

Executive Summary

This report is an assessment of the socioeconomic and cultural relationships between the three ranger districts (RDs) of Lincoln National Forest (NF) and their neighboring communities. This assessment was commissioned by the Southwestern Regional Office of the United States Department of Agriculture Forest Service (FS), and serves as a source of information for the development of a revised plan for Lincoln NF.

The assessment is based primarily on secondary data sources, including the United States Bureau of the Census, the Bureau of Land Management, the United States Geological Survey, the United States Federal Highway Administration, the New Mexico Department of Transportation, offices of wildlife management, and county governments. The most important source of data was FS records, including the FS infrastructure database (INFRA) and geographic information system (GIS) databases. In many cases, specific information was not available in a form appropriate to this analysis, requiring the Bureau of Business and Economic Research to make estimates, using the best available data. In other cases, data was not available at all and the analysis was limited. Information sources and analysis methods are thoroughly documented throughout the report.

The **principal findings** of this study include the following:

- Over the past decades, uses of the Lincoln NF have shifted along with broader patterns of national and even global restructuring. Resource-based industries (mining and oil and gas, ranching, and timber) have declined in importance while amenity-based activities (recreation and residential development) have emerged as the predominate use in and around the Lincoln NF. In total, activities on the Lincoln NF directly and indirectly account for about 2.8 percent of all employment in the four county assessment area (Otero, Lincoln, Chaves, and Eddy Counties).
- Economic change is closely associated with changes in the demographic and social profile of forest users and communities that neighbor the Lincoln NF. These changes are again consistent with national demographic and social patterns but, while uneven across counties, are somewhat more pronounced. The population in the Lincoln NF assessment area is becoming older; ethnically, racially, and economically more diverse; better educated; and, on average, wealthier.
- These trends are much more pronounced in the assessment areas of the northern ranger districts (RDs) (Sacramento and Smokey Bear RDs, including Otero and Lincoln Counties) than in the corresponding areas of the Guadalupe RD (including Eddy and Chaves Counties). In the southern area, resource-based activities remain relatively more important, the development of amenity-based uses is tempered by the remoteness of the area, and demographic change is limited by the slow and declining rate of population growth.
- The checkerboard pattern of public and private landownership complicates the work of the FS – environmental management practices as regards wildlife protection, invasive species eradication, and fire and fuel management are more difficult and the provision of access and right-of-way (ROW) require greater investment where FS-owned land is not contiguous. However, the checkerboard pattern of landownership also provides a greater opportunity for the FS to fulfill its mission to demonstrate sustainable, multiple-use management strategies. Lincoln NF has been effective in undertaking land conveyances to mitigate problems of access and ROW.

- The remote location of the Lincoln NF has the effect of concentrating forest impacts among the local communities. However, technology, the growth of recreation and tourism activities, and the national and even global character of advocacy means that the FS managers also must be responsive to a broader constituency. This raises challenges, but also opportunities, for Lincoln NF managers.
- Lincoln NF has been very successful in fostering collaboration with private citizens, federal, state, local, and tribal governments, non-governmental organizations, schools, and many other entities. In light of the many changes in the socioeconomic conditions affecting the forest, collaboration can play a key role in the leveraging of resources, the exchange of ideas, and the negotiation of potential conflict.

The following is a brief review of information presented in this report.

Lincoln National Forest Overview

Lincoln NF has 1.1 million acres of publicly owned land and consists of three RDs (Sacramento, Smokey Bear, and Guadalupe) and two wilderness areas (Capitan Mountain Wilderness and the White Mountain Wilderness). Lincoln NF spans four counties located in south-central New Mexico: Lincoln, Otero, Chaves, and Eddy Counties. All four are rural counties. The largest incorporated areas are Roswell, Alamogordo, Carlsbad, and Artesia; all other incorporated areas had populations of less than 10,000, as of the 2000 census. The Sacramento and Smokey Bear RDs share borders with the Mescalero Apache tribe, which has historical ties to Lincoln NF land and continues to make use of Lincoln NF.

Demographics and Socioeconomic Trends

The populations of all four of the assessment area counties grew between 1980 and 2000, and are projected to continue to grow. Population growth was strongest in Lincoln County, which experienced population growth of 70 percent between 1980 and 2000; population growth in Otero County was 41 percent, roughly equivalent to that of New Mexico as a whole; growth in Eddy and Chaves Counties was somewhat lower than the state average. Similar patterns are projected for the 2000-2030 period, although growth will begin to moderate in Lincoln during the latter half of the forecast period. This growing population base implies that the FS can expect a continued increase in the use of Lincoln NF and an increase in the number of homes built within and adjacent to it.

The age of the area's population is expected to increase during the next two decades, as the percentage of individuals age 65 and older is expected to increase from 14 percent to 25 percent between now and 2030. The size of this cohort is expected to be especially large in Lincoln County, comprising 35 percent of the population by 2030.

Poverty varies with race and ethnicity. Assessment area poverty percentages by race are: Whites (63 percent), African Americans (3 percent), American Indians (5 percent), Asians (0 percent), and "Other" (29 percent). Assessment area poverty percentages by ethnicity are: non-Hispanic (41 percent) and Hispanic (59 percent).

Access

Although Lincoln NF is relatively remote, there are well-developed transportation routes that link Lincoln NF to major population centers. Growing populations in Las Cruces, El Paso, and Lubbock suggest that there are more people seeking out recreation opportunities offered by Lincoln NF. The higher and cooler mountainous regions of the Sacramento and Smokey Bear RDs are especially appealing to visitors from west Texas. Ongoing and future transportation infrastructure improvement projects will improve visitors' ability to access Lincoln NF.

Forest roads and trails provide important access for both forest users and FS officials. Access for FS officials is important for maintenance, rehabilitation, and fire management purposes. In addition to the many official forest roads and trails, numerous illegal user-created routes exist that have primarily been created by individuals driving off-highway vehicles (OHVs) off-road.

An influx of newcomers to the area has resulted in new subdivisions and housing developments both within and adjacent to the forest. Ranchers have found that newcomers are frequently willing to pay many times the value of the land for farming or ranching practices. This change in land use has the potential to create management problems for the FS, both in the form of future access problems for forest users and in the need to provide improved access to additional homes located within the forest.

Land Cover and Wildlife

Of the roughly 1.3 million acres in Lincoln NF, approximately 167 thousand acres (13 percent) are privately owned; the remaining 1.1 million acres (87 percent) are publicly owned. There is a checkerboard pattern of land ownership within Lincoln NF, which poses challenges for effective and efficient land management, as various landowners are likely to have dissimilar management interests and priorities. Land conveyances and exchanges can decrease such management problems, but the frequency of changes in land ownership has declined in recent decades due to a lack of funds available for purchases, the time consuming nature of exchanges, and decreased interest by private landowners as the value of their land for subdivision purposes has increased.

The predominant land cover in Lincoln NF as a whole is evergreen forest (58 percent), followed by herbaceous grasslands (22 percent) and shrub land (19 percent). Lincoln NF has several endangered and threatened plants and animals, including the Sacramento prickly poppy, the Texas Madrone, the Mexican spotted owl, and the bald eagle. There are also numerous invasive species present on the NF, especially in the Sacramento and Smokey Bear RDs.

Continued drought conditions combined with high fuel loads have created severe fire danger within parts of Lincoln NF. During the past several years there have been a number of fires in Lincoln NF, the most severe of which was the May 2004 lightning-caused Peppin Fire that burned 65,000 acres within the Capitan Mountain Wilderness (Smokey Bear RD). The FS is facing increased urgency to reduce the hazardous fuel loads and reduce the likelihood of crown fires near adjacent communities. Although a number of measures can be taken to progress toward this goal, some residents and environmentalists have concerns with the methods used.

Users of Lincoln NF

Recreation is one of the primary uses of Lincoln NF; FS data indicates that more than 780,000 people visited between 1999 and 2000. The majority of visitors (98 percent) engaged in recreational activities, while only 2 percent engaged in wildlife activities. A unique cave system and two ski areas attract many visitors to the area.

Grazing has been ongoing in the Lincoln NF area since the 1800s. Although the importance of grazing has since declined, grazing still has a significant economic impact (second only to recreation). Current economic and social conditions typically require ranchers to supplement grazing with additional sources of income. Local ranchers assert that access to grazing on Lincoln NF land is critical to the continued survival of the area's ranching culture.

Logging has occurred in the area since the early 1900s. As with grazing, the economic importance of the timber industry has declined over time, and this way of life has needed to be supplemented with additional income sources. Saw timber and fuel wood were the two most valuable forest products harvested in 2004, with sales values of approximately \$2.6 million and \$404 thousand, respectively.

Most special-use permits granted in Lincoln NF are for the purposes of recreation, communications, and transportation. Two of the special-use permits granted in Lincoln NF are for operation of the ski hills located within the NF. With respect to illegal uses, the most common was leaving a fire without properly extinguishing it. Other common violations related to sanitation, damaging natural features and other U.S. property, cutting or damaging timber products without the proper permit, and the abandonment of personal property.

Special Places

Lincoln NF features 70 designated recreational sites, most of which are located in the Sacramento and Smokey Bear RDs. There are also two wilderness areas located within Lincoln NF – the Capitan Mountain (approximately 35,000 acres) and White Mountain (roughly 49,000 acres) Wilderness areas, both located in the Smokey Bear RD. Inventoried roadless areas also exist in Lincoln NF, mostly within these two wilderness areas.

It is estimated that Lincoln NF contains between 12,000 and 15,000 sites of cultural, archeological, or historical interest. During 2003, the FS surveyed 12,000 acres, resulting in the documentation of 67 new sites. Four sites have been listed on the National Register of Historic Places: the Cloudcroft Trestle, the Bonito pipeline, Wizard's Roost (a prehistoric solar observatory), and the Jicarilla Schoolhouse.

Economic Impact of Lincoln NF

The principal economic activities on Lincoln NF include ranching, timber harvesting, recreation, and FS operations. The direct and indirect impacts of these activities indicate that visitor spending and ranching are the largest contributors to the economic impact of Lincoln NF on the regional economy. Visitors and recreationists contributed almost \$137 million of direct and indirect economic impacts to the local economy in 2004, while ranching contributed nearly \$23 million and FS operations contributed slightly more than \$16 million. The relevance of these activities is

slightly different for employment and income contributions, for which recreation is again the largest contributor, followed by FS operations and then ranching.

Lincoln and Otero Counties, which contain nearly 90 percent of Lincoln NF, are likely to experience the majority of the economic benefits from the forest.

Community Partnerships

Lincoln NF benefits from the efforts of many volunteers and works with a variety of partners and collaborators on a wide range of projects. Volunteers have helped with recreation site and trail maintenance, business and finance activities, heritage resource protection, and other activities. Lincoln NF benefited from the efforts of nearly 600 volunteers during 2005, whose efforts have an estimated value of over \$166 thousand.

In 2005, Lincoln NF maintained more than 200 partnerships and collaborations on projects that ranged from education to forest health and sustainability. The Collaborative Forest Rehabilitation Program (CFRP), which provides funding in the form of cost-share grants for the purposes of collaborative forest restoration projects on public lands, is just one example of the many collaborative efforts in which Lincoln NF is involved.

1. Introduction

1.1 Statement of Purpose

This report provides information about and analysis of the socioeconomic environment of the Lincoln National Forest (NF), including the relationships between Forest Service (FS) managed land, visitors, and surrounding communities. Specifically, this report:

- Documents and analyzes the current contributions of Lincoln NF to the socioeconomic and cultural vitality of the communities neighboring the public land;
- Identifies and evaluates national, regional, and local trends that may shape these contributions during the coming years; and
- Explores opportunities and risks that the FS and the public confront as they work to broaden and deepen relationships between forest, visitors, and neighboring communities.

The purpose of the report is to assist the FS and the public in developing a forest management plan.

1.2 Sources of Information, Analytical Methods, and Levels of Analysis

The Lincoln NF is comprised of three ranger districts (RDs): Smokey Bear, Sacramento, and Guadalupe; includes two wilderness areas: the Capitan Mountain Wilderness (roughly 35,000 acres) and the White Mountain Wilderness (nearly 49,000 acres); and encompasses portions of four mountain ranges: the Jicarilla Mountains, Sacramento Mountains, Guadalupe Mountains, and Capitan Mountains.

Information in this assessment is largely drawn from secondary data sources. Specifically, data for this report comes from:

- Demographic and economic data sets, including those available from the United States Census Bureau and the Bureau of Economic Analysis;
- Administrative, land management, and resource data, mostly provided by the FS and the Bureau of Land Management; and
- Contextual and historical information, obtained from archival sources such as newspapers, internet sites, and trade journals.

Throughout this report, an effort is made to undertake analysis on the local scale, for example, considering differences among communities within individual counties. However, the structure of data sources often constrains this effort. Demographic and economic data sets are in many cases available only on the county level; it is not possible to disaggregate this data to the community level. Similarly, administrative data provided by the FS is often at the forest level (for Lincoln NF as a whole), and it is likewise impossible to further disaggregate the data to the RD level.

1.3 Assessment Area

Lincoln NF is located in Lincoln, Otero, Chaves, and Eddy Counties in south-central New Mexico. The forest encompasses roughly 1.3 million acres, of which approximately 1.1 million

acres (87 percent) are publicly owned; the remaining 167 thousand acres (13 percent) are privately owned. Lincoln NF is the smallest of the five national forests located within New Mexico. **Figure 1.1** provides a map of Lincoln NF and the surrounding vicinity – county boundaries, urban areas, Indian reservations, and major roads and airports are all detailed on the map.

Although the socioeconomic characteristics of the four counties vary, all are predominately rural counties. The communities within the four-county assessment area with the largest populations as of 2000 are Roswell in Chaves County (population 45,293), Alamogordo in Otero County (population 35,582), Carlsbad in Eddy County (population 25,625), and Artesia in Eddy County (population 10,692). All other communities within the assessment areas had populations of less than 10,000 people as of 2000.

Much of the statistical information used for this report, including demographic and economic data sets, is available only on a county level. Thus, county boundaries define the parameters of much of the data and determine the assessment area – the area includes only those New Mexico counties that are contained or touched by the four RDs of Lincoln NF. The assessment area is comprised of four New Mexico counties – Otero, Lincoln, Eddy, and Chaves Counties – and includes 21,716 square miles or 13,898,495 acres.

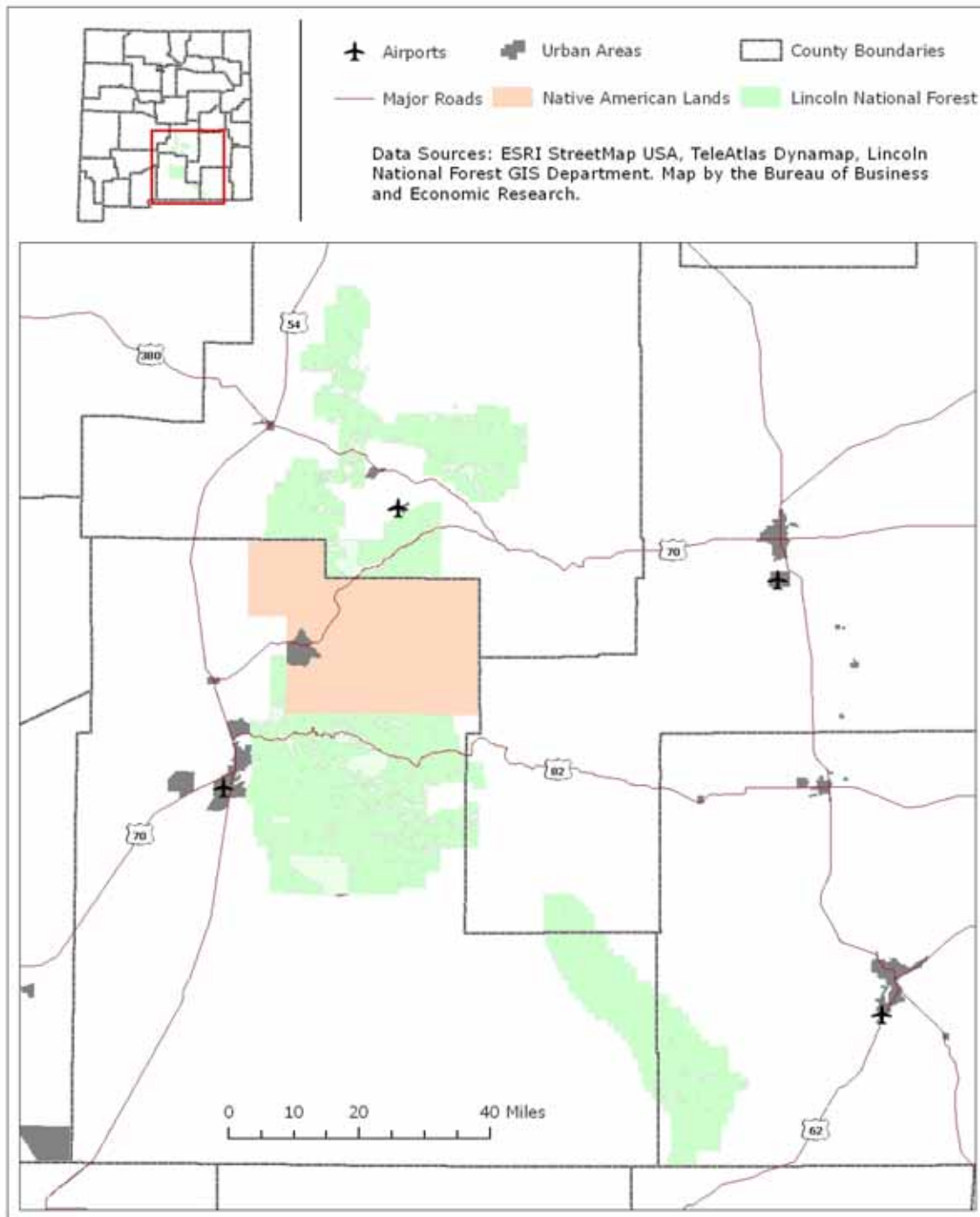


Figure 1.1: Lincoln NF Assessment Area

Table 1.1 lists the counties in the assessment area and shows the amount of FS-owned land in each county, total Lincoln NF acres in each county, and the amount of land within Lincoln NF that is owned by other entities. To place Lincoln NF in a regional context, the last two columns provide data on the total acres in each county and the percent of these acres covered by Lincoln NF.

Table 1.1: Forest-Owned Land by County (Acres)

	USFS Owned	Other Owned	Total Lincoln NF	Total Land in County	Forest as % of County
Otero	559,562	98,276	657,838	4,238,704	15.5%
Lincoln	360,599	62,742	423,341	3,089,791	13.7%
Eddy	133,541	4,191	137,732	2,684,638	5.1%
Chaves	40,504	1,378	41,882	3,885,361	1.1%
Total	1,094,206	166,587	1,260,793	13,898,495	9.1%

Sources: Lincoln NF GIS Department and ESRI ArcGIS Street Map USA 2004; Calculations by UNM-BBER.

The largest portions of Lincoln NF are located in Otero and Lincoln Counties. Forest land comprises a far greater percentage of land in these counties (16 percent and 14 percent, respectively) than in Eddy and Chaves Counties (5 percent and 1 percent, respectively). Significantly, in Otero and Lincoln Counties, more than 17 percent of Lincoln NF land is owned by other entities (primarily private landowners), whereas only 3 percent of Lincoln NF land is owned by other entities (again, primarily private landowners) in Eddy and Chaves Counties.

1.4 Brief History of Lincoln NF and its Assessment Area

It is unclear when humans first inhabited the area that comprises Lincoln NF, although much of the Southwest was occupied by 10,000 B.C. The prehistoric peoples who occupied south-central New Mexico initially depended upon hunting, although climatic changes to a drier climate later caused a transition to dependence upon both hunting and gathering. Evidence of their camps (extinct fauna and human artifactual material) has been found in caves in the Guadalupe Mountains. Rock shelters and campsites have been located in both the basin and mountain regions.

Eventually, dependence upon agriculture becomes more prevalent. By approximately 700 A.D., pit house villages were established and inhabited. The people who inhabited the pit house villages were part of the Jornada Mogollon Culture, one of numerous distinctive cultural traditions that had developed in the Southwest between 300 B.C. and 700 A.D. By 1200 A.D., pit houses were replaced with above-ground dwellings. Artifacts have suggested that the Jornada people were in contact with other parts of the Southwest and northern Mexico. A reliance on bison from the plains is also evident. For reasons that remain the subject of debate among scholars, the area encompassed by the forest was largely abandoned in the late 1300s or early 1400s.

The area remained unpopulated for 200 years. By the 1700s, the area had become the homeland of the Mescalero Apache, a people whose subsistence depended upon hunting, gathering, and raiding. Mescal, datil, piñon, and mesquite were the four plant foods of primary importance to the Mescalero. The mid 1800s brought about the start of the Anglo occupation. The Anglos made numerous attempts to end Apache raiding through the use of military campaigns, farming projects for the Mescaleros, and the establishment of Ft. Stanton. In 1874, a reservation was established for the Mescalero Apache. The reservation lies between what are now the Smokey Bear and

Sacramento RDs. Apache use of Lincoln NF essentially ended by the late 1800s, as settlement on the Mescalero reservation increased and permanent Anglo occupation occurred. Due to the Apache's historic ties with Lincoln NF land, there are Apache sites within the forest, although the sites are often difficult to identify.

The area became a popular settlement area in the late 1800s, as it was a good place for raising stock and had large tracts of land available. The FS began playing a role in the area in the early 1900s. The land that now comprises Lincoln NF was originally part of five national forests or forest reserves. Consolidation of the various forests occurred in 1917, and the area became known as Lincoln NF.

Lincoln NF is the home of the famous Smokey the Bear, the tiny black bear cub found after a human-caused forest fire in 1950. Smokey was later housed at the National Zoo in Washington, D.C. and became the well-known figure used to warn and educate the public about the dangers of forest fires. The burial site of Smokey the Bear is located at the Smokey Bear State Park in Capitan, New Mexico.

Many who live in the assessment area have families who go back several generations, having supported themselves as ranchers, miners, or in the timber industry. In recent years, the area has attracted second home investments and a growing number of retirees and families and individuals who have opted for a rural lifestyle. The population is therefore a diverse mix of individuals with varied demographic characteristics, cultural backgrounds, and values, attitudes, and beliefs. Different groups of residents have various, and often opposing, expectations of the services and management obligations of the FS. Later chapters of this report examine these differences and the management challenges they pose.

1.5 Lincoln National Forest Ranger Districts

The following sections describe each of the three RDs, including a discussion of historical land uses, using information from the Lincoln NF website (<http://www.fs.fed.us/r3/lincoln/>) and other sources.

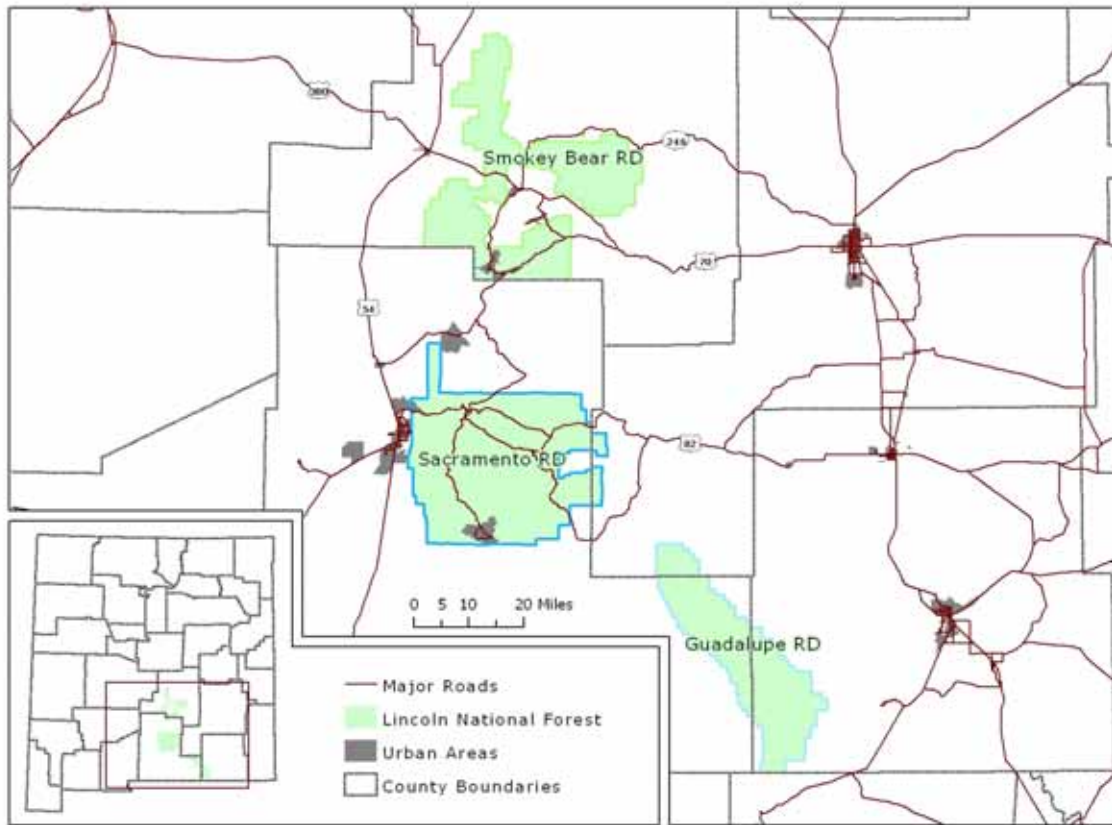


Figure 1.2: Lincoln NF Ranger Districts

1.6 Sacramento Ranger District

The Sacramento RD is the largest of the three RDs, with about 450,000 acres or 41 percent of Lincoln NF-owned land under its management. The RD is contained entirely within Otero County, with its headquarters in Cloudcroft. The Sacramento Mountain Range is located in the Sacramento RD, resulting in elevations that range from 4,600 to 9,695 feet. The district features a wide variety of habitats, from scrublands and grasslands to evergreen forests at higher elevations.

The only highway tunnel in southern New Mexico is on U.S. Highway 82, which bisects the Sacramento RD between Cloudcroft and Alamogordo. Just west of the tunnel is a parking area with a magnificent view of White Sands National Monument, Fresnal Canyon, and the Tularosa Basin. Also located within the Sacramento RD is the National Solar Observatory at Sacramento Peak, managed by the Association of Universities for Research in Astronomy (AURA) with funding from the National Science Foundation; and the Apache Point Observatory, owned by the Astrophysical Research Consortium and managed by New Mexico State University. Both are located in Sunspot, New Mexico and can be accessed via Scenic By-Way NM 6563. The National Solar Observatory is open to the public May 1 through October 1.

Grazing and timber made the area popular for settlement in the late 1800s. Grazing opportunities led to the establishment of Tularosa on the west side of the Sacramento Mountains in the 1860s and Weed and Mayhill on the eastern slopes of the Sacramento Mountains in the 1880s.

Alamogordo was established as a railroad town in 1898 and had a line running directly into the mountains to acquire timber. The presence of the railroad led to the establishment of High Rolls, Mountain Park, and Cloudcroft, as well as that of Russia and Marcia (both now deserted). The railroad tracks were removed in 1959 as a result of rising logging costs and the construction of highways.

During recent years, the region has experienced rapid development, raising concerns for fire management, water availability, and threatened and endangered species preservation. Two major ecosystems intersect in the area, creating much diversity. A number of protected, endangered species are found in the forest, including the Mexican spotted owl.

1.7 Smokey Bear Ranger District

The Smokey Bear RD is located mostly within Lincoln County, with a smaller portion in Chaves County. The RD manages roughly 375,000 acres, about one-third of the Lincoln NF total, and has its headquarters in Ruidoso. The Sacramento, Jicarilla, and Capitan Mountain Ranges (the last being the birthplace of Smokey the Bear), with elevations ranging from 5,400 to 11,580 feet, are located in the Smokey Bear RD. Both of Lincoln NF's wilderness areas (Capitan Mountain and White Mountain Wilderness areas) are located within Smokey Bear RD. Elevation also plays an important role in the climate, as temperatures can vary from exceptionally hot in the desert areas to quite cool in the mountain regions. Vegetation varies from semi-desert plants to spruce, fir, and high-elevation grasses and forbs.

Two towns of particular historical interest – Lincoln and Capitan – are both located near Smokey Bear RD. Lincoln is the site of one of the famous Billy-the-Kid shoot-outs, while Capitan is the resting place of Smokey the Bear. Lincoln was established in 1849 by families engaged in farming and raising cattle and sheep. Grazing opportunities also led to settlement of the Hondo and Ruidoso Valleys. Range conflicts have long played a role in the region's history, the most famous of which is the Lincoln County War, begun in 1878.

In the 1870s, gold was discovered in the area, leading to the establishment of the towns of Nogal and White Oaks in the late 1870s. Many other mining camps sprang up in the Jicarilla Mountains. When the railroad was built northward from El Paso but bypassed White Oaks, a decline in mining development occurred in the Smokey Bear RD region.

Today the Smokey Bear RD is characterized by well-established communities such as Ruidoso, Ruidoso Downs, Alto, and Glencoe, and the growing presence of more affluent constituencies. Important stakeholders include developers marketing to Texas-based markets, ski resorts, and Mescalero Apache tribe casinos. Development issues are less pressing in the Smokey Bear RD than in the Sacramento RD, as the Ruidoso area has largely been built out already. The towns of Capitan and Alto are now experiencing the greatest development pressures in the area. Because much of the market for these developments includes Texans, development patterns often follow fluctuations in the oil and gas markets that generate wealth in Texas.

1.8 Guadalupe Ranger District

The Guadalupe RD, located in portions of Otero, Eddy, and Chaves Counties, comprises the remainder of the Lincoln NF. From its headquarters in Carlsbad, the RD manages about 280,000

acres, roughly one-quarter of all Lincoln NF-managed land. The landscape of the Guadalupe RD consists of gently rolling hills and steep canyons atop the Guadalupe Mountain Range. Vegetation varies from that characteristic of the Chihuahuan Desert to piñon, juniper, and ponderosa woodlands. The Guadalupe Mountains are an exposed portion of the ancient and geologically significant Capitan Barrier Reef, which include many caves, unique and diverse ecosystems, and sedimentary formations rich with Permian Age fossils. Elevations range from 3,500 in the northern part of the district to 7,500 feet in the southern portion of the district along the Texas border with New Mexico.

The landscape of the northern two-thirds of the district consists of rolling hills and canyons. Sitting Bull Falls Recreation Area, Rim Road, and Last Chance Canyon Trail are all popular destination areas located within the northern two-thirds of the district. Sitting Bull Falls Recreation Area is one of the most spectacular and popular destinations within the district. The Sitting Bull Falls is a 150-foot waterfall that cascades to natural pools.

The landscape of the southern third of the district consists of deep canyons with sheer cliffs. Unusual plant life for this part of New Mexico is found throughout this portion of the district, including Chinkapin oak and Douglas-fir trees. The endangered Texas Madrone tree with its shedding bark can also be seen in this area. This portion of the district provides many breathtaking views, but is remote and primitive with no drinking water or available services. Most of the district's 130 primitive caves, classified as "Nationally Significant Caves" by the National Park Service, are located in the steep and rugged canyons of the district's southern third. Permits are required to enter all caves (within the Guadalupe RD and other Lincoln NF districts). Some caves require a guide due to sensitive cave formations or on-going restoration work. Carlsbad Caverns National Park abuts the southeastern edge of the Guadalupe RD, and contains more than 100 known caves, including Lechuguilla Cave – the nation's deepest limestone cave and fourth longest.

The Guadalupe RD area of New Mexico is largely uninhabited and devoid of modern day conveniences. Carlsbad is the closest town of any significant size, about 30 miles to the west as the crow flies. Queen is a small village about 40 miles southwest of Carlsbad that was abandoned during the 1930s but which has recently been resettled. The area's isolation causes there to be few land development issues.

There is a large controversy around oil and gas development on Bureau of Land Management land in this area of New Mexico. Controversy has arisen because the area is also North America's largest and wildest Chihuahuan Desert grassland on public land. There are numerous concerns regarding the effects of oil and gas development on the ecosystem, groundwater, ranching operations, and wildlife. A variety of environmental and conservation organizations are working to halt oil and gas development in the Greater Otero Mesa area. However, pressures from the oil and gas industry have increased as energy prices have risen.

1.9 Organization of the Report

The organization of this assessment is based on the collection and analysis of data pertinent to each of the assessment topics. Chapter 2 provides information on demographic trends and economic characteristics of the counties within the assessment area. Chapter 3 discusses access and travel patterns within the area. Chapter 4 examines the forest's land cover, ownership and

management. Chapter 5 examines the different uses of Lincoln NF and the policies impacting these different uses. Chapter 6 examines specially designated areas in the forest, including recreational and heritage sites. Chapter 7 provides an assessment of the economic impacts Lincoln NF has on surrounding communities. Chapter 8 discusses relationships between Lincoln NF and various communities at the local and regional levels and discusses partnerships on specific projects. Chapter 9 identifies key issues facing the forest lands and their management. Finally, Chapter 10 provides a summary of principal findings and recommendations.

2 Demographic and Socioeconomic Trends

This section examines the demographic and socioeconomic patterns of those living in or near Lincoln National Forest (NF). The principal source of information is the U.S. Census Bureau's decennial censuses for the years 2000, 1990, and 1980. The geographical scope of this review includes the four counties in which Lincoln NF is located (Chaves, Eddy, Lincoln, Otero Counties); data is presented on the county scale and, where available, for census places.

2.1 Population Growth

Table 2.1 shows population density is relatively sparse in the assessment area, ranging from four persons per square mile in Lincoln County to 12.3 in Eddy County. This is well below the New Mexico statewide population density of 16 persons per square mile, but consistent with patterns found in the state's rural areas.

Table 2.1: 2000 Population Density (sq. mile)

Population Density	
Chaves	10.1
Eddy	12.3
Lincoln	4.0
Otero	9.4

Source: US Census Bureau, 2000 Decennial Census.

Note: Population Density calculated as per square mile of land area.

Table 2.2 shows that during the period 1980-2000 the four counties that comprise the assessment area added about 40,000 persons to their population, an increase from about 155,000 to 195,000. The 26 percent increase was slightly below that of the U.S. as a whole, and significantly below the 40 percent increase experienced by the state of New Mexico during the same period.

Population growth in the four-county assessment area was highly uneven, generally favoring the more sparsely populated areas of Lincoln and Otero Counties, where the largest swaths of national forest land are located. During the period 1980-2000, these two counties added 26,000 persons (net) to their populations, an increase of about 47 percent. By comparison, Chavez and Eddy Counties grew by 14,000 persons, an increase of only 14 percent. Moreover, while the growth of the population accelerated rapidly from the 1980-1990 period to the 1990-2000 in Lincoln and Otero Counties, growth of the population in Chaves and Eddy Counties slowed. The rapid population growth of Otero and Lincoln Counties is at least partially explained by the relocation of retirees or partial retirees attracted by recreational amenities and the mountains.

According to Census Bureau projections, it is expected that 233,000 residents will live in the assessment area by 2030. This represents an increase of 11 percent, or over 22,000, between 2010 and 2030. Population growth will continue to favor Lincoln County (a projected 40 percent increase) during 2000-2010 but the other three counties will lag behind the state's growth rate. Following the state trend, growth is projected to diminish in all four counties after 2010.

Table 2.2: Historical & Projected County Population, 1980-2030

	Historical			Projected		
	1980	1990	2000	2010	2020	2030
Chaves	51,103	57,849	61,382	64,864	67,591	69,251
Eddy	47,855	48,605	51,658	55,274	58,514	61,066
Lincoln	10,997	12,219	19,411	23,792	27,100	29,715
Otero	44,665	51,928	62,298	67,018	70,508	73,348
TOTAL LINCOLN COUNTIES	154,620	170,601	194,749	210,948	223,713	233,380
TOTAL NM	1,303,303	1,515,069	1,819,046	2,112,986	2,383,116	2,626,553

	Percent Change				
	1980-1990	1990-2000	2000-2010	2010-2020	2020-2030
Chaves	13%	6%	10%	4%	2%
Eddy	2%	6%	13%	6%	4%
Lincoln	11%	59%	40%	14%	10%
Otero	16%	20%	13%	5%	4%
TOTAL LINCOLN COUNTIES	10%	14%	8%	6%	4%
TOTAL NM	16%	20%	16%	13%	10%

Source: US Census Bureau, Decennial Census, 1980, 1990, 2000. Calculations done by UNM - BBER.

Table 2.3 displays a complete list of communities and their populations in the assessment area, as reported by the U.S. Census Bureau.¹ The growth of the population of Roswell, in Chaves County, was flat during the 1990-2000 period. With a population of about 45,000, Roswell is the largest city and home to nearly one-quarter of the total population of the assessment area. Likewise, Carlsbad and Artesia in Eddy County, the third and fourth largest communities in the assessment area, saw little population gain. By contrast, Alamogordo in Otero County, the second largest city in the area, grew 29 percent. The three fastest growing communities in the area were Ruidoso (up 3,100), Ruidoso Downs (up 900), and Capitan (up 600), all of which are located in Lincoln County and abut the Lincoln NF. A loss of nearly 4,000 persons at Holloman Air Force Base CDP in Otero County offset the otherwise rapid gains among communities in Otero and Lincoln Counties. The decline in the population was a result of Air Force policies and was not indicative of the broader patterns evident in the two-county area.²

¹ This listing includes both incorporated and unincorporated census designated places (CDPs).

² The decline in the Holloman AFB was the result of a change in the base's mission and a decision to move personnel off base for housing rather than renovate existing housing or build new housing.

Table 2.3: Population in Places, 1990-2000

Lincoln Places	County	1990	2000	Change	% Change
Alamogordo city	Otero	27,596	35,582	7,986	29
Artesia city	Eddy	10,610	10,692	82	1
Boles Acres CDP	Otero	1,409	1,172	-237	-17
Capitan village	Lincoln	842	1,443	601	71
Carlsbad city	Eddy	24,952	25,625	673	3
Carlsbad North CDP	Eddy	1,167	1,245	78	7
Carrizozo town	Lincoln	1,075	1,036	-39	-4
Chaparral CDP	Otero	2,962	NA	NA	NA
Cloudcroft village	Otero	636	749	113	18
Corona village	Lincoln	215	165	-50	-23
Dexter town	Chaves	898	1,235	337	38
Hagerman town	Chaves	961	1,168	207	22
Holloman AFB CDP	Otero	5,891	2,076	-3,815	-65
Hope village	Eddy	101	107	6	6
Lake Arthur town	Chaves	336	432	96	29
La Luz CDP	Otero	1,625	1,615	-10	-1
Loving village	Eddy	1,243	1,326	83	7
Mescalero CDP	Otero	1,159	1,233	74	6
Roswell city	Chaves	44,654	45,293	639	1
Ruidoso village	Lincoln	4,600	7,698	3,098	67
Ruidoso Downs village	Lincoln	920	1,824	904	98
Timberon CDP	Otero	NA	309	NA	NA
Tularosa village	Otero	2,615	2,864	249	10
TOTAL LINCOLN PLACES		136,467	144,889	8,422	6

Source: US Census Bureau, Decennial Census, 1980, 1990, 2000. Calculations by UNM-BBER.

2.2 Racial/Ethnic Composition

New Mexico was the first state in the United States in which the White/non-Hispanic population comprises a minority of the state's total. The four county assessment area is an exception to this pattern, though the trends suggest a notable shift.

Table 2.4 shows the population increased for most race-ethnic groups in the assessment area between 1990 and 2000. The White population increased 6,000, but much of that increase was among White Hispanic persons. The White/non-Hispanic population grew by only 3 percent during the period, while the Hispanic population, both White and non-White, grew by nearly 33 percent. The assessment area had an increase of 17,000 in the number of people who self-reported as "other" when asked about racial identity. This "other" includes individuals who self-identify with more than one racial group, but it also includes those, fairly numerous in New Mexico, who self-identify with some racial group not listed. Many of those who so identify are Hispanic.

American Indians increased as a percent of the New Mexico population between 1990 and 2000. During the same period, the American Indian population in the assessment area increased about 1,600. American Indians constituted 6 percent of the 2000 population in Otero County, home of the Mescalero Apache. The African American population fell about 300 in the assessment area. African Americans constituted 4 percent of the population in Otero County. Otero County has the most diverse population in the area.

Table 2.4: Race / Ethnicity by County, 1990 & 2000

	WHITE (NON- HISPANIC)	HISPANIC	AFRICAN AMERICAN	AMERICAN INDIAN	ASIAN OR PACIFIC ISLANDER	OTHER	TOTAL
Year 1990							
Chaves	34,792	21,271	1,197	375	282	8,205	66,122
Eddy	30,236	17,145	826	249	201	7,732	56,389
Lincoln	8,585	3,427	65	132	28	819	13,056
Otero	33,268	12,380	2,755	2,984	966	3,910	56,263
TOTAL LINCOLN COUNTIES	106,881	54,223	4,843	3,740	1,477	20,666	191,830
Year 2000							
Chaves	31,970	26,904	1,209	694	357	14,955	76,089
Eddy	29,797	20,023	805	646	278	10,491	62,040
Lincoln	13,763	4,975	68	379	65	2,671	21,921
Otero	34,728	20,033	2,440	3,614	810	9,515	71,140
TOTAL LINCOLN COUNTIES	110,258	71,935	4,522	5,333	1,510	37,632	231,190

Source: US Census Bureau, Decennial Census, 1990 and 2000. Calculations done by UNM - BBER.

Note: Hispanic can be of any race. The "Other" group includes two or more races.

Table 2.5 presents the percentages of the race-ethnic groups represented in each county in the assessment area. Between 1990 and 2000, the Hispanic share of the total population in New Mexico rose from 32 percent to 37 percent. The Hispanic share also increased from 32 percent to 37 percent in the assessment area, while the non-Hispanic share fell commensurately. The Hispanic share of the total population slipped in Lincoln County but increased in the other three counties. While not shown in the table, White/non-Hispanics added about 3,500 people overall. White/non-Hispanics increased over 5,000 in Lincoln County and in Otero County but they declined in Eddy County and Chaves County. The White/non-Hispanic share of the total population decreased 6 percentage points to 57 percent in the assessment area.

As indicated above, population trends for race and ethnicity varied by county. These shifting demographics have social and political implications that may affect interactions between the Lincoln NF and the surrounding communities. The implications are discussed at the conclusion of this section of the report.

Table 2.5: Race / Ethnicity by County, Percentage, 1990 & 2000

	WHITE (NON- HISPANIC)	HISPANIC	AFRICAN AMERICAN	AMERICAN INDIAN	ASIAN OR PACIFIC ISLANDER	OTHER	TOTAL
Year 1990							
Chaves	53%	32%	2%	1%	0%	12%	100%
Eddy	54%	30%	1%	0%	0%	14%	100%
Lincoln	66%	26%	0%	1%	0%	6%	100%
Otero	59%	22%	5%	5%	2%	7%	100%
TOTAL LINCOLN	56%	28%	3%	2%	1%	11%	100%
TOTAL NM	50%	38%	2%	8%	1%	0%	99%
Year 2000							
Chaves	42%	35%	2%	1%	0%	20%	100%
Eddy	48%	32%	1%	1%	0%	17%	100%
Lincoln	63%	23%	0%	2%	0%	12%	100%
Otero	49%	28%	3%	5%	1%	13%	100%
TOTAL LINCOLN	48%	31%	2%	2%	1%	16%	100%
TOTAL NM	45%	42%	2%	9%	1%	1%	100%

Source: US Census Bureau, Decennial Census, 1990 and 2000. Calculations done by UNM - BBER.

Note: Hispanic can be of any race. The "Other" group includes two or more races.

2.3 Age of Population

Table 2.6 presents the age of the population by county in the assessment area. Shown are the percentages of those within each cohort as derived from the 2000 census; these are followed by projections of each age cohort in 10-year increments until 2030. The patterns evident in these data are consistent with the national trends, as the 'Baby Boomer' generation reaches the age of retirement and the working population declines in relative proportion.

The ages 15 to 64 cohort represents those of working age, but its share of the area total is expected to shrink from 63 percent to 58 percent between 2000 and 2030. All counties will experience the trend of proportionally fewer working age people. Three of the counties have mid-sized populations and cities (for New Mexico) but they also have less economic activity and diversity than urban centers in the state. With limited opportunities for employment, some younger people migrate to larger cities with more diversified economic bases.

The share of 65 and older cohort is projected to increase from 14 percent to 25 percent in the assessment area during the 30-year period. Three counties will see approximately 10 percentage point increases in this cohort's share of the total. This cohort will reach a quarter of the total In Chaves and Eddy Counties, one-fifth in Otero County, and will nearly double to about 35 percent of the population In Lincoln County.

Aging populations will present new challenges for governments at all levels as those retiring from the workforce expect to receive services funded by revenues from a workforce that is a shrinking portion of the total population. These retirees will compete for federal and state funds as they seek services such as Medicaid and Social Security. The consequence for the FS may be twofold: increased competition for federal funding in an era of flat or declining government revenues, and an increased demand for services as longer-living retirees settle in rural areas such as the Lincoln assessment area.

Table 2.6: Age Distribution by County, 2000-2030

County	Age	Percent Distribution				
		1990	2000	2010	2020	2030
Chaves	0 - 14	25.8	23.5	20.8	19.8	18.6
	15 - 64	59.9	61.8	63.2	60.0	56.7
	65 yrs. & over	14.3	14.7	15.9	20.1	24.7
Eddy	0 - 14	25.9	23.5	20.1	19.1	18.1
	15 - 64	58.9	61.8	64.4	61.3	57.7
	65 yrs. & over	15.2	14.7	15.4	19.6	24.2
Lincoln	0 - 14	21.4	18.5	13.9	13.7	13.2
	15 - 64	62.8	63.7	60.8	55.0	52.0
	65 yrs. & over	15.8	17.9	25.2	31.4	34.8
Otero	0 - 14	26.4	24.3	19.8	18.4	17.7
	15 - 64	64.8	64.0	66.3	64.6	60.8
	65 yrs. & over	8.8	11.7	13.9	17.0	21.5
Total Lincoln Counties	0 - 14	25.7	23.3	19.6	18.4	17.5
	15 - 64	61.3	62.7	64.2	61.2	57.7
	65 yrs. & over	13.0	14.0	16.2	20.4	24.9

Source: New Mexico County Population Projections: July 1, 2000 to July 1, 2030; UNM-BBER, April 2004.

2.4 Income and Poverty

Table 2.7 depicts per capita income in real 2000 dollars by county in the assessment area for 1990 and 2000. Real per capita income in the area measured \$12,596 in 2000, nearly \$1,500 below the New Mexico average. Between 1990 and 2000, real per capita income nearly doubled in the state but increased by only 21 percent in the assessment area. Real per capita income was higher than the state average for all counties in 1990, but only Lincoln County remained above the state average in 2000.

Table 2.7 also shows the number and percent of persons living below the federal poverty level for each county. Over 36,000 persons lived in poverty in the assessment area in 2000, an increase of 3,000 despite overall improvement in the national and state economy from the 1989 recession. Much of the gain in the number of persons living in poverty was in Otero County.

Table 2.7: Per Capita Income and Persons in Poverty, 1989 & 1999

	1989			1999		
	Per Capita Income	Persons Below Poverty	% Persons Below Poverty	Per Capita Income	Persons Below Poverty	% Persons Below Poverty
Chaves	\$7,232	12,621	22%	\$14,990	12,778	21%
Eddy	\$8,154	9,755	20%	\$15,823	8,769	17%
Lincoln	\$7,665	2,384	20%	\$19,338	2,855	15%
Otero	\$8,136	8,404	16%	\$14,345	11,737	19%
TOTAL LINCOLN COUNTIES	\$7,801	33,164	19%	\$15,438	36,139	19%
TOTAL NM	\$9,788	305,934	21%	\$17,261	328,933	18%

Source: US Census Bureau, Decennial Census, 1990 and 2000. Calculations done by UNM - BBER.

Note: The poverty line is the federal established poverty level. Per capita income is in 2000 dollars.

Poverty in the assessment area, as in other parts of the state, tracks racial and ethnic patterns.

Table 2.8 shows that over 36,000 persons in 2000 live in poverty in the assessment area. Poverty percentages by race in the assessment area are: Whites (63 percent), African Americans (3 percent), American Indians (5 percent), Asians and Pacific Islanders (0 percent), and Other (29 percent). American Indians comprise a higher share (11 percent) of the number of persons in poverty in Otero County than in other counties.

In the assessment area, the poverty rate differs by ethnicity for non-Hispanics (41 percent) and Hispanics (59 percent). Hispanics are the majority in all counties except Lincoln County. Over two-thirds of those in poverty in Chaves County are Hispanics. Generally, Hispanics are more likely than non-Hispanics to live in poverty in rural counties in the state. Not shown in the table is the White/non-Hispanic poverty rate (32 percent) in the assessment area.

Table 2.8: Poverty by Race and Ethnicity, 2000

	RACIAL GROUP					ETHNICITY		TOTAL
	WHITE	AFRICAN AMERICAN	AMERICAN INDIAN	ASIAN & PACIFIC ISLANDER	OTHER	NON-HISPANIC	HISPANIC	
Chaves	7,463	410	268	26	4,611	4,228	8,550	12,778
Eddy	5,675	280	112	20	2,682	3,581	5,188	8,769
Lincoln	2,040	3	74	0	738	1,585	1,270	2,855
Otero	7,490	398	1,242	56	2,551	5,435	6,302	11,737
TOTAL LINCOLN COUNTIES	22,668	1,091	1,696	102	10,582	14,829	21,310	36,139
Percent of Total Group								
Chaves	58%	3%	2%	0%	36%	33%	67%	100%
Eddy	65%	3%	1%	0%	31%	41%	59%	100%
Lincoln	71%	0%	3%	0%	26%	56%	44%	100%
Otero	64%	3%	11%	0%	22%	46%	54%	100%
TOTAL LINCOLN COUNTIES	63%	3%	5%	0%	29%	41%	59%	100%

Source: US Census Bureau, Decennial Census, 2000. Calculations done by UNM - BBER.

Note: Ethnicity can be of any race. The "Other" group includes two or more races.

The poverty line is the federal established poverty level. Per capita income is in 1990 dollars.

2.5 Household Composition

Table 2.9 presents household composition by type of household for 1990 and 2000. Households in the assessment area are exhibiting the same trend as seen in the US, as there are proportionally more single households and female-headed households. Total households in the area grew about 12,000, numbering over 73,000 in 2000.

Single households are non-family households headed by a single person. Female-headed family households are households that are headed by a female with children or other dependents and no husband is present. For example, Lincoln County has 4,761 total households, of which 1,176 (25 percent) are single households and 398 (8 percent) are female-headed family households.

Female-headed family households increased nearly 2,150, totaling about 8,400 in 2000. The proportion of female-headed households in the assessment area (10 percent) is lower than the state (13 percent) in 2000. Female-headed households increased in all counties and had similar shares of total households in 1990 and 2000. These types of households are an increasingly important market and part of the nation's demographic landscape.

Similarly, households of people who live by themselves have become increasingly common. Single households continue to grow in part because of a trend in marrying at later ages and longer life expectancy. Roughly, one-third of single person households are over 65 years of age in the state. In the assessment area, single households increased about 4,500, totaling 18,000 in 2000. The percent of single households in the assessment area (24 percent) was similar to the state (25 percent) in 2000. The increase in both single households and female-headed family households (both 34 percent) outstripped total households (20 percent) between 1990 and 2000.

Table 2.9: Type of Household, 1990 & 2000

	Number of Households			Percent of Total Households	
	Total	Single	Female Headed, Family	Single	Female Headed, Family
Year 1990					
Chaves	20,572	4,670	2,321	23%	11%
Eddy	17,447	3,784	1,733	22%	10%
Lincoln	4,761	1,176	398	25%	8%
Otero	18,139	3,640	1,787	20%	10%
TOTAL LINCOLN COUNTIES	60,919	13,270	6,239	22%	10%
Year 2000					
Chaves	22,559	5,600	2,797	25%	12%
Eddy	19,410	4,685	2,164	24%	11%
Lincoln	8,206	2,196	777	27%	9%
Otero	22,984	5,317	2,654	23%	12%
TOTAL LINCOLN COUNTIES	73,159	17,798	8,392	24%	11%

Source: US Census Bureau, Decennial Census, 1990 and 2000. Calculations done by UNM-BBER.

Note: Single households are non-family households headed by a single person. Female headed family households include children.

2.6 Educational Attainment

Table 2.10 presents educational attainment for the 25-year and older population in 1990 and 2000. Attainment levels have generally advanced in 2000 compared to a decade earlier as the share of the population with at least some college or with a college degree increased while those with high school or less declined.

Table 2.11 shows the share of the population in the assessment area with at least some college education increased from 41 percent to 48 percent between 1990 and 2000. On the other hand, the proportion of adults without a high school degree or equivalent improved from 28 percent to 23 percent in the assessment area and in all counties except Otero County.

Educational attainment is closely tied to one's ability to generate income. The average earnings of a college degree holder are almost twice that of an adult with a high school diploma. As educational attainment increases, the likelihood of poverty decreases. This correlation usually holds in the assessment area.

Table 2.10: Educational Attainment by County

	Less than 9th Grade	9th to 12th Grade	HS Grad or GED	Some College; No Degree	Assoc., BA. Or More	Total
Year 1990						
Chaves	5,725	5,643	9,479	6,987	6,889	34,723
Eddy	4,698	5,188	9,994	5,723	4,613	30,216
Lincoln	794	1,110	2,694	2,065	1,658	8,321
Otero	2,288	3,287	9,971	8,182	6,511	30,239
TOTAL LINCOLN COUNTIES	13,505	15,228	32,138	22,957	19,671	103,499
Year 2000						
Chaves	5,343	5,035	9,998	9,014	8,421	37,811
Eddy	3,519	4,634	11,188	7,147	6,084	32,572
Lincoln	691	1,449	3,905	3,800	4,004	13,849
Otero	2,940	4,282	11,096	10,634	9,109	38,061
TOTAL LINCOLN COUNTIES	12,493	15,400	36,187	30,595	27,618	122,293

Source: US Census Bureau, Decennial Census, 1990 and 2000. Calculations done by UNM-BBER.

Table 2.11: Educational Attainment Percentage by County

	Less than 9th Grade	9th to 12th Grade	HS Grad or GED	Some College; No Degree	Assoc., BA. Or More	Total
Year 1990						
Chaves	16%	16%	27%	20%	20%	100%
Eddy	16%	17%	33%	19%	15%	100%
Lincoln	10%	13%	32%	25%	20%	100%
Otero	8%	11%	33%	27%	22%	100%
TOTAL LINCOLN COUNTIES	13%	15%	31%	22%	19%	100%
TOTAL NM	11%	14%	29%	21%	25%	100%
Year 2000						
Chaves	14%	13%	26%	24%	22%	100%
Eddy	11%	14%	34%	22%	19%	100%
Lincoln	5%	10%	28%	27%	29%	100%
Otero	8%	11%	29%	28%	24%	100%
TOTAL LINCOLN COUNTIES	10%	13%	30%	25%	23%	100%
TOTAL NM	9%	12%	27%	23%	29%	100%

Source: US Census Bureau, Decennial Census, 1990 and 2000. Calculations done by UNM-BBER.

2.7 Housing

Table 2.12 illustrates the number of housing units and the occupied status of these units in each county in the assessment area. As would be expected, the number of dwellings in all counties increased as the population grew.

Table 2.12: Housing Units and Occupation of Housing

	1990			2000		
	Housing Units: Total	Housing Units: Occupied	Housing Units: Vacant	Housing Units: Total	Housing Units: Occupied	Housing Units: Vacant
Chaves	23,177	18,155	5,022	29,272	22,984	6,288
Eddy	12,622	4,789	7,833	15,298	8,202	7,096
Lincoln	20,134	17,472	2,662	22,249	19,379	2,870
Otero	23,386	20,589	2,797	25,647	22,561	3,086
TOTAL LINCOLN COUNTIES	79,319	61,005	18,314	92,466	73,126	19,340

Source: US Census Bureau, Decennial Census, 1990 and 2000. Calculations done by UNM-BBER.

The housing stock expanded by over 13,000 units during 1990-2000, increasing 17 percent in the assessment area. **Table 2.12** shows nearly one in five houses are vacant in the assessment area in 2000 compared to about one in four in 1990. Nearly half of the housing is vacant in Eddy County but more vacant housing has been occupied since 1990 when nearly two-thirds of housing was vacant and the economy suffered. In contrast, the proportion of vacant housing is much lower in both Lincoln and Otero Counties as depicted in **Table 2.13** and **Table 2.14**. In the assessment area nearly half of the total vacant homes are for seasonal or recreational use. This ranges from low seasonal or recreational use in Chaves and Eddy Counties, to over one-third in Otero County, and to 85 percent in Lincoln County. One in five vacant houses is for rent in the assessment area. At least one-third of vacant housing is for rent and another one-third classified as other vacant in Eddy and Chaves Counties. The large proportion of vacant housing for rent indicates stressed economies in these counties, although the Chaves County economy improved in the 1990's.

Table 2.13: Vacant Housing by Type Of Vacancy

	For rent	For sale only	Rented or sold, not occupied	Seasonal or rec use	For migrant workers	Other vacant	Total vacant
Year 1990							
Chaves	1,317	396	83	69	65	867	2,797
Eddy	899	352	340	103	30	938	2,662
Lincoln	377	438	150	6,364	20	484	7,833
Otero	1,315	346	188	2,495	8	670	5,022
TOTAL LINCOLN COUNTIES	3,908	1,532	761	9,031	123	2,959	18,314
Year 2000							
Chaves	1,021	501	278	260	18	1,008	3,086
Eddy	1,099	424	115	284	28	920	2,870
Lincoln	339	272	70	6,021	14	380	7,096
Otero	1,491	556	284	2,451	7	1,499	6,288
TOTAL LINCOLN COUNTIES	3,950	1,753	747	9,016	67	3,807	19,340

Source: US Census Bureau, Decennial Census, 1990 and 2000. Calculations done by UNM-BBER.

Table 2.14: Percent of Total Vacant Housing

	For rent	For sale only	Rented or sold, not occupied	Seasonal or rec use	For migrant workers	Other vacant	Total vacant
Year 1990							
Chaves	47%	14%	3%	2%	2%	31%	100%
Eddy	34%	13%	13%	4%	1%	35%	100%
Lincoln	5%	6%	2%	81%	0%	6%	100%
Otero	26%	7%	4%	50%	0%	13%	100%
TOTAL LINCOLN COUNTIES	21%	8%	4%	49%	1%	16%	100%
Year 2000							
Chaves	33%	16%	9%	8%	1%	33%	100%
Eddy	38%	15%	4%	10%	1%	32%	100%
Lincoln	5%	4%	1%	85%	0%	5%	100%
Otero	24%	9%	5%	39%	0%	24%	100%
TOTAL LINCOLN COUNTIES	20%	9%	4%	47%	0%	20%	100%

Source: 2000 US Census Bureau, Decennial Census, 1990 and 2000. Calculations by UNM-BBER.

As demonstrated in **Table 2.15**, the housing stock in the assessment area is 29.5 years old in 2000, ranging from a low of 23.5 years old in Eddy County to 34 years old in both Lincoln and Otero Counties. Also shown is the percentage of households that lack complete plumbing. There is usually a correlation between the counties of high poverty and the lack of plumbing in a dwelling. All counties (except Lincoln County) saw small gains in the percent of houses without plumbing

between 1990 and 2000. In contrast, the state's average age of housing rose from 22 to 27 years and the proportion of households without plumbing remained at 3 percent. In the assessment area, housing that lacked plumbing facilities increased by over 600 units between 1990 and 2000, less than 2 percent of total housing units.

Table 2.15: Age of Housing Stock and Plumbing Availability

	Average Age of Housing Stock		Lacking Complete Plumbing Facilities	
	1990	2000	1990	2000
Chaves	23.0	26.0	0.8%	1.3%
Eddy	22.3	23.5	0.9%	1.7%
Lincoln	28.4	34.4	0.9%	0.9%
Otero	28.6	34.2	1.7%	2.6%
TOTAL LINCOLN COUNTIES	25.6	29.5	1.1%	1.6%
TOTAL NM	22.2	27.0	3.0%	3.0%

Source: US Census Bureau, Decennial Census, 1990 and 2000. Calculations by UNM BBER.

2.8 Net Migration

Table 2.16 illustrates the net migration into the assessment area at the county level. In each decennial census, respondents are asked about their county and state of residence five years previous. Shown in **Table 2.16** are only those in New Mexico who are five years of age or older. For the assessment area in 2000, 46 percent of those in the area were movers (had changed addresses in the past five years). Of these 84,172 movers, 41,836, or about half, moved within the same county. Also, 12,264 moved from other places in New Mexico. A small decline in movers came from other states from a decade earlier, as 24,203 persons, or over one of four movers, came to the area from other states in 2000. This compares to 24,977, or one of three movers, from other states in 1990. And of those who moved from other states, the region of origin in 2000 (as a percent of the total) was Northeast (0 percent), Midwest (2 percent), South (7 percent), and West (5 percent) -- (Texas is in the South region and California dominates the West region). Many movers from another state originated in Texas. There was little difference in these percentages between the 1990 and 2000 census.

Table 2.16: Net Migration by County

	CHAVES COUNTY				EDDY COUNTY			
			Percent of Total	Percent of Total			Percent of Total	Percent of Total
	1990	2000	1990	2000	1990	2000	1990	2000
TOTAL	53,134	56,978	100%	100%	44,875	47,952	100%	100%
Same House	27,326	31,668	51%	56%	25,564	28,287	57%	59%
Different House	25,808	25,310	49%	44%	19,311	19,665	43%	41%
in the United States	25,001	24,355	47%	43%	19,071	19,329	42%	40%
Same County	14,218	14,763	27%	26%	11,894	12,386	27%	26%
Different County	10,783	9,592	20%	17%	7,177	6,943	16%	14%
Same State	4,070	3,723	8%	7%	2,429	2,667	5%	6%
Different State	6,713	5,869	13%	10%	4,748	4,276	11%	9%
Northeast	355	207	1%	0%	171	70	0%	0%
Midwest	963	865	2%	2%	433	338	1%	1%
South	3,164	2,451	6%	4%	2,899	2,205	6%	5%
West	2,231	2,346	4%	4%	1,245	1,663	3%	3%
Puerto Rico	0	0	0%	0%	0	0	0%	0%
Elsewhere	807	955	2%	2%	240	336	1%	1%

	LINCOLN COUNTY				OTERO COUNTY			
			Percent of Total	Percent of Total			Percent of Total	Percent of Total
	1990	2000	1990	2000	1990	2000	1990	2000
TOTAL	11,420	18,448	100%	100%	47,051	57,857	100%	100%
Same House	5,882	9,268	52%	50%	20,054	27,840	43%	48%
Different House	5,538	9,180	48%	50%	26,997	30,017	57%	52%
in the United States	5,466	8,870	48%	48%	23,937	25,749	51%	45%
Same County	2,509	3,549	22%	19%	9,830	11,138	21%	19%
Different County	2,957	5,321	26%	29%	14,107	14,611	30%	25%
Same State	1,156	2,205	10%	12%	2,392	3,669	5%	6%
Different State	1,801	3,116	16%	17%	11,715	10,942	25%	19%
Northeast	22	99	0%	1%	744	506	2%	1%
Midwest	100	354	1%	2%	1,736	1,542	4%	3%
South	1,219	1,910	11%	10%	5,181	5,411	11%	9%
West	460	753	4%	4%	4,054	3,483	9%	6%
Puerto Rico	0	0	0%	0%	15	58	0%	0%
Elsewhere	72	310	1%	2%	3,045	4,210	6%	7%

	NEW MEXICO				TOTAL LINCOLN COUNTIES			
			Percent of Total	Percent of Total			Percent of Total	Percent of Total
	1990	2000	1990	2000	1990	2000	1990	2000
TOTAL	1,390,048	1,689,911	100%	100%	156,480	181,235	100%	100%
Same House	719,628	919,717	52%	54%	78,826	97,063	50%	54%
Different House	670,420	770,194	48%	46%	77,654	84,172	50%	46%
in the United States	645,519	731,488	46%	43%	73,475	78,303	47%	43%
Same County	345,469	400,128	25%	24%	38,451	41,836	25%	23%
Different County	300,050	331,360	22%	20%	35,024	36,467	22%	20%
Same State	107,289	126,093	8%	7%	10,047	12,264	6%	7%
Different State	192,761	205,267	14%	12%	24,977	24,203	16%	13%
Northeast	14,311	15,329	1%	1%	1,292	882	1%	0%
Midwest	28,270	29,457	2%	2%	3,232	3,099	2%	2%
South	73,548	72,497	5%	4%	12,463	11,977	8%	7%
West	76,632	87,984	6%	5%	7,990	8,245	5%	5%
Puerto Rico	110	398	0%	0%	15	58	0%	0%
Elsewhere	24,791	38,308	2%	2%	4,164	5,811	3%	3%

Source: US Census Bureau, Decennial Census, 1990 and 2000. Calculations by UNM BBER.

2.9 Challenges and Opportunities for Forest Management

The demographic data developed in this chapter for the four Lincoln NF assessment counties generally follow the demographics of the U.S. as a whole – the population is aging, more racially diverse, with higher educational attainment, and increasing per capita incomes. More households are headed by women and are single person households.

To focus on these demographic similarities between the U.S. and the Lincoln NF counties would mean missing some important developments in the Lincoln NF area over the past two decades. This is an area of profound economic change, and some of the changes relate to the natural resources of the area and to changing policies regarding the use of national forests. Over the last two decades, the logging and grazing activities on public lands have declined, as much a result of changing market conditions as of FS policies to balance uses.³ Furthermore, grazing on public lands has been curtailed and ranchers are seeing hard times (see Chapter 5). Oil drilling in Eddy County and Chaves County has declined and experienced volatility. Due to Canadian competition, the potash mines in Eddy County have mostly been closed, employing less than half of its former level.

On the positive side, White Sands National Monument attracts many tourists to the Alamogordo area. Holloman Air Force Base is a mainstay of the local landscape. Also there are military facilities and operations at White Sands Missile Range and Fort Bliss in Otero County. A substantial cheese processing industry, capitalizing on the many herds of dairy cows, has developed in Chaves County. The Waste Isolation Project (WIPP) provides a pillar of the Eddy County economy. Carlsbad Caverns National Park brings in many visitors and is an important driver of the local economy. Even in Artesia, a microbrewery/restaurant draws in travelers and is a larger employer.

The Lincoln NF has an increasing number of recreational uses. As a result, the local tourism industry expanded, as has amenity migration into the area by retirees and others investing in vacation and second homes. There was little change in the number of people who had lived in a different state when comparing the 1990 and 2000 censuses. The housing stock expanded by about 13,000 units during 1990-2000 as the stock increased by 17 percent in the assessment area. The 2000 census found a significant number of vacant houses in the assessment area. Almost half of the vacant houses in the assessment area are seasonal or vacation homes and most of the vacant houses in Lincoln County are in this category. Lincoln County has many natural amenities, including camping, hiking, skiing, fishing, boating, and hunting. The Mescalero Apache operate the Inn of the Mountain Gods and Casino, a destination resort, perched above a gorgeous lake. The Mescalero Apache also own a large amount of land in Otero County.

The population increased in all counties between 1980 and 2000. Real per capita income rose in the four counties between 1990 and 2000. More people with more income in the assessment area may be expected to impact forest uses. In rural economies more dependent on agriculture and other land uses that involve extraction from the forest lands (e.g., grazing, wood gathering, piñon harvesting, etc.), management decisions could have lasting impacts on the wealth and well-being

³ The Lincoln Forest has actively worked to minimize these impacts. An example is the reopening and retooling of an Otero County sawmill by the Mescalero tribe with support of a Forest Service Community-Forest Restoration Grant.

of certain populations. Increasingly important will be a more diverse populace that is represented in decisions about Lincoln NF.

The nation is aging and life spans are increasing. With the leading edge of the Baby Boomers reaching age 60 this year, this massive cohort likely will spend more leisure time in the country's national forests. As discussed in a subsequent chapter, there is already evidence of retirees choosing to live within or near Lincoln NF. As the healthier and wealthier Boomers retire, more demand for recreation could further stress the forest. Further, aging populations may require new infrastructure. Yet Boomers have indicated that they will seek alternatives to retirement that include volunteering, from which Lincoln NF could benefit. Older Americans also desire cultural and heritage tourism, so they would take advantage of these offerings in the forest. The retired and semi-retired, therefore, may add to workloads of Lincoln NF personnel but also could be a target market for interpretive events. Aging Boomers will place heavy demand on federal benefits and entitlements, such as Medicare and Social Security, and therefore intensify competition for federal dollars. This could mean flat or reduced funding levels for federal agencies, including the FS.

Finally, those seeking to live or retire in more peaceful forest surroundings are increasingly choosing to build houses within or adjacent to national forests. This is clearly happening in Lincoln NF. These homeowners may seek to block the access of other forest users or enterprises. Housing at the wild land interface also impacts Lincoln NF policies about fire and the reduction of fuel loads. Strategies for fighting fires when there are dwellings in the forest now must devote additional resources to the protection of those houses and the lives of their residents. Residents at the forest's edge may oppose thinning and thinning methods. Housing in the forest also can alter access and impact forest use. New roads built to developments can impact forest health by creating runoff problems, air pollution problems, and access to new areas where unmanaged recreation can occur.

Diversity does not only mean different races but changes in the mix of people in the area. A conflict brews between wealthier newcomers and old-timers or long time landholders. This conflict occurs in growing places throughout the West (and nation). The newcomers have different expectations and less traditional ties to the land, which impacts land use and land values. These issues impact access to national forest properties as well.