Federal Outdoor Recreation Trends: Effects on Economic Opportunities

National Center for Natural Resources Economic Research (NCNRER)
NCNRER Working Paper Number 1
October 2014

Eric M. White[1], J. M. Bowker[2], Ashley E. Askew[3], Linda L. Langner[4], J. Ross Arnold[4], Donald B.K. English[5]

Introduction

Outdoor recreation plays a significant role in American lives. It provides physical challenges and well-being, helps develop lifelong skills, provokes interest and inquiry, inspires wonder and awe of the natural world, and often provides an alternative to daily routines. Recreation contributes greatly to the physical, mental, and spiritual health of individuals, bonds family and friends, and instills pride in natural and cultural heritage. Federal lands contribute significantly, and in many cases uniquely, to the provision of nature-based outdoor recreation opportunities.

This paper, prepared for the Federal Interagency Council on Outdoor Recreation (FICOR), focuses on the potential future role of federal lands in supplying outdoor recreation opportunities and therefore supporting associated jobs and income. FICOR is a seven-agency council that promotes better coordination and collaboration among Federal agencies whose missions or programs include providing outdoor recreation and conserving or managing natural and cultural resources. The FICOR agencies are the Bureau of Land Management (BLM), Bureau of Reclamation (BOR), Forest Service (FS), National Oceanic and Atmospheric Administration (NOAA), National Park Service (NPS), U.S. Army Corps of Engineers (USACE), and the Fish and Wildlife Service (FWS).

We begin with an overview of recent trends in outdoor recreation activity participation in the United States and projected recreation participation to 2030. The primary driving forces for participation are reviewed, and their effects on future recreation use are discussed. The federal land base for outdoor recreation and expectations for future availability are also described. Recreation visitation in 2012 on lands and waters managed by the FICOR agencies and the associated jobs provide the baseline for considering how projected recreation use might influence future economic effects.

The "future" look takes into account 1) the key factors that determine the level of economic activity in and around federal lands, 2) potential changes in recreation activities and associated spending patterns, and 3) other factors that influence spending. Finally, we discuss other contributions to local economies that may be influenced by federal recreation opportunities, including amenity migration, business relocation, and natural backdrops.

[1] Oregon State University
[2] USDA Forest Service, Research and Development, Southern Research Station
[3] University of Georgia
[4] USDA Forest Service, Research and Development, Washington Office
[5] USDA Forest Service, National Forest System, Washington Office

Outdoor Recreation Participation

Measuring outdoor recreation participation in the United States

National trends in outdoor recreation participation are based primarily on the National Survey on Recreation and the Environment (NSRE). The NSRE is a general population telephone survey of people 16 years of age and older designed to measure participation in outdoor recreation activities and people's environmental behaviors and attitudes (Cordell 2012). NSRE sampling is population-based occurring across both rural and urban areas of the country and includes all activity participation whether on public or private land and water.

Historical outdoor recreation trends

Choices for outdoor recreation today are different from choices made by previous generations of Americans, both in the mix of activities and relative popularity. Outdoor recreation participation grew through the 1960s and 1980s. Activities such as camping, canoeing, kayaking, and bicycling grew rapidly, influenced partly by improving equipment technology. New activities appeared, while a few activities declined in participation (Cordell 2012).

Between 1999 and 2009, nature-based outdoor recreation generally increased, although trends vary across individual activities. The number of U.S. participants[6] in 50 nature-based outdoor recreation activities increased 7.1 percent between 1999 and 2009, while the number of activity days[7] increased at least that much (Table 1). Activities oriented toward viewing and photographing nature have been among the fastest growing activities, both in terms of number of participants and activity days of participation. Off-highway vehicle driving realized a 34 percent increase in participants. Several physically challenging activities, such as kayaking, snowboarding, and surfing also had relatively large increases in this time frame (Cordell 2012).

While there were increases in the number of participants for the majority of activities from 1999-2009, there were declines in some activities. Most of the traditional winter recreation activities experienced decreasing participation rates and days of activity, with the exception of snowboarding. In addition, several activities that had increased numbers of participants experienced a drop in total days of activity, indicating that the average number of days per participant declined. Examples included day hiking and horseback riding on trails. While more people recreate in the eastern United States because of the U.S. population distribution, participation rates are uniformly higher in the west for all activities except hunting and fishing (Cordell 2012).

[6] A participant is any individual 16 years of age or older that engaged in one or more recreation activities during the 12 months prior to the survey interview date.

[7] An activity day is any amount of time during the course of a calendar day in which an individual participates in a given activity. Thus, an individual may report multiple activity days for a given calendar day.

Table 1. Percent change between 1999-2001 and 2005-2009 in total participants and total days for people age 16 and older participating in nature-based outdoor activities (Cordell 2012).

	Percent Change in Total Participants	Percent Change in Total Days[1]
Activity Groups	**1999-2009**	**1999-2009**
Visiting Developed Sites		
Developed site use		
Family gathering	10.5	21.5
Picnicking	2.8	-5.8
Developed camping	1.1	0.5
Visiting interpretive sites		
Visit outdoor nature center/zoo	10.2	18.6
Visit historic sites	8.1	7.0
Visit prehistoric sites	11.1	9.4
Viewing & Photographing Nature		
Birding		
View or photograph birds	22.8	36.7
Viewing		
View/ photograph natural scenery	17.9	62.6
View/ photograph flowers, etc.	29.4	83.5
View/ photograph other wildlife	25.4	51.8
View or photograph birds	22.8	36.7
Gather mushrooms, berries, etc.	28.6	30.1
Backcountry Activities		
Challenge		
Mountain climbing	-5.9	-4.3
Caving	18.4	14.0
Rock climbing	9.5	12.3
Equestrian		
Horseback riding on trails	1.6	-9.7
Hiking		
Day hiking	15.4	-4.9
Visiting primitive areas		
Backpacking	7.9	26.6
Primitive camping	3.2	6.6
Visit a wilderness	17.7	31.8
Motorized Activities		
Motorized off-road use		
Off-highway vehicle driving	34.5	47.6
Motorized water		
Motorboating	8.6	12.3
Waterskiing	33.1	20.0
Use personal watercraft	10.9	12.7
Motorized snow		
Snowmobiling	-5.5	-23.7
Hunting and Fishing		

Hunting		
Small game hunting	11.4	-0.7
Big game hunting	17.1	22.2
Migratory bird hunting	-1.1	0.4
Fishing		
Anadromous fishing	24.1	9.7
Coldwater fishing	8.7	1.4
Saltwater fishing	17.2	-0.7
Warmwater fishing	17.1	13.1
Non-motorized Winter Activities		
Developed Skiing		
Downhill skiing	-8.5	-19.4
Snowboarding	33.7	32.6
Undeveloped skiing		
Cross-country skiing	-21.7	-32.9
Snowshoeing	-9.4	-25.1
Non-motorized Water Activities		
Swimming		
Swimming in lakes, streams, etc.	14.0	16.0
Snorkeling	11.8	-0.6
Surfing	46.3	18.6
Scuba diving	-5.6	-15.6
Visit a beach	20.7	28.2
Visit waterside besides beach	6.3	28.1
Windsurfing	-10.1	-24.7
Floating		
Canoeing	18.2	8.0
Kayaking	103.8	86.3
Rafting	-2.8	7.9

[1]Since individual may report multiple activity days for a given calendar day, these increases are not additive across activities.

Recreation Participation in the Future

Past and recent outdoor recreation trends are important indicators of what might happen in the near future. However, simple trends do not address the underlying factors and associations that may be driving these trends. Thus, a trend may be of limited value as an indicator if the time horizon is long or if the trend's driving factors are expected to deviate substantially from historical patterns. Therefore, projection models developed for the 2010 Resources Planning Act (RPA) Assessment[8] (USDA Forest Service 2012a) are used in conjunction with external projections of relevant factors, including demographic, economic, land use, and climate factors, to simulate future recreation participation (Bowker et al. 2012). Outdoor recreation participation was projected for 17 recreation activity composites that were organized into seven activity groups that either occur in similar recreation settings

[8] See http://www.fs.fed.us/research/rpa/ for additional information about the RPA Assessment.

or have a similar focus (Table 2). These projections are based on the NSRE data described above, and include nature-based recreation on all ownerships of land and water.

Table 2. Outdoor recreation activity groups and associated activity composites.

Activity Group	Modeled Activity Composite	Activities Included in Modeled Activity Composite
Visiting Developed Sites		
	Developed site use	Family gathering; picnicking; developed camping
	Visiting interpretive sites	Visiting nature centers, zoos, historic sites, and prehistoric sites
Viewing & Photographing Nature		
	Birding	View or photograph birds
	Viewing	View/ photograph natural scenery, flowers, birds, other wildlife; gather mushrooms, berries, etc.
Backcountry Activities		
	Challenge activities	Caving; mountain climbing; rock climbing
	Day hiking	Day hiking
	Equestrian	Horseback riding on trails
	Visiting primitive areas	Backpacking; primitive camping; visiting wilderness
Motorized Activities		
	Motorized off-road use	Off-road driving
	Motorized snow use	Snowmobiling
	Motorized water use	Motorboating; waterskiing; personal watercraft use
Hunting and Fishing		
	Hunting	Big game; small game; migratory birds
	Fishing	Anadromous; coldwater; warmwater; saltwater
Non-motorized Winter Activities		
	Developed skiing	Downhill skiing; snowboarding
	Undeveloped skiing	Cross-country skiing; snowshoeing
Non-motorized Water Activities		
	Swimming	Swimming in lakes, streams; snorkeling; surfing; scuba diving; visit a beach; visit waterside besides beach; windsurfing
	Floating	Canoeing; kayaking; rafting

The 2010 RPA Assessment used multiple scenarios to explore a range of possible futures that account for uncertainties about future political, economic, social, and environmental change. A detailed description of these scenarios can be found in USDA Forest Service (2012b). Projections to 2060, at 10-year intervals, associated with these scenarios incorporate changing population, socioeconomic characteristics, land availability and the potential effects of climate change. For this report, we chose to use projected recreation participation through 2030 to focus on the time frame most consistent with federal land management planning. We also chose to focus on the results from one socioeconomic scenario and its associated climate projections – the scenario referred to as RPA A1B in the 2010 RPA Assessment. Since population growth is an important determinant of recreation demand in the future, we chose the RPA A1B scenario because it is the most consistent with the Census Bureau's projected population growth in the United States at the time the RPA scenarios were developed.

The outdoor recreation projections resulted in estimates of per capita participation and average annual days per participant. Total participants and total annual days of participation were calculated by multiplying the RPA population projections by the participation rate and average days per participant

(Bowker et al. 2012). Table 3 summarizes projected participation and use for the activity groups shown in Table 2.

Visiting Developed Sites

The activities associated with developed site use include venues popular with all age groups. Per capita participation in this activity group is currently highest among the 17 activity groups and is projected to remain the most popular through 2030. The number of potential developed site users increases from over 190 million to 246 million participants over the projection period, driven primarily by increasing population. While the total number of participants is projected to increase, those participants are projected to have slightly fewer numbers of days recreating at developed sites each year, on average, compared to the current pattern.

Visiting interpretive sites is also popular across all ages and occurs primarily in developed settings. The projections indicate participation rates of the population could increase by more than three percent, translating into a gain of more than 30 percent in the total number of participants by 2030. Two factors might influence the greater participation rate growth in this activity group compared to developed site use. First, developed site use is negatively correlated with age which is expected to rise by 2030, and positively correlated with available federal land per capita, which is expected to decline. Those variables are less important in interpretive site participation. Secondly, in comparison to the other activity groups, visiting interpretive sites has one of the higher percentage increases in both average days per participant and total days of participation.

Viewing and Photographing Nature

This category is comprised of birding and nature viewing, that includes viewing wildlife and nature, gathering, and nature study. Adult participation in birding averaged 35 percent in 2008. Nearly 81 percent of adults participated in the more broadly defined nature viewing during the same period. The participation rate for nature viewing is projected to increase by slightly more than one percent through 2030, whereas the participation rate for birding could increase by four percent. The viewing days per participant are anticipated to decline by over three percent. This decline is influenced by projected increases in population density and minority populations, as well as projected decreases in both forest and rangeland and national park acres per capita. The average annual days of participation exceed 160 and contribute to an estimate of total days nearly 10 times higher than any other non-viewing activity group. However, given the broad definition of viewing, much of this activity occurs in close proximity to home, in-transit to other recreation activities, or while participating in another activity.

Table 3. Projected participation and use for activity groups between 2008 and 2030.

	Per Capita Participation			Adult Participants (millions)			Days per Participant			Total Days (millions)		
Activity Groups	2008	2030	Percent	2008	2030	Percent	2008	2030	Percent	2008	2030	Percent
	Rate	Rate	Change	Number	Number	Change	Rate	Rate	Change	Number	Number	Change
Visiting Developed Sites												
Developed site use	0.819	0.825	0.7	192.7	245.9	27.6	11.67	11.58	-0.8	2,235	2,830	26.6
Visiting interpretive sites	0.669	0.690	3.2	157.4	205.7	30.7	7.81	8.02	2.6	1,243	1,666	34.1
Viewing & Photographing Nature												
Birding	0.346	0.361	4.4	81.4	107.7	32.3	97.71	97.91	0.2	8,215	10,889	32.5
Viewing	0.805	0.814	1.2	189.4	242.7	28.1	169.59	163.96	-3.3	32,303	40,019	23.9
Backcountry Activities												
Challenge	0.107	0.111	3.6	25.1	33.0	31.3	4.77	4.74	-0.6	120	156	30.5
Equestrian	0.070	0.072	2.7	16.4	21.3	30.1	16.28	16.48	1.2	262	345	31.7
Hiking	0.333	0.343	3.1	78.3	102.2	30.5	22.89	23.41	2.3	1,826	2,437	33.5
Visiting primitive areas	0.383	0.375	-2.1	90.2	111.8	24.0	13.22	13.08	-1.1	1,233	1,512	22.6
Motorized Activities												
Motorized off-road use	0.204	0.194	-4.7	47.9	57.8	20.7	21.65	21.04	-2.8	1,048	1,229	17.3
Motorized water use	0.263	0.270	2.5	62.0	80.5	29.9	15.27	15.35	0.5	953	1,244	30.6
Motorized snow use	0.040	0.036	-10.4	9.4	10.7	13.6	7.25	7.16	-1.3	68	77	12.1
Hunting and Fishing												
Hunting	0.119	0.105	-11.6	27.9	31.3	12.0	19.13	18.17	-5.0	535	570	6.4
Fishing	0.309	0.301	-2.6	72.7	89.7	23.4	18.48	18.15	-1.8	1,363	1,651	21.1
Non-motorized Winter Activities												
Developed skiing	0.101	0.108	6.7	23.7	32.1	35.1	7.19	7.42	3.2	171	238	39.5
Undeveloped skiing	0.033	0.033	-0.6	7.8	9.8	25.9	6.58	6.72	2.1	51	66	28.6
Non-motorized Water Activities												
Swimming	0.609	0.630	3.4	143.2	187.5	31.0	23.98	24.12	0.6	3,459	4,558	31.7
Floating	0.169	0.162	-3.9	39.8	48.4	21.7	6.50	6.53	0.3	261	318	22.1

Backcountry Activities

Backcountry activities are pursued in undeveloped, but accessible lands. This activity group includes challenge activities, equestrian, hiking, and visiting primitive areas. Challenge activities are often associated with young and affluent adults and include caving, mountain climbing, and rock climbing. Over 11 percent of adults are expected to participate in challenge activities by 2030; an increase of about 3.5 percent from 2008. The growth in the rate of participation is driven mostly by projected increases in income. The projected days per participant are almost unchanged through 2030. Participants in challenge activities report less than five days of participation per year, which is the lowest among all activity groups.

Participation in equestrian or trail riding per capita is projected to increase about 2.5 percent by 2030. As with the challenge activities, income also has a strong positive influence on the participation rate for trail riding. However, the days per participant change very little, perhaps suggesting higher income participants have more competing uses for their time.

Hiking is the most popular single backcountry activity with 33 percent adult participation in 2008. By 2030, the participation rate is projected to increase about three percent with the number of projected participants exceeding 100 million. Total days of hiking are projected to increase by about 33 percent, which is slightly more than participation (30 percent). The increase in hiking days is among the highest for all activity groups.

The final backcountry activity is visiting primitive areas. It is a composite activity consisting of people who backpack, primitive camp, or visit wilderness areas. The participation rate is projected to decline by over two percent by 2030. Increased population density and projected decreases in wilderness, forest, and rangeland acres per capita appear to correlate with the participation rate decline. Activity days per participant are projected to decline slightly less than participation rates.

Motorized Activities

Three categories of motorized activities were considered: off-road driving, motorized water use, and motorized snow use. Participation in off-road driving averaged a little more than 20 percent among the adult population in 2008. An expected decrease in the participation rate between four and five percent will lower participation below 20 percent by 2030. The decrease is correlated with expected increases in the average age and the increasing proportion of Hispanics in the population. Annual days per participant are also projected to decline by almost three percent. The declines in both the participation rate and days per participant imply that the overall increases in total days will be less than the respective increase in population.

Motorized water use has the highest participation rate of the motorized activities. More than 80 million adults or 27 percent of the adult population are projected to participate in 2030. It is the only motorized activity with positive percentage increases in both participation rate and days per participant. Income growth appears to be a significant factor in the positive growth rates. Both total participants and total days grow by about 30 percent between 2008 and 2030.

Motorized snow use (snowmobiling) has one of the largest projected declines in participation rates across all activities. Snowmobiling is geographically limited to areas with adequate recreation opportunities and snow conditions and is undertaken by only about 4 percent of the population. By

2030, rates are projected to decline over 10 percent. Similar to off-road driving, these declines are correlated with increasing average age and increasing proportion of Hispanics in the population. Days per participant also decline, but at a much lower percentage than the participation rate. Snowmobilers will still average about seven days per year on the snow.

Hunting and Fishing

The traditional wildlife pursuits of hunting and fishing remain popular outdoor activities with about 28 million and 73 million annual adult participants, respectively, in 2008. However, on a per capita basis, these activities continue a decline from levels of past decades. The adult hunting participation rate is projected to decline by 11 to 12 percent by 2030. 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 decline in participation rate. Days per hunter are also projected to decline by about five percent. Total participants and total days of hunting continue to grow because of population growth, but at small increases of about 12 and 6.4 percent respectively. Hunting exhibits the largest drop in the rates of participation and days per participant and the smallest increases in the number of participants and total days.

The overall rate of decline in per capita participation and days per participant are not as drastic for fishing as hunting. The participation rate for fishing is projected to decline between two and three percent. The number of adult participants is still expected to increase by about 23 percent to over 89 million anglers. Average annual fishing days per participant are projected to fall a little less than two percent.

Non-Motorized Winter Activities

Developed skiing (downhill skiing and snowboarding) is the only winter activity with projected percentage increases in both per capita participation and days per participant. The participation rates increase by six to seven percent by 2030, the largest increase among all activity groups. Income growth is a strong driver in skiing participation. Days per participant also increase but at a more modest rate of three percent. The total days of 238 million in 2030 reflect an almost 40 percent increase above the 2008 levels.

Undeveloped skiing (cross-country skiing and snowshoeing) has the lowest participation rate for any of the activity groups. About three percent of the population participates with the number of adult participants expected to remain below 10 million in 2030. Although per capita participation is expected to change little, the days per participant are projected to increase slightly due to a positive correlation with mean population age. However, given this small increase and a static participation rate, the annual undeveloped skiing days per year will most likely track population growth at about 29 percent.

Non-Motorized Water Activities

This category consists of floating and various kinds of outdoor swimming activities, including snorkeling, surfing, diving, and visiting beaches or watersides. Swimming is the fourth most popular outdoor activity, with a 63 percent adult participation rate and 187 million participants projected for 2030. Although the projected percentage increase in days per participant is relatively flat, the projected total days will exceed 4,500 million by 2030. This is driven by the popularity of swimming and the relatively high number of days people swim each year.

Floating activities include canoeing, kayaking, and rafting. By 2030, the participation rate is projected to decrease by almost four percent. The days per participant are projected to be virtually unchanged between 2008 and 2030 at about 6.5 days per year. Both the total adult participants and total days increase in future decades, but at levels less than the expected increase in population.

Climate change and recreation trends and projections

The results shown in Table 3 were estimated without incorporating climate change into the projections. Climate variables were added to the projection models to assess whether participation and participation intensity were sensitive to climate effects (see Bowker et al. 2012 for details about the climate variables).

Except for a few activities, adding climate variables to the projection models does not greatly change projected future participation (Bowker et al. 2012). Generally, the effect of the climate variables is a minor change in both per capita participation and average days per year compared to the "no climate change" projection. The effect of climate is easier to understand when expressed as changes in total participation or total days. Table 4 shows the percentage change between 2008 and 2030 for activity projections with and without climate effects in the model. It also displays the net difference between the no climate change (No CC) vs. climate change (CC) estimates as increases or decreases from the percentage for the no climate change projection. Overall, 14 of 17 activities showed average declines in total days of participation when accounting for climate change. Most of those reductions lower future projected percentage increases in total days by five percent or less. The percent decline was greatest for three activities: snowmobiling, undeveloped skiing (cross country skiing, snowshoeing), and floating (canoeing, kayaking, rafting), accounting for average net decreases of 39 percent, 36 percent, and 9 percent, respectively. The effect of climate change on snowmobiling and undeveloped skiing actually reduced the projected days of participation in 2030 to levels lower than those observed in 2008. The effects of climate change surpassed the gains in participant days resulting from population growth. Activities that could show a slight increase in total days under projected climate changes include interpretive site use, challenge sports, and off-road driving.

The general effects of climate change on projected percentage change in the number of total participants for 2030 is also shown and has similar results to the climate effect on total days. The direction (increase or decrease) of the climate effect is often the same, but the magnitude of the difference is more muted for the analysis of participants. The primary exception is for equestrian, where the climate change models reduced the estimate of days by 4.5 percent and increased the number of participants by 4.9 percent. The opposite effect was evident for visiting interpretive sites, as climate change had a negative effect on the number of participants and a positive effect on days. The magnitude of the effect was relatively low at -.6 percent and 1.4 percent respectively. Thirteen of 17 activities are expected to experience fewer participants when climate change is included into the projection estimates.

However, the small percentage increases or decreases from incorporating climate change can have a noticeable impact on total participants and days if the activity has high levels of participation and average days. For example, climate change effects associated with developed site use could result in two million fewer participants and 52 million fewer activity days in 2030, on average, than would be expected with no climate change. The overall decline is 1.1 percent for total participants and 2.3 percent for days. In contrast, the 36 percent drop in days for winter activities only reduces the total activity days by 18 million because participants only engage in 6 to 7 days annually.

The effects of climate change on outdoor recreation activities vary across alternative climate projections. In the set of climate projections used in the 2010 RPA Assessment (USDA Forest Service 2012a), the most pronounced effects of climate were associated with the climate projections with the greatest increases in average temperature and greatest decreases in precipitation (Bowker et al. 2012).

Table 4. Projected percent change in participants and days to 2030 with (CC) and without (No CC) the effects of climate change (Scenario RPA A1B), by recreation activity.

	Adult Participants (millions)			**Total Days (millions)**		
Activity Groups	Average % Change 2008 to 2030		Effects of CC	Average % Change 2008 to 2030		Effects of CC
	No CC	CC	% Difference	No CC	CC	% Difference
Visiting Developed Sites						
Developed site use	27.6	26.5	-1.1	26.6	24.3	-2.3
Visiting interpretive sites	30.7	30.0	-0.6	34.1	35.4	1.4
Viewing & Photographing Nature						
Birding	32.3	28.8	-3.5	32.5	28.3	-4.3
Viewing	28.1	27.8	-0.4	23.9	22.2	-1.6
Backcountry Activities						
Challenge	31.3	32.6	1.4	30.5	32.9	2.5
Equestrian	30.1	35.0	4.9	31.7	27.2	-4.5
Hiking	30.5	27.7	-2.8	33.5	31.0	-2.5
Visiting primitive areas	24.0	22.3	-1.6	22.6	18.8	-3.8
Motorized Activities						
Motorized off-road use	20.7	21.2	0.5	17.3	19.3	2.1
Motorized water use	29.9	26.3	-3.5	30.6	25.5	-5.1
Motorized snow use	13.6	-18.4	-32.0	12.1	-26.8	-38.9
Hunting and Fishing						
Hunting	12.0	10.5	-1.5	6.4	4.0	-2.4
Fishing	23.4	19.1	-4.2	21.1	16.1	-5.0
Non-motorized Winter Activities						
Developed skiing	35.1	34.7	-0.4	39.5	38.7	-0.8
Undeveloped skiing	25.9	-5.9	-31.8	28.6	-6.9	-35.5
Non-motorized Water Activities						
Swimming	31.0	31.0	0.0	31.7	29.8	-1.9
Floating	21.7	13.1	-8.5	22.1	13.1	-9.0

CC = climate change

Dominant factors in recreation projections

Previous research (e.g. Cordell 2012) has established that population size, gender, race, ethnicity, education, income, and supply of and proximity to recreation settings can be highly correlated with the rate of outdoor recreation participation as well as age, place of residence, and participation intensity. The results of the recreation projections (Bowker et al. 2012) reinforce those findings, as summarized below.

Key differences in the model variables drive the projections of recreation participation. Population growth often is the most important factor. Income growth also has differential effects on projected participation, particularly for those activities that require more capital or income for effective participation, such as developed skiing, challenge activities, equestrian activities, hunting, and motorized activities. The effects of population growth were often offset by more indirect effects. For example, increased population density in the vicinity of recreation sites can cause crowding onsite, which has been shown to reduce the quality of many nature-based recreation experiences. In most cases, population growth is sufficient to result in overall growth in total participants and total days of participation, even when participation rates and/or average days of participation are projected to decline.

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 the decision to participate. However, it has little influence on the annual days of participation, once the individual chooses to participate. Minorities including African Americans, Hispanics, and Asians, are almost always less likely than Whites to participate in the various activities examined in this report. A notable exception occurs with hiking where, controlling for other socioeconomic and supply factors, Hispanics are more likely than Whites to participate. Respondents claiming American Indian, non-Hispanic identity are often more likely than Whites to participate in remote activities like hunting and fishing, motorized off-road, motorized snow, hiking, equestrian, and viewing. In absolute numbers, 70-75 percent of total participants across all activity groups are non-Hispanic Whites with Hispanic participants the next highest, averaging about 14 percent.

Education beyond high school generally results in higher participation rates for most activities. However, the level of education attained can influence participation 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. More than a high school education lowers the probability of participation for fishing and hunting, motorized off-road use, and motorized snow activities. While participation rate generally increases with education, around 50 percent (+ or – 5 percent) of participants across all activity groups have maximum education attainment of either a high school education or some college.

Income is positively associated with participation and use across all activities. However, for some activities such as birding, hiking, and hunting, the effect is small, while for others such as developed skiing and motorized water use, the effect is large. An important aspect of income growth, omitted from the analysis in this report, is that RPA Assessment scenarios used in this study accounted only for aggregate income growth and omitted any consideration of changing income distribution. This omission is serious and likely overlooks the fact that recreation access will probably become more partitioned by income class.

Generally, land and water available per capita positively influence activity participation. Population growth combined with a stable public land base and declining private natural land base (from urbanization) resulted in a decline in per capita recreation opportunities over the projection period. This decline is likely to reduce participation rates for activities that require large spatial extents, such as hunting, off-road driving, and visiting primitive areas. Similarly, participation in water-based activities such as swimming, motorized boating, and non-motorized boating are all positively correlated with the per capita water area. Fishing is positively correlated with both per capita water area and forest and rangeland area. A seemingly counterintuitive result occurred with the variable indicating whether the respondent lived in a coastal community. Here, participation in fishing, hunting, and viewing are 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 these results and projections do not account for factors outside the range of available data such as climate change effects on recreation resources, new technology, changes in relative costs, new infrastructure, and changes in tastes and preferences.

Federal Land Base for Outdoor Recreation

The United States has extensive land and water resources. Public lands held in trust by local, state, and federal governments, are critical resources for nature-based outdoor recreation. While focusing on the federal land base, we briefly describe the role of state, and local lands in providing recreation opportunities, based on Cordell et al. (2013). The distribution of federal land is uneven between the eastern and western United States, which influences the role of federal lands in providing outdoor recreation opportunities in different regions of the United States. Some of the information is provided by regions used in the RPA Assessment (Figure 1).

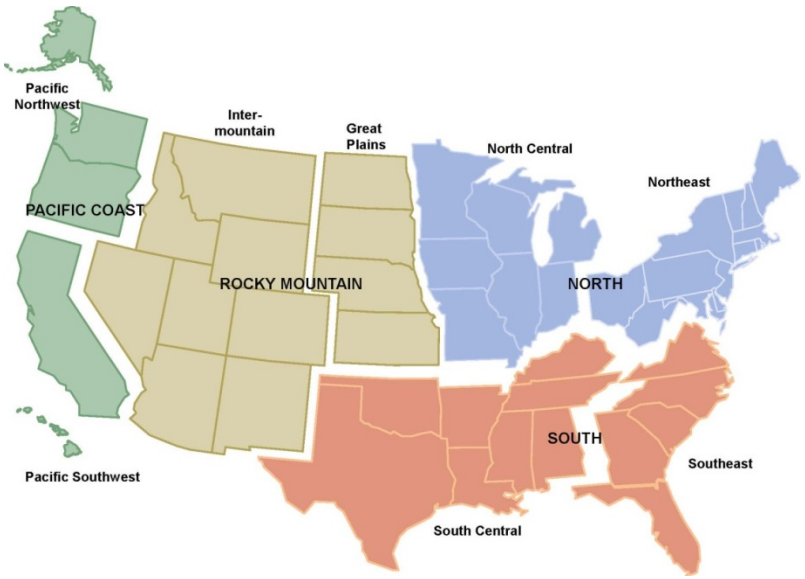

Figure 1. Resources Planning Act (RPA) Assessment regions of the United States.

Local and State government lands

Local governments own a small percentage of total public lands, but these holdings are highly important because they tend to be located close to population centers. Urban parklands are an important resource in areas of high population density. These resources typically fill a key recreation niche, providing places for activities such as team sports and daily exercise such as walking or jogging. Generally, these resources are designed and managed to accommodate frequent and heavy density of use.

States manage a variety of lands that can provide recreation opportunities, including state parks, state forests, state wildlife areas, and other designations. State lands tend to occupy a niche between the more undeveloped and dispersed recreation opportunities of federal lands and the much more facility and development-oriented local lands. Similar to local government lands, state resources tend to occur in close proximity to populated areas, especially in the eastern United States where state lands play a much more significant role in providing outdoor recreation opportunities than in the West. Still, because of the lower population in the West, there are more state park system acres per capita in the West than in the East (Cordell et al 2013).

States manage more than 6500 individual parks and other categories of areas (e.g. natural areas, historic sites) that account for about 14 million acres. The North and Pacific Coast regions have the largest areas (about 5.2 million acres each), while the South has about 2.2 million acres, and the Rocky Mountain region about 1.4 million acres. About 25 million acres of U.S. forest land are managed by state forestry agencies. These lands are often available for recreation purposes, especially fishing, hunting, and wildlife watching. The largest proportion (64 percent) is in the North region, followed by the Pacific Coast region (20 percent). State forests and State wildlife and fish areas provide additional outdoor recreation opportunities (Cordell et al. 2013).

Federal lands

Federal lands cover about 640 million acres in the United States[9], about 28 percent of the total land area. Nearly all Federal land is open and available to the public for recreation. More than 92 percent of Federal land is located in the West, with about 36 percent of all Federal land in Alaska. The FS and BLM manage the majority of Federal land. The acres of land managed by six of the seven FICOR agencies are shown in Table 5, as well as the distribution by RPA region. Since the Pacific Coast includes large Federal holdings in Alaska, Table 5 shows acreage for Alaska separately. NOAA manages 14 marine protected areas encompassing more than 170,000 square miles of marine and Great Lakes water from Washington State to the Florida Keys, and from Lake Huron to American Samoa. The network includes a system of 13 national marine sanctuaries and one marine national monument.[10]

[9] The 640 million acres does not include land managed by the Department of Defense.
[10] http://sanctuaries.noaa.gov/

Table 5. Acres of federal land[1] in the United States by FICOR agency and RPA region (thousand acres).

Federal agency	North	South	Rocky Mountain	Pacific Coast[2]	Alaska	United States
Forest Service	12,161	13,396	100,096	45,101	22,207	192,961
National Park Service	1,225	5,129	10,763	9,954	52,621	79,691
Fish & Wildlife Service	1,568	4,522	10,496	1,767	76,886	95,239
Bureau of Reclamation	0	197	5,470	854	0	6,522
Bureau of Land Management	4	25	142,956	31,906	72,423	247,314
Army Corps of Engineers	2,557	7,104	3,540	526	19	13,746
Total	**17,515**	**30,373**	**273,321**	**90,108**	**224,156**	**635,473**

[1] Acres reported by the Bureau of Reclamation and Army Corps of Engineers include water area
[2] Pacific Coast acreage in this column does not include Alaska.
Sources:
USDA Forest Service: http://www.fs.fed.us/land/staff/lar/LAR2013/Table_03.pdf (2013 data)
USDI National Park Service. 2010 Data as reported in Gorte et at (2012)
U.S. Fish & Wildlife Service http://www.fws.gov/refuges/realty/archives/pdf/2013_Annual_Report_of_LandsDataTables.pdf (2013 data)
USDI Bureau of Reclamation. Recreation Fast Facts. www.usbr.gov/recreation.
USDI Bureau of Land Management. http://www.blm.gov/public_land_statistics/pls12/pls2012-web.pdf (2012 data)
U.S. Army Corps of Engineers. Institute for Water Resources in partnership with the Engineer Research and Development Center and Natural Resources Management. Value to the Nation website: www.CorpsResults.us. Last updated 2006.

Congressional designations offer additional direction to the management of Federal lands that often affect the recreation opportunities available on those lands. The National Wilderness Preservation (NWPS) System includes more than 109 million acres of Wilderness Areas that represent the most pristine and protected of federal lands. More than half of the NWPS area is in Alaska, while the remainder is almost entirely in the western United States. Other Congressionally designated acres provide unique recreation resources: National Recreation Areas (NRAs), National Wild and Scenic Rivers (NWSRs), and the National Trail System. NRAs are intended to serve primarily as a recreation resource and be accessible to population centers. In 2008, 41 NRAs covered 7.4 million acres, with 90 percent of that acreage in the western United States. The NWSR designation requires qualifying rivers to have outstanding scenic, wild, and/or recreation values. Almost 12,600 miles of 203 rivers in 39 states and Puerto Rico were designated as of April 2012;[11] the Pacific Coast region contained more than half of the designated areas in 2009 (Cordell et al. 2013). The National Trails System includes national scenic trails, national historic trails, and national recreation trails. Currently, the National Trails System totals over 60,000 miles in all 50 states and is comprised of 11 National Scenic Trails and 19 National Historic Trails authorized by Congress, and more than 1000 National Recreation Trails (NRT) designated by the Departments of the Interior or Agriculture. The NRT system is unique in that it can be managed by any government agency at any level of government. In 2009 there were slightly more than 20,000 miles in the system, with the East accounting for almost 70 percent of the total trail miles (Cordell et al. 2013).

[11] http://www.rivers.gov/national-system.php

Federal land availability and facilities

The seven FICOR agencies are critical providers of outdoor recreation opportunities to the American public as well as foreign tourists. The key activities for each agency focus on connecting the visiting public with the resources under their stewardship. All of the FICOR agencies balance recreation activity with resource management, where 'management' can be construed as either preserving a specific resource or balancing joint production of several outputs from one resource unit. All of the FICOR agencies have goals that include some combination of providing public access to the resource base, promoting health benefits, and improving connections with our nation's natural and cultural heritage.

The recreation resources managed by the FICOR agencies are extensive. If the area of federal lands and waters are assumed to remain stable, per capita availability can only decline over time as population increases. The ability of Federal resources to meet future recreation participation depends on future recreation participation rates, the distribution of recreation participants in relation to recreation resources, and substitutes for Federal opportunities. Transportation systems will continue to be critical for providing access to recreation opportunities. Figure 2 overlays the current land base of six of the FICOR agencies (excluding NOAA) in the United States on a map of county-level projected population change to 2030, following the population projections of the RPA A1B scenario from the 2010 RPA Assessment.

While the federal land base may remain relatively static, legislative and executive designations, along with Agency regulations and rules can alter the mix of recreation opportunities available. Changes in designations can affect the mix between recreation activities (e.g., a change from motorized to non-motorized use) or the mix between recreation and other uses (e.g., recreation and logging or mineral extraction). These types of changes can effectively increase or decrease federal acreage available for recreation.

The NPS, FWS, BLM, and FS provide a wide range of recreation opportunities, with dominant activities including sightseeing (including auto touring or pleasure driving), viewing nature and wildlife (including birds), and hiking and walking. Top activities across all NPS units are sightseeing, day hiking, visitor center use, and creative arts (photography, writing, painting, drawing, etc.).[12] The greatest participation rates on FWS lands are for wildlife observation and birding, photography, hiking/walking, auto-tour driving, and fresh water fishing, although other popular activities are hunting, bicycling, and non-motorized boating (Kevin Kilcuillen, personal communication). BLM officials indicated the activities with the highest recreational visitation on BLM lands are camping and picnicking; non-motorized travel; off-highway travel; water-based activities; and hunting (USDI BLM 2012). The most common activities in which people participate on FS lands include viewing scenery/natural features; hiking/walking; relaxing/ hanging out; and viewing wildlife.[13]

[12] https://irma.nps.gov/Stats/Reports/National
[13] http://www.fs.fed.us/recreation/programs/nvum/

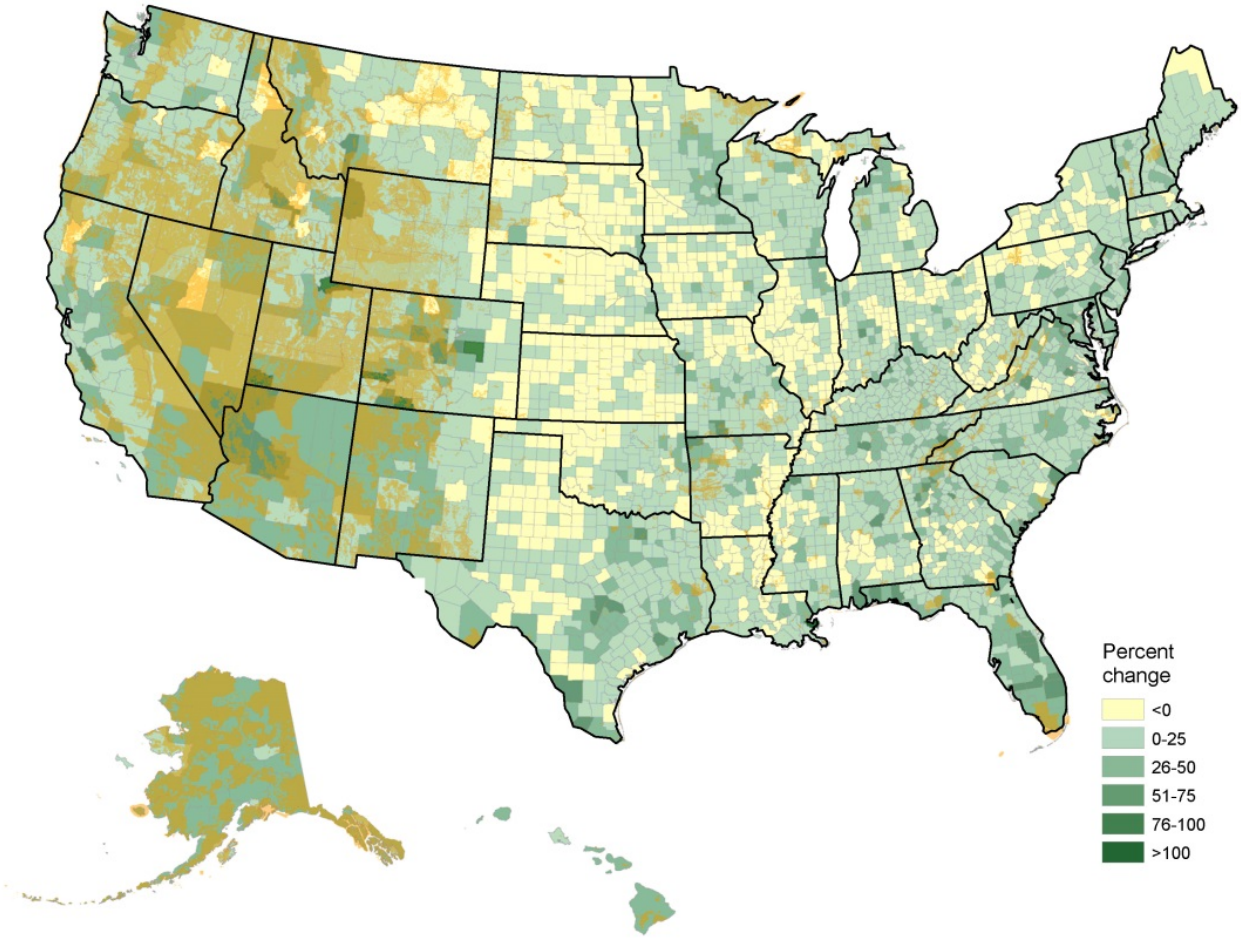

Figure 2. Federal lands (brown shading) overlaid on population change by county in the United States projected from 2010-2030, RPA A1B scenario. (Source of federal ownership overlay for six FICOR agencies: Protected Area Database-United States (PAD-US))

The USACE, BOR, and NOAA are more focused on opportunities associated with water recreation. The USACE sites host 33% of all U.S. freshwater lake fishing; provide other water-based activities, and camping and hiking/walking opportunities.[14] Similarly, the BOR provides extensive water-based opportunities. BOR's day use and dispersed opportunities areas also accommodate activities such as camping, picnicking, hiking, wildlife viewing, and photography. The most common activities at NOAA marine sanctuaries are fishing, SCUBA, and snorkeling.

[14] http://www.usace.army.mil/Missions/CivilWorks/Recreation.aspx

Proximity is important for many recreation visitors. For several agencies, including BLM, FS, FWS, and USACE, at least half of the visits come from people who live within 50 miles.[15] Thus, population growth and/or change in the communities in those proximate zones can have large effects on the volume and nature of visitation. Even so, these agencies all have resources that can have regional, national, or international markets. While there is considerable overlap in the recreation opportunities across the FICOR agencies, they could be segmented into dominant niches. The BLM and FS offer a range of opportunities from "big backyard" to backcountry; the FWS opportunities emphasize wildlife, fish, and birds, while the NPS is often associated with iconic natural and cultural resources. The USACE, BOR, and NOAA tend to focus on water and underwater resources.

Economic Contributions from Recreation on Federal Lands

Federal recreation resources offer opportunities for individuals to interact with forests and other natural resources. Federally-managed public areas supply places individuals can use to recreate or exercise, landscapes that are aesthetically pleasing and provide desirable backdrops for living or working nearby. Through these interactions with federal recreation resources, a number of positive economic effects accrue to people, individually and as communities. The most commonly recognized economic outcomes from federal recreation resources include business activity generated from the spending made by recreation visitors, increased property values and business attraction because of natural amenities those resources provide, and health benefits from physical activity and stress reduction.

Of the economic outcomes associated with federal recreation resources noted above, the most attention is typically given to the business activity created when visitors spend money to recreate. This economic outcome is often a key consideration in federal natural resource planning, is a focus of local, regional, and national business groups, and is a primary interest of local and state community leaders. Americans spend an estimated $646 billion annually on recreation equipment and the goods and services connected with outdoor recreation (Outdoor Industry Association 2013). The majority of that spending—$525 billion—is made while recreating for purchases of things like food, lodging, fuel, and entertainment. Recreation trip spending includes purchases at home in preparation for the trip, enroute, and at the recreation destination. In total, American spending for recreation supports about 6.1 million full and part-time jobs (Outdoor Industry Association 2012). How spending in support of recreation influences the economy in the future will be influenced, in large part, by future patterns of recreation participation.

People spend money at businesses while recreating on both public and private lands. But, from the standpoint of public lands management, there is substantial interest in how government provision of opportunities for recreation on public lands translates into economic activity in communities around federal recreation resources. Studies specific to federal lands indicate that those recreating on federal recreation resources spend at least $51 billion in the local economies around their federal recreation destination (English et al. 2014). This provides a conservative estimate of overall spending relative to spending reported in national recreation industry analyses. Federal contribution analyses typically limit visitor expenditures to a geographic area in close proximity to the federal sites. The at-home and enroute spending of visitors traveling longer distances are not included. The intent is to attribute the spending to a single destination and a single trip and focus the effects in and around federal recreation opportunities. This limits the magnitude and scope of what is included in federal contributions, but links the spending to resources and opportunities provided.

[15] http://www.fs.fed.us/recreation/programs/nvum/2012%20National_Summary_Report_061413.pdf

Factors Contributing to Economic Activity from Federal Recreation

The magnitude of business activity in local communities associated with outdoor recreation on federal lands is dependent on: 1) the presence of people recreating on federal recreation lands, 2) the existence of businesses where visitors can spend money, and 3) spending from recreation visitors.

Recreation Participation

Recreation occurring on federal lands results from individual visitor preferences for outdoor recreation as well as the quality and quantity of recreation opportunities supplied by federal agencies. The quality of opportunities for recreation activities such as camping, hiking, picnicking, observing nature, fishing, hunting, viewing wildlife, driving off-road, and others, federal recreation agencies will influence the amount and type of recreation on federal lands. Visitors to communities around federal recreation opportunities generate economic activity. A number of federal recreation destinations are unique, premier recreation destinations, i.e., "crown jewels," that consistently attract large numbers of tourists who travel long distances to reach the site. The recreation activity at these sites often drives substantial economic activity in local communities. Tourism is the primary economic driver in many of these communities. Some other federal recreation destinations are in remote rural communities that tend to have few visitors, many of whom reside in the local area. Visitor spending in these locales is often relatively low with limited economic effects. The majority of federal recreation areas are likely somewhere in the middle, receiving moderate levels of visitation that drive an important component of local economic activity.

Opportunities for Visitor Spending

The amount of visitor spending stimulated by federal recreation opportunities depends, in large part, on the presence of private businesses in nearby communities. Communities that are able to capture the most spending from recreation visitors have businesses that offer services and goods desired by those engaged in outdoor recreation. On average, expenditures for lodging, food in restaurants/bars and grocery stores, and fuel account for the majority of recreation trip spending. Communities may increase the likelihood and magnitude of visitor spending by including complementary and other attractions/activities to lengthen visitor stays, or provide incentives for return visits.

The presence of private businesses operating as concessionaires or offering outfitter/guide services on federal lands often enhances the recreation opportunities accessible to visitors and leads to increased spending in local communities. Concessionaire and guide businesses are attracted to, and dependent on, the innate features of federal recreation resources and operate within guidelines set by federal agencies. Concessionaires and guides can provide key services and create access opportunities for a broader spectrum of recreation visitors. In some cases, concessionaires and guides may encourage longer stays and enhance the amount of spending in local communities by selling recreation packages that include services or products offered by other local businesses.

The primary effects of visitor purchases of goods and services are realized by businesses catering directly to visitor needs. However, the total economic activity is greatest when there are other local businesses that are intermediate suppliers to businesses selling directly to recreationists. For example, if a restaurant purchases meats, vegetables, or beverages from producers in the local area, money spent by recreationists accrues both to the restaurant serving recreationists as well as local food producers.

Alternately, if a restaurant must source food from outside the local area, the money spent by recreationists leaks out of the local economy more rapidly as restaurant supplies are purchased from elsewhere.

Recreation Visitor Spending

Spending from visitors in and around federal recreation opportunities creates economic activity in local communities. A variety of factors, including the size of the travel party, time spent in the local area, personal preferences and income, and shopping opportunities influence how much money people spend in local communities and the types of purchases. The specific recreation activity of the visitor has a secondary influence on spending.

Visitor spending is strongly influenced by the type of recreation trip, day use versus overnight trips and destinations far from or close to home. Those characteristics of trip type alter the array of items and services a visitor must purchase during the recreation visit. Those staying overnight away from home usually spend money for lodging in hotels/motels, B&Bs, or public or private campgrounds. An individual on a day trip does not need to purchase lodging. Visitors staying one or more nights in a community eat more meals in the area and often spend more money in local restaurants/bars and grocery stores. A day visitor may spend a relatively brief time in local communities and may eat meals at home before and after the trip. Finally, visitors staying more than one day in an area are more likely to spend money on entertainment, souvenirs and other retail items. A visitor traveling a long distance from home, whether on a day trip or overnight trip, often has greater spending because the trip length requires increased purchases of items such as fuel.

Generally, the specific recreation activity has a secondary influence on visitor spending. Some activities have greater or lesser spending, on average, because of the types of purchases (e.g., lift tickets, fuel, and guide services) required to complete the trip. For example, downhill skiers at sites on federal lands are among the highest recreation spenders. On a per night basis, these visitors spend significantly more than other visitors for recreation fees (i.e., lift tickets), restaurants and bars, and lodging. Conversely, some activities, such as backpacking and hiking have spending levels that are lower than visitors on the same type of trip but engaged in a different primary activity. Visitors on backpacking trips are likely to make purchases near their home and have limited or no opportunities to spend money while recreating in the backcountry. Despite lower than average spending, hiking is one of the most popular activities on federal lands. The aggregate total spending of hikers and backpackers can be an important contribution to the economies of many rural communities.

Classification of Trip Spending and Recreation Visits

The FICOR agencies each develop estimates of total recreation use, the amount of money visitors spend in local communities, and how that spending affects local economies. In many cases, agencies have implemented monitoring systems to update estimates of total recreation use, visitor characteristics and trip spending on a regular basis. For this discussion, we use spending estimates developed from the FS National Visitor Use Monitoring (NVUM) Program as an indicator of how projected future recreation participation could change the amount of recreation spending in local communities. NVUM data are a useful source for this analysis because they are collected throughout the U.S., represent visitors engaged in a broad range of recreation trips and activities, and come from surveys of users in a variety of settings near a diverse group of communities. The approach for estimating visitor spending through NVUM is generally consistent with that used by other FICOR agencies. Further, spending averages estimated

from the NVUM data are consistent with spending averages estimated from the monitoring programs of other agencies. For the purpose of economic contribution analysis, the FICOR agencies are consistent and only consider visitor spending within about 50 miles of federal recreation resources. The marine sanctuaries managed by NOAA are one notable exception.

Visitor spending attributed to recreation on federal lands is categorized by the type of recreation trip. At the most aggregate level, trips are classified by the proximity of their origin to the destination and if the trip lasted more than one day. Trip origin distinguishes trips to recreation sites close to home (local trips) from trips involving longer distance travel (non-local trips). The cutoff distance can vary based on the recreation market area, but local trips are often less than 50 miles from the visitor's home to the recreation destination. The length of the trip is classified as 1) recreation trips that start and finish at-home on the same day (day trips) or 2) trips that involve an overnight stay on federal lands or in local communities nearby (overnight trips). The combination of these trip types creates four separate categories and forms the core of trip types considered across all federal agencies. Most agencies refine the categories to explain more of the spending variation between trips. For example, the NPS classifies overnight trips into those staying in Agency campgrounds, Agency lodges, private hotels/motels outside the park, and private campgrounds (Cullinane-Thomas et al. 2014). Further, the FS partitions overnight stays into those that include stays at hotels, motels or campgrounds outside the national forest versus those in campgrounds or other lodging on national forest lands (White et al. 2013). Lastly, recreation visitors who do not consider the federal site to be the primary motivating reason for the trip are often grouped into a separate category. The spending of visitors in that category is typically fully or partially excluded from analysis of economic contribution, leading to a more conservative estimate of the economic contribution of federal lands. At the national level across all activities, the FS uses seven trip types to classify all recreation visits to national forests (Table 6). The FS visitor spending figures and the distribution of recreation visits across the trip types demonstrate the key features of classifying trips.

The type of recreation trip is the most important factor in explaining variation in visitor trip spending to federal recreation sites (White and Stynes 2008). Average spending figures estimated from NVUM data illustrate how recreation spending varies by trip type. Visitors traveling outside the local area of their home (non-local visitors) to recreate spend up to twice as much as visitors recreating near their homes (local visitors) (Table 6). Further, those visitors who take trips where they stay overnight away from home (whether local or non-local trips) have greater spending than visitors on day trips. The greatest spending comes from visitors who travel far from home and stay overnight in communities near federal lands. These visitors spend on average 15 times more than those on local day trips.

Table 6. Average spending in local communities and the distribution recreation visits across Forest Service trip type categories (Source: White et al. 2013)

	Non-local Day Trips	Non-local Overnight Trips (camping)	Non-local Overnight Trips (hotels or motels)	Local Day Trips	Local Overnight Trips (camping)	Local Overnight Trips (hotels or motels)	Not Primary[1]
Average party spending within 50 miles of recreation destinations[2]	$ 63	$233	$514	$33	$162	$213	NA
Percent of all trips[3]	10	9	14	49	4	1	13

[1]The Forest Service recognizes a group termed "not primary" travelers. Those visitors recreate on Forest Service land as part of a larger leisure or business trip that has some primary purpose other than Forest Service recreation. These visitors typically have high levels of spending, but only a portion of that spending is directly attributable to Forest Service land.
[2]Average spending by trip type in local communities of travel parties recreating on U.S. Forest Service land
[3]Percent distribution of U.S. Forest Service recreation trips across trip type categories

Communities often make a considerable effort to attract overnight visitors (who tend to have higher spending profiles). However, recreation visitors take a variety of trip types and total spending in communities is dependent on both the patterns of average spending and the distribution of visitation across trip types (Table 6). Most visits to FS lands are associated with people on day trips recreating locally (49%). Although day trips have relatively low levels of average spending, the high number of trips yields a significant amount of total spending. The second most common type of trip to FS lands is by nonlocal visitors staying overnight. The high spending of that group and the fairly large number of trips combine to generate high levels of total spending. Relatively small changes in the level of visitation can produce large swings in total spending.

Total spending in local communities is largely a function of the numbers of each trip type taken by visitors. The recreation activity can also play an important role if opportunities for expensive activities such as developed skiing and motorized vehicle use are available. Conversely, low spending activities, such as backcountry camping and hiking usually support less spending. However, lower spending for these activities may not hold for unique recreation opportunities or high quality environments that draw visitors for extended stays. The recreation activity can provide important information about visitor spending, but except for special cases, like developed skiing, it should be considered as a secondary attribute after trip type when evaluating recreation spending.

Economic Contribution from Federal Recreation Opportunities

A recently completed analysis by the FICOR agencies uses spending and reported recreation visitation to provide estimates of the economic contribution of federal recreation to the national economy (English et al. 2014). Outdoor recreationists made more than 938 million visits to federal lands in 2012, spending $51 billion and supporting 880,000 jobs (English 2014). Table 7 provides a snapshot of the contributions that outdoor recreation had on jobs and the economy in 2012.

Table 7. 2012 Economic contributions of visitor spending for recreation on federal lands and waters (2012 dollars).

Agency	Recreation Visitation (millions)	Visitor Spending (billion $)	Jobs (thousands)
National Park Service	283	15	243
Bureau of Land Management	59	3	58
U.S. Fish and Wildlife Service	47	2	37
Bureau of Reclamation	28	1	26
Forest Service	161	11	194
National Oceanic and Atmospheric Administration	NR[1]	5	135
U.S. Army Corps of Engineers	360	13	187
All FICOR Agencies	**938**	**51**	**880**

[1] NR = not reported
Source: English 2014

Economic Activity Associated with Future Recreation Participation

The RPA Assessment projections described earlier are used in this section as a reasonable estimate of the overall patterns of future recreation participation on federal lands. Those projections do not differentiate recreation participation on public or private lands. Moreover, while the projections are not specific to federal lands, the set of nature-based activities considered are closely related to many federal opportunities. Because consideration of trip type is fundamental to understanding visitor spending in local communities, we separately discuss activity spending for day and overnight trips and the distribution of visitation by activity across trip types. The effects of climate change on future recreation participation are discussed at the end of this section.

Visitor Spending on Day trips

The level of average spending for day trips ranges from a low of $21 dollars for local visitors to $130 for visitors coming from longer distances (Table 8). At the high end of spending are visitors engaged in developed skiing (downhill, snowboarding), all motorized activities, undeveloped skiing (cross country, snowshoeing), and hunting. These activities often require a significant investment in recreation fees, fuel, and supplies for completing the trip. Of these activities, developed skiing and motorized water recreation are projected to see the greatest percentage increases in participant days by 2030. Motorized off-road use, snowmobiling, and hunting are projected to have the lowest increases in participant days, ranging from six percent to 17 percent. Motorized recreation activities on federal lands are typically restricted to specific areas. Snowmobiling is further limited to times and regions of the country where weather conditions are conducive. Changes in recreation participation in motorized activities (and the associated changes in visitor spending) will likely affect a select subset of communities near federal lands. Because hunting occurs across a broad range of recreation resources and is distributed across the United States, although seasonally restricted, the effects of slow growth in participation could influence a greater number of communities.

Hiking, birding, and interpretive site use occur across a broad spectrum of recreation environments and represent three of the top four projected percentage increases in participant days. Hiking is currently the most common recreation activity on FS lands. The average spending of day trip visitors engaged in these general activities is among the lowest and is significantly less than specialized activities like motorized recreation or skiing. However, recreation participation in general activities is so great that the total spending is substantial. Most federal lands offer opportunities for visitors to engage in these activities. Therefore, anticipated future participation increases in these generalized activities is likely to have positive economic effects on numerous communities located around federal recreation resources.

Table 8. Projected change in participant days[1] and average spending in local communities of parties on recreation trips to U.S. Forest Service lands.

		Spending per party per trip in federal recreation communities (2007 $) (White and Stynes 2010)			
Activity Groups	**Projected change in participant days 2008-2030**	**Non-local Day Trips**	**Non-local Overnight Trips**	**Local Day Trips**	**Local Overnight Trips**
Visiting Developed Sites					
Developed site use	27%	$72	$206	$40	$171
Visiting interpretive sites	34%	$65	$473	$37	$195
Viewing & Photographing Nature					
Birding	33%	$65	$473	$37	$195
Viewing	24%	$65	$473	$37	$195
Backcountry Activities					
Challenge	30%	$50	$473	$21	$150
Equestrian	32%	$50	$473	$21	$150
Hiking	33%	$50	$473	$21	$150
Visiting primitive areas	23%	$50	$134	$21	$120
Motorized Activities					
Motorized off-road use	17%	$109	$277	$58	$134
Motorized water use	31%	$109	$277	$58	$134
Motorized snow use	12%	$129	$642	$74	$311
Hunting and Fishing					
Hunting	6%	$88	$368	$51	$248
Fishing	21%	$55	$331	$38	$161
Non-motorized Winter Activities					
Developed skiing	39%	$130	$798	$64	$386
Undeveloped skiing	29%	$97	$537	$27	$259
Non-motorized Water Activities					
Swimming	32%	$72	$330	$40	$187
Floating	22%	$72	$330	$40	$187

[1] Results do not include climate change effects see Table 3.

Visitor Spending on Overnight Trips

Visitors traveling on overnight trips have the highest per trip spending of any visitor type (Table 8). Spending ranges from about $120 for locals visiting primitive areas to almost $800 for nonlocal developed skiers. The pattern of high spending noted for day trip visitors engaged in developed and undeveloped skiing and snowmobiling continues for overnight visitors as all three groups exceed $500 per trip. Motorized water and off-road use are generally on the lower end of the overnight spending spectrum in contrast to their high spending as day use activities. In many cases, visitors engaged in these activities are camping and spending less on lodging than other overnight visitors.

Visitors on overnight trips use a variety of lodging types and have varying patterns of visitor spending. Campers tend to have high levels of spending for groceries and fuel, although some visitors bring food purchased outside the local area. In many settings, these visitors also have relatively high spending on entertainment and souvenirs. Public or private area camping is split between developed site use (which includes developed campground camping) and visiting primitive areas (backcountry camping). Participation in both those activities is projected to increase (27% and 23%, respectively). Increased rates of camping will promote increased spending for groceries, fuel, souvenirs, and entertainment.

Those staying overnight in hotels/motels or lodges spend more in restaurants and bars and on entertainment than campers. Winter recreationists engaged in developed skiing or snowmobiling have some of the highest levels of overnight spending and use hotels/motels and lodges more than visitors engaged in other activities. Participation growth in developed skiing is projected to be very high, while motorized snow recreation is projected to see lower levels of growth. Visitors using cabins, seasonal homes, or staying with friends and relatives have spending patterns that are a mix of campers and those using hotels/motels or lodges. They often eat some meals at the cabin (leading to grocery spending) and some meals in restaurants (leading to restaurant spending). Like campers, some of these visitors may bring food purchased from outside the local area. Cabin and seasonal home users participate in a variety of activities, but have high levels of participation in winter recreation and general recreation activities like viewing and photographing nature, hiking, or visiting developed sites. All of those activities are projected to see increases in recreation participation in the future.

High Spending Trip Types and Recreation Activity Projections

A few activities (e.g., developed skiing and motorized recreation) have higher than average spending because participants need to purchase specific items (e.g., lift tickets or additional fuel) regardless of the type of trip taken. Other activities generate high trip spending because visitors often stay overnight and/or take trips far from home. Both trip types lead to high trip spending and create significant economic effects for local communities Federal recreation opportunities that facilitate overnight stays or encourage long distance travel support these types of activities. The RPA projections, coupled with an understanding of what activities are most associated with overnight and long distance trips, can provide insight into how total spending may change in the future because of changing trip type.

Distribution of Visitor Use by Trip Type and Activity

The intensity of visitor use within each of the trip types significantly affects total spending. Overnight trips from non-locals, some coming from very long distances, are most common among visitors who engage in developed skiing, developed site use, swimming and floating (Table 9). A quarter or more of the trips in each of those activities occur in that trip type. Those four activities, along with the wildlife-related activities (birding, hunting, and fishing), have over 30 percent of their visitor use from people traveling 50 or more miles from home. Developed skiing is the only activity with greater than 50 percent of reported visitation (58 percent) coming from distances more than 50 miles from the site. Large percentage increases in participant days are projected for both developed skiing and birding. Relatively small percentage increases are projected for hunting, fishing, and floating. Federal recreation opportunities supporting birding and developed skiing should yield increased out-of-town travelers to communities near the visited sites. Communities close to federal hunting and fishing opportunities will probably see gains in out-of-town visitors, although those gains will not be as large because those activities require low densities of use for quality experiences.

Table 9. Projected change in participant days[1] and current distribution of recreation trips across trip type categories for visitors to U.S. Forest Service lands engaged in a variety of recreation activities (recreation trip type source: White and Stynes 2010)

Activity Groups	Projected Change in Participant Days 2008-2030	Non-local Day Trips	Non-local Overnight Trips	Local Day Trips	Local Overnight Trips	Not primary
	Percent					
Visiting Developed Sites						
Developed site use	27	9	25	43	8	15
Visiting interpretive sites	34	10	16	39	2	33
Viewing & Photographing Nature						
Birding	33	10	21	55	7	7
Viewing	24	10	16	39	2	33
Backcountry Activities						
Challenge	30	8	13	62	2	15
Equestrian	32	8	13	62	2	15
Hiking	33	8	13	62	2	15
Visiting primitive areas	23	8	13	62	2	15
Motorized Activities						
Motorized off-road use	17	7	21	62	5	5
Motorized water use	31	7	21	62	5	5
Motorized snow use	12	7	21	62	5	5
Hunting and Fishing						
Hunting	6	10	21	55	7	7
Fishing	21	10	21	55	7	7
Non-motorized Winter Activities						
Developed skiing	39	14	44	36	2	4
Undeveloped skiing	29	7	16	68	2	7
Non-motorized Water Activities						
Swimming	32	9	25	43	8	15
Floating	22	9	25	43	8	15

[1] Results do not include climate change effects see Table 3.

Local day users tend to dominate recreation trips to FS lands with about two-thirds of the activities having 50 percent or more trips in that category; the largest proportions in backcountry activities, motorized activities, and undeveloped skiing. Relatively large increases in participant days are projected for most backcountry activities and motorized water use. If the distribution of trips across trip types is stable over time, the relatively large increases in participant days in these activities will likely yield associated increases in local trips. Although the spending of these visitors is lower than non-locals, it can be an important economic activity in some communities. Thus, the volume of use from local day users generates significant cumulative economic activity despite their lower average trip spending.

The Potential Influence of Climate Change

Future climate conditions—along with population growth, increasing wealth, and changing preferences, as alluded to above—will likely influence participation patterns in outdoor recreation. The recreation participation projections for 2030 displayed in Table 9 do not include the influence of climate changes. Additional RPA Assessment projection models were estimated with the inclusion of variables to account for future climate conditions. Incorporating climate variables slightly lowered the estimates of participation days in 2030 for most activities relative to the projections without climate change (see

Table 4). In general, the effects of climate change were overwhelmed by increases in participation because of greater future population and income. Although most of the differences between the climate and no climate estimates are small and considered insignificant, three key recreation activities have much lower participation rates when climate change is incorporated (Table 10).

Table 10. Projected future recreation participation with and without climate change for select recreation activities.

Activity Group	Projected percent change in days of participation without climate change 2008-2030	Projected percent change in days of participation with climate change 2008-2030
Motorized snow use	12	-27
Undeveloped skiing	29	-7
Floating	22	13

Accounting for anticipated future climate change substantively reduces the projections of future recreation participation in motorized snow use, undeveloped skiing, and floating. Climate change is projected to decrease total participation in 2030 for the former two activities and to slow the growth of participation in floating. Some places that still have adequate snow in the future may see muted reductions, or even increases, as visitors are displaced from areas with poor snow conditions. Other locales could experience more significant variations in climate and have more extreme reductions in participation. Recreationists who engage in snowmobiling or undeveloped skiing on federal lands have some of the highest trip expenditures of federal lands recreationists. Large changes in the numbers of participant days in these activities could lead to meaningful reductions in the economic inputs to communities where those activities are currently popular. However, because winter recreation is constrained to areas with specific recreation opportunities and climate conditions, the effects of reductions in spending would not be felt across all communities near federal recreation opportunities. In those places that are affected, reductions could result in significant local economic changes unless the winter activities can be substituted for others in the same region. For example, in the absence of snow cover, snowmobile areas might be suitable for other forms of dispersed recreation.

Climate change is also projected to slow participation growth in floating (rafting, tubing, canoeing, kayaking). Floating is a general recreation activity that occurs on a wide range of locations across most federal land management agencies. Those engaged in floating have average levels of spending during their trips, although the popularity of floating creates an important contribution to the economies of many locales near federal lands. With changing climate, floating participation may grow more slowly than it might otherwise. Similar to non-motorized winter activities, areas offering floating activities will be differentially affected as climate change effects will vary across regions. Some areas will improve and benefit in terms of local conditions, while other areas experience declines.

Demographic Change and Recreation Spending

The racial and ethnic diversity of the U.S. population is projected to continue to increase in the coming decades. Table 11 displays recreation participation by different race/ethnicity groups for the seven composite activity groups. Although the composite groups obscure important differences in individual activities, some overall trends are evident. Amongst all racial and ethnic groups, visiting developed sites and viewing nature have the highest levels of participation. Comparing across racial and ethnic groups, American Indians have the highest rates of participation in those activities, while African Americans report the lowest rates.

Racial and ethnic groups show greater differences in participation for more specialized recreation activities. African American and Asian/Pacific Islanders have relatively low levels of participation in backcountry activities, motorized activities, and hunting and fishing. Hispanics have rates of participation in those aggregate activities that are more similar to, but lower than participation by Whites. American Indians have by far the highest rate of participation in backcountry activities and participate in motorized activities and hunting and fishing similar to that of Whites. The increasing share of Hispanic, African American and Asian/Pacific Islanders in the population is projected to contribute to slower gains in participation in motorized recreation and hunting and fishing. Communities that currently see high levels of spending from visitors engaged in those activities may see slower growth in spending in the future.

Increasing diversity in the population is unlikely to decrease future levels of spending for people engaged in general activities such as visiting developed sites and viewing and photographing nature. Those sorts of activities account for a large share of current recreation visits to federal lands, are popular among most groups, and contribute significant levels of spending. Spending attributed to those general activities will likely remain largely unchanged as the population continues to diversify.

Winter recreation sports are key drivers of local economic activity in some communities. Visitors engaged in developed and undeveloped skiing and snowmobiling have the highest spending per trip in local communities. Among racial and ethnic groups, Whites, Hispanics, and Asian/Pacific Islanders show the greatest rates of participation in winter recreation. Anticipated increases in the number of Hispanics and Asian/Pacific Islanders will likely lead to continued popularity of winter snow sports, especially if the opportunities are not diminished by climate change.

Table 11. Percent participating in outdoor recreation activity groups by racial and ethnic group, 2005-2009 (Cordell 2012).

Activity Groups	White	African American	Asian/Pacific Islander	Hispanic	American Indian
Visiting developed sites	80	69	82	75	84
Viewing and photographing nature	78	59	73	71	79
Backcountry activities	46	21	34	43	60
Motorized activities	41	15	24	35	42
Hunting and fishing	38	21	19	32	38
Non-motorized winter activities	13	4	11	12	7
Non-motorized water activities	24	7	21	19	21

Americans 45 and older report participating in fewer types of recreation activities as they age (Table 12). Projected participation drops significantly for hunting and fishing, motorized activities, backcountry activities and non-motorized winter activities. However, general activities like visiting developed sites and viewing and photographing nature remain popular for almost two-thirds of older individuals. Local communities can expect to continue to see older Americans participating in these

general recreation activities. Since most federal lands offer opportunities to participate in those activities, many local communities are in a position to continue to capture the economic benefits associated with these visitors.

Table 12. Percent participating in outdoor recreation activity groups by age group and gender, 2005-2009 (Cordell, 2012).

Activity Group	Age 45-54	Age 55-64	Age 65+	Male	Female
Visiting developed sites	81	75	62	76	79
Viewing and photographing nature	80	75	65	74	75
Backcountry activities	48	37	22	49	35
Motorized activities	37	27	17	41	30
Hunting and fishing	38	29	20	46	23
Non-motorized winter activities	10	5	2	15	8
Non-motorized water activities	22	15	7	23	19

Men typically report higher overall rates of participation in outdoor recreation activities. The largest differences occur for non-motorized winter activities, hunting and fishing and to a lesser extent motorized and backcountry activities. Therefore, continued slowing of hunting and fishing participation and associated changes in spending may affect communities with high dependency on those activities.

Other Considerations for Future Economic Contributions from Recreation

Future Visitor Spending Patterns

Expectations for the future effects on local communities from federal recreation opportunities are sensitive to a number of considerations beyond future participation rates. Effects of future changes in recreation participation on economic activity in communities are based on current visitor spending patterns. The current patterns in the expenditures for goods and services by federal recreation visitors have appeared stable in recent years. For example, after accounting for inflation, there has been relatively little change in the relative amounts that visitors spend on food versus gasoline versus lodging. In the future, aside from any inflationary differences, the types and amounts of things that visitors buy could change from current patterns. Changing technology, economic conditions, or preferences could result in unforeseen effects to local economies dependent on tourism associated with federal recreation resources.

User and Entrance Fee Changes

Changes in entrance or user fees charged by providers of federal recreation opportunities or concessionaires and guides operating on federal lands could change the amount of recreation visits to those resources or the patterns of spending of recreation visitors. The relationship between fees and recreation use is complex and difficult to accurately project changes. Bowker et al. (1999) reported that

95% of the public found fees or a combination of fees and taxes acceptable to fund recreation opportunities on public lands. Further, fees can be a relatively insignificant share of trip costs for some types of trips. Nonetheless, changes in fees to recreate at federal sites could change future recreation activity participation beyond the projected levels noted in this report. There is some evidence that increased user fees are associated with reductions in recreation visits (e.g., Stevens et al. 2014, Brown et al. 2008). Conversely, a reduction in fees could lead to an increase in recreation use. However, to the extent that user fees are essential for site maintenance and improvements, reduction in fees could affect the quality of visitor experiences, which may negatively affect participation. Unanticipated changes in recreation visits because of fee changes could lead to economic effects to local communities that differ from the reported projections.

Aside from entrance or access fee changes, changes in the rates charged by concessionaires (e.g., increased lift ticket fees or guide fees) could also affect recreation visit numbers (and the magnitude of future recreation visitor spending) or the patterns of recreation visitor spending. Differential changes in concessionaire fees could lead to substitution between activities or displacement to other sites for the same activities. Ultimately, however, the outcomes from changes in concessionaire fees are difficult to predict. In many cases, the recreation experience or novel recreation opportunity may be great enough to overwhelm the effect of minor increases in concessionaire fees.

Transportation Costs

Future unforeseen cost increases for transportation fuels could result in recreation participation patterns that differ from those discussed here. Fuel constitutes a primary expense for visitors on recreation trips and increased transportation costs can greatly increase overall trip costs. With increased transportation expenses, individuals may complete fewer recreation trips or complete trips that are closer to home and require less transportation expense. There is some indication of this behavior by recreation visitors during fuel price increases experienced in the early 2000s (Cho et al. 2014, Stevens et al. 2014). A reduction in the number of recreation trips would likely reduce the overall amount of visitor spending injected in communities surrounding federal lands. Visitors spend more when they take recreation trips that are away from their local home area. Further, communities that can attract visitors who have traveled from outside the local area achieve the greatest positive economic effect. Increased fuel cost could reduce the economic effects to federal recreation communities as recreationists change their trip behavior and travel shorter distances from home and less often leave their local areas. Conversely, changes in transportation technology, such as increased availability of electric/hybrid vehicles, could have a counter effect.

Climate Change

For most activities, population increases and economic improvements are projected to yield increases in participant numbers that mute any negative effects of a changing climate. At the national level, most future recreation participation numbers are projected to continue to grow even after taking into account future climate. However, the anticipated climate changes vary across U.S. regions and there will likely be variation in the regional effects on recreation from climate change. Because of regional variation in the effects of climate change, there will likely be some regions that experience positive responses in recreation participation because of changing climate. Such positive changes might come about, for example if shoulder seasons become longer, thereby increasing opportunities for activities such as camping and off-road vehicle use. At the same time, there will likely be other regions that experience deleterious effects from climate change that are more severe than (or altogether opposite of) that

experienced elsewhere. For instance, we project that developed skiing participation will remain steady to increasing nationally under anticipated future climates. However, regions that are unable to maintain artificial snow production or that experience increased rain on snow or high overnight low temperatures may see significant declines in developed skiing because of poor snow conditions. This may be even more of a concern for more localized winter activities like snowmobiling and undeveloped skiing. Ultimately, for some activities, regional participation in outdoor recreation under a climate changed environment may differ from the overall national pattern. Some regions will likely experience gains while others will experience losses.

Capacity of Recreation Resources and Community Congestion

There are constraints in the amount of recreation use that federal resources can accommodate with current infrastructure. For example, there are only so many camping sites at existing campgrounds, trailhead parking lots can provide access to a set number of vehicles, and some trails already have limited, permit only, access. It is uncertain whether existing federal facilities and lands will be able to provide expanded opportunities for all the future increases in recreation. Limitations in the capacities of federal opportunities may limit the extent to which federal resources capture expected future increases in recreation participation. If future users are unable to access federal opportunities (perhaps because campgrounds are full or permits cannot be obtained), potential participants may choose not to recreate, choose alternative activities where capacity is not an issue, or use substitute sites provided by other governmental or private providers.

Large increases in recreation participation days may bring large numbers of visitors into local communities around federal recreation resources. Although initial increases may bring about positive economic gains, significant expansions in the numbers of tourists in towns can also bring about a number of negative effects. Traffic congestion, wear to roads and infrastructure, increased costs for public safety, and noise and air pollution are just some of the costs that can accrue to communities because of high rates of tourism. Increased recreation participation may lead to gains to some local businesses but those gains may be overwhelmed by costs to the broader community.

Economic Dependence of Local Communities

Some communities located around federal recreation lands have a high dependence on economic inputs from recreation spending and natural amenity economic inputs. Although strong connections between communities and federal recreation often lead to positive economic outcomes, high economic dependence on a single economic sector can leave a community vulnerable to changes in economic conditions. In the case of recreation, communities with a high dependence on recreation visitor spending may experience negative economic conditions if participation numbers decline or visitor spending patterns change significantly in the future.

Other Economic Outcomes from Federal Recreation Resources

Federal recreation lands also can provide positive economic outcomes for communities in a number of ways beyond attracting recreation visitors and promoting their spending. Commonly noted positive economic effects include aesthetic benefits that attract new residents and businesses to communities, contributions to improved health of rural populations, and the provision of scenic landscapes that serve as backdrops to those passing nearby. Several of these outcomes are briefly described below.

Amenity Migration

The populations and numbers of homes in communities around federal lands have been increasing more rapidly relative to other similar communities. The presence of large expanses of undeveloped, aesthetically-pleasing views and opportunities for recreation has led to high levels of amenity migration to many communities around federal lands (Stein et al. 2007, McGranahan et al. 2011, Radeloff et al. 2010). In-migration of new residents and expansion in local housing stock can lead to increased tax base for local governments, increased demand from the financial, real-estate, and construction sectors of local economies, and expansion in the service and retail businesses (e.g., restaurants and bars, stores, and entertainment). Although amenity migration can be traced in part to recreation opportunities, the economic effects of amenity migration on local economies and tax bases is additional to that reported in studies of the economic effects of visitor spending.

Business Relocation

In addition to attracting new residents, the presence of appealing landscapes and the natural resource amenities of federal lands can encourage business to relocate to communities adjacent to federal lands. Businesses, especially those not tied to location-dependent manufacturing inputs, have relocated to areas that offer desirable amenities to potential employees. Relocation of businesses in particular industries (e.g., technology) can lead to further relocation of related businesses and the creation of business hubs—agglomerations of related businesses. In addition to business relocation, the appeal of some locales as convention destinations (and the success of convention-related businesses) can be credited in at least some part to the presence of amenity-rich federal resources. The role of federal lands in making convention destinations attractive has not been studied.

Health Benefits

With increasing rates of obesity, poor cardiovascular health, diabetes, and stress, positive economic effects can accrue to individuals and communities who take advantage of recreation opportunities on federal lands to pursue activities that can contribute to health. Urban residents often find places for rest, relaxation, and exercise at local- and county-government parks. Often lacking those sorts of recreation resources, in rural communities, federal recreation resources may substitute for local government recreation resources. Across the U.S., people living in the vicinity of FS land—many of them in rural locations—are estimated to burn about 146 billion calories annually while using FS recreation resources (Kline et al., 2011). With increased attention to healthcare costs, the role of federal recreation resources in contributing to improved individual and community health and well-being deserves more attention.

Recreation Backdrops

In addition to providing places for people to recreate, federal lands can provide the backdrop for recreation outings that never involve a formal visit to federal lands. For example, a tourist to Alaska might take a cruise or a ferry through the Inland Passage and view the Tongass National Forest but never step foot on federal lands. Likewise, a visitor to Las Vegas might take a helicopter ride over Grand Canyon National Park to view natural features but may never enter the Park. In typical studies of the economic impact of federal recreation opportunities, the spending of those individuals is not counted. Although the spending of these visitors is excluded from official estimates, and not considered here, the

spending of those who view federal recreation resources also generates positive economic effects in local communities.

Summary and Conclusions

Public lands are crucial resources for nature-based outdoor recreation. Assuming the public land base for outdoor recreation remains stable into the future; an increasing population will result in decreasing per-person opportunities for recreation across most of the United States. Although there are many other factors involved in recreation supply, it is likely that recreation resources will become less available and perhaps less desirable, as more people compete to use them. A major challenge for public natural resource managers and planners will be to ensure that recreation opportunities remain viable and adapt to a changing population. This could be accomplished through more creative and efficient management of existing federal recreation resources.

Choices in outdoor recreation activities have changed over time in response to changing preferences, demographics, and recreation opportunities. Overall, participation in nature-based outdoor recreation has grown in the last decade, continuing a long-term trend. At the same time, recreation visitation to State parks and Federal lands has not increased at similar rates (Walls et al. 2009) , indicating that recreationists are increasing their use of other lands. The change in recreation preferences at least partly reflects changing demographics in the American public. As the population ages and becomes more racially and ethnically diverse, it is unclear whether current recreation opportunities will meet future needs.

Given the growing diversity of the American population, and despite studies which have found increasing acculturation related to natural resource-based recreation (Johnson et al. 2005), the relatively low participation rates of all groups except non-Hispanic Whites may signal a shift in overall future recreation participation. The aging population may require different types of recreation opportunities. Recreation activities that have been dominated by rural residents are also likely to decline, as the American population becomes increasingly more urban. Understanding the constraints on recreation participation of various groups could improve the ability of recreation providers to deliver recreation opportunities to underserved groups. Social factors such as time, money, lack of transportation, lack of facilities, lack of information, crowding at sites, poorly maintained facilities, and pollution are constraints felt by potential recreationists.

Based on the available data, future growth is projected for most recreation activities between 2008 and 2030. The five outdoor recreation activities projected to have the highest percentage growth in total days of participation are developed skiing, visiting interpretive sites, day hiking, birding, and equestrian. In contrast, the five activities expected to grow the least are hunting, motorized snow activities, motorized off-road use, floating, and fishing. Several of the activities with high projected growth, such as downhill skiing and equestrian activities, tend to require substantial financial commitments. This factor partially explains the low current participation rates and may limit growth in participant numbers and days depending on the distribution of future income growth. Projected population growth is high enough that the total number of participants and the total number of days for most activities are projected to increase regardless of the direction of the trends in participation rates or days per participant.

Climate can affect individual willingness to participate in recreation activities and/or affect recreation resource availability and quality. The climate variables used in the recreation projection models were limited to those coming directly from the 2010 RPA Assessment climate projections, or variables derived from those basic variables. Generally, the climate variables used in these recreation models were presumed to affect willingness to participate and frequency of participation directly. Despite the lack of existing data, it is reasonable to expect that climate change will affect resource availability. For example, in the case of hunting and fishing, increasing temperatures will likely affect the distribution of plant and animal species that are fundamental to maintaining fish and game populations. Moreover, changes in precipitation may influence local snow cover and thus affect seasonal availability for activities like snowmobiling and undeveloped skiing. Disentangling the effects of the climate variables on recreation participation is difficult. Further exploration of these direct and indirect relationships at different scales will be fundamental to improving forecasts of recreation behavior in the future.

The magnitude of business activity in local communities associated with outdoor recreation on federal lands results from the combination of: 1) people recreating on federal recreation lands, 2) the presence of businesses where visitors can spend money, and 3) the trip spending of those recreation visitors. Communities best able to capitalize from recreation visitor spending offer services and goods that cater to those engaged in outdoor recreation. Communities that have attractive combinations of lodging, restaurants/bars, and entertainment will see more spending from recreation visitors. Resource managers and policy-makers can help facilitate positive economic outcomes in local communities by providing recreation opportunities that are consistent with activities that tend to involve overnight stays or long distance travel, like skiing, developed site recreation, and water use. Providing 'bundled' recreation sites or groups of interpretive sites that make it easy for visitors to engage in longer periods of recreation by visiting multiple sites in one area can promote longer stays, and thus, more opportunities to spend money in the community.

Studies specific to recreation on federal lands indicate that visitors spend at least $51 billion in the local economies around the federal destination. Anticipated future increased participation in general recreation activities like hiking, viewing nature, and visiting developed sites will likely have positive economic effects on the numerous communities located around federal lands. Projected increases in more specialized recreation activities, like developed skiing, motorized vehicle use, and motorized water use, will likely lead to increased economic activity in communities located near those specialized places where visitors can engage in those types of activities.

Racial and ethnic diversity and the age of the U.S. population may alter future participation patterns for some recreation activities. However, generalist activities like hiking, viewing nature, and visiting developed recreation and historic sites remain popular with all population subgroups. Recreation sites that can provide recreation opportunities supporting those types of activities, and local communities around those sites, are in a position to see continued high levels of recreation use. Those engaged in winter recreation have the highest spending of any visitor group. Developed skiing remains popular with people from diverse racial and ethnic backgrounds, especially among young people. Developed skiing is expected to remain a popular recreation activity—and local economic driver—even in the context of an increasingly diverse population.

A changing climate may alter future recreation participation and lead to change in the amount and distribution of money spent in local communities. Expected future climate conditions may lead to lower participation in motorized snow activities and undeveloped skiing. Recreationists engaged in those activities have some of the highest trip expenditures of any federal lands recreationists. Thus, large

reductions in the numbers of participant days in those activities would likely lead to reductions in the economic activity in communities dependent on those recreationists.

The **National Center for Natural Resources Economic Research** (NCNRER) is a Forest Service Research and Development virtual center designed to respond to emerging natural resource economic issues of national significance.

Acknowledgements: The authors would like to thank Karen Abt, David Allen, Daniel McCollum, and Susan Winter for their reviews. Thanks also to Kurt Riitters for providing Figure 2.

References

Bowker, J,M.; H.K. Cordell; C.Y. Johnson. 1999. User fees for recreation services on public lands: a national assessment. Journal of Park and Recreation Administration 17: 1-14.

Bowker, J.M.; Askew, A.; Cordell, H.K.; [et al.]. 2012. Outdoor recreation participation in the United States: projections to 2060: a technical document supporting the Forest Service 2010 RPA Assessment. Gen. Tech. Rep. SRS-GTR-160. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 34 p.

Brown, R.N.K, R.S. Rosenberger, J.D. Kline, T.E. Hall, M.D. Needham. 2008. Visitor preferences for managing wilderness recreation after wildfire. Journal of Forestry 1/2: 9-16.

Cho, S-H., J.M. Bowker, D.B.K. English, R.K. Roberts, T. Kim. Effects of travel cost and participation in national forest visits. Journal of Forest Policy and Economics 40(2014):21-30.

Cordell, H.K. 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.

Cordell, H.K.; Betz, C.J.; Zarnoch, S.J. 2013. Recreation and protected land resources in the United States: a technical document supporting the Forest Service 2010 RPA Assessment. Gen. Tech. Rep. SRS-169. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 198 p.

Cullinane-Thomas, C.; Huber C.; Koontz L. 2014. 2013 National Park Visitor Spending Effects. Natural Resources Report NPS/NRSS/EQD/NRR—2014/824. 42 p.

English, D.B.K, 2014. Outdoor recreation: jobs and income. http://www.funoutdoors.com/files/FICOR%20Report%20on%20Jobs%20and%20Income.pdf,. [Accessed October 5, 2014]

Johnson, C.J., J.M. Bowker, H.K. Cordell. 2005. Acculturation via Nature-based Outdoor Recreation: A Comparison of Mexican and Chinese Origin Groups in the U.S. Environmental Practice 7: 257-272.

Kline, J.D.; Rosenberger R.S.; White E.M. 2011. A national assessment of physical activity on US national forests. Journal of Forestry 109(6): 343 – 353.

McGranahan, D.A.; Wojan, T.R.; Lambert, D.M. 2011. The rural growth trifecta: outdoor amenities, creative class and entrepreneurial context. Journal of Economic Geography 11(3): 529-557.

Outdoor Industry Association. 2013. The outdoor recreation economy. http://outdoorindustry.org/images/researchfiles/OIA_OutdoorRecEconomyReport2012.pdf?167. [Accessed October 5, 2014]

Radeloff, V.C.; Stewart, S.I., Hawbaker, T.J.; Gimmi; U.; Pidgeon, A.M.; Flather, C.H.; Hammer, R.B.; Helmers, D.P. 2010. Housing growth in and near United State protected areas limits their conservation value. PNAS 107(2): 940—945.

Stevens, T.H.; More, T.A.; Markowski-Lindsay, M. 2014. Declining national park visitiation. Journal of Leisure Research. 46(2): 153—164.

Stein, S.M.; Alig R.J.; White E.M.; Comas S.J.; Carr M.; Eley M. 2007. National forests on the edge: Development pressures on America's national forests and grasslands. Portland, OR: USDA FS Pacific Northwest Research Station. PNW-GTR-728. 26 p.

U.S. Census Bureau Population Division. 2012. Projections of the population and components of change for the United States 2015 to 2060. NP2012-T1, released December 2012. http://www.census.gov/population/projections/data/national/2012.html. [Accessed July 18 2014]

USDA Forest Service. 2012a. Future of America's forests and rangelands: Forest Service 2010 Resources Planning Act Assessment. Gen. Tech. Rep. WO-87. Washington, DC: 198 p.

USDA Forest Service. 2012b. Future scenarios: a technical document supporting the Forest Service 2010 RPA Assessment. Gen. Tech. Rep. RMRS–GTR–272. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 34 p.

USDI BLM. 2012. Public land statistics. Available: http://www.blm.gov/public_land_statistics/.

Walls, M., Darley, S., Siikamaki, J. 2009. The state of the great outdoors: America's parks, public lands, and recreation resources. Washington, DC: Resources for the Future. 97 p.

White, E.M.; Stynes, D.J. 2008. National forest visitor spending averages and the influence of trip-type and recreation activity. Journal of Forestry. 116(1): 17–24.

White, E.M.; Stynes, D.J. 2010. Updated spending profiles for national forest recreation visitors by activity. Report for USDA FS and OSU Joint Venture Agreement No. 10-JV-11261955-018. 40 p.

White, E.M.; Goodding, D.B.; Stynes, D.J. 2013. Estimation of national forest visitor spending averages from National Visitor Use Monitoring: Round 2. PNW-GTR-833. 65 p.