to the declines. As well, it is widely understood that households' lifestyles have been changing dramatically over the last two decades to include fewer vacations and shorter trips overall.

Table 4.10—Trends in number and percentage of people ages 16 and older participating in outdoor recreation activities in 1999-2001 and 2005-2009 (for activities with fewer than 15 million participants from 2005 through 2009)

	Total participants			Percent participating	Percent change
Activity	1994-1995	1999-2001	2005-2009	2005-2009	1999-2001 to 2005-2009
	---------- *millions* ----------				
Kayaking	3.4	7.0	14.2	6.0	103.8
Mountain climbing	9.0	13.2	12.4	5.3	-5.9
Snowboarding	6.1	9.1	12.2	5.2	33.7
Ice skating outdoors	14.2	13.6	12.0	5.1	-11.5
Snowmobiling	9.6	11.3	10.7	4.5	-5.5
Anadromous fishing	11.0	8.6	10.7	4.5	24.1
Sailing	12.1	10.4	10.4	4.4	-0.4
Caving	9.5	8.8	10.4	4.4	18.4
Rock climbing	7.5	9.0	9.8	4.2	9.5
Rowing	10.7	8.6	9.4	4.0	8.9
Orienteering	4.8	3.7	6.2	2.6	67.8
Cross-country skiing	8.8	7.8	6.1	2.6	-21.7
Migratory bird hunting	5.7	4.9	4.9	2.1	-1.1
Ice fishing	4.8	5.7	4.8	2.1	-15.5
Surfing	2.9	3.2	4.7	2.0	46.3
Snowshoeing	–	4.5	4.1	1.7	-9.4
Scuba diving	–	3.8	3.6	1.5	-5.6
Windsurfing	2.8	1.5	1.4	0.6	-10.1

Missing data are denoted with "—" and indicate that participation data for that activity were not collected during that time period. Percent change was calculated before rounding.

Note: The numbers in this table are *annual* participation estimates based on data collected during the three time periods. 1994-1995 participants based on 201.3 million people ages 16+ (Woods & Poole Economics, Inc. 2007). 1999-2001 participants based on 214.0 million people ages 16+ (U.S. Department of Commerce 2000). 2005-2009 participants based on 235.3 million people ages 16+ (U.S. Department of Commerce 2008).

Source: USDA Forest Service (1995) (n=17,217), USDA Forest Service (2001) (n=52,607), and USDA Forest Service (2009) (n=30,398).

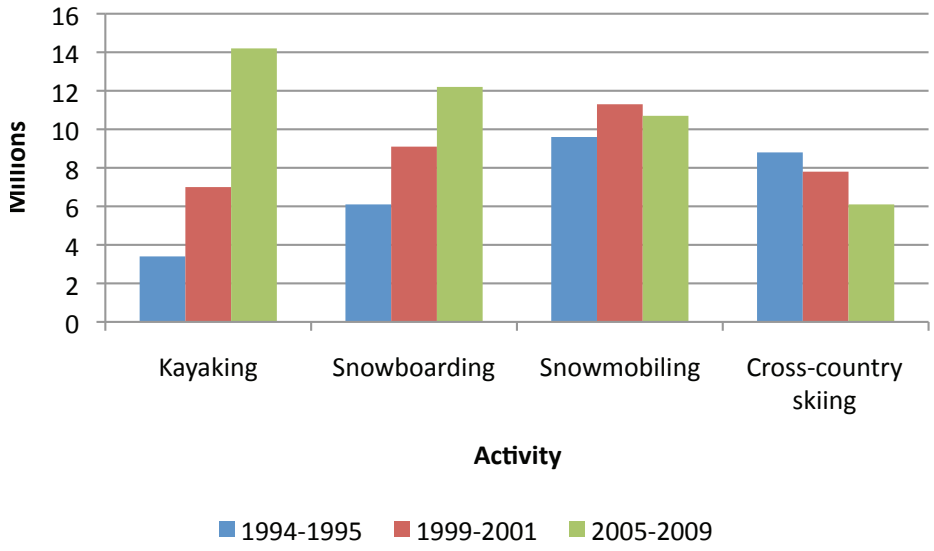


Figure 4.17—Millions of participants in four outdoor recreation activities in three periods (1994-1995, 1999-2001, and 2005-2009).

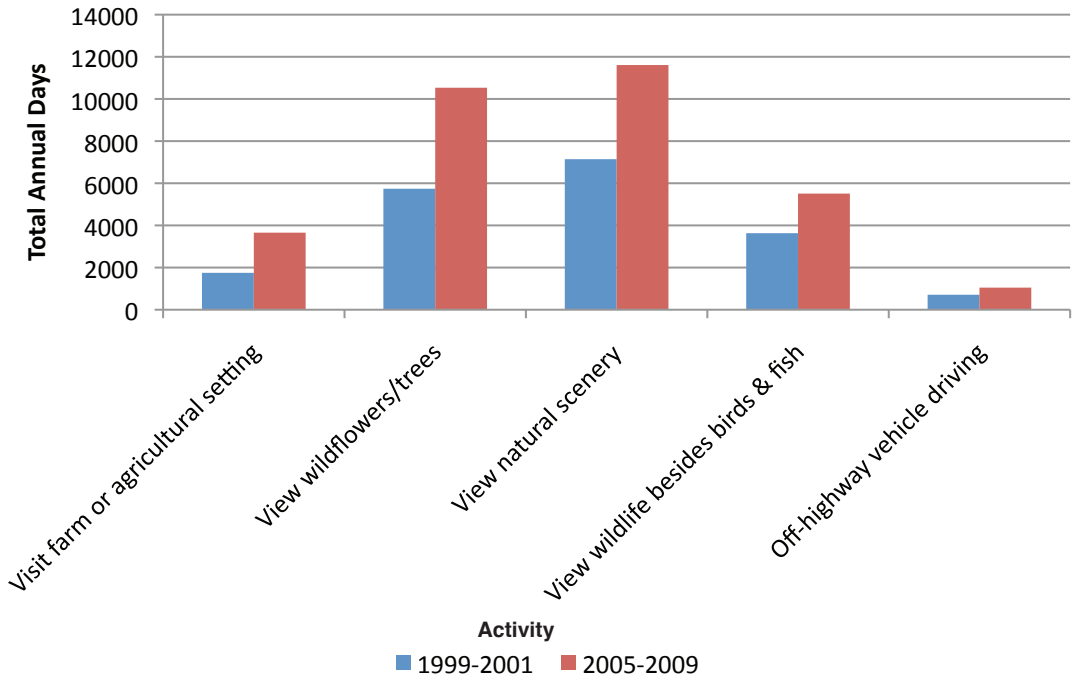


Figure 4.18—Millions of total annual days for five high-growth outdoor activities between 1999 and 2009.

Table 4.11—Mean and total annual days for activities adding more than 100 million participation days between 1999-2001 and 2005-2009

	1999-2001		2005-2009			
Activity	Mean annual days	Total annual days	Mean annual days	Total annual days	Percent change in total days 1999-2001 to 2005-2009	Change in total days 1999-2001 to 2005-2009
		--millions--		*--millions--*		*--millions--*
View wildflowers/trees	61.2	5,739.9	86.8	10,532.2	83.5	4,792.3
View natural scenery	56.2	7,141.5	77.5	11,608.6	62.6	4,467.1
Walk for pleasure	103.2	18,109.3	104.6	20,927.8	15.6	2,818.5
View or photograph birds	87.8	6,009.3	97.7	8,215.0	36.7	2,205.7
Visit farm or agricultural setting	29.9	1,750.4	48.5	3,655.3	108.8	1,904.9
View wildlife besides birds and fish	38.5	3,630.6	46.7	5,509.5	51.8	1,878.9
Swimming in an outdoor pool	23.2	1,971.1	25.7	2,621.1	33.0	650.0
Off-highway vehicle driving	19.7	710.4	21.6	1,048.2	47.6	337.8
Visit a beach	10.9	924.0	11.6	1,184.2	28.2	260.2
Sightseeing	14.8	1,616.5	14.9	1,842.5	14.0	226.0
Gathering of family/friends	6.2	970.4	6.8	1,179.3	21.5	208.9
Gather mushrooms/berries	10.2	614.3	10.3	799.0	30.1	184.7
Visit a wilderness	8.3	558.7	9.3	736.3	31.8	177.6
Visit waterside besides beach	11.5	611.4	13.9	783.4	28.1	172.0
Swimming in lakes, streams, etc.	12.4	1,062.4	12.6	1,232.4	16.0	170.0
Visit outdoor nature center/zoo	5.1	620.9	5.5	736.4	18.6	115.5

Note: The numbers in this table are *annual* activity days estimates based on data collected during the two time periods. Mean days is the average annual number of days in which participants engage in an activity. Total annual days (in millions) is the product of the estimated number of participants times the mean annual days.

Source: USDA Forest Service (2001) (n=52,607) and USDA Forest Service (2009) (n=30,398). Change in total days may not exactly equal the difference between the two time periods due to rounding.

Table 4.12—Mean and total annual days for activities adding between 20 and 100 million participation days between 1999-2001 and 2005-2009

	1999-2001		2005-2009			
Activity	Mean annual days	Total annual days	Mean annual days	Total annual days	Percent change in total days 1999-2001 to 2005-2009	Change in total days 1999-2001 to 2005-2009
		---millions---		*---millions---*		*---millions---*
Driving for pleasure	18.9	2,045.2	17.8	2,140.1	4.6	94.9
Warmwater fishing	15.2	721.8	14.6	816.3	13.1	94.5
Motorboating	11.5	581.6	11.9	653.1	12.3	71.5
Big game hunting	13.8	246.4	14.4	301.2	22.2	54.8
Backpacking	8.7	186.2	10.2	235.8	26.6	49.6
Kayaking	6.2	43.0	5.6	80.1	86.3	37.1
Visit historic sites/monuments	4.3	411.2	4.2	439.8	7.0	28.6
Waterskiing	8.1	129.7	7.3	155.6	20.0	25.9
Snowboarding	7.4	67.4	7.4	89.4	32.6	22.0

Note: The numbers in this table are annual activity days estimates based on data collected during the two time periods. Mean days is the average annual number of days in which participants engage in an activity. Total annual days (in millions) is the product of the estimated number of participants times the mean annual days.

Source: USDA Forest Service (2001) (n=52,607) and USDA Forest Service (2009) (n=30,398). Change in total days may not exactly equal the difference between the two time periods due to rounding.

Table 4.13—Mean and total annual days for activities adding fewer than 20 million participation days between 1999-2001 and 2005-2009

	1999-2001		2005-2009			
Activity	Mean annual days	Total annual days	Mean annual days	Total annual days	Percent change in total days 1999-2001 to 2005-2009	Change in total days 1999-2001 to 2005-2009
		---millions---		*---millions---*		*---millions---*
Use personal watercraft	7.8	148.2	7.9	167.0	12.7	18.8
Primitive camping	7.1	234.1	7.3	249.6	6.6	15.5
Visit archaeological sites	3.3	144.0	3.2	157.6	9.4	13.6
Surfing	21.1	67.2	17.1	79.7	18.6	12.5
Canoeing	5.1	98.8	4.7	106.7	8.0	7.9
Rafting	4.0	77.2	4.5	83.3	7.9	6.1
Anadromous fishing	7.2	62.1	6.4	68.1	9.7	6.0
Rock climbing	4.4	39.8	4.6	44.7	12.3	4.9
Coldwater fishing	11.3	320.9	10.5	325.4	1.4	4.5
Rowing	5.7	49.2	5.5	51.7	5.1	2.5
Caving	1.9	17.1	1.9	19.5	14.0	2.4
Developed camping	7.6	419.8	7.5	421.8	0.5	2.0
Sailing	6.0	62.4	6.1	63.8	2.2	1.4
Migratory bird hunting	11.1	54.8	11.3	55.0	0.4	0.2
Snorkeling	5.3	71.3	4.7	70.9	-0.6	-0.4
Small game hunting	14.3	212.0	12.7	210.6	-0.7	-1.4
Saltwater fishing	10.4	221.9	8.8	220.3	-0.7	-1.6
Windsurfing	5.5	8.5	4.6	6.4	-24.7	-2.1
Mountain climbing	4.7	62.4	4.8	59.7	-4.3	-2.7
Scuba diving	7.0	26.9	6.3	22.7	-15.6	-4.2
Snowshoeing	6.3	28.3	5.2	21.2	-25.1	-7.1
Cross-country skiing	6.9	53.5	5.9	35.9	-32.9	-17.6
Downhill skiing	6.3	109.5	5.5	88.3	-19.4	-21.2
Snowmobiling	9.0	101.4	7.2	77.4	-23.7	-24.0
Horseback riding on trails	18.3	290.3	16.3	262.1	-9.7	-28.2
Picnicking	6.8	808.9	6.3	762.0	-5.8	-46.9
Day hiking	27.8	1,919.6	22.9	1,825.5	-4.9	-94.1
Bicycling on mountain/hybrid bike	25.4	1,119.6	19.4	825.8	-26.2	-293.8

Note: The numbers in this table are *annual* activity days estimates based on data collected during the two time periods. Mean days is the average annual number of days in which participants engage in an activity. Total annual days (in millions) is the product of the estimated number of participants times the mean annual days.

Source: USDA Forest Service (2001) (n=52,607) and USDA Forest Service (2009) (n=30,398). Change in total days may not exactly equal the difference between the two time periods due to rounding.

Trends in Participation Across Composites of Activities from NSRE

Figures 4.19 through 4.26 present indexed line graphs of trends in selected nature-based activities grouped according to general types of recreation. Activities were grouped as listed below because of similarities in either setting or primary focus of the activities. For example, the activities in the composite "visiting recreation and historic sites" were grouped because they involve people using designated recreation sites. As another example, the composite named "viewing and photographing nature" includes activities focused on viewing and photographing birds, natural scenery, other wildlife (besides birds), wildflowers and trees, and the like. The seven activity composites and the activities they cover include:

- Visiting recreation and historic sites—family gatherings, picnicking, visiting the beach, visiting historic or prehistoric sites, and camping.
- Viewing/photographing nature—view/photograph birds, natural scenery, other wildlife (besides birds), and wildflowers, trees, etc.
- Backcountry activities—backpacking, day hiking, horseback riding on trails, mountain climbing, and visiting a wilderness or primitive area.
- Motorized activities—motorboating, off-highway vehicle driving, snowmobiling, using personal watercraft, and waterskiing.
- Hunting and fishing—anadromous fishing (salt to fresh water migratory fish, e.g., salmon), coldwater fishing, warmwater fishing, saltwater fishing, big game hunting, small game hunting, and migratory bird hunting.
- Non-motor boating—canoeing, kayaking, rafting, rowing, and sailing.
- Snow skiing and snowboarding—cross-country skiing, downhill skiing, and snowboarding.

Shown in the line graphs are 3-year moving averages of total annual number of activity days on which participation occurred across the U.S. population of people ages 16 and older. These moving averages are indexed to the estimated number of days in the year 2000, where the index value for 2000 is shown as zero; the indexed values represent the percent change since the base year 2000. Graphing for subsequent years shows whether there was an upward or downward trend above or below the 2000 zero base line for individual activities, respectively. The moving average metric is used to decrease year-to-year variation in participation in individual activities that result from weather patterns, catastrophes such as Hurricane Katrina, the 9-11 attacks, fluctuating gas prices, and other factors.

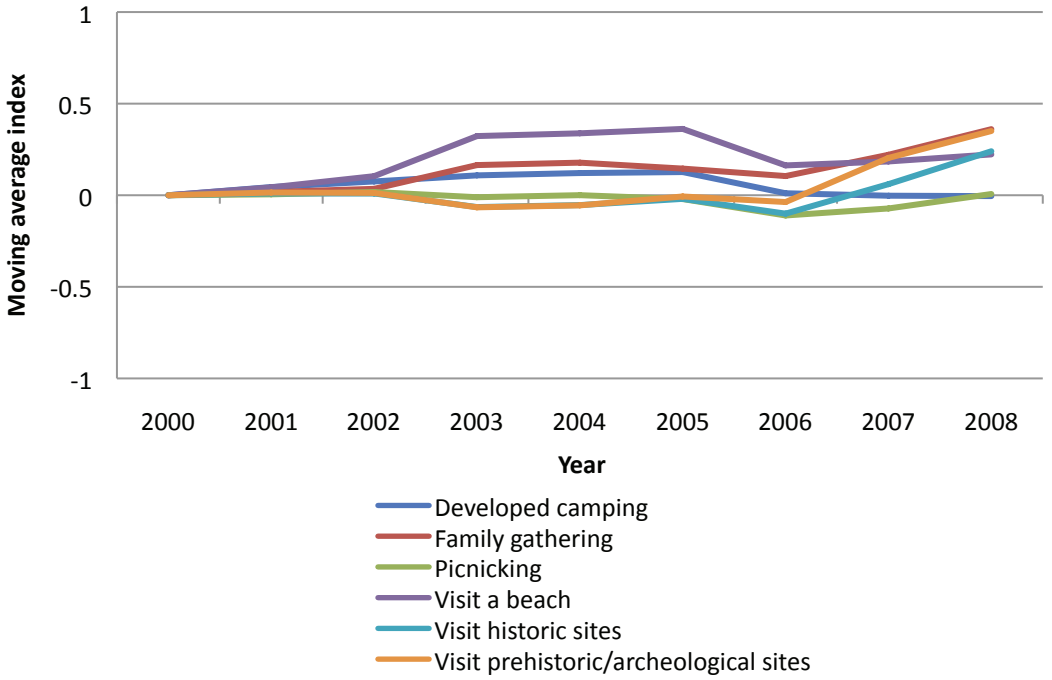


Figure 4.19—Indexed moving average of total activity days for activities associated with visiting recreation or historic sites, 2000-2008.

The 3-year moving average is computed as the annual average of the sum of total activity days across the span of 3 years. This average is applied to the middle of the 3 years averaged and shown in the line graphs relative to base year 2000. For example, for 2001, the totals for years 2000, 2001, and 2002 are summed, divided by 3, and applied to 2001. In the first seven figures (4.19-25), indexed trends for individual activities in each activity composite are shown. In figure 4.26, moving average trends for the seven activity composites, indexed to base year 2000, are shown. Variation from the base year zero is computed for any given year beyond 2000 as:

$$MA = ((MA_{(2000+n)} / MA_{2000}) - 1) \quad (3)$$

where
n=number of years since 2000
MA=moving average of annual total number of activity days

Often, when people think of outdoor recreation, site-based activities such as camping, picnicking, or going to the beach come to mind. In figure 4.19, trends in indexed total days of participation across six such traditional activities are shown. Relative to base year 2000, a mixture of trends is revealed. In the middle years (2003-2005), the family-oriented activities of developed camping, family gatherings, and especially visiting a beach outpaced the other activities. Most activities dipped slightly in 2006 before rebounding in 2007 and 2008. Beach visits slowed somewhat and camping and picnicking settled at nearly the same level as 2000. By 2008, family gatherings and visiting prehistoric or archeological sites showed the highest rates of growth.

Figure 4.20 shows indexed trends for activities associated with viewing and photographing nature. By the middle years of this decade, all of these five activities were showing growth, especially viewing and photographing wildflowers and trees as well as natural scenery. Slower growth, but growth nonetheless occurred for viewing and photographing wildlife and birds, and for visiting nature centers. As a group of activities, the ones shown in figure 4.20 showed consistent growth patterns likely indicating increasing interest in nature.

Backcountry activity trends are indexed in figure 4.21. Starting in 2002 to the middle years of this decade, days of day hiking, horseback riding on trails and mountain climbing declined. But by 2008, mountain climbing had recovered and was showing growth. Backpacking and visiting wild areas were maintaining levels reached in the middle years of 2003-2005.

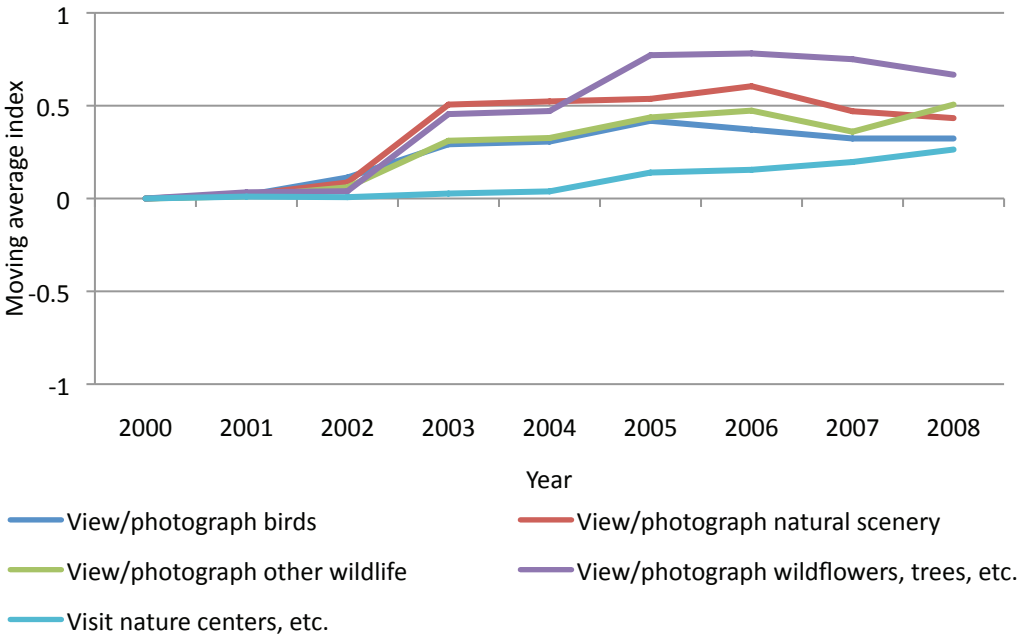


Figure 4.20—Indexed moving average of total activity days for viewing and photographing nature activities, 2000-2008.

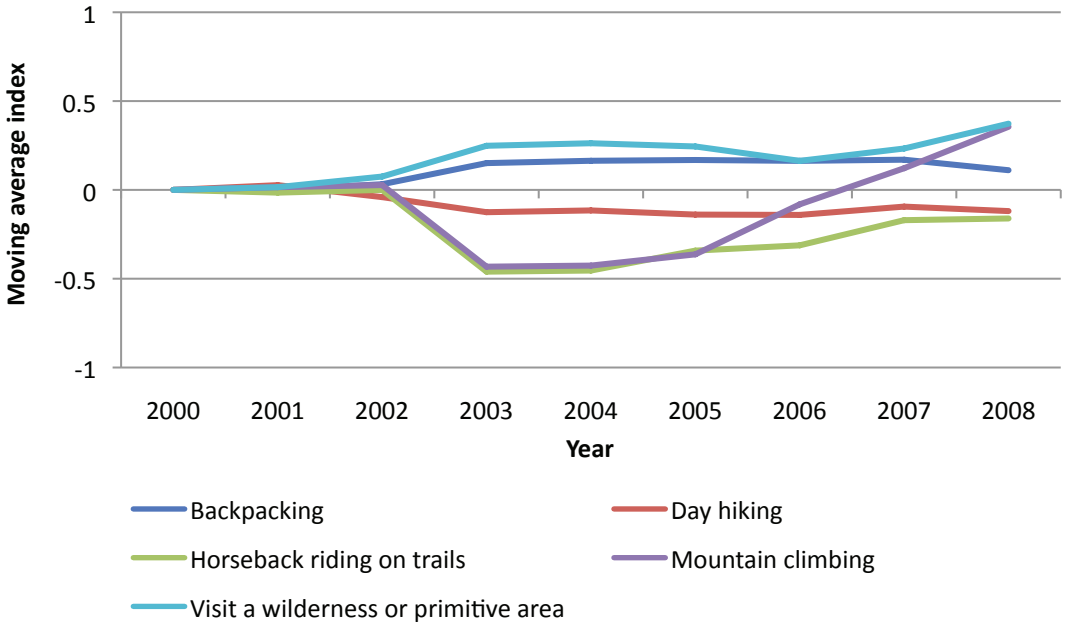


Figure 4.21—Indexed moving average of total activity days for backcountry activities, 2000-2008.

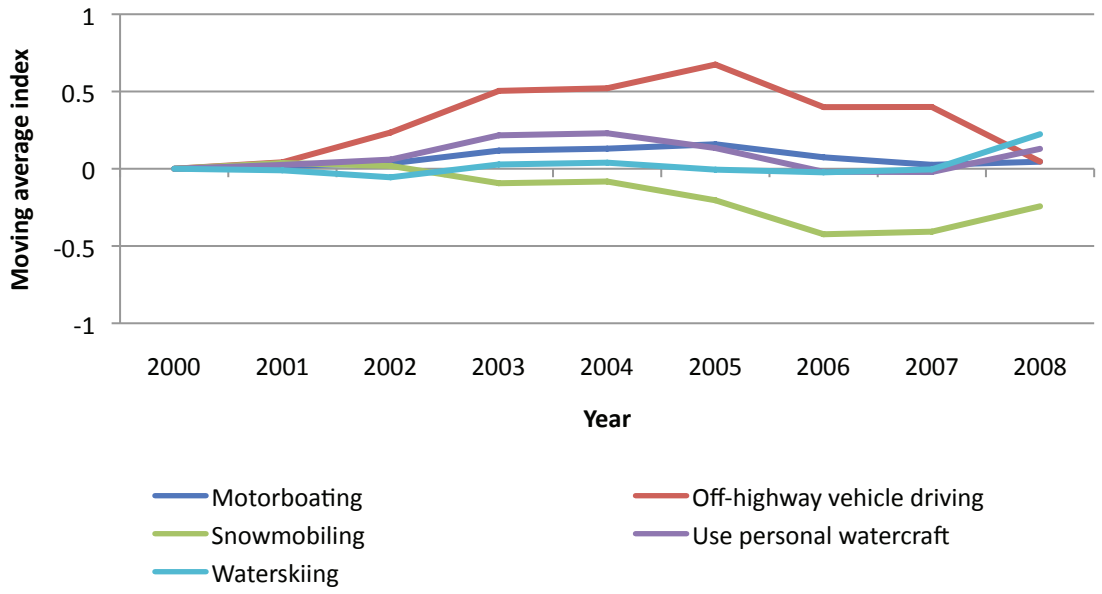


Figure 4.22—Indexed moving average of total activity days for motorized activities, 2000-2008.

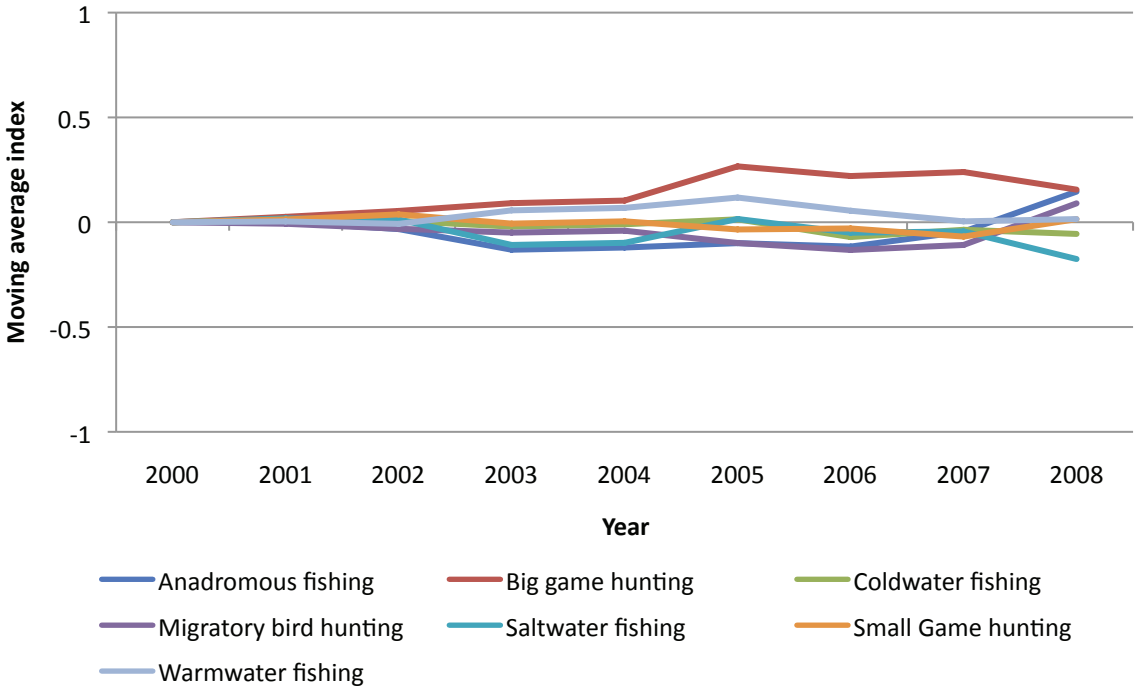


Figure 4.23—Indexed moving average of total activity days for hunting and fishing activities, 2000-2008.

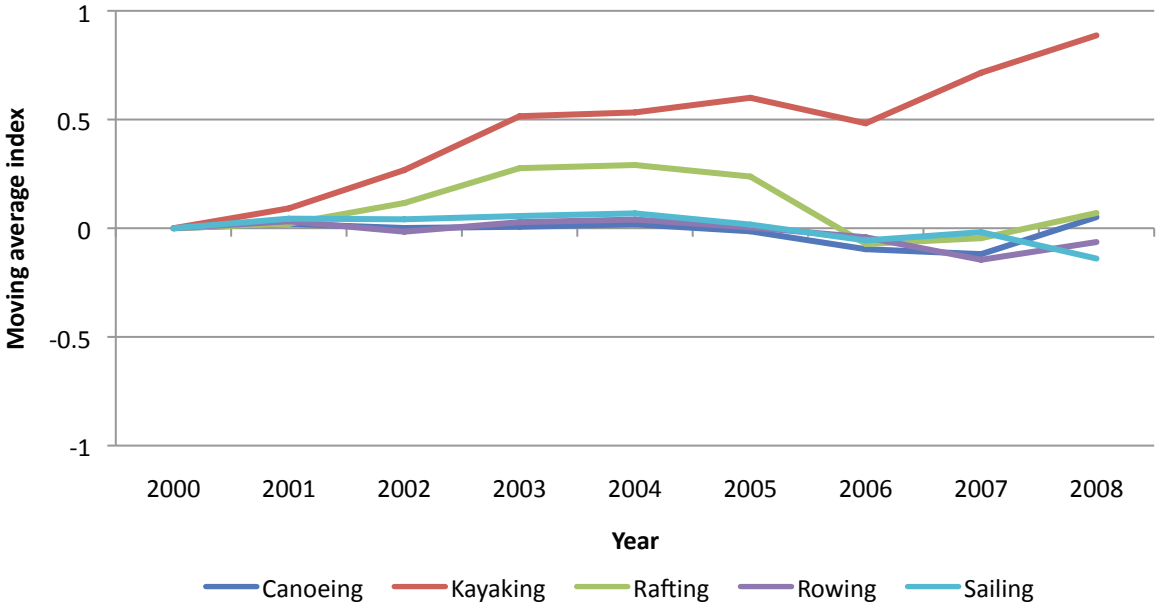


Figure 4.24—Indexed moving average of total activity days for non-motorized boating activities, 2000-2008.

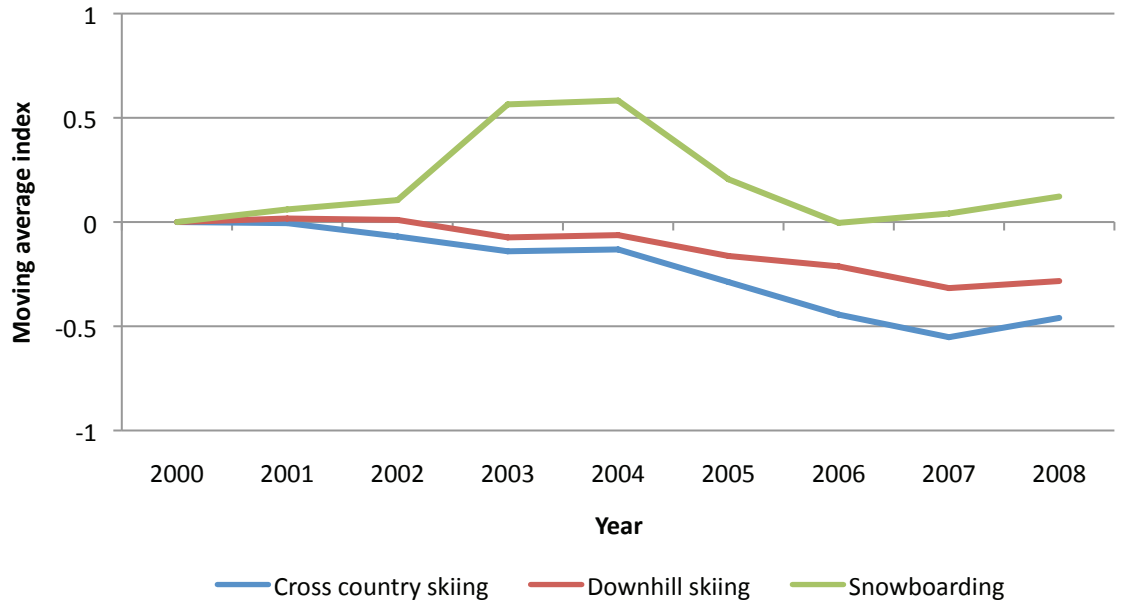


Figure 4.25—Indexed moving average of total activity days for snow skiing and boarding activities, 2000-2008.

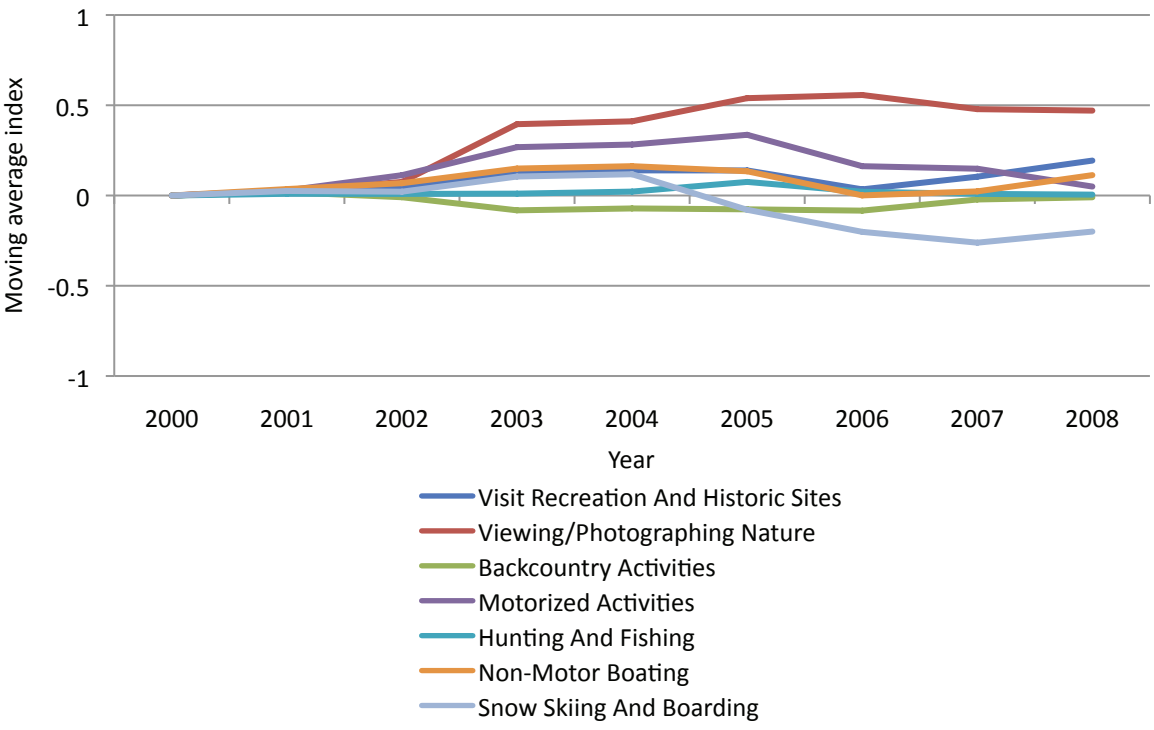


Figure 4.26—Indexed moving average of total activity days for seven composites of nature-based activities, 2000-2008.

The indexed trends in motorized activity participation are shown in figure 4.22. Through the middle years of this decade, the only activity showing a decline was snowmobiling. That downward trend continued through 2006 but rebounded slightly through 2008. Off-highway vehicle driving grew steadily until 2005 before falling back to its 2000 level by 2008. Only snowmobiling had a lower level of participation in 2008 than it had in 2000.

Figure 4.23 covers seven hunting and fishing activities. Although there were some slight growth or decline trends shown in the middle years, generally all activities ended close to the same levels of participation in 2008 as in 2000. Big game hunting had grown the most by 2008, slightly more than anadromous fishing. Saltwater and coldwater fishing were the two activities posting declines since 2000. Hunting and fishing as referenced for the NSRE respondents includes any amount of participation, whether or not it was the primary activity of choice for an outing. Thus, this trend is not inconsistent with the earlier reported hunting and fishing trends reported in the paper by Anna Harris from the U.S. Fish and Wildlife Service.

Non-motorized boating activities include paddling (canoeing or kayaking), floating (rafting), rowing and sailing (fig. 4.24). Through this decade, canoeing, rowing, and sailing maintained about the same level of total days of activity as in 2000. Kayaking and rafting showed moderate growth up through the middle years, but by 2006, rafting had dropped below its 2000 level before rebounding in 2008. Kayaking grew steadily throughout the decade with only a slight dip in 2006.

Cross-country skiing and downhill skiing showed a slow but steady decline from 2000 to 2007 before rebounding slightly in 2008 (fig. 4.25). Snowboarding, however, increased in the middle years of this decade, but since then declined back to its level of 2000.

The patterns shown in figure 4.26 reflect the cumulative effects of trends in the individual activities reported in the previous line graphs. While motorized activities showed growth up to about 2005, it, along with hunting, fishing, and backcountry activities, ended up toward the end of this decade at about the same level of participation as in 2000. Non-motor boating grew modestly, and visiting recreation and historic sites grew at a slightly higher rate. Various forms of skiing, including snowboarding, declined during this decade. The clear leader in growth of total annual days was the overall group of activities named "viewing and photographing nature."

Broad Summary of Trends in Outdoor and Nature-Based Recreation from NSRE

In the summer of 2008, papers describing the overall trends in general outdoor recreation and in specific nature-based outdoor recreation were published in the *International Journal of Wilderness* (Cordell and others 2008) and in *Forest History Today* (Cordell 2008). This section updates those trends with additional data from NSRE through 2009. Consistent with the previous section, these trends are based on pooled data from 1999-2001 and 2005-09. (Relatively few NSRE interviews were conducted during the calendar year 1999, which is why the trend period is designated as 2000 to 2009.)

Outdoor recreation broadly defined—Between 2000 and 2009, the total number of people who participated in one or more of a list of 60 outdoor activities grew by 7.5 percent, from an estimated 208.2 million to 223.9 million (fig. 4.27). Included in the list of 60 was a wide range of activities, from visiting beaches and visiting farms to rock climbing and backpacking. Across the 60 activities, the number of activity days of participation (an index measuring the average number of days per activity x number of activity participants summed across all activities) increased from 61.3 billion to 81.3 billion, an approximate 32.5 percent increase in 9 years. The average annual days of participation per person (i.e., total days divided by the total number of participants in each period) who participated in one or more of the 60 activities increased about 23 percent.

Nature-based outdoor recreation specifically—Within the list of 60 outdoor recreation activities making up the trends in figure 4.27 are 50 nature-based activities. These are activities associated in some way with wildlife, birds, streams, lakes, snow and ice areas, trails, rugged terrain, mountains, caves, and other natural outdoor resources or settings. Included in the list of 50 are activities such as mountain biking, coldwater fishing, whitewater rafting, downhill skiing, primitive camping, backpacking, mountain climbing, visiting prehistoric sites, saltwater fishing, and snorkeling.

Pursuit of nature-based activities, such as bird watching or swimming, can occur near home, or as with backpacking or mountain climbing, at more remote wildland areas. As is the case with more broadly defined outdoor recreation activities, nature-based outdoor recreation showed a discernible growth in the total number of participants and in the summed number of activity days between 2000 and 2009. Figure 4.28 summarizes this growth.

The total number of people who participated in one or more of these fifty activities grew by 7.1 percent, from an estimated 196.0 million to 209.9 million. At the same time, the number of activity days of participation summed across all participants and activities grew about 40 percent, from an estimated 37 billion to about 52 billion. Over all fifty nature-based activities, per capita days of participation for the U.S. population increased by around 31 percent during this period.

Experts Focus on Three Outdoor Activities

The following section includes invited papers that focus on three specific nature-based outdoor activities. The first paper discusses developed camping, which has been viewed in the United States as one of the Nation's more traditional core activities. Developed camping means camping overnight in sites specifically set up to accommodate overnight visitors. The second is a paper on the activity of geocaching, an activity very often involving natural settings. Geocaching is a relatively new activity that involves use of a handheld Global Positioning System (GPS) device to find hidden stashes of mystery items in outdoor areas based on clues posted on the Internet. The third is a paper covering the growth of wildlife festivals (e.g., birds, mammals, fish, and invertebrates). Festivals can be local or as broad as national and typically involve volunteers as well as related social, recreational, and educational activities. Wildlife and other festivals are important draws for tourists and speak to the growing popularity of wildlife viewing and photography.

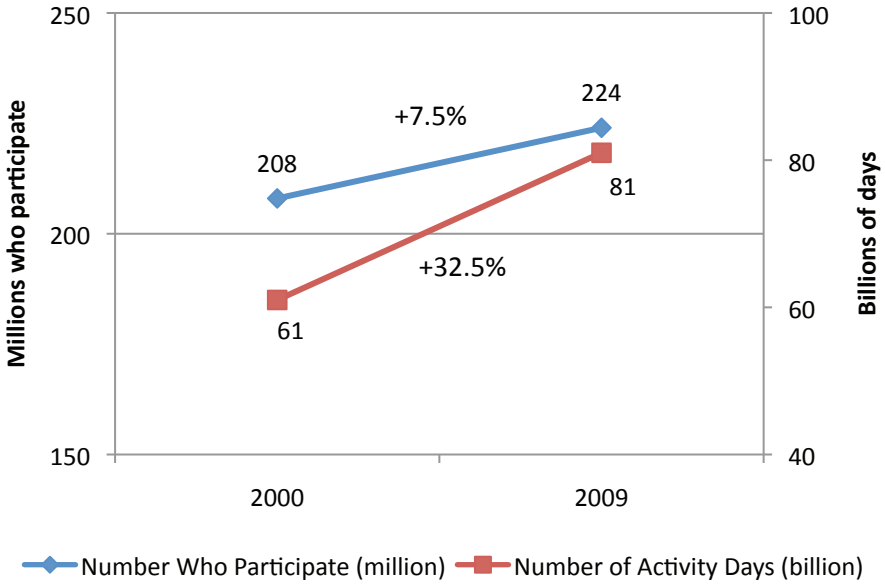


Figure 4.27—Growth in number of people age 16 and older and number of annual participation days in 60 outdoor recreation activities in the United States, 2000-2009.

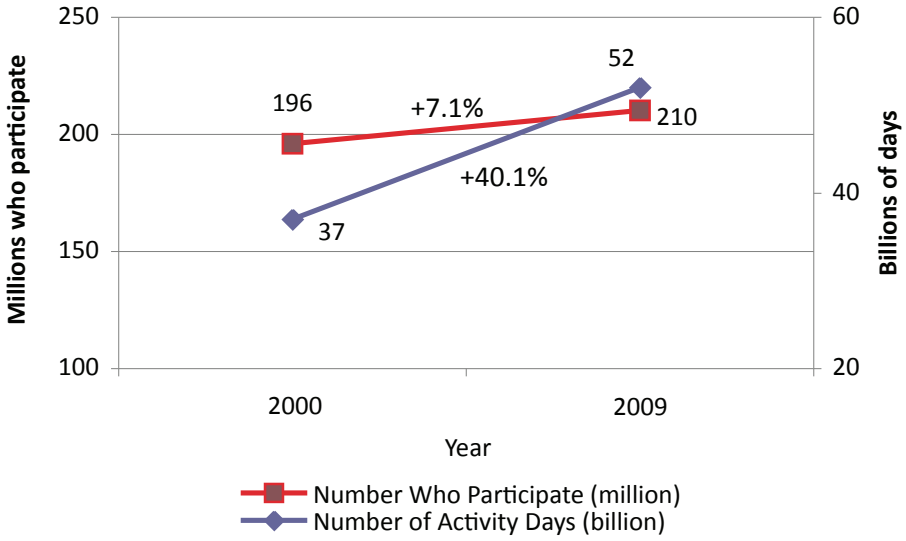


Figure 4.28—Growth in number of people age 16 and older and number of annual participation days in 50 nature-based outdoor recreation activities in the United States, 2000-2009.

Invited Paper

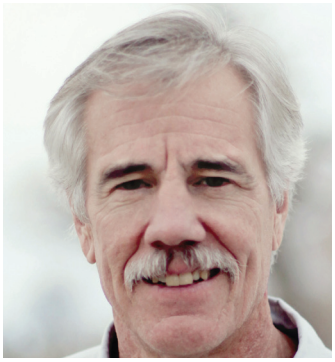
Trends in Developed Forest Camping

by Barry A. Garst, Daniel R. Williams, and Joseph W. Roggenbuck[6]

Introduction

Barry Garst

Over the past 40 years, the number of forest campers has grown from 13 million in the 1960s to approximately 56 million in 2000 (table 4.6). Camping is now one of the more



Daniel R. Williams

Joseph W. Roggenbuck

common ways that Americans spend time in the outdoors, with over one-fourth of the U.S. population participating in some form of camping.

From the late 1950s to the early 1970s, researchers studied elements of developed camping experiences such as associated activities (King 1966) and patterns of social interaction (Burch 1965, Hendee and Campbell 1969, Shafer 1969). Hendee and Harris (1970) observed that developed campgrounds reflected complex social systems among groups, and both Etzkorn (1964) and Hendee and Campbell (1969) found that campers often appeared to care more

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for social interaction than natural amenities. For example, research into activity patterns of campers emphasized the importance of campfires for facilitating social interaction during camping (Hendee and Campbell 1969).

This trend summary compares developed camping in the 1960s and 1970s with 21st century developed camping and suggests that developed forest camping has changed considerably over the past 40 years, especially in the area of equipment and technologies. Today's campers show different characteristics, preferences, and behaviors than campers of the 1960s, when camping was sometimes viewed as an inexpensive lodging option for families on vacation (ORRRC 1962). Developed campground campers today tend to be retirees camping in motor homes or recreationists using camping to gain access to specific recreation activities (Cordell and others 1999). Despite these changes the values and benefits of the experience have much in common with the past.

Technological advancements have changed modern camping. Synthetic materials have replaced natural fabrics in many types of clothing, tents, and sleeping bags (Tilin and Grudowski 1997). Advancements in equipment such as weather-resistant tents, portable cook-stoves, self-inflating pads, collapsible water bladders, and solar-heated showers have made camping much more comfortable today (Cordell and others 1999). Modern campers utilize a wider variety of electronic technologies for communication and entertainment as compared to what was available to 1960s campers. In addition to the ubiquitous cell phone, televisions, DVD players, wireless connections, and even satellite dishes have become commonplace, which may suggest that today's campers spend much of their time engaged in passive entertainment rather than in active, nature-based experiences. However, even some of the studies of developed camping from the 1960s noted that "few visitors engaged in activities that were dependent upon the natural environment or displayed any concern for the flora, fauna, geology, or natural history of the area" (Hendee and Campbell 1969).

Travelling and camping. (Photo courtesy of Ken Cordell)

Modern campers also appear to have a different set of expectations for campground facilities when compared to 1960s campers. The trend even among some public-managed campgrounds, particularly those found in State park systems, has moved toward expanded amenities and services, reflecting trends in American society toward personal comfort and convenience. In addition, many U.S. Department of Agriculture Forest Service campgrounds are now managed by outside concessionaires and thus reduce the prevalence of more rustic developed camping opportunities that provide fewer amenities.

A Virginia Case Study

Further documentation of developed forest camping trends can be gleaned from a 2003 case study of developed camping conducted in the Mount Rogers National Recreation Area with 38 camping groups across three campgrounds that varied in their level of development (Garst and others 2010). Participants tended to be very experienced with camping, with 13 percent having 21 to 25 years of experience and 41 percent having more than 25 years of experience. Participants had traveled to Mount Rogers from nine States, with most participants (37 percent) being Virginia residents.

Camping vehicles—Data about the types of vehicles that participants used were collected in the interviews and via observations made at the time of the interview. In the less developed campgrounds, in which the roads were too small to accommodate larger camping vehicles, participants used tents or small pop-up campers. Participants from the moderately developed campground used tents, pop-up campers, pull behind trailers, and smaller motor homes. These campgrounds could accommodate larger camping vehicles like motor homes because of wider, paved roads, but because they did not have full hook-ups, motor homes were rare. Participants from the highly developed campgrounds tended to use motor homes and larger pull-behind trailers.

A common theme related to camping vehicles that emerged from the interviews involved "transitioning" or "upgrading" as a participant moves from one type of camping vehicle

to another during the course of one's life to accommodate preferences for comfort. Transitioning from tent camping, to a pop-up, to a camper, and finally to a motor-home was seen by many participants as a natural progression and an inevitable aspect of developed camping. As a participant from the moderately developed campground shared, "We went from a tent to a pop-up because we [were] getting so old we couldn't get down on the ground and get up… campers definitely want more comfort when they get older."

Electronics—To explore how technology facilitated the modern developed forest camping experience, data were collected about electronics as a part of the interviews. Participants from the less developed and moderately developed campgrounds used the fewest types of electronics, which typically included items such as radios and televisions.

In comparison, participants from the highly developed campground used a wide range of electronics, including televisions, radios, VCRs, personal gaming devices (e.g., Nintendo, Game Boy, Sega/Play Station), cell phones, microwave ovens, CD players, satellite dishes, coffeemakers, refrigerators, DVD players, electric blankets, weather radios, air conditioning units, electric grills, digital cameras, and even a ham radio. This seems consistent with the fact that a majority of participants camping in the highly developed campground utilized motor homes which gave them easier access to electricity, thus making electronic technology much more likely.

In addition to asking participants about the electronics they brought and utilized on their camping trips, they were also asked about whether or not these electronics were important for their developed forest camping experiences and how these technologies influenced their experiences. The most common theme that emerged among participants was comfort and convenience. Participants used technologies, from camping vehicle to gear to electronics, to make the camping experience more pleasant and less work. As a participant from the highly developed campground explained, "We wouldn't be here if we didn't have waterproof tents and nylon bags to put all our stuff in, and plastic coolers to keep our ice frozen…This kind of stuff is what we need, it really makes camping more comfortable."

Camping experiences—To identify the most salient aspects of developed forest camping experiences, participants in the Virginia study were asked to describe in detail different aspects of their developed forest camping experiences. Participants were involved in a range of activities during their camping experiences, some onsite and some offsite. Activities were almost always social, and a majority of participants stated that "who they were with" was most important. The setting of the experience was also salient, as expressed through nature-based activities and preferences for certain campground and campsite characteristics. Participants expressed a range of emotions that they felt during their camping experience, and their mood states ebbed and flowed based upon what was happening to them (e.g., the weather) and what they were doing.

Meaning of camping—Participants were asked about the meanings associated with their onsite developed forest camping experiences (associated meanings) and also about the ways in which camping was meaningful within the greater context of their lives (life-context meanings). The most common associated meanings were: restoration (including escape, rest, and relaxation), family functioning, special places, self-identity, social interaction, experiencing nature, and opportunity for children to learn. When compared to camping studies from the 1960s and 1970s, one key difference appears to be the increasing importance given to family functioning and children's learning (Garst and others 2010).

As described by participants, camping meanings were interrelated. For example, family functioning meanings were related to the opportunity that participants had to "escape" (a category of restoration) the stresses of their home environments in order to focus on members of their family during their camping trips. Another example was "special places," which evolved from participants spending time in nature and then developing family traditions focused around their attachment to a particular campground. Another example was "appreciation for nature," which evolved from experiencing nature and feelings of restoration. As participants spent time in nature and were restored through contact with it, they expressed appreciation for nature.

Some meanings were not only associated with participants' current camping trip but were also identified as important in the greater context of participants' lives (life-context meanings). The most common life-context meanings were: restoration (including escape, rest, and relaxation), sharing positive family memories and traditions, experiencing and appreciating nature, freedom, novelty, self-identify, family functioning, and self-reliance.

Implications

Comfort and convenience, important to the participants in the case study, were most often associated with access to campsite amenities such as water, electricity, hot showers,

clean bathrooms, and technologies such as satellite and cell phone reception. Future developed forest campers will likely continue to demand these types of amenities.

Developed forest campers perceived many benefits related to family functioning and identified family functioning as an important meaning associated with developed forest camping experiences. Quality family interaction was in part attributed to the opportunities camping afforded families to have some "down time." This additional quality family time was used for unscheduled time together as well as to participate in organized programs, campfires, and self-guided trails associated with the campgrounds and nearby facilities and attractions.

Despite a plethora of "indoor" conveniences, campfires continue to be a center for social experiences in the campsites and were the catalyst for the expression and sharing of stories and even traditions. Sharing and hearing stories about camping was seen as a particularly valuable component of the social interactions among campers. Managers may want to consider ways to enhance these types of experiences through site construction, visitor interpretation, and organized programming. As one example, interpretive sites and trails can incorporate more electronic communications technologies to help attract younger participants.

Given what we learned from researchers investigating developed forest camping in the 1960s, it is apparent that the technology campers take with them has evolved, while the experiences and meanings have remained largely the same. People continue to look to developed camping as a way to comfortably contact nature and to satisfy important human needs for personal restoration and social bonding. The motivations that led campers to escape and to travel in social groups to less populated areas for the restorative effects of a camping trip are still very much present. Coupled with meanings like emotional attachments to special camping places, the strengthening of social family relationships through memories and stories, and the enhancement of a general appreciation of nature, developed forest camping continues to play an important role within the larger context of outdoor recreation experiences.

End Invited Paper

Invited Paper

Geocaching: Form, Function, and Opportunity

by Ingrid E. Schneider and Deborah J. Chavez[7]

Ingrid E. Schneider

Deborah J. Chavez

The role technology plays in outdoor recreation is evolving and of ongoing interest. One technology-related activity in particular emerged at the start of the 21st century: geocaching. Geocaching involves using a handheld GPS device to find hidden caches in areas based on clues posted on the Internet. Geocaching.com, the primary source for geocachers, provides information and guidelines for participating in the activity. In 2010, geocaching celebrated its 10th birthday heralded by nearly 100,000 geocaching.com members and nearly 1,000,000 active caches around the world. The current estimate of the percent of population of people in the United States of age 16 and older who participate in geochaching is 3.5 percent (based on sampling for the NSRE described earlier). This is roughly 8 million participants of this age in the United States based on the Bureau of Census population estimate for 2008. Since this is an activity popular with youth, there obviously are many more participants than this 8 million.

In its simplest form, a geocache is a small, waterproof container with a logbook. The logbook contains information from the cache hider and notes from its finders. A logbook might contain information about nearby attractions, coordinates to other unpublished (not posted on the Internet) caches, and even jokes. Those who take information from the logbook then leave some information too, at least providing the date and time they visited. The geocaching.com Web site notes that geocaching is deceptively easy; it is one thing to see where an item is

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Example of cache contents. (USDA Forest Service file photo)

Example of a micro (small) cache. (USDA Forest Service file photo)

on the GPS unit, but it is a different story to get there. After finding the cache, participants are asked to place it back where and how they found it. After returning home, the cache finder posts an email to the cache owner via geocache.com to let them know the cache was found and comments on the condition of the cache. Appropriately placed and well-maintained caches are recommended by www.geocaching.com.

With emergent activities come new challenges and opportunities for land managers and planners, e.g., off-trail travel, disturbed natural areas, abandoned property, and more visitors. Although geocaching has existed for a decade, few empirical studies of geocachers exist (Chavez and others 2004, O'Hara 2008). As such, little is known about this user group, their behaviors, and preferences. Thus, the purpose of this project was to profile geocachers and their activity. Notably, the samples reported are small and not representative of all geocachers across the United States. However, many of the issues identified in these studies can help in better understanding this growing user group and their impact on public lands.

Methods

To find out more about geocachers, an electronically administered survey was developed and disseminated to geocachers in Minnesota (MN) and Michigan (MI) in 2003 and 2004, respectively. Potential respondents were geocachers drawn from the appropriate State Geocaching Association (n=235 in MN and n=480 in MI). Due to the few Minnesota association members at that time, that list was supplemented by cachers who found a cache in the seven county metropolitan Minnesota area, as was listed online at www.geocaching.com.

A questionnaire was designed, pre-tested, and electronically implemented via Zoomerang© using a modified Dillman (2000) technique. The questionnaire addressed experience with geocaching, preferences for geocaching experiences, environmentally appropriate behaviors, and demographics. Demographics included age, gender, income, and education level.

More than 50 percent of geocachers responded to the questionnaires (MN 62 percent response rate, MI 52 percent response rate). Descriptive analysis provided means, standard deviations, and frequencies.

Findings

The respondents ranged in age from 18 to 70 years, with a mean age near 40 (39 years in MN, 43 years in MI). The vast majority of survey respondents were male (85.6 percent in MN, 72 percent in MI) and White (96.1 percent in MN, 97 percent in MI), highly educated (47.7 percent college degree, 14.4 percent advanced degree in MN, 39 percent college degree, 16 percent advanced degree in MI), and reported an income > $75,000 in MN and > $50,000 in MI.

At the time of the survey, respondents most frequently indicated they had participated in geocaching for 1 to 2 years. Respondents were typically with members of their immediate family when geocaching (48.1 percent in MN, 52.8 percent in MI) or alone (24.8 percent in MN, 20.8 percent in MI). The majority of respondents indicated they always found caches (66.9 percent in MN, 66.3 percent in MI). Almost half had hidden at least one cache (48 percent

in MN, 55 percent in MI).

The majority of respondents in both States agreed on the most important motivations for geocaching and that it increased their visitation to parks. At least 80 percent of respondents in both States agreed that important motivations for geocaching were to experience nature, get away from the usual demands of life, get physical exercise, and test their skills. More than 95 percent of respondents in both States agreed or strongly agreed that geocaching had increased their number of visits to parks and recreation areas.

Regarding environmentally responsible behavior, the vast majority of geocachers in both States (85 percent) concurred that it was important to pack out everything they brought in, remove dog feces, and control pets. However, a lower number of cachers (65 percent) identified that it was important to stay on trails.

Implications for the Future

Results from the electronically administered questionnaire indicate that Midwestern geocaching participants are similar to outdoor recreationists in other activity groups, although more male dominated (Cordell and others 1999). These results are also comparable to the computer gaming area, where males have dominated as technology emerges (Bryce and Rutter 2003). If the gender divide continues in geocaching, it will be interesting to follow and compare with Internet and computer gaming participation where, as the innovation diffuses, the female presence has grown (Schumacher and Morahan-Martin 2001).

Among these respondents, geocaching has led to an increased use of public lands. Knowing more about the increase in visitation in terms of number of visits or duration would be meaningful. Further information on the caching experiences would also be helpful, such as better understanding the importance of the hunt, factors influencing positive experiences, and duration of experiences. Similarly of interest is determining what percent of geocachers are new outdoor recreationists, and whether new use of technology in the outdoors may result in visitor conflicts. Further, the fact that geocachers typically go off trail at some point may result in negative feelings toward them. Subsequently, the impact of this new experience opportunity on visitor conflict levels deserves attention.

Motivations for geocaching are similar to other outdoor recreation activities, and hold promise for physical activity opportunities. O'Hara's (2008) interviews with English geocachers indicated that this activity motivated respondents to get out and walk, as well as to push themselves physically to find the cache. Given the obesity epidemic in the United States and emphasis on physical fitness by government and non-government organizations, geocaching participants' motivation for exercise is very promising. Participants' physical health changes, if any, and the realized health benefits would be of interest in future research.

Communication and programming implications are evident with this activity. First, electronic communication is almost mandatory with geocachers, given the internet dependency for cache coordinates. While typical communication methods of onsite signs and brochures may be of use, immediate and real-time messages can be delivered on management Web sites, through www.geocaching.com, and a local geocaching organization Web site if one exists. The use of caches themselves for information or education may be of interest. For example, the use of the Register of Big Trees (which are maintained by public forestry agencies describing the location of the largest specimens of various tree species) as caches may improve people's understanding and appreciation of the trees (Wright 2003). Research on optimizing messaging and delivery will be essential as this, and other, technologically-driven activities evolve. Second, given the male dominance of the activity, single-sex programming could provide opportunities to overcome constraints related to technology as well as the outdoors for women.

As geocaching appears to be a family activity, social group research is of interest. Research documents that family leisure and recreation enhances family satisfaction (Orthner 1975, 1976) as well as couple satisfaction (Holman and Epperson 1984; Holman and Jacquart 1988). However, the leisure experience within groups varies among group members by age and family role (Martinson and others 2002). Thus, understanding if and how leisure is experienced within geocaching family groups is of interest. O'Hara (2008) positively notes the flexibility of geocaching for participation and inclusivity to create a positive social environment, regardless of group. Similarly, understanding if and how technology-based group leisure is experienced is of interest. The integration of technology may dramatically change the outdoor recreation experience. GPS use could cross over generational divides associated with technology and enhance family opportunities in the outdoors. Also, as geocaching brings decisions regarding directions, technology, as well as hand-held controls, the opportunity for marital and family conflict presents itself (Imber-Black 2001). As such, exploring the actual effect of geocaching experiences on family cohesion and group dynamics would be enlightening. Beyond the family, the socialization and patterns of the geocaching e-community deserves attention

(Scott and Johnson 2003).

Our research indicates that geocaching takes several forms, is linked to technology (e.g., Internet, GPS), is of growing interest, gets people outdoors and active, and has the potential to change how lands are used by members of the recreating public. As such, geocaching provides challenges and opportunities to those managing lands the geocachers use. A number of research opportunities similarly exist to better understand the activity, the geocachers, and offer advice to the resource managers who provide the lands for this technology dependent activity.

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Invited Paper

Wildlife Festivals in North America: Growth and Economic Importance

by Glen T. Hvenegaard[8]

Introduction

Glen T. Hvenegaard

Festivals are annual public celebrations of local features of interest lasting a short time (Getz 1997). Wildlife festivals can focus on all wildlife or on particular groups or species (e.g., birds, mammals, fish, and invertebrates). Festivals attract mostly local and regional visitors, are facilitated by volunteers, and offer a variety of social, recreational, and educational activities. Organizers host wildlife festivals for a number of reasons usually including enhancement of a community's image, generation of economic impacts, providing recreational opportunities, developing a local sense of community, and helping conserve wildlife (Polson 1993, Hvenegaard and Manaloor 2007, Romero and Stangel 1996).

Methods

This paper reviews the growth, economic impacts, and conservation orientation of wildlife festivals. Data were obtained from a comprehensive literature review, analysis of Internet sites, and personal participation in some studies (e.g., Hvenegaard and Manaloor 2007).

Results

Recently, wildlife festivals have grown rapidly in number. In North America, from 1992 to 2002, the number of known festivals grew from 10 to 240 (Decray and others 1998, DiGregorio 2002, Lawton 2009). In Canada, over 80 wildlife festivals were offered in 2009. Wildlife festival tourists are generally older, more educated, and more affluent than the general population (Lawton 2009).

Table 4.14 summarizes the expenditures generated by visitors within a given local area of several North American wildlife festivals. While formal economic impact studies should include only new spending in a local area by non-residents (see Kim and others (1998), and Chambliss and others (2009) for good models), a number of the studies used data and methods inconsistent with this standard.

Regardless, total local expenditures per festival ranged from about $10,000 to more than $1 million USD. Average expenditures per person per trip ranged from $8 to $761 USD. Significant drivers of local economic impact include the number of participants, need to stay overnight, length of stay, affluence of participants, types of activities, and ability of local communities to meet visitor needs (Hvenegaard and Manaloor 2004).

A few studies have expanded economic analyses. Rockport, Texas hosts the Hummer/Bird Celebration each year in September. The 4,500 festival visitors spend an average of $383.70 USD per person, for a total of $1,276,548 USD in the local county (Kim and others 1998). Of visitors, 71 percent were non-residents (spending $344.94 USD per person) and 29 percent were residents (spending $133.69 USD per person). Using a regional input-output model, Kim and others (1998) estimated a total economic multiplier (the number of times that money is spent over again in the local area) of 2.28. Thus, the county received an additional $144,638 USD in indirect expenditures (businesses

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Table 4.14—Local expenditures resulting from wildlife festivals

Festival name	Location	Year	Days	Visitors	Local expenditures per person per visit[a]	Total local expenditures[a]	Reference
				number			
Snow Goose Festival	Tofield, AB	2000	2	5,000	$22.48 CAD	$98,050 CAD	Hvenegaard and Manaloor 2004
Brant Wildlife Festival	Parksville-Qualicum, BC	2003	3	3,430	$155.73 CAD	$534,188 CAD	Jenner 2003
British Birdwatching Fair	Rutland, UK	2003	3	16,000	–	$640,000 U.S.	Green 2003
Hummer/Bird Celebration	Rockport, TX	1995	4	4,500	$283.70 U.S.	$1,276,548 U.S.	Kim and others 1998
Rio Grande Valley Bird Festival	Harlingen, TX	1998	5	–	$761.15 U.S.	–	Eubanks and Stoll 1999
American River Salmon Festival	Rancho Cardova, CA	1999	2	16,000	$33.80 U.S.	–	Fermata, Inc. 2001
Kern Valley Bioregions Festival	Kern County, CA	1999	2	1,000-1,500	$184.15 U.S.	–	Fermata, Inc. 2001
Florida Panhandle Birding & Wildflower Festival	Bay, Gulf, & Franklin Counties, FL	2002	4	232	$43 U.S.	$52,098 U.S.	Lynch and others 2003
Florida Wakulla Springs Birding and Wildlife Festival	Wakulla County, FL	2003	2	258	$14.15 U.S.	$22,528 U.S.	Lynch and Harrington 2003
Pelican Island Wildlife Festival	Indian River County, FL	2003	2	3,000	$557.54 U.S. for non-residents	$650,000 U.S. from non-residents	Chambliss and others 2003
Potholes and Prairie Birding Festival	Jamestown, ND	2004	4		$162	$16,839 U.S.	Hodur and others 2004
Hummingbird Migration Celebration	Holly Springs, MS	2006	4	7,970	$7.95 U.S.	$97,654 U.S.	Measells and Grado 2007
Stork and Cork Festival	Vicksburg, MS	2006	3	145	$44.69 U.S.	$10,031 U.S.	Measells and Grado 2007
Space Coast Birding & Wildlife Festival	Brevard County, FL	2009	5	3,651	$339 U.S. for non-residents	$996,679 U.S. from non-residents	Chambliss and others 2009

[a]Numbers are reported for all visitors since many studies did not differentiate expenditures between residents and non-residents. More properly, economic impact studies should report only new expenditures by non-residents. Also, in some cases, total local expenditures were calculated with weighting procedures on other variables, so multiplying number of visitors by local expenditures per person per visit will not produce an accurate estimate of total local expenditures. Missing data indicate that those categories were not reported in the study.

respending money in the local area) and $1,270,788 USD in induced expenditures (employees of businesses spending money in the local area). The festival contributed about 73 full-time or part-time jobs to the local community.

Another way to economically analyze wildlife festivals is in terms of consumer surplus, which is a way to estimate the dollar value of benefits festival visitors gain. Consumer surplus is a measure of what they would be willing to spend beyond their direct expenditures for participating in the festival. At the Rio Grande Valley Birding Festival, the average consumer surplus was $205.09 USD per visitor per birding trip (Eubanks and Stoll 1999). At the American River Salmon Festival and the Kern Valley Bioregions Festival, the average consumer surplus per participant was $44.78 USD and $149.18 USD, respectively (Fermata, Inc. 2001).

Implications

The significant growth of wildlife festivals reflects increased participation in recreation activities such as viewing and photographing natural scenery, wildlife, and plants (Cordell 2008). The economic impacts from wildlife festivals are significant because they often occur in rural areas with few economic development options and occur in the tourism off-seasons. However, a few negative impacts should be considered. Festival economic benefits are seasonal and temporary (i.e., occur during a short time period each year) and often may not accrue to those bearing the festival costs (e.g., landowners may encounter crop damage from migrating waterfowl). Moreover, many analyses fail to consider a festival's direct costs (e.g., to acquire land and build facilities), indirect costs (e.g., maintaining a festival site), and opportunity costs (e.g., foregone harvesting rights).

Communities offering wildlife festivals can enhance local economic impacts by increasing tourist numbers, but the local carrying capacity must be considered. Alternatively, organizers can encourage visitors to change their spending and travel behaviour. First, by providing desired goods and services (e.g., books, souvenirs, birding equipment), visitors will increase spending (Hvenegaard and Manaloor 2004). Second, visitors will spend more if they stay longer. The low expenditures per person per visit in table 4.14 for the Snow Goose Festival, Florida Panhandle Birding Festival, and Florida Wakulla Springs Birding Festival indicate mostly day visitors. Other festivals with higher per-day expenditures involved overnight visitors. Visitors will stay longer only if there are other suitable attractions. Third, festival organizers can encourage visitors to return at other times of the year. In surveys of festival visitors, many indicated an interest in returning to the local area within 1 to 3 years (e.g., 57 percent at the Snow Goose Festival and 87 percent at the Brant Wildlife Festival) (Hvenegaard and Manaloor 2004). To this end, organizers should provide information to visitors about

Wildlife festival

Wildlife festival

Wildlife festival

local natural history, cultural, and recreational events at other times during the year. Finally, local economic impact can also be increased if more local residents participate economically in the festival and tourism operations (Wunder 2000).

In addition to economic benefits, wildlife festivals also can generate conservation benefits. A festival's economic stimulus may prompt the establishment of a local protected area to support wildlife viewing (Fennell and Weaver 2005). For example, with the economic boost from the Whooping Crane Festival and the Great Texas Coastal Birding Trail, Port Aransas, TX, is planning to designate a new park with wildlife observation posts (Robbins 2003). Wildlife festivals can also generate revenue for wildlife protection. The 2007 British Birdwatching Fair raised £225,000 to support bird conservation (Green 2003). In Pinellas County, FL, the Florida Birding Festival and Nature Expo (2000) raised $20,000 USD to purchase critical shorebird nesting habitat. Finally, wildlife festivals can promote wildlife-friendly management. During the 1980s, the Swallow Festival at Pembroke, Ontario attracted over 10,000 people per year, producing over $200,000 CAD in local expenditures. Based on a benefit-cost analysis of the swallow roost, city officials turned down a $50 million CAD proposal for urban development that would have eliminated the swallow roost (Clark 1987, Kingsmill 1988).

Conclusions

North American wildlife festivals have been growing in popularity, and they have the potential to benefit local economies and promote nature conservation. Realization of these benefits requires careful planning and festival activity administration.

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5. COMPARISON OF RECREATION PARTICIPATION PATTERNS ACROSS DEMOGRAPHIC, REGION-OF-COUNTRY, AND NATURAL SETTING STRATA

This section focuses on the differences in recreation participation between demographic groups of the population, regions of the country, and natural settings using the seven activity groups described in chapter 4 as the framework. The general approach was to test for participation differences using standard statistical tests (see footnotes for tables). The first set of comparisons focuses on the role of demographic characteristics, including gender, race, age, education, income, urban residency, and immigrant status. The test statistic for comparisons across strata for these demographic groups is a chi-square goodness of fit test. The level of significance for the variables is denoted in the tables by asterisks. These asterisks are placed following the name of the demographic group.

A second comparison is for difference between our estimate of the percentage of population participating in activities for each of the demographic strata and a hypothesized percentage. The hypothesized percentage for each demographic strata is the percentage of the overall U.S. population which participates in the activities. These comparisons point out where a particular group participates more or less than the population at large. Significance levels are similarly denoted by asterisks for the four regions of the country—North, South, Rocky Mountains/Great Plains, and Pacific Coast.

The tables also show a ratio of percentage of people in each demographic strata who participate in an activity to percentage of population overall in each demographic strata. A ratio > 1.0 means that a higher proportion of people in a particular demographic group or region participate in the activities than is their proportion of the population. Percentages sum down to 100 within each activity group in the first two columns of numbers. The ratio of these numbers is shown in the third column of numbers. A similarly formatted table that compares regions of the country is presented later with the same pattern of statistical tests.

Participation Differences by Demographic Strata

The population and participation statistics examined below are for non-institutionalized people ages 16 years and older across the United States. The population-wide estimate of percent of people participating in the activities making up each activity group is shown at the top of last column of numbers in each table. See appendix table 6 for participation by demographic strata for the individual activities that make up each activity group. There are seven additional activity groups covering a number of other individual activities, in addition to the seven shown in this section.

Participating in activities at recreation or historic sites—Activities making up "visiting recreation or historic sites" include attending outdoor family gatherings, picnicking, visiting the beach, visiting historic or prehistoric sites, and camping. Overall, just over three-fourths of Americans participate in some form of recreation or historic site activity as defined by the activities listed above. Participation rates are significantly higher among non-Hispanic Whites, late

Table 5.1—Percentage of participants and population, ratios of percentages, and statistical test results for the activity group Visiting Recreation and Historic Sites

Demographic	Stratum	Percent of participants	Percent of Nation	Ratio (1)/(2)	Percent participating
All groups	All people ages 16 and older	100.0	100.0	1.00	77.8
Gender*	Male*	47.5	48.2	0.99	76.4
	Female**	52.5	51.8	1.01	79.0
Race/ethnicity*	White, non-Hispanic*	69.3	67.3	1.03	80.1
	Black, non-Hispanic*	12.4	13.9	0.89	68.6
	American Indian, non-Hispanic	0.7	0.8	0.88	83.6
	Asian or Pacific Islander, non-Hispanic***	3.7	3.6	1.03	81.5
	Hispanic*	13.9	14.4	0.97	74.8
Age*	16-24*	17.3	15.8	1.09	85.8
	25-34*	16.7	16.2	1.03	81.4
	35-44*	18.0	16.9	1.07	84.6
	45-54*	18.6	17.6	1.06	81.1
	55-64*	13.3	13.6	0.98	74.8
	65+*	16.0	20.0	0.80	61.9
Education*	Less than high school*	20.2	24.0	0.84	65.1
	High school graduate*	25.6	26.9	0.95	74.4
	Some college*	28.9	26.8	1.08	84.0
	College degree*	16.4	14.4	1.14	87.1
	Postgraduate degree*	9.1	7.9	1.15	88.6
Annual family income*	<$15,000*	12.9	16.5	0.78	62.8
	$15,000-$24,999*	10.2	11.4	0.89	71.8
	$25,000-$49,999	27.0	27.4	0.99	77.4
	$50,000-$74,999*	18.9	18.3	1.03	85.0
	$75,000-$99,999*	13.3	11.1	1.20	89.7
	$100,000-$149,999*	10.8	9.4	1.15	88.9
	$150,000+*	6.9	6.0	1.15	89.7
Place of residence**	Non-metro resident**	16.9	17.5	0.97	75.7
	Metro area resident	83.1	82.5	1.01	78.2
Residence status	Native born or U.S. citizen born abroad	96.3	96.7	1.00	77.6
	Foreign born	3.7	3.3	1.12	80.7

Note: Test statistic in the 'Demographic' column is chi-square goodness of fit which tests independence of the observed proportions in the categories of each demographic group. Test statistic in the 'Stratum' column are binomial tests of significance between the stratum participation rate ('Percent participating') and the participation rate for all people age 16 and older shown in line 1. Significance levels indicated by: *=.01, **=.05, ***=.10.

Percentages sum down to 100 within each demographic group in the first two columns; may not sum to 100 percent exactly due to rounding. In 4th column, compare stratum percent to the percent participating for all respondents in line 1. Sample sizes vary by activity because not all activities were asked in every NSRE version.

Source: USDA Forest Service (2009), Versions 1-4. N=13,022. Interview dates: 1/05 to 4/09.

Table 5.2—Percentage of participants and population, ratios of percentages, and statistical test results for the activity group Viewing and Photographing Nature

Demographic	Stratum	Percent of participants	Percent of Nation	Ratio (1)/(2)	Percent participating
All groups	All people ages 16 and older	100.0	100.0	1.00	74.3
Gender**	Male***	47.5	48.2	0.99	73.5
	Female	52.5	51.8	1.01	74.8
Race/ethnicity*	White, non-Hispanic*	71.1	67.3	1.06	78.3
	Black, non-Hispanic*	10.9	13.9	0.78	58.6
	American Indian, non-Hispanic	0.8	0.8	1.00	78.8
	Asian or Pacific Islander, non-Hispanic	3.6	3.6	1.00	72.8
	Hispanic*	13.7	14.4	0.95	70.5
Age*	16-24**	15.5	15.8	0.98	72.5
	25-34	16.2	16.2	1.00	74.0
	35-44*	18.2	16.9	1.08	79.6
	45-54*	18.9	17.6	1.07	79.8
	55-64	13.7	13.6	1.01	75.4
	65+*	17.5	20.0	0.88	65.3
Education*	Less than high school*	19.8	24.0	0.83	60.7
	High school graduate*	25.7	26.9	0.96	71.4
	Some college*	28.9	26.8	1.08	80.7
	College degree*	16.3	14.4	1.13	84.1
	Postgraduate degree*	9.2	7.9	1.16	86.6
Annual family income*	<$15,000*	13.4	16.5	0.81	62.6
	$15,000-$24,999*	10.3	11.4	0.90	68.4
	$25,000-$49,999*	27.5	27.4	1.00	76.1
	$50,000-$74,999*	19.6	18.3	1.07	82.4
	$75,000-$99,999*	12.2	11.1	1.10	83.0
	$100,000-$149,999*	10.3	9.4	1.10	85.2
	$150,000+*	6.7	6.0	1.12	86.8
Place of residence	Non-metro resident	17.7	17.5	1.01	75.0
	Metro area resident	82.3	82.5	1.00	74.1
Residence status*	Native born or U.S. citizen born abroad	97.0	96.7	1.00	74.5
	Foreign born*	3.0	3.3	0.91	68.6

Note: Test statistic in the 'Demographic' column is chi-square goodness of fit which tests independence of the observed proportions in the categories of each demographic group. Test statistic in the 'Stratum' column are binomial tests of significance between the stratum participation rate ('Percent participating') and the participation rate for all people age 16 and older shown in line 1. Significance levels indicated by: *=.01, **=.05, ***=.10.

Percentages sum down to 100 within each demographic group in the first two columns; may not sum to 100 percent exactly due to rounding. In 4th column, compare stratum percent to the percent participating for all respondents in line 1. Sample sizes vary by activity because not all activities were asked in every NSRE version.

Source: USDA Forest Service (2009), Versions 1-4. N=21,754. Interview dates: 1/05 to 4/09.

Table 5.3—Percentage of participants and population, ratios of percentages, and statistical test results for the activity group Backcountry Activities

Demographic	Stratum	Percent of participants	Percent of Nation	Ratio (1)/(2)	Percent participating
All groups	All people ages 16 and older	100.0	100.0	1.00	41.3
Gender*	Male*	56.9	48.2	1.18	48.5
	Female*	43.1	51.8	0.83	34.6
Race/ethnicity*	White, non-Hispanic*	74.1	67.3	1.10	45.5
	Black, non-Hispanic*	7.3	13.9	0.53	20.8
	American Indian, non-Hispanic*	1.0	0.8	1.25	60.4
	Asian or Pacific Islander, non-Hispanic*	2.9	3.6	0.81	34.2
	Hispanic	14.7	14.4	1.02	42.6
Age*	16-24*	17.7	15.8	1.12	46.5
	25-34*	18.1	16.2	1.12	46.9
	35-44*	20.2	16.9	1.20	50.9
	45-54	20.6	17.6	1.17	47.8
	55-64*	12.4	13.6	0.91	36.8
	65+*	11.0	20.0	0.55	22.4
Education*	Less than high school*	17.9	24.0	0.75	30.6
	High school graduate***	25.4	26.9	0.94	39.1
	Some college*	28.9	26.8	1.08	44.7
	College degree*	17.7	14.4	1.23	50.6
	Postgraduate degree*	10.2	7.9	1.29	53.2
Annual family income*	<$15,000*	11.2	16.5	0.68	30.0
	$15,000-$24,999*	8.1	11.4	0.71	31.4
	$25,000-$49,999	26.4	27.4	0.96	42.2
	$50,000-$74,999*	19.9	18.3	1.09	49.9
	$75,000-$99,999*	14.7	11.1	1.32	55.8
	$100,000-$149,999*	11.8	9.4	1.26	53.6
	$150,000+*	7.9	6.0	1.32	55.7
Place of residence*	Non-metro resident*	18.7	17.5	1.07	44.7
	Metro area resident	81.3	82.5	0.99	40.6
Residence status*	Native born or U.S. citizen born abroad	96.2	96.7	0.99	41.3
	Foreign born	3.8	3.3	1.15	43.8

Note: Test statistic in the 'Demographic' column is chi-square goodness of fit which tests independence of the observed proportions in the categories of each demographic group. Test statistic in the 'Stratum' column are binomial tests of significance between the stratum participation rate ('Percent participating') and the participation rate for all people age 16 and older shown in line 1. Significance levels indicated by: *=.01, **=.05, ***=.10.

Percentages sum down to 100 within each demographic group in the first two columns; may not sum to 100 percent exactly due to rounding. In 4th column, compare stratum percent to the percent participating for all respondents in line 1. Sample sizes vary by activity because not all activities were asked in every NSRE version.

Source: USDA Forest Service (2009), Versions 1-4. N=14,072. Interview dates: 1/05 to 4/09.

teenagers, middle-aged people, people with some college to completed advanced degrees, higher income people, and the foreign born (table 5.1). Less likely to participate in recreation or historic site activities are Blacks, people 65 or older, people with less than a college education, and people with the lowest incomes (under $25,000).

Viewing and photographing nature—Overall, almost three-fourths of Americans participate in one or more of the activities making up this activity group. People with higher education and incomes have higher participation rates than the general population. Non-Hispanic Whites, people ages 35 to 54, those having some college to post graduate education, and those earning more than $25,000 per year participate in nature viewing and photography at higher rates than others (table 5.2). Participation rises consistently with income. There is little difference in participation rates between males and females or between urban and rural residents. Less likely to participate are Black or Hispanic people, people ages 65 and older, people with a high school education or less, and people earning under $25,000 per year.

Participating in backcountry activities—Backcountry activities include backpacking, day hiking, horseback riding on trails, mountain climbing, and visiting a wilderness or other primitive area. Generally, more modest percentages of Americans participate in this group of activities—41 percent indicated participation in one or more of them in 2005-2009. Participation rates (percentage of the demographic group) are highest among males, Whites, Native Americans, people under 55 years of age, people well educated with higher incomes, and rural residents (table 5.3). Less likely to participate in these more physically demanding nature-based activities relative to their numbers are females, Blacks, Asians, people 55 or older, urban residents, and people with low incomes and education.

Participating in motorized outdoor activities—Motorized outdoor activities include motor boating, off-highway vehicle driving, snowmobiling, using personal watercraft, and waterskiing. Overall, about 36 percent of the U.S. population participated in one or more of this group of activities in 2005-2009. Participation rates are highest among males, non-Hispanic Whites, people under the age of 55 years (especially younger people), people with some college or a college degree, middle-to-high income people, and rural residents (table 5.4). Less likely to participate in these outdoor activities relative to their numbers are females, Blacks, Asians, people ages 55 and older, urban residents, and people with lower education and income.

Participating in hunting or fishing activities—Hunting and fishing outdoor activities include anadromous fishing (salt to fresh water migratory fish, e.g., salmon), coldwater fishing (e.g., trout), warmwater fishing, saltwater fishing, big game hunting, and small game hunting. Overall, about one-third of Americans reported participating in some form of hunting or fishing as defined above; 34 percent indicated participation in one or more activities in 2005-2009. Participation rates are higher among males, non-Hispanic Whites, late teenagers to middle-aged people, people with high school to some college education, middle-to-high income people, and rural residents (table 5.5). Less likely to participate in hunting and fishing are females, Blacks, Asians, people 55 or older, people with post graduate degrees, and the foreign born.

Participating in non-motorized boating activities—Non-motorized boating activities include canoeing, kayaking, rafting, rowing, and sailing. Generally, just over 20 percent of Americans participated in some form of non-motorized boating in 2005-2009. Participation rates are high relative to the general population for males, non-Hispanic Whites, people ages 16 to 44, people with some college to postgraduate education, and high-middle to high income people (table 5.6). Urban residents and native born people are just slightly more likely to participate. Less likely than the population to participate in non-motorized boating are females, Blacks or Hispanics, people 55 or older, the lower income groups, rural residents, and people with no college education.

Participating in snow skiing and boarding activities—Snow skiing and snowboarding activities include cross-country skiing, downhill skiing, and snowboarding. Across the demography of Americans generally, just over 11 percent participated in some form of snow skiing or boarding in 2005-2009. Participation rates are high relative to the general population for males, non-Hispanic Whites, people ages 16 to 34 (especially those under age 25), people with college to postgraduate education, people earning more than $75,000 annually, and urban residents (table 5.7). Less likely than the population to participate in snow skiing or boarding are females, Blacks, Native Americans, people over 55 years of age, those lacking college degrees, people with low incomes, and rural residents.

As the above analyses show, participation differs across the demography of the United States population. The following paper examines some of the reasons for differences in participation among different demographic groups.

Table 5.4—Percentage of participants and population, ratios of percentages, and statistical test results for the activity group Motorized Outdoor Activities

Demographic	Stratum	Percent of participants	Percent of Nation	Ratio (1)/(2)	Percent participating
All groups	All people ages 16 and older	100.0	100.0	1.00.	35.7
Gender*	Male*	56.4	48.2	1.17	41.4
	Female*	43.6	51.8	0.84	30.3
Race/ethnicity*	White, non-Hispanic*	76.8	67.3	1.14	41.2
	Black, non-Hispanic*	6.2	13.9	0.45	15.4
	American Indian, non-Hispanic	0.8	0.8	1.00	41.6
	Asian or Pacific Islander, non-Hispanic*	2.3	3.6	0.64	23.7
	Hispanic	13.9	14.4	0.97	35.2
Age*	16-24*	22.0	15.8	1.39	50.2
	25-34*	19.5	16.2	1.20	43.9
	35-44*	19.9	16.9	1.18	43.5
	45-54	18.3	17.6	1.04	37.0
	55-64*	10.6	13.6	0.78	27.3
	65+*	9.7	20.0	0.49	17.3
Education*	Less than high school*	19.6	24.0	0.82	29.0
	High school graduate***	25.7	26.9	0.96	34.2
	Some college*	29.9	26.8	1.12	40.0
	College degree*	16.7	14.4	1.16	41.3
	Postgraduate degree	8.0	7.9	1.01	36.3
Annual family income*	<$15,000*	8.5	16.5	0.52	19.3
	$15,000-$24,999*	7.0	11.4	0.61	22.8
	$25,000-$49,999	26.2	27.4	0.96	35.2
	$50,000-$74,999*	20.2	18.3	1.10	42.5
	$75,000-$99,999*	15.9	11.1	1.43	50.7
	$100,000-$149,999*	13.2	9.4	1.40	50.5
	$150,000+*	9.0	6.0	1.50	53.7
Place of residence*	Non-metro resident*	19.5	17.5	1.11	40.3
	Metro area resident**	80.5	82.5	0.98	34.7
Residence status*	Native born or U.S. citizen born abroad	97.1	96.7	1.00	36.0
	Foreign born*	2.9	3.3	0.88	29.6

Note: Test statistic in the 'Demographic' column is chi-square goodness of fit which tests independence of the observed proportions in the categories of each demographic group. Test statistic in the 'Stratum' column are binomial tests of significance between the stratum participation rate ('Percent participating') and the participation rate for all people age 16 and older shown in line 1. Significance levels indicated by: *=.01, **=.05, ***=.10.

Percentages sum down to 100 within each demographic group in the first two columns; may not sum to 100 percent exactly due to rounding. In 4th column, compare stratum percent to the percent participating for all respondents in line 1. Sample sizes vary by activity because not all activities were asked in every NSRE version.

Source: USDA Forest Service (2009), Versions 1-4. N=14,071. Interview dates: 1/05 to 4/09.

Table 5.5—Percentage of participants and population, ratios of percentages, and statistical test results for the activity group Hunting and Fishing

Demographic	Stratum	Percent of participants	Percent of Nation	Ratio (1)/(2)	Percent participating
All groups	All people ages 16 and older	100.0	100.0	1.00	34.0
Gender*	Male*	65.3	48.2	1.35	46.1
	Female*	34.7	51.8	0.67	22.8
Race/ethnicity*	White, non-Hispanic*	75.2	67.3	1.12	38.1
	Black, non-Hispanic*	8.3	13.9	0.60	20.5
	American Indian, non-Hispanic	0.8	0.8	1.00	37.5
	Asian or Pacific Islander, non-Hispanic*	2.0	3.6	0.56	19.0
	Hispanic**	13.6	14.4	0.94	32.3
Age*	16-24*	18.8	15.8	1.19	40.7
	25-34*	19.1	16.2	1.18	40.3
	35-44*	19.8	16.9	1.17	40.2
	45-54*	19.4	17.6	1.10	37.9
	55-64*	11.5	13.6	0.85	29.0
	65+*	11.5	20.0	0.58	19.6
Education*	Less than high school*	22.3	24.0	0.93	31.6
	High school graduate*	29.0	26.9	1.08	36.6
	Some college**	27.9	26.8	1.04	35.4
	College degree	14.3	14.4	0.99	33.8
	Postgraduate degree*	6.5	7.9	0.82	27.8
Annual family income*	<$15,000*	11.4	16.5	0.69	25.0
	$15,000-$24,999*	9.0	11.4	0.79	28.2
	$25,000-$49,999*	27.9	27.4	1.02	36.7
	$50,000-$74,999*	20.1	18.3	1.10	39.5
	$75,000-$99,999*	13.5	11.1	1.22	43.9
	$100,000-$149,999*	11.1	9.4	1.18	42.7
	$150,000+*	7.0	6.0	1.17	41.8
Place of residence*	Non-metro resident*	21.9	17.5	1.25	42.5
	Metro area resident*	78.1	82.5	0.95	32.2
Residence status*	Native born or U.S. citizen born abroad	98.0	96.7	1.01	34.4
	Foreign born*	2.0	3.3	0.61	21.1

Note: Test statistic in the 'Demographic' column is chi-square goodness of fit which tests independence of the observed proportions in the categories of each demographic group. Test statistic in the 'Stratum' column are binomial tests of significance between the stratum participation rate ('Percent participating') and the participation rate for all people age 16 and older shown in line 1. Significance levels indicated by: *=.01, **=.05, ***=.10.

Percentages sum down to 100 within each demographic group in the first two columns; may not sum to 100 percent exactly due to rounding. In 4th column, compare stratum percent to the percent participating for all respondents in line 1. Sample sizes vary by activity because not all activities were asked in every NSRE version.

Source: USDA Forest Service (2009), Versions 1-4. N=24,073. Interview dates: 1/05 to 4/09.

Table 5.6—Percentage of participants and population, ratios of percentages, and statistical test results for the activity group Non-motorized Boating

Demographic	Stratum	Percent of participants	Percent of Nation	Ratio (1)/(2)	Percent participating
All groups	All people ages 16 and older	100.0	100.0	1.00	20.8
Gender*	Male*	53.1	48.2	1.10	22.9
	Female*	46.9	51.8	0.91	18.8
Race/ethnicity*	White, non-Hispanic*	78.0	67.3	1.16	24.1
	Black, non-Hispanic*	4.9	13.9	0.35	7.3
	American Indian, non-Hispanic	0.8	0.8	1.00	21.1
	Asian or Pacific Islander, non-Hispanic	3.6	3.6	1.00	20.8
	Hispanic*	12.8	14.4	0.89	18.5
Age*	16-24*	25.6	15.8	1.62	33.8
	25-34*	19.9	16.2	1.23	25.6
	35-44*	20.3	16.9	1.20	25.1
	45-54	18.2	17.6	1.03	21.6
	55-64*	9.7	13.6	0.71	14.9
	65+*	6.3	20.0	0.32	6.5
Education*	Less than high school*	16.4	24.0	0.68	14.2
	High school graduate*	21.2	26.9	0.79	16.4
	Some college*	28.7	26.8	1.07	22.3
	College degree*	20.9	14.4	1.45	30.3
	Postgraduate degree*	12.7	7.9	1.61	33.6
Annual family income*	<$15,000*	8.7	16.5	0.53	11.7
	$15,000-$24,999*	7.2	11.4	0.63	13.8
	$25,000-$49,999*	23.2	27.4	0.85	18.7
	$50,000-$74,999*	21.2	18.3	1.16	25.6
	$75,000-$99,999*	15.7	11.1	1.41	31.1
	$100,000-$149,999*	13.3	9.4	1.41	31.4
	$150,000+*	10.7	6.0	1.78	39.4
Place of residence*	Non-metro resident*	15.3	17.5	0.87	18.1
	Metro area resident**	84.7	82.5	1.03	21.4
Residence status*	Native born or U.S. citizen born abroad	97.9	96.7	1.01	21.0
	Foreign born*	2.1	3.3	0.64	13.6

Note: Test statistic in the 'Demographic' column is chi-square goodness of fit which tests independence of the observed proportions in the categories of each demographic group. Test statistic in the 'Stratum' column are binomial tests of significance between the stratum participation rate ('Percent participating') and the participation rate for all people age 16 and older shown in line 1. Significance levels indicated by: *=.01, **=.05, ***=.10.

Percentages sum down to 100 within each demographic group in the first two columns; may not sum to 100 percent exactly due to rounding. In 4th column, compare stratum percent to the percent participating for all respondents in line 1. Sample sizes vary by activity because not all activities were asked in every NSRE version.

Source: USDA Forest Service (2009), Versions 1-4. N=24,073. Interview dates: 1/05 to 4/09.

Table 5.7—Percentage of participants and population, ratios of percentages, and statistical test results for the activity group Snow Skiing or Boarding

Demographic	Stratum	Percent of participants	Percent of Nation	Ratio (1)/(2)	Percent participating
All groups	All people ages 16 and older	100.0	100.0	1.00	11.2
Gender*	Male*	63.0	48.2	1.31	14.5
	Female*	37.0	51.8	0.71	8.1
Race/ethnicity*	White, non-Hispanic*	75.9	67.3	1.13	12.7
	Black, non-Hispanic*	5.5	13.9	0.40	4.2
	American Indian, non-Hispanic	0.4	0.8	0.50	6.5
	Asian or Pacific Islander, non-Hispanic	3.6	3.6	1.00	11.3
	Hispanic	14.6	14.4	1.01	11.5
Age*	16-24*	38.8	15.8	2.46	27.6
	25-34*	18.6	16.2	1.15	13.0
	35-44	17.7	16.9	1.05	12.1
	45-54	16.5	17.6	0.94	10.4
	55-64*	5.7	13.6	0.42	4.6
	65+*	2.7	20.0	0.14	1.5
Education*	Less than high school**	21.3	24.0	0.89	9.9
	High school graduate*	19.4	26.9	0.72	8.1
	Some college***	24.6	26.8	0.92	10.3
	College degree*	21.5	14.4	1.49	16.7
	Postgraduate degree*	13.2	7.9	1.67	18.7
Annual family income*	<$15,000*	9.3	16.5	0.56	6.6
	$15,000-$24,999*	5.7	11.4	0.50	5.8
	$25,000-$49,999*	18.7	27.4	0.68	7.9
	$50,000-$74,999***	19.0	18.3	1.04	12.5
	$75,000-$99,999*	14.5	11.1	1.31	14.5
	$100,000-$149,999*	18.0	9.4	1.91	21.5
	$150,000+*	14.8	6.0	2.47	27.6
Place of residence*	Non-metro resident*	13.0	17.5	0.74	8.4
	Metro area resident**	87.0	82.5	1.05	11.8
Residence status	Native born or U.S. citizen born abroad	96.3	96.7	1.00	11.2
	Foreign born	3.7	3.3	1.12	11.7

Note: Test statistic in the 'Demographic' column is chi-square goodness of fit which tests independence of the observed proportions in the categories of each demographic group. Test statistic in the 'Stratum' column are binomial tests of significance between the stratum participation rate ('Percent participating') and the participation rate for all people age 16 and older shown in line 1. Significance levels indicated by: *=.01, **=.05, ***=.10.

Percentages sum down to 100 within each demographic group in the first two columns; may not sum to 100 percent exactly due to rounding. In 4th column, compare stratum percent to the percent participating for all respondents in line 1. Sample sizes vary by activity because not all activities were asked in every NSRE version.

Source: USDA Forest Service (2009), Versions 1-4. N=14,070. Interview dates: 1/05 to 4/09.

Generally, across the seven activity groups, we found that participation rates for outdoor activities are visiting recreation significantly higher among males, non-Hispanic Whites, young to middle-aged people, people with college education, middle to higher income people, and rural residents.

Invited Paper

A National Study of Constraints to Participation in Outdoor Recreational Activities

by Gary T. Green, J.M. Bowker, Xiongfei Wang, H. Ken Cordell, and Cassandra Y. Johnson[9]

Gary T. Green

Introduction

A number of studies have shown that certain groups in American society (e.g., Blacks, women, urban dwellers) can encounter barriers or perceived constraints to participation in outdoor recreation. Early research on constraints focused on racial or gender differences. More recent research has examined the effects of income, education, age, and place of residence (Arnold and Shinew 1998). However, despite the growth of research on constraints, few studies have examined how social factors (e.g., access, services, health) may constrain participation in outdoor recreation.

This paper extends research of an earlier study (Johnson and others 2001). While this study includes traditionally marginalized groups such as Blacks, women, and rural dwellers, it broadens the focus to include immigrant, Hispanic, Asian/Pacific Islander, low-income and less-educated populations. It was hypothesized that members of these groups were more likely than the rest of society to perceive their participation in outdoor recreation as being constrained. Eighteen specific constraints, grouped into three general categories—personal, structural, and psychological—were examined. This study focuses on perceived constraints to participation in the respondent's favorite outdoor recreation activities.

Approach

Data for this study came from the National Survey on Recreation and the Environment (NSRE). The constraints questions to NSRE respondents were preceded by questions about their favorite outdoor recreation activities. Respondents were read a list of reasons people might not participate in favorite outdoor activities and asked for each reason if it had kept them from participating as often as they wanted.

To statistically test whether respondents in each of the minority groups felt more (or less) constrained in pursuit of their favorite outdoor activity, logistic regression equations were developed for each of the constraints. Included in each of these models were age, household income, immigrant status, ethnicity (e.g., Black, Hispanic, Asian/Pacific Islander), gender, region (e.g., South, Central, West), education (e.g., less than high school, bachelor's degree or more), residency (e.g., urban), and setting for favorite activity (e.g., winter, water, dispersed). A statistically significant positive (negative) coefficient on any of these variables indicated that the probability the respective group felt constrained in their participation was higher than (less than) that of the rest of society.

Results

Analysis revealed that all eighteen constraint models were statistically significant ($p < 0.05$) based on likelihood ratio tests (table 5.8). Results for each population classification variable are presented below.

Age—Age was a significant factor in nine of the constraints, but often in opposite directions. Increasing age reduced some constraints (e.g., time and money), while increasing age amplified other constraints (e.g., physical limitations, safety, and health).

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Gender—Generally, women felt more constrained from participating in their favorite recreation activities than men across all possible reasons. The exception was time constraints, where men reported feeling more constrained than women.

Immigrants—Except for not understanding the language, immigrants felt less constrained than people born in the United States for the following reasons: "don't have enough money," "inadequate transportation and information," "crowded activity areas," "safety and pollution problems," "outdoor pests," "feel unwelcome or uncomfortable," and "household member has disability." Stodolska (1998) found that immigrants often experienced constraints unlike the general populace (e.g., language barriers) and that many constraints were less important to immigrants because they normally worked more and consumed less of their income, while often confining their leisure engagements to their ethnic communities.

Income—Results indicated that lower income households felt more constrained for the following reasons: "don't have enough money," "health reasons," "inadequate transportation," "no one to do activities with," "feel afraid in forests," "pollution problems," "outdoor pests," "feel unwelcome or uncomfortable," "can't understand the language," "physically limiting condition," and "household member has a disability." These results support previous studies' findings that people with lower incomes feel more constrained than others.

Education—People with less than a high school education felt less time constrained than people with a high school education, and less constrained by inadequate information. The fact that inadequate information was not perceived as a constraint by this group could indicate this group has found a way to circumnavigate this problem, or that they are using facilities and resources close to home of which they are already fully aware.

People with less than a high school education felt more constrained than people who completed high school from participating in their favorite recreation activities because of "inadequate transportation and information," "health," "lack of money," "feel afraid in forests," "feel unwelcome or uncomfortable," "can't understand the language," "physically limiting condition," and "household member has a disability." In general, people with low education and income levels usually have low participation rates and often encounter multiple barriers to participation.

Blacks—Blacks felt more hindered from participating in their favorite recreation activities than Whites for the "all of the reasons" except "having no one with whom to do activities."

Asian/Pacific Islanders (API)—Crowded activity areas was the only factor where API felt less constrained than Whites from participating in their favorite recreation activities. API felt more constrained than Whites for these reasons: "don't have enough time because of my job," "inadequate transportation," "facilities and information," "safety problems," "feel unwelcome or uncomfortable," and "feel afraid in forests."

Hispanics—The results indicated that Hispanics felt more constrained from participating in their favorite recreation activities than Whites for the following reasons: "not enough time because of my job," "safety problems," "can't understand the language," and "feel afraid in forests." It is important to note this study's findings for API and Hispanics because previous constraints research has focused on Blacks in comparison to Whites. In comparing the results of Blacks, API, and Hispanics, considerable overlap appears to exist in their perceived constraints to recreation.

Rural residence—Results by urban or rural residence revealed that urban dwellers felt less constrained by reasons of "don't have enough time because of my job and family" and "outdoor pest" than rural dwellers. Urban dwellers were more likely to feel constrained by "inadequate transport," "crowded areas," and "safety problems" than were rural dwellers.

Regions—In eight cases (e.g., "don't have enough time," "health reasons," "no one to do activities with," "safety problems," "inadequate facilities," "outdoor pests," "can't understand the language," and "feel afraid in a forest"), Southerners felt more constrained from participating in their favorite recreation activities than Northerners felt. However, in the case of inadequate transportation, Southerners felt less constrained than Northerners. Conversely, people who resided in the Central region felt more constrained than Northerners for reasons of "don't have enough money" and "crowded activity areas." They felt less constrained by reasons of "don't have enough time because of family," "poorly maintained activities," "pollution problems," and "outdoor pests." Westerners felt more constrained by "health reasons" and "physically limiting condition" than Northerners. Westerners felt less constrained than Northerners for reasons of "outdoor pests" and "can't understand the language."

Table 5.8—Summary of significant likelihood ratio test results for perceived constraints to favorite outdoor recreation activities

	Population and setting factors															
Constraints	Age	Gender	Immigration	Income	Low education	B.S./ Grad Education	Black	Asian/ Pacific Islander	Hispanic	Urban	South	Central	West	Winter	Water	Dispersed
Personal																
Not enough time because of work and long hours	-X	X			-X			X	X	-X					X	X
Not enough time because of family, etc	-X	-X			-X					-X	X	-X		-X		
Personal health reasons	X	-X		-X	X	-X					X		X			
I have a physically limiting condition without equipment	X	-X		-X	X	-X							X		X	
A member of my household has a disability	X	-X	-X	-X	X	-X	X									
Not enough money	-X	-X	-X	-X	X	-X						X				
Inadequate transportation	-X	-X	-X	-X	X	-X	X	X		X	-X					
No one to do activities with		-X		-X			-X		-X		X				-X	
Structural																
Poorly maintained activity areas	-X					-X	X					-X				
Inadequate facilities in activity areas	-X	-X				-X	X	X			X					
Crowded activity areas	-X		-X					-X		X		X				
Pollution problems in activity areas	-X		-X	-X			X					-X				X

(continued)

Appendix table 5.8 (continued)

	Population and setting factors															
Constraints	Age	Gender	Immigration	Income	Low education	B.S./ Grad Education	Black	Asian/ Pacific Islander	Hispanic	Urban	South	Central	West	Winter	Water	Dispersed
Inadequate information on places to do activities	-X	-X	-X		-X		X	X							-X	
I can't understand language on signs or spoken at many outdoor recreation areas	X		X	-X			X		X		X		-X			
Psychological																
I am uncomfortable b/c sometimes I feel afraid in forest or other natural settings	X	-X		-X	X		X	X	X		X					
Personal safety problems in activity areas	X	-X	-X				X	X	X	X	X					
I feel unwelcome/ uncomfortable at many outdoor recreation areas b/c of who I am			-X	-X	X		X	X								
Outdoor pests, e.g., mosquitos, chiggers, or ticks		-X	-X	-X			X			-X	X	-X	-X			

Note: X = significant ($p \leq .05$).

Source: USDA Forest Service (2009).

Activity settings—In general, the activity setting category (e.g., developed, winter, water, dispersed) had little influence on a respondent's perceived constraints. Overall, regardless of setting, the most prevalent constraints to participants were: "not enough time because of my job," "inadequate transportation," "safety problems," "physically limiting condition," "outdoor pests," "can't understand the language," and "feel afraid of a forest." The least mentioned constraints were "poorly maintained areas" and "crowded activity areas." Overall, results supported the hypotheses that minorities, women, rural residents, lower income people, and less educated people had higher probabilities of feeling constrained in their participation. Contrary to expectations, results also indicated that immigrants perceived fewer constraints, except for language, than people born in the United States.

Discussion

Public lands, natural resources, and recreational facilities are there, in part, for the enjoyment, benefit, and recreational participation of all. However, this research has shown that some segments of our society feel more constrained than others from participating in outdoor recreation. Past images of our parks have featured a particular genre of signage, pictures, displays, facilities, programs, services offered, management personnel, and languages spoken. These past images may play a large role in how people today perceive their freedom or feeling of welcome to use those parks. This historic context might partly explain why immigrants, who are often new to this country, perceive fewer constraints to outdoor recreation.

End Invited Paper

Invited Paper

Deborah Chavez

Latinos and Outdoor Recreation

by Deborah J. Chavez[10]

The research reported here includes a number of studies conducted in southern California. It was aimed at better understanding the recreation needs and desires of Latino populations. Generally, the findings indicate that Latinos have many of the same recreation needs as other groups, such as places to recreate and reasonable accommodations. But it also indicates they have some unique preferences.

The ethnic and racial profile of the United States is undergoing a major shift. In the decades ahead, people of color will constitute a majority of the population (Shinew and others 2006). Over the last 100 years, few racial or ethnic groups have had as great an impact on the demography of the United States as Latinos (Saenz 2004). Note that "Hispanic" is a term developed by the U.S. Census Bureau, while "Latino" is the term used for this paper, unless referring to Census data. Latinos are measured by the U.S. Census as having Hispanic origins (including Mexican, Central and South American, Puerto Rican, or Cuban heritages). Latinos may be White, African American, or of other races.

The number of Latinos in the United States more than doubled between 1980 and 2000, accounting for 40 percent of the growth in the country's population during that period (Saenz 2004). While in 1900 there were approximately 500,000 Latinos in the United States, today there are more than 35 million. In 2000, people of Mexican origin were the largest Hispanic group in the United States, followed by Puerto Rican, Cuban, Central American,

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South American, and other origins (U.S. Department of Commerce 2004). The same Census data indicated that the median age of Hispanics to be 26 years, that 75 percent of Hispanics spoke a language other than English at home, and that 81 percent resided in family households. It is important to note that there are vast within-group differences and the use of "Latino" in this document is not meant to ignore those differences.

When it comes to outdoor recreation sites, there are many influences from Latinos. Several studies have indicated that Latino groups may have different use patterns and expectations about recreation areas, different constraints for participation, and different site development preferences than other groups. Development or changes at resource sites to suit Latino visitors can also serve other groups to those places. For example, Chavez (2002) found that Korean American visitors began frequenting an area developed for use by Latinos.

The information provided in this article is based on one qualitative study (Chavez 2003) and 17 quantitative research projects over a 15-year period conducted mostly in southern California. Owing to this emphasis on southern California, the applicability of these studies in other regions may be limited. Some of this research was previously reported in Chavez (2001) and in Chavez and Olson (2009).

Data collection from Latinos can differ from other groups. For our studies, bilingual field teams collected data from recreation visitors at day use sites on summer weekends. Field team members approached a group of visitors, spent some time getting acquainted, then described the purpose of the study and requested their participation. Often field team members became members of the "family" and shared food or non-alcoholic beverages with the visitors before data collection could take place. We have found that Latinos value outdoor recreation opportunities and appreciate efforts to serve their needs. Most are quite willing to share their opinions about site management once connections between the interviewers and visitors have been made.

Use Patterns and Expectations about Outdoor Recreation Areas

There are three consistent results across the studies related to Latino use patterns and Latino expectations about outdoor recreation areas:

(1) Due to cultural and social factors, Latinos may use recreational sites for different reasons than Whites. Many Latinos have reported they have one day off from work per week, and as a result are primarily day-use visitors (Chavez 2003). In addition, some Latinos feel that local city parks are unsafe, and thus prefer to visit more distant recreation sites, such as national parks and forests (Chavez 2003). These findings may differ from the usual reasons to go to natural resource sites (e.g., get away from it all).

(2) For Latinos, there is a strong emphasis on spending time with family (Chavez 2001, 2003; Chavez and Olson 2009). Often, "family" for Latinos includes the nuclear family (e.g., father, mother, and children) and extended family members (e.g., aunts, uncles, grandparents, etc.). This can result in larger sized groups at outdoor recreation sites. Our studies indicate that the average size of a Latino group is 8 to 15, but that it can number > 100 (Chavez 2001; Chavez and Olson 2009). A survey of Mexican-Americans at national forests sites in southern California showed that they consider leisure activity important and think it contributes to family bonding (Chavez 2003). The Latino visitors responding to this survey placed particular importance on recreational activities in natural areas, citing a sense of place that helps them feel safe. Several also said that these natural places remind them of their homeland and represent an opportunity to pass on their love of the land to their children. In addition, we have found evidence of repeat use of sites over time by Latino families and plans to return multiple times per year (Chavez 2001, Chavez and Olson 2009).

(3) Latinos approach "picnicking" differently from other groups. Rather than an opportunity to have a prepared meal, for Latinos, picnicking is often an all-day activity. They may cook several meals onsite, often from scratch. They spend 6 to 10 hours with other family members, often using much of that time to play with children. Consequently, there is little turnover at some sites. We have found that although we may be conducting studies at picnic areas, Latinos might indicate their primary activity is "family gathering" instead of "picnicking" (Chavez and Olson 2009).

Constraints to Participation

There are two consistent results across our studies related to constraints to outdoor recreation participation by Latinos:

(1) Research on Latino visitors to southern California national forest day use areas indicated a large percentage of Spanish speakers and Spanish readers (Chavez 2001). The same studies found a preference for getting

information about these areas by word of mouth, particularly from family and friends. It was found that once on site, visitors preferred to receive information through a brochure at the site entrance, signs along the road, and notes on bulletin boards. Preferred was information that is site-specific. For example, at one open space (or dispersed use area), preferences were for information on streamside areas, things to see and do, rules and regulations, and rare types of plants and animals. At a picnic site, the preferences were for the best times to visit the area to avoid crowds, safety in the area, picnic/barbecue area, and camping in the area.

(2) In a study of Los Angeles County residents (Tierney and others 1998), we learned that some of the constraints most strongly experienced by Latinos who found time to recreate in outdoor areas (such as forests) included being uncomfortable in the outdoors, finding travel and recreation in natural areas too much trouble, and being discriminated against while traveling to or when recreating in natural areas. Respondents also reported that they encountered too few Latino employees at the national forest. The perception of discrimination has a powerful effect on people. In one study at two outdoor recreation areas in southern California, we found that Latinos perceived much more discrimination than other racial and ethnic groups (Chavez 1993). Among all respondents, about 13 percent believed they had been victims of discrimination, whereas 32 percent of Latinos felt they had been discriminated against.

Site Development

There is one consistent result across the studies related to site development. These studies indicated a general preference for development of sites, even those managed as dispersed use sites (Chavez 2001, 2003; Chavez and Olson 2009). Specific site preferences for amenities and facilities were also found (Chavez 2001; Chavez and Olson 2009). For example, at one site the strongest preferences expressed by Latinos were for trash cans, water faucets, cooking grills, picnic tables, and restrooms (Chavez 2002). This was a function of the site being a picnic area. At another site, which is managed for dispersed or open space use, the preferences were for trash cans, telephones, water faucets, and parking areas (Chavez 2001).

Conclusions

Meeting the needs of our changing population likely will require changes in recreation management on national forests and other lands. Latinos have many of the same recreation needs as other groups, such as needing places to recreate and reasonable accommodations. But Latinos also have some unique preferences. Understanding changing use patterns is a critical challenge for managers as they work to keep recreation sites appealing and useful to the Latino populations of the United States.

The findings reported here from studies conducted in southern California over 15 years suggest how managers in southern California might go about serving the needs and desires of Latino populations. Many Latino respondents reported they have one day off from work per week, thus they are primarily day-use visitors (Chavez 2003). This knowledge is critical in determining when use will be heaviest and what sites may require concentration of resources. Managers also should consider the strong desire for family time and family bonding when Latinos are recreating outdoors and might offer programming to suit that desire. It is also important to consider what constitutes "family" for Latinos, which often means larger groups on site.

Communication is a key to serving Latinos at outdoor recreation sites. Translating materials into Spanish is suggested, and even better would be to provide materials that have been back-translated (where a message is translated to Spanish and then translated back to English by a second translator). This way, the two English statements can be compared (Marin and Marin 1991) and are culturally correct and appropriate. It appears that traditional use of brochures at the site entrance, signs along the road, and notes on bulletin boards are acceptable. Alternate communication strategies, such as onsite bilingual hosts and interpretations, also can be helpful. When considering the types on information to provide, managers will need to survey their visitors.

Meeting the development needs of Latino visitors may require renovation or equipment upgrades, such as installing larger picnic tables, placing groups of tables together, and providing several trash receptacles to accommodate larger visitor groups. In places where people are visiting, but where there are no picnic tables, trash cans could be placed closer to areas where Latinos reported they most commonly recreate, such as near streambeds. Some consideration should be made for the longer period Latinos tend to stay at sites, perhaps by having services/facilities that fit their preferences (such as group play areas that could be used for volleyball or soccer, drinking water, and toilets).

The level of development depends on visitor desires and upon the management goals of an area. For example, picnic areas can be highly developed since they serve a

particular need, but managers will probably exercise more caution for development of dispersed sites. At dispersed sites, managers might want to consider providing portable restrooms and trash dumpsters.

End Invited Paper

Participation Differences by Region

Results from comparison of percentages of participants with percentages of population across the seven activity groups and among regions of the country are shown in table 5.9. The data source is the NSRE. Each activity group is listed in turn in column one. Regions are listed one after the other for each activity group in column two. Regions and inclusive States include:

North: Connecticut, Delaware, District of Columbia, Illinois, Indiana, Iowa, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, West Virginia, Wisconsin

South: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia

Rocky Mountains: Arizona, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, South Dakota, Utah, Wyoming

Pacific Coast: Alaska, California, Hawaii, Oregon, Washington

The regional distribution of population (column 4) and observations about regional differences are shown in table 5.9. Each of the seven activity groups is covered. An asterisk in the Activity Group column of this table indicates the chi-square goodness of fit statistic, which tests independence of the observed proportions in the four regions from the proportions in the nation, as a whole. The asterisks in the RPA Region column are binomial tests of significance between the region participation rate ("Percent participating") and the participation rate for all people ages 16 and older. This signifies that the participation rate for the region for the activity group listed is significantly different from that of the nation as a whole.

Visiting recreation and historic sites—Generally, regional differences are modest with participation in activities at recreation and historic sites slightly greater in the North Region and slightly lower in the South.

Viewing and photographing nature—Participation in this activity group also shows modest regional differences. Participation rates are a few percentage points higher in the two western regions and a few points lower in the South.

Backcountry activities—The participation rate in backcountry activities is substantially higher in the Rocky Mountain and Pacific Coast Regions than the nation overall, and especially higher than in the South.

Motorized activities—Participation in motorized activities is higher in the Rocky Mountain Region than in any other of the three regions. The Rocky Mountains is the only region more than a few percentage points different from the national participation rate.

Hunting and fishing—Participation in hunting and fishing activities is highest in the South and Rocky Mountain Regions, which are both higher than the national rate, and lowest in the Pacific Coast Region.

Non-motorized boating activities—Participation in non-motor boating is disproportionately higher in the North and Pacific Coast Regions, but lower in the South.

Snow skiing and boarding—Participation in snow skiing is highest in the Rocky Mountain and Pacific Coast Regions, is next highest in the North, and by far is the lowest in the South. All but the South are above the national rate.

Across the seven activity groups, one apparent determining factor of participation rate is availability of sites and areas for outdoor activities. Activities requiring large natural areas are much more abundant in the western regions. Areas with snowfall sufficient for skiing occur in the western mountains and in the northern states. Hunting and fishing occur in all regions, but they are very much traditional activities for the forests and waters of the South and thus have relatively high participation rates in that region. Generally, all regions have their own species of birds, wildlife and trees to support viewing and photographing activities.

Table 5.9—Percentage of participants and population, ratios of percentages, and statistical test results for seven activity groups and four regions

Activity group	RPA region	Percent of participants	Percent of population	Ratio (1)/(2)	Percent participating
Visiting recreation/ historic sites*	North***	39.8	38.6	1.03	78.8
	South*	31.9	33.6	0.95	74.5
	Rocky Mountains***	9.4	9.4	1.00	79.9
	Pacific Coast*	18.9	18.4	1.03	80.4
Viewing/photographing nature*	North	38.6	38.6	1.00	74.8
	South*	32.7	33.6	0.97	71.6
	Rocky Mountains*	9.8	9.4	1.04	77.0
	Pacific Coast*	18.9	18.4	1.03	76.7
Backcountry activities*	North***	38.2	38.6	0.99	40.2
	South*	27.6	33.6	0.82	34.4
	Rocky Mountains*	12.4	9.4	1.32	54.7
	Pacific Coast*	21.8	18.4	1.18	49.6
Motorized activities*	North***	37.9	38.6	0.98	34.4
	South	32.9	33.6	0.98	35.4
	Rocky Mountains*	10.8	9.4	1.15	41.0
	Pacific Coast	18.4	18.4	1.00	36.1
Hunting and fishing*	North*	37.0	38.6	0.96	32.6
	South*	37.3	33.6	1.11	37.8
	Rocky Mountains*	10.5	9.4	1.12	37.7
	Pacific Coast*	15.2	18.4	0.83	28.0
Non-motor boating*	North*	42.1	38.6	1.09	22.7
	South*	28.7	33.6	0.85	17.7
	Rocky Mountains	9.4	9.4	1.00	20.6
	Pacific Coast*	19.9	18.4	1.08	22.4
Snow skiing and boarding*	North*	46.8	38.6	1.21	13.4
	South*	15.4	33.6	0.46	5.2
	Rocky Mountains*	12.5	9.4	1.33	15.0
	Pacific Coast*	25.3	18.4	1.38	15.6

Note: Test statistic in the 'Demographic' column is chi-square goodness of fit which tests independence of the observed proportions in the categories of each demographic group. Test statistic in the 'Stratum' column are binomial tests of significance between the stratum participation rate ('Percent participating') and the participation rate for all people age 16 and older shown in line 1. Significance levels indicated by: *=.01, **=.05, ***=.10.

Percentages sum down to 100 within each activity group in the first two columns; may not sum to 100 percent exactly due to rounding. Activity groups consist of the following activities: Visiting recreation and historic sites: family gatherings, picnicking, visiting the beach, visiting historic or prehistoric sites, and camping; Viewing/photographing nature: view/photograph birds, natural scenery, other wildlife (besides birds), and wildflowers, trees, etc.; Backcountry activities: backpacking, day hiking, horseback riding on trails, mountain climbing, and visiting a wilderness or primitive area; Motorized activities: motorboating, off-highway vehicle driving, snowmobiling, using personal watercraft, and waterskiing; Hunting and fishing: (anadromous, coldwater, warmwater, and saltwater fishing), (big game, small game, and migratory bird hunting); Non-motor boating: canoeing, kayaking, rafting, rowing, and sailing; Snow skiing and boarding: cross-country skiing, downhill skiing, and snowboarding.

Source: USDA Forest Service (2009), Versions 1-4. N=24,073. Interview dates: 1/05 to 4/09.

Invited Paper

Examining Motivations for Outdoor Recreational Activity Across Multiple Setting Choices: A National Study

by Gary T. Green, Rudy M. Schuster, David A. Graefe, and H. Ken Cordell[11]

Gary Green

Introduction

In outdoor recreation, participants engage in a particular recreation activity in an outdoor setting of choice for a desired experience. Desired experiences, and the benefits from them, are fundamentally the motivations to participate in an activity in a particular setting. This study was undertaken to examine potential differences in motivations to participate in selected outdoor activities across various settings. For example, does a hiker in a desert have a different motivation than a hiker in a forest, or do hikers in general have similar motivations regardless of setting? This study was designed to identify motivations for activities in certain settings, and to identify if any activities are dependent upon setting. Unlike previous research, this paper specifically examines changes in motivation across physical settings by employing an alternative method of conceptualizing the term setting. Settings were defined by the physical attributes of the location where the activity took place. For example, an individual may walk in a forest, desert, or coastal waterway setting.

Methods

The national data for this research were obtained through the NSRE (described earlier). The NSRE questions used covered specific outdoor recreational activities, settings, and motivations. Respondents were asked to identify their main outdoor recreation activity and to then choose the settings where their main activity had taken place. The respondents were also asked to rate importance of a list of 13 motivations for choosing a particular setting and activity combination. The focus of this paper is on four main activities, settings for each activity, and importance of motivations for choosing the combination of setting and activity (table 5.10). In addition to the recreation activity questions, demographic data were obtained.

Thirteen motivations were tested across seven settings (coastal waters, inland freshwater, forest, open grassland, urban park, desert, and mountain) to see if motivations for choosing settings were different for each of four activities. The four activities included hiking, sightseeing, camping in developed campgrounds, and walking (table 5.11; only the walking table is shown in this report). The Analysis of Variance (ANOVA) was run separately for each main activity to identify whether the importance of each motivation was significantly different in choosing among the seven settings. Hiking, sightseeing, camping in developed campgrounds, and walking were the selected activities because they could occur in a variety of outdoor settings. Where appropriate, post-hoc tests were conducted to identify which of the 13 motivations were significantly different across the seven settings for each activity.

Results

Hiking and camping—Significant differences were found between importance scores of two motivations for hiking. These motivations were to be near my home and for physical exercise or training. The most popular motivations for hiking, regardless of setting, were to be outdoors, experience nature, and get away from the demands of life. Like hiking, importance scores for motivations for camping differed across settings, but only for the motivation to experience nature. To experience nature was the fourth most popular motivation for camping in developed areas. The first three most popular motivations were to get away from the demands of life, be with family, and be outdoors. The fifth and sixth most popular camping motivations were to be with friends and view wildlife.

Unfortunately, post-hoc analysis was not possible for the activities of hiking and camping due to a lack of sufficient cell counts of campers and hikers for each different setting.

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Consequently, while significant differences across settings existed between specific motivations of hikers and campers, which settings were significantly different from the others could not be identified.

Sightseeing—Results showed that none of the mean importance scores of motivations for participating in sightseeing were significantly different across settings. These results suggest that the importance of individual motivations for participation in sightseeing does not vary significantly across settings. Regardless of setting, the top three motivations for sightseeing are to be with family, be outdoors, and get away from the demands of life.

Walking—For walkers, reported importance scores for the motivation to be near my home was significantly different across settings. Significant differences also existed across settings for the motivations to experience nature, to see wildlife not seen before, to be with friends, to view wildlife generally, and to have a challenging outdoor experience.

Summary and Discussion

A very important point about this research is that it is national in scope covering the adult population of people ages 16 and older in the United States. For this population, this research offers two general observations based on the ANOVA results. The first is that motivations can be different for choosing a setting for different activities. Referring to the four activities selected, existence of such differences can be seen. For hiking, being near home and health differed in importance as motivations for setting selection. For camping in developed campgrounds, experiencing nature differed in importance as a motivation for setting selection. There were no significant differences in the importance of any of the 13 motivations as reasons for selecting a setting for sightseeing. The importance of being near home, experiencing nature, seeing new wildlife, being with friends, viewing wildlife, and having a challenge each varied significantly in importance as reasons for selecting setting for the activity of walking.

Table 5.10—Survey questions pertaining to people's participation in their main outdoor recreational activity in relation to their specific choice of settings and motivations

1. Of all the outdoor recreation activities you participated in during the last 12 months, which do you consider to be your main activity?

2. In which of the following settings did you mainly do this activity?

    1. Coastal waters including bays, beaches, or the ocean
    2. Inland freshwater lakes, rivers, streams, or ponds
    3. A forest
    4. Open grasslands or meadows with few or no trees
    5. An urban or suburban park
    6. Desert
    7. Mountains
    8. Other
    9. Don't know
    10. Refused

3. From the following list of motivations or reasons, would you please tell me on a scale from 1 to 5, with 1 being 'Not At All Important' and 5 being 'Very Important', how important was each motivation or reason in choosing [setting] to [activity]?

    1. Near my home
    2. To experience nature
    3. To get away from the demands of life
    4. To see wildlife I have not seen before
    5. To be with family
    6. To be alone
    7. To be with friends
    8. To be outdoors
    9. For health reasons
    10. For physical exercise or training
    11. To view wildlife
    12. To improve outdoor skills and abilities
    13. To have a challenging outdoor experience

Source: USDA Forest Service (2009).

The second general observation from this national study concerns identification of which motivations are most important overall to each of the four activities. This means looking only at motivations having a mean value of 4.0 or larger (important to very important). For hiking, the most important motivations for the activity, in descending order of importance, are to be outdoors, to experience nature, to get away from the demands of everyday life, and to have physical exercise or training. For camping, the most important motivations, in descending order of importance, are to be outdoors, to get away from the everyday demands of life, and to experience nature. For sightseeing, the most important motivation is to be with family, and the other two are to be outdoors and to get away from the everyday demands of life. For walking, the motivations are to be outdoors, health, physical exercise or training, and to get away from the everyday demands of life.

In addition to knowing how activity participation is trending, knowing more about motivations for participating in activities and for selecting particular settings for activities is important. Local, State, and Federal agencies have been struggling to maintain both the dispersed and developed portions of their recreation opportunities. Cordell and others (2008) and others have shown that outdoor recreation is evolving from the traditional activity mixes that Americans chose in previous generations. Numbers of people participating in some activities are decreasing somewhat, while others are growing. The current recession, resulting tight budgets, and other factors are forcing both public and

Table 5.11—Post-hoc analysis to identify specific differences in mean motivational scores across different types of settings, for the activity of walking

	Setting							
Motivation	(a) Coastal waters	(b) Inland freshwater	(c) Forest	(d) Grass lands	(e) (Sub) Urban park	(f) Desert	(g) Mtns	(h) Other
1. Near my home	3.1[eh]	3.7	3.6	3.5	3.9[ag]	3.7	3.1[eh]	3.9[ag]
2. Experience nature*	4.4[eh]	4.3[h]	4.6[eh]	4.0	3.8[ac]	3.4	3.9	3.2[abc]
3. Get away from the demands of life	4.3	4.2	4.0	4.1	4.0	4.0	4.6[h]	3.6
4. See wildlife I have not seen before	3.5[eh]	3.4[eh]	3.4[eh]	3.6[eh]	2.7[abcd]	3.1	3.5[h]	2.5[abcdg]
5. Be with family	3.9	3.4	3.4	3.4	3.5	4.1	4.1	3.4
6. Be alone	2.6	2.4	3.1	3.1	2.4	3.1	2.2	2.6
7. Be with friends	3.6[dh]	3.4[d]	3.1	2.6[abeg]	3.3[dh]	2.5	3.6[d]	2.8[ae]
8. Be outdoors	4.5	4.8	4.6	4.7	4.4	4.3	4.5	4.3
9. For health reasons	4.2	4.4	4.1	4.3	4.4	3.9	4.3	4.5
10. Physical exercise or training	3.9	4.2	4.2	4.3	4.2	3.7	4.1	4.4
11. View wildlife	3.6[eh]	3.7[eh]	3.5[eh]	3.5[eh]	3.0[abcd]	3.7[h]	3.2	2.7[abcdf]
12. Improve outdoor skills and abilities	2.7	2.9	2.9	3.3	2.8	3.3	3.5	3.2
13. Have a challenging outdoor experience*	3.1[f]	3.1[f]	2.6[f]	3.0[f]	2.7[f]	1.3[abcdegh]	3.0[f]	3.0[f]

Note: *Tanhane's T2 used due to unequal variances; LSD used for all other post hoc analyses. Setting is the independent variable and motivation is the dependent variable. Motivations were measured on a 5-point Likert scale ranging from 'Not at all important' to 'Very important.'

For those motivation means that were significantly different across settings, superscript letters identify the setting groups (columns) between which differences in mean motivation scores existed (rows). For example, the cell value 3.1[eh], indicates that the mean of 3.1 was significantly different than the mean scores reported in the urban park (column e) and other (column h) setting categories.

Source: USDA Forest Service (2009).

private recreation providers to adjust, and perhaps to reduce, some of the resources they provide. Knowing the importance of various motivations, or reasons, for choosing activities and settings can greatly aid those adjustments. For example, knowing that being outdoors and experiencing nature are important motivations for the activities we studied may indicate that one activity may be a substitute for another (or others) if they meet some of the same needs. Also, knowing that activity motivations are important in some choices of outdoor settings may help in identifying setting complementarity, where different settings for the same activity seem to meet the same need (motivation). Greater understanding of people's motivations, especially how these could be changing over time, could help natural resource managers to better plan and tailor the opportunities and programs they are currently providing to their users to better meet their needs and expectations.

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Participation Differences by Type of Setting

In addition to the previous two studies by Green and by Chavez, we estimated total days of participation in activities within the activity groups earlier described that occurred in natural forest, unforested natural areas (including range), and developed settings across all participants in each activity group. The source of data was the NSRE. Estimation of days of participation by setting was possible because respondents to the NSRE were asked how many activity days had occurred in settings that were mostly in natural forest cover (tree-dominated) or in non-forest natural cover. Activity days not in forest or non-forest natural cover were assumed to have occurred in non-natural settings, which could include urban areas and other developed areas.

Table 5.12 shows estimates of land-based activity days for the United States. Generally, more than half of all activity days, 54 percent, were reported to have occurred in forested settings across all activity groups. This was especially so for backcountry, hunting, and snow skiing activities. The activity group with the greatest number of days over all settings was viewing and photographing nature, and this was true even in non-natural setting (those in a more developed state). Eighty-two percent of all activity days for these six activity groups were spent viewing and photographing nature. Hunting and snow skiing produced a very small fraction of the total activity days. Next highest, but not very close, in total activity days were backcountry activities, and visiting recreation and historic sites. Non-forest natural settings may include range, grass, shrub, or other open lands. Non-natural other settings may include developed sites, parks, urban areas, or other places. See appendix table 7 for activity days by setting and region for individual activities.

6. YOUTH TIME AND ACTIVITIES OUTDOORS

Time Youth Spend Outdoors

The National Kids Survey was conducted from late 2007 through early 2009. As part of this survey, questions were asked of respondent households concerning amount of time youth 6 to 19 years old spent outdoors, regardless of activity (such as hanging out with friends or organized sports activities). The first general area of inquiry concerned

Table 5.12—Millions of activity days for six groups of land-based activities that occurred in natural forest, non-forest natural, and developed or other settings

	Type of setting			
Land-based activity group	Natural forest	Non-forest natural	Developed or other settings	Total activity days
Viewing/photographing nature	18,732.9	10,627.9	6,455.7	35,816.5
Backcountry activities	2,106.6	572.7	440.1	3,119.4
Visiting recreation and historic sites	1,580.1	923.8	456.3	2,960.2
Motorized activities	682.4	350.9	92.3	1,125.6
Hunting	408.6	83.8	18.9	511.3
Snow skiing	27.1	6.4	2.4	35.9

Note: Non-natural other settings include the remainder of days that were not reported in natural forests or on non-forest natural lands. Snow skiing includes cross-country skiing only; no other snow-based activity collected forest setting data.

Source: USDA Forest Service (2009), n=30,394.

amount of time spent outdoors. This included time on a typical weekday, amount of time on a typical weekend day, and time outdoors at the time of surveying relative to the previous year.

Estimated percentages of youth spending various amounts of time outdoors daily on weekdays and weekends are shown in table 6.1. Also shown are 95 percent confidence intervals. The estimates shown represent reported (not directly observed) time spent outdoors. The data indicate that 64 percent of youth ages 6 to 19 reported spending 2 or more hours outdoors on a typical weekday during the week preceding the household interview (table 6.1). Over three-fourths (about 78 percent) spent more than 2 hours outdoors on a typical weekend day. More than one half of the youth spent 4 or more hours outdoors on a typical weekend day. Less than 5 percent spent no time outdoors on either weekdays or weekend days. Twenty-two and 12 percent spent about 1 hour outdoors on weekdays and weekend days, respectively. As one might expect, school and other activities likely compete more for youths' time during weekdays than during weekends.

Next, percentages of youth indicating spending less, the same, or more time outdoors at the time of the interview relative to a year ago were examined. Across the entire sample of both boys and girls, only 15 percent reported spending less time, 44 percent reported spending the same, and 41 percent estimated spending more time outdoors this year than last (table 6.2). See appendix table 8 for percentages by gender and age group.

Demographics Associated with Time Youth Spend Outdoors

Next examined is whether the demographics of respondents are associated with time spent outdoors. The demographics used include gender, age, race, and household income.

Table 6.1—Percent of youth ages 6 to 19 (with 95 percent confidence intervals) who spent different amounts of time outdoors on typical weekdays and weekend days during the week just preceding the interview

	Weekday			Weekend day		
Amount of time	95 percent c.i. lower bound	Percent	95 percent c.i. upper bound	95 percent c.i. lower bound	Percent	95 percent c.i. upper bound
None	1.4	2.3	3.1	2.9	4.0	5.1
< 1/2 hour a day	3.2	4.3	5.5	1.3	2.1	2.9
About 1/2 hour a day	6.0	7.5	9.0	2.5	3.5	4.6
About 1 hour	19.1	21.5	23.8	10.7	12.6	14.5
2-3 hours	29.3	32.0	34.6	23.4	25.9	28.4
4 or more hours	29.8	32.4	35.1	49.1	52.0	54.8

c.i. = confidence interval.

Note: Percent may not sum down to 100.0 exactly due to rounding.

Table 6.2— Percent of youth ages 6 to 19 (with 95 percent confidence intervals) reporting spending less, about the same, or more time outdoors this year than last

Less time			About the same			More time		
95 percent c.i. lower bound	Percent	95 percent c.i. upper bound	95 percent c.i. lower bound	Percent	95 percent c.i. upper bound	95 percent c.i. lower bound	Percent	95 percent c.i. upper bound
13.0	15.1	17.1	41.2	44.0	46.8	38.1	41.0	43.8

c.i. = confidence interval.

Note: Percent does not sum across to 100.0 exactly due to rounding.

Source: NSRE National Kids Survey, 2007 to 2009, N=1,201.

Percentages of male and female youth spending various amounts of time outdoors on weekdays and weekends are shown in table 6.3.

Generally, somewhat higher percentages of both male and female youth spent no time outdoors on weekends, relative to weekdays (about 4 percent versus 2 percent, respectively). However, smaller percentages of both males and females spent an hour or less outdoors on weekends, as compared with weekdays. The most significant time difference in time outdoors between weekdays and weekends, for both males and females, was in percentages of youth spending 4 or more hours outdoors. For males, that percentage went from 39 percent on weekdays up to 58 percent on weekend days. For females, the percentage spending 4 or more hours outdoors increased from about 26 on weekdays to 46 percent on weekend days. Around 82 percent of males and 74 percent of females spent 2 or more hours outdoors on weekend days.

Percentages of youth of different ages by amount of time per day outdoors are shown in table 6.4. Higher percentages of children ages 6 to 15 spent 2 or more hours outdoors, compared with those ages 16 to 19. This difference between children under 16 years and those ages 16 to 19 is especially pronounced when comparing percentages spending 4 or more hours per day on weekends. Consistent with these comparisons is that a larger percentage of youth ages 16 to 19 reported spending no time outdoors on weekends—about 6 percent. The percentages spending < ½ hour and up to an hour per day decrease across all ages on weekends compared

Table 6.3—Amount of time youth spent outdoors on a typical weekday and weekend day during the past week, by gender

	Male		Female		Total	
Time outdoors	Week-day	Weekend day	Week-day	Weekend day	Week-day	Weekend day
			percent			
None	2.1	3.8	2.3	4.1	2.2	3.9
< 1/2 hour a day	3.8	1.2	5.2	3.0	4.5	2.1
About 1/2 hour a day	6.3	2.6	8.3	4.2	7.3	3.4
About 1 hour	19.1	10.6	24.4	14.8	21.7	12.7
2-3 hours	29.4	23.6	34.1	28.0	31.7	25.8
4 or more hours	39.2	58.2	25.7	45.8	32.5	52.0

Note: Percent may not sum down to 100.0 exactly due to rounding. Chi-square: Weekday (x= 34.72, p(x)<.0001), Weekend (x= 30.53 , p(x)<.0001).

Source: NSRE National Kids Survey, 2007 to 2009. Gender sample sizes: Male (n=611), Female (n=572), Total (n=1,183).

Table 6.4—Amount of time youth spent outdoors on a typical weekday and weekend day during the past week, by age group

	6-9		10-12		13-15		16-19		Total	
Time outdoors	Week-day	Week-end day	Week-day	Week-end day	Week-day	Week-end day	Week-day	Week-end day	Week-day	Week-end day
					percent					
None	2.3	2.7	3.0	4.0	1.9	3.2	1.9	6.1	2.3	4.0
< 1/2 hour a day	3.0	1.3	2.7	1.1	4.8	0.9	7.5	4.8	4.5	2.1
About 1/2 hour a day	8.0	1.7	6.1	4.1	7.5	3.8	7.7	4.7	7.4	3.5
About 1 hour	23.6	9.4	22.2	5.8	15.8	13.0	23.5	22.0	21.7	12.7
2-3 hours	34.8	27.6	27.3	26.4	35.0	28.6	28.8	21.2	31.6	25.8
4 or more hours	28.4	57.3	38.7	58.5	35.0	50.5	30.6	41.0	32.5	51.9

Note: Percent may not sum down to 100.0 exactly due to rounding. Chi-square: Weekday (x= 36.6, p(x)=0.00145), Weekend (x= 103.72, p(x)<.0001).

Source: NSRE National Kids Survey, 2007 to 2009. Age group sample sizes: Age 6–9 (n=368), Age 10–12 (n=284), Age 13–15 (n=313), Age 16–19 (n=218), Total (n=1,183).

with weekdays. The largest difference between weekdays and weekends is in percentages spending 4 or more hours outdoors for all age groups. For children 6 to 9 years old, the percentage more than doubles from 28 to 57 percent (29 percent greater on weekends), and for children ages 10 to 12 the shift is from 39 to 59 percent (20 percent greater on weekends). Across all age groups, percentages spending 2 to 3 hours per day drop somewhat on weekends.

A higher percentage of Hispanic youth (63 percent) spent 4 or more hours per day outdoors on weekends than either White or Black youth (table 6.5). A somewhat higher percentage of Whites spent 4 or more hours per day on weekends relative to Black youth. A smaller percentage of Hispanics spent no time outdoors on weekends as compared to Black youth. Relative to Whites, higher percentages of Hispanic and Black youth spent 4 or more hours outdoors on weekdays.

The greatest shifts in hours per day from weekdays to weekends are for Hispanic youth spending about 1 hour outdoors (from 18 on weekdays down to 6 percent on weekends); for White youth spending 4 or more hours (28 up to 51 percent); and for Hispanic youth spending 4 or more hours per day (47 up to 63 percent). The percentage of Black youth spending no time outdoors moves from just under 3 percent on weekdays to over 6 percent on weekend days.

Time outdoors was also compared across households with different income levels. Somewhat lower percentages of youth in the highest income category spent no time outdoors (table 6.6). Interestingly, the percentage spending 4 or more hours outdoors on weekdays generally trended downward with greater family incomes. Higher percentages of children in families with incomes from $25,000 to $99,000 USD spent 4 or more hours outdoors on weekends relative to those in households with both the lowest and the highest incomes. The shift in percentage spending 4 or more hours on weekend days relative to weekdays is more pronounced for households with incomes above $50,000 USD, and it is especially pronounced for incomes of $75,000 to $99,000 USD.

Outdoor Activities

Figure 6.1 shows the top five outdoor activities of youth ages 6 to 19. These are really groups of similar activities, but tailored to youth respondents. Of these, the one outdoor activity with the highest participation rate (82 percent) was that of "just playing or hanging out outdoors." Second, with 80 percent participation, was biking, jogging, walking, skate boarding, or similar activity. Listening to music or using other electronic devices outdoors was third, followed by playing or practicing team sports and reading/studying outdoors.

Table 6.7 compares outdoor activity participation rates (percentages) between male and female youth. Just over 87 percent of boys and 77 percent of girls indicated they had been outdoors playing or hanging out as an activity during the previous week. In comparison, the activity of biking/jogging/walking/skate boarding or a similar activity was basically even among girls and boys, with 80 percent participating. Listening to music or using a screen or other electronic device outdoors, the third most popular activity, was more popular with girls at about 62 percent participation, while for boys participation was 48 percent.

Table 6.5—Amount of time youth spend outdoors on a typical weekday and weekend day during the past week, by race/ethnicity

	White		Black		Hispanic		Other		Total	
Time outdoors	Week-day	Week-end day	Week-day	Week-end day	Week-day	Week-end day	Week-day	Week-end day	Week-day	Week-end day
					percent					
None	1.9	3.7	2.8	6.6	1.7	1.9	7.8	9.0	2.3	3.9
< 1/2 hour a day	5.3	2.5	2.0	2.2	4.4	1.2	0.0	0.0	4.5	2.1
About 1/2 hour a day	8.8	3.9	9.4	4.2	2.6	1.6	7.4	6.7	7.5	3.6
About 1 hour	21.7	13.7	22.9	11.3	17.7	6.2	34.0	29.4	21.6	12.6
2-3 hours	34.4	24.9	29.3	30.9	26.2	26.3	26.8	23.6	31.7	25.8
4 or more hours	27.9	51.3	33.6	44.8	47.3	62.8	24.1	31.3	32.4	51.9

Note: Percent may not sum down to 100.0 exactly due to rounding. Chi-square: Weekday (x= 76.78, p(x)<.0001), Weekend (x= 67.80, p(x)<.0001).

Source: NSRE National Kids Survey, 2007 to 2009. Race/ethnicity sample sizes: White (n=953), Black (n=100), Hispanic (n=77), Other (n=38), Total (n=1,168). 'Other' races include American Indians and Asian Americans/Pacific Islanders.

Table 6.6—Amount of time youth spend outdoors on a typical weekday and weekend day during the past week, by annual family income

	<$25,000		$25,000-$49,999		$50,000-$74,999		$75,000-$99,999		$100,000-$149,999		$150,000+		Total	
Time outdoors	Week-day	Week-end day	Week-day	Week-end day	Week-day	Week-end day	Week-day	Week-end day	Week-day	Week-end day	Week-day	Week-end day	Week-day	Week-end day
	percent													
None	1.9	5.5	2.6	2.8	1.8	4.1	1.7	2.8	4.1	2.1	0.8	1.1	2.2	3.4
< 1/2 hour a day	5.6	1.4	4.5	0.9	4.6	1.6	3.3	2.0	1.4	0.5	9.6	6.6	4.5	1.7
About 1/2 hour a day	10.1	4.8	4.1	2.6	6.5	2.2	8.7	3.0	8.9	6.4	13.1	3.4	7.9	3.6
About 1 hour	14.2	14.0	19.7	9.6	22.8	12.1	21.5	8.4	33.1	10.4	21.1	12.6	21.3	11.0
2-3 hours	28.9	27.8	27.9	25.8	34.6	28.1	29.6	18.8	29.7	34.5	35.5	34.1	30.5	27.0
4 or more hours	39.4	46.5	41.2	58.2	29.7	51.8	35.3	64.9	22.8	46.1	19.9	42.3	33.6	53.2

Note: Percent may not sum down to 100.0 exactly due to rounding. Chi-square: Weekday (x= 66.34, p(x)<0.0001), Weekend (x= 58.89 , p(x)=0.00015).

Source: NSRE National Kids Survey, 2007 to 2009. Income category sample sizes (in order, lowest income to highest): 1 (n=132), 2 (n=188), 3 (n=202), 4 (n=181), 5 (n=182), 6 (n=131), Total (n=1,016). Income is total annual family income before taxes. Imputed values for income were substituted for missing values for all NSRE data through 12/31/08.

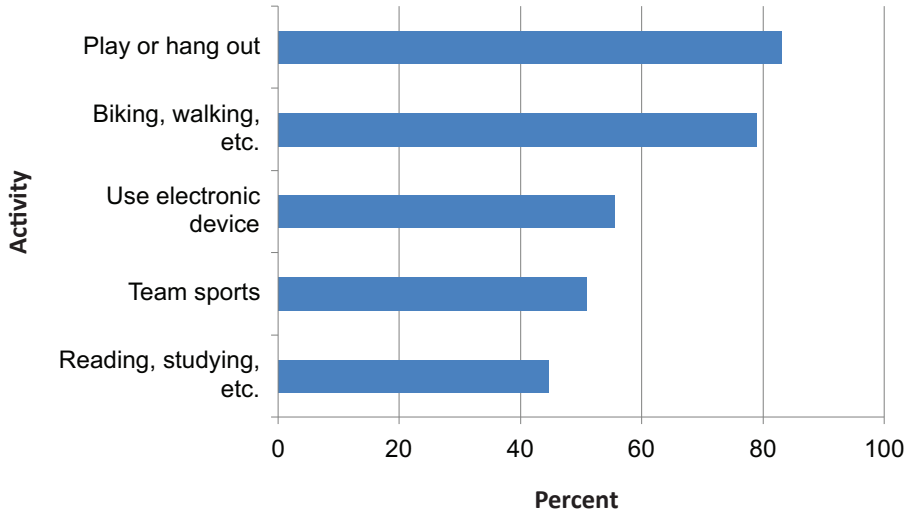

Figure 6.1—Five activities with highest participation rates by youth 6 to 19 years of age.

Playing or practicing team sports was more popular with boys at 58 percent, while for girls participation was 43 percent. About one-third of youth participated in non-motorized nature-based activities, such as attending camps and classes, and bird or wildlife watching. Girls participated in these activities at a greater rate than boys, but boys outpaced girls in the motorized activity of riding off-road vehicles. Hiking, camping, and fishing were essentially the same for both genders at about 31 percent.

Table 6.8 compares percentages of youth participating in different outdoor activities by age. By far, playing or hanging out outdoors is more popular among 10- to 12-year-olds (95 percent participated in the last week), followed by 6- to 9-year-olds. Similarly, biking/jogging/walking/skate boarding and related activities are more popular as an activity by 10-to 12- and 6-to 9-year-old youth. Listening to music, watching videos, or using other electronic devices outdoors was more popular with youth over age 13, especially those ages 13 to 15, with 75 percent participation. Percentages playing or practicing team sports were similar across the two youngest and the oldest age groups at just under 50 percent, but spiked to over 60 percent in the 13- to 15-year-old age group. Reading or studying outdoors was more popular with ages 10 to 12 and with ages 16 to 19. Participating in sports, such as golf or tennis, is most popular with younger children, those ages 6 to 12. Similarly, bird or wildlife viewing is more popular with children ages 6 to 12, while riding ATVs or motorcycles off road is more popular with youth older than 12 years.

Included in the category of "Other outdoor activities" are gardening/landscaping (23 percent of the "other" responses), equestrian (12 percent), trampoline (11 percent), band (11 percent), family cook outs (6 percent), attending sports (6 percent), farm chores (5 percent), cheerleading (5 percent), and a variety of other outdoor activities (falling below 5 percent).

Reasons for Not Spending More Time Outdoors

Table 6.9 shows comparisons between males and females concerning reasons for not spending more time outdoors. Interest in music, art, reading, and similar uses of time was the highest percentage reason given by females for not spending more time outdoors. For males, the highest percentage reason was video games, watching DVDs and television. For females, the second highest reason was interest in the Internet, text messaging, and related social networking. For males, the second highest reason was music, art, reading, and related interests. As table 6.9 shows, there are a number of important differences between males and females. Not having neighborhood access to outdoor areas, not having a friend to go with, and not having transportation were cited more frequently by females, while

Table 6.7—Percent of youth participating in outdoor activity during the past week, by type of activity and gender

Outdoor activity	Male	Female	Total
		percent	
Just play outdoors or hang out	87.1	77.4	82.3*
Biking, jogging, walking, skate boarding, etc.	80.0	80.3	80.1
Listen to music, watch movies, or use electronic device	47.5	61.7	54.8*
Playing or practicing team sports	57.6	43.4	50.6*
Reading, studying while sitting outdoors	38.8	53.2	46.0*
Other sports, e.g., tennis, golf	39.7	37.5	38.6
Attending camps, field trips, outdoor classes	31.3	38.6	34.9*
Swimming, diving, snorkeling, etc.	33.4	36.6	34.8
Bird watching, wildlife viewing, etc.	29.3	35.9	32.6*
Hiking, camping, fishing, etc.	31.4	31.2	31.2
Riding motorcycles, ATVs, other off-road vehicles	22.6	16.8	19.7*
Snow skiing, snowboarding, cross-country skiing	9.5	7.9	8.6
Boating, jet skiing, water skiing, etc.	8.9	8.9	8.8
Rowing, kayaking, canoeing, surfing, etc.	8.7	8.2	8.4
Other outdoor activities	8.6	10.8	9.6

Chi-square test of independence, significance levels: *=.01.

Table 6.8—Percent of youth participating by type of outdoor activity and age group

Outdoor activity	Age group				Total percent
	6 to 9	10 to 12	13 to 15	16 to 19	
			percent		
Just play outdoors or hang out	86.5	94.9	80.9	68.1	82.3*
Biking, jogging, walking, skate boarding, etc.	84.8	87.2	67.4	78.4	80.1*
Listen to music, watch movies, or use electronic device	39.4	46.8	74.8	64.5	54.8*
Playing or practicing team sports	47.2	49.6	61.0	47.3	50.6*
Reading, studying while sitting outdoors	42.2	52.4	39.1	50.4	46.0*
Other sports, e.g., tennis, golf	43.9	50.3	29.2	30.1	38.6*
Attending camps, field trips, outdoor classes	36.4	37.9	37.1	28.8	34.9**
Swimming, diving, snorkeling, etc.	38.8	39.2	36.9	25.3	34.8*
Bird watching, wildlife viewing, etc.	41.4	43.6	24.9	18.6	32.6*
Hiking, camping, fishing, etc.	39.5	23.9	32.3	26.6	31.2*
Riding motorcycles, ATVs, other off-road vehicles	19.4	15.7	23.1	21.1	19.7
Boating, jet skiing, water skiing, etc.	3.8	9.3	13.3	11.3	8.8**
Snow skiing, snowboarding, cross-country skiing	7.0	8.1	9.1	10.7	8.6
Rowing, kayaking, canoeing, surfing, etc.	8.3	9.5	6.8	8.8	8.4
Other outdoor activities	9.5	10.9	10.8	8.1	9.6

Chi-square test of independence, significance levels: *=.01, **= .05.

Table 6.9—Percent of youth stating reason for not spending more time outdoors by gender

Reason	Male	Female	Total
		percent	
Interested in listening to music, art, reading, etc.	52.4	63.9	58.2*
Interested in Internet, text messaging, etc.	40.7	55.4	47.9*
Interested in video games, DVDs and TV	54.2	38.8	46.6*
More involved in indoor sports	31.0	40.6	35.6*
Neighborhood does not have good access	23.0	30.7	26.9*
Other reason time not spent outdoors	21.9	24.6	23.4
Don’t have transportation	19.3	25.5	22.4*
Spend time at mall, shopping, hanging out	19.0	23.2	21.1**
Don't have anyone to play outdoors with	16.9	22.5	19.6*
It is not safe to play or do sports outside	16.1	8.6	12.3*
Was injured or developed a health problem	10.5	7.0	8.8*

Chi-square test of independence, significance levels: *=.01, **= .05.

Source: NSRE National Kids Survey, 2007 to 2009. N=1,201.

interestingly, not feeling safe was more likely to be given as a reason for not spending more time outdoors by males.

Table 6.10 shows differences by age. Much lower percentages of children ages 6 to 9 indicated not spending more time outdoors because of internet and text messaging, indoor sports, hanging out, and lack of transportation. Higher percentages of youth ages 10 to 12 indicated music and art, video games/DVDs/TV, and safety as reasons. Poor access to outdoor areas was mentioned by often by 13- to 15-year-olds, followed closely by the 10- to 12-year-old age group. Higher percentages of youth ages 13 to 15 indicated interest in internet/messaging/networking, and involvement in indoor sports as reasons. A higher percentage of youth ages 16 to 19 indicated hanging out the mall or shopping as reasons, and much lower percentages of this age group indicated video games/DVDs/TV and safety as reasons.

Invited Paper

Preserving the Hunting Heritage: Rise in Youth Hunting

by Richard Aiken and Anna Harris[12]

Richard Aiken

Over the last 2 decades, the number of 16-year-old and older hunters has declined by 11 percent. Yet programs aimed at engaging youth hunters seem to be paying off, especially in the number of young female hunters. An interesting trend

Table 6.10—Percent of youth stating reason for not spending more time outdoors by age group

	Age group				
Reason	6 to 9	10 to 12	13 to 15	16 to 19	Total
			percent		
Interested in listening to music, art, reading, etc.	55.2	63.8	60.4	55.6	58.2**
Interested in Internet, text messaging, etc.	24.9	57.7	66.9	53.9	47.9*
Interested in video games, DVDs and tv	44.9	60.3	50.3	34.3	46.6*
More involved in indoor sports	31.4	30.4	44.3	38.9	35.6*
Neighborhood does not have good access	22.2	33.5	35.4	20.3	26.9*
Other reason time not spent outdoors	19.2	25.3	20.7	28.4	23.4*
Don't have transportation	13.5	25.3	34.0	21.9	22.4*
Spend time at mall, shopping, hanging out	5.2	11.1	25.6	45.2	21.1*
Don't have anyone to play outdoors with	20.0	21.6	23.8	14.7	19.6**
It is not safe to play or do sports outside	8.8	24.7	12.9	5.7	12.3*
Was injured or developed a health problem	2.6	13.1	15.1	8.1	8.8*

Chi-square test of independence, significance levels: *=.01, **= .05.

Source: NSRE National Kids Survey, 2007 to 2009. N=1,201.

reveals the number of girls 6 to 15 years old who hunt has nearly doubled. Another finding shows the number of boy hunters 6 to 15 years old remained stable from 1991 to 2006 (at the 95 percent level of significance) (fig. 6.2).[13]

The National Survey of Fishing, Hunting, and Wildlife-Associated Recreation has been conducted by the U.S. Fish and Wildlife Service since 1955 and is one of the oldest and most comprehensive continuing recreational surveys in the United States. In 1991 the survey methodology changed, making the estimates before 1991 incomparable with those after 1991.

End Invited Paper

7. RECREATION USE OF PUBLIC AND PRIVATE PROPERTIES

This section presents several sources of data covering recreational use of public properties. The first source is the National Survey on Recreation and the Environment (NSRE), which included questions asked concerning respondents' understanding of the ownership of lands or water access they had used for recreation activity. These data are shown for groups of similar activities and for individual activities for which the ownership questions were asked. Also included is a short section on recreation on private forest lands based on the National Woodland Owners Survey. Public land is defined as any land owned by a governmental entity at any level from federal to local. Private land is any land owned by individuals, families, corporations, or organizations. Similarly, public water access is any waters owned by a governmental entity.

In addition, we report on trends in visitation to federal wildlands for agencies which maintain and report visitation statistics. Visitation trends are affected by many different factors. To illustrate this, a short paper by Susan Alexander and Neil Hagadorn is added that concerns nature-based tourism visits to Alaska and use of National Forests in Alaska. Much of tourism in Alaska is drawn by wildland and ocean scapes on public lands such as national parks, national forests, and State and Federal wildlife management areas. Statistics on visitation to State park systems in the United States are also reported. These are based on data maintained by the National Association of State Park Directors.

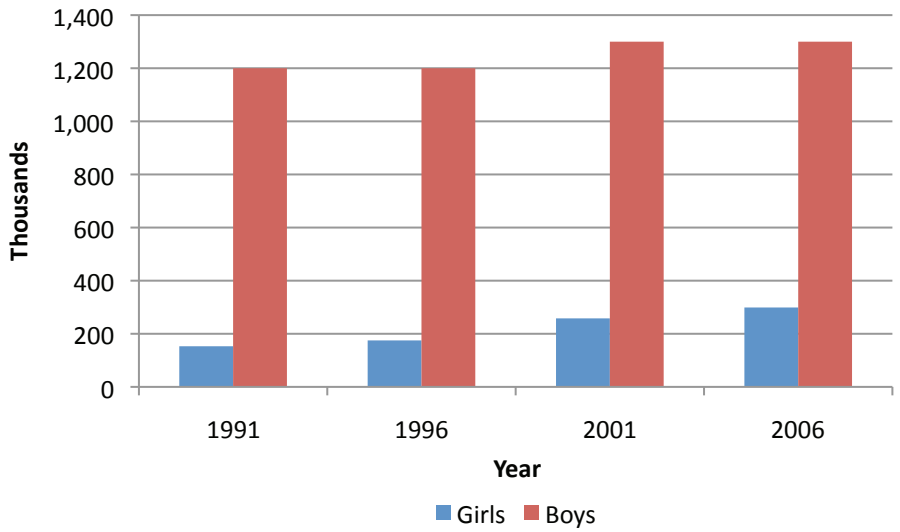

Figure 6.2—Trends in youth hunting, girls and boys age 6 to 15 years old.

[12] Richard Aiken, Economist, and Anna Harris, Economist, U.S. Fish and Wildlife Service, Arlington, VA.
[13] A 95-percent confidence interval is used to determine statistical validity. A non-significant change in the number of boy hunters means that for 95 percent of all possible samples the estimate for one survey year is not different from the estimate for the other survey year.

Estimated Recreation Activity on Public and Private Properties

Table 7.1 shows percent and millions of recreation activity days estimated to occur on public and private forest lands and water activities accessed through public or private access facilities. The source of these estimates is data from the NSRE. Respondents indicating participation in one or more land-based activities from a listing of 26 outdoor activities were asked if the activity occurred primarily in forested settings or in other settings. If the activity occurred in forested settings, the respondents were then asked if the land where they typically went was publicly or privately owned. Distinction for public and private ownership was not asked if the land setting was not forested. NSRE respondents were also asked if they used public or private access facilities for a number of water activities, such as fishing. All the percentages and total annual days were calculated on the basis of what the activity participant understood about the settings and ownership of places where they recreated. See appendix table 9 for annual recreation activity days for individual activities on public and private properties by region.

As presented in table 7.1, total days of forest land-based activities across the Nation at recreation and historic sites (e.g., family gatherings, picnicking, visiting historic or prehistoric sites, and camping) are relatively small as compared with viewing and photographing nature. Percentages of days in this activity group that occur on public land, however, are substantial in both the East and the West, with the percentage being considerably higher in the West than in the East (70 versus 60 percent, respectively).

Land-based activities making up viewing and photographing nature included viewing and photographing birds, natural scenery, other wildlife (besides birds), wildflowers, trees, etc. In the East, days of participation in these activities on forested lands occurred more on public land (55 percent) than on private land. In the West, over 61 percent of viewing and photographing nature days occurred on public land. Because of much larger population numbers in the East, there were more than three times as many activity days for this activity group in the East relative to the West.

Backcountry activity days (backpacking, day hiking, horseback riding on trails, mountain climbing, and visiting a wilderness or primitive area) were many fewer than days of viewing and photographing nature in both sections of the country. Generally, this grouping of land-based activities had participation that was less than one-tenth that of viewing and photographing nature. In both the East and West, around three-fourths of backcountry activity days occurred on public lands where access is more easily gained and where there are typically more miles of trails.

Motorized land activities include off-road vehicle driving and snowmobiling. Nationally there are an estimated 1,125 million activity days of motorized land activities. An estimated 46 percent of this occurs on public lands in the East, and 59 percent occurs on public lands in the West.

Table 7.1—Percent and number of annual activity days on public and private properties, East and West 2005-2009

	East					West					Nation
	Public		Private		Total annual	Public		Private		Total annual	Total annual
Activity group	Percent	Days	Percent	Days	days	Percent	Days	Percent	Days	days	days
		millions		*millions*			*millions*		*millions*	*millions*	*millions*
Visiting recreation and historic sites	60	1,266	40	834	2,101	70	598	30	262	860	2,960
Viewing/photo-graphing nature	55	15,119	45	12,175	27,294	61	5,239	39	3,332	8,572	35,865
Backcountry activities	72	1,474	28	580	2,054	78	828	22	237	1,065	3,119
Motorized activities	46	416	54	488	904	59	131	41	91	222	1,126
Hunting	43	181	57	242	423	57	51	43	38	89	512
Snow skiing	57	14	43	11	25	67	7	33	4	11	36

Note: Annual days are in millions and include land-based activities only. Percent was calculated before rounding annual days and sums across to 100 within each region; may not equal 100 exactly due to rounding. Snow skiing includes cross-country skiing only; no other snow-based activity collected forest setting data.

Viewing and photographing nature has become more and more popular across the country. (Photo of waterfall in municipal park in Greenville, SC, courtesy of Ken Cordell)

The hunting activity group includes big game and small game hunting. Nationally, the estimate for activity days of hunting is about 512 million. This is between 1 and 2 percent of the number of activity days of viewing and photographing nature. In the East, close to 43 percent of hunting occurs on public forest lands; in the West almost 57 percent occurs on public lands.

Finally, snow skiing (only cross-country) is small in numbers of activity days relative to other activity groups. But like most of the other activity groups, the estimated days of participation indicate the importance of public lands as a resource for recreation activity. In the East and West, 57 percent and 67 percent, respectively, of cross-country skiing is estimated to occur on public lands. As earlier stated, public lands as referenced here include all public lands at all levels of government.

Private lands, as referenced in table 7.1, include any privately-owned forest lands (nongovernmental) where survey respondents participated in the types of activities listed. These could be corporation, nongovernmental organization, or family ownerships. In the East, days of activity on private land across the six activity groups ranges from a low of 28 percent for backcountry activities to a high of 57 percent for hunting. The estimates show that over half of motorized land activities also occur on private lands. In the West, where there is proportionately less private land relative to public land, between 22 percent and 43 percent (backcountry and hunting activities, respectively) of days of activity occurred on private lands. The percentage of motorized activity (41 percent) was almost as large as the percentage of hunting on private land (43 percent). As with activity on public lands, the total number of activity days on private lands in the East across the six activity groups was nearly four times the number in the West.

Invited Paper

Status and Trends in Hunting and Wildlife Watching on Public and Private Lands

by Anna Harris and Richard Aiken[14]

America's public lands are a timeless treasure comprised of vast natural resources and iconic cultural entities. The management of and care for our public lands are primarily the responsibility of the Federal government. The Federal government owns 3 out of every 10 acres of land in the United States. The availability of public land varies widely by region, with most located in the West. The 2006 National Survey of Fishing, Hunting and Wildlife-Associated Recreation (U.S. Department of the Interior, Fish and Wildlife Service; U.S. Department of Commerce, Census Bureau 2007) addressed questions about the recreational activities occurring on public lands. The Survey provided estimates of the number of hunters who used public and private land and their days of hunting. It also captured the number of wildlife watchers who visited public areas to observe, feed, or photograph wildlife. The data represent outings where hunting or wildlife watching activity was the primary reason for the outing.

Hunting on Public Lands

In 2006, 12.5 million hunters 16 years old or older hunted on public land, private land, or both. Of this number, 39 percent, or 4.9 million, hunted on publicly owned lands while 82 percent, or 10.2 million, hunted on either public and private land or on privately owned land only.

Hunting only on public lands accounts for 1.9 million, or 15 percent, of all hunters, as compared to 7.2 million, or 58 percent, hunting only on private land (fig. 7.1). Slightly over 3 million hunters, or 24 percent, hunted on both public and private lands.

Hunters spent 54 million days pursuing game on public lands, which is 25 percent of all hunting days. As for what

[14] Anna Harris, Economist, and Richard Aiken, Economist, Fish and Wildlife Service, U.S Department of the Interior, Arlington, VA.

kind of game public land hunters were seeking, 35 percent of big game hunters (3.8 million) spent 37 million days hunting on public lands (table. 7.2). Thirty-five percent of small game hunters (1.7 million) pursued small game on public land for 13 million days. Nearly 800,000 migratory bird hunters, or 35 percent, hunted migratory birds on public lands for 6 million days. Twenty-eight percent, or 311,000, of other animal hunters pursued game on public land for 3 million days. Over the past 25 years, hunting in the United States has seen a shift toward using more private land mostly because of where big game hunters have chosen to hunt.[15]

One explanation for this trend may be the "walk-in" hunting programs being promoted by State fish and game agencies. Walk-in hunting programs allow hunters to hunt on private land where the State pays landowners for access and for enhancement of hunting opportunities and wildlife habitat. Another explanation for this shift may be due to the increased availability of paid access. Paid access generally involves a contractual agreement directly between the landowner and the hunter or hunting group.

Wildlife Watching on Public Lands

Nearly a third of the U.S. population ages 16 years old and older enjoyed wildlife watching as the primary activity in 2006.[16] These activities are categorized as around the home (within a mile of home) or away from home (at least 1 mile from home). In 2006, publicly owned lands were the most popular destination for people taking trips to observe, feed, or photograph wildlife. Approximately 80 percent of all away-from-home wildlife watchers went to public areas or some combination of public and private areas, while just 38 percent visited only private areas (table 7.3). About 27 percent of trip-taking wildlife watchers visited both public and private land.

About 12.2 million, or 53 percent, of people visited only public areas to engage in their activities, as compared to 2.5 million, or 11 percent, of people who visited only private areas (fig. 7.2). Furthermore, approximately 20 percent (13.3 million) of around-the-home wildlife watchers visited a public area within a mile from their home.

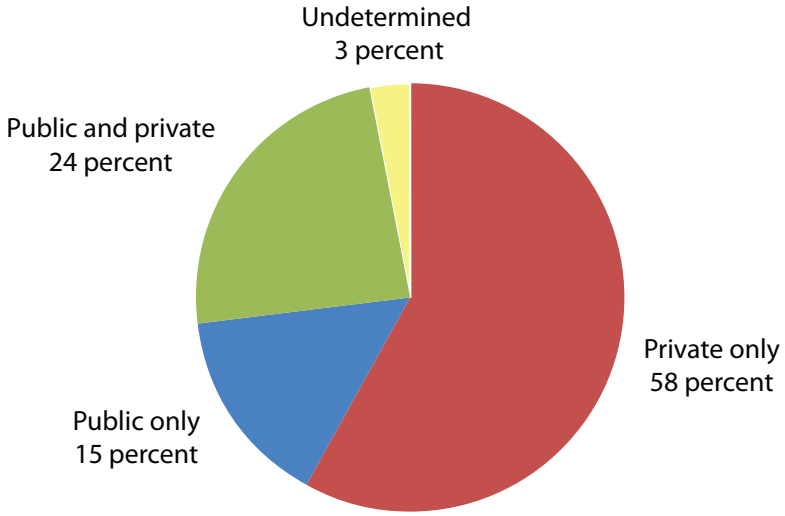

Figure 7.1—Percent of hunters by land ownership where hunting occurs.

[15] For technical reasons (primarily changes in the respondents' recall period), the 1980 and 1985 Survey participation estimates are not directly comparable to the 1991-2006 survey estimates, but the proportion of participants can be compared.
[16] Wildlife watching is defined here as closely observing, feeding, and photographing wildlife, visiting pubic parks around the home because of wildlife, and maintaining plantings and natural areas around the home for the benefit of wildlife.

Public land is by far the most popular destination for Americans for observing, feeding, or photographing wildlife away from the home. More than three fourths of all trip-takers observe, feed, or photograph wildlife on public lands. Table 7.3 displays this continual trend over the last 20 years.

The National Survey of Fishing, Hunting, and Wildlife-Associated Recreation reports results from interviews with U.S. residents about fishing, hunting, and wildlife watching as primary purposes for their outdoor activity. The survey defines public land as land owned by local governments (e.g., municipal, county), State governments, or the Federal government (e.g., national wildlife refuges). Together, these public lands support large populations of wildlife, providing continual recreational opportunities for present and future generations of Americans.

End Invited Paper

Table 7.2—Percent of public land hunters by type of game hunted

Type of game	1980	1985	1991	1996	2001	2006
			percent			
Total Hunting	45	47	44	47	40	39
Big game	47	47	43	44	37	35
Small game	33	34	34	38	36	35
Migratory bird	32	32	29	36	35	35
Other animals	21	20	21	26	27	28

Source: U.S. Department of the Interior, Fish and Wildlife Service; U.S. Department of Commerce, Census Bureau (2007).

Table 7.3—Percent of away-from-home wildlife watching participants by ownership of area visited

Land ownership	1985	1991	1996	2001	2006
			percent		
Public only	58	51	51	49	53
Private only	11	12	10	12	11
Public and private	28	33	34	28	27
Not reported	3	4	5	12	9

Note: Percent sums down to 100; may not equal 100 exactly due to rounding.

Source: U.S. Department of the Interior, Fish and Wildlife Service; U.S. Department of Commerce, Census Bureau (2007).

Recreation on Private Individual and Family-owned Forest Lands

The Northern Research Station of the Forest Service periodically conducts the National Woodland Owners Survey (NWOS) to assess the status and trends with family and individually owned forest lands in the United States (Butler 2008). In comparison with the previous section examining all public and private lands, this section focuses on recreation on family and individually owned forest lands. The following is based on findings from the NWOS survey regarding what owners reported as the recreation use status of their forest lands.

Invited Paper

Recreation on Private Forest land in the United States

by Brett J. Butler[17]

Of the forest land in the United States, over half is privately owned and of this, nearly two-thirds is owned by families and individuals (Butler 2008). While recreation by the general public is a common, if not primary, activity across much of the public lands, this is not the case for most of the private lands. To understand the full extent of forest recreation in the United States, it is important to understand what is occurring, and not occurring, on private lands.

There are over 10 million family forest owners who collectively control 264 million acres (106.8 million ha) of forest across the United States. (Butler 2008). This includes families, individuals, and unincorporated groups with at least 1 acre of forest land. More than 60 percent of the family forest owners own < 10 acres (4 ha), but nearly 70 percent of the family forest land is in ownerships of 50 acres (20.2 ha) or more (fig. 7.3). This has important implications for recreation. The large number of owners means that many people have ready access to land and the recreational opportunities that it provides. On the other hand, the increasing number of small parcels means that recreational activities may be limited and that the general public desiring to access the resource may have a more difficult time doing so.

The reasons landowners own land are, in general, not in conflict with recreation. Privacy and protection of natural biodiversity rank among the top objectives (fig. 7.4).

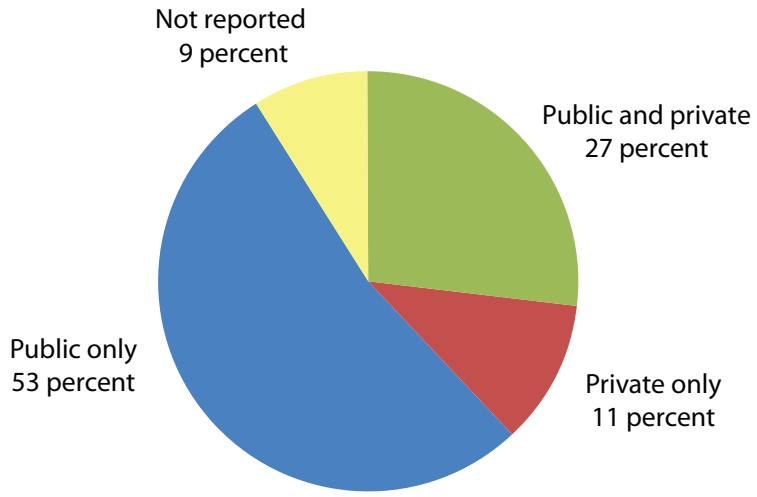

Figure 7.2—Percent of away-from-home wildlife watchers by land ownership where activity occurs.

[17] Brett J. Butler, Research Forester, U.S. Department of Agriculture Forest Service, Northern Research Station, Amherst, MA. The data discussed here come from the U.S. Department of Agriculture Forest Service's National Woodland Owner Survey (NWOS). For more information on the NWOS visit: www.fia.fs.fed.us/nwos.

Indeed, one in three owners state that passive recreation, such as hiking and bird watching, is an important ownership objective. A similar proportion, many of whom are the same owners, states that hunting and fishing are important as an objective.

When asked specifically about recreation, a third of the owners, who control just over half of the family forest land, reported that they, their family, and/or friends have recently—within the past 5 years—recreated on their land (table 7.4). A far smaller percentage of this land was open to the general public—about 7 percent or just 1 in 14 owners who owned about 15 percent of the private forest land. Posting land to prevent public access occurred on 43 percent of the land. Leasing land, particularly for hunting, is a common activity in many parts of the country and can result in significant revenues for owners.

End Invited Paper

Days of Participation for Individual Activities on Public Lands

In table 7.5, days of participation in 26 outdoor activities on public lands are reported. In the East, the activities with 70 percent or more of activity days occurring on public lands included day hiking, visiting outdoor nature centers, visiting a wilderness or primitive area, backpacking, visiting prehistoric sites, mountain climbing, and rock climbing. Activities in the East with the smallest percentages of activity days on public lands (< 50 percent) included off-highway vehicle driving, gathering mushrooms/berries or other natural products, horseback riding on trails, big game hunting, and small game hunting.

In the West where public lands are more prevalent, there are more activities than in the East, with 70 or greater percent of days occurring on public lands. Activities include day hiking, visiting a wilderness or primitive area, visiting nature centers, picnicking, developed camping, primitive camping, backpacking, visiting prehistoric sites, mountain climbing,

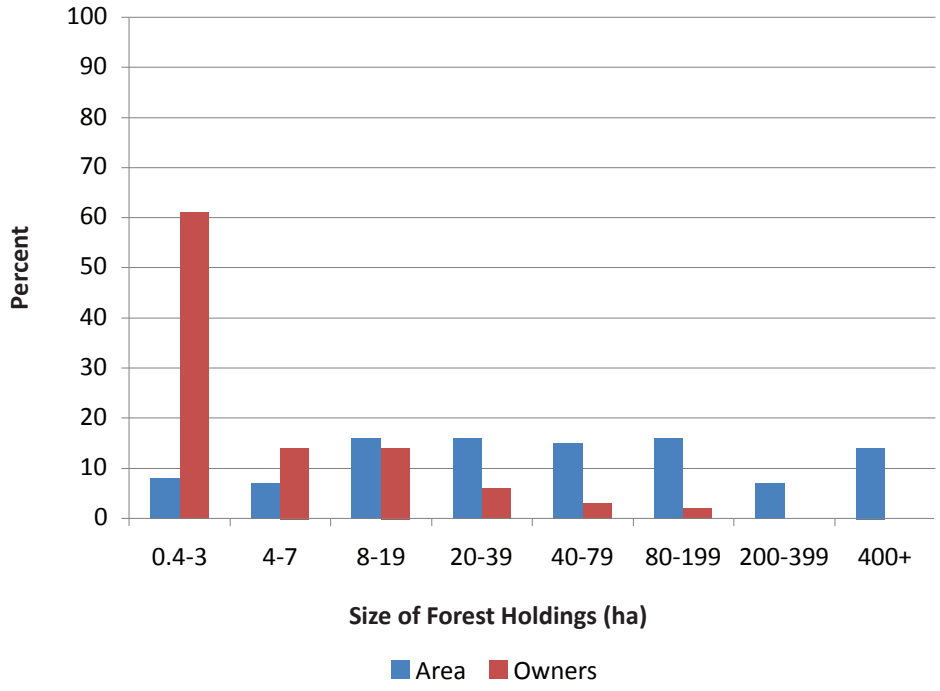

Figure 7.3—Family-owned forests by percent of owners and size of area. Note: Excludes interior Alaska, Hawaii, Nevada, western Oklahoma, and western Texas. Percent for area (blue) and owners (red) each sum to 100 across the eight forest size categories; may not equal 100 exactly due to rounding.

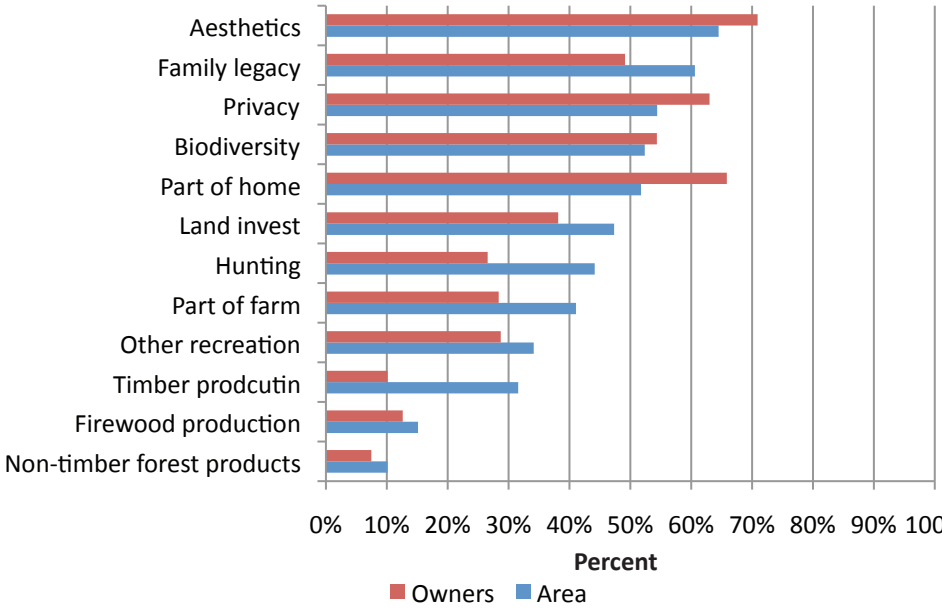

Figure 7.4—Reasons landowners own land by percent of owners and area. Note: excludes interior Alaska, Hawaii, Nevada, western Oklahoma, and western Texas.

Table 7.4—Percent of family forest land and owners in the United States by selected recent (past 5 years) activities

Activity	Family forest land	Family forest owners
	percent	
Private recreation	54	33
Public recreation	15	7
Leasing for hunting	7	1
Leasing for other recreation	3	<1

Note: Excludes interior Alaska, Hawaii, Nevada, western Oklahoma, and western Texas.

Source: Butler (2008).

Table 7.5—Percent and millions of annual activity days on public lands by region for 26 land based activities in forest settings, in descending order of national total annual activity days, public and private

	East		West		Nation
Activity	Percent	Annual days	Percent	Annual days	Total annual days
		----millions----		*----millions--*	*----millions---*
Walk for pleasure	52	8,228	57	2,995	20,928
View/photograph natural scenery	60	5,207	67	2,004	11,609
View/photograph wildflowers, trees, etc.	55	4,306	57	1,556	10,532
View/photograph birds	50	3,284	55	916	8,215
View/photograph other wildlife	54	2,321	62	763	5,510
Day hiking	74	873	79	508	1,826
Family gathering	53	458	62	193	1,179
Off-highway driving	46	385	59	120	1,048
Mountain biking	59	359	63	138	826
Gather mushrooms, berries, etc.	44	273	59	103	799
Picnicking	68	368	74	164	762
Visit nature centers, etc.	77	408	73	151	736
Visit a wilderness or primitive area	74	384	81	175	736
Visit historic sites	57	181	65	80	440
Developed camping	68	184	81	124	422
Big game hunting	42	108	58	26	301
Horseback riding on trails	46	79	58	52	262
Primitive camping	69	105	82	80	250
Backpacking	78	112	78	72	236
Small game hunting	44	73	55	25	211
Visit prehistoric/archeological sites	70	75	74	38	158
Snowmobiling	52	31	61	11	77
Mountain climbing	81	25	77	22	60
Rock climbing	70	14	71	17	45
Cross country skiing	57	14	67	7	36
Snowshoeing	53	7	68	5	21

Note: Total annual days for the Nation include the sum of activity days on public and private land.

Source: USDA Forest Service (2009), (n=5,374).

and rock climbing. There are no activities with < 50 percent of activity days occurring on public lands in the West.

Recreation Visitation on Public Lands (Federal and State)

There has been much interest in recent times concerning the trend in visitation to public lands. Reported below are trends in visitation to Federal and State park lands. The emphasis is on total number of visits regardless of the number of people visiting. The emphasis of recent other research has been on per capita visitation.

Federal land visitation—Federal lands, especially national parks, are highly esteemed for both their use and non-use values. Since their establishment, the various systems of federal properties, such as the National Park System (NPS) and National Forest System, have drawn many millions of visitors. Five of the Federal agencies which manage these land or water systems routinely estimate and report visitation to their areas on an annual basis (table 7.6). Visitation to the properties of the agencies listed starts with 1996.

Visits to various units of the NPS have been relatively stable over the 13 years shown. Lowest visitation was in 1996 and 2003. Highest visitation for the NPS was in the years 1998 through 2000 and again in 2009 at around 286 to 287 million annual visits. Visitation at National Wildlife Refuges and other U.S. Fish and Wildlife Service areas has shown fairly steady growth over these same years, 1996 to 2009,

Table 7.6—Millions of recreation visits to Federal agency sites by year, 1996 to 2009

Year	National Park Service	U.S. Fish and Wildlife Service	Bureau of Land Management	U.S. Forest Service	U.S. Army Corps of Engineers
1996	266	30	57	–	372
1997	275	30	61	–	378
1998	287	32	61	–	381
1999	287	35	55	–	379
2000	286	37	54	–	–
2001	280	39	52	214	–
2002	277	38	53	–	358
2003	266	40	53	–	349
2004	277	40	54	205	359
2005	274	38	56	196	362
2006	273	38	55	180	371
2007	276	40	58	179	363
2008	275	41	57	176	357
2009	286	43	57	174	370

Note: Missing data indicate that visitation statistics are not available for those agency and years. Bureau of Reclamation and the Tennessee Valley Authority (not shown in table) do not annually collect agency-wide data on visitation at recreation areas. The U.S. Forest Service released the first visitation figures from its National Visitor Use Monitoring Program in 2001 and began releasing numbers on an annual basis in 2004. The U.S. Army Corps of Engineers operated the Natural Resources Management System from 1994 to 1999 and in 2000 switched to the Operations and Maintenance Business Information Link, beginning data collection in 2002 and continuing through 2009. The 2000 and 2001 data are incomplete.

Source: U.S. Department of the Interior, USDA (2009). 2009 visitation statistics are from: National Park Service (http://www.nature.nps.gov/stats/viewReport.cfm, select '2009'), U.S. Fish and Wildlife Service (Kevin Kilcullen, Chief of Visitor Services, Kevin_Kilcullen@fws.gov), BLM (Recreation Management Information System Reports, Fiscal Year 2009), U.S. Forest Service (National Visitor Use Monitoring Results, USDA Forest Service, National Summary Report, Data collected FY 2005 through FY 2009. http://www.fs.fed.us/recreation/programs/nvum/nvum_national_summary_fy2009.pdf), U.S. Army Corps of Engineers (Wen-Huei Chang, Institute of Water Resources, Wen-Huei.Chang@usace.army.mil).

with some flattening in the early and mid-2000s. From a low of 30 million in 1996 to 43 million in 2009, annual growth has averaged approximately 1 million visitors per year.

Visitation at Bureau of Land Management areas has been relatively stable over the years shown. Visitation in 1996 was generally the same as in 2009. Highest years for reported visitation were 1997 and 1998. The lowest years were between 2001 and 2003. The Forest Service changed its visitation sampling and reporting system in 2000. Thus, estimates developed prior to 2000 were not comparable and could not be used to show a long-term visitation trend. Generally, visitation at national forests appears to have been declining over the years that estimates were available. In 2001, there were an estimated 214 million visits; in 2009 there were an estimated 174 million. Both the Bureau of Land Management and the Forest Service manage extensive acreages and thus much of the recreation use of their lands occurs on sites with very little development. Some of this land is in the National Wilderness Preservation System, which by definition is not developed, except for maintained trails.

The U.S. Army Corps of Engineers manages a number of reservoir and lock and dam systems. Total visitation at Corps projects has fallen slightly over the period shown, but not by much. The highest years were 1997 through 1999. Like the Forest Service, the Corps changed estimation and reporting systems and thus for 2 years visitation estimates were missing. The lowest year for visitation was 2003.

State park visitation—State park visitation is over 80 percent of the level of visitation to all federal lands on which visitation is recorded. It is nearly three times the visitation received by national parks. Table 7.7 shows estimated visitation at State parks from 1992 to 2009. This visitation grew pretty steadily from 1992 up through 2000. It then declined from about 787 million annually to 711 million in 2005. Since 2005, State park visitation grew back to 748 million in 2008 before declining again to 727 million in 2009. Current and historic levels of visitation vary greatly by region of the country. Nearly half of the most recent (2009) State park visitation occurred in parks in the North Region. Trend patterns have differed among regions of the country. Next largest visitation of State parks is in the Pacific Coast Region, followed by the South.

Figure 7.5 is a broad summary of Federal and State visitation trends for the United States. The Federal trend line is the sum across Federal agencies from table 7.6 and the State trend line is the national total from table 7.7. These trend lines demonstrate clearly that visitation to both Federal and State recreation areas have been level since the early to mid-1990s. Visitation increased for the NPS, U.S. Fish and Wildlife Service, and U.S. Army Corps of Engineers from 2008 to 2009, perhaps signaling a rebound in Federal land visitation in the coming years. State park visitation increased between 2007 and 2008 before falling in 2009. These very recent visitation trends are highly significant because they are occurring in the face of one of the strongest recessions in U.S. history.

Table 7.7—Millions of visits to state park system sites by region, 1992 to 2009

Year	North	South	Rocky Mountains	Pacific Coast	U.S. total
1992	312.2	162.9	49.0	179.6	703.8
1993	325.6	164.1	52.6	182.5	724.8
1994	329.3	167.7	54.3	174.3	725.5
1995	351.3	169.0	58.9	173.1	752.3
1996	358.5	152.3	58.8	176.0	745.6
1997	355.5	147.6	57.2	223.1	783.4
1998	354.7	153.1	59.9	193.1	760.8
1999	375.0	152.9	56.4	182.6	766.8
2000	370.6	151.5	58.9	205.6	786.6
2001	367.9	149.0	59.0	190.2	766.0
2002	367.7	145.0	60.9	184.6	758.2
2003	351.6	143.5	61.1	178.8	735.0
2004	340.2	135.6	62.2	180.8	718.8
2005	342.6	130.7	62.9	175.2	711.5
2006	373.7	131.3	61.7	173.5	740.2
2007	371.4	135.6	57.1	168.9	732.8
2008	370.6	134.5	63.7	179.2	748.0
2009	357.0	133.5	64.3	172.2	727.1

Source: National Association of State Park Directors, Annual Information Exchange annual reports.

The time period covered by each report is the previous 12-month period of July 1 to June 30. For example, the 2009 report covers July 1, 2008 through June 30, 2009. In a few cases, some States did not report visitation statistics for certain years. Previous year statistics were used in place of missing data. States and years include: Idaho in 2007 and 2006 (used 2005 data), Hawaii in 2006 (used 2005 data),

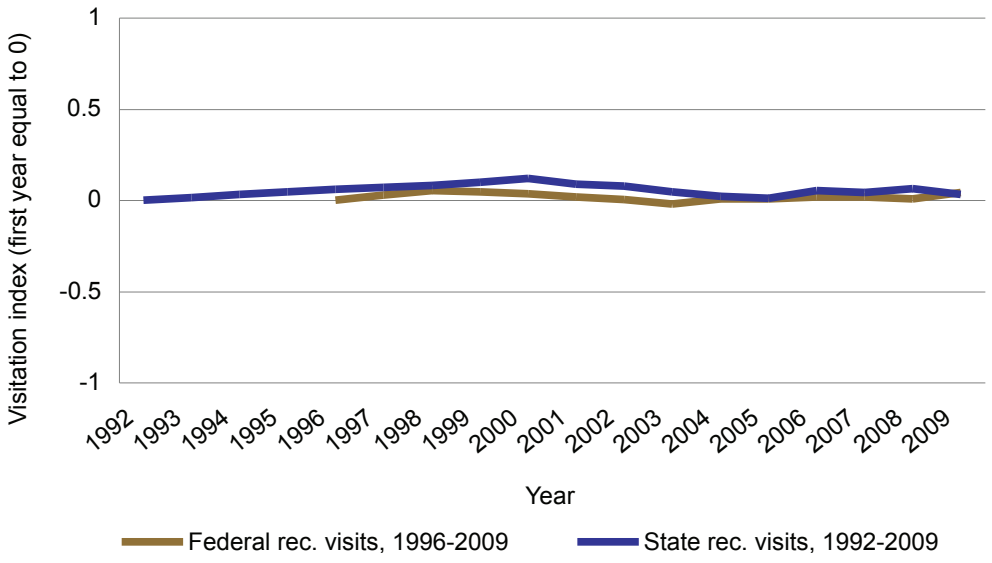

Figure 7.5—Indexed Federal and State visitation trends for the United States, 1996-2009.

Invited Paper

Tourism in Alaska: Past, Present, and Future

by Susan Alexander and Neil Hagadorn[18]

Susan Alexander

Neil Hagadorn

Introduction

Alaska is the largest State in the United States. With a total of 586,412 square miles, it is two-and-a-half times larger than Texas. Most of Alaska is in public land ownership. There are 228 million acres of Federal public lands and 95 million acres of State land also available for public access. These lands provide residents and nonresidents tremendous opportunities for nature-based recreation and tourism. In 2006 and 2007, Alaska residents were asked a number of questions about where and what kind of outdoor recreation activities in which they participate. This was done through a statewide survey of recreation behavior and attitudes. The top five activities for residents included hiking, camping, wildlife viewing, fishing, and food gathering (Fix 2009). Hall and others (2009) found that per capita participation in outdoor recreation is much higher in Alaska than in other western States. They found that the first six of the top ten activities in 2004 were nonconsumptive, among them driving for pleasure, walking, hiking, wildlife viewing and picnicking. Sport fishing and berry picking were the seventh and eighth most common outdoor activities, followed by backpacking and clamming. Hall and others (2009) found that major issues for residents are adequate public access to outdoor recreation areas and crowding in areas that are easily accessible. Dugan and others (2006) indicated that non-resident tourism in Alaska is primarily focused on nature-based activities. Alaska's vast public land base offers unparalleled opportunities to residents and nonresidents alike for a wide variety of primarily nature-based outdoor recreation activities.

[18]Susan Alexander, Regional Economist, and Neil Hagadorn, Assistant Director, Recreation, Heritage, Wilderness, and Tourism Resources, U.S. Department of Agriculture Forest Service, Alaska Region, Juneau, AK.

Between May 2008 and April 2009, 1,949,900 people visited Alaska, a State with a total resident population of 626,932. Figure 7.6 illustrates the total number of visitors to Alaska counted by how they depart the State. Because some cruise ship visitors exit the State by airplane, the actual number of incoming cruise ship passengers is higher than exiting traffic. In 2008, total cruise ship visitor numbers were 1,033,100, more than half of the full-year visitors to the State (McDowell Group 2009). One in three visitors are repeat travelers, and many independent travelers made their first trip north on a cruise ship (ATIA 2007). Tourism in Alaska consists of cruise ship visitation, packaged tours, and independent travelers (Cerveny 2005). Independent travelers plan their own itineraries and rely on local accommodations and visitor services.

Economic Impacts of Tourism in Alaska

The Alaska Travel Industry Association (ATIA 2008) estimated that visitors to Alaska in 2009 spent about $1.87 billion, generating over $152 million in State and local taxes and fees. Tourism is the leading industry sector in south-central, southeast, and interior Alaska, providing one in eight private sector jobs. The ATIA (2007) reports that the tourism industry is one of Alaska's most significant economic drivers. Spending by visitors has increased dramatically in the past 10 years due to increasing visitation and longer visits with the resulting expansion of tours, attractions, and retail stores. Summer visitors spend more than $1.5 billion in State, not including the cost of land-based cruises and tours, and transportation to and from Alaska. Tourism creates other jobs in sectors such as real estate, banking, communications, freight transport and warehousing, and many others. The ATIA (2007) estimates the total economic impact of the Alaska travel and tourism industry at $3.4 billion. Visitors contribute to State and local government services through taxes and fees. Taxes on lodging, car rental, and cruise passengers, in addition to dockage and moorage fees, corporate profits taxes, sales taxes, and transportation fees and licenses help pay for infrastructure construction and maintenance, emergency services, and the many other structural and services needs generated by visitors. Travel and tourism constitutes about 13.7 percent of all employment in the State, generating $1.15 billion in wages and benefits. The vast majority of travel-related businesses are small. Most companies have fewer than 50 employees, and many have fewer than 5 (ATIA 2007).

Cruise Ship Visitation

Cruise ship visitation began in Alaska more than 100 years ago, and came to many people's attention with the publishing of John Muir's naturalist diaries "Travels in Alaska," documenting his travels in the late 1890s. In the 1970s, larger cruise ships began to popularize the Inside Passage tours to Alaska, and enjoyed steady growth every year for over three decades. Over the past decade, much of the growth in the tourism industry in Alaska has been due to increased cruise travel. As can be seen in figure 7.7, cruise ship visitors almost tripled in number from 1994 to 2009. Cruise ship visitation has leveled off since 2007. Opinions vary as to why, but include market saturation,

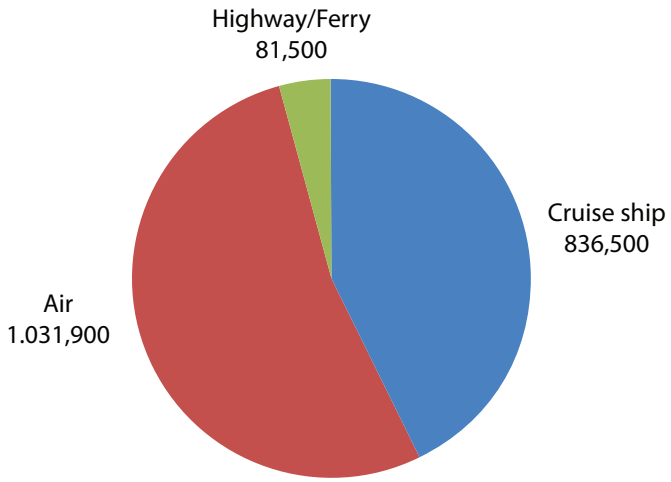

Figure 7.6—Alaska visitor volume, May 2008-April 2009, by exit mode.

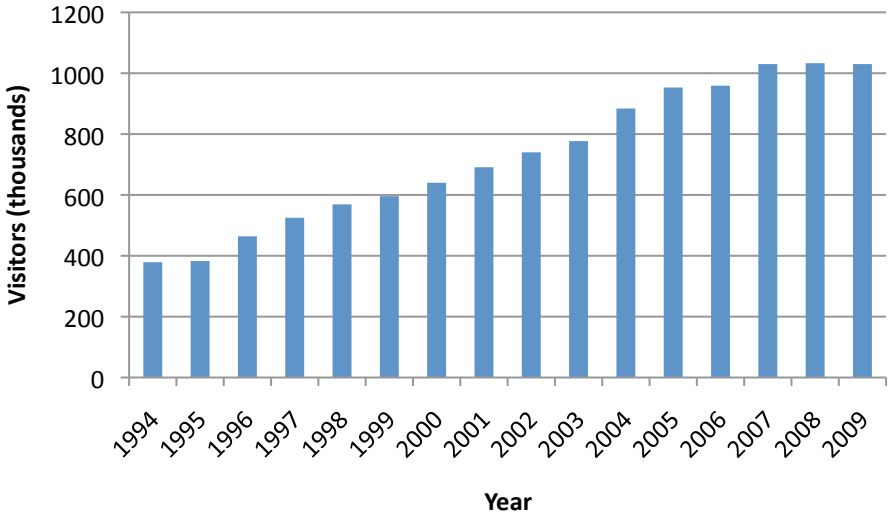

Figure 7.7— Alaska cruise ship visitation, 1994 to 2009, in thousands.

full use of existing infrastructure, and the downturn in the economy. The passage of the 2006 state cruise ship initiative resulted in wide ranging requirements for the cruise ship industry, including a $50/person head tax, very strict water quality standards, and corporate income taxes. Citing these requirements, several major cruise lines have made the decision to redeploy their ships to other international destinations, which will result in significant reductions in the number of ships and passengers visiting Alaska ports of call. The cruise industry is a full-year, international business with very mobile assets. Changes in destinations and redeployment from one international destination to another are not unusual.

Hall and others (2009) state that tourism is not evenly dispersed throughout the State. Cruise destinations and timing determine where and when cruise ship passengers recreate. Shore excursions take place over 4 to 10 hours, and vary from a tour of a visitor center to dog sledding on glaciers. Cruise lines expanded their capacity to meet surging demand in the past two decades by increasing the size and quantity of ships. Larger ships translate into larger impacts, both to the environment and to host communities.

Cruise ship visitation has significant social and economic impacts in southeast and south-central Alaska, with localized impacts extending into places such as Denali National Park where excursions take place. The increase in visitor volume, particularly in southeast Alaska, has resulted in an escalation in the frequency and intensity of use of natural areas with special scenic qualities and wildlife viewing opportunities. The increased numbers of visitors has resulted in tension between different users, such as between charter, recreational, subsistence, and commercial fishing as the number of charters has increased. Where visitor volumes are high, local residents report increased congestion in town, a quickened pace of life, growing commercialization, and social frictions among key stakeholders (Cerveny 2005). Locals in small communities with cruise ship visitation express concerns that outside corporations can eventually dominate local tourism. Locally-owned enterprises are more prevalent in smaller communities, but in larger more developed cruise ports, there is a tendency toward outside investment. Corporate decisions by the international cruise corporations to change docking schedules have repercussions throughout local economies (Cerveny 2005). There is a complex and highly competitive system for pre-booking cruise ship shore excursions. Businesses with exclusive cruise contracts make price and tour information available only to cruise passengers, and often agree not to sell tours without going through the cruise line. Competition exists between companies in a community and with other ports (Dugan and others 2006). Cerveny (2005) asserts that the ability of community leaders to participate in tourism development is central to the creation of a sustainable tourism industry. She found that tribal officials see benefits in promoting the sharing and learning of cultural traditions, particularly as young people learn stories, songs, dances, and aesthetic traditions.

While large cruise ships have significant impacts on communities and the economy, it can also be argued that having such large volumes of visitors concentrated on self-contained vessels may actually have less environmental

impact than many more, smaller vessels, or independent travelers and the associated flights, rental cars, and local impacts. These large ships now carry as many as 2,500 passengers; it would take as many as 25 smaller ships to accommodate as many visitors.

National Forest Recreation and Tourism in Alaska

Cruise ship visitors constitute the majority of visitors to national forests in Alaska. As in the rest of the State, estimates indicate that the number of independent visitors to Alaska national forests has remained fairly constant in the past decade. The Chugach National Forest has numerous campgrounds, 42 public recreation cabins, and one visitor center. The Tongass National Forest also has numerous campgrounds, in addition to 148 recreation cabins, four wildlife viewing areas, and two visitor centers. Most cruise ship passengers on excursions, other non-residents, and even many residents visit national forests with commercial recreation guides and outfitters. There are currently 398 special use permits for outfitters and guides in the Alaska Region. Outfitters and guides offer many different adventures, including sea kayaking, fly fishing, hunting, heli-skiing, wilderness tours, and helicopter flightseeing and landings on the Juneau ice field, complete with dog sled rides. These outfitters and guides provide unique opportunities to educate and inform visitors of national forest ecosystems and management. National forests are the cornerstone of their business.

Projecting Tourism and Recreation in Alaska

Hall and others (2009) examined tourism and recreation forecasting in Oregon, Washington, and Alaska. They found that literature on forecasting suggests that the best guide for predicting short-term trends in outdoor recreation activities may be the prior years' numbers. A great deal of variation can occur at the local scale. Alaska's population is increasing, so demand for recreation by residents will also increase, assuming newcomers have the same desires to participate as do current residents. Further crowding at popular sites and growing conflict among different users may be an issue. Facility condition and maintenance are significant concerns of residents. Winter sports are projected to increase, whereas they have declined elsewhere. South-central and southeast Alaska is the most populated and receive the heaviest recreation use from both residents and visitors.

Cruise lines are expected to dominate Alaska tourism and visitation for the next decade as the largest market segment of visitation. As a result, the global changes in the industry will impact visitation to the national forests in Alaska. The Cruise Line Agencies of Alaska, an industry group that serves cruise lines visiting Alaska, has reported that Alaska is a long-haul destination, which means that ships have to travel a long distance (Seattle or Vancouver) to the first port of call. As a result, Alaska is in direct competition with other destinations such as the Canadian Maritime Provinces, which have a shorter run from such population centers as New York City and Boston.

In the short term, cruise ship visitation is projected to decrease. Projections for 2010 and 2011 are for fewer dockings and fewer ships coming to Alaska ports. Holland America and Princess Cruise Lines have reported a projected decrease in visitation to both Southeast and South Central Alaska destinations of 10 to 30 percent due to the increased costs of the Alaska Cruise Ship Initiative. Since these are the largest cruise lines with multiple ships and visits, it will likely result in a 10 percent reduction to communities like Juneau and Ketchikan, and as much as 30 percent in south-central Alaska ports. At the same time, Disney Cruises and some others have indicated that they will join the Alaska market in 2011, which may have some moderating impacts, but the number of new ships is a fraction of the number which has been announced to be removed from the Alaska market. As Cerveny (2005) found in her studies of small southeast Alaska communities, the impacts on small communities from shifts in docking schedules from one community to another, and the removal of ships from the system entirely, will be disparate, and in some cases, significant.

End Invited Paper

8. U.S. OUTDOOR RECREATION PARTICIPATION PROJECTIONS TO 2060

By J.M. Bowker and Ashley Askew[19]

J.M. Bowker

Ashley Askew

In this chapter, we develop and present national outdoor recreation participation projections for 17 recreation activities or activity composites through 2060. (The projections are for the population of Americans age 16 and older, referred to hereafter in this section as "adults.") This charge is consistent with the Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974, which mandates periodic assessments of the condition and trends of the Nation's renewable resources. The RPA Assessment provides a snapshot of current U.S. forest and rangeland conditions and trends on all ownerships, identifies drivers of change, and projects 50 years into the future, including analyses of the status and trends for recreation, water, fish, wildlife, biodiversity, forest and range resources, as well as land use change, climate change, and urban forestry.

An individual is said to have participated in an outdoor recreation activity if he reported engaging in that activity at least once in the preceding 12 months. Participation is a general indicator of the size of a given market and also can be indicative of relative public interest. For example, if over 80 percent of the population visits day use developed sites, whereas only 4 percent participate in snowmobiling, public resource management agencies may be more concerned with providing developed recreation sites rather than snowmobiling opportunities. It is important, therefore, for managers and legislators to know how many people participate in a given recreation activity, and how this measure could change over time. Measures of participation, either per capita or absolute numbers of participants, provide the broadest measure of a recreation market.

Past outdoor recreation trends, as well as recent ones, are important indicators of what may happen with outdoor recreation in the near future (Hall and others 2009). However, simple descriptive statistics or trends do not formally explore underlying factors and associations which may be driving these trends. Thus a trend may be of limited value if the time horizon is long and factors driving the trend are expected to deviate substantially from their historic levels. Trend analysis can therefore be supplemented by development of projection models which attempt to relate recreation participation directly to factors known to influence this behavior. The projection models can then be used to simulate future participation by combining external projections of relevant factors, including population growth, with estimated model parameters. Such modeling allows changes in recreation participation over time to be assessed in light of previously unseen changes in factors driving this participation, e.g., large changes in social demographics.

Previous research (Bowker and others 1999, Bowker and others 2006, Cicchetti 1973, Hof and Kaiser 1983b, Leeworthy and others 2005) has established that factors including race, ethnicity, gender, age, income, and supply or proximity to settings affect outdoor recreation participation as well as participation intensity or consumption. Reliable information about these factors is often available from external sources, like the U.S. Census or parallel research efforts aimed at modeling and simulating exogenous variables into the future. Such information is thus available long before recreation survey results can be obtained.

A two-step approach was used to develop projections for individual participation in 17 outdoor recreation activities, or activity composites (table 8.1). The first step, or model estimation step, focused on the development of statistical models of per capita participation for each of the activities. The statistical models represent the probability that one participated in an activity. This information is important as it allows a better understanding of the factors that influence individual recreation choices or behavior. As well, it allows one to examine how, under the assumption of static tastes and preferences, average individual behavior changes over time as underlying factors change.

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The second step, or simulation step, combines the estimated models with external projections of relevant explanatory variables to generate estimated per capita participation probabilities for each activity at 10-year intervals to 2060. Per capita estimates are in turn combined with population projections to derive national estimates of adult participants for each activity. These estimates are then used to create indices by which 2008 baseline estimates of participants for the various activities found in table 8.1 are scaled. Indices of estimated adult participants for each of the 17 activities are presented across the three 2010 RPA Assessment Scenarios described below. For discussion, the activities are grouped into the broader categories as follows: visiting developed sites; viewing and photographing nature; backcountry activities; motorized activities; hunting and fishing; non-motorized winter activities; and non-motorized water activities (table 8.1).

The chapter proceeds as follows. First, we present a brief discussion of the statistical methods and previous research upon which our per capita participation models are based. Next we describe the data used in the estimation step including projections of covariates for the three assessment scenarios. We then present the results of our estimation and simulation steps with indexed participation projections by activity and assessment scenario to 2060. Finally, we discuss some of the key findings within and across categories as well as with respect to demographics.

Methods and Data

Modeling—Models used to assess recreation demand decisions can be grouped into three basic categories: site-specific user models, site-specific aggregate models, and population-level models (Cicchetti 1973). Available data necessitates population-level modeling for this study. Cicchetti (1973) pioneered the use of cross-sectional population-level models with the household-based 1965 National Survey of Recreation to estimate annual participation and use nationally for many outdoor recreation activities. Estimated models and U.S. Census Bureau projections were then used to estimate participation and use to 2000.

The cross-sectional population-level approach has subsequently been used to estimate and project participation and use for recreation activities at national and regional levels (Bowker 2001; Bowker and others 1999; Hof and Kaiser 1983a, 1983b; Leeworthy and others 2005; Walsh and others 1992). Alternative approaches, wherein population data were combined with individual site-level data to project participation or consumption have also been used (Bowker and others 2006; Cordell and Bergstrom 1991; Cordell and others 1990; Englin and Shonkwiler 1995; English and others 1993).

In this chapter, we employ national cross-sectional population-level logistic models to describe the probability of adult participation in activities as:

$$Pij = \frac{1}{[1 + exp(-XijB)]} \quad (4)$$

where

P_{ij} = probability that the jth individual claims to have participated in the ith recreation activity in the preceding year

X_{ij} = socio-demographic characteristics unique to activity i for individual j and relevant supply variables for activity i pertaining to individual j's location (table 8.2)

B = vector of parameters which are estimated using SAS Institute Inc. (2004)

The models for each activity, based on National Survey on Recreation and the Environment (NSRE) data from 1999 to 2009, were combined with baseline population-weighted sample means for the explanatory variables to create an initial predicted per capita participation rate for each activity. The per capita participation rates were recalculated at 10-year intervals using projected external data. Indices were then created for the participation rates by which the NSRE 2005-09 average population-weighted participation frequencies were scaled, leading to indexed per capita participation rates for each of the 17 activities with 2008 as a baseline. Indexing the 2005-09 averages by changes in model-predicted rates was judged to be superior in terms of mitigating potential non-linearity biases associated with complete reliance on logistic predicted values (Souter and Bowker 1996). The indexed participation rate estimates were then combined with projected changes in population, according to each of the three 2010 RPA Assessment scenarios, to yield indexed values for total adult participants across the 17 activities.

2010 RPA Assessment Scenarios—Future renewable resource conditions are influenced by common driving forces such as population change, economic growth, and land use change, while other drivers of change are unique to individual resources. The purpose of scenarios in the 2010 RPA Assessment is to characterize the common demographic, socioeconomic, and technological driving forces underlying changes in resource conditions in order to evaluate the sensitivity of resource trends to a feasible future range of these driving forces. The use of scenarios links underlying assumptions of the individual analyses and frames the future uncertainty in these driving forces within

Table 8.1—Base year 2008 number of participants used in outdoor recreation participation projection models, by activity category

Category and activity	Participants	Participation rate
	thousands	*percent*
Visiting Developed Sites		
Developed Site Use – family gatherings, picnicking, developed camping	192,739	81.9
Visiting Interpretive Sites – nature centers, zoos, historic sites, prehistoric sites	157,403	66.9
Viewing and Photographing Nature		
Birding	81,449	34.6
Viewing – viewing, photography, study, or nature gathering related to fauna, flora, or natural settings	189,418	80.5
Backcountry Activities		
Challenge Activities – caving, mountain biking, mountain climbing, rock climbing	25,134	10.7
Equestrian – horseback riding on trails	16,393	7.0
Hiking – day hiking	78,256	33.3
Visiting Primitive Areas – backpacking, primitive camping, wilderness	90,164	38.3
Motorized Activities		
Motorized off-road use – off-road driving	47,937	20.4
Motorized snow use – snowmobiling	9,440	4.0
Motorized water use – motorboating, waterskiing, or using personal watercraft	61,960	26.3
Hunting and Fishing		
Hunting – small game, big game, migratory bird, other	27,909	11.9
Fishing – anadromous, coldwater, saltwater, warmwater	72,714	30.9
Non-Motorized Winter Activities		
Downhill Skiing – downhill skiing, snowboarding	23,729	10.1
Winter Activities – cross-country skiing, snowshoeing	7,778	3.3
Non-Motorized Water Activities		
Swimming – swimming, snorkeling, surfing, diving, visiting beaches or watersides	143,204	60.9
Floating – canoeing, kayaking, rafting	39,800	16.9

Note: Activities are individual or activity composites derived from the NSRE. Participants are determined by the product of the average weighted frequency of participation by activity for NSRE data from 2005-2009 and the adult (>16) population in the United States during 2008 (235.4 million). The 2008 Census population estimate corresponds to the A1B scenario.

Source: USDA Forest Service (2009).

Table 8.2—Socioeconomic and supply variables used in outdoor recreation participation projection models

Variable	Description
Gender	1=male
American Indian	1=Am. Indian, non-Hispanic, 0=otherwise
Asian/Pacific Islander	1=Asian/Pac Islander, 0=otherwise
Hispanic	1=Hispanic, 0=otherwise
Black	1=Black, non-Hispanic, 0=otherwise
Bachelor's	1=Bachelor's degree, 0=otherwise
Below High School	1=Less than high school, 0=otherwise
Post Graduate	1=Post-graduate degree, 0=otherwise
Some College	1=Some college or technical school, 0=otherwise
Age	Respondent age in years
Age Squared	Respondent age squared
Income	Respondent household income (2007 dollars)
Population Density	County area divided by population. Base 1997.
Coastal	1=County on coast, 0 otherwise
for_ran_pcap	Sum of forest land acres and rangeland acres divided by population at county level and at 50, 100, 200-mile radii. Base 1997.
water_pcap	Water acres divided by population at county level and at 50, 100, 200-mile radii. Base 1997.
mtns_pcap	Acres in mountainous divided by population. Base 1997.
pct_mtns_pcap	Percentage of county acres in mountains divided by population (x100,000). Base 1997.
natpark_pcap	Number of nature parks and similar institutions divided by population (x100,000). Base 1997
fed_land	Sum USFS, NPS, USFWS, BLM, USBR, TVA, and USACE acreage. Base 1997.
fed_land_pcap	Sum USFS, NPS, USFWS, BLM, USBR, TVA, and USACE acreage divided by population. Base 1997.
days_snow	Mean number snow days depth >=1.0 inch (per station). Base 2000.
med_days_snow	Mean number snow days depth >=1.0 inch (per station). Base 2000.
nwps_pcap	National Wilderness Preservation System acres divided by population (x1,000). Base 2005.
avg_elev	Average elevation in meters at county level and 50, 100, 200-mile radii. Base 1997.

USFS=U.S. Forest Service; NPS=National Park Service; USFWS=U.S. Fish and Wildlife Service; BLM=Bureau of Land Management; USBR=U.S. Bureau of Reclamation; TVA=Tennessee Valley Authority; USACE=U.S. Army Corps of Engineers.

the integrated modeling and analysis framework of the 2010 RPA Assessment.

Three scenarios, considered equally likely, were chosen that are linked to globally consistent and well-documented scenarios used in the 4th Assessment by the Intergovernmental Panel on Climate Change (IPCC) (IPCC 2007). The scenarios include a range of future global and U.S. socioeconomic and climate conditions that are likely to have different effects on future U.S. resource conditions and trends. The IPCC scenario "names" have been maintained in the RPA Assessment documentation for continuity: A1B, A2, and B2. The IPCC global data were scaled to the U.S. national and subnational levels to facilitate the resource analyses for the 2010 RPA Assessment. U.S. gross domestic product and population projections used in IPCC analyses were updated, and the updated U.S. population and disposable personal income data were then downscaled to the U.S. county level (Zarnoch and others 2010). In addition, the associated climate scenario output from several global circulation models were downscaled to the county scale; however, these climate data are not used in this chapter.

As shown in figure 8.1 and figure 8.2, A1B corresponds to mid-range population growth and the highest average personal and household income level of the three IPCC scenarios. Under this scenario, the United States can expect to see about 447 million people (370 million adults), an average personal income of around $73,000, and an average household income of $137,000 by 2060. Scenario A2 projects the highest population growth, reaching more than 505 million people (418 million adults) by 2060, and the lowest projected average personal and household income, around $50,000 and $97,000, respectively. Scenario B2 projects the lowest population growth and mid-level personal income, predicting a population of 397 million people (329 million adults) with average personal income around $54,000 and household income around $108,000.

In accordance with the assessment scenarios A1B, A2, and B2, projected land use changes are incorporated from Wear (2011) to develop supply variables listed in table 8.2. In general, Wear's projections indicate an increase in urban area of 1 to 1.4 million acres per year nationally between 1997 and 2060; a decline in forest area of 24 to 37 million acres, and a decline in cropland of 19 to 28 million acres by 2060. Wear also projects that about 90 percent of forecasted forest land losses are found in the Eastern United States with more than half in the South. Federal lands, water areas, weather conditions (snow days), and county elevations are assumed static throughout the projection period.

Results

Estimation results for all models and simulation results for the three 2010 RPA Assessment scenarios are reported in electronic appendix A, retrievable in read-only format at Web site link for appendix A. Reported results include model estimates for each activity, values for explanatory variables by scenario and year, odds ratios which indicate the odds of participation occurring in one group to the odds of it occurring in another group, and graphics of overall participant growth by activity and assessment scenario. Throughout the remainder of this section, we present the

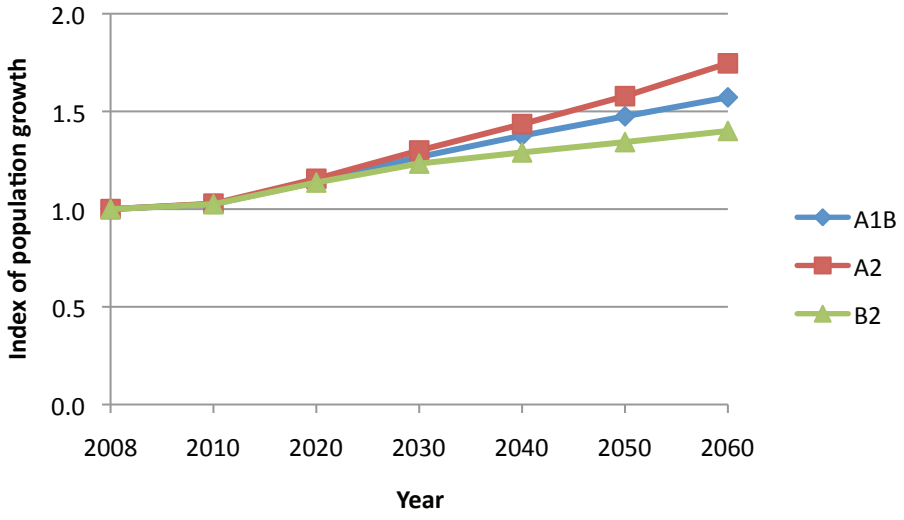

Figure 8.1—Adult population growth from 2008 to 2060 by RPA Assessment scenario.

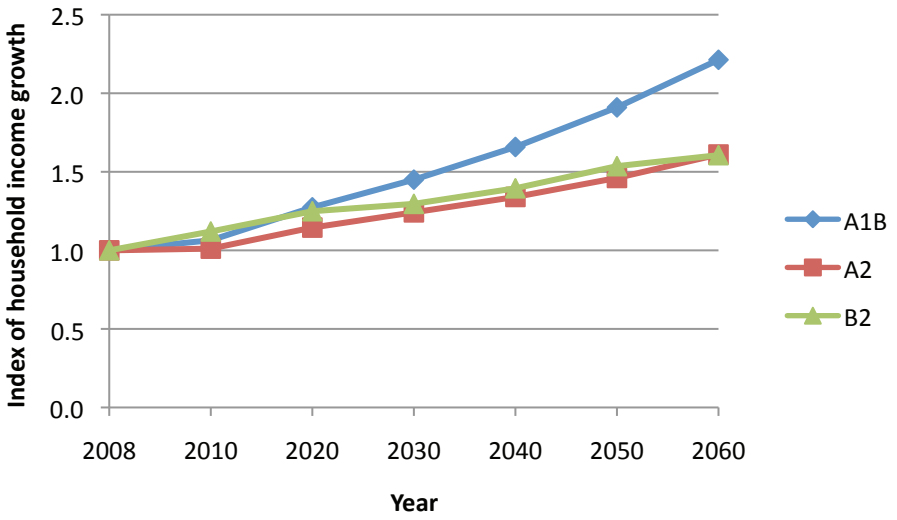

Figure 8.2—NSRE average household income growth from 2008 to 2060 by RPA Assessment scenario.

results for per capita and overall changes in participation by activity and assessment scenario at 10-year intervals from 2010 to 2060.

Visiting developed sites—This popular outdoor recreation activity category includes two composite activities. First is developed site use, which includes NSRE activities such as family gatherings, picnicking, and developed camping. Hence, anyone who reported engaging in any of these three activities in the previous 12 months was considered a participant in developed site use. On average between 2005 and 2009, this included about 82 percent of adults or more than 192 million people. Moreover, because our projections only relate to adults and many kids participate in these activities, participation including all age groups might be much higher. As table 8.3 indicates, per capita participation growth in this activity is expected to be static over the next 50 years across each of the assessment scenarios, with A1B showing the most change at less than a 3 percent change from 2008. However, as this composite activity is highly popular to begin with, the static participation rate means that overall participants in this activity grow by the rate at which the population increases for each scenario (table 8.3). Thus A2, which has the greatest expected population growth, demonstrated an increase in participants of nearly 77 percent to approximately 340 million adults per year.

Another popular activity composite is visiting interpretive sites which include NSRE activities such as visiting nature centers, zoos, historic sites, and prehistoric sites. More than 156 million adults, or about 67 percent, of all those over the age of 16 participated in at least one activity in this outdoor recreation category annually from 2005 to 2009. Visiting interpretive sites showed more expected 50-year growth in per capita participation than developed site use, with a range of from just over 5 percent in B2 and A2 to nearly 9 percent under A1B (table 8.4). The somewhat greater participation rate growth relative to developed site use may be due to the facts that developed site use is negatively correlated with population age which is expected to rise out to 2060, and that it is positively correlated with available federal land per capita which is expected to decline over the same period as the population grows but federal land holdings are assumed to be constant.

As per capita participation is expected to rise between 5 and 9 percent, the number of participants will exceed the rate of population growth, with A2 showing 84 percent growth to at least 295 million participants by 2060. Assessment scenario B2, having the lowest projected population growth, still showed an increase in visiting interpretive sites to over 230 million participants per year over the next 50 years.

Viewing and photographing nature—The category is comprised of birding, which includes viewing and/or photographing birds, and a more general activity aggregate called viewing. The latter consists of a number of NSRE activities including anything wherein viewing, photography, study, or gathering is involved related to fauna, flora, or natural settings. From 2005 to 2009, an average of 35 percent of all adults, or 82 million people, participated

Table 8.3—Projections of per capita participation rate and number of participants, 2010 to 2060: Developed site use—family gatherings, picnicking, or developed camping

Participation rate		Indexed per capita participation					
2008	Scenario	2010	2020	2030	2040	2050	2060
0.819	A1B	1.001	1.005	1.007	1.012	1.019	1.026
0.819	A2	1.000	1.002	1.002	1.004	1.008	1.012
0.819	B2	1.002	1.004	1.004	1.007	1.011	1.014
Annual participants		Indexed number of participants					
2008 (x1,000)	Scenario	2010	2020	2030	2040	2050	2060
192,739	A1B	1.027	1.145	1.276	1.393	1.502	1.613
196,067	A2	1.028	1.157	1.303	1.441	1.591	1.767
192,238	B2	1.028	1.141	1.238	1.298	1.358	1.419

Note: Base year participant numbers in 2008 vary according to projected population for 2008 under each of the 2010 RPA Assessment scenarios.

Source: National Survey on Recreation and the Environment 1999-2009.

Table 8.4—Projections of per capita participation rate and number of participants, 2010 to 2060: Visiting interpretive sites—nature centers, prehistoric sites, historic sites, etc.

Participation rate		Indexed per capita participation					
2008	Scenario	2010	2020	2030	2040	2050	2060
0.669	A1B	1.004	1.019	1.032	1.048	1.067	1.089
0.669	A2	1.000	1.011	1.018	1.028	1.040	1.054
0.669	B2	1.008	1.018	1.022	1.032	1.046	1.055
Annual participants		Indexed number of participants					
2008 (x1,000)	Scenario	2010	2020	2030	2040	2050	2060
157,403	A1B	1.030	1.161	1.307	1.442	1.574	1.711
160,121	A2	1.029	1.167	1.323	1.475	1.642	1.840
156,994	B2	1.033	1.157	1.260	1.331	1.405	1.477

Note: Base year participant numbers in 2008 vary according to projected population for 2008 under each of the 2010 RPA Assessment scenarios.

Source: National Survey on Recreation and the Environment 1999-2009.

annually in birding. In the more broadly defined viewing aggregate, which would include birding, nearly 81 percent of the adult population, or about 190 million people, participated annually during the same period.

Per capita growth in birding is expected to increase by between 4 and 7 percent over the next 50 years to more than 36 percent of adults or about 82 million people (table 8.5). Assessment scenario A1B indicated the greatest per capita participation rate growth. This is most likely due to income, a positive influence on birding, increasing more relative to the other scenarios. Combining the per capita growth rates with expected population changes led to an 81 percent increase in birders under the higher population growth scenario, A2, to over 150 million birding participants by 2060. The B2 and A1B scenarios resulted in participant increases from 46 to 69 percent, respectively over the next 5 decades.

The broader viewing category will remain essentially unchanged over the next 50 years in terms of the adult participation rate. Scenarios A2 and B2 will lead to around 1 percent increases, while A1B will affect just over a 3 percent increase in adult participation rate by 2060 (table 8.6). Despite the larger participation rate increase with A1B, overall viewing participants will increase the most under the A2 scenario because of the larger increase in population growth. By 2060, nearly 340 million adults will be participating in at least one form of nature viewing, an increase from the 190 million adults of today.

Backcountry activities—In this chapter, the general category backcountry activities encompasses a number of activities that are most often pursued in undeveloped but accessible lands. Four activities, or composites, are included: Challenge activities, equestrian activities, hiking, and visiting primitive areas. Challenge activities include the NSRE activities of caving, mountain climbing, and rock climbing. These activities are typically associated with youth. Presently, challenge activities are engaged in by just under 11 percent of adults. This rate is expected to increase under all of the assessment scenarios by at least 6 percent over the next 50 years, with the biggest participation rate increase, nearly 18 percent, coming under scenario A1B (table 8.7). The higher rate of participation under A1B is probably due to the higher projected income relative to A2 and B2, given the positive association of income with participation (see appendix A). Challenge activity participation is projected to grow from about 25 million people currently to about 47 million under both A1B and A2, while reaching around 37 million annual adult participants by 2060 under B2.

Equestrian activities, or horseback riding on trails, claimed 7 percent of the adult population annually as participants. This percentage is expected to increase to nearly 19 percent by 2060 under scenario A1B, while increasing by 3 percent or less for scenarios A2 and B2 (table 8.8). The difference can mostly be attributed to the higher income associated with A1B for the next 50 years, despite the fact that scenario B2 is less susceptible to forest and rangeland loss over the same

Table 8.5—Projections of per capita participation rate and number of participants, 2010 to 2060: Birding—viewing or photographing birds

Participation rate		Indexed per capita participation					
2008	Scenario	2010	2020	2030	2040	2050	2060
0.346	A1B	1.007	1.025	1.044	1.055	1.063	1.075
0.346	A2	1.004	1.018	1.032	1.036	1.037	1.039
0.346	B2	1.01	1.024	1.037	1.041	1.044	1.043
Annual Participants		Indexed number of participants					
2008 (x1,000)	Scenario	2010	2020	2030	2040	2050	2060
81,449	A1B	1.033	1.168	1.323	1.451	1.568	1.69
82,855	A2	1.033	1.175	1.342	1.487	1.637	1.814
81,237	B2	1.036	1.163	1.278	1.343	1.402	1.46

Note: Base year participant numbers in 2008 vary according to projected population for 2008 under each of the 2010 RPA Assessment scenarios.

Source: National Survey on Recreation and the Environment 1999-2009.

Table 8.6—Projections of per capita participation rate and number of participants, 2010 to 2060: Viewing nature—viewing or photographing birds, other wildlife, natural scenery, flowers, etc. or gathering mushrooms, berries, etc.

Participation rate			Indexed per capita participation				
2008	Scenario	2010	2020	2030	2040	2050	2060
0.805	A1B	1.002	1.008	1.012	1.017	1.025	1.035
0.805	A2	1	1.002	1.002	1.003	1.006	1.009
0.805	B2	1.005	1.007	1.006	1.008	1.012	1.012
Annual participants			Indexed number of participants				
2008 (x1,000)	Scenario	2010	2020	2030	2040	2050	2060
189,418	A1B	1.028	1.148	1.281	1.4	1.512	1.627
192,690	A2	1.028	1.157	1.303	1.44	1.587	1.762
188,927	B2	1.03	1.144	1.24	1.299	1.359	1.417

Note: Base year participant numbers in 2008 vary according to projected population for 2008 under each of the 2010 RPA Assessment scenarios.

Source: National Survey on Recreation and the Environment 1999-2009.

Table 8.7—Projections of per capita participation rate and number of participants, 2010 to 2060: Challenge activities—mountain climbing, rock climbing, or caving

Participation rate			Indexed per capita participation				
2008	Scenario	2010	2020	2030	2040	2050	2060
0.107	A1B	1.005	1.025	1.036	1.069	1.117	1.176
0.107	A2	0.996	1.004	1.001	1.014	1.038	1.066
0.107	B2	1.014	1.023	1.013	1.028	1.056	1.073
Annual participants			Indexed number of participants				
2008 (x1,000)	Scenario	2010	2020	2030	2040	2050	2060
25,134	A1B	1.031	1.168	1.313	1.471	1.647	1.848
25,568	A2	1.025	1.159	1.302	1.456	1.638	1.861
25,069	B2	1.04	1.162	1.249	1.326	1.419	1.502

Note: Base year participant numbers in 2008 vary according to projected population for 2008 under each of the 2010 RPA Assessment scenarios.

Source: National Survey on Recreation and the Environment 1999-2009.

time period (see appendix A). When population growth is included to derive the number of annual participants, A1B leads to an increase of nearly 87 percent, from just over 16 million per year to over 30 million annually in 2060. The high population growth under scenario A2 leads to about 77 percent more equestrian activity participants in 2060 than in 2008.

Hiking is perhaps the most popular single backcountry activity. In 2008, about 33 percent of adults nationally participated in hiking, totaling nearly 80 million people. Among the three assessment scenarios, hiking participation per capita is expected to increase by 7 to 10 percent by 2060, increasing the most under A1B (table 8.9). A notable model result for hiking is that it is the only activity for which Hispanic ethnicity is associated with a higher participation rate than Whites (see appendix A). As the participation rates are similar across scenarios, A2's higher population growth leads to the greatest increase in hiking participants over the time span, nearly 88 percent, resulting in about 150 million hikers by 2060. Scenarios B2 and A1B led to hiking participant increases from 2008 of about 50 percent and 72 percent, respectively.

The final backcountry activity is an aggregate called visiting primitive areas, which consists of participating in NSRE activities such as backpacking, primitive camping, and visiting a wilderness, both designated and undesignated. This composite accounted for 90 million participants in 2008, or about 38 percent of all adults. Annual per capita participation in this category is expected to decline by up to 5 percent over the next 50 years (table 8.10). Increased population density and declines in wilderness acres per capita, and forest and rangeland per capita, appear to be factors influencing the participation rate decline (see appendix A). However, overall participation is expected to increase by between 33 and 65 percent across scenarios by 2060 because population growth offsets the decline in participation rates.

Motorized activities—Three categories of non-roaded motorized activities are considered in this section, namely, motorized off-road driving, motorized water activities, and motorized snow activities. Per capita participation in off-road driving averaged about 20 percent annually for adults between 2005 and 2009. This participation amounted to around 48 million adult participants in 2008 (table 8.11). Future participation rates in off-road driving are expected to decline under two of three assessment scenarios, A2 (18 percent) and B2 (8 percent), while the percent of adult participants under A1B, while declining to 2040, will be about the same in 2060 as today. A2's relatively larger decline in participation rate can be attributed to smaller income growth than A1B, and a larger decline in federal and private forest and range land than either B2 or A1B (see appendix A). Despite the static or declining rate of growth in per capita participation, the number of participants in off-road driving will increase by 29 to 56 percent under the assessment scenarios to between almost 60 and 75 million because the rate of population growth will outstrip any decline in per capita participation through 2060.

Motorized water activities including the NSRE activities of motor boating, waterskiing, and personal watercraft use has the highest per capita participation rate of the motorized activities (26 percent) and thus the greatest number of annual adult participants at over 60 million (table 8.12). Under assessment scenario A1B, per capita participation is expected to grow by 15 percent over the next five decades to about 30 percent of all adults, while under scenarios A2 and B2 growth will essentially be static. Income growth under A1B is the biggest factor in causing the greater per capita growth. Overall, the number of adult participants in motorized water activities increases faster than the population under scenario A1B to about 112 million in 2060. With per capita participation constant under both A2 and B2, the number of motorized water activity participants mirrors population growth, yielding about 107 million and 87 million participants in 2060, respectively.

Motorized snow activity is limited to snowmobiling, an activity undertaken by 4 percent of the adult population, or between 9 and 10 million people in 2008. Per capita participation in snowmobiling is expected to decline under assessment scenarios A2 and B2 by just over 10 percent, or about one-half a percentage point over the next 50 years (table 8.13). Under scenario A1B, the adult snowmobiling participation rate will rise by almost 3 percent by 2060, the difference being mostly accounted for by A1B's income increase relative to the other two scenarios (see appendix A). Overall, by 2060, the number of snowmobiling enthusiasts will increase to nearly 12 million under scenario B2, and about 15 million under scenario A1B.

Hunting and fishing—Based on NSRE definitions, traditional consumptive wildlife pursuits like hunting and fishing remain popular outdoor activities, with about 28 million and 73 million adult participants annually in 2008. However, on a per capita basis, these pursuits are showing some decline from past decades. Here, hunting consists of participation in the pursuit of big game, small game, or migratory birds, as identified by a NSRE hunting screener question. The annual adult hunting participation rate, nearly 12 percent in 2008, is projected to decline by up to 30

Table 8.8—Projections of per capita participation rate and number of participants, 2010 to 2060: Equestrian activities—horseback riding on trails

Participation rate		Indexed per capita participation					
2008	Scenario	2010	2020	2030	2040	2050	2060
0.07	A1B	1.005	1.024	1.028	1.06	1.115	1.186
0.07	A2	0.992	0.99	0.973	0.976	0.992	1.015
0.07	B2	1.02	1.02	0.992	0.999	1.024	1.031
Annual participants		Indexed number of participants					
2008 (x1,000)	Scenario	2010	2020	2030	2040	2050	2060
16,393	A1B	1.031	1.166	1.302	1.459	1.644	1.865
16,676	A2	1.02	1.143	1.265	1.401	1.565	1.771
16,350	B2	1.046	1.158	1.223	1.288	1.376	1.444

Note: Base year participant numbers in 2008 vary according to projected population for 2008 under each of the 2010 RPA Assessment scenarios.

Source: National Survey on Recreation and the Environment 1999-2009.

Table 8.9—Projections of per capita participation rate and number of participants, 2010 to 2060: Day hiking

Participation rate		Indexed per capita participation					
2008	Scenario	2010	2020	2030	2040	2050	2060
0.333	A1B	1.003	1.017	1.031	1.049	1.072	1.097
0.333	A2	1.001	1.013	1.023	1.038	1.056	1.076
0.333	B2	1.006	1.017	1.025	1.039	1.057	1.073
Annual participants		Indexed number of participants					
2008 (x1,000)	Scenario	2010	2020	2030	2040	2050	2060
78,256	A1B	1.029	1.159	1.305	1.444	1.581	1.724
79,607	A2	1.03	1.169	1.33	1.49	1.667	1.879
78,053	B2	1.031	1.155	1.264	1.34	1.42	1.501

Note: Base year participant numbers in 2008 vary according to projected population for 2008 under each of the 2010 RPA Assessment scenarios.

Source: National Survey on Recreation and the Environment 1999-2009.

Table 8.10—Projections of per capita participation rate and number of participants, 2010 to 2060: Visiting primitive areas—visiting a wilderness, primitive camping, or backpacking

Participation rate		Indexed per capita participation					
2008	Scenario	2010	2020	2030	2040	2050	2060
0.383	A1B	0.999	0.992	0.979	0.978	0.985	0.995
0.383	A2	0.994	0.982	0.962	0.953	0.949	0.947
0.383	B2	1.003	0.991	0.969	0.961	0.96	0.954
Annual participants		Indexed number of participants					
2008 (x1,000)	Scenario	2010	2020	2030	2040	2050	2060
90,164	A1B	1.024	1.13	1.24	1.346	1.452	1.564
91,721	A2	1.023	1.133	1.251	1.367	1.498	1.653
89,930	B2	1.028	1.125	1.194	1.239	1.29	1.335

Note: Base year participant numbers in 2008 vary according to projected population for 2008 under each of the 2010 RPA Assessment scenarios.

Source: National Survey on Recreation and the Environment 1999-2009.

Table 8.11—Projections of per capita participation rate and number of participants, 2010 to 2060: Motorized off-road activities—off-road driving

Participation rate		Indexed per capita participation					
2008	Scenario	2010	2020	2030	2040	2050	2060
0.204	A1B	0.998	0.983	0.952	0.949	0.966	0.995
0.204	A2	0.985	0.949	0.898	0.866	0.845	0.824
0.204	B2	1.011	0.98	0.934	0.925	0.931	0.922
Annual participants		Indexed number of participants					
2008 (x1,000)	Scenario	2010	2020	2030	2040	2050	2060
47,937	A1B	1.024	1.119	1.206	1.306	1.424	1.563
48,764	A2	1.013	1.096	1.167	1.243	1.333	1.439
47,812	B2	1.036	1.113	1.151	1.193	1.251	1.291

Note: Base year participant numbers in 2008 vary according to projected population for 2008 under each of the 2010 RPA Assessment scenarios.

Source: National Survey on Recreation and the Environment 1999-2009.

Table 8.12—Projections of per capita participation rate and number of participants, 2010 to 2060: Motorized water use—motorboating, waterskiing, or using personal watercraft

Participation rate		Indexed per capita participation					
2008	Scenario	2010	2020	2030	2040	2050	2060
0.263	A1B	1.007	1.022	1.025	1.051	1.094	1.154
0.263	A2	0.992	0.986	0.966	0.96	0.965	0.976
0.263	B2	1.022	1.018	0.99	0.991	1.008	1.006
Annual participants		Indexed number of participants					
2008 (x1,000)	Scenario	2010	2020	2030	2040	2050	2060
61,960	A1B	1.032	1.165	1.299	1.446	1.614	1.814
63,030	A2	1.021	1.139	1.256	1.378	1.523	1.704
61,799	B2	1.048	1.156	1.221	1.278	1.354	1.408

Note: Base year participant numbers in 2008 vary according to projected population for 2008 under each of the 2010 RPA Assessment scenarios.

Source: National Survey on Recreation and the Environment 1999-2009.

Table 8.13—Projections of per capita participation rate and number of participants, 2010 to 2060: Motorized snow use—snowmobiling

Participation rate		Indexed per capita participation					
2008	Scenario	2010	2020	2030	2040	2050	2060
0.04	A1B	0.997	0.983	0.952	0.957	0.985	1.026
0.04	A2	0.984	0.951	0.902	0.881	0.876	0.876
0.04	B2	1.012	0.979	0.92	0.902	0.905	0.892
Annual participants		Indexed number of participants					
2008 (x1000)	Scenario	2010	2020	2030	2040	2050	2060
9,440	A1B	1.022	1.12	1.206	1.317	1.452	1.613
9,603	A2	1.012	1.098	1.173	1.265	1.383	1.53
9,415	B2	1.037	1.112	1.134	1.164	1.216	1.248

Note: Base year participant numbers in 2008 vary according to projected population for 2008 under each of the 2010 RPA Assessment scenarios.

Source: National Survey on Recreation and the Environment 1999-2009.

percent across assessment scenarios by 2060 (table 8.14). The high population growth of scenario A2 shows the biggest decrease, leading to an annual participation rate of 8 percent. Factors like increased education levels, increased population density, diminishing availability of private and public land, and strong negative relationships between growing minority populations and hunting appear to be influencing the drop in participation rate (see appendix A). However, the decline in the rate of annual participation in hunting is offset by population growth to the extent that hunting participants should increase between 7 and 23 percent across the assessment scenarios over the next 50 years.

Fishing participation includes partaking of any of a number of NSRE fishing activities such as warm and cold water fishing, saltwater fishing, and anadromous fishing. Like hunting, the participation rate for fishing is expected to drop over the next 5 decades. For example, under scenario A2, the adult fishing participation rate is projected to fall by 10 percent from 31 percent in 2008 to around 28 percent by 2060. A similar rate decline is expected for scenario B2, while the drop associated with A1B is only 3 percent (table 8.15). Similar to hunting, the population growth under each scenario is enough to induce increases in adult fishing participants from 28 percent under B2 to over 50 percent via scenarios A1B and A2.

Non-motorized winter activities—Non-motorized winter activities include developed skiing and undeveloped skiing. Developed skiing, which includes the NSRE activities of downhill skiing and snowboarding, had an average adult participation rate of 10 percent from 2005 through 2009, or about 24 million participants annually in 2008 (table 8.16). Assuming constant climate conditions, the participation rate in developed skiing is expected to increase by 20 percent under assessment scenarios A2 and B2 and by almost 60 percent under scenario A1B. As with a number of other income dependent activities, the higher growth in household income associated with scenario A1B relative to A2 and B2 appears to be driving the difference in participation rates (see appendix A). The increases in per capita participation rates for all scenarios, combined with the respective population growth rates, suggest that developed skiing will grow as much or more than any activity reported in this chapter. For example, under assessment scenarios B2 and A2, the total number of adult participants is expected to increase from 24 million in 2008 to between 40 and 50 million in 2060. A bigger increase, from 24 million to nearly 60 million, of annual developed skiing participants is projected to occur under scenario A1B.

The second non-motorized winter activity is undeveloped skiing including NSRE activities of cross-country skiing and snow shoeing. Like developed skiing, this activity composite is expected to grow considerably from the slightly over 3 percent adult participation rate in 2008 and nearly 8 million participants. The expected growth rate in participation is close to 10 percent for scenarios A2 and B2, while it is nearly 31 percent for scenario A1B by 2060 (table 8.17). The differences in the participation growth rates seem

Table 8.14— Projections of per capita participation rate and number of participants, 2010 to 2060: Hunting—screener variable for all hunting activities

Participation rate		Indexed per capita participation					
2008	Scenario	2010	2020	2030	2040	2050	2060
0.119	A1B	0.992	0.942	0.885	0.841	0.808	0.781
0.119	A2	0.985	0.923	0.854	0.795	0.741	0.69
0.119	B2	0.999	0.942	0.881	0.841	0.809	0.77
Annual participants		Indexed number of participants					
2008 (x1,000)	Scenario	2010	2020	2030	2040	2050	2060
27,909	A1B	1.017	1.074	1.121	1.157	1.191	1.228
28,391	A2	1.013	1.066	1.11	1.14	1.17	1.205
27,836	B2	1.024	1.07	1.086	1.085	1.086	1.078

Note: Base year participant numbers in 2008 vary according to projected population for 2008 under each of the 2010 RPA Assessment scenarios.

Source: National Survey on Recreation and the Environment 1999-2009.

Table 8.15— Projections of per capita participation rate and number of participants, 2010 to 2060: Fishing—coldwater fishing, warmwater fishing, saltwater fishing, or anadromous fishing

Participation rate		Indexed per capita participation					
2008	Scenario	2010	2020	2030	2040	2050	2060
0.309	A1B	1	0.991	0.974	0.966	0.965	0.97
0.309	A2	0.994	0.975	0.948	0.927	0.91	0.896
0.309	B2	1.007	0.989	0.959	0.942	0.931	0.912
Annual participants		Indexed number of participants					
2008 (x1,000)	Scenario	2010	2020	2030	2040	2050	2060
72,714	A1B	1.026	1.128	1.234	1.329	1.423	1.525
73,969	A2	1.022	1.126	1.233	1.33	1.437	1.564
72,525	B2	1.032	1.123	1.183	1.214	1.25	1.277

Note: Base year participant numbers in 2008 vary according to projected population for 2008 under each of the 2010 RPA Assessment scenarios.

Source: National Survey on Recreation and the Environment 1999-2009.

Table 8.16—Projections of per capita participation rate and number of participants, 2010 to 2060: Developed skiing—downhill skiing or snowboarding

Participation rate		Indexed per capita participation					
2008	Scenario	2010	2020	2030	2040	2050	2060
0.101	A1B	1.012	1.071	1.103	1.204	1.361	1.57
0.101	A2	0.988	1.009	1.002	1.042	1.113	1.206
0.101	B2	1.04	1.062	1.031	1.071	1.153	1.202
Annual participants		Indexed number of participants					
2008 (x1,000)	Scenario	2010	2020	2030	2040	2050	2060
23,729	A1B	1.038	1.22	1.397	1.657	2.007	2.468
24,139	A2	1.016	1.165	1.303	1.496	1.757	2.105
23,667	B2	1.066	1.207	1.271	1.381	1.549	1.682

Note: Base year participant numbers in 2008 vary according to projected population for 2008 under each of the 2010 RPA Assessment scenarios.

Source: National Survey on Recreation and the Environment 1999-2009.

to be primarily induced by the higher income growth of A1B (see appendix A). Overall the participant number for undeveloped skiing is expected to increase during the next five decades by at least 50 percent under scenario B2, while more than doubling to about 16 million adults in 2060 under scenario A1B.

Non-motorized water activities—The final outdoor recreation category in this chapter is non-motorized water activities. This category consists of a swimming aggregate which includes participation in any of the NSRE activities defined by a swimming screener question (e.g., swimming, snorkeling, surfing, diving, visiting beaches or watersides) and floating, which is comprised of participation in the NSRE activities of canoeing, kayaking, or rafting. Swimming is the fourth most popular outdoor recreation pursuit examined in this chapter, with a 61 percent adult participation rate from 2005 to 2009, and approximately 143 million participants in 2008 (table 8.18). Like visiting developed sites and viewing activities, swimming is a popular family activity with high levels of youth participation, so the number of total participants in swimming from all age groups is expected to be much larger than adult participants.

Swimming is neither land nor income intensive, so the narrow band of participation rate increases across the assessment scenarios to 2060, from 5 percent under B2 to nearly 11 percent under A1B, is not likely to be an aberration (see appendix A). With these expected changes, the number of total adult participants in swimming will increase at slightly more than the rate of population growth for each scenario, with A2 showing the greatest increase to a total of nearly 270 million by 2060 (table 8.18). Scenario B2, with the least population growth indicates an increase in adult swimming participants to about 210 million annually by 2060.

Floating had an annual adult participation rate of nearly 17 percent from 2005 to 2009, which translated to about 39 million participants in 2008. Across the assessment scenarios, the participation rate is expected to increase slightly for A1B to over 17 percent annually by 2060 (table 8.19). For each of the lower income scenarios, the rate of participation for adults is expected to drop by between 7 and 11 percent over the next five decades, with scenario A2 dipping to 15 percent participation. With these changes in participation rates, floating participants under A1B are projected to increase 62 percent, or slightly more than the population, while scenarios A2 and B2 will grow slightly less than their respective population growth rates. By 2060, approximately 64 million adults will participate in floating under A1B, with scenario B2 accounting for about 51 million and A2 yielding nearly 63 million participants.

Key Findings

As displayed in the results section above, all 17 outdoor recreation activities or activity aggregates will grow in the number of participants over the next five decades. In

Table 8.17—Projections of per capita participation rate and number of participants, 2010 to 2060: Undeveloped skiing—cross-country skiing or snow shoeing

Participation rate		Indexed per capita participation					
2008	Scenario	2010	2020	2030	2040	2050	2060
0.033	A1B	1.012	1.054	1.083	1.135	1.21	1.309
0.033	A2	0.997	1.014	1.016	1.03	1.055	1.09
0.033	B2	1.03	1.049	1.038	1.056	1.092	1.106
Annual participants		Indexed number of participants					
2008 (x1,000)	Scenario	2010	2020	2030	2040	2050	2060
7,778	A1B	1.038	1.201	1.371	1.561	1.784	2.058
7,912	A2	1.025	1.171	1.321	1.478	1.666	1.903
7,758	B2	1.056	1.192	1.28	1.361	1.467	1.548

Note: Base year participant numbers in 2008 vary according to projected population for 2008 under each of the 2010 RPA Assessment scenarios.

Source: National Survey on Recreation and the Environment 1999-2009.

Table 8.18—Projections of per capita participation rate and number of participants, 2010 to 2060: Swimming activities—screener variable for swimming activities

Participation rate			Indexed per capita participation				
2008	Scenario	2010	2020	2030	2040	2050	2060
0.609	A1B	1.004	1.022	1.034	1.055	1.081	1.109
0.609	A2	0.999	1.009	1.013	1.024	1.04	1.058
0.609	B2	1.011	1.02	1.018	1.027	1.043	1.052
Annual participants			Indexed number of participants				
2008 (x1,000)	Scenario	2010	2020	2030	2040	2050	2060
143,204	A1B	1.03	1.164	1.309	1.451	1.594	1.744
145,677	A2	1.027	1.165	1.317	1.47	1.641	1.847
142,832	B2	1.036	1.159	1.255	1.324	1.401	1.472

Note: Base year participant numbers in 2008 vary according to projected population for 2008 under each of the 2010 RPA Assessment scenarios.

Source: National Survey on Recreation and the Environment 1999-2009.

Table 8.19—Projections of per capita participation rate and number of participants, 2010 to 2060: Floating activities—canoeing, kayaking, or rafting

Participation rate			Indexed per capita participation				
2008	Scenario	2010	2020	2030	2040	2050	2060
0.169	A1B	0.997	0.986	0.96	0.967	0.993	1.031
0.169	A2	0.986	0.957	0.914	0.896	0.891	0.89
0.169	B2	1.01	0.983	0.935	0.926	0.935	0.928
Annual participants			Indexed number of participants				
2008 (x1,000)	Scenario	2010	2020	2030	2040	2050	2060
39,800	A1B	1.023	1.123	1.216	1.33	1.464	1.621
40,487	A2	1.014	1.105	1.188	1.285	1.406	1.553
39,697	B2	1.035	1.116	1.153	1.194	1.255	1.3

Note: Base year participant numbers in 2008 vary according to projected population for 2008 under each of the 2010 RPA Assessment scenarios.

Source: National Survey on Recreation and the Environment 1999-2009.

some cases, the per capita participation growth rate will be near, or even less than one. However, population growth will be large enough under each assessment scenario to ensure that all activities will see growth in the number of adult participants.

Per capita participation—The five outdoor recreation activities projected to have the fastest growth in per capita participation across the three 2010 RPA Assessment scenarios over the next 50 years are developed skiing (20 to 50 percent), undeveloped skiing (9 to 31 percent), challenge activities (6 to 18 percent increase), equestrian activities (3 to 19 percent), and motorized water activities (-3 to 15 percent). Alternatively, a number of activities will experience a decline in adult participation rates. These include visiting primitive areas (0 to -5 percent), motorized off-road activities (0 to -18 percent), motorized snow activities (2 to -11 percent), hunting (-22 to -31 percent), fishing (-3 to -10 percent), and floating activities (3 to -11 percent). Growth of per capita participation rates for the remaining activities will hover around zero or grow minimally. It should also be noted that in general, activities with low per capita rates of participation such as developed skiing, undeveloped skiing, and equestrian activities have considerable room for growth, while activities with already high rates such as developed site use, viewing, and swimming have less room to grow their participation rates.

Participant numbers—By definition, the activities with the highest rates of growth in participant numbers are the same as those with the highest growth rates in per capita participation because all activities face the same population growth rates. The growth in participant numbers for the top five growth activities (fig. 8.3) are developed skiing (68 to 147 percent), undeveloped skiing (55 to 106 percent), challenge activities (50 to 86 percent), equestrian activities (44 to 87 percent), and motorized water activities (41 to 81 percent). Similarly, the lowest rates of participant numbers growth (fig. 8.4) are visiting primitive areas (33 to 65 percent), motorized off-road activities (29 to 56 percent), motorized snow activities (25 to 61 percent), hunting (8 to 23 percent), fishing (27 to 56 percent), and floating activities (30 to 62 percent). As stated above, it is unlikely that activities with already high participation rates can demonstrate large percentage increases in participant numbers. However, it is obvious that smaller percentage increases in already highly popular activities can mean quite large increases in the absolute number of adult participants.

Assessment scenarios—The assessment scenarios drive the activity projections through two avenues. First, as the number of participants is a product of estimated per capita participation and population, all estimates are population driven and in many cases, this means that A2, with the largest projected population growth, often correlates with the greatest projected increase in participant numbers. Similarly, B2, with the lowest rate of population growth, generally coincides with the least growth for any given activity. However, A2's population growth influences the per capita participation negatively as most participation models had negative signs on population density which increases with population growth. As well, supply variables such as

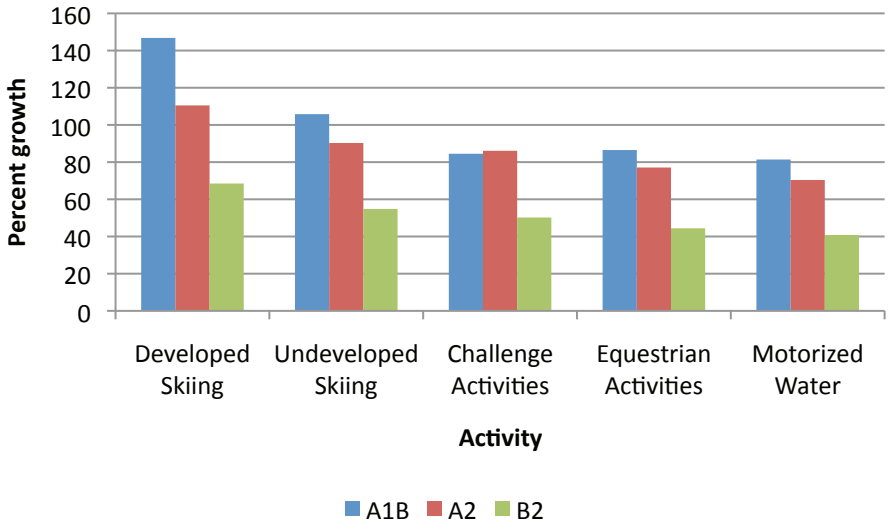

Figure 8.3—Top five activities by percent growth in projected number of participants and scenario, 2008 to 2060.

water area per capita and land per capita, with typically positive influences on per capita participation, saw declines as per capita land and water areas declined with population growth. In most cases, the difference was not enough to offset population growth's influence as a product.

Another important difference emerging in the per capita participation modeling was the effect of income on certain activities such as developed skiing, challenge activities, equestrian activities, hunting, and motorized activities. In virtually all these cases, the growth in income under scenario A1B was enough to offset the difference in population growth difference between A2 and A1B, leading to higher rates of growth in participants for A1B. This effect seemed consistent across activities that typically require more capital to effectively participate.

Factors—An examination of model results and odds ratio estimates in appendix A reveals stories similar to previous research into outdoor recreation participation behavior. First, males are more apt to participate in backcountry activities, hunting and fishing, motorized activities, non-motorized winter activities, and floating than are females, while the latter are more likely to participate in the viewing activities, swimming, equestrian, and visiting developed sites.

Ethnicity is still an important influence on participation. Minorities including Blacks, Hispanics, and Asians, were almost always less likely than Whites to participate in the various activities examined in this chapter. A notable exception occurred with hiking, as Hispanics were more likely than Whites to have participated, assuming all other factors constant. Respondents claiming American Indian, non-Hispanic identity were often more likely than Whites to participate in the remote activities like hunting and fishing, motorized off-road, motorized snow, hiking, equestrian, and viewing.

Education beyond high school resulted in higher participation probability for most activities. However, the level of education varied somewhat. For example, the greater the education level, the more likely one would participate in birding, non-motorized winter activities, backcountry activities, and viewing activities. However, for fishing and hunting, motorized off-road, and motorized snow activities, more than a high school education lowered the probability of participation.

Income was positively associated with participation across all activities. However, for some activities such as birding, hiking, and hunting, the effect was small, while for others such as developed skiing and motorized water use, the effect was large. As discussed above, the higher growth rate of income under assessment scenario A1B was noticeable across a number of activities.

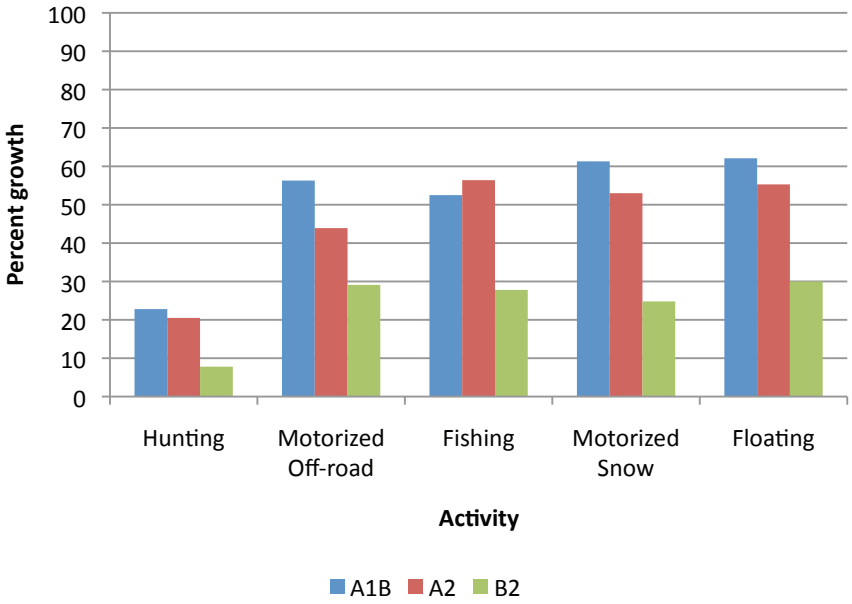

Figure 8.4—Bottom five activities by percent growth in projected number of participants and scenario, 2008 to 2060.

Relevant land and water availability per capita generally correlated positively with activity participation. Hence, declines in overall forest and rangeland per capita, federal land per capita, and/or in National Wilderness Preservation System lands per capita induced declines in spatially intensive activities such as equestrian, hunting, motorized off-road driving, visiting primitive areas, and viewing. Similarly, participation in water-based activities such as swimming, motorized boating, and non-motorized boating were all positively correlated with the per capita availability of water area. Fishing was positively correlated with both water area and forest and rangeland availability. A seemingly counterintuitive result occurred with the variable indicating whether the respondent lived in a coastal community. Here, participation in fishing, hunting, and viewing were negatively correlated with residence in a coastal county. Such a result could be driven by the fact that coastal population in the country is dominated by highly urban areas.

Finally, it should be noted that the model results and projections in this chapter do not account for factors outside the range of available data such as climate change, new technology, changes in costs, and changes in tastes and preferences.

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9. SUMMARY

This assessment has attempted to describe the status and trends in outdoor recreation across the United States. These trends are important to understand because of the large role outdoor recreation plays in the lifestyle of Americans. They are also important because of the large investments and management responsibilities of both the public and private sectors as providers of recreation opportunities.

Three Sources of Outdoor Recreation Participation Trends

National Recreation Survey—Historical context was provided earlier by looking back at previous surveys and studies. The primary historical source of data was the National Recreation Survey, which eventually became the National Survey on Recreation and the Environment (NSRE) which is managed by the Forest Service, U.S. Department of Agriculture. The former National Recreation Survey showed that what people did for outdoor recreation had been very noticeably changing over the years in earlier decades. However, in 1960 and since that year, one activity—the simple activity of walking for pleasure outdoors—remained at the top in popularity. At the same time, other activities also were growing. These activities included viewing or photographing wild birds, attending outdoor sports events, day hiking, attending outdoor concerts/plays/other events, and visiting outdoor nature centers. Also growing in terms of number of participants were swimming in natural waters, sightseeing, bicycling, running or jogging and picnicking. Some of the activities lesser in popularity involved use of motors, e.g., motor boating, driving for pleasure, and off-highway vehicle driving.

Across the years since the National Recreation Survey began, one general, overriding trend has been evident. The mix of outdoor activities and their relative popularity has been evolving. This evolution included addition of some activities that were not recognized as significant, or even as existing in 1960. Examples of added activities are mountain biking, snowboarding, and geocaching. In the last period of data examined from NSRE (2005-2009), it was estimated that over 223 million people ages 16 and older participated in some form of outdoor recreation. Whereas the first National Recreation Survey covered only a few recognized activities, the NSRE now includes 77 activities, including those that are sport and wildlife related.

The National Fishing, Hunting, and Wildlife-Associated Recreation Survey—The National Fishing, Hunting, and Wildlife-Associated Recreation Survey is devoted specifically to fish and wildlife-based outdoor recreation. The National Fishing, Hunting, and Wildlife-Associated Recreation Survey focuses on outings where hunting, fishing, or wildlife watching was the primary reason for an outing. This survey is managed by the U.S. Fish and Wildlife Service and has tracked trends since 1955. It is the oldest ongoing national recreation survey in the United States From the most recent round of surveying done in 2006, it was reported that more than 87 million people 16 years of age and older participated in some form of fish- or wildlife-related recreation as the primary reason for an outdoor occasion. This is about 4 out of 10 people in the United States of that age. Like outdoor recreation generally, wildlife- and fish-based recreation has been changing. The overall number of hunters in the United States has declined, except for big game hunting, which has remained relatively stable. Fishing participation has also declined. The total number of anglers fell 15 percent from

1996 to 2006, with fishing in the Great Lakes experiencing the greatest downturn. Wildlife watching, however, showed a 13 percent increase from 1996 to 2006. The most popular type of wildlife watching—around-the-home wildlife watching—led this overall upward trend.

The Outdoor Foundation Survey—The Outdoor Foundation also conducts an extensive survey of how Americans participate in outdoor recreation in the United States. This survey, in combination with the above two mentioned, are the primary sources of outdoor recreation trend data in the United States. According to the most recent Outdoor Foundation survey data, 48.6 percent of all Americans participated at least once in 2008 in one or more of the 40 outdoor activities they track. Among these 40 activities, Americans participated on 11.2 billion days in 2008. While overall participation in outdoor activities declined slightly in 2008, participation in nature-based outdoor activities in many cases increased significantly. Activities like backpacking, mountain biking, and trail running showed double-digit increases. Participation in outdoor activities was found to be significantly higher among Whites than among any other ethnicity.

Current Trends in Outdoor Activities

Individual activities—The National Recreation Survey, under a new name, has continued to be administered beyond its early years, including the periods 1999 to 2001 and 2005 to 2009. The most popular activities emerging in this first decade of the 21st century, in terms of number of people participating, are walking for pleasure, family gatherings outdoors, gardening or landscaping, viewing/photographing natural scenery, visiting outdoor nature centers, and attending outdoor sports events. Following those activities are sightseeing, picnicking, viewing/photographing flowers and trees, driving for pleasure, viewing/photographing wildlife, and visiting historic sites. All of these activities have shown growth in this decade, but activities oriented toward viewing and photographing nature (e.g., scenery, flowers/trees, and wildlife) have been among the fastest growing of all activities. There were some activities on the decline, and they include downhill skiing, inline or rollerblade skating, snowmobiling, ice skating, cross-country skiing, snowshoeing, and windsurfing.

Viewed over all the activities included in the NSRE survey, it is very clear that what people in the United States chose as activities is changing, as it was in previous decades, but these changes appear to be more dramatic than in past decades. The activities that dominated in the 1960s, 1970s, and 1980s in many cases no longer dominate as society, lifestyles, tastes, information, and technology are shifting. In terms of total number of days on which people participated in outdoor recreation, strongest growth was in viewing and photographing wildlife, birds and nature, walking for pleasure, and visiting farms or agricultural areas.

Camping, geocaching, and wildlife festivals—Invited authors examined three outdoor recreation activities in more detail. In the paper by Garst and others (included earlier), camping, a very traditional form of outdoor recreation, was examined. This revealed that comfort and convenience were important to campers and were associated with access to campsite amenities such as water, electricity, hot showers, clean bathrooms, and technologies such as satellite and cell phone reception. Developed campers identified family functioning as an important meaning associated with a camping experience. The second activity, geocaching (covered by Schneider and Chavez), is a new and growing outdoor activity that introduces flexibility and inclusivity to participants, which creates a positive social environment regardless of type of group involved. The integration of electronic and remote reception technology represented by geocaching may dramatically change the outdoor experience and provide crossovers to generational divides. It was noted that geocaching gets people outdoors and active, and has the potential to change how lands are used by the recreating public. The third activity, examined by Hvenegaard, was attendance at wildlife festivals, which has shown growth. From 1992 to 2002, the number of North American festivals grew from 10 to 240. In Canada, over 80 wildlife festivals were offered in 2009. Wildlife festival tourists are generally older, more educated, and more affluent than the general public. Growing attendance at wildlife festivals underscores the increasing interest in nature.

Trends in Types of Similar Outdoor Activities

Following onto this finding that recreational interest in nature was growing, outdoor activities in the NSRE study were grouped into seven groups to look more broadly at trends in number of activity days on which Americans participated in various forms of nature-based outdoor recreation. The results showed that while motorized activities showed growth up to about 2005, these activities, along with hunting, fishing, and backcountry activities, ended up toward the end of 2009 at about the same level of participation as in 2000. Non-motor boating grew modestly, and visiting recreation and historic sites grew at a slightly higher rate. Various forms of skiing, including snowboarding, declined during this decade. The clear growth area was within the overall group of activities named "viewing and photographing nature."

Overall Trends Across All Activities

To look even more broadly at outdoor recreation trends, NSRE data were used to examine the overall trend of 60 outdoor activities. Between 2000 and 2009, the total number of people who participated in one or more of activities included in this list of 60 grew by 7.5 percent, from an estimated 208.2 million to 223.9 million. Included in the list of 60 was a wide range of activities, from visiting beaches and visiting farms to rock climbing and backpacking. Across the 60 activities, the number of activity days of participation increased from 61.3 billion to 81.3 billion, an approximate 32.5 percent increase in 9 years during this decade.

From within the list of 60 outdoor activities, 50 natured-based activities were examined as a whole. These are activities associated in some way with nature elements such as wildlife, birds, streams, lakes, snow and ice areas, trails, rugged terrain, mountains, caves, and other natural outdoor settings, features, or resources. Included in the list of 50 were activities such as mountain biking, coldwater fishing, whitewater rafting, downhill skiing, primitive camping, backpacking, mountain climbing, visiting prehistoric sites, saltwater fishing, snorkeling, and a number of others. Included was participation at sites near home or at a travelling distance.

As was the case with more broadly defined outdoor recreation, nature-based recreation showed a discernible growth between 2000 and 2009. For emphasis, we repeat a previous graphic, showing that the total number of people who participated in these 50 activities grew by 7.1 percent, and number of activity days grew about 40 percent from an estimated 37 billion to about 52 billion (fig. 9.1).

Demographic Differences in Nature-based Participation

In an examination of demographic differences, we found that participation rates for visiting recreation or historic sites were significantly higher among non-Hispanic Whites, late teenagers, middle-aged people, people with some college to completed advanced degrees, higher income people, and the foreign born. For viewing and photographing nature activities, participation was higher among people with higher education and incomes, and among non-Hispanic Whites, people ages 35 to 54, those having some college to post graduate education, as well as those earning more than $50,000 per year. For backcountry activities, such as backpacking or horseback riding on trails, participation rates were highest among males, Whites, Native Americans, people under 55 years of age, people well educated with higher incomes, and rural residents.

Participation in motorized outdoor activities, such as motor boating and off-highway vehicle driving, is higher among males, non-Hispanic Whites, people under 55 years of age (especially younger people), people with some college or a college degree, middle-to-high income people, and rural residents. Participation in hunting and fishing is

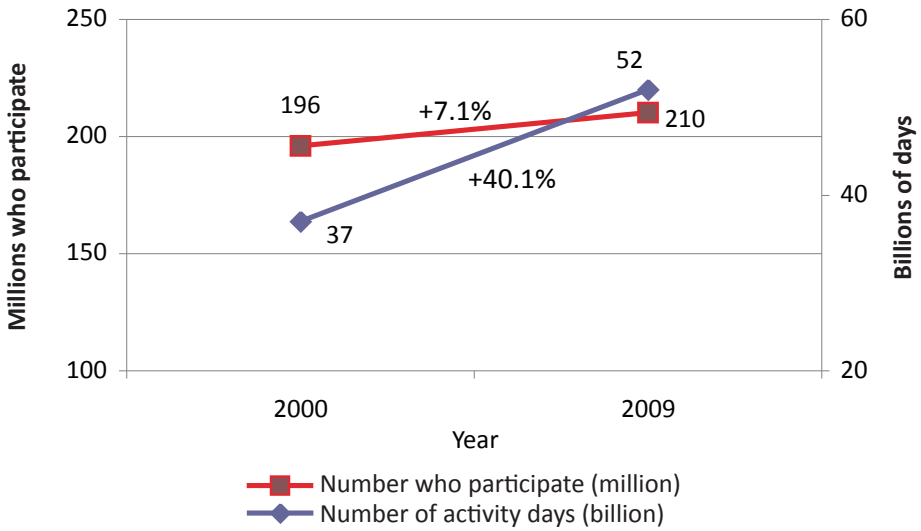

Figure 9.1—Growth in number of people age 16 and older and number of annual participation days in 50 nature-based outdoor recreation activities in the United States, 2000-2009.

higher among males, non-Hispanic Whites, late teenagers to middle-aged people, people with high school to some college education, middle-to-high-income people, and rural residents.

Participation in non-motorized boating activities was higher relative to the general population for males, non-Hispanic Whites, people ages 16 to 44, people with college to postgraduate education, high-middle to high income people, urban residents, and native born. Snow skiing and snowboarding participation was higher relative to the general population for males, non-Hispanic Whites, people ages 16 to 34, people with college to post graduate education, people earning more than $75,000 annually, and urban residents.

From the studies of Latinos in southern California, as reported above by Chavez, we learned that Latinos have many of the same recreation needs as other groups. But we also learned that there are some differences. One difference is that many Latinos report having only one day off from work per week, and, as a result, are primarily day use visitors. Also, there is a strong desire by Latinos for family time and family bonding when recreating outdoors. In addition, communication is a key to better serving Latinos at outdoor recreation sites. Further, development needs of Latino visitors seem to be somewhat different and include larger picnic tables, grouping tables, and providing trash receptacles to accommodate larger groups.

Regional Differences in Nature-based Participation

In addition to comparing percentage of participants and of population within each demographic strata, percentages of participants and population within each region strata for the seven activity groups were compared. These comparisons showed that for the activity group of visiting recreation and historic sites, participation was highest in the North Region and lowest in the South. For backcountry activities, the participation rate was highest in the Rocky Mountain and Pacific Coast Regions and lowest in the South. For motorized activities, participation was highest in the Rocky Mountain Region. Participation in hunting and fishing activities was highest in the South and Rocky Mountain Regions and lowest in the North and Pacific Coast Regions. Participation in non-motor boating was highest in the North and Pacific Coast Regions, and lowest in the South. For snow skiing, participation was highest in the Rocky Mountain and Pacific Coast Regions, next highest in the North, and by far lowest in the South. Also compared were participation in natural forest, non-forest natural, and non-natural other settings. Generally, a very high proportion of participation occurs in forested settings across all of the nature-based activity groups. This is especially so for backcountry, hunting/fishing, and snow skiing activities.

Youth Outdoors

From the National Kids Survey, we estimated that just over 60 percent of youth ages 6 to19 reported spending two or more hours outdoors on a typical weekday, and over three-fourths reported two or more hours outdoors on typical weekend days (fall 2007 to spring 2009). One half of youth spent as much as 4 or more hours outdoors on a typical weekend day. Less than five percent spent no time outdoors on either weekdays or weekend days. Regarding time spent relative to last year and across the entire sample of both boys and girls, only 15 percent reported spending less time, 45 percent reported spending about the same time, and nearly 40 percent estimated spending more time outdoors this year than last. The most obvious short-term trend between the two periods was a decrease in percentage of kids indicating spending about the same amount of time as a year ago (from 49 to 42 percent) and an increase in percentage indicating spending more time (from 35 to 43 percent).

During time outdoors, the outdoor activity with the highest participation rate (82 percent) was that of "just playing or hanging out outdoors." Second, with 80 percent participation, was being physically active by participating in biking, jogging, walking, skate boarding, or similar activity. Playing music or using other electronic devices outdoors was third, followed by playing or practicing team sports and reading/studying outdoors. Of the outdoor activities we asked about as being favorites, just playing or hanging out (24 percent) and playing or practicing team sports (21 percent) were ranked at the top. Next at a not-too-distant third was biking, jogging, walking, skating, etc., as a group of similar activities. Other activity groups for which 5 percent or more selected the activity as their favorite were swimming, diving, snorkeling, etc.; and riding motorcycles, ATVs, or other off-road vehicles.

Over the last two decades the number of 16 year old and older hunters has declined by 11 percent. This estimate of a trend is based on the Fishing, Hunting, and Wildlife-Associated Recreation Survey. Yet programs aimed at engaging youth hunters may be paying off, especially in the number of young female hunters. The number of girls 6 to 15 years old who hunt has nearly doubled between 1991 and 2006. The number of boy hunters 6 to 15 years old has stayed level during this same time period.

The National Kids Survey also showed that interest in music, art, reading, and similar uses of time was the highest percentage reason given by females for not spending more

time outdoors. Participating in video games, and watching DVDs and television was the highest percentage reason for males. For females, the second highest reason was interest in the Internet, text messaging, and related social networking, while for males it was music, art, reading, and related interests. Much lower percentages of youth ages 6 to 9 indicated not spending more time outdoors because of Internet use, messaging, indoor sports, hanging out, and lack of transportation. Higher percentages of children ages 10 to 12 indicated music and art, video games/DVDs/TV, poor access to outdoor areas, and safety as reasons.

Recreation on Public and Private Land

Percentages of days in visiting recreation and historic sites that occur on public land are substantial in both the East and the West. In the East, days of participation in these activities on public land is substantially higher (60 percent) than that which occurs on private land. In the West, over 60 percent of days of viewing and photographing nature activity occur on public land. In both the East and West, around three-fourths of backcountry activity days occur on public lands, where access is more easily gained and where there are typically more miles of trails. An estimated 46 percent of motorized activities occur on public lands in the East; 59 percent occurs on public lands in the West. In the East, close to 43 percent of hunting occurs on public forest lands; in the West, almost 57 percent occurs on public lands. Fifty-seven percent in the East and 67 percent in the West of cross-country skiing is estimated to occur on public lands.

In the East, days of activity on private land (all private ownerships) across the six activity groups ranged from a low of 28 percent for backcountry activities to a high of 57 percent for hunting. The estimates show that over half of motorized land activities also occur on private lands. In the West, where there is proportionately less private land relative to public land, between 22 percent (backcountry activities) and 43 percent (hunting) of activity days occurred on private lands. The percentage of motorized activity in the West (41 percent) was almost as large as the percentage of hunting on private land in that region. As with activity on public lands in the West, the total number of activity days on private lands in the East across the six activity groups was nearly four times the number in the West. When family or individual owners were asked specifically about recreation on their own land, a third of the owners, who control just over half of the family forest land in the United States, reported that they, their family, and/or friends had recently, within the past 5 years, recreated on their land. A far smaller percentage of private forest land was open to and used by the general public. Posting land to prevent public access occurred on over 40 percent of the land. Leasing, particularly for hunting, was common in many parts of the country.

From the Fishing, Hunting, and Wildlife Associated Recreation National Survey, estimates were produced concerning hunting and wildlife watching participation occurring on public and private lands. These estimates showed that in 2006, 12.5 million hunters 16 years old and older hunted. Of this number, 39 percent, or 4.9 million, hunted on publicly owned lands, while 82 percent, or 10.2 million, hunted on privately owned land. (Again, the distinction between the National Fishing, Hunting, and Wildlife-Associated Recreation Survey and NSRE surveys is that the former focuses only on outings where fishing, hunting, or wildlife watching was the primary reason for the outings. The NSRE measures participation in activities whether or not it was the primary motivation.)

Nearly a third of the U.S. population 16 years old and older enjoyed wildlife watching as a primary activity in 2006. These activities are categorized as around the home (within a mile of home) or away from home (at least one mile from home). In 2006, publicly owned lands were the most popular destination for people taking trips away from home to observe, feed, or photograph wildlife. Approximately 80 percent of all away-from-home wildlife watchers went to public areas, while just 38 percent visited private areas. About 27 percent of trip-taking wildlife watchers visited both public and private land.

Visits to various units of the National Park System have been relatively stable over the last several years. The lowest reported visitation was in 1996 and 2003 (266 million visits), while the highest reported visitation was between 1998 through 2000 and again in 2009 (286 to 287 million). Visitation at National Wildlife Refuges and other areas managed by the U.S. Fish and Wildlife Service has shown fairly steady growth between 1996 and 2009, with some flattening in the early and mid-2000s. From a low of 30 million in 1996 to 43 million in 2009, annual growth has averaged approximately 1 million visitors per year. Visitation at Bureau of Land Management areas has been relatively stable over the years. Bureau of Land Management visitation in 1996 was generally the same as in 2009. The Forest Service reported that visitation to National Forests has been declining from an estimated 214 million visits in 2001 to 174 million visits in 2009. Both the Bureau of Land Management and the Forest Service manage extensive acreages and thus much of the recreation use of their lands occurs on sites with very little development. State parks are typically much more developed and are usually closer to where people live. State park visitation is over 80 percent of the level of visitation to all Federal lands on which visitation is recorded. State park

visitation grew pretty steadily from 1992 up through 2000 then declined until 2005. Since 2005, state park visitation increased through 2008 before dipping again in 2009.

Alaska is a special case regarding visitation to public lands. In this state, cruise ship visitors constitute the majority of visitors to national forests. Estimates indicate that the number of independent visitors to Alaska national forests has remained fairly constant in the past decade. Most cruise ship passengers on excursions, other non-residents, and even many residents visit national forests with commercial recreation providers. There are currently 398 permitted outfitters and guides in the Alaska Region. In the short term, cruise ship visitation is projected to decrease. Projections for 2010 and 2011 are for fewer dockings and fewer ships coming to Alaska ports, which will decrease visitation to both southeast and south-central Alaska destinations by 10 to 30 percent.

Constraints and Motivations

Two other important topics concerning outdoor recreation were covered in this report.

Constraints—Public lands, natural resources, and recreational facilities are there, in part, for the enjoyment, benefit, and recreational participation of all. However, this national research has shown that some segments of our society feel more constrained than others from participating in outdoor recreation. Past images of our parks have featured a particular genre of signage, pictures, displays, facilities, programs, services offered, management personnel, and languages spoken. These past images may play a large role in how people today perceive their freedom or feeling of welcome to use those parks. This historic context might partly explain why immigrants new to this country perceive fewer constraints to outdoor recreation.

Motivations—From another NSRE national study, we saw that there are different reasons why people seek different forms of outdoor recreation. For hiking, the most important motivations, in order of importance, are to be outdoors, to experience nature, to get away from the demands of everyday life, and to have physical exercise or training. For camping the most important motivations, in order of importance, are to be outdoors, to get away from the everyday demands of life, and to experience nature. For sightseeing, the most important motivation is to be with family, and the other two are to be outdoors and to get away from the everyday demands of life. For walking, the motivations are to be outdoors, contribution to health, physical exercise or training, and to get away from the demands of everyday life.

Projections of Future Trends

Results from the analysis of recent trends described in chapter 4 and other chapters clearly indicated emerging changes in what the people of the United States chose as outdoor recreation. Chapter 8 focuses on where future trends might take us. Generally, all of the 17 outdoor recreation activities or activity aggregates are projected to grow in the number of participants out to 2060. Population growth is projected to push growth in number of adult participants under each assessment scenario.

Per capita participation—The five outdoor recreation activities projected to grow fastest in per capita participation over the next 50 years are developed skiing (20 to 50 percent), undeveloped skiing (9 to 31 percent), challenge activities (6 to 18 percent), equestrian activities (3 to 19 percent), and motorized water activities (-3 to 15 percent). At the same time, a number of activities are projected to decline in per capita adult participation rates. These include visiting primitive areas (0 to -5 percent), motorized off-road activities (0 to -18 percent), motorized snow activities (2 to -11 percent), hunting (-22 to -31 percent), fishing (-3 to -10 percent), and floating activities (3 to -11 percent). Growth of per capita participation rates for the remaining activities will hover around zero or grow minimally.

Participant numbers—The top five activities in terms of growth of number of participants are developed skiing (68 to 147 percent), undeveloped skiing (55 to 106 percent), day hiking (50 to 88 percent), equestrian activities (44 to 87 percent), and challenge activities (50 to 86 percent) (table 9.1). Among the lowest rates of participant number growth are visiting primitive areas (33 to 65 percent), motorized off-road activities (29 to 56 percent), motorized snow activities (25 to 61 percent), hunting (8 to 23 percent), fishing (27 to 56 percent), and floating activities (30 to 62 percent). It is unlikely that activities with already high participation levels (e.g., viewing nature) will show large percentage increases in participant numbers; however, small percentage increases in already highly popular activities can mean quite large increases in participants.

Assessment scenarios—The assessment scenarios drive activity participation projections in two ways. First, all estimates are population driven which means that A2, with the largest projected population growth, often produced the greatest increase in participant numbers. However, high population growth in some areas influenced per capita participation negatively in many of the activity models. As well, supply variables, such as water area and land area, were associated with decreases in per capita participation as per

capita land and water areas declined with population growth. In most cases, the difference was not enough to offset population growth's overall influence.

Another important difference emerging in the per capita participation modeling was the effect of income on certain activities like developed skiing, challenge activities, equestrian activities, hunting, and motorized activities. In virtually all these cases, the growth in income under scenario A1B was enough to offset the population growth difference between A2 and A1B, leading to higher rates of growth in participants for A1B.

Gender, ethnicity, education, and income—Males are more apt to participate in backcountry activities, hunting and fishing, motorized activities, non-motorized winter activities, and floating than females. Females are more likely to participate in the viewing activities, swimming, equestrian, and visiting developed sites. As with gender, ethnicity is important in its influence on participation. Major minorities including Blacks, Hispanics, and Asians were almost always less likely than non-Hispanic Whites to participate in the various activities. Respondents claiming non-Hispanic American Indian identity were more likely than Whites to participate in activities such as hunting and fishing, motorized off-road, motorized snow, hiking, equestrian, and viewing.

Education beyond high school resulted in higher participation probabilities for most activities. The greater the education level, the more likely one would participate in birding, non-motorized winter activities, backcountry activities, and viewing activities. However, for fishing and hunting, motorized off-road, and motorized snow activities, more education lowered the probability of participation. Finally, income was positively associated with participation across all activities. However, for some activities such as birding, hiking, and hunting the effect was small, while for others, such as developed skiing and motorized water use, the effect was large.

Table 9.1—Number of participants in 2008 and projected range of percent growth by 2060 across the three RPA scenarios

Activity	Number of participants in 2008	Range of percentage growth
	thousands	
Developed Skiing - downhill skiing or snowboarding	23,729	68.2-146.8
Undeveloped Skiing - cross-country skiing or snowshoeing	7,778	54.8-105.8
Day Hiking	78,256	50.1-87.9
Equestrian Activities - horseback riding on trails	16,393	44.4-86.5
Challenge Activities - mountain climbing, rock climbing, or caving	25,134	50.2-86.1
Swimming Activities - screener variable for swimming activities	143,204	47.2-84.7
Visiting Interpretive Sites - visiting nature centers, prehistoric sites, historic sites, etc.	157,403	47.7-84.0
Birding - viewing or photographing birds	81,449	46.0-81.4
Motorized Water Use - motorboating, waterskiing, or using personal watercraft	61,960	40.8-81.4
Developed Site Use - family gatherings, picnicking, or developed Camping	192,739	41.9-76.7
Viewing Nature - viewing orphotographing birds, other wildlife, natural scenery, flowers, etc. or gathering mushrooms, berries, etc.	189,418	41.7-76.2
Visiting Primitive Areas - visiting a wilderness, primitive camping, or backpacking	90,164	33.5-65.3
Floating Activities - canoeing, kayaking, or rafting	39,800	30.0-62.1
Motorized Snow Use - snowmobiling	9,440	24.8-61.3
Fishing - coldwater fishing, warmwater fishing, saltwater fishing, or anadromous fishing	72,714	27.7-56.4
Motorized Off-Road Activities – off-road driving	47,937	29.1-56.3
Hunting - screener variable for all hunting activities	27,909	7.8-22.8

Source: Tables 8.3 to 8.19.

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Appendix table 1—Trends in millions of people ages 16 and older participating in 33 outdoor recreation activities by historic period in the United States, 1982 to 2001

	1982-1983		1994-1995		1999-2001		2005-2009		Trend	
Activity	Percent participating	Total participants	Percent participating	Total participants	Percent participating	Total participants	Percent participating	Total participants	Percent change in participants, 1982-83 to 2005-09	Change in number of participants, 1982-83 to 2005-09
		----millions----		*----millions-----*		*----millions-----*		*----millions-----*		*-----millions-----*
Walk for pleasure	53.0	91.9	68.8	138.5	82.0	175.6	85.0	200.0	117.6	108.1
View/ photograph birds	12.0	20.8	27.0	54.3	32.0	68.5	35.7	84.1	304.2	63.3
Attend outdoor sports events	40.0	69.4	49.0	98.6	50.2	107.5	53.7	126.3	82.0	56.9
Day hiking	14.0	24.3	26.6	53.6	32.3	69.1	33.9	79.8	228.2	55.5
Visit nature centers, etc.	50.0	86.7	55.1	110.9	56.5	121.0	56.6	133.3	53.7	46.6
Attend outdoor concerts, plays, etc.	25.0	43.4	35.2	70.9	40.7	87.2	37.5	88.1	103.1	44.7
Sightseeing	46.0	79.8	58.4	117.5	50.9	109.0	52.7	123.9	55.3	44.1
Swimming in lakes, streams, etc.	32.0	55.5	43.4	87.4	40.0	85.5	41.5	97.5	75.8	42.0
Picnicking	48.0	83.3	55.7	112.1	55.3	118.3	51.7	121.6	46.0	38.3
Driving for pleasure	48.0	83.3	–	–	50.4	107.9	51.2	120.5	44.6	37.2
Running or jogging	26.0	45.1	28.2	56.7	30.9	66.2	34.2	80.4	78.2	35.3
Boating	28.0	48.6	37.8	76.2	35.1	75.0	35.5	83.5	71.9	34.9
Bicycling	32.0	55.5	38.7	77.8	38.3	81.9	37.5	88.3	59.1	32.8
Drive off-road	11.0	19.1	17.8	35.9	16.8	36.0	20.6	48.4	153.5	29.3
Swimming in an outdoor pool	43.0	74.6	49.2	99.1	39.7	85.0	43.3	102.0	36.7	27.4

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Appendix table 1 (continued)

Activity	1982-1983		1994-1995		1999-2001		2005-2009		Trend	
	Percent participating	Total participants	Percent participating	Total participants	Percent participating	Total participants	Percent participating	Total participants	Percent change in participants, 1982-83 to 2005-09	Change in number of participants, 1982-83 to 2005-09
		----millions----		*----millions-----*		*----millions-----*		*----millions-----*		*-----millions-----*
Developed camping	17.0	29.5	23.1	46.5	25.9	55.3	23.8	56	89.7	26.5
Motorboating	19.0	33	29.6	59.5	23.7	50.7	23.4	55	66.7	22.0
Fishing	34.0	59	35.0	70.4	33.5	71.6	34.2	80.4	36.2	21.4
Outdoor team sports	24.0	41.6	29.1	58.6	21.4	45.9	26.6	62.5	50.2	20.9
Primitive camping	10.0	17.3	15.6	31.4	15.5	33.1	14.5	34.1	97.4	16.8
Canoeing or kayaking	8.0	13.9	9.5	19.2	10.7	23.0	12.9	30.4	118.6	16.5
Sledding	10.0	17.3	13.7	27.7	14.4	30.8	13.6	32.0	85.1	14.7
Backpacking	5.0	8.7	8.4	17.0	10.0	21.5	9.9	23.2	166.6	14.5
Golf	13.0	22.6	17.3	34.9	16.5	35.3	15.2	35.9	58.8	13.3
Hunting	12.0	20.8	12.5	25.3	11.0	23.6	11.9	28.0	34.5	7.2
Horseback riding	9.0	15.6	10.3	20.7	9.3	19.8	9.1	21.5	37.8	5.9
Waterskiing	9.0	15.6	11.3	22.7	7.5	16.0	9.0	21.3	36.3	5.7
Downhill skiing	6.0	10.4	11.3	22.8	8.1	17.4	6.8	15.9	53.2	5.5
Snowmobiling	3.0	5.2	4.8	9.6	5.3	11.3	4.5	10.7	105.3	5.5
Ice skating outdoors	6.0	10.4	7.1	14.2	6.3	13.6	5.1	12.0	15.3	1.6
Cross country skiing	3.0	5.2	4.4	8.8	3.6	7.8	2.6	6.1	17.0	0.9
Sailing	6.0	10.4	6.0	12.1	4.9	10.4	4.4	10.4	0.0	0.0
Tennis outdoors	17.0	29.5	14	28.2	9.8	20.9	10.0	23.5	-20.3	-6.0

Note: The numbers in this table are annual participation estimates based on data collected during the four time periods. 1982-1983 participants based on 173.5 million people ages 16+ (U.S. Department of the Interior 1986), 1994-1995 participants based on 201.3 million people ages 16+ (Woods & Poole Economics, Inc. 2007). 1999-2001 participants based on 214.0 million people ages 16+ (U.S. Department of Commerce 2000). 2005-2009 participants based on 235.3 million people ages 16+ (U.S. Department of Commerce 2008). Missing data are denoted with "—" and indicate that participation data for that activity were not collected during that time period.

Source: NRS 1982-1983 (n=5,757), USDA Forest Service (1995) (n=17,217), USDA Forest Service (2001) (n=52,607), and USDA Forest Service (2009) (n=30,398).

Appendix table 2—Percent participating and number of participants ages 16 and older in outdoor recreation activities by region, 2005-2009

Activity	North		South		Rocky Mountains		Pacific Coast		United States	
	Percent	Participants	Percent	Participants	Percent	Participants	Percent	Participants	Percent	Participants
		thousands		*thousands*		*thousands*		*thousands*		*thousands*
Walk for pleasure	84.6	82,519.8	83.9	66,330.5	85.3	18,019.8	87.7	33,128.3	85.0	199,998.3
Family gathering	74.9	72,991.7	73.8	58,322.5	73.3	15,472.8	72.7	27,400.9	74.0	174,187.9
Gardening or landscaping	66.6	64,821.7	69.3	54,762.2	66.8	14,104.5	64.1	24,178.5	67.1	157,867.0
View/ photograph natural scenery	63.6	62,159.8	59.6	47,254.1	69.5	14,717.9	67.9	25,686.1	63.7	149,818.0
Visit outdoor nature center/zoo	57.3	56,077.1	52.5	41,609.8	61.5	13,042.2	59.5	22,535.9	56.6	133,265.0
Attend outdoor sports events	53.8	52,415.2	55.4	43,710.9	57.2	12,075.4	48.1	18,133.6	53.7	126,335.2
Sightseeing	50.8	49,615.6	52.9	41,832.9	57.8	12,208.9	53.6	20,241.5	52.7	123,898.8
Picnicking	54.6	53,484.4	44.3	35,168.8	54.6	11,600.0	56.2	21,313.4	51.7	121,566.6
View/ photograph flowers, etc.	50.9	49,763.8	49.5	39,229.0	54.1	11,441.5	55.2	20,888.6	51.6	121,322.9
Driving for pleasure	50.3	49,114.9	50.3	39,824.0	58.2	12,301.6	50.9	19,252.8	51.2	120,493.3
View/ photograph other wildlife	51.0	49,702.7	49.2	38,884.8	55.7	11,764.8	46.9	17,706.9	50.2	118,059.2
Visit historic sites	44.4	43,391.5	42.3	33,462.6	46.5	9,830.6	45.5	17,189.6	44.1	103,874.3
Swimming in an outdoor pool	42.7	41,573.2	44.5	35,113.6	38.3	8,087.1	45.6	17,208.0	43.3	101,981.9
Visit a beach	45.2	44,166.6	39.3	31,125.3	31.1	6,583.9	53.1	20,092.4	43.3	101,968.2
Yard games, e.g., croquet	46.3	44,657.6	43.9	34,326.4	44.5	9,300.3	28.3	10,573.5	42.0	98,857.8
Swimming in lakes, streams, etc.	43.8	42,665.9	39.4	31,141.6	34.5	7,284.1	43.6	16,453.3	41.5	97,544.9
Bicycling	39.6	38,804.7	33.1	26,243.3	36.4	7,727.1	41.0	15,536.2	37.5	88,311.3
Attend outdoor concerts, etc.	41.0	40,144.8	33.0	26,240.7	31.0	6,586.7	40.0	15,165.1	37.5	88,137.3
View or photograph birds	38.2	37,208.9	34.2	26,974.6	33.1	6,972.4	34.3	12,916.5	35.7	84,072.4
Running or jogging	29.5	28,886.0	35.1	27,914.9	44.5	9,455.8	37.1	14,098.5	34.2	80,355.1
Day hiking	32.7	32,417.0	25.2	20,283.2	46.1	9,901.7	44.7	17,145.3	33.9	79,747.2
Visit a wilderness	31.3	30,799.9	29.9	23,832.9	45.3	9,653.0	39.0	14,834.8	33.6	79,120.6

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Appendix table 2 (continued)

Activity	North		South		Rocky Mountains		Pacific Coast		United States	
	Percent	Participants	Percent	Participants	Percent	Participants	Percent	Participants	Percent	Participants
		thousands		*thousands*		*thousands*		*thousands*		*thousands*
Gather mushrooms, berries, etc.	36.0	34,936.3	31.8	25,070.2	31.6	6,647.6	28.1	10,559.4	32.8	77,213.5
Visited farm or agricultural setting	35.7	34,820.6	29.2	23,091.0	34.3	7,258.4	26.9	10,168.3	32.0	75,338.3
View or photograph fish	25.2	24,581.1	28.9	22,838.1	24.5	5,163.6	28.9	10,909.5	27.0	63,492.2
Outdoor team sports	21.6	21,813.5	19.3	15,752.3	34.9	7,620.8	44.4	17,311.5	26.6	62,498.1
Visit waterside besides beach	23.6	23,041.6	23.1	18,302.5	23.0	4,857.9	27.3	10,313.2	24.0	56,515.2
Developed camping	20.6	20,454.1	19.4	15,550.6	34.0	7,301.1	33.0	12,656.5	23.8	55,962.4
Warmwater fishing	24.5	23,501.6	29.9	23,257.7	19.7	4,101.7	13.1	4,857.9	23.7	55,718.9
Motorboating	24.1	23,423.2	24.2	19,031.3	23.5	4,935.8	20.3	7,627.7	23.4	55,018.0
Visit prehistoric sites	18.6	18,325.6	19.1	15,243.5	29.7	6,334.3	23.5	8,943.8	20.8	48,847.2
Off-highway vehicle driving	17.6	17,259.9	21.3	16,907.4	27.1	5,746.6	22.4	8,503.8	20.6	48,417.7
Boat tours or excursions	19.2	18,720.3	18.8	14,858.7	15.6	3,287.2	24.5	9,251.6	19.6	46,117.9
Mountain biking	20.3	19,919.7	14.7	11,706.5	17.4	3,691.1	19.4	7,346.5	18.1	42,663.8
Basketball outdoors	19.2	18,723.2	14.9	11,797.2	20.1	4,250.7	17.3	6,527.6	17.6	41,298.7
Golf	17.2	16,708.6	14.2	11,231.4	16.4	3,459.0	11.9	4,483.2	15.2	35,882.1
Volleyball outdoors	19.0	18,258.3	14.0	10,899.8	3.6	756.0	12.3	4,561.9	14.7	34,475.9
Primitive camping	11.9	11,789.5	11.8	9,484.8	26.7	5,737.9	18.6	7,138.0	14.5	34,150.2
Sledding	21.3	20,951.2	4.8	3,827.8	15.9	3,387.1	10.1	3,856.1	13.6	32,022.2
Coldwater fishing	11.3	11,267.3	9.4	7,564.6	22.6	4,891.3	18.5	7,133.1	13.1	30,856.3
Football	13.8	13,427.0	9.4	7,442.9	19.0	4,007.9	12.2	4,577.4	12.5	29,455.1
Handball, etc. outdoors	13.1	12,799.5	10.1	7,969.3	9.1	1,929.4	13.6	5,120.0	11.8	27,818.2
Soccer outdoors	11.1	10,845.5	12.9	10,239.2	9.6	2,022.5	9.4	3,546.5	11.3	26,653.6
Baseball	14.7	14,168.9	6.8	5,295.7	16.6	3,483.9	6.3	2,373.0	10.8	25,321.5
Saltwater fishing	8.2	7,926.5	15.3	11,923.2	4.7	973.2	11.4	4,252.8	10.7	25,075.7
Tennis outdoors	9.8	9,559.8	10.2	8,045.5	11.4	2,405.9	9.2	3,491.0	10.0	23,502.2
Backpacking	8.5	8,496.5	7.8	6,265.3	14.9	3,219.6	13.6	5,217.4	9.9	23,198.8
Canoeing	12.3	11,919.2	9.0	7,045.6	6.7	1,397.5	6.5	2,432.5	9.7	22,794.9

Continued on next page

Appendix table 2 (continued)

Activity	North		South		Rocky Mountains		Pacific Coast		United States	
	Percent	Participants	Percent	Participants	Percent	Participants	Percent	Participants	Percent	Participants
		thousands		*thousands*		*thousands*		*thousands*		*thousands*
Softball	6.8	6,197.3	14.4	10,652.3	2.3	451.6	12.6	4,456.3	9.2	21,757.4
Horseback riding	7.8	7,594.2	9.6	7,630.2	12.4	2,626.3	9.6	3,641.9	9.1	21,492.6
Waterskiing	7.8	7,646.3	9.7	7,718.5	10.8	2,290.5	9.5	3,599.4	9.0	21,254.6
Use personal watercraft	7.6	7,425.7	9.7	7,719.9	9.5	2,001.5	10.6	3,998.0	9.0	21,145.1
Big game hunting	8.7	8,485.6	10.1	7,992.2	13.6	2,868.1	4.0	1,509.4	8.9	20,855.3
Rafting	7.2	7,022.8	7.9	6,289.9	10.2	2,160.3	8.2	3,101.9	7.9	18,574.9
Small game hunting	6.8	6,542.5	8.6	6,710.4	8.9	1,851.7	3.8	1,429.2	7.0	16,533.8
Horseback riding on trails	5.9	5,768.2	7.1	5,649.2	9.3	1,977.4	7.2	2,704.5	6.8	16,099.2
Downhill skiing	7.5	7,490.1	4.0	3,230.7	8.8	1,898.2	8.6	3,313.9	6.8	15,932.9
Snorkeling	5.9	5,809.2	5.9	4,690.5	5.9	1,263.6	9.0	3,417.6	6.5	15,181.0
Inline skating	7.0	6,641.5	6.3	4,871.4	1.0	201.3	7.7	2,837.2	6.2	14,551.4
Kayaking	7.0	6,816.0	4.6	3,629.2	4.5	948.0	7.4	2,817.3	6.0	14,210.5
Mountain climbing	4.2	4,148.9	4.1	3,324.9	11.5	2,481.3	6.3	2,431.8	5.3	12,386.9
Snowboarding	5.8	5,791.9	2.2	1,821.9	5.6	1,215.2	8.6	3,322.9	5.2	12,152.0
Ice skating	8.4	8,242.3	1.9	1,510.5	3.2	687.2	4.1	1,548.4	5.1	11,988.4
Snowmobiling	7.1	6,998.4	1.4	1,100.8	6.0	1,283.3	3.4	1,295.3	4.5	10,677.8
Anadromous fishing	3.7	3,730.5	3.4	2,729.8	3.9	852.7	8.7	3,357.8	4.5	10,670.8
Caving	4.1	4,027.9	4.1	3,273.4	5.5	1,161.5	5.2	1,969.3	4.4	10,432.1
Sailing	5.0	4,921.3	3.2	2,584.7	3.0	634.1	5.9	2,255.8	4.4	10,395.9
Rock climbing	4.0	3,978.3	2.7	2,210.0	7.5	1,622.6	5.2	2,009.9	4.2	9,820.8
Rowing	5.0	4,905.8	3.1	2,419.3	3.6	757.8	3.5	1,301.7	4.0	9,384.6
Orienteering	2.5	2,438.4	1.9	1,550.5	4.8	1,027.4	3.1	1,182.3	2.6	6,198.6
Cross-country skiing	4.0	3,923.7	0.8	609.0	3.0	635.3	2.4	914.7	2.6	6,082.6
Migratory bird hunting	1.8	1,761.3	2.5	1,942.5	3.0	637.9	1.4	538.5	2.1	4,880.2
Ice fishing	3.9	3,774.4	0.4	325.5	2.6	546.0	0.5	180.9	2.1	4,826.7
Surfing	1.1	1,125.0	1.6	1,290.0	1.4	308.3	5.0	1,944.9	2.0	4,668.2
Snowshoeing	2.3	2,321.8	0.2	186.2	3.3	718.3	2.2	842.5	1.7	4,068.8
Scuba diving	1.5	1,477.4	1.3	1,022.1	1.8	389.7	2.0	744.0	1.5	3,633.2
Windsurfing	0.8	756.9	0.3	273.9	0.5	107.3	0.6	238.7	0.6	1,376.7

Note: Number of participants based on 2008 Census estimates: 97.44 million (North), 79.02 million (South), 21.11 million (Rocky Mountains), 37.72 million (Pacific Coast), and 235.30 million (United States).

Source: NSRE 2005-2009 (n=30,398).

Appendix Table 3—Trends in outdoor recreation activity participation of people ages 16 and older in the United States with sample size and 95 percent confidence limits, 1994-2009

Activity	1994-1995					1999-2001					2005-2009					Change in participants, 1999-2001 to 2005-2009	
	n=	Lower conf. limit	Percent	Upper conf. limit	Total participants	n=	Lower conf. limit	Percent	Upper conf. limit	Total participants	n=	Lower conf. limit	Percent	Upper conf. limit	Total participants		
					thousands					*thousands*					*thousands*	*percent*	*thousands*
Walk for pleasure	16,552	68.1	68.8	69.5	138,443.5	52,578	81.7	82.0	82.4	175,552.8	25,967	84.6	85.0	85.4	199,998.3	13.9	24,445.5
Family gathering	16,552	63.0	63.7	64.4	128,180.0	52,513	73.2	73.6	74.0	157,574.6	13,389	73.3	74.0	74.8	174,187.9	10.5	16,613.3
Gardening or landscaping	0	–	–	–	–	5,769	64.6	65.8	67.0	140,796.8	5,178	65.8	67.1	68.4	157,867.0	12.1	17,070.2
View/ photograph natural scenery	0	–	–	–	–	52,391	58.9	59.4	59.8	127,055.4	26,356	63.1	63.7	64.3	149,818.0	17.9	22,762.6
Visit outdoor nature center/zoo	16,552	54.3	55.1	55.9	110,906.4	52,492	56.1	56.5	56.9	120,957.6	16,379	55.9	56.6	57.4	133,265.0	10.2	12,307.4
Attend outdoor sports events	16,552	48.2	49.0	49.7	98,583.5	7,922	49.1	50.2	51.3	107,470.2	2,764	51.8	53.7	55.6	126,335.2	17.6	18,865.0
Sightseeing	16,552	57.6	58.4	59.1	117,480.2	47,662	50.5	50.9	51.4	108,950.4	12,771	51.8	52.7	53.5	123,898.8	13.7	14,948.4
Picnicking	16,552	54.9	55.7	56.4	112,068.5	52,519	54.8	55.3	55.7	118,260.3	16,300	50.9	51.7	52.4	121,566.6	2.8	3,306.3
View/ photograph flowers, etc.	0	–	–	–	–	52,411	43.4	43.8	44.2	93,757.9	26,257	51.0	51.6	52.2	121,322.9	29.4	27,565.0
Driving for pleasure	0	–	–	–	–	47,648	50.0	50.4	50.9	107,939.9	12,774	50.3	51.2	52.1	120,493.3	11.6	12,553.4
View/ photograph other wildlife	16,552	30.5	31.2	31.9	62,809.7	52,230	43.6	44.0	44.4	94,182.5	26,257	49.6	50.2	50.8	118,059.2	25.4	23,876.7
Visit historic sites	16,552	44.8	45.5	46.3	91,590.6	47,460	44.5	44.9	45.4	96,114.8	16,164	43.4	44.1	44.9	103,874.3	8.1	7,759.5
Swimming in an outdoor pool	16,552	48.4	49.2	50.0	99,029.1	29,726	39.2	39.7	40.3	85,009.0	25,362	42.7	43.3	44.0	101,981.9	20.0	16,972.9
Visit a beach	16,552	63.3	64.0	64.7	128,786.3	52,362	39.0	39.5	39.9	84,445.9	30,346	42.8	43.3	43.9	101,968.2	20.7	17,522.3
Yard games, e.g., croquet	16,552	42.7	43.4	44.2	87,356.2	10,008	37.6	38.6	39.5	82,519.4	2,773	40.2	42.0	43.9	98,857.8	19.8	16,338.4
Swimming in lakes, streams, etc.	16,552	42.6	43.4	44.2	87,353.4	52,530	39.5	40.0	40.4	85,540.9	30,357	40.9	41.5	42.0	97,544.9	14.0	12,004.0
Bicycling	16,552	37.9	38.7	39.4	77,816.7	52,565	37.9	38.3	38.7	81,906.5	16,833	36.8	37.5	38.3	88,311.3	7.8	6,404.8
Attend outdoor concerts, etc.	16,552	34.5	35.2	35.9	70,877.5	7,916	39.6	40.7	41.8	87,154.8	2,673	35.6	37.5	39.3	88,137.3	1.1	982.5
View or photograph birds	16,552	26.3	27.0	27.7	54,293.7	52,470	31.6	32.0	32.4	68,465.3	26,710	35.2	35.7	36.3	84,072.4	22.8	15,607.1

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Appendix table 3 (continued)

Activity	1994-1995					1999-2001					2005-2009					Change in participants, 1999-2001 to 2005-2009	
	n=	Lower conf. limit	Percent	Upper conf. limit	Total participants	n=	Lower conf. limit	Percent	Upper conf. limit	Total participants	n=	Lower conf. limit	Percent	Upper conf. limit	Total participants		
					thousands					*thousands*					*thousands*	*percent*	*thousands*
Running or jogging	16,552	27.5	28.2	28.9	56,717.7	10,010	30.0	30.9	31.8	66,182.6	1,870	32.0	34.2	36.3	80,355.1	21.4	14,172.5
Day hiking	16,552	25.9	26.6	27.3	53,547.5	52,510	31.9	32.3	32.7	69,103.5	16,796	33.2	33.9	34.6	79,747.2	15.4	10,643.7
Visit a wilderness	0	–	–	–	–	52,413	31.0	31.4	31.8	67,248.2	16,801	32.9	33.6	34.3	79,120.6	17.7	11,872.4
Gather mushrooms, berries, etc.	0	–	–	–	–	52,571	27.7	28.1	28.4	60,043.2	16,789	32.1	32.8	33.5	77,213.5	28.6	17,170.3
Visited farm or agricultural setting	0	–	–	–	–	29,909	26.9	27.4	27.9	58,567.3	5,293	30.8	32.0	33.3	75,338.3	28.6	16,771.0
View or photograph fish	16,552	13.2	13.7	14.2	27,562.3	52,441	24.1	24.4	24.8	52,293.3	27,238	26.5	27.0	27.5	63,492.2	21.4	11,198.9
Outdoor team sports	16,552	28.4	29.1	29.8	58,562.2	44,980	21.1	21.4	21.8	45,864.0	1,041	23.9	26.6	29.2	62,498.1	36.3	16,634.1
Visit waterside besides beach	0	–	–	–	–	52,176	24.5	24.8	25.2	53,163.5	20,233	23.4	24.0	24.6	56,515.2	6.3	3,351.7
Developed camping	16,552	22.5	23.1	23.7	46,494.0	52,563	25.5	25.9	26.2	55,342.3	16,802	23.1	23.8	24.4	55,962.4	1.1	620.1
Warmwater fishing	16,552	23.8	24.5	25.2	49,302.4	49,671	21.9	22.2	22.6	47,568.7	30,266	23.2	23.7	24.2	55,718.9	17.1	8,150.2
Motor-boating	16,552	28.9	29.6	30.3	59,531.0	52,527	23.3	23.7	24.0	50,657.2	30,346	22.9	23.4	23.9	55,018.0	8.6	4,360.8
Visit prehistoric sites	16,552	17.4	17.9	18.5	36,120.9	52,324	20.2	20.5	20.9	43,961.0	16,679	20.1	20.8	21.4	48,847.2	11.1	4,886.2
Off-highway vehicle driving	16,552	17.3	17.8	18.4	35,898.0	44,956	16.5	16.8	17.2	36,009.3	17,771	20.0	20.6	21.2	48,417.7	34.5	12,408.4
Boat tours or excursions	0	–	–	–	–	9,990	18.3	19.1	19.8	40,793.1	16,500	19.0	19.6	20.2	46,117.9	13.1	5,324.8
Mountain biking	0	–	–	–	–	49,793	20.2	20.6	20.9	43,994.3	16,817	17.5	18.1	18.7	42,663.8	-3.0	-1,330.5
Basketball outdoors	16,552	14.5	15.1	15.6	30,327.9	10,003	11.9	12.5	13.2	26,790.1	829	15.0	17.6	20.1	41,298.7	54.2	14,508.6
Golf	16,552	16.7	17.3	17.9	34,856.6	10,013	15.8	16.5	17.2	35,288.5	1,859	13.6	15.2	16.9	35,882.1	1.7	593.6
Volleyball outdoors	16,552	16.4	16.9	17.5	34,074.4	10,003	9.4	10.0	10.6	21,370.2	822	12.2	14.7	17.1	34,475.9	61.3	13,105.7
Primitive camping	16,552	15.0	15.6	16.1	31,380.9	52,562	15.2	15.5	15.8	33,100.6	16,802	14.0	14.5	15.0	34,150.2	3.2	1,049.6
Sledding	16,552	13.2	13.7	14.3	27,653.0	10,009	13.7	14.4	15.1	30,822.8	10,372	12.9	13.6	14.3	32,022.2	3.9	1,199.4
Coldwater fishing	16,552	12.0	12.5	13.0	25,082.2	49,709	13.0	13.3	13.6	28,392.0	30,269	12.7	13.1	13.5	30,856.3	8.7	2,464.3
Football	16,552	7.6	8.0	8.4	16,106.0	10,000	6.3	6.8	7.2	14,453.6	840	10.3	12.5	14.8	29,455.1	103.8	15,001.5

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Appendix table 3 (continued)

Activity	1994-1995					1999-2001					2005-2009					Change in participants, 1999-2001 to 2005-2009	
	n=	Lower conf. limit	Percent	Upper conf. limit	Total participants	n=	Lower conf. limit	Percent	Upper conf. limit	Total participants	n=	Lower conf. limit	Percent	Upper conf. limit	Total participants		
					thousands					*thousands*					*thousands*	*percent*	*thousands*
Handball, etc. outdoors	16,552	6.3	6.7	7.0	13,388.8	10,007	6.6	7.1	7.6	15,194.9	1,906	10.4	11.8	13.3	27,818.2	83.1	12,623.3
Soccer outdoors	16,552	5.2	5.6	5.9	11,245.1	10,002	6.6	7.1	7.6	15,107.7	788	9.1	11.3	13.5	26,653.6	76.4	11,545.9
Baseball	16,552	7.5	8.0	8.4	16,018.3	10,002	5.3	5.8	6.2	12,375.4	859	8.7	10.8	12.8	25,321.5	104.6	12,946.1
Saltwater fishing	16,552	10.9	11.4	11.9	22,938.5	52,504	9.7	10.0	10.3	21,401.7	30,309	10.3	10.7	11.0	25,075.7	17.2	3,674.0
Tennis outdoors	16,552	13.5	14.0	14.5	28,215.2	10,012	9.2	9.8	10.4	20,910.4	1,882	8.6	10.0	11.3	23,502.2	12.4	2,591.8
Backpacking	16,552	8.0	8.4	8.9	16,982.9	52,570	9.8	10.0	10.3	21,505.9	17,782	9.4	9.9	10.3	23,198.8	7.9	1,692.9
Canoeing	16,552	8.4	8.9	9.3	17,851.1	52,546	8.8	9.0	9.3	19,282.3	30,361	9.4	9.7	10.0	22,794.9	18.2	3,512.6
Softball	16,552	14.9	15.4	16.0	30,999.0	10,003	9.3	9.9	10.5	21,170.8	860	7.3	9.2	11.2	21,757.4	2.8	586.6
Horseback riding	16,552	9.8	10.3	10.7	20,701.5	52,580	9.0	9.3	9.5	19,832.8	16,223	8.7	9.1	9.6	21,492.6	8.4	1,659.8
Waterskiing	16,552	10.8	11.3	11.7	22,657.1	52,545	7.2	7.5	7.7	15,973.0	30,361	8.7	9.0	9.4	21,254.6	33.1	5,281.6
Use personal watercraft	16,552	5.6	6.0	6.3	12,021.9	52,532	8.7	8.9	9.2	19,065.0	30,353	8.7	9.0	9.3	21,145.1	10.9	2,080.1
Big game hunting	16,552	9.0	9.4	9.9	19,002.6	44,975	8.1	8.3	8.6	17,806.4	10,366	8.3	8.9	9.4	20,855.3	17.1	3,048.9
Rafting	16,552	9.1	9.6	10.0	19,283.6	52,530	8.7	8.9	9.2	19,100.3	30,356	7.6	7.9	8.2	18,574.9	-2.8	-525.4
Small game hunting	16,552	8.2	8.6	9.0	17,340.3	44,973	6.7	6.9	7.2	14,845.4	20,356	6.7	7.0	7.4	16,533.8	11.4	1,688.4
Horseback riding on trails	16,552	7.1	7.5	7.9	15,132.9	49,857	7.2	7.4	7.6	15,838.0	16,219	6.5	6.8	7.2	16,099.2	1.6	261.2
Downhill skiing	16,552	10.8	11.3	11.8	22,768.1	44,978	7.9	8.1	8.4	17,421.1	20,380	6.4	6.8	7.1	15,932.9	-8.5	-1,488.2
Snorkeling	16,552	7.6	8.1	8.5	16,202.3	52,528	6.1	6.3	6.6	13,573.4	20,353	6.1	6.5	6.8	15,181.0	11.8	1,607.6
Inline skating	0	–	–	–	–	5,840	15.4	16.3	17.3	34,943.1	1,898	5.1	6.2	7.3	14,551.4	-58.4	-20,391.7
Kayaking	16,552	1.5	1.7	1.9	3,356.4	52,548	3.1	3.3	3.4	6,971.5	30,359	5.8	6.0	6.3	14,210.5	103.8	7,239.0
Mountain climbing	16,552	4.2	4.5	4.8	9,018.2	10,012	5.7	6.1	6.6	13,157.5	12,740	4.9	5.3	5.7	12,386.9	-5.9	-770.6
Snow-boarding	16,552	2.8	3.0	3.3	6,121.7	44,979	4.1	4.2	4.4	9,088.1	20,381	4.9	5.2	5.5	12,152.0	33.7	3,063.9
Ice skating	16,552	6.7	7.1	7.4	14,194.5	10,009	5.9	6.3	6.8	13,550.9	10,372	4.7	5.1	5.5	11,988.4	-11.5	-1,562.5
Snow-mobiling	16,552	4.5	4.8	5.1	9,615.8	44,977	5.1	5.3	5.5	11,301.0	20,382	4.3	4.5	4.8	10,677.8	-5.5	-623.2
Anadromous fishing	16,552	5.1	5.4	5.8	10,950.5	52,329	3.9	4.0	4.2	8,600.6	29,810	4.3	4.5	4.8	10,670.8	24.1	2,070.2
Caving	16,552	4.4	4.7	5.0	9,478.9	10,008	3.7	4.1	4.5	8,809.4	15,374	4.1	4.4	4.8	10,432.1	18.4	1,622.7

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Appendix table 3 (continued)

Activity	1994-1995					1999-2001					2005-2009					Change in participants, 1999-2001 to 2005-2009	
	n=	Lower conf. limit	Percent	Upper conf. limit	Total participants	n=	Lower conf. limit	Percent	Upper conf. limit	Total participants	n=	Lower conf. limit	Percent	Upper conf. limit	Total participants		
					thousands					*thousands*					*thousands*	*percent*	*thousands*
Sailing	16,552	5.7	6.0	6.4	12,118.3	52,543	4.7	4.9	5.1	10,441.9	30,357	4.2	4.4	4.6	10,395.9	-0.4	-46.0
Rock climbing	16,552	3.4	3.7	4.0	7,469.2	10,009	3.8	4.2	4.6	8,966.7	15,390	3.9	4.2	4.5	9,820.8	9.5	854.1
Rowing	16,552	5.0	5.3	5.7	10,688.9	52,531	3.9	4.0	4.2	8,617.3	30,345	3.8	4.0	4.2	9,384.6	8.9	767.3
Orienteering	16,552	2.2	2.4	2.6	4,830.4	9,996	1.5	1.7	2.0	3,695.0	6,696	2.3	2.6	3.0	6,198.6	67.8	2,503.6
Cross country skiing	16,552	4.1	4.4	4.7	8,832.4	44,977	3.5	3.6	3.8	7,767.5	20,381	2.4	2.6	2.8	6,082.6	-21.7	-1,684.9
Migratory bird hunting	16,552	2.6	2.8	3.1	5,709.0	52,573	2.2	2.3	2.4	4,936.0	30,364	1.9	2.1	2.2	4,880.2	-1.1	-55.8
Ice fishing	16,552	2.2	2.4	2.6	4,830.1	9,991	2.4	2.7	3.0	5,712.4	30,316	1.9	2.1	2.2	4,826.7	-15.5	-885.7
Surfing	16,552	1.3	1.5	1.6	2,920.9	52,546	1.4	1.5	1.6	3,191.0	20,355	1.8	2.0	2.2	4,668.2	46.3	1,477.2
Snow-shoeing	0	--	--	--	--	10,006	1.8	2.1	2.4	4,490.3	10,370	1.5	1.7	2.0	4,068.8	-9.4	-421.5
Scuba diving	0	--	--	--	--	52,546	1.7	1.8	1.9	3,847.2	20,360	1.4	1.5	1.7	3,633.2	-5.6	-214.0
Windsurfing	16,552	1.2	1.4	1.6	2,805.4	52,544	0.6	0.7	0.8	1,532.2	20,351	0.5	0.6	0.7	1,376.7	-10.1	-155.5

Note: The numbers in this table are annual participation estimates based on data collected during the three time periods. 1994-1995 participants based on 201.3 million people ages 16+ (Woods & Poole Economics, Inc. 2007). 1999-2001 participants based on 214.0 million people ages 16+ (U.S. Department of Commerce 2000). 2005-2009 participants based on 235.3 million people ages 16+ (U.S. Department of Commerce 2008). Snorkeling in 1994-1995 included scuba diving. Percent change was calculated before rounding.

Source: USDA Forest Service (1995) (n=17,217), USDA Forest Service (2001) (n=52,607), and USDA Forest Service (2009) (n=30,398).

Appendix table 4—Mean and total annual days of participation in outdoor recreation activities by people ages 16 and older by region, 2005-2009

Activity	North		South		Rocky Mountains		Pacific Coast		United States	
	Mean days	Total days	Mean days	Total days	Mean days	Total days	Mean days	Total days	Mean days	Total days
		millions		*millions*		*millions*		*millions*		*millions*
Walk for pleasure	99.9	8,226.6	113.0	7,474.4	86.5	1,554.2	111.1	3,672.6	104.6	20,927.8
View/photograph natural scenery	79.4	4,930.0	78.4	3,700.6	80.9	1,189.6	69.7	1,788.5	77.5	11,608.6
View/photograph flowers, etc.	88.7	4,399.6	87.4	3,417.4	67.1	765.6	93.6	1,949.7	86.8	10,532.2
View or photograph birds	99.8	3,696.0	106.6	2,862.4	79.6	552.3	85.9	1,104.3	97.7	8,215.0
View/photograph other wildlife	48.5	2,399.0	48.8	1,888.8	44.6	522.4	39.7	699.4	46.7	5,509.5
Visited farm or agricultural setting	41.5	1,465.0	48.5	1,136.4	71.6	527.4	51.1	526.5	48.5	3,655.3
Swimming in an outdoor pool	23.1	962.7	27.9	979.3	27.2	220.0	26.6	459.1	25.7	2,621.1
Driving for pleasure	17.7	860.6	20.2	795.1	16.5	200.4	14.9	284.0	17.8	2,140.1
Sightseeing	15.0	740.8	15.2	633.8	12.8	155.7	15.5	312.2	14.9	1,842.5
Day hiking	22.4	723.8	22.9	462.7	20.4	200.8	25.7	438.2	22.9	1,825.5
Swimming in lakes, streams, etc.	12.0	511.0	13.0	404.0	10.8	78.8	14.5	238.5	12.6	1,232.4
Visit a beach	10.7	473.1	11.2	349.0	10.0	66.0	14.7	296.1	11.6	1,184.2
Family gathering	6.9	507.5	6.1	358.7	7.7	119.2	7.1	193.8	6.8	1,179.3
Off-highway vehicle driving	16.4	282.8	33.3	561.6	16.9	96.9	12.6	106.8	21.6	1,048.2
Mountain biking	18.8	379.3	19.3	228.5	26.2	97.7	16.2	120.3	19.4	825.8
Warmwater fishing	14.1	329.0	16.9	389.7	11.3	46.1	10.7	51.5	14.6	816.3
Gather mushrooms, berries, etc.	9.1	319.1	12.2	306.2	8.4	56.2	11.1	117.4	10.3	799.0
Visit waterside besides beach	13.9	319.0	14.2	258.7	11.9	57.8	14.4	147.9	13.9	783.4
Picnicking	6.3	335.4	5.8	204.9	6.9	80.7	6.6	141.0	6.3	762.0
Visit outdoor nature center/zoo	5.8	326.6	4.9	202.7	5.5	72.5	6.0	134.6	5.5	736.4
Visit a wilderness	8.7	266.9	10.8	254.0	7.3	70.1	9.9	145.3	9.3	736.3
Motorboating	11.8	274.0	13.7	258.8	9.3	45.6	9.9	74.6	11.9	653.1

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Appendix table 4 (continued)

Activity	North		South		Rocky Mountains		Pacific Coast		United States	
	Mean days	Total days	Mean days	Total days	Mean days	Total days	Mean days	Total days	Mean days	Total days
		millions		*millions*		*millions*		*millions*		*millions*
Visit historic sites	4.1	175.6	4.3	141.8	3.8	37.5	5.0	84.8	4.2	439.8
Developed camping	8.1	165.3	6.7	104.3	6.7	48.4	8.2	103.7	7.5	421.8
Coldwater fishing	10.6	119.6	10.4	78.7	10.0	48.9	11.0	78.2	10.5	325.4
Big game hunting	14.9	124.9	16.8	132.5	8.8	24.9	12.6	18.7	14.4	301.2
Horseback riding on trails	12.6	72.2	17.7	99.0	35.0	68.7	8.3	22.2	16.3	262.1
Primitive camping	7.3	86.9	6.8	65.1	8.5	49.2	6.8	48.4	7.3	249.6
Backpacking	9.1	77.6	10.5	66.5	12.1	39.1	10.0	52.5	10.2	235.8
Saltwater fishing	8.3	65.2	9.7	114.5	3.4	3.3	8.9	37.3	8.8	220.3
Small game hunting	11.6	75.3	13.5	89.9	12.3	22.7	16.0	22.7	12.7	210.6
Use personal watercraft	8.3	60.7	9.3	71.1	6.3	12.3	5.8	22.9	7.9	167.0
Visit prehistoric sites	3.2	59.2	3.1	48.0	3.4	21.5	3.2	29.0	3.2	157.6
Waterskiing	6.9	52.7	8.4	64.3	6.7	15.4	6.5	23.2	7.3	155.6
Canoeing	4.8	57.1	4.7	33.1	3.6	5.0	4.7	11.4	4.7	106.7
Snowboarding	6.9	40.3	5.4	9.9	8.7	10.8	8.4	28.4	7.4	89.4
Downhill skiing	5.7	43.2	4.4	14.3	6.4	12.1	5.6	18.7	5.5	88.3
Rafting	4.1	28.9	4.9	30.6	4.1	8.7	4.9	15.0	4.5	83.3
Kayaking	6.1	41.4	5.7	20.7	4.0	3.8	5.0	14.1	5.6	80.1
Surfing	13.1	14.6	10.0	12.8	7.4	2.2	25.9	50.0	17.1	79.7
Snowmobiling	7.9	54.8	3.9	4.3	4.8	6.2	9.4	12.1	7.2	77.4
Snorkeling	3.8	22.0	5.7	26.6	3.6	4.5	5.2	17.8	4.7	70.9
Anadromous fishing	5.2	19.4	6.9	19.0	4.1	3.5	7.7	26.1	6.4	68.1
Sailing	6.4	31.2	6.5	16.9	4.9	3.1	5.6	12.6	6.1	63.8
Mountain climbing	3.8	16.1	4.5	15.3	6.6	16.9	4.6	11.4	4.8	59.7
Migratory bird hunting	10.3	18.2	11.6	22.6	10.1	6.5	14.5	7.8	11.3	55.0
Rowing	5.3	26.0	5.7	13.8	4.9	3.7	6.3	8.2	5.5	51.7
Rock climbing	3.2	13.1	3.0	7.0	7.2	12.2	5.9	12.4	4.6	44.7

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Appendix table 4 (continued)

Activity	North		South		Rocky Mountains		Pacific Coast		United States	
	Mean days	Total days	Mean days	Total days	Mean days	Total days	Mean days	Total days	Mean days	Total days
		millions		*millions*		*millions*		*millions*		*millions*
Cross-country skiing	5.7	22.2	4.5	2.7	9.2	5.8	5.8	5.2	5.9	35.9
Scuba diving	5.1	7.3	8.7	8.6	3.2	1.3	7.7	5.6	6.3	22.7
Snowshoeing	5.5	12.9	2.1	0.4	4.6	3.3	5.4	4.5	5.2	21.2
Caving	1.9	7.9	1.6	5.3	2.2	2.5	1.9	3.8	1.9	19.5
Windsurfing	4.9	3.7	5.1	1.4	3.3	0.3	4.0	1.0	4.6	6.4

Note: The numbers in this table are *annual* activity days estimates based on data collected between 2005 and 2009. Mean days is the average annual number of days in which participants engage in an activity. Total annual days (in millions) is the product of the estimated number of participants times the mean annual days.

Source: USDA Forest Service (2009) (n=30,398).

Appendix table 5—Trends in outdoor recreation annual activity days by people ages 16 and older in the United States with sample size and 95 percent confidence limits, 1994-2009

Activity	1994-1995					1999-2001					2005-2009					Change in participants, 1999-2001 to 2005-2009	
	n=	Lower conf. limit	Mean days	Upper conf. limit	Total annual days	n=	Lower conf. limit	Mean days	Upper conf. limit	Total annual days	n=	Lower conf. limit	Mean days	Upper conf. limit	Total annual days		
					millions					*millions*					*millions*	*percent*	*millions*
Walk for pleasure	7,959	105.4	107.9	110.4	18,942.2	7,203	100.4	103.2	105.9	18,109.3	4,925	101.4	104.6	107.9	20,927.8	15.6	2,818.5
View/ photograph natural scenery	0	–	–	–	–	5,728	53.3	56.2	59.2	7,141.5	11,065	75.1	77.5	79.9	11,608.6	62.6	4,467.1
View/ photograph flowers, etc.	0	–	–	–	–	21,948	59.7	61.2	62.7	5,739.9	8,855	84.1	86.8	89.6	10,532.2	83.5	4,792.3
View or photograph birds	3,479	83.3	87.7	92.1	6,004.6	16,142	85.6	87.8	89.9	6,009.3	6,522	94.4	97.7	101.1	8,215.0	36.7	2,205.7
View/ photograph other wildlife	4,053	34.2	36.7	39.3	3,461.0	22,709	37.4	38.5	39.7	3,630.6	8,534	44.7	46.7	48.6	5,509.5	51.8	1,878.9
Visited farm or agricultural setting	0	–	–	–	–	2,953	26.8	29.9	32.9	1,750.4	844	41.2	48.5	55.8	3,655.3	108.8	1,904.9
Swimming in an outdoor pool	4,992	26.4	27.6	28.8	2,346.4	11,900	22.5	23.2	23.9	1,971.1	5,359	24.6	25.7	26.8	2,621.1	33.0	650.0
Driving for pleasure	0	–	–	–	–	4,637	18.2	18.9	19.7	2,045.2	2,649	16.8	17.8	18.7	2,140.1	4.6	94.9
Sightseeing	6,856	17.1	18.0	18.9	1,961.2	4,730	14.3	14.8	15.4	1,616.5	2,732	14.2	14.9	15.6	1,842.5	14.0	226.0
Day hiking	3,618	15.6	16.8	18.0	1,160.0	2,947	26.0	27.8	29.5	1,919.6	2,481	21.3	22.9	24.5	1,825.5	-4.9	-94.1
Swimming in lakes, streams, etc.	4,459	15.1	15.8	16.6	1,355.4	22,956	12.2	12.4	12.6	1,062.4	9,101	12.3	12.6	12.9	1,232.4	16.0	170.0
Visit a beach	7,255	24.3	25.5	26.7	2,153.0	22,034	10.7	10.9	11.1	924.0	9,628	11.3	11.6	11.9	1,184.2	28.2	260.2
Family gathering	7,439	8.4	8.8	9.2	1,392.4	7,357	6.0	6.2	6.3	970.4	2,440	6.4	6.8	7.1	1,179.3	21.5	208.9
Off-highway vehicle driving	2,339	21.9	24.0	26.1	864.7	1,650	18.3	19.7	21.1	710.4	1,373	19.8	21.6	23.5	1,048.2	47.6	337.8
Mountain biking	0	–	–	–	–	2,176	23.9	25.4	27.0	1,119.6	1,238	17.7	19.4	21.1	825.8	-26.2	-293.8
Warmwater fishing	2,273	16.3	17.6	18.9	837.8	2,299	14.4	15.2	16.0	721.8	4,501	14.1	14.6	15.2	816.3	13.1	94.5
Gather mushrooms, berries, etc.	0	–	–	–	–	5,023	9.8	10.2	10.7	614.3	2,244	9.7	10.3	11.0	799.0	30.1	184.7
Visit waterside besides beach	0	–	–	–	–	14,195	11.2	11.5	11.8	611.4	4,010	13.2	13.9	14.5	783.4	28.1	172.0
Picnicking	6,794	8.4	8.8	9.2	1,040.6	5,972	6.6	6.8	7.0	808.9	3,439	6.0	6.3	6.5	762.0	-5.8	-46.9

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Appendix table 5 (continued)

Activity	1994-1995					1999-2001					2005-2009					Change in participants, 1999-2001 to 2005-2009	
	n=	Lower conf. limit	Mean days	Upper conf. limit	Total annual days	n=	Lower conf. limit	Mean days	Upper conf. limit	Total annual days	n=	Lower conf. limit	Mean days	Upper conf. limit	Total annual days		
					millions					*millions*					*millions*	*percent*	*millions*
Visit outdoor nature center/zoo	0	–	–	–	–	5,968	5.0	5.1	5.3	620.9	3,924	5.3	5.5	5.8	736.4	18.6	115.5
Visit a wilderness	0	–	–	–	–	3,157	7.9	8.3	8.7	558.7	2,344	8.8	9.3	9.9	736.3	31.8	177.6
Motorboating	3,309	13.7	14.7	15.6	744.5	14,218	11.2	11.5	11.7	581.6	5,626	11.5	11.9	12.3	653.1	12.3	71.5
Visit historic sites	5,343	5.0	5.5	6.0	529.1	4,748	4.1	4.3	4.4	411.2	3,042	4.1	4.2	4.4	439.8	7.0	28.6
Developed camping	3,036	9.9	10.6	11.2	585.4	2,911	7.3	7.6	7.9	419.8	1,763	7.1	7.5	7.9	421.8	0.5	2.0
Coldwater fishing	1,859	10.4	11.4	12.4	323.6	1,365	10.6	11.3	12.0	320.9	2,440	10.0	10.5	11.1	325.4	1.4	4.5
Big game hunting	1,300	13.0	14.2	15.3	252.4	1,058	12.9	13.8	14.8	246.4	956	13.5	14.4	15.4	301.2	22.2	54.8
Horseback riding on trails	0	–	–	–	–	485	15.1	18.3	21.5	290.3	458	13.3	16.3	19.2	262.1	-9.7	-28.2
Primitive camping	2,308	8.6	9.3	9.9	306.6	1,787	6.7	7.1	7.4	234.1	995	6.8	7.3	7.8	249.6	6.6	15.5
Backpacking	1,199	7.5	8.5	9.4	182.0	1,012	7.9	8.7	9.4	186.2	860	9.2	10.2	11.1	235.8	26.6	49.6
Saltwater fishing	1,041	11.3	13.1	14.9	280.5	5,160	9.9	10.4	10.8	221.9	2,130	8.2	8.8	9.4	220.3	-0.7	-1.6
Small game hunting	935	12.2	13.6	15.0	202.0	796	13.2	14.3	15.4	212.0	732	11.6	12.7	13.8	210.6	-0.7	-1.4
Use personal watercraft	615	6.5	7.6	8.7	145.0	4,879	7.5	7.8	8.1	148.2	1,642	7.4	7.9	8.4	167.0	12.7	18.8
Visit prehistoric sites	2,468	4.2	5.0	5.9	221.2	2,047	3.1	3.3	3.4	144.0	1,454	3.0	3.2	3.4	157.6	9.4	13.6
Waterskiing	1,269	8.8	9.6	10.4	153.3	4,372	7.8	8.1	8.4	129.7	1,656	6.9	7.3	7.7	155.6	20.0	25.9
Canoeing	827	4.5	5.3	6.2	103.1	5,205	5.0	5.1	5.3	98.8	2,829	4.5	4.7	4.9	106.7	8.0	7.9
Snowboarding	0	–	–	–	–	412	6.6	7.4	8.3	67.4	362	6.3	7.4	8.4	89.4	32.6	22.0
Downhill skiing	1,503	6.9	7.6	8.2	131.7	1,010	5.9	6.3	6.7	109.5	848	5.2	5.5	5.9	88.3	-19.4	-21.2
Rafting	1,047	4.6	5.1	5.6	97.4	1,004	3.7	4.0	4.4	77.2	1,915	4.2	4.5	4.7	83.3	7.9	6.1
Kayaking	155	5.2	8.1	10.9	56.2	2,109	5.8	6.2	6.6	43.0	1,856	5.3	5.6	6.0	80.1	86.3	37.1
Surfing	127	20.2	30.9	41.6	98.6	760	18.5	21.1	23.7	67.2	285	13.8	17.1	20.3	79.7	18.6	12.5
Snowmobiling	696	8.0	9.2	10.4	104.0	653	8.1	9.0	9.8	101.4	407	6.3	7.2	8.2	77.4	-23.7	-24.0
Snorkeling	794	6.3	7.3	8.2	98.7	3,871	5.0	5.3	5.5	71.3	1,167	4.3	4.7	5.0	70.9	-0.6	-0.4
Anadromous fishing	666	8.0	9.6	11.3	83.0	394	6.3	7.2	8.1	62.1	544	5.6	6.4	7.1	68.1	9.7	6.0

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Appendix table 5 (continued)

Activity	1994-1995					1999-2001					2005-2009					Change in participants, 1999-2001 to 2005-2009	
	n=	Lower conf. limit	Mean days	Upper conf. limit	Total annual days	n=	Lower conf. limit	Mean days	Upper conf. limit	Total annual days	n=	Lower conf. limit	Mean days	Upper conf. limit	Total annual days		
					millions					*millions*					*millions*	*percent*	*millions*
Sailing	653	6.7	8.0	9.3	83.3	3,052	5.7	6.0	6.3	62.4	851	5.6	6.1	6.7	63.8	2.2	1.4
Mountain climbing	661	3.9	4.5	5.2	59.6	661	4.3	4.7	5.2	62.4	442	4.2	4.8	5.5	59.7	-4.3	-2.7
Migratory bird hunting	383	6.9	8.0	9.0	39.3	1,389	10.5	11.1	11.7	54.8	417	10.2	11.3	12.3	55.0	0.4	0.2
Rowing	476	4.3	5.4	6.5	46.6	2,357	5.4	5.7	6.1	49.2	908	5.0	5.5	6.0	51.7	5.1	2.5
Rock climbing	467	3.7	5.3	6.8	47.2	437	3.8	4.4	5.0	39.8	411	3.9	4.6	5.2	44.7	12.3	4.9
Cross-country skiing	659	6.5	7.4	8.3	57.4	484	6.2	6.9	7.6	53.5	366	5.1	5.9	6.7	35.9	-32.9	-17.6
Scuba diving	794	6.3	7.3	8.2	28.0	1,044	6.4	7.0	7.6	26.9	246	5.2	6.3	7.3	22.7	-15.6	-4.2
Snowshoeing	0	–	–	–	–	292	5.5	6.3	7.1	28.3	293	4.5	5.2	5.9	21.2	-25.1	-7.1
Caving	631	1.9	2.4	2.9	21.4	466	1.8	1.9	2.1	17.1	455	1.7	1.9	2.0	19.5	14.0	2.4
Windsurfing	133	4.1	5.9	7.6	9.0	385	4.8	5.5	6.3	8.5	94	3.2	4.6	6.1	6.4	-24.7	-2.1

Note: The numbers in this table are annual activity days estimates based on data collected during the three time periods. Mean days is the average annual number of days in which participants engage in an activity. Total annual days (in millions) is the product of the estimated number of participants times the mean annual days. Snorkeling in 1994-1995 included scuba diving. Missing data are denoted with "—" and indicate that annual days data for that activity were not collected during that time period.

Source: USDA Forest Service (1995) (n=17,217), USDA Forest Service (2001) (n=52,607), and USDA Forest Service (2009) (n=30,398).

Appendix table 6—Percent participating in recreation activity group individual activities by demographic strata

	Visiting recreation and historic sites					
Demographic strata	Family gatherings	Picnicking	Visit a beach	Visit historic sites	Developed camping	Visit prehistoric sites
All people age 16+	74.0	51.7	43.3	44.1	23.8	20.8
Male	72.3+ *	46.9+ *	43.2	45.3+ **	26.2+ *	21.8+ **
Female	75.6*	56.1*	43.6	43.1***	21.5*	19.8**
White	73.6+	53.0+ *	45.5+ *	46.2+ *	26.6+ *	20.3+
Black	77.3*	45.3*	30.8*	32.4*	8.8*	15.2*
American Indian	73.5	57.1	38.1***	47.5	26.6	26.6
Asian or Pacific Islander	79.0**	57.5*	50.5*	41.4	15.0*	25.1*
Hispanic	72.6	50.1	42.8	44.7	26.7*	26.1*
Age 16-24	80.0+ *	41.0+ *	52.2*	45.0+	29.3+ *	23.3+ *
Age 25-34	77.4*	55.2*	48.5*	48.2*	30.7*	24.1*
Age 35-44	80.0*	62.2*	54.2*	51.9*	32.0*	23.4*
Age 45-54	73.9	55.1*	47.4*	49.1*	25.1***	23.2*
Age 55-64	71.0*	51.0	39.1*	41.8**	18.7*	17.7*
Age 65+	65.5*	45.5*	22.1*	30.9*	10.7*	13.9*
Less than high school	69.3+ *	39.6+ *	25.7*	30.2+ *	19.4+ *	16.2+ *
High school graduate	70.7*	47.1*	37.5*	36.1*	23.5	17.2*
Some college	78.5*	57.7*	50.2*	48.8*	26.7*	23.9*
College degree	77.4*	60.5*	60.3*	59.2*	25.7**	24.7*
Postgraduate degree	77.0**	64.1*	63.5*	66.5*	24.6	27.5*
<$15,000	64.4+ *	41.3+ *	27.0*	27.9+ *	14.3+ *	13.4+ *
$15,000-$24,999	72.1	51.9	28.8*	35.6*	20.8*	18.1**
$25,000-$49,999	75.4	54.8*	42.4	43.0	24.4	21.8
$50,000-$74,999	78.9*	58.4*	52.8*	52.5*	30.4*	23.2*
$75,000-$99,999	80.4*	63.7*	59.9*	59.6*	32.6*	26.2*
$100,000-$149,999	80.2*	60.3*	63.2*	60.8*	30.9*	26.7*
$150,000+	79.6*	57.7*	72.0*	67.5*	29.6*	27.4*
Non-metro resident	76.2++ **	51.8	33.3+ *	40.1+ *	26.7+ *	21.9
Metro area resident	73.6	51.6	45.4*	45.0***	23.2	20.5
U.S. citizen	74.4+	51.9	43.3	44.2	24.1+	20.8
Foreign born	69.4**	49.7	42.4	42.9	18.7*	18.8

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Appendix table 6 (continued)

Demographic strata	Viewing and photographing nature: View or photograph natural scenery	View or photograph wildflowers, trees, etc.	View or photograph other wildlife	View or photograph birds
All people age 16+	63.7	51.6	50.2	35.7
Male	62.3+ *	47.3+ *	51.6+ *	33.5+ *
Female	64.8*	55.4*	48.9*	37.7*
White	68.8+ *	55.2+ *	56.2+ *	40.1+ *
Black	43.9*	37.6*	31.1*	25.9*
American Indian	67.2	55.5	54.5	39.5
Asian or Pacific Islander	67.5**	51.9	39.2*	25.7*
Hispanic	56.3*	46.4*	42.3*	25.9*
Age 16-24	59.0+ *	44.8+ *	47.2+ *	21.8+ *
Age 25-34	64.4	47.3*	51.6***	28.2*
Age 35-44	73.1*	57.8*	58.2*	39.0*
Age 45-54	71.5*	58.7*	56.4*	43.1*
Age 55-64	66.4*	55.9*	51.5	42.4*
Age 65+	49.7*	45.5*	38.2*	37.9*
Less than high school	43.7*	39.4+ *	40.0+ *	24.7+ *
High school graduate	60.0*	46.7*	47.2*	34.1*
Some college	72.2*	57.0*	55.4*	39.5*
College degree	78.6*	63.0*	57.7*	43.3*
Postgraduate degree	82.4*	67.4*	61.9*	48.4*
<$15,000	47.3+ *	40.8+ *	38.0+ *	30.3+ *
$15,000-$24,999	55.4*	47.3*	43.7*	32.3*
$25,000-$49,999	66.5*	52.7	53.0*	37.1**
$50,000-$74,999	74.5*	58.4*	60.2*	39.9*
$75,000-$99,999	78.1*	59.7*	61.4*	40.9*
$100,000-$149,999	80.8*	62.6*	63.8*	44.4*
$150,000+	80.3*	62.9*	63.5*	43.7*
Non-metro resident	63.1	52.2	57.5+ *	36.9+++
Metro area resident	63.8	51.4	48.6*	35.5
U.S. citizen	64.0+	52.0+	50.9+ **	36.0+
Foreign born	56.6*	42.2*	33.7*	30.5*

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Appendix table 6 (continued)

Demographic strata	Backcountry activities				
	Hiking	Visit a wilderness or primitive area	Backpacking	Horseback riding on trails	Mountain climbing
All people age 16+	33.9	33.6	9.9	6.8	5.3
Male	39.0+ *	40.5+ *	13.3+ *	6.8	6.4+ *
Female	29.2*	27.3*	6.7*	6.9	4.2*
White	37.9+ *	37.3+ *	11.0+ *	7.5+ *	5.8+ **
Black	12.1*	15.7*	2.5*	3.0*	1.1*
American Indian	49.0*	54.9*	18.7*	15.3*	20.1*
Asian or Pacific Islander	29.4**	20.8*	9.9	4.8***	4.9
Hispanic	34.0	34.2	10.5	7.2	5.6
Age 16-24	32.8+	36.8+ *	14.3+ *	13.0+ *	9.3+ *
Age 25-34	38.6*	38.4*	12.4*	7.0	4.8
Age 35-44	41.5*	40.3*	13.7*	7.8***	5.9
Age 45-54	41.4*	39.1*	12.3*	8.5*	6.2***
Age 55-64	32.8	30.2*	6.0*	3.7*	4.2**
Age 65+	18.9*	20.1*	2.1*	2.3*	1.6*
Less than high school	24.0+ *	24.2+ *	7.1+ *	4.9+ *	4.2+ **
High school graduate	30.1*	31.7*	7.9*	7.0	3.5*
Some college	35.7**	37.4*	10.3	7.6**	5.7
College degree	43.9*	40.7*	14.4*	7.9**	7.6*
Postgraduate degree	48.4*	40.8*	14.1*	7.4	8.1*
<$15,000	23.0+ *	26.0+ *	6.8+ *	3.7+ *	4.2+ ***
$15,000-$24,999	27.3*	25.5*	7.0*	3.6*	2.8*
$25,000-$49,999	34.4	34.7	10.2	6.6	4.5***
$50,000-$74,999	39.4*	41.5*	12.1*	7.4	6.3***
$75,000-$99,999	45.5*	44.8*	13.4*	9.5*	6.1
$100,000-$149,999	48.1*	45.1*	13.7*	9.5*	9.3*
$150,000+	50.6*	49.5*	20.0*	12.1*	9.6*
Non-metro resident	34.5	41.1+ *	9.9	9.0+ *	5.5
Metro area resident	33.8	32.1*	9.8	6.4***	5.2
U.S. citizen	34.2+	34.1+	9.9+++	6.9	5.2
Foreign born	26.3*	24.6*	7.8***	5.5	6.5

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Appendix table 6 (continued)

	Motorized activities				
Demographic strata	Motorboating	Driving off-road	Using personal watercraft	Waterskiing	Snowmobiling
All people age 16+	23.4	20.6	9.0	9.0	4.5
Male	27.3+ *	26.5+ *	10.1+ *	10.9+ *	5.9+ *
Female	19.7*	15.1*	8.0*	7.4*	3.3*
White	29.4+ *	22.5+ *	10+ *	10.7+ *	5.3+ *
Black	6.4*	10.5*	4.0*	2.0*	1.4*
American Indian	15.8*	26.1***	5.9***	4.1*	3.7
Asian or Pacific Islander	12.2*	7.0*	7.0**	6.0*	0.9*
Hispanic	15.9*	24.4*	10.0**	9.3	4.7
Age 16-24	26.6+ *	32.6+ *	18.6+ *	19.4+ *	7.3+ *
Age 25-34	25.9*	28.9*	11.9*	13.3*	8.1*
Age 35-44	28.3*	26.2*	10.7*	12.0*	5.8*
Age 45-54	27.3*	19.8	7.5*	7.6*	4.0
Age 55-64	21.3*	12.6*	4.4*	3.3*	2.3*
Age 65+	13.3*	7.7*	2.5*	0.8*	1.0*
Less than high school	15.1+ *	20.3+	7.6+ *	7.3+ *	3.5+ *
High school graduate	22.1*	22.6*	8.6	8.0*	5.0***
Some college	26.6*	22.4*	9.7**	10.2*	5.6*
College degree	30.8*	18.1*	11.0*	11.5*	4.1
Postgraduate degree	28.9*	13.5*	8.4	9.6	3.4**
<$15,000	10.3+ *	13.2+ *	4.6+ *	4.0+ *	2.4+ *
$15,000-$24,999	14.3*	14.0*	4.3*	3.6*	5.3
$25,000-$49,999	22.2**	22.2**	8.2**	7.1*	4.2
$50,000-$74,999	30.7*	23.2*	11*	11.4*	5.8*
$75,000-$99,999	34.9*	27.2*	12.6*	13.8*	5.6**
$100,000-$149,999	37.0*	26.6*	14.0*	14.8*	5.6***
$150,000+	43.7*	26.2*	18.6*	22.5*	8.9*
Non-metro resident	25.6+ *	28.4+ *	7.8+ *	8.6	6.6+ *
Metro area resident	22.9***	19.0*	9.2	9.1	4.1**
U.S. citizen	24.0+ **	20.8+	9.1+	9.2+	4.5
Foreign born	9.2*	16.9**	5.9*	4.2*	5.6

Appendix table 6 (continued)

Demographic strata	Fishing and hunting						
	Warmwater fishing	Coldwater fishing	Saltwater fishing	Big game hunting	Small game hunting	Anadromous fishing	Migratory bird hunting
All people age 16+	23.7	13.1	10.7	8.9	7.0	4.5	2.1
Male	32.0+ *	17.7+ *	15.4+ *	15.3+ *	12.4+ *	6.6+ *	3.8+ *
Female	16.0*	8.8*	6.3*	2.7*	2.0*	2.7*	0.5*
White	27.3+ *	14.2+ *	10.1+ *	11.5+ *	9.0+ *	4.3+	2.7+ *
Black	15.9*	6.6*	8.4*	3.0*	2.7*	2.9*	0.3*
American Indian	21.2	21.6*	10.8	6.3	8.6	7.5**	2.9
Asian or Pacific Islander	8.7*	6.5*	11.8	0.8*	1.1*	5.0	0.4*
Hispanic	18.9*	15.2*	14.8*	5.3*	4.0*	6.4*	1.4*
Age 16-24	28.4+ *	16.3+ *	12.4+ *	10.8+ *	9.2+ *	6.1+ *	3.2+ *
Age 25-34	28.1*	15.7*	13.8*	9.1	8.2*	5.7*	2.4***
Age 35-44	29.5*	15.9*	11.5***	11.4*	8.2*	4.5	2.9*
Age 45-54	26.2*	14.8*	12.4*	11.5*	8.7*	5.6*	2.1
Age 55-64	19.8*	10.8*	9.6**	6.9*	5.8*	4.0***	1.5*
Age 65+	13.1*	6.8*	5.5*	4.3*	3.2*	2.0*	0.7*
Less than high school	22.7+ **	13.5++	9.4+ *	6.8+ *	5.4+ *	4.7+++	1.6+ *
High school graduate	26.1*	13.0	10.8	11.8*	8.8*	4.4	2.6*
Some college	24.6***	13.7	10.6	9.9***	7.5	4.9	2.1
College degree	22.1**	12.7	12.3*	7.2**	7.0	3.9**	2.0
Postgraduate degree	17.4*	11.1*	11.1	4.0*	4.2*	4.1	1.6
<$15,000	17.2+ *	10.4+ *	6.2+ *	4.5+ *	3.7+ *	3.7+ **	1.3+ *
$15,000-$24,999	21.7**	12.7	8.9*	6.3*	5.2*	4.7	1.2*
$25,000-$49,999	27.7*	14.1**	10.9	10.2**	7.3	4.2	1.8
$50,000-$74,999	27.7*	14.2**	11.5***	12.8*	8.3**	5.1***	2.7**
$75,000-$99,999	30.9*	15.5*	15.2*	13.0*	10.6*	5.6**	3.4*
$100,000-$149,999	28.0*	16.9*	17.0*	10.8***	10.9*	6.8*	3.2*
$150,000+	24.8	18.2*	19.4*	9.5	10.4*	6.0*	4.1*
Non-metro resident	32.8+ *	16.5+ *	7.9+ *	16.4+ *	14.1+ *	4.3	3.8+ *
Metro area resident	21.8*	12.4*	11.2*	7.4*	5.6*	4.6	1.7*
U.S. citizen	24.2+ **	13.3+	10.6	9.2+	7.3+	4.5	2.1+
Foreign born	9.9*	8.8*	9.8	0.4*	0.7*	5.2	0.9*

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Appendix table 6 (continued)

	Non-motorized boating				
Demographic strata	Canoeing	Rafting	Kayaking	Sailing	Rowing
All people age 16+	9.7	7.9	6.0	4.4	4.0
Male	11.4+ *	8.4+ **	6.8+ *	4.4	4.8+ *
Female	8.1*	7.5***	5.4*	4.5	3.2*
White	12+ *	9.2+ *	7.2+ *	4.8+ **	4.8+ *
Black	3.0*	2.8*	1.5*	2.4*	1.2*
American Indian	5.8**	5.6	1.5*	3.1	1.4**
Asian or Pacific Islander	8.7	6.6	7.5**	4.6	4.0
Hispanic	5.9*	7.4	4.7*	4.3	3.1*
Age 16-24	18.5+ *	15.2+ *	11.3+ *	6.2+ *	5.6+ *
Age 25-34	10.4***	10.3*	5.9	4.9***	3.7
Age 35-44	12.2*	10.1*	6.8**	4.5	4.6**
Age 45-54	10.0	7.9	6.9**	4.9***	4.5***
Age 55-64	6.4*	3.9*	4.5*	4.0	3.4***
Age 65+	2.3*	1.4*	1.7*	2.2*	2.3*
Less than high school	6.9+ *	6.2+ *	3.8+ *	2.7+ *	2.7+ *
High school graduate	8.1*	7.1**	3.9*	2.1*	3.5**
Some college	9.5	8.7*	5.7	4.7	4.6*
College degree	14.2*	9.7*	10.5*	7.9*	4.9*
Postgraduate degree	16.0*	9.6*	12.8*	10.4*	5.7*
<$15,000	4.8+ *	5.3+ *	3.2+ *	1.9+ *	2.9+ *
$15,000-$24,999	6.7*	5.4*	2.5*	2.3*	3.1**
$25,000-$49,999	8.7**	7.4	4.0*	3.2*	3.9
$50,000-$74,999	12.4*	9.7*	7.6*	4.2	5.1*
$75,000-$99,999	15.2*	12*	9.4*	5.2***	4.4
$100,000-$149,999	16.0*	10.4*	11.8*	8.6*	5.3*
$150,000+	16.1*	14.2*	14.6*	15.4*	6.0*
Non-metro resident	10.3+++	7.7	4.3+ *	2.1+ *	4.0
Metro area resident	9.6	7.9	6.4**	4.9*	4.0
U.S. citizen	9.8+	8.1+	6.1	4.4	4.1+
Foreign born	5.9*	3.6*	5.1	4.8	1.7*

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Appendix table 6 (continued)

	Snow skiing/boarding		
Demographic strata	Downhill skiing	Snowboarding	Cross country skiing
All people age 16+	6.8	5.2	2.6
Male	8.6+ *	6.8+ *	2.9+ **
Female	5.1*	3.6*	2.3***
White	7.4+ *	5.2+	2.8+
Black	1.8*	2.6*	0.6*
American Indian	2.4**	4.9	1.5
Asian or Pacific Islander	10.1*	6.7***	1.8
Hispanic	7.5	7.3*	3.4*
Age 16-24	13+ *	18.7*	2.4+
Age 25-34	8.1*	7.7*	2.8
Age 35-44	9.0*	4.1*	3.2**
Age 45-54	7.8**	2.2*	3.7*
Age 55-64	3.1*	0.6*	2.6
Age 65+	1.1*	0.1*	1.0*
Less than high school	4.7+ *	6.9+ *	1.5+ *
High school graduate	4.4*	4.4**	1.5*
Some college	6.0**	4.8	2.0**
College degree	11.5*	5.4	4.2*
Postgraduate degree	13.7*	3.8**	7.5*
<$15,000	3.2+ *	4.2+ **	2.3+
$15,000-$24,999	2.5*	3.2*	1.4*
$25,000-$49,999	3.8*	4.2**	1.8*
$50,000-$74,999	7.0	5.5	3.5*
$75,000-$99,999	10.6*	5.1	3.9*
$100,000-$149,999	14.0*	7.3*	4.4*
$150,000+	24.0*	10.8*	5.3*
Non-metro resident	4.5+ *	4.1+ *	2.6
Metro area resident	7.2**	5.4	2.6
U.S. citizen	6.7+++	5.2	2.6
Foreign born	8.3***	4.1	2.9

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Appendix table 6 (continued)

Demographic strata	Other viewing/learning/gathering nature activities				
	Visit outdoor nature centers, zoos, etc.	Sightseeing	Gather mushrooms, berries, etc.	Visit a farm or agricultural setting	View or photograph fish
All people age 16+	56.6	52.7	32.8	32.0	27.0
Male	57.5++	51.6++ ***	36.7+ *	32.2	30.5+ *
Female	55.8	53.7***	29.2*	31.8	23.9*
White	59.4+ *	55.8+ *	37+ *	35.3+ *	28.4+ *
Black	41.1*	40.1*	18.5*	20.4*	21.8*
American Indian	53.0	49.5	42.9**	44.9***	26.0
Asian or Pacific Islander	54.4	46.3*	15.5*	29.3	24.0**
Hispanic	58.4***	50.9	30.6**	26.6*	25.5**
Age 16-24	58.1+	48.3+ *	38.1+ *	31.7+	22.8+ *
Age 25-34	68.3*	55***	36.1*	33.2	31.5*
Age 35-44	69.1*	58.1*	35.2*	38.5*	34.2*
Age 45-54	59.3*	58.7*	37.9*	36.3*	31.5*
Age 55-64	53.6*	55**	28.5*	27.9**	26.1
Age 65+	36.3*	42.8*	23.2*	24.7*	17.4*
Less than high school	38.7+ *	38.6+ *	29.6+ *	18.2+ *	21.6+ *
High school graduate	51.0*	48.9*	33.2	32.0	25.8**
Some college	63.8*	59.6*	35.9*	36.8*	29.3*
College degree	71.0*	60.6*	32.9	41.5*	31.0*
Postgraduate degree	76.5*	64.8*	30.9	38.3*	32.1*
<$15,000	35.8+ *	36.5+ *	28.1+ *	19.1+ *	19.4+ *
$15,000-$24,999	50.9*	42.8*	27.3*	31.1	22.3*
$25,000-$49,999	59.0*	55.3**	36.2*	33.3	30.4*
$50,000-$74,999	67.0*	61.1*	37.7*	39.7*	31.9*
$75,000-$99,999	72.8*	66.2*	38.3*	42.0*	33.9*
$100,000-$149,999	74.4*	66.4*	35.7**	47.0*	35.0*
$150,000+	73.7*	64.5*	37.6*	36.0	41.4*
Non-metro resident	52.7+ *	54.8++ **	43.8+ *	39.4+ *	27.5
Metro area resident	57.4***	52.2	30.6*	30.5**	26.9
U.S. citizen	56.6	53.4+	33.4+	31.9	27.1+++
Foreign born	59.7	39.5*	21.5*	38.7	24.5***

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Appendix table 6 (continued)

Demographic strata	Other nature-based land activities				
	Mountain biking	Primitive camping	Caving	Rock climbing	Orienteering
All people age 16+	18.1	14.5	4.4	4.2	2.6
Male	23.5+ *	18.9+ *	4.9+ ***	5.3+ *	3.8+ *
Female	13.1*	10.5*	4.0***	3.1*	1.5*
White	19+ **	16.6+ *	4.8+ ***	4.6+ **	2.6+++
Black	11.9*	4.6*	1.0*	2.1*	1.5**
American Indian	29.9*	26.5*	3.5	16.4*	4.6
Asian or Pacific Islander	11.3*	8.1*	2.8***	3.4	2.6
Hispanic	20.5*	15.2	6.2*	3.8	3.6***
Age 16-24	27.9+ *	18.4+ *	7.6+ *	10.5+ *	4.5+ *
Age 25-34	23.8*	18.3*	3.9	4.4	2.6
Age 35-44	27.0*	19.1*	5.6*	4.5	3.1
Age 45-54	18.5	16.9*	5.2***	3.5***	2.9
Age 55-64	10.5*	11.2*	2.5*	2.1*	1.9
Age 65+	4.7*	5.7*	2.2*	0.9*	1.2*
Less than high school	15.6+ *	12.2+ *	3.8+++ ***	5.8+ *	1.9+
High school graduate	15.4*	14.8	4.2	2.2*	1.4*
Some college	18.3	16.4*	5.0***	3.6***	3.5**
College degree	22.7*	14.7	4.9	5.3*	3.7**
Postgraduate degree	24.9*	13.4	4.5	5.6**	4.1**
<$15,000	14.1+ *	10.8+ *	3.1+ *	3.7+	0.9+ *
$15,000-$24,999	13.3*	10.3*	4.0	2.5*	2.6
$25,000-$49,999	16.6**	15.8**	4.9	3.6***	2.1
$50,000-$74,999	19.9**	18.1*	6.6*	4.2	3.8**
$75,000-$99,999	23.0*	21.7*	4.9	3.6	3.8***
$100,000-$149,999	30.0*	19.2*	5.8**	8.0*	4.9*
$150,000+	29.1*	20.3*	6.2**	7.4*	3.6
Non-metro resident	16.9+++ ***	18.6+ *	5.1+++ ***	4.2	2.1
Metro area resident	18.4	13.7*	4.3	4.2	2.7
U.S. citizen	17.8+	14.8+	4.5	4.2	2.7
Foreign born	25.7*	7.3*	4.0	3.3	1.0

Continued on next page

Appendix table 6 (continued)

Demographic strata	Developed-setting activities: Walking for pleasure	Gardening or landscaping for pleasure	Driving for pleasure	Yard games e.g., horseshoes	Bicycling	Attend outdoor concerts etc.	Horse-back riding (any type)
All people age 16+	85.0	67.1	51.2	42.0	37.5	37.5	9.1
Male	83.6+ *	65.8+++	52.4++ ***	49.7+ *	42.7+ *	34.2+ **	8.8
Female	86.4*	68.3	50.1***	35.8*	32.8*	40.5**	9.4
White	85.2+	69.8+ *	56.1+ *	47.2+ *	37.3+	35+ **	10.1+ *
Black	83.3*	55.1*	32.5*	36.1**	33.4*	42.3***	3.9*
American Indian	86.5	72.7	58.8	54.4	41.6	53.9	21.2*
Asian or Pacific Islander	82.9***	65.2	36.2*	8.2*	37.6	49.7**	5.6*
Hispanic	86.2**	64.3***	48.2**	34.3*	42.7*	41.4	9.6
Age 16-24	86.2+ **	47.0+ *	50.5+	58.0+ *	54.7+ *	57.1+ *	17.4+ *
Age 25-34	88.6*	64.5	53.9**	45.3	46.6*	39.0	9.8
Age 35-44	87.6*	74.1*	59.3*	57.6*	47.9*	40.6	10.1
Age 45-54	87.0*	74.2*	55.8*	45.5	37.0	37.4	10.7*
Age 55-64	83.2*	72.9*	52.3	40.2	25.8*	27.2*	5.2*
Age 65+	78.2*	68.6	39.2*	17.5*	18.3*	24.8*	3.4*
Less than high school	80.2+ *	53.8+ *	39.6+ *	41.2++	33.2+ *	29.5+ *	7.0+ *
High school graduate	81.7*	67.0	49.1**	38.1**	31.6*	31.7*	9.3
Some college	87.6*	71.1*	57.1*	42.3	38.2	40.5	10.4*
College degree	90.7*	75.1*	57.1*	45.6	46.8*	46.2*	9.7
Postgraduate degree	93.2*	78.5*	58.9*	47.3	49.8*	49.8*	9.4
<$15,000	80.1+ *	53.2+ *	34.6+ *	32.8+ *	30+ *	29.4+ *	4.7+ *
$15,000-$24,999	84.6	64.4	42.4*	29.2*	25.6*	38.0	5.4*
$25,000-$49,999	85.8	66.6	54.9*	41.1	35.3*	36.0	8.7
$50,000-$74,999	87.3*	74.3*	59.5*	53.6*	40.5*	35.4	10.7**
$75,000-$99,999	91.5*	79.9*	63.5*	51.7*	44.8*	46.8*	12.3*
$100,000-$149,999	90.7*	76.1*	65.9*	56.6*	54.4*	53.7*	11.2**
$150,000+	90.7*	77.0*	59.2*	49.5	53.4*	39.3	14.5*
Non-metro resident	84.6	72.0+ *	57.9+ *	51.4+ *	30.1+ *	27.0+ *	12.5+ *
Metro area resident	85.1	66.0	49.9*	40.1***	39.0*	39.5**	8.5*
U.S. citizen	84.9+	67.4	52.1+ **	42.9+	37.2+	37.7	9.2
Foreign born	89.9*	65.6	34.8*	18.3*	46.3*	34.5	7.8

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Appendix table 6 (continued)

Demographic strata	Other water-based activities							
	Swimming in outdoor pool	Swimming in lakes, streams, etc.	Visit other waterside (not beach)	Boat tours or excursions	Snorkeling	Surfing	Scuba diving	Wind-surfing
All people age 16+	43.3	41.5	24.0	19.6	6.5	2.0	1.5	0.6
Male	42.1+ *	43.5+ *	24.0	19.7	7.3+ *	2.5+ *	2.2+ *	0.7
Female	44.6*	39.6*	24.1	19.5	5.6*	1.5*	0.9*	0.5
White	46.3+ *	46.7+ *	27.1+ *	20.7+ *	7.3+ *	2.0+	1.7++	0.7++
Black	28.8*	18.6*	12.5*	12.1*	2.4*	0.5*	1.2	0.4
American Indian	27.7*	40.9	23.5	12.8**	6.3	2.0	2.2	0.1
Asian or Pacific Islander	39.5**	35.3*	23.4	25.9*	10*	3.3*	0.6**	1.0
Hispanic	45.9*	40.5	20.0*	18.6	5.6***	2.9*	1.3	0.3**
Age 16-24	64.7*	58.6*	29.1+ *	19.4+	9.5+ *	5.9+ *	2.5+ *	1.5+ *
Age 25-34	54.3*	49.4*	27.0*	17.7*	7.1	1.9	2.4*	0.4***
Age 35-44	54.4*	53.9*	33.7*	25.3*	8.4*	2	1.9	0.7
Age 45-54	43.1	44.9*	26.3*	22.1*	8.1*	1.6***	1.7	0.7
Age 55-64	31.9*	31.4*	19.8*	18.8	4.9*	0.6*	0.7*	0.2*
Age 65+	18.2*	15.4*	9.4*	14.5*	1.3*	0.2*	0.1*	0.1*
Less than high school	32.3+ *	28.5+ *	15.0+ *	12.3+ *	2.8+ *	1.7+ ***	1.0+ *	0.5+
High school graduate	39.1*	36.3*	20.4*	15.6*	3.7*	1.6**	0.8*	0.3*
Some college	46.9*	46.0*	28.1*	21.8*	7.1***	2.0	1.7	0.6
College degree	56.5*	55.8*	33.7*	29.3*	13*	3.0*	2.5*	0.9**
Postgraduate degree	55.5*	56.3*	34.6*	32.4*	13.9*	2.7***	3.2*	1.3*
<$15,000	26.2+ *	28.3*	16.5+ *	12.4+ *	1.8+ *	1.2+ *	0.4+ *	0.3+ **
$15,000-$24,999	32.3*	27.5*	18.2*	12.8*	3.0*	0.9*	0.6*	0.3***
$25,000-$49,999	41.5*	39.3*	23.9	17.9**	4.6*	1.3*	1.1**	0.3**
$50,000-$74,999	51.7*	50.7*	30.9*	24.1*	8.2*	1.7	1.6	0.6
$75,000-$99,999	58.1*	58.4*	33.5*	27*	10.8*	3.2*	2.2**	0.9
$100,000-$149,999	62.0*	60.6*	34.6*	30.5*	13.7*	5.0*	2.8*	1.4*
$150,000+	67.4*	69.2*	37.9*	40.3*	22.6*	5.2*	6.9*	1.4*
Non-metro resident	34.7+ *	37.9+ *	21.9+ *	13.6+ *	3.8+ *	0.6+ *	0.8+ *	0.3++ ***
Metro area resident	45.2*	42.2**	24.5	20.9*	7.0*	2.3*	1.7***	0.6
U.S. citizen	43.6+	41.7+	24.2+	19.7	6.4	2.0	1.5	0.5+
Foreign born	38.5*	36*	19.1*	18.5	7.0	2.0	1.5	2.1*

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Appendix table 6 (continued)

	Other winter activities			
Demographic strata	Sledding	Ice skating outdoors	Ice fishing	Snowshoeing
All people age 16+	13.6	5.1	2.1	1.7
Male	12.8++ ***	4.3+ **	3.4+ *	1.6
Female	14.4***	5.8**	0.8*	1.9
White	16.6+ *	5.2+++	2.6+ *	2.3+ *
Black	5.9*	4.2	0.4*	0.2*
American Indian	22.8*	10.3**	1.8	1.5
Asian or Pacific Islander	7.0*	4.2	0.3*	0.9
Hispanic	9.2*	5.6	1.6**	0.6*
Age 16-24	26.5+ *	12.6+ *	2.3+	1.6++
Age 25-34	19.1*	5.6	3.0*	2.0
Age 35-44	20.3*	6.1***	2.4	2.0
Age 45-54	11*	4.2***	2.5**	2.2
Age 55-64	4.7*	2.3*	1.7	1.5
Age 65+	1.4*	0.6*	0.8*	0.8*
Less than high school	9.8+ *	3.5+ *	1.5+ *	0.7+ *
High school graduate	12.9	4.5	2.7*	1.1**
Some college	15**	5.6	2.1	1.7
College degree	17.7*	6.6*	1.9	2.9*
Postgraduate degree	15.9***	7.2*	1.3**	4.7*
<$15,000	8.1+ *	2.6+ *	1.2+ *	1.2+
$15,000-$24,999	9.8*	3.9	1.8	0.9***
$25,000-$49,999	11.9**	4.4	2.1	1.3
$50,000-$74,999	17.4*	5.3	2.8*	2.0
$75,000-$99,999	19.1*	6.5***	3.2*	2.3
$100,000-$149,999	21.3*	7.8*	2.7**	3.4*
$150,000+	20.8*	7.9*	2.5	4.0*
Non-metro resident	13.8	2.7+ *	3.3+ *	2.2
Metro area resident	13.6	5.6**	1.8*	1.6
U.S. citizen	13.9+	5.1	2.1+	1.7
Foreign born	4.7*	5.2	0.9*	1.3

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Appendix table 6 (continued)

Demographic strata	Individual sports				
	Running or jogging	Golf	Handball outdoors	Tennis outdoors	Inline skating
All people age 16+	34.2	15.2	11.8	10.0	6.2
Male	41.7+ *	22.6+ *	11.7	11.2+++	7.0
Female	28.1*	8.2*	11.9	8.8	5.3
White	31.5+ **	17.5+ **	10.8+	9.8++	6.0+
Black	37.2	8.0*	15.5***	7.6	7.6
American Indian	44.4	33.4**	11.7	0.0	33.4*
Asian or Pacific Islander	21.5*	5.8**	25.6*	20.6*	2.2
Hispanic	48.4*	13.8	10.3	10.9	5.6
Age 16-24	72.8+ *	13.8+	33.8+ *	25.5+ *	12.6+ *
Age 25-34	43.8*	19.4**	12.3	12.8	11.1*
Age 35-44	44.6*	22.0*	10.8	10.4	6.0
Age 45-54	22*	17.4	7.8**	6.3**	2.3*
Age 55-64	15.9*	14.4	6.1*	2.6*	1.6*
Age 65+	11.5*	6.4*	3.2*	1.9*	3.0**
Less than high school	33.4+	6.3+ *	14.3	9.9+	6.5
High school graduate	26.8*	14.2	11.6	6.2*	6.3
Some college	33.9	15.7	10.8	9.3	5.5
College degree	44.6*	26.8*	11.9	15.5*	7.2
Postgraduate degree	44.7*	19.1	9.3	16.1**	6.1
<$15,000	28.1+ ***	5.8+ *	12.4++	6.9+	9.4***
$15,000-$24,999	26.4***	6.7*	7.6	9.7	5.2
$25,000-$49,999	38.3	10.6**	9.2***	7.3	5.0
$50,000-$74,999	32.0	19.7**	7.7**	10.3	5.5
$75,000-$99,999	46.4*	17.9	16.7**	13.4	7.2
$100,000-$149,999	47.9*	32.3*	13.0	10.7	10.5**
$150,000+	44.6**	33.8*	15.3	28.3*	5.8
Non-metro resident	31.0	9.7+ *	9.9	6.0+ **	4.0+++
Metro area resident	34.8	16.4	12.2	10.9	6.6
U.S. citizen	34.1++	15.3	11.6	10.0	6.1
Foreign born	49.7**	16.4	17.9	10.4	7.2

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Appendix table 6 (continued)

	Team sports						
Demographic strata	Attend sports events outdoors	Basketball	Volleyball outdoors	Football	Baseball	Soccer	Softball
All people age 16+	53.7	17.6	14.7	12.5	10.8	11.3	9.2
Male	56.2++ ***	24.9+ *	15.3	17.9+ *	14.1+ **	15.8+ *	14.6+ *
Female	51.4***	11.8*	14.0	8.3*	7.2**	6.9*	3.4*
White	54.7+	19.9+	14.2	13.3	11.4+++	10.0	5.4+ *
Black	49.7	28*	17.5	10.2	5.5***	11.6	0.0
American Indian	42.6	4.5	0.0	9.4	0.0	0.0	14.9
Asian or Pacific Islander	35.1*	4.2*	15.6	11.7	5.2	23.7***	0.0***
Hispanic	59.8**	8.2*	14.5	13.3	13.9	16.6***	28*
Age 16-24	70.3+ *	42.9+ *	30.7+ *	28.4+ *	16.2+ **	31.9+ *	9.7+
Age 25-34	66.0*	27.8*	23.0*	21.6*	15.2**	15.3	20.8*
Age 35-44	63.9*	18.7	11.4	10.2	16.5**	13.9	11.6
Age 45-54	54.5	15.9	12.9	5.2*	8.3	4.7**	3.6**
Age 55-64	39.9*	7.4*	4.2*	3.7*	5.2**	2.3**	0.8*
Age 65+	36.5*	0.5*	4.1*	2.5*	1.1*	0.0*	0.8*
Less than high school	39.1+ *	19.1+	15.7	12.3	8.0	15++ ***	16.6+ *
High school graduate	50.3***	13.1***	13	12.8	9.6	5.8**	6.1***
Some college	58.2**	14.8	17.6	11.1	13.5	14.0	7.2
College degree	68.0*	27.2*	12.7	13.4	14.0	9.8	7.6
Postgraduate degree	65.3*	20.3	10.9	13.9	10.9	12.7	7.0
<$15,000	36.1+ *	20.9+	12.1	4.3+ **	14+	9.4++	3.4+ ***
$15,000-$24,999	40.8*	19.2	10.7	10.6	4.4	13.7	1.2*
$25,000-$49,999	49.3**	8.6*	14.9	12.5	7***	7.4	10.6
$50,000-$74,999	61.4*	18.2	17.4	14.5	11.2	4.7**	3.4**
$75,000-$99,999	70.7*	27.2**	16.6	8.0	26.2*	10.0	9.6
$100,000-$149,999	72.0*	24.3	17.0	26.2*	15.9	22.1*	12.8
$150,000+	71.6*	49.0*	23.8	9.2	17.2	11.1	10.6
Non-metro resident	50.0+++	21.8	13.7	6.3++ ***	8.4	7.9	4.2++ **
Metro area resident	54.5	16.7	14.9	13.4	11.3	12.1	10.3
U.S. citizen	54.2++	17.8	14.9	12.5	10.8	10.8+	6.5+ *
Foreign born	40.4**	23.3	6.5	14.6	10.1	44.7*	46.6*

Note: The test statistic denoted by the '+' symbol is chi-square goodness of fit which tests independence of the observed proportions in the categories of each demographic group. The test statistic denoted by '*' is a binomial test of significance between the stratum participation rate and the participation rate for all people ages 16 and older shown in line 1. Significance levels indicated by (same for '+'): '*'=.01, '**=.05, '***=.10.

Source: USDA Forest Service (2009), n=30,398. Hispanics may be of any race but are included in the Hispanic category only. Income is total annual family income before taxes. U.S. citizen includes people born abroad.

Appendix table 7—Millions of individual annual activity days of land-based activities that occurred in natural forest, non-forest natural, and developed or other settings by region

By activity

	East				West				Nation			
Activity	Natural forest	Non-forest natural	Other settings	Total	Natural forest	Non-forest natural	Other settings	Total	Natural forest	Non-forest natural	Other settings	Total
Walk for pleasure	6,036.1	4,967.6	4,696.3	15,701.0	1,735.7	1,947.8	1,543.3	5,226.8	7,766.0	6,921.7	6,239.2	20,927.8
View/photograph natural scenery	4,860.4	2,690.0	1,047.6	8,630.6	1,516.3	1,073.7	387.9	2,978.0	6,318.5	3,816.5	1,445.1	11,608.6
View/photograph flowers, etc.	3,889.1	2,465.9	1,462.0	7,817.0	1,077.3	641.7	996.2	2,715.2	4,892.3	3,049.4	2,590.5	10,532.2
View or photograph birds	3,042.9	2,227.3	1,288.2	6,558.4	874.9	484.3	276.4	1,656.6	3,914.8	2,713.8	1,566.0	8,215.0
View/photograph other wildlife	2,673.9	940.2	673.6	4,287.7	878.6	159.1	184.1	1,221.8	3,607.3	1,048.1	854.0	5,509.5
Day hiking	783.9	242.8	159.8	1,186.5	353.2	121.5	164.3	639.0	1,117.8	361.7	345.9	1,825.5
Family gathering	472.9	248.5	144.7	866.2	145.8	109.1	58.1	313.0	615.4	360.3	203.5	1,179.3
Off-highway vehicle driving	573.5	186.3	84.5	844.4	77.0	119.9	6.8	203.7	627.4	334.6	86.2	1,048.2
Mountain biking	328.3	168.1	111.6	607.9	98.7	67.5	51.7	218.0	420.5	238.1	167.3	825.8
Gather mushrooms, berries, etc.	428.4	129.3	67.6	625.3	98.4	70.7	4.5	173.6	525.9	201.7	71.5	799.0
Picnicking	322.8	147.9	69.6	540.3	115.3	56.5	49.9	221.7	433.9	203.4	124.6	762.0
Visit outdoor nature center/zoo	349.3	130.5	49.2	529.3	130.8	43.3	32.9	207.1	479.7	173.3	83.2	736.4
Visit a wilderness	441.9	66.2	12.7	520.8	189.6	22.5	3.3	215.4	632.2	88.3	15.8	736.3
Visit historic sites	70.0	186.0	61.4	317.4	55.3	50.4	16.6	122.3	139.0	226.1	74.6	439.8
Developed camping	183.9	42.8	42.9	269.6	116.3	24.4	11.5	152.1	301.9	67.2	52.7	421.8
Big game hunting	223.5	28.3	5.4	257.6	37.1	5.5	1.1	43.7	260.4	34.0	6.6	301.2
Horseback riding on trails	112.3	36.5	22.5	171.3	33.9	27.7	29.3	90.9	142.1	65.4	54.5	262.1
Primitive camping	106.8	29.9	15.3	152.0	58.8	32.2	6.5	97.5	162.7	66.2	20.7	249.6
Backpacking	120.3	11.3	12.5	144.1	60.8	26.7	4.1	91.6	179.3	40.3	16.2	235.8
Small game hunting	129.6	27.1	8.3	165.2	21.6	20.0	3.8	45.4	148.2	49.8	12.3	210.6
Visit prehistoric sites	79.9	26.8	0.5	107.2	13.4	36.7	0.4	50.5	89.9	66.8	0.9	157.6
Snowmobiling	42.5	12.3	4.3	59.1	12.3	4.1	1.9	18.3	54.9	16.4	6.1	77.4
Mountain climbing	14.3	11.6	5.5	31.4	23.7	3.6	1.0	28.3	35.1	17.0	7.6	59.7
Rock climbing	11.8	5.2	3.1	20.1	15.5	8.5	0.3	24.5	27.8	14.7	1.9	44.7

Appendix table 7 (continued)

Activity	East				West				Nation			
	Natural forest	Non-forest natural	Other settings	Total	Natural forest	Non-forest natural	Other settings	Total	Natural forest	Non-forest natural	Other settings	Total
Cross-country skiing	16.8	5.7	2.4	24.9	9.6	1.1	0.2	10.9	27.1	6.4	2.4	35.9
Snowshoeing	11.5	1.5	0.3	13.3	7.4	0.5	0.0	7.9	19.1	1.8	0.3	21.2

Source: NSRE 2005-2009 (n=30,394). Note: Annual days are in millions. Other settings include the remainder of days that were not reported in natural forests or on non-forest natural lands.

By activity group

Activity	East				West				Nation			
	Natural forest	Non-forest natural	Other settings	Total	Natural forest	Non-forest natural	Other settings	Total	Natural forest	Non-forest natural	Other settings	Total
Visiting recreation & historic sites	1,129.5	652.0	319.1	2,100.7	446.0	277.1	136.4	859.6	1,580.1	923.8	456.3	2,960.2
Viewing/photographing nature	14,466.3	8,323.4	4,471.4	27,293.7	4,347.2	2,358.8	1,844.7	8,571.6	18,732.9	10,627.9	6,455.7	35,816.5
Backcountry activities	1,472.7	368.4	213.0	2,054.1	661.2	202.0	202.0	1,065.2	2,106.6	572.7	440.1	3,119.4
Motorized activities	616.1	198.7	88.8	903.5	89.3	124.0	8.7	222.0	682.4	350.9	92.3	1,125.6
Hunting	353.1	55.4	13.7	422.8	58.7	25.5	4.9	89.1	408.6	83.8	18.9	511.3
Snow skiing	16.8	5.7	2.4	24.9	9.6	1.1	0.2	10.9	27.1	6.4	2.4	35.9

Note: Annual days are in millions. Based on land-based activities only. The entire non-motor water activity group is excluded. Some land-based activities did not ask about environmental setting. Other settings include the remainder of days that were not reported in natural forests or on non-forest natural lands. Activity groups consist of the following activities:

Viewing/photographing nature: View/photograph birds, natural scenery, other wildlife (besides birds), and wildflowers, trees, etc.

Backcountry activities: Backpacking, day hiking, horseback riding on trails, mountain climbing, and visiting a wilderness or primitive area.

Visiting recreation and historic sites: Family gatherings, picnicking, visiting historic or prehistoric sites, and camping. Not included: Visiting the beach.

Motorized activities: Off-highway vehicle driving and snowmobiling. Not included: Motorboating, using personal watercraft, and waterskiing.

Hunting: Big game hunting, small game hunting.

Snow skiing: Includes cross-country skiing only; no other snow-based activity collected forest setting data.

Source: USDA Forest Service (2009) (n=30,394).

Appendix table 8—Percent of youth ages 6 to 19 (with 95 percent confidence intervals) reporting spending less, about the same, or more time outdoors this year than last, by gender and age

			Less time			About the same			More time		
Gender	Age	n=	95 percent c.i. lower	Percent	95 percent c.i. upper	95 percent c.i. lower	Percent	95 percent c.i. upper	95 percent c.i. lower	Percent	95 percent c.i. upper
Male	6 to 9	187	5.6	9.8	14.1	36.5	43.6	50.7	39.4	46.6	53.7
Female	6 to 9	180	8.3	13.2	18.2	40.4	47.7	55.0	32.0	39.1	46.2
Male	10 to 12	140	7.7	13.4	19.0	37.0	45.2	53.5	33.3	41.4	49.6
Female	10 to 12	143	7.0	12.4	17.8	45.7	53.9	62.1	26.0	33.7	41.5
Male	13 to 15	172	14.2	20.2	26.2	33.7	41.0	48.4	31.5	38.8	46.1
Female	13 to 15	140	12.7	19.3	25.8	43.6	51.9	60.2	21.3	28.8	36.3
Male	16 to 19	108	7.8	14.4	21.0	32.7	42.0	51.3	34.3	43.6	53.0
Female	16 to 19	106	11.0	18.4	25.7	31.8	41.1	50.5	31.2	40.5	49.9
Total	All ages	1,176	13.0	15.0	17.1	42.6	45.4	48.3	36.7	39.5	42.3

c.i. = confidence interval.

Note: Percent may not sum across to 100.0 exactly due to rounding.

Source: NSRE National Kids Survey, 2007 to 2009.

Appendix table 9—Percent and number of annual activity days that occurred on public and private lands in forest settings by region

Activity	East					West					Nation
	Public		Private			Public		Private			
	Percent	Days	Percent	Days	Annual Days	Percent	Days	Percent	Days	Annual Days	Total Annual Days
		millions		*millions*	*millions*		*millions*		*millions*	*millions*	*millions*
Walk for pleasure	52.4	8,227.8	47.6	7,473.2	15,701.0	57.3	2,994.6	42.7	2,232.2	5,226.8	20,927.8
View/photograph natural scenery	60.3	5,207.0	39.7	3,423.6	8,630.6	67.3	2,004.4	32.7	973.6	2,978.0	11,608.6
View/photograph wildflowers, trees, etc.	55.1	4,306.4	44.9	3,510.6	7,817.0	57.3	1,556.1	42.7	1,159.1	2,715.2	10,532.2
View/photograph birds	50.1	3,284.4	49.9	3,274.0	6,558.4	55.3	915.8	44.7	740.8	1,656.6	8,215.0
View/photograph other wildlife	54.1	2,321.2	45.9	1,966.5	4,287.7	62.4	763.0	37.6	458.8	1,221.8	5,509.5
Day hiking	73.6	872.8	26.4	313.7	1,186.5	79.4	507.6	20.6	131.4	639.0	1,825.5
Swimming in lakes, streams, etc.	53.0	484.8	47.0	430.3	915.1	68.6	217.7	31.4	99.6	317.3	1,232.4
Family gathering	52.9	458.1	47.1	408.1	866.2	61.8	193.5	38.2	119.5	313.0	1,179.2
Off-highway vehicle driving	45.6	385.1	54.4	459.3	844.4	58.9	120.0	41.1	83.7	203.7	1,048.1
Mountain biking	59.1	359.2	40.9	248.7	607.9	63.2	137.7	36.8	80.3	218.0	825.9
Gather mushrooms, berries, etc.	43.6	272.6	56.4	352.7	625.3	59.2	102.7	40.8	70.9	173.6	798.9
Picnicking	68.2	368.4	31.8	171.9	540.3	73.9	163.8	26.1	57.9	221.7	762.0
Visit outdoor nature center/zoo	77.0	407.7	23.0	121.6	529.3	73.1	151.5	26.9	55.6	207.1	736.4
Visit a wilderness or primitive area	73.8	384.1	26.2	136.7	520.8	81.1	174.8	18.9	40.6	215.4	736.2
Visit historic sites	57.0	180.9	43.0	136.5	317.4	65.1	79.7	34.9	42.6	122.3	439.7
Developed camping	68.2	183.8	31.8	85.8	269.6	81.3	123.6	18.7	28.5	152.1	421.7
Big game hunting	42.0	108.3	58.0	149.3	257.6	58.4	25.5	41.6	18.2	43.7	301.3
Horseback riding on trails	46.4	79.5	53.6	91.8	171.3	57.5	52.3	42.5	38.6	90.9	262.2
Primitive camping	69.1	105.1	30.9	46.9	152.0	82.4	80.3	17.6	17.2	97.5	249.5
Backpacking	77.8	112.1	22.2	32.0	144.1	78.3	71.7	21.7	19.9	91.6	235.7
Small game hunting	44.1	72.9	55.9	92.3	165.2	55.4	25.2	44.6	20.2	45.4	210.6
Visit prehistoric sites	69.9	75.0	30.1	32.2	107.2	74.3	37.5	25.7	13.0	50.5	157.7
Snowmobiling	51.8	30.6	48.2	28.5	59.1	61.4	11.2	38.6	7.1	18.3	77.4
Mountain climbing	80.9	25.4	19.1	6.0	31.4	76.8	21.7	23.2	6.6	28.3	59.7
Rock climbing	69.6	14.0	30.4	6.1	20.1	70.5	17.3	29.5	7.2	24.5	44.6
Cross-country skiing	57.2	14.2	42.8	10.7	24.9	67.3	7.3	32.7	3.6	10.9	35.8
Snowshoeing	53.4	7.1	46.6	6.2	13.3	68.2	5.4	31.8	2.5	7.9	21.2

Note: Annual days are in millions. Percentages sum across to 100 percent separately for the East and West regions; may not sum to 100 exactly due to rounding.

Source: USDA Forest Service (2009) n=5,374.

Cordell, H. Ken. 2012. Outdoor recreation trends and futures: a technical document supporting the Forest Service 2010 RPA Assessment. Gen. Tech. Rep. SRS-150. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station, 167 p.

This publication presents a national study of outdoor recreation trends as part of the Renewable Resources Planning Act Assessment by the Forest Service, U.S. Department of Agriculture. The objectives are to review past trends in outdoor recreation participation by Americans, to describe in detail current outdoor recreation participation patterns, and to compare patterns across regional and demographic strata. Further objectives include describing recreation activity participation on public and private lands and providing projections of outdoor recreation participation out to the year 2060. One overriding national trend is quite evident: the mix of outdoor activities chosen by Americans and the relative popularity of activities overall have been evolving over the last several decades. One general category of activity that has been showing growth in the first decade of the 21st century is nature-based recreation. Between 2000 and 2009, the number of people who participated in nature-based outdoor recreation grew by 7.1 percent and the number of activity days grew about 40 percent. Among types of nature-based recreation, motorized activities showed growth up to about 2005, but then ended up toward the end of the 2000-2009 decade at about the same level as in 2000. The trend in hunting, fishing, and backcountry activities remained relatively flat during this period. Various forms of skiing, including snowboarding, declined during this decade. The clear growth area was within the overall group of activities oriented toward viewing and photographing nature. Generally, outdoor recreation activities are projected to grow in number of participants out to 2060. Population growth is projected to be the primary driver of growth in number of adult participants under each RPA Assessment scenario. The top five activities in terms of growth of number of participants are developed skiing, other skiing, challenge activities, equestrian activities, and motorized water activities. The lowest rates of participant growth are visiting primitive areas, motorized off-road activities, motorized snow activities, hunting, fishing, and floating water activities. At the same time, a number of activities are projected to decline in per-capita adult participation rates.

Keywords: Nature-based recreation, outdoor recreation, recreation projections, recreation trends, recreation visitation, 2010 RPA Assessment.

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