

Regional Demand for Wilderness

Operational Draft: This document is prepared to provide guidance to forest plan revision teams. As this guidance is implemented we expect to learn improved ways to do this work. As we learn, this document will be updated. This document was reviewed and revised as appropriate in May 2009 to conform with the requirements of the 1982 Planning Rule Provisions.

Current Wilderness Use Southwestern Region

Wildernesses in the Southwestern Region experienced a total of 1.9 million visits, in the years 2000 – 2003, according to Round 1 of National Visitor Use Monitoring (NVUM). Only one round of visitor use data has been collected for most forests, so trend information is not available. Wilderness visitation ranged from a low of almost 9,500 visits on the Kaibab National Forest to a high of almost 760,000 visits on the Cibola National Forest. Based on this data, four forests are considered to have high wilderness use (Gila, Cibola, Coronado, and Coconino), four have moderate use (Apache-Sitgreaves, Santa Fe, Carson, and Tonto), and three have low use (Prescott, Lincoln, and Kaibab).¹ The following table shows the number of wilderness visits by forest.

Table 1: Annual Wilderness Visitation Use Estimate by Forest

National Forest	Visits*(1,000s)	80% Confidence Interval (%)+/-
Apache-Sitgreaves	38.1	46.9
Carson	33.1	30.6
Cibola	577.4	62.2
Coconino	269.8	62.3
Coronado	528.2	27.8
Gila	140.7	96.5
Kaibab	10.8	35.9
Lincoln	23.0	33.3
Prescott	15.8	29.5
Santa Fe	46.6	8.3
Tonto	109.4	30.9
All Forests Combined	1,792.8	24.9

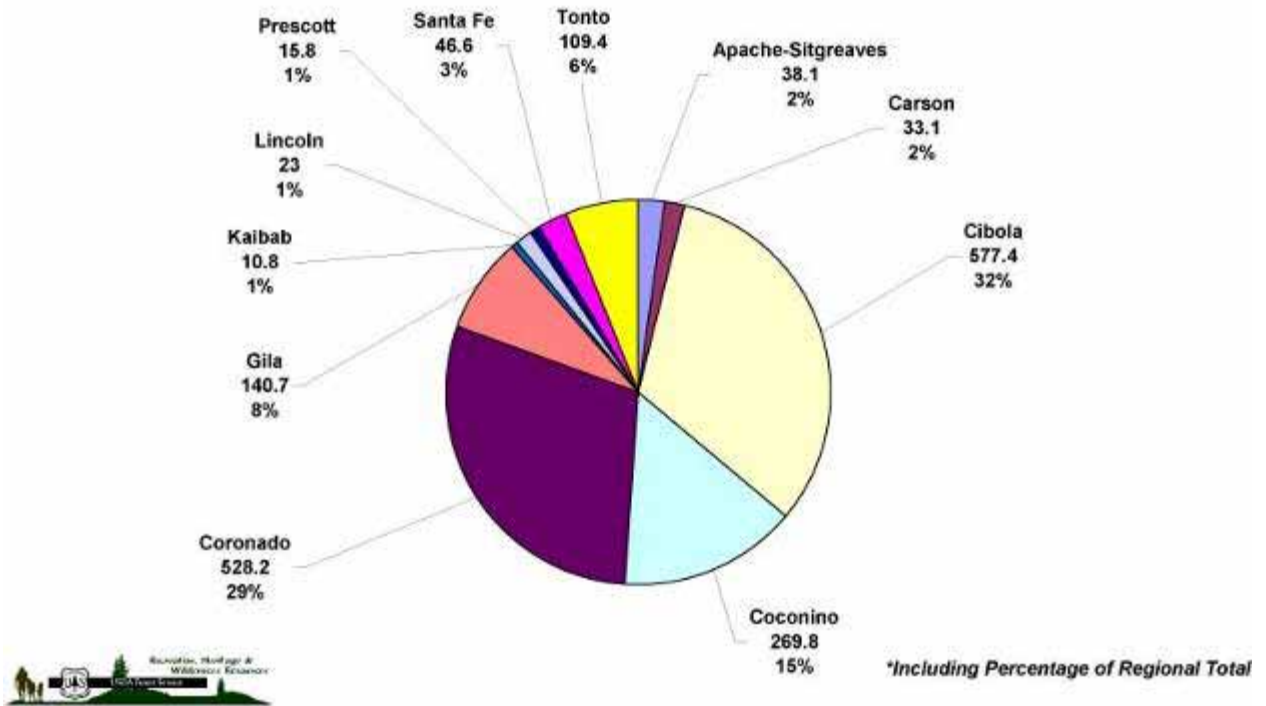
* A National Forest Visit is defined as the entry of one person upon a national forest to participate in recreation activities for an unspecified period of time. A National Forest Visit can be composed of multiple Site Visits.

+ Confidence interval - Defines the upper and lower bounds of the visitation estimate at the 80% confidence level, for example if the visitation estimate is 100 +/- 5%, one would say “at the 80% confidence level visitation is between 95 and 105 visits”.

The following pie chart displays wilderness use visits as a proportion of total wilderness use in the region:

¹ This is based on use categories developed by the Forest Service Wilderness Advisory Group, with low use defined as 0-10,000 visits, medium as 10,001 – 30,000 visits, and high being greater than 30,000 visits. Total wilderness use for a forest from NVUM was divided by the number of wildernesses the forest is lead for, to get an average amount of use per wilderness.

National Visitor Use Monitoring Project W I L D E R N E S S Southwestern Region Estimated Visits* (1,000s)



The National Visitor Use Monitoring data also provided information on gender, race and ethnicity, age, and origin of wilderness visitors.

Gender: On a regional basis, approximately 60 percent of wilderness visitors are male, and about 40 percent are female. Nationally, about 70 percent of national forest wilderness visitors are male.

Race and ethnicity: The vast majority of wilderness visitors in the Southwestern Region are white. The other two predominant groups of wilderness visitors are Spanish, Hispanic, or Latino, and American Indian/Alaska Native. Compared to national statistics, Region 3 has twice as many visits by visitors who reported their race/ethnicity as Spanish, Hispanic, or Latino and American Indian/Alaska Native. The following table shows the distribution of wilderness visits by all racial/ethnic groups surveyed:

Table 2: Percent of Wilderness Site Visits* by Race/Ethnicity

Race/Ethnicity†	Wilderness Site Visits (%)‡
American Indian/Alaska Native	2.10
Asian	0.59

Race/Ethnicity†	Wilderness Site Visits (%)‡
Black/African American	0.25
Native Hawaiian or other Pacific Islander	0
Other	0.59
Spanish, Hispanic, or Latino	5.73
White	91.23
Total	100.49

* A Site Visit is the entry of one person onto a National Forest site or area to participate in recreation activities for an unspecified period of time.

† Non-respondents to race/ethnicity questions were excluded from analysis.

‡ Calculations are computed using weights that expand the sample of individuals to the population of National Forest Visits. An individual could select multiple categories so this may total more than 100% (as in this case). For detailed information regarding weights contact the NVUM program manager.

Age: The largest age group represented by wilderness visitors who were surveyed was people in the 40-49 year age category. This is also the predominant age group using national forest wildernesses nationally. The following table shows the percentage of wilderness site visits generated by the identified age categories:

Table 3: Percent of Wilderness Site Visits* by Age

Age Class	Survey Respondents	Wilderness Site Visits (%)†
UNDER16	0	10.4
16-19	49	1.4
20-29	286	12.0
30-39	408	17.9
40-49	529	22.9
50-59	390	18.2
60-69	239	12.4
70+	75	4.8
Total	1,976	100.0

* A Site Visit is the entry of one person onto a national forest site or area to participate in recreation activities for an unspecified period of time.

† Calculations are computed using weights that expand the sample of individuals to the population.

Origin of Wilderness Visitors: According to NVUM data, the majority of the Southwestern Region’s wilderness visitors are from Arizona (48%), New Mexico (31%), Texas (4%), and California (3%) (USDA Forest Service 2007). Visitor origins within the region are concentrated near the communities of Flagstaff, Phoenix, and Tucson in Arizona, and Taos, Santa Fe, and Albuquerque in New Mexico. The following map shows the origin of all sampled visitors for every forest in the Southwestern Region.

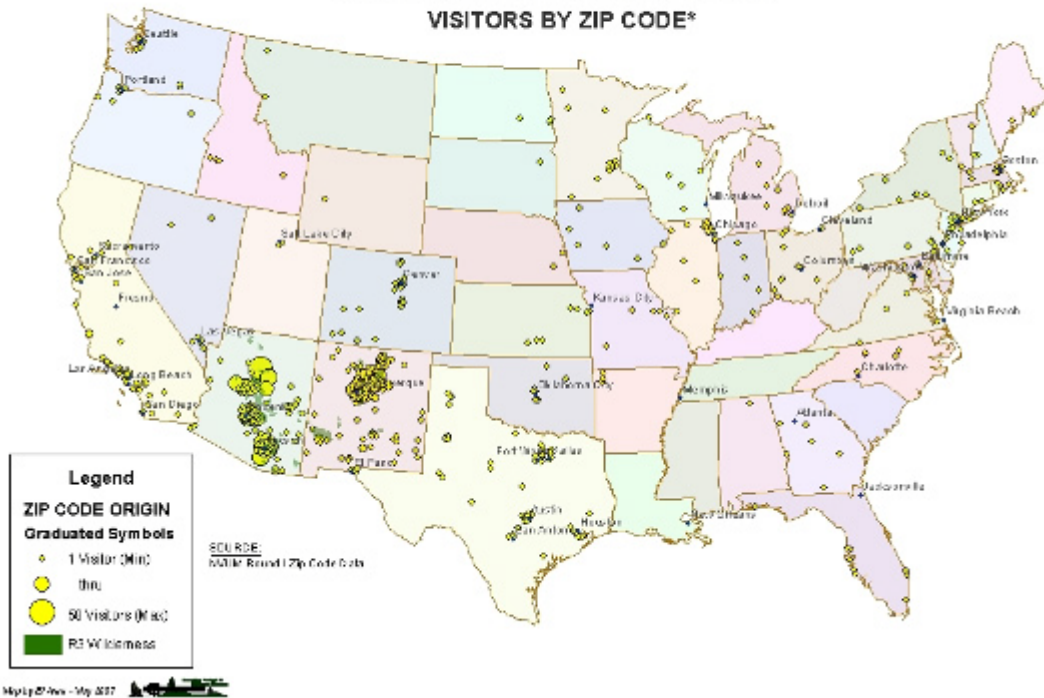


National Visitor Use Monitoring Project

W I L D E R N E S S

SOUTHWESTERN REGION

VISITORS BY ZIP CODE*



Current Wilderness Distribution Southwestern Region

Nationally, the four federal agencies that manage wilderness account for a total of 633.4 million acres. Of this total, 107.4 million acres are wilderness. Designated wilderness represents 17 percent of all federal agency acres.

Nationally the Forest Service manages about 34.8 million wilderness acres out of a total of 192.8 million acres. Designated wilderness represents 18 percent of all National Forest System acres. In Region 3, of a total of 20.8 million acres, 2.7 million are designated wilderness, representing 13 percent of the lands. Compared to the national figure, there are about five percent fewer wilderness acres in Region 3. For wilderness acres in the region to be at the national average would require the addition of about 1 million acres. If Alaska wilderness acres are subtracted out, the national average drops to 17 percent of National Forest System lands designated as wilderness (USDA Forest Service 2007).

In Arizona, most wilderness is located in the southwestern quadrant of the state (see Table 4 below)². The least amount of wilderness is in the northeast quadrant, which has the least amount of total acres that are managed by federal agencies with designated wilderness. Wilderness within the northwest and northeast quadrants respectively account for eight percent and six percent of the federal acres, which are below the national average of 17 percent of federal lands

² Each state was divided into four equal quadrants for this calculation. Wilderness acres and total federal acres, including all four federal agencies that manage wilderness, were determined from GIS for each quadrant.

designated as wilderness. The other two quadrants (southwest and southeast) have wilderness acres at or above the national average.

In New Mexico, most wilderness is also located in the southwestern quadrant of the state. This is where the Gila and Aldo Leopold Wildernesses are located, which account for about 760,000 of the almost 900,000 wilderness acres in that quadrant. The least represented quadrant, at two percent of the federal lands in designated wilderness, is in the southeastern part of the state. Most of this area includes lands administered by the Bureau of Land Management, but also includes the Lincoln National Forest and part of the Cibola National Forest. Wilderness acres in all quadrants in New Mexico are under-represented when compared to the national average.

Table 4: Wilderness Acres by Quadrant, Arizona and New Mexico, 2007

State and Quadrant	Managing Agencies	Number of Wilderness Acres in Quadrant	Total Federal Acres (BLM, FWS, FS, NPS only)	Wilderness Acres/Total Federal Acres (BLM, FWS, FS, NPS only)
Arizona – Northwest	BLM, FWS, FS, NPS	1,028,820	12,508,980	8%
Arizona – Northeast	BLM, FS, NPS	173,036	2,855,187	6%
Arizona – Southwest	BLM, FS, FWS, NPS	2,287,391	7,564,100	30%
Arizona – Southeast	BLM, FS, NPS	1,232,699	7,628,459	16%
New Mexico – Northwest	BLM, FS, NPS	356,017	6,086,263	6%
New Mexico - Northeast	FS	262,193	2,562,908	10%
New Mexico – Southwest	FS, FWS	896,588	10,965,525	8%
New Mexico - Southeast	FS, FWS, NPS	123,490	7,139,709	2%

National Trends in Wilderness Use

Cole (1996) estimates that recreation use in all federally managed wildernesses increased six times between 1964 and 1994. Most of this increase in use is associated with more wilderness designations. In 1994 approximately 68 percent of wilderness use was generated in wildernesses designated subsequent to the Wilderness Act (Cole 1996). Recreation use in Forest Service managed wildernesses grew at a rate of 9.6 percent annually between 1965 and 1974, 10 percent a year between 1975 and 1985, and 8.4 percent annually by 1993. The reduction in annual growth rates coincides with fewer new wilderness designations (Bowker et al 2006). Based on NVUM data from the first round of sampling, wilderness use on all national forests amounted to about 8.6 million visits annually (USDA, Forest Service 2007).

Looking to the future, it is expected that wilderness visitation will continue to increase over the next 50 years because of the increasing population nationally. However, participation on a per capita basis is expected to decline by 15 percent between 2006 and 2056. The reason for this

decline is primarily because of increases in population proportions for categories that are currently negatively correlated with participation in wilderness recreation. The estimated per capita decline in wilderness use is offset by the anticipated increase of 49 percent in the population as a whole during the same time period. Because of this offset, the number of wilderness participants is predicted to increase by 26 percent, even though the per capita participation rate is expected to decline (Bowker et al 2006).

Per-capita days spent in wilderness are also expected to decline by 26 percent over the 50 year time horizon. But again, since the United States population as a whole is expected to increase by 49 percent, the actual number of wilderness use days is expected to increase by about 21 percent.

According to Bowker, et al, income, gender (male), immigrant status (born in the United States), and environmental awareness are positively correlated with wildland recreation participation. Race (black and other), ethnicity (Hispanic), age, distance, and urban dwelling negatively affect wildland recreation participation (Bowker et al, 2006).

Changing Patterns of Use

Very few visitor use studies have been repeated in wilderness, so use trends are generally difficult to identify (Watson 2000). Cole reported in 1995 on trends in wilderness visitors and visits that were based on five repeated studies. Cole stated that the characteristics of visitors changed more than the type of visit. He identified five strong consistent trends in wilderness visitors, three of which relate to user demographics, which were visitors being older, education attainment being higher (40-50 percent have some graduate courses), and more females. Weak consistent trends (subtle changes) included increased income, more solo visitors, smaller groups, shorter overnight stays, more day-use, and use more concentrated in summer. Variables that did not change much were origin of users, and proportion of visitors who hike, photograph, and swim (Cole 1995). Cole cautions managers against concluding that these visitor characteristics will be the same in each wilderness.

Age of Visitors

Hendee and Dawson state that wilderness visitors tend to be younger on average than the general population (Hendee and Dawson 2002). However, Cole reported that the average age of visitors was increasing in the early 1990s, being between 35-40 years of age (Cole 1996). Watson indicated that the average age of wilderness visitors at that time was up significantly from previous studies (Watson 2000). According to the National Visitor Use Monitoring data, the predominant age group for wilderness visitors today in the Southwestern Region is the 40-49 year age category. This would tend to indicate that the average age of visitors continues to increase.

Gender of Visitors

From 1960 until about 1983, research showed the proportion of female users at 15 - 30 percent (Hendee and Dawson 2002). Cole's study of wildernesses in the early 1990s showed female use to have increased from previous studies in the 1960s and 1970s to 20 - 34 percent (Cole 1996). Region 3's NVUM results show that females represent about 40 percent of wilderness visitors (NVUM 2007).

Population Expansion Factors

Population growth in both Arizona and New Mexico exceeded U.S. population growth during the period 1990 to 2000. During this time period the United States grew at a rate of 13.2 percent, while the Arizona growth rate was 40 percent, and New Mexico grew at a rate of 20 percent (U.S. Census Bureau 2001).

The Census Bureau predicts that the United States population will grow by 29 percent between the years 2000 and 2030. Growth predictions in Arizona are that its population will increase by 109 percent in that time frame. Growth predictions for New Mexico are much lower than for Arizona, with a growth rate of 15 percent predicted for the same time period (U.S. Census Bureau 2005).

Bowker predicts that population growth in expanding cities in the West and Southwest in particular will result in increased use in wildernesses in the vicinity (Bowker et al 2006). It can also be expected that population increases in the communities adjacent to the National Forests will occur because of their attractiveness in terms of the availability of quality outdoor recreation experiences, clean air and water, and a natural setting (Socio-Economic Assessment for the Apache-Sitgreaves National Forest 2005).

Demographics

The demographics of Arizona and New Mexico in terms of race and ethnicity³ are different from the United States as a whole. As of the year 2000, the predominant racial/ethnic groups in the United States were white persons at 75 percent, persons of Hispanic/Latino origin at 12.5 percent, and black persons at 12.3 percent (U.S. Census Bureau 2000). The major differences between the United States as a whole and Arizona and New Mexico are the lower proportion of black and Asian persons in these two southwestern states, and the higher percentage of American Indian persons, Alaska Native persons, and persons of Hispanic/Latino origin.

Changes in Demographics

In Arizona, during the period of 1990 to 2000, the fastest growing racial/ethnic groups were multiple races at an annualized rate of 12.6 percent, Hispanic at 9 percent, and Asian or Pacific Islander at 8.2 percent. In New Mexico, the fastest growing groups were multiple races at 9.9 percent, Asian or Pacific Islander at 4.4 percent, and Hispanic at 3.3 percent (Socio-Economic Assessment for the Apache-Sitgreaves National Forest 2005).

³ Race and ethnicity are defined as separate concepts by the federal government. People of a specific race may be of any ethnic origin, and people of a specific ethnic origin may be of any race (Socio-Economic Assessment for the Apache-Sitgreaves National Forest 2005).

Table 5: Racial/Ethnic Composition of County and State Populations, 1990 - 2000 and Percent Change

Race/Ethnicity	Arizona		
	1990	2000	% Change
American Indian or Alaska Native	204,589	255,879	25.07%
Asian or Pacific Islander	54,127	98,969	82.85%
African American or Black	110,062	158,873	44.35%
Multiple Races	328,768	743,300	126.09%
White	2,967,682	3,873,611	30.53%
Hispanic	680,628	1,295,617	90.36%

Source: NRIS Human Dimensions

Race/Ethnicity	New Mexico		
	1990	2000	% Change
American Indian or Alaska Native	134,035	173,483	29.43%
Asian or Pacific Islander	14,372	20,758	44.43%
African American or Black	29,818	34,343	15.18%
Multiple Races	188,282	376,209	99.81%
White	1,148,562	1,214,253	5.72%
Hispanic	576,709	765,386	32.72%

Source: NRIS Human Dimensions

Table 6 displays some predictions related to changes in wilderness use based on racial and ethnic demographics in the Southwestern Region.

Table 6: Current Arizona and New Mexico Demographics and Predicted Future Changes

Race/Ethnicity	% of Population AZ	% of Population NM	R3 NVUM % of Wilderness Site Visits	Predicted Growth Rate, 1995 - 2025	Participation rate and predicted increase in wilderness use
White	75.5	66.8	91.23	49%	Participation rate higher than representation in population as a whole, relatively slow future growth in population, moderate increase in wilderness use
Black	3.1	1.9	0.24	100%	Participation rate lower than representation in population as a whole, high future growth in population, low increase in wilderness use

Race/ Ethnicity	% of Population AZ	% of Population NM	R3 NVUM % of Wilderness Site Visits	Predicted Growth Rate, 1995 – 2025	Participation rate and predicted increase in wilderness use
American Indian/ Alaska Native	5	9.5	2.09	54%	Participation rate lower than representation in population as a whole, relatively slow future growth in population, low increase in wilderness use
Asian	1.8	1.1	0.55	151% ⁴	Participation rate lower than representation in population as a whole, high future growth in population, low increase in wilderness use
Native Hawaiian/ Other Pacific Islander	0.1	0.1	0		
Hispanic/ Latino	25.3	42.1	5.89	117%	Participation rate much lower than representation in population as a whole, high future growth in population, low increase in wilderness use

Sources: Population and predicted growth, US Census Bureau 1996 and 2000; percent of wilderness sites visits, R3 Round 1 NVUM data.

General Characteristics about Wilderness Visitors

Visitor Origin

Average travel time for visitors to reach their destination wilderness from their home is 5 hours, and the average distance is 92 miles (Watson 1989). Most wilderness users are from urban areas however, the proportion of urban dwellers using any one area depends on that area’s proximity to a city. Most visitors come from the same state or region where the wilderness is located (Hendee and Dawson 2002). This is consistent with NVUM results for Region 3 (USDA Forest Service 2007).

Duration of Visits

Most wilderness visits are of short duration, and involve day use, or short overnight stays of only one to two nights. Many small or medium sized wildernesses have mostly day users (Hendee and Dawson, 2002). Visit duration is not known regionally for wildernesses in Region 3.

Group Characteristics

Wilderness group sizes are generally small, typically ranging from two to four people for 50-75 percent of the parties in wildernesses where this data has been collected. Party size is declining. User groups are usually families or close friends (Hendee and Dawson, 2002).

⁴ The 1996 U.S. Census Bureau projections combined Asian and Pacific Islander.

Season of Use

Most use in most areas occurs in the summertime (Hendee and Dawson, 2002). However, in the Southwestern Region a fair bit of use occurs in the winter and spring because of extreme summer temperatures and mild winter temperatures.

Wilderness Activities

The predominant travel method through wilderness is hiking. Nationally, the most popular activities in wilderness are fishing, photography, and nature study (Hendee and Dawson, 2002).

Conclusions – Regional Demand for Wilderness

1. Increased demand for additional wilderness in both Arizona and New Mexico should be anticipated based on population growth during the period of 1990 to 2000, which exceeded the national growth rate.
2. Assuming Arizona continues to grow at a rate greatly outpacing the national rate (predicted to be about 3 times the national rate), the number of visits to existing wilderness will continue to increase, and Arizona in particular could benefit from additional wilderness.
3. Demographics related to visitor race and ethnicity will affect the rate of increase in wilderness visits in the Southwestern Region. Even though the faster growing racial/ethnic groups have relatively low participation rates, wilderness use is still expected to increase, because of the overall population growth rate.
4. Public demand increases with proximity to six population centers: Flagstaff, Phoenix, Tucson, Santa Fe, Taos, and Albuquerque. Consider wilderness recommendations within 100 miles of those cities to provide for that demand.
5. Some additional public demand for wilderness in the Southwestern Region will occur from the influx of people moving to communities in the vicinity of the National Forests.
6. In terms of geographic distribution of wilderness, the Southwestern Region is under-represented with five percent fewer wilderness acres as compared with the representation nationally. Additionally, all quadrants in Arizona and New Mexico are under-represented with the exception of the southwest and southeast quadrants in Arizona. The most under-represented quadrants are southeast and northwest New Mexico, and northeast Arizona which are at 6 percent or less in the number of wilderness acres (compared with total federal wilderness acres).
7. Desirability of the scenic mountainous settings available in the rural communities within and adjacent to national forests in the Southwestern Region will attract new retirees and others, further contributing to a growth in wilderness visitation.

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