Outdoor Recreation by Alaskans: Projections for 2000 Through 2020

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Introduction

This report is designed to assist forest planners at the Chugach National Forest in Alaska better understand present and future outdoor recreation use on the forest. Two measures of recreation use are addressed. The first is recreation participation. An individual is said to participate in a given outdoor recreation activity if he or she engaged in that activity at least once in the preceding 12 months. Participation is a general indicator of the size of a given market and also can be indicative of relative public support. For example, if 50 percent of the population fishes, whereas only 5 percent participate in kayaking, public resource management agencies will likely be more concerned with providing fishing rather than kayaking opportunities. It is important, therefore, for managers to know how many people participate in a given recreation activity and how this measure could change over time.

A second measure of recreation use is consumption. Consumption can be measured in such units as number of times, days, or trips in a given year. The Forest Service has used such consumption measures as recreation visitor days and visits. The consumption measure is important because it adds amount to participation. Although resource managers providing recreation opportunities need to know how many people participate, many of their decisions depend even more on knowing how often and how long people engage in a given activity. Such information is crucial to the allocation of existing resources such as campsites and is also useful in planning the development of new venues. Participation and consumption together provide the broadest measures of a recreation market.

The goal of this research was to provide planners at the Chugach National Forest with a better understanding of outdoor recreation use in the state of Alaska at present and for the next 20 years. This information can be combined with their knowledge of the recreation opportunities on the forest and surrounding areas and the proportion that the Chugach National Forest provides to facilitate better planning and management of recreation resources on the forest.

Initially, the objectives of this research were to (1) estimate current annual participation and use by Alaskans and non-Alaskans on the Chugach National Forest in about 13 outdoor recreation activities identified by planners as being important including sightseeing, cabin use, hiking, camping, boating, cross-country skiing, wildlife viewing, motorized off-roading, mountain biking, helisports, visitor centers, hunting and fishing; and (2) project future annual participation in the same 13 activities by Alaskans and non-Alaskans on the forest, through the year 2020.

To achieve the desired objectives, several kinds of information are needed. First, and most important, are annual forest visitation data. This information would allow estimation of the number of different forest visitors and the number of times or days each participated in given activity-setting combinations on the forest. Moreover, spatial information pertaining to the origin of the visitor and the specific destinations visited on the forest would allow more detailed estimation of a facility; e.g., campsite or trailhead use. Ideally, this information would have been collected over a period sufficiently long to allow the use of time-series statistical models or times-series/cross-sectional models to reliably forecast future recreation use–in general or by specific activity. Such models would account for changes in the underlying structure of recreation participation and consumption through time. They would also assist in identifying potential supply and demand gaps. Unfortunately, the necessary data were not available. Hence, revised goals and an alternative approach were necessitated based on existing data.

Three sources of data were available for the study. These included the Recreation Preference Survey from Alaska state parks in the Statewide Comprehensive Outdoor Recreation Plan (SCORP97); the 1996 national survey of Fishing, Hunting, and Nonconsumptive Wildlife-Associated Recreation (FHWAR96); and the 1995 National Survey on Recreation and the Environment (NSRE95). Detailed descriptions of the surveys are given below. All three sources contain state-level data on participation or use for various recreation activities. The

FHWAR96 also reported information about wildlife enthusiasts from the rest of the United States traveling to Alaska. All used probability-based sampling of households via telephone interviews. A common limitation, however, is that although such surveys obtain information about the recreation preferences and behavior along with sociodemographic characteristics of individuals, no information about destinations selected is included. Consequently, although participation of an individual in a given activity and the number of trips taken can be measured, there is no way to determine whether, or how often, the person visited a specific location.

On-site recreation visitors to the Chugach National Forest were surveyed in 1991, 1992, and 1995 (Reed 1999), but these surveys were based on either convenience or quota sampling and limited to a short collection period. Unfortunately, these on-site survey data cannot be linked to the above household data to address the initial objectives. Moreover, none of the surveys covered all the activities of concern to the forest, much less specific sites or settings within the forest.

Given the data limitations, it was impossible to estimate how many Alaskans will engage in any specific recreation activity on the Chugach National Forest. Moreover, the frequency of participation and the specific locations cannot be determined. Data are even more limited for out-of-state residents (hereafter called tourists). Nevertheless, enough information is available to generally assess participation and use by Alaskans over a wide range of outdoor recreation activities and by tourists in wildlife-related activities. Hence, the objectives of this research were revised as follows: (1) estimate participation and participation intensity of Alaskans for several popular outdoor recreation activities, (2) estimate nonresident participation in wildlife-related recreation in Alaska, and (3) forecast participation and participation intensity for the above groups at 10-year intervals through 2020. This broad assessment of participation and use today and for the next two decades should provide planners with a general feel for future recreation use on the forest. By knowing the relative importance of the Chugach National Forest vis-à-vis other in-state sources of similar recreation opportunities, planners should be able to estimate the potential for increases (or decreases) in use on the forest from state-level participation and consumption estimates.

The report is organized as follows. First, a brief description of data and methods is given. Previous recreation forecasting is discussed and models used for this study are explained. Next, the results of the forecasting models for both participation and use for the various activities are reported. Tables are presented for each data set. Current percentages of adult Alaskans participating in the various activities are listed along with the number of times and primary purpose of trips taken annually by adult Alaskans for selected activities. The results also predict numbers of participants and the total number of times they are forecast to engage in specified activities at 10-year intervals to 2020. The discussion attempts to reconcile differences among the data sets and examines factors explaining recreation behavior. Finally, the results are compared to some recent findings from other surveys in the United States, and limitations of the work are discussed.

Data and Methods

Data

The three independent sources of data mentioned previously are population-level, origin-based surveys as opposed to site-based, user surveys. The SCORP97 survey was conducted via telephone interviews of 600 Alaskan households in October 1997. Individuals were asked about participation in 37 different outdoor recreation activities and their attitudes toward recreation, recreation management, selected user fees, and funding of recreation services (More 1997). In addition, respondents were queried about such demographic variables as household composition, education, and income. Sampling was random within three geographically stratified areas of the state, southeast, railbelt, and rural. Statewide measures were obtained through a post sample weighting process (More 1997). The SCORP surveys also were conducted in 1979 and 1992 by using similar procedures. Initially, a modeling approach incorporating SCORP data from

1979, 1992, and 1996 was planned. The 1979 and 1992 SCORP data, however, were not available for public use.

The second set of data used in this study was obtained from the NSRE95 (National Survey on Recreation and the Environment, Cordell et al. 1996). The NSRE95 sampling consisted of two separate telephone surveys in 1995. The primary survey sampled 12,000 people, aged 16 and over nationwide. In interviews averaging about 20 minutes, information was gathered on individual and household characteristics, day and trip participation in specified recreation activities, characteristics of recreation trips, and other general information about outdoor recreation. The secondary survey asked 5,000 people, aged 16 and over, about more specific issues including participation in outdoor recreation activities, benefits of participation, favorite activities, barriers and constraints to participation, wilderness issues, awareness of public land agencies, freshwater trips, and opinions about user fees and funding services common to public land. Because of the number of issue questions, respondents were randomly assigned a set of modules with subsets of questions.

For the first survey, the sample was stratified by region. Within each region, sampling was distributed within states according to the population among area and local phone codes. Eight regions were identified. To ensure adequate numbers of observations in the Rocky Mountains, the Great Plains, and Alaska (minimum of 900 per region and 400 for Alaska), a higher percentage of the population was sampled. In the second survey, a simple random sample of the population of the Nation was distributed among the states in proportion to population. In addition, the data were weighted for analysis to compensate for disproportionate sampling rates among social strata and geographic regions. The Alaska subsample used contained 419 observations initially, 336 of which contained complete information on the relevant set of socioeconomic variables.

The final set of data used came from the 1996 Survey of Fishing, Hunting and Nonconsumptive Wildlife-based Recreation. This survey has been conducted periodically since 1955 by the Census Bureau in two phases. The first phase of the 1996 survey was a screening interview conducted in 1995 designed to identify individuals in each of the three categories and to obtain sociodemographic information. The second phase was a detailed interview of hunters, anglers, and wildlife viewers designed to obtain more specific information about destinations, expenses, trip frequencies, and other information related to the three activities. This phase was conducted three times during 1996. Each observation was weighted to reflect relative representation in the U.S. population. Activities selected from each data set are listed in tables 1 through 3.

Models

Models used to assess recreation demand decisions can be grouped into three basic categories: site-specific user models, site-specific aggregate models, and population specific models (Cicchetti 1973). Being site specific, the first two categories require surveying on site. Moreover, determining total use requires sampling over all relevant seasons and spacial combinations for the site. Travel cost demand models are one example of site-specific demand. These are typically used to assess economic benefits, total use, and changes in use caused by changes in price, income, substitute availability, site attributes, and other factors. These models are limited because on-site sampling is so expensive and by the fact that no information potential on users is available.

Available data necessitates population-level modeling for this study. Population-level models are usually household based. These surveys may be directed toward the general population or specific subsets of a population such as hunting license holders or Sierra Club members. Population-based models are typically used by recreation researchers to forecast participation and use by activity. Cicchetti (1973) used cross-sectional population-level models and the 1965 National Survey of Recreation to estimate annual participation and use nationally for many outdoor recreation activities. Estimated models and Census Bureau projections were then used to estimate participation and use from 1960 to 2000.

Table 1—Outdoor recreation activities included in the 1997 Statewide Comprehensive Outdoor Recreation Plan

Activity	Subactivities
Backpacking	Backpacking or tent camping in backcountry
Back-country skiing	Back-country, trail or cross-country skiing
Berry picking	Berry picking
Biking	Biking or mountain biking
Wildlife viewing	Bird watching or wildlife viewing
Boating	Power boating
Canoeing	River canoeing, rafting, or floating
Climbing	Rock climbing or ice climbing
Driving	Driving for pleasure or scenic driving
Fishing	Sport fishing
Hiking	Day hiking
Hunting	Sport hunting
Kayaking	Sea kayaking
Off road	ORV, all terrain vehicle (ATV), or snowmachining
Off-road vehicle (ORV)	ORV or ATV
Picnicking	Picnicking
Recreational vehicle (RV) camping	RV
Tent camping	Tent camping in a campground

Table 2—Selected outdoor recreation activities from the National Survey on Recreation and the Environment, 1995

Activity	Subactivities
Adventure	Rock climbing, orienteering, mountain climbing
Backpacking	Backpacking
Biking	General biking, bike touring
Boating	Motorized boating
Cross-country skiing	Cross-country skiing
Developed camping	Camping at campgrounds with facilities
Fishing	Freshwater and saltwater fishing except ice fishing
Hiking	Day hiking and trail walking
Hunting	Big game, small game, migratory bird
Motorized trail	ORV, all terrain vehicle (ATV), motorbike, snowmobile
Off-road vehicle (ORV)	ORV, ATV
Primitive camping	Primitive camping
Sightseeing	Sight seeing, scenic driving
Snowmobiling	Snowmobiling
Social	Picnicking, family gathering
Trail	Hiking, day hiking, backpacking
Wildlife viewing	Birding, wildlife viewing, fish viewing, viewing nature from water

Table 3—Selected outdoor recreation activities from the National Survey of Fishing, Hunting, and Nonconsumptive Wildlife-Associated Recreation, 1996

Activity	Type
Fishing	All types of fishing
Hunting	All types of hunting
Wildlife viewing	Bird and wildlife watching, feeding, and photography

The cross-sectional population-level approach has subsequently been used by various researchers to estimate and project participation and use for recreation activities at national and regional levels. Bowker and others (1999) used data from NSRE95, the U.S. Census (Day 1996), and the 1997 NORSIS database to project participation and use for more than 20 activities and four geographical regions of the United States from 2000 to 2050. Hof and Kaiser (1983) used data from the 1977 National Outdoor Recreation Survey to estimate and project national participation in 13 popular outdoor recreation activities. Walsh and others (1992) used similar models to examine the effect of price on wildlife recreation participation nationally.

An alternative approach, wherein population data are combined with individual site-level data, was suggested by Cordell and Bergstrom (1991). This approach was used by Cordell and others (1990) to estimate outdoor recreation trips nationally for 31 activities and to forecast the number of trips by activity to 2040. English and others (1993) used the same basic approach; however, they converted estimates to the regional level by combining parameter estimates from national models with regional explanatory variable values.

The major drawback of cross-sectional models is that the structure of the estimated models remains constant over the forecast period. For example, the factors that influence participation or use are assumed to have the same effects throughout the forecast period. Hence, barring major shifts in demographics, the results are primarily driven by population growth. This assumption can be tenuous. For example, new sports brought about by technological change or shifts in tastes and preferences, such as mountain biking, snow boarding, and para-skiing, are unlikely to be correctly represented in the models while they are in the rapid-growth phase. Nevertheless, without appropriate time-series data, researchers are left with the use of cross-sectional models with their inherent limitations, as a second-best alternative to estimate and forecast participation and use. A further drawback of these models is that it is difficult to account for the dampening effect of crowding or supply limitations on growth in participation and use.

Participation models are based on the premise that individual participation depends on such measurable factors as age, sex, income, and race. When data permit, factors indicating the relative availability of recreation opportunities or supply also are considered (Bowker and others 1999). The models are most often estimated by using logistic regressions (Greene 1995) following the general specification,

$$\mathbf{P}_{aj} = f(X_j, Q_j) + u_j,$$

where $\mathbf{P}_{aj}$ is the probability that an individual 'j' will participate in activity 'a', X_j is a vector of sociodemographic characteristics associated with individual j, Q_j is a vector of supply relevant variables, and u is a random disturbance term.

In this analysis, logit models are estimated at the state-level for both SCORP97 and NSRE95 data sets for nearly 20 different activities. Data on supply variables were not available. Implicit for all models and subsequent aggregation is the assumption that Alaskans participating in these outdoor recreation activities will do so at least once in their home state. Given the list of activities, this assumption seems plausible. Moreover, opportunities for each of these activities are provided in various degrees on the Chugach National Forest. The estimated results cannot be explicitly linked to the Chugach National Forest without site-specific data. Given the proximity of the forest to the city of Anchorage, however, it is reasonable to expect that the forecasted changes in activity participation will indicate what could happen on the Chugach National Forest.

A second set of three participation models estimates wildlife-related recreation in Alaska by residents of the rest of the United States. These models are two-stage in that the probability of participation in the specific activity is contingent on participating in Alaska. As with the state-level models, no explicit links to the Chugach National Forest are possible. The estimates are expected to be representative of the forest insofar as it contains settings comparable to other destinations in Alaska.

The participation models were combined with projections of corresponding sets of independent socioeconomic variables based on external sources, including the U.S. Census, USDA ERS macroeconomic projections (Torgerson 1996), and Alaska state-level macroeconomic projections (Goldsmith 1999), to derive resident and nonresident projections of participation in these activities in Alaska for 2000, 2010, and 2020. Projections are reported in absolute numbers (thousands of participants). Because of model bias where participation was extremely high or low, base-year aggregates were calculated with sample frequencies rather than predicted regression means.

As discussed earlier, data on recreation intensity gives planners important additional information. For example, two individuals could participate in a given activity but one might participate more frequently than the other. Participation models alone do not account for this distinction. Moreover, participation in certain activities may be high but the nature of the activity limits participation to a few times per year. Hence, an activity with a high participation rate may actually involve fewer total days of use at a recreation setting than one with fewer participants engaging in the activity more often.

Participation intensity or consumption models are similar to the participation models listed above except that the number of times an individual participates or the number of trips he or she takes is factored in. The general specification for the consumption model is of the form,

$$\mathbf{T}_{aj} = f(X_j, Q_j) + u_j,$$

where $\mathbf{T}_{aj}$ represents the annual number of times or trips an individual 'j' makes for the primary purpose of participating in activity 'a', X_j is a vector of sociodemographic characteristics associated with individual j, Q_j is a vector of supply relevant variables, and u is a random disturbance term. The logistic model is no longer appropriate as the dependent variable is a nonnegative integer. Under such conditions, negative binomial regression models are estimated with the SCORP97 and NSRE95 data sets for 33 activities or activity composites.

As with the participation models, no supply variables were available for inclusion.

In the SCORP97 survey, individuals were asked the number of "times" they engaged in a given activity. In the NSRE95 survey, individuals were asked the number of "primary-purpose trips" and the number of "days" spent recreating at a given activity at least 1mile from home. A "day" is any part of a day devoted to a given activity. Theoretically, an individual on a 2-day primary-purpose river fishing trip could tent camp one night and hike one evening to view wildlife. Such a combination of activities would represent one primary purpose fishing trip, two days of fishing, two days of primitive camping, one day of wildlife viewing and one day of hiking. Unfortunately, the composite nature of outdoor recreation prevents clean measurement as might be the case with movie-goers. For this research, two of the three consumption measures were used. The SCORP97 data were used to estimate regression models reporting the number of times an individual participates annually in given activities. The NSRE95 data were used to estimate regression models reporting the number of primary-purpose trips an individual makes annually to participate in specific activities. All of the estimated models were limited to random samples of Alaskans as there are no data suitable to estimate similar models for U.S. residents traveling to Alaska. Although not easily dismissed, this omission is rendered less serious given that recent estimates indicate 70 to 80 percent of the recreation use in Alaska is by state residents (Colt 1999).

Like the participation modeling, the intensity models were combined with projections of corresponding sets of independent socioeconomic variables based on external sources including the U.S. Census, USDA ERS macroeconomic projections, and Alaska state-level macroeconomic projections to project times and primary-purpose trips of residents in these activities for 2000, 2010, and 2020. Projections are reported in absolute terms (thousands of trips) and base-year aggregates were calculated with sample means rather than predicted regression means.

Results

Participation

Thirty-six logit regression models for recreation participation by Alaska residents were estimated from the combined data using LIMDEP econometric software (Greene 1995). Because of the large number of models estimated, a general specification was used for all models within a given data set. For the SCORP97 models, explanatory variables included: **age**, **age squared**, (age sq), **income**, **sex**, and a binary variable, **anch d**. The **anch d** variable indicates whether a respondent lives in the Railbelt region that encompasses Anchorage and the Chugach National Forest. With only 200 observations, the data were insufficient for estimating separate models for this region; hence it was felt that this variable included in a state-level model might allow for some differences to occur for the region and consequently the forest. For the NSRE95 models, explanatory variables included: **age, age sq**, **income, sex**, and **race**. For the FHWAR96 models, explanatory variables included subsets of the following: **age, gender, income, education, marital status, retired, urban residence, white, black, Indian, Asian, age sq, employment, student, house keeper,** and **race** (white vs. nonwhite). In addition, three logit participation models were estimated for tourists from the rest of the United States. These models estimated the probability that the tourist would travel to Alaska to engage in fishing, hunting, or nonconsumptive wildlife-related recreation. Regression parameter estimates and forecast spreadsheets are available from the author. Estimates of participation frequencies and the forecasted number of participants by activity and data set are reported in tables 4 through 7.

Participation in outdoor recreation activities is a way of life in Alaska. The estimated percentage of participation by Alaskan adults in various outdoor recreation activities is generally much higher than for the rest of the United States, based on percentages reported in table 4 and a recent survey of the United States (Roper Starch Worldwide 1999). For example, 42 percent of Americans report engaging in scenic driving or driving for pleasure, whereas 86 percent of Alaskans report doing so. About 9 percent of Americans participate in recreational vehicle (RV) camping compared to 29 percent of Alaskans. The participation rates for Alaskans in campground camping and hiking are 48 and 69 percent, respectively, whereas for the rest of the United States, the percentages are 21 and 15, respectively. Off-road vehicle driving attracts 33 percent of adult Alaskans compared to 7 percent of the U.S. population at large. Motor boating and canoeing/floating have participation rates among Alaskans of 42 and 31 percent, respectively, whereas in the rest of the United States, these rates are 11 and 7 percent, respectively. The same pattern holds for wildlife-related activities. Alaska residents report a 36-percent participation rate in hunting and a 76-percent rate for fishing, whereas the corresponding rates for hunting and fishing for the rest of the United States are 9 and 28 percent, respectively. Clearly, except for swimming and diving-related sports, the proportion of participation in various outdoor recreation activities by Alaskans is significantly higher than for the rest of the country.

Activity participation rates for Alaskan adults for the three data sets used in this study are reasonably consistent (see tables 4 through 7). Among trail activities, backpacking shows some inconsistency between SCORP97 and NSRE95, with estimated participation rates at 45 vs. 23 percent. As table 1 indicates, however, the backpacking category in SCORP97 includes tent camping in the backcountry, whereas the NSRE95 contains a separate category for primitive camping. In general, for comparable activities, the estimates derived from the SCORP97 survey run slightly higher than either the NSRE95 or the FHWAR96 estimates. Among wildlife-related activities, the FHWAR96 produces lower estimates of participation for hunting, fishing, and bird and wildlife viewing than either of the other surveys. The biggest discrepancy was in viewing, which was roughly 50 percent of that reported in the other two surveys. This difference may be attributed, in large part, to wording differences in the surveys. The FHWAR96 required a participant to list the activity as the primary purpose for at least one

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Table 4—Alaska state-level outdoor recreation participation estimates, 2000-2020, using the Statewide Comprehensive Outdoor Recreation Preference Survey, 1997 database

Recreation activity	Alaskan adult participation annually, 1997[a]	Predicted state-wide adult participants (1,000)[b]			Change in state-wide number of participants, 2000-2020 (1,000)	Predicted change in participants, 2000-2020
		2000	2010	2020		
	Percent					*Percent*
Backpacking	45.3	205.5	238.9	265.3	59.7	29
Back-country skiing	10.6	46.5	56.1	62.5	16.1	35
Berry picking	61.0	281.0	323.2	360.4	79.3	28
Biking	67.4	305.5	355.9	397.0	91.5	30
Wildlife viewing	73.8	338.5	389.2	434.4	95.8	28
Boating	42.3	192.2	223.3	248.2	56.1	29
Canoeing	31.3	140.8	165.1	183.5	42.9	30
Climbing	11.1	49.9	57.8	63.8	14.0	28
Driving	85.7	392.6	453.4	505.6	113.0	29
Fishing	75.9	349.2	400.0	445.2	96.1	28
Hiking	68.7	312.8	360.5	402.5	89.7	29
Hunting	35.6	161.5	186.4	205.8	44.3	27
Kayaking	4.8	22.0	25.4	28.3	6.3	28
Off road	50.5	229.8	266.1	295.7	65.9	29
Off-road vehicle	32.9	149.7	173.3	192.3	42.6	28
Picnicking	76.1	349.9	402.0	449.1	99.2	28
Recreational vehicle camping	28.9	134.1	153.0	170.5	36.3	27
Tent camping	48.4	217.1	256.0	284.7	67.6	31

[a] Because people participate in many recreation activities, percentages should not sum to 100.

[b] Based on U.S. Census population projections and model estimates.

Table 5—Alaska state-level outdoor recreation participation estimates, 2000-2020, using the 1995 National Survey on Recreation and the Environment database

Recreation activity	Alaskan adult participation annually, 1995[a]	Predicted state-wide adult participants (1,000)[b]			Change in state-wide number of participants, 2000-2020 (1,000)	Predicted change in participants, 2000-2020
		2000	2010	2020		
	Percent					
Adventure	15.8	72.4	91.7	108.3	36.0	50
Backpacking	23.2	106.5	126.3	140.0	33.5	31
Biking	50.6	232.1	268.5	292.0	59.9	26
Wildlife viewing	72.3	331.8	382.3	425.0	93.3	28
Boating	50.0	229.4	262.1	285.0	56.6	25
Cross-country skiing	28.3	129.7	148.4	159.1	29.4	23
Developed camping	33.3	152.9	174.9	191.5	38.6	25
Fishing	62.5	286.7	328.6	355.9	69.1	24
Hiking	48.8	223.9	256.0	276.1	52.2	23
Hunting	22.0	101.0	111.3	119.7	18.7	18
Off road	38.7	177.5	203.5	217.5	40.0	23
Off-road vehicle	26.8	122.9	141.0	151.8	28.9	24
Primitive camping	43.2	198.0	224.9	241.9	44.0	22
Sightseeing	64.6	296.3	339.0	367.2	70.9	24
Snowmobiling	25.0	114.7	125.4	124.4	9.7	8
Social	83.6	383.7	442.2	489.7	106.0	28
Trails	52.7	241.7	276.9	300.1	58.5	24

[a] Because people participate in many recreation activities, percentages should not sum to 100.

[b] Based on U.S. Census population projections and model estimates.

Table 6—Alaska state-level outdoor recreation participation estimates, 2000-2020, using the 1996 Fishing, Hunting and Nonconsumptive Wildlife-Associated Recreation database

Recreation activity	Alaskan adult participation annually, 1995[a]	Predicted state-wide adult participants (1,000)[b]			Change in state-wide number of participants, 2000-2020 (1,000)	Predicted change in participants, 2000-2020
		2000	2010	2020		
	Percent					
Wildlife viewing	33.6	154.0	176.4	194.3	40.3	26
Fishing	55.8	255.8	292.9	326.0	70.2	27
Hunting	16.7	76.8	85.8	92.0	15.2	20

[a] Because people participate in many recreation activities, percentages should not sum to 100.

[b] Based on U.S. Census population projections and model estimates.

Table 7—Alaska state-level outdoor recreation participation estimates, 2000-2020, using the 1996 Fishing, Hunting and Nonconsumptive Wildlife-Associated Recreation database

Recreation activity	U.S. adult (Non-Alaskan) participation in Alaska annually, 1996[a]	Predicted number of adult participants (1,000) from the U.S. (Alaska excluded)[b]			Change in number of U.S. participants, 2000-2020 (1,000)	Predicted change in U.S. participants, 2000-2020
		2000	2010	2020		
	Percent					*Percent*
Wildlife viewing	0.2294	545	770	1,091	546	100
Fishing	.1228	256	326	416	160	63
Hunting	.0081	17	24	34	17	100

[a] Because people participate in many recreation activities, percentages should not sum to 100.

[b] Based on U.S. Census population projections and model estimates.

trip. Hence, one who stopped to watch wildlife while on a snowmobiling trip would not be counted as participating in wildlife viewing.

Based on the SCORP97, the five most popular activities among Alaskan adults are driving for pleasure (86 percent), picnicking (76 percent), fishing (75 percent), bird and wildlife viewing (74 percent), and hiking (68 percent). Biking (67 percent) and berry picking (61 percent) are also popular. The rates derived from the NSRE95 are similar, with social activities (including picnicking) at 84 percent, followed by bird and wildlife viewing (72 percent), sightseeing (65 percent), fishing (63 percent), and trail activities (including hiking) at 53 percent. In general, these are day activities. They can be done in various settings, are often done in conjunction with other activities, and usually (with the exception of fishing) do not require much capital or expertise. Not surprising, highly technical sports such as rock climbing (11 percent), backcountry skiing (11 percent), and sea kayaking (5 percent) are far less popular. Opportunities for all the activities are readily available on the Chugach National Forest.

The estimated total number of adult Alaskans participating in the various activities for 2000 from the SCORP97 survey ranged from a high of 393,000 for scenic driving to a low of 22,000 for kayaking. For the NSRE95 survey, the numbers ranged from 383,700 for the social activity aggregate to 15,000 for the adventure aggregate, which includes orienteering and rock and mountain climbing. Results from both surveys indicate that more than 300,000 people view birds and wildlife, whereas at least 100,000 hunt. Including the FHWAR96 results, it appears that the state has 255,800 to 349,100 adult anglers. Note, however, that for many of the activities, children can and do participate. Therefore, estimated numbers of adult participants underestimate total participants in the Alaska population.

Table 7 reports FHWAR96-based estimates of wildlife-related participation in Alaska by American tourists. The participation rates among the American population for hunting, fishing, and bird and wildlife viewing in Alaska are extremely low, ranging from 0.23 to 0.008 percent. These low rates, however, translate into large numbers of participants when the size of the U.S. population is considered. For example, the number of adult tourists participating in bird and wildlife viewing in Alaska in 2000 is estimated to be 545,000, whereas the numbers for fishing and hunting are 256,000 and 17,000, respectively. These numbers also can be considered low because they do not include tourists from foreign countries.

Participation Projections

Logistic regression estimates were combined with exogenous variable projections to arrive at estimates of annual state-level participation from 2000 to 2020. Population, sex, and age projections were derived from the Williams, Gregory (1998) and U.S. Census (1999). Real income projections were obtained from Goldsmith (1999). Tables 4 through 6 (columns 2, 3, and 4) show the projected number of adult participants in the state by data set and activity. Column 5 in the same tables shows the expected change in total participants for the listed activities by 2020; column 6 reports the predicted change in percentage of participants from 2000 to 2020.

Population participation is the product of per capita participation and population growth. Per capita participation represents the probability someone in the population will partake of a given activity in the sample period. In general, models estimated with SCORP97 data suggest that per capita participation in all activities will remain relatively unchanged over the period. Although the participation rate in the population for most activities is not predicted to change much, the total number participating will increase greatly, due primarily to state population growth, which is expected to be about 28 percent between 2000 and 2020 (U.S. Census 1999).

The relatively small per capita changes in participation are probably conservative. More (1997) reports population participation rates for many of the same activities for 1992 and 1997 calculated from previous SCORP surveys. Most activities, including driving for pleasure, day hiking, biking and mountain biking, sport fishing, and tent camping in

a campground, show annual per capita participation growth rates of zero to 1 percent. Bird-watching and wildlife viewing grew 8 percent annually over the same period. Backpacking, ORV riding, and power boating, averaged annual participant growth rates of 6 to 7 percent. Participation in trail and cross-country skiing declined by about 4 percent per year, whereas back-country skiing declined about 2 percent per year.

Column 5 in tables 4 through 6 shows estimates of the change in the total number of participants by activity expected by 2020. Table 4 presents the projections based on SCORP97 data. These numbers should be interesting to resource managers and planners because they reflect absolute growth in numbers of participants. Although the numbers do not indicate how many people will visit any specific site, they do represent potential participants state-wide. Increases in resident adult participant numbers in the listed activities range from a low of 6,300 in kayaking to 113,000 in scenic driving. Eleven activities will increase by more than 50,000 participants over the next 20 years including picnicking (99,200), fishing (96,100), bird and wildlife viewing (95,800), biking (91,500), hiking (89,700), berry picking (79,300), tent camping in campgrounds (67,200), general motorized off-road activities (65,900), backpacking and tent camping in back country (67,600), and general motorized boating (56,100). These numbers, however, must be kept in perspective. Whereas bikers will increase by 91,500 and sea kayakers by only 6,300, opportunities to bike are dispersed throughout the state and are usually available locally. On the other hand, the availability of quality kayaking venues is more restricted. Overall, SCORP97 model estimates, combined with projections of explanatory variables, predict increases in participants of 35 percent for backcountry skiing and 27 percent for both hunting and RV camping (table 4, column 6).

Increases in adult participation and corresponding percentage changes based on models derived from the NSRE95 are reported in table 5, columns 5 and 6. In general, the forecasts from the NSRE95 models are slightly lower than those from the SCORP97. The lowest projected percentage increase for any of the activities is for snowmobiling (8 percent). Hunting is the second lowest with an 18-percent increase, an absolute increase in hunters of 18,700 compared to 44,200 in the SCORP97 projection. This discrepancy is difficult to explain. One possibility is that hunters may respond differently to state versus federal surveys. The largest projected increase among the NSRE95 results is in the adventure activity aggregate (rock climbing, orienteering, mountain climbing), which is predicted to grow by 50 percent.

State-level projections from the FHWAR96 are reported in table 6. The percentage of increases for fishing (27 percent), hunting (20 percent), and wildlife viewing (26 percent) are similar to those for the same activities in the other two data sets. Although the results from the FHWAR96 and NSRE95 for hunting are close, they differ greatly in absolute terms from the SCORP97 projections. Wildlife viewing reflects a similar pattern. For example, percentage of changes among the three data sets are similar; however, the NSRE95 and SCORP97 projections indicate an increase in wildlife viewing participants of more than 90,000 by 2020, whereas the FHWAR96 projections indicate an increase of only 40,300. This discrepancy may be due to the fact that a participant in the FHWAR96 must have taken at least one trip where wildlife viewing was the main purpose. The other two surveys are not as rigid, allowing ancillary participation to count.

Table 7 reports participation projections in wildlife-related activities in Alaska by Americans living outside Alaska. It is interesting to note that many more people from outside Alaska are expected to participate in wildlife-related activities than those from within the state (table 7). By 2020, more than 1 million bird and wildlife viewing tourists are expected, an increase of 546,000 in the next 20 years. This forecast is more than triple the predicted growth for Alaska participants. These data suggest that out-of-state bird and wildlife-viewing tourists will outnumber Alaskans by more than 10 to 1 by 2020. Although not as dramatic, the growth of tourist anglers also is expected to exceed that for in-state anglers by about 50 percent. By 2020, the number of Alaskan and tourist anglers should be about equal.

Depending on perspective, the projected growth in the number of participants may be either cause for alarm or a signal of the increased importance of outdoor recreation in the life and economy of Alaskans. It should be noted that two important factors are left out of the participation forecasts. First, the models do not measure supply. Bowker et al. (1999) incorporate supply index measures in a study of recreation participation and use at the national level. We found that decreases in supply per capita of necessary places and resources for dispersed activities can slow growth of participation in an activity despite population increases. So far, the supply of recreation opportunities in Alaska has not limited participation. The SCORP97 survey, however, did indicate that crowding was greater than in previous surveys. Unfortunately, the crowding situation was general and could not be used as an explanatory variable for any of the participation activity models. Nevertheless, as crowding increases on trails, in campgrounds, and along riverbanks, some of the current users will probably participate less, if not leave the market entirely. Supply-intensive activities, such as hunting, fishing, and backpacking, are likely to be more affected by crowding than such activities as biking and picnicking. Moreover, activities that require space for long periods (e.g., camping) are also likely to grow less than predicted because as availability decreases, some people will select alternative activities.

Consumption

Thirty-four negative binomial regression models for recreation consumption by Alaska residents were estimated from the SCORP97 and NSRE95 data using LIMDEP econometric software (Greene 1995). The SCORP97 data were used to estimate regression models explaining the number of times an individual participates annually in given activities. The NSRE95 data were used to estimate regression models explaining the number of primary-purpose trips an individual takes annually to participate in specific activities. Because of the large number of models estimated, a general specification was used for all models within a given data set. For the SCORP97 models, explanatory variables included **age, age sq, income, sex,** and **anch d**. The **anch d** binary variable indicates whether a respondent lives in the Railbelt region that encompasses Anchorage and the Chugach National Forest. There were too few observations (only 200) to estimate separate regional models, so this variable was included in a state-level model allowing perhaps for differences to occur between this region and the rest of the state. For the NSRE95 models, explanatory variables included **age, age sq, income sex,** and **race**.

State-level per capita averages for times participating in the various activities derived from the SCORP97 data are reported in table 8 (see column 1). State-level per capita averages for primary-purpose trips in a similar set of activities derived from NSRE95 data are reported in table 9 (see column 1). The distinction between "times" and "primary purpose trips" is important. A trip taken for the primary purpose of engaging in a given activity implies that the particular activity is the main reason for the trip even though the individual may also participate in other activities on the same trip. For example, someone using a motorboat for fishing would list the event as one "primary purpose" fishing trip. However, the same event would represent one "time" fishing and one "time" motor boating. Activities for which the number of times greatly exceeds the number of primary purpose trips can be considered more ancillary in nature. A good example would be bird and wildlife viewing. The average participation in bird and wildlife viewing is 27.9 times per capita, whereas the average of primary purpose trips is only 7.1 times per capita. The implication is that bird and wildlife viewing is often done as a secondary or complementary activity on trips. Alternatively, the per capita average for primary-purpose fishing trips is larger than average per capita times spent fishing. This would obviously not be true if the averages were derived from the same survey and hence reflect the random error between the two surveys. Nevertheless, fishing is clearly a driving force among participants.

Based on the SCORP97 data, the top five activities in terms of the highest per capita averages for times of participation annually are bird and wildlife viewing (27.9), scenic driving (27.7), off-road

Table 8—Alaska state-level outdoor recreation consumption estimates, 2000-2020, using the Statewide Comprehensive Outdoor Recreation Plan database

Recreation activity	Average annual times participating per adult	Predicted total times of population participation (1000)[a]			Predicted change in total times, 2000-2020 (1,000)	Predicted change in total times, 2000-2020
		2000	2010	2020		
						Percent
Backpacking	4.6	2,033	2,515	2,684	650	32
Back-country skiing	1.4	606	793	829	223	37
Berry picking	4.9	2,219	2,609	2,904	685	31
Biking	22.0	9,937	11,875	13,012	3,075	31
Wildlife viewing	27.9	12,950	14,658	16,544	3,594	28
Boating	13.4	6,047	7,090	7,742	1,695	28
Canoeing	3.2	1,373	1,782	1,861	488	36
Climbing	.8	329	415	433	104	31
Driving	27.7	12,739	14,726	16,434	3,695	29
Fishing	16.2	7,366	8,590	9,456	2,089	28
Hiking	13.0	5,776	7,128	7,694	1,918	33
Hunting	5.1	2,315	2,755	2,970	655	28
Kayaking	.6	267	311	344	77	29
Off road	22.3	9,987	11,948	12,970	2,983	30
Off-road vehicle	9.4	4,238	5,047	5,514	1,276	30
Picnicking	10.2	4,670	5,370	6,037	1,368	29
Recreational vehicle camping	3.4	1,595	1,791	2,932	436	27
Tent camping	4.3	1,918	2,338	2,547	629	33

[a] Based on U.S. Census population projections and model estimates.

Table 9—Alaska State-level outdoor recreation consumption estimates, 2000-2020, using the 1995 National Survey on Recreation and the Environment database

Recreation activity	Average annual primary purpose trips per adult	Predicted population total primary purpose trips (1,000)[a]			Predicted change in total trips 2000-2020 (1,000)	Predicted change in total trips 2000-2020
		2000	2010	2020		
						Percent
Adventure	0.4	197	234	258	61	31
Backpacking	1.3	580	723	835	255	44
Biking	3.9	1,791	2,277	2,742	950	53
Wildlife viewing	7.1	3,259	3,779	4,119	860	26
Boating	5.2	2,378	2,709	2,912	533	22
Cross-country skiing	2.5	1,155	1,359	1,391	236	20
Developed camping	1.7	796	903	933	137	17
Fishing	21.7	9,971	11,222	12,250	2,279	23
Hiking	9.8	4,497	5,227	5,690	1,193	27
Hunting	1.6	725	809	867	142	20
Offroad	5.9	2,729	3,010	3,163	434	16
ORV	3.6	1,657	1,825	1,924	267	16
Primitive camping	1.7	796	881	950	154	19
Sightseeing	5.3	2,425	2,802	2,969	544	22
Snowmobiling	2.3	1,072	1,181	1,226	154	14
Social	10.1	4,648	5,419	5,928	1,280	28

[a] Based on U.S. Census population projections and model estimates.

driving (22.3), biking (22), and fishing (16.2). The total times adults participated in these activities ranges from about 13 million for scenic driving and bird and wildlife viewing to more than 7 million for fishing. These numbers differ slightly from participation where more people participated in picnicking (76.1 percent) than off-road vehicle driving (50.5 percent). Because of the frequency of off-road driving excursions, however, the total times of off-road driving in a given year exceeds picnicking by a 2 to 1 margin. Note that the off-road driving as used here includes snowmobiling, ORVs, and ATVs (table 1).

Per capita averages for number of primary-purpose trips are somewhat different than those for times, both in magnitude and order (table 9). Fishing ranks first with an annual average of 21.7 trips, whereas social activities (including picnicking and family gathering) are a distant second at 10.1 annual trips. Hiking, (9.8 annual trips), bird and wildlife viewing (7.1 annual trips), and off-road driving (5.9 annual trips) are the other top five activities. Fishing accounts for about 10 million annual primary-purpose trips, social activities and hiking around 4.5 million trips each, and bird and wildlife viewing and off-road driving at just over and just under 3 million trips each. As with participation, estimates of times and primary-purpose trips for Alaskan adults are highest for activities that require less specialized skill and less expense. The exception is fishing; however, the skill levels of anglers are likely to be more heterogeneous than those among rock climbers or sea kayakers.

Interestingly, the mix of activities that generate the most times and primary-purpose trips for Alaskans somewhat differs from that for the rest of the United States. Cordell et al. (1999) report the top five primary-purpose trip activities nationwide as sightseeing, family gatherings, bird and wildlife viewing, biking, and picnicking. The top six activities in terms of days of participation for the United States are walking, bird watching, wildlife viewing, biking, sightseeing, and family gathering. Although the viewing and gathering activities are similar, Alaskans engage in fishing, hiking, and off-road activities at much higher rates and intensities than their counterparts in the rest of the United States. The same is generally true for all of the activities examined in this study.

Consumption Projections

Negative binomial regression parameter estimates were combined with exogenous variable projections to estimate annual state-level times and primary-purpose trips for each activity from 2000 to 2020. Population, sex, and age projections were derived from the Williams, Gregory (1998) and U.S. Census (1999). Real income projections were obtained from Goldsmith (1999). Tables 8 and 9 (columns 2 through 4) show the projected number of adult participants in the state by data set and activity. Table 8 shows the expected change in the total times individuals will participate (see column 5), and table 9 shows the number of primary-purpose trips they will take (see column 5) for the listed activities by 2020. In tables 8 and 9 (see column 6), the percentage of increase in the respective activities from 2000 to 2020 is projected.

Similar to the participation model results, changes in per capita participation frequencies are estimated to be minor over the simulation period. For many activities, this could lead to somewhat conservative estimates of participation frequencies. The SCORP results reported for 1997 and 1992 (More 1997) indicate that most activities reported in this study increased in participation frequencies between 1992 and 1997. Participation frequencies, however, can be affected by weather and other factors and summer 1997 was a good one for outdoor recreation in Alaska. Hence, the higher participation frequencies in 1997 may be less of a trend than the result of good conditions in a specific year. Moreover, two winter activities, cross-country skiing and back-country skiing, showed lower participation frequencies in 1997 than in 1992.

The five activities (table 8) that will be engaged in most often by Alaskans in 2020 are the same as those in 2000, namely, scenic driving (16.4 million times), bird and wildlife viewing (16.5 million times), biking (13 million times), off-road driving (12.9 million times), and fishing (9.4 million times). The five activities that will grow most in

the number of times Alaskans will participate in them are scenic driving, biking, bird and wildlife viewing, RV camping, and fishing. These annual increases will range more than 4 million times in scenic driving and more than 1.6 million times in fishing. Hiking, with an increase nearly 1.5 million times, barely misses being included among the top five activities in terms of expected increases. The biggest percentage of increases are expected to come in backcountry skiing (37 percent), canoeing and floating (36 percent), tent camping (33 percent), hiking (33 percent), biking (31 percent), climbing (31 percent), and berry picking (31 percent). The smallest percentage increases are in RV camping (27 percent), boating (28 percent), fishing (28 percent), hunting (28 percent), and wildlife viewing (28 percent). None of the activities in this study are expected to decline, either in percentage or absolute terms, over the next 20 years.

The NSRE95-based projections for primary-purpose trips are reported in table 9 (see columns 2 through 4). The biggest percentage of increases (table 9, column 6) over the next 20 years are expected to come in biking (53 percent), backpacking (44 percent), and adventure activities (31 percent). In absolute numbers (table 4, column 5), the single biggest increase in primary-purpose trips is expected to be in fishing, with an increase of about 2.3 million trips for Alaska residents alone, pushing the total primary-purpose trips for angling to more than 12 million by 2020. Another five activities are expected to account for increases of nearly 1 million primary-purpose trips each: social activities (1.3 million), hiking (1.1 million), biking (1 million), and wildlife viewing (0.9 million).

The smallest increases in primary-purpose trips are expected to be in adventure activities (61,000), developed camping (137,000), hunting (142,000), primitive camping (154,000), and snowmobiling (154,000). Although these numbers appear relatively small, it is important to recognize the nature of camping and hunting activities. For example, camping trips, by definition, must be a minimum of two days. Hunting trips also usually last for several days. Hence, information on the projected number of primary-purpose trips needs to be supplemented with information about trip characteristics, especially duration, to get a better handle on relative demand on the resources.

For all activities, the expected increase in primary-purpose trips by Alaskans generally exceeds that for Americans at large. For example, among wildlife-related activities, fishing trips are expected to increase nationally over the next 20 years at a rate of 7 percent (Bowker et al. 1999), whereas for Alaskans, the predicted increase is 23 percent. Hunting trips of Alaska's are expected to increase 20 percent from 2000 to 2020, whereas those for the rest of the United States will increase only 1 percent. A similar pattern holds for wildlife viewing trips with the expected increase in trips by Alaskans exceeding those by their U.S. counterparts–26 percent vs. 15 percent. Among the activities with the largest differences in trips, growth rates between Alaska and the United States over the next 20 years are backpacking (44 percent vs. 6 percent), ORV (16 vs. -14 percent), and primitive camping (19 vs. 2 percent). Developed camping is the only activity where growth in primary-purpose trips for the United States exceeds that for Alaska (27 vs. 17 percent). Much of this difference can be attributed to growth in the Southern United States where camping seasons are longer.

Factors Explaining Participation and Consumption

It is beyond the scope of this report to explain the significance and magnitude of estimates for each of the 76 models estimated (model estimates are available from the author); however, a few general statements merit mention. As noted above, some explanatory variables were included in the participation and consumption models. Common to all models were **age, income,** and **sex**. The NSRE95 and FHWAR96 models included **race,** whereas the SCORP97 models did not. Unique to the FHWAR96 models were **education, marital status, retired, urban residence,** and activity variable indicators. Unique to the SCORP97 models was an indicator variable, **anch d,** identifying Anchorage residents, perhaps the most relevant variable in the state-level models for planners on the Chugach National Forest. Including this variable in participation and consumption models implies that

people from Anchorage have different recreation preferences or behavior from other Alaskans. For the 18 participation models, the **anch d** variable was insignificant 7 times and significant 11 times. Among the activities where there were no statistical differences for Anchorage residents were backpacking, back-country skiing, wildlife viewing, fishing, hiking, off-road, and ORV use. Anchorage residents participated less than residents in the rest of the state in five activities: berry picking, boating, hunting, kayaking, and picnicking. Anchorage residents participated more than fellow Alaskans in biking, canoeing, climbing, scenic driving, RV camping, and tent camping.

Among the consumption models, Anchorage residents participated the same as other Alaskans in backpacking, backcountry skiing, biking, canoeing, climbing, driving, fishing, hiking, hunting, kayaking, and picnicking. However, Anchorage residents participated less than other Alaskans in berry picking, wildlife viewing, boating, and offroad and ORV driving. Anchorage residents participated more times on average than other Alaskans in both RV camping and tent camping. The significance of these results depends on the proportion of Anchorage to other Alaskan users of the Chugach National Forest. If a large number of Chugach National Forest users come from Anchorage, planners can expect larger increases in RV camping and tent camping than table 8 would indicate. Similarly, berry picking and boating should be somewhat less than predicted, holding other factors constant.

Among the other factors, results are generally consistent with other studies of recreation participation and consumption. Activities typically considered male dominated in other populations appear the same for Alaskans. For example, males fish and hunt more than females; but gender is insignificant in wildlife viewing behavior. Similarly, backpacking, off-road driving, boating, primitive camping, climbing, and adventure activities are male dominated, but no differences were found for biking, canoeing, driving, kayaking, RV camping, snowmobiling, and tent camping. Females had significantly higher rates of participation and consumption for berry picking and picnicking. Although the percentage of males in the Alaskan adult population is expected to decrease slightly over the next 20 years, this should have only a minor effect on participation and consumption overall.

Census projections indicate that nonwhites will increase about 9 percent over the next 20 years in Alaska. This change is incorporated into the projections. Although race was not a factor in most activities, it was significant in evaluating hunting, wildlife viewing, cross-country skiing, primitive camping, sight seeing, snowmobiling, and general trail activities with whites showing higher rates of participation and consumption. The result is somewhat contrary to findings for the rest of the United States (Bowker and others 1999), where nonwhites were not likely to participate, or participate more frequently in any activity than whites.

For most activities, income did not affect either participation or participation frequency. There were, however, some exceptions. Based on the SCORP97 models, participation in back-country skiing, fishing, hiking, picnicking, wildlife viewing and power boating was greater by people with high incomes. Surprisingly, scenic driving and RV camping were negatively impacted. For nonresidents, the probability of participating in fishing and wildlife viewing in Alaska are both positively influenced by increased income, as expected.

Conclusion

Outdoor recreation participation and consumption appear to be an important part of the life of Alaskans. Overall, rates of participation and intensity of participation among Alaskans are higher than for their U.S. counterparts, and they will continue to be so for at least the next 20 years. The five activities with the highest annual participation per capita are bird and wildlife viewing, scenic driving, off-road driving, biking, and fishing. There are almost 13 million annual occurrences of scenic driving and bird and wildlife viewing and more than 7 million fishing trips annually. Per capita averages for primary-purpose trips are somewhat different than those for times, both in magnitude and in order. Fishing is most popular, generating about 10 million trips, whereas social activities and hiking each generate about 4.5 million trips. Bird and

wildlife viewing and off-road driving generate just over and just under 3 million trips, respectively. Estimates of times and primary-purpose trips for Alaskan adults are highest for activities that require minimal specialized skill and expense. The exception is fishing; however, the skill levels of anglers are likely to be more heterogeneous than those among rock climbers or sea kayakers.

Projected increases in participants, times, and primary-purpose trips for most activities can be expected to keep pace with population growth, roughly 28 percent. Percentagewise, adventure activities, backpacking, biking, berry picking, and tent camping are the fastest growing. Nevertheless, the five activities that are growing fastest in number of times Alaskans participate in them are scenic driving, biking, bird and wildlife viewing, RV camping, and fishing. The increases in these activities range from more than 4 million times for scenic driving to more than 1.6 million times in fishing. Hiking, with an increase of nearly 1.5 million times, barely misses being included among the top five activities. These findings make it clear that road and waterways will continue to be heavily relied on for outdoor recreation.

Nonresident participation in fishing, wildlife viewing, and hunting should increase by large percentages. By 2020, the number of bird and wildlife-viewing tourists is expected to be more than 1 million, an increase of 546,000 participants in the next 20 years. This forecast suggests that bird and wildlife-viewing tourists will outnumber Alaskans by more than 10 to 1 by 2020. Although not as dramatic, the growth of tourist anglers is also expected to exceed that for in-state anglers by about 50 percent. By 2020, Alaskan and tourist anglers should be about equal. Nonresident hunters are expected to double by 2020; however, in absolute terms, the increase of 17 thousand hunters is small compared to the increases in fishing and wildlife viewing.

This research is clearly limited because of the lack of available data. First and foremost, without accurate recreation visitation data by activity, space, and time on the Chugach National Forest, accurate and reliable use forecasts will remain elusive. Origin-based state and national level results can at best serve as broad indicators of the overall recreation market. This information must be cautiously applied to the forest in conjunction with intimate knowledge of planners about existing recreation opportunities and the niche that the Chugach National Forest fills among recreation resources in Alaska. Barring unprecedented change in public preferences for outdoor recreation, demand will likely continue to grow, and management will be faced with meeting the need for increased capacity. Although the rate of growth may taper off (as congestion increases time and costs while decreasing the quality of the recreation experience) the public will likely pressure government officials to maintain the high standard for and good access to recreation opportunities to which it is accustomed.

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