

What are the attitudes and values of southern residents toward forests and their management, how have they changed over time, and how do they differ among demographic groups?

Chapter 7: Sociodemographics, Values, and Attitudes

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Key Findings

- When compared with the Nation, the South is more rural, nonwhite, and poorly educated, with lower median household income.
- From 1980 to 1990, total population increased at a higher rate in the South (14.16 percent) than in the Nation (9.78 percent). Most of the increase was in the major cities such as Atlanta, GA, Austin, TX, Dallas, TX, and Miami, FL, and along the eastern coastline. Some decrease occurred in the Southern Appalachians, the Mississippi River Basin, and the western Texas and Oklahoma Panhandle.
- Southern areas with population losses since 1980 are generally more rural, have more nonwhite residents, and have lower median household incomes than areas with population increases.
- Southern residents hold stronger (more intense) values about public than private forests. Among four values of forests mentioned to respondents, the one considered most important was clean air, and the one rated as least important was wood production.
- Southern residents have moderately strong proenvironmental attitudes. They favor additional funding of environmental protection and stricter environmental laws and regulations.
- A review of the related literature reveals a strong and fundamental shift over the past two decades in public values about forests and their management. Values have shifted away from a commodity-oriented,

anthropocentric approach to forest management and toward inclusion of natural biological factors in a biocentric approach.

- Southern women and younger people have stronger biocentric values about forests and stronger proenvironmental attitudes than men and older people. There are only minor differences in environmental attitudes and values between urban and rural residents, and by length of residence, land ownership, race, and region within the South.

Introduction

The values and attitudes that the public holds toward the natural environment, forests, and forest management have become increasingly important over the past few decades. Indeed, it has been argued that the core problem facing traditional forestry is a need to adjust to changing social and environmental values (Bengston 1994). Information about values and attitudes equips managers to deal with potential conflicts among stakeholders, to establish policies and goals, and to define broad strategies.

Understanding environmental values and attitudes begins with the social, economic, and demographic composition of the public. A value is defined here as a standard that provides the criteria for determining what is desirable or undesirable (Brown 1984, Rokeach 1973). An attitude is a learned predisposition toward some object or action (Fishbein and Ajzen 1975). Attitudes are driven by and are more transient than values. Forest values concern the good or relative worth

of forests. Attitudes evaluate the desirability of forest uses, such as timber harvesting and recreation.

Methods

Three different methods were used to answer the four questions. For the first question, population data for 1980, 1990, and 1999 (projected) were mapped at the county scale using ArcView 3.1 (Environmental Systems Research Institute 1996). To answer the next questions, 1,423 randomly sampled residents of the 13 States (Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia) were interviewed by telephone. The last question was addressed using a literature review.

Nine social, economic, and demographic population variables were mapped (table 7.1). Median household incomes were adjusted with the Consumer Price Index (Woodrow 2000) to reflect 1980-dollar amounts. For all variables, percent change was computed as (1990 value minus 1980 value)/1980 value.

The telephone survey (about 2 minutes) was part of the National Survey on Recreation and the Environment (NSRE) (about 20 minutes) administered by the Human Dimensions Research Laboratory at the University of Tennessee during fall 2000. Telephone numbers were generated from a random-digit dialing sample of valid telephone exchanges. Respondents were selected by asking for the resident in the household, over the age of 16 years, with the most

Table 7.1—Social, economic, and demographic characteristics of residents in the United States and in the South

| Variable | National | | Southern | |
|------------------------------|-------------|-------------|------------|------------|
| | 1980 | 1990 | 1980 | 1990 |
| Total population (no.) | 226,545,805 | 248,709,873 | 67,973,072 | 77,597,917 |
| Median household income (\$) | 16,647 | 30,056 | 14,675 | 25,192 |
| Rural (%) | 26.3 | 24.8 | 33.4 | 31.7 |
| Female (%) | 51.4 | 51.3 | 41.4 | 51.4 |
| Nonwhite (%) | 16.9 | 19.6 | 21.6 | 22.9 |
| Hispanic (%) | 6.5 | 8.8 | 6.4 | 8.4 |
| Blue-collar (%) | 47.0 | 41.9 | 49.6 | 44.2 |
| Some college (%) | 31.8 | 45.3 | 29.0 | 42.1 |
| Over 55 years (%) | 20.9 | 21.0 | 20.6 | 21.1 |

recent birthday. By including refusals from known eligible respondents, i.e., household residents known to have the most recent birthday, and deleting the number of “never-contacted” numbers, the response rate was 52.3. This percent includes partial completes of 3.6, hearing-impaired respondents of 2.0, callbacks that were never

recontacted of 3.0, and known eligible refusals of 39.1.

Forest values were measured in two ways: (1) as individual-preference “assigned” values, which provide a measure of the relative worth or importance of forest objects, and (2) as individual-preference “held” values, which provide a measure of the relatively enduring conception

of the “good” (or bad) related to forests. Both approaches were used, because there is no consensus in the social-psychological literature as to which is better. In both approaches, the same four objects (taken from Xu and Bengston 1997) were used: wood products (utilitarian), clean air (life support), scenic beauty (aesthetic), and heritage (spiritual). Respondents were asked to rank the four objects in their relative order of importance from highest (most important) to lowest (least important) for (1) private forests and (2) public forests. The most important object was given a score/rank of 1 and the least important 4. The four objects were read to the respondents in a random order by the interviewer to avoid bias in ranking. For held values, each object was rated from 1 “agree” to 4 “disagree,” where low scores indicated a higher value.

Three types of environmental attitudes were assessed. First, attitudes toward environmental protection were measured by asking respondents, “Do you think that we’re spending too much, too little, or about the right amount of money on protecting the environment?” Second, attitudes toward environmental laws were measured by asking respondents, “At present, do you think that our environmental laws and regulations have gone too far, not far enough, or have struck about the right balance?” Third, general environmental concern (including private property issues) was measured using a modified (10-item) version of the New Environmental Paradigm (NEP) scale (Dunlap and Van Liere 1978), in which 6 of the original 12 items were deleted (due to sexist and/or outdated terminology), 1 item was reworded, and 4 new items were added (table 7.2). The 10 items in the modified NEP scale were rated on a 5-point response scale from “strongly agree” to “strongly disagree” with a midpoint of “neither.” Possible scores ranged from 10 (representing a highly favorable attitude) to 50 (highly unfavorable attitude). Cronbach’s alpha for the modified NEP was 0.70.

Urban residents were oversampled because of the greater proportion of southern residents in metropolitan areas. One-way ANOVA (using the Scheffe method) and Pearson Correlation in SPSS/PC+ (Statistical Packages for the Social Sciences 1998) were used to examine differences in

Table 7.2—Items and descriptive statistics for the modified New Environmental Paradigm scale

| Item | n | Mean ^a | Standard deviation |
|---|-----|-------------------|--------------------|
| Human skill and resource will ensure that we do not make the earth unlivable ^b | 645 | 3.36 | 1.4 |
| Humans are severely abusing the environment | 681 | 1.73 | 1.06 |
| Humans have the right to modify the natural environment to suit their needs | 676 | 2.65 | 1.47 |
| Humans were meant to rule over nature | 678 | 2.56 | 1.57 |
| Humans will eventually learn enough about how nature works to be able to control it ^b | 661 | 2.61 | 1.48 |
| If things continue on their present course, we will soon experience a major ecological catastrophe ^b | 658 | 2.21 | 1.33 |
| The balance of earth is delicate and easily upset | 672 | 1.68 | 1.04 |
| The so-called “environmental crisis” has been greatly exaggerated ^b | 660 | 2.73 | 1.45 |
| We are approaching the limit to the number of people this earth can support | 633 | 2.5 | 1.44 |
| When humans interfere with nature, it often produces disastrous consequences | 681 | 1.84 | 1.12 |

^a Items were measured using a 5-point response scale of (1) strongly agree to (5) strongly disagree.

^b New or modified item (from the original New Environmental Paradigm scale).

Source: Dunlap and Van Liere 1978

environmental attitudes and forest values among the social and demographic groups.

Data Sources

Population data for 1980 were taken from the Census CD 1980 Version 2.0 (Geolytics 2000) and for 1990 and 1999 from the Census CD Maps Release 3.0 (Geolytics 1999). Projections for 1999 were available for total population, gender, and race.

The NSRE data were provided through the USDA Forest Service Southern Research Station in Athens, GA. The literature review covered journal articles, government documents, books, conference proceedings, and monographs published since 1990.

Results

Social, Economic, and Demographic Characteristics of Southern Residents

From 1980 to 1990, total population increased at a higher rate in the South (14.16 percent) than in the United States (9.78 percent) (table 7.1). The South is more rural, more nonwhite, less educated, and more blue collar, with lower median household income, than the national average.

The southern population is concentrated along the coasts; in Piedmont cities, including Atlanta, GA, Charlotte, NC, and Columbia, SC; and in the major cities of Texas (Austin, Dallas, and Houston) and Florida (fig. 7.1). Between 1980 and 1999 (figs. 7.2 and 7.3) these major metropolitan areas received the greatest percentage increase in population, while there were decreases in the Mississippi River Basin, in the western Texas and Oklahoma Panhandle, and in parts of the Southern Appalachians. In 1990 (fig. 7.4), education levels (percent of residents attending some college) were generally lowest in the central interior and north-central region of the South. Between 1980 and 1990, education levels generally increased throughout the South, with the strongest gains along the eastern coast and in the major metropolitan areas (fig. 7.5).

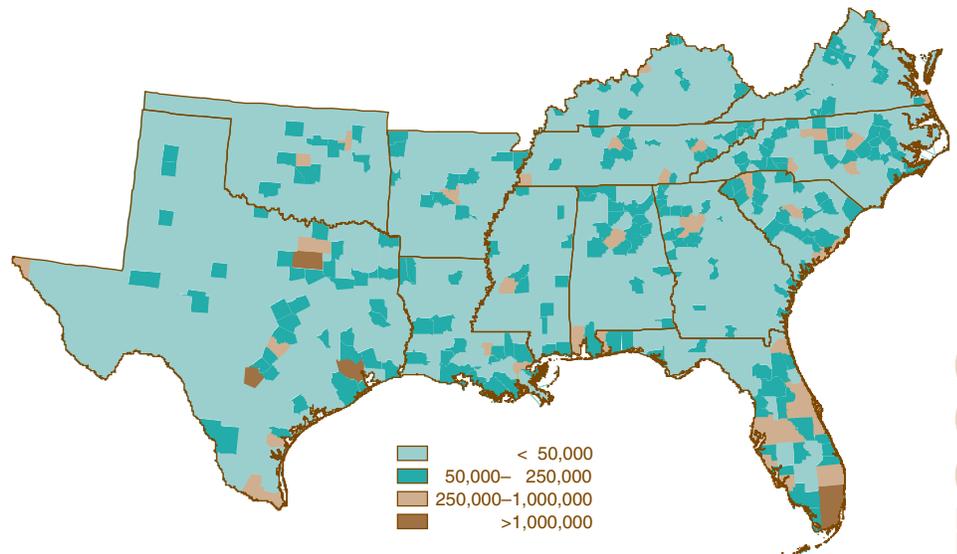


Figure 7.1—Total population in the South, 1990.

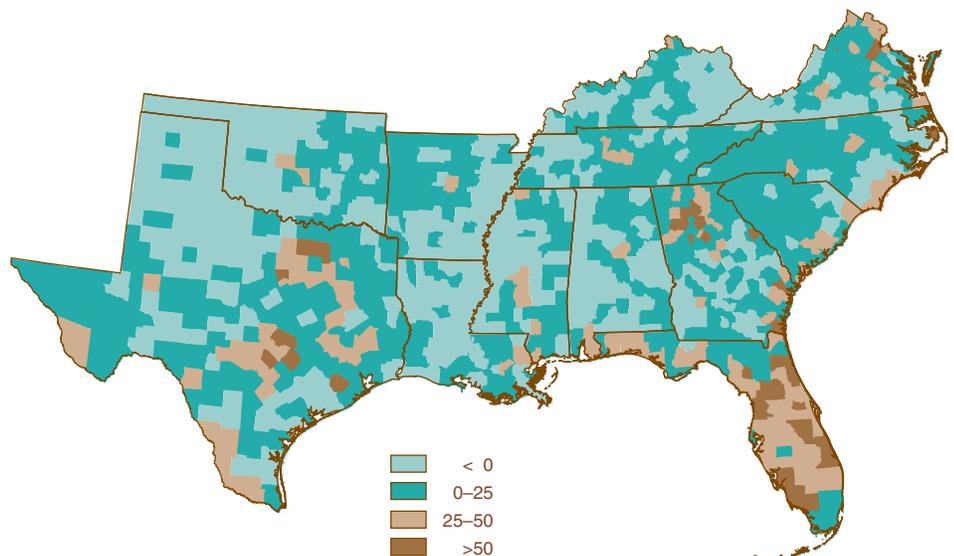


Figure 7.2—Percent change in total population in the South, 1980 to 1990.

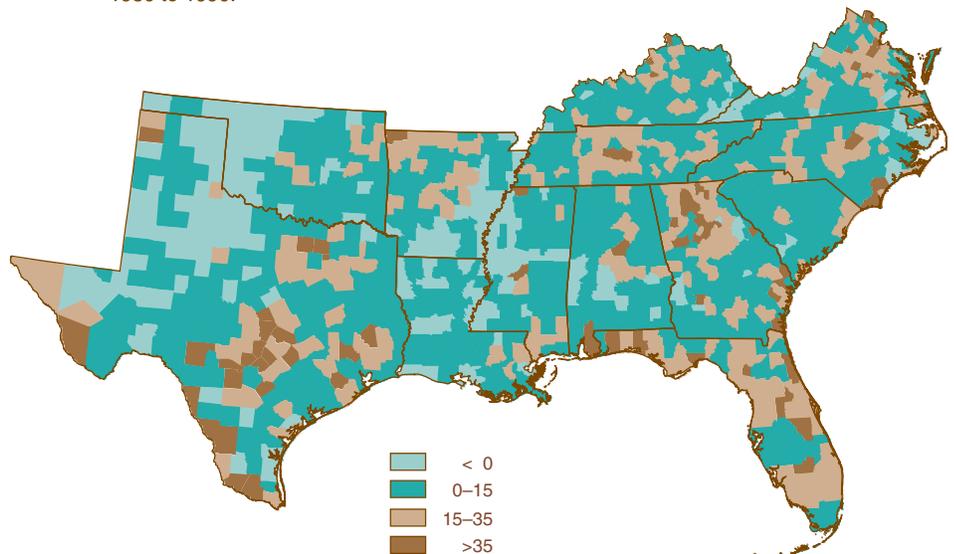


Figure 7.3—Percent change in total population in the South, 1990 to 1999.

The highest concentrations of rural residents in 1990 occurred in the Southern Appalachians, parts of the Mississippi River Basin, and the western Texas and Oklahoma Panhandle (fig. 7.6). Overall, the entire region experienced a general decrease in rural residency between 1980 and 1990 (fig. 7.7).

Areas with the highest percentage of residents older than 55 years in 1990 include Arkansas, Oklahoma, central Texas, and southern and central Florida (fig. 7.8). From 1980 to 1990, many areas of the South experienced an increase in elderly population, except for the metropolitan cities of Atlanta, GA, Dallas and Houston, TX, and Miami, FL (fig. 7.9). In 1990, the highest percentage of blue-collar workers occurred in western Texas and Oklahoma, parts of the Southern Appalachians, and the central and north-central areas of the South (fig. 7.10). Since 1980, the percent of blue-collar workers has decreased in the South as a whole, but increases have occurred in parts of Mississippi and the western Texas and Oklahoma Panhandle (fig. 7.11). In 1990 there were more women than men in most counties across the South, with the highest concentrations in the center of the region and the lowest in parts of Texas, Florida, and the Southern Appalachians (fig. 7.12). Between 1980 and 1999, the percent of women largely decreased throughout the South, except in small pockets of the coast (with the exception of Florida) and the Texas and Oklahoma Panhandle (figs. 7.13 and 7.14).

In 1990, the highest concentrations of Hispanics were in west Texas (along the Mexico border) and south Florida (fig. 7.15). Between 1980 and 1990, the highest increases in Hispanic populations occurred throughout Texas and Florida. Modest gains occurred in Oklahoma, Georgia, and North Carolina (fig. 7.16). In 1990, the percentage of nonwhite residents was highest in a broad band from the Mississippi River Basin through the Piedmont to the Carolinas coast. The lowest concentrations were in the north-central region of the South, the Southern Appalachians, central Texas, and the Florida coasts (fig. 7.17). The largest increase in nonwhite populations from 1980 to 1990 occurred in western

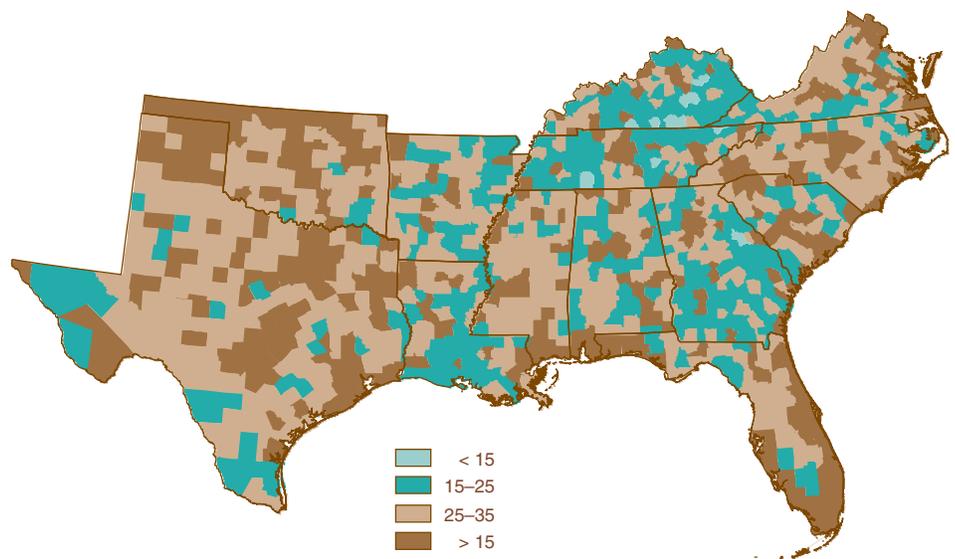


Figure 7.4—Percent of residents attending college in the South, 1990.

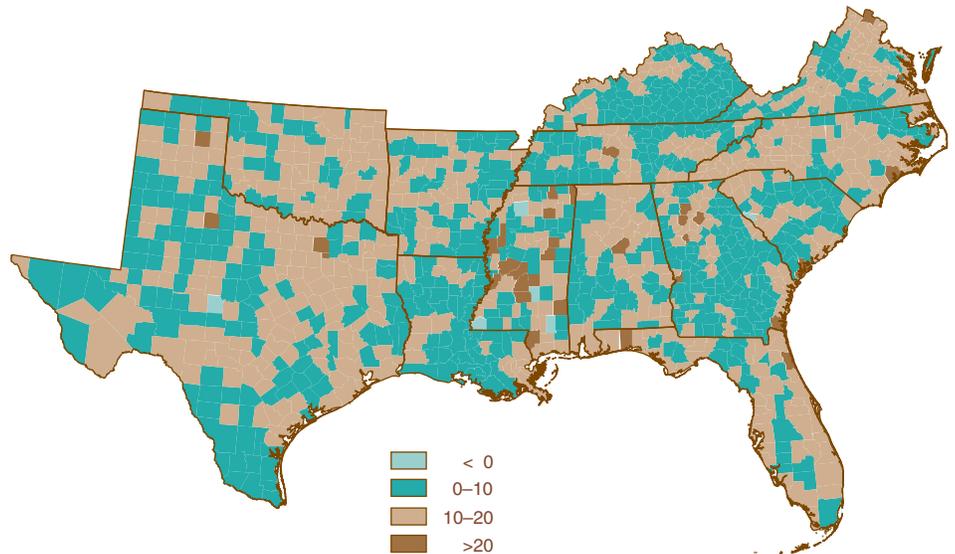


Figure 7.5—Change in percent of residents attending college in the South, 1980 to 1990.

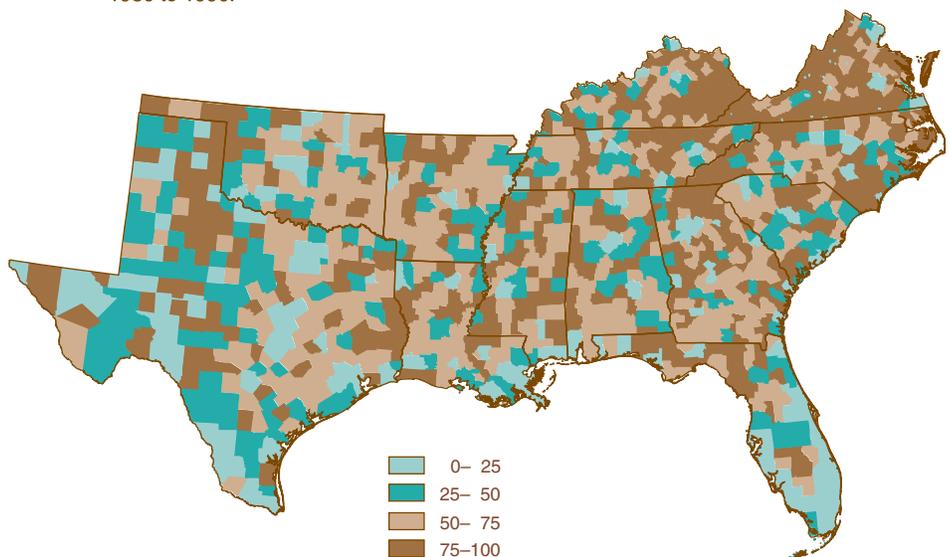


Figure 7.6—Percent of rural residents in the South, 1990.

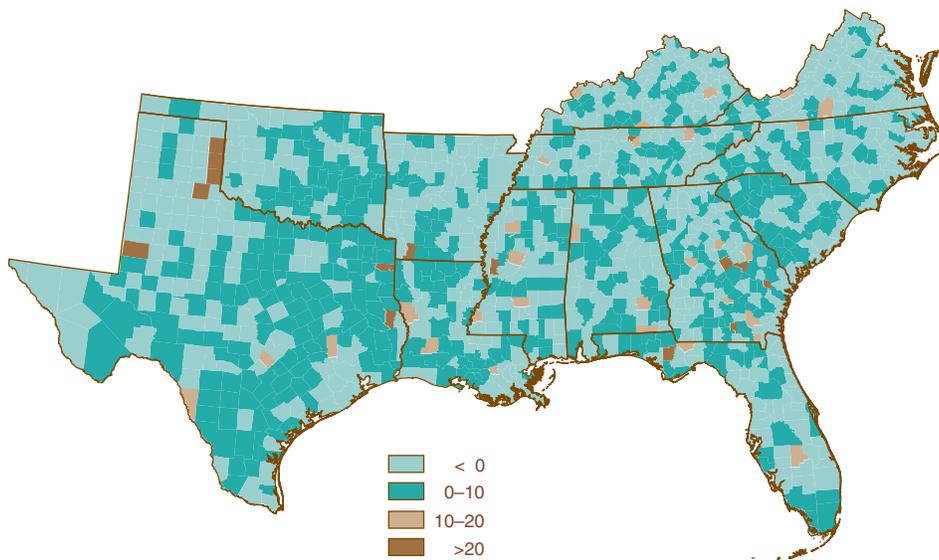


Figure 7.7—Change in percent of rural residents in the South, 1980 to 1990.

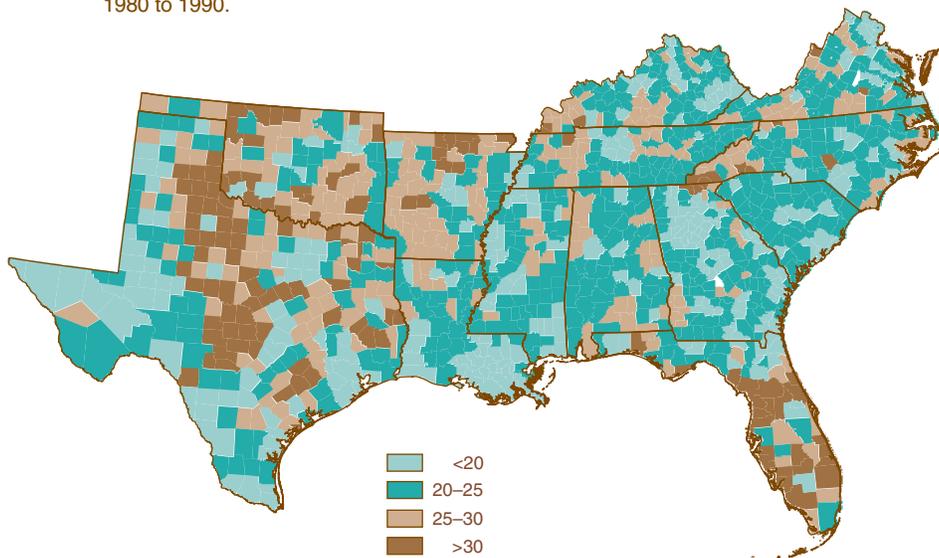


Figure 7.8—Percent of residents in the South over 55 years of age, 1990.

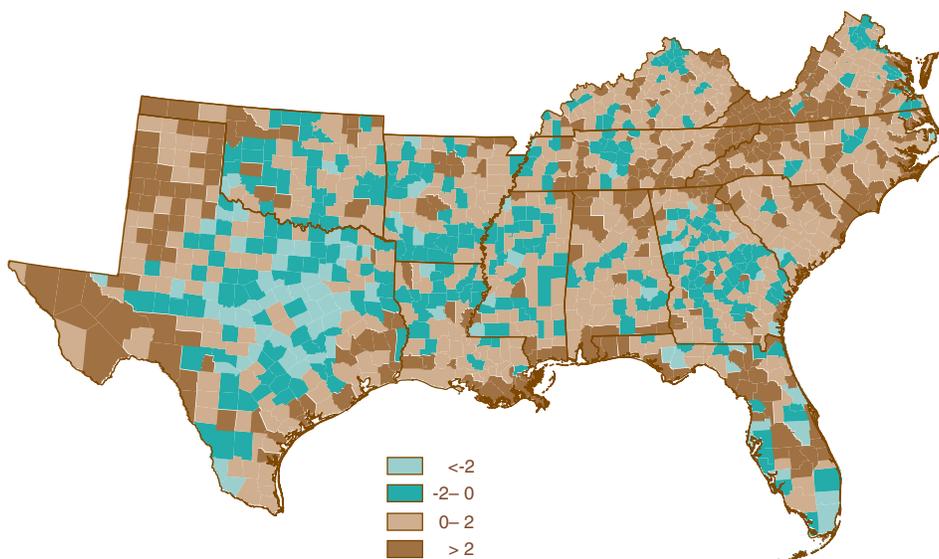


Figure 7.9—Change in percent of residents in the South over 55 years of age, 1980 to 1990.

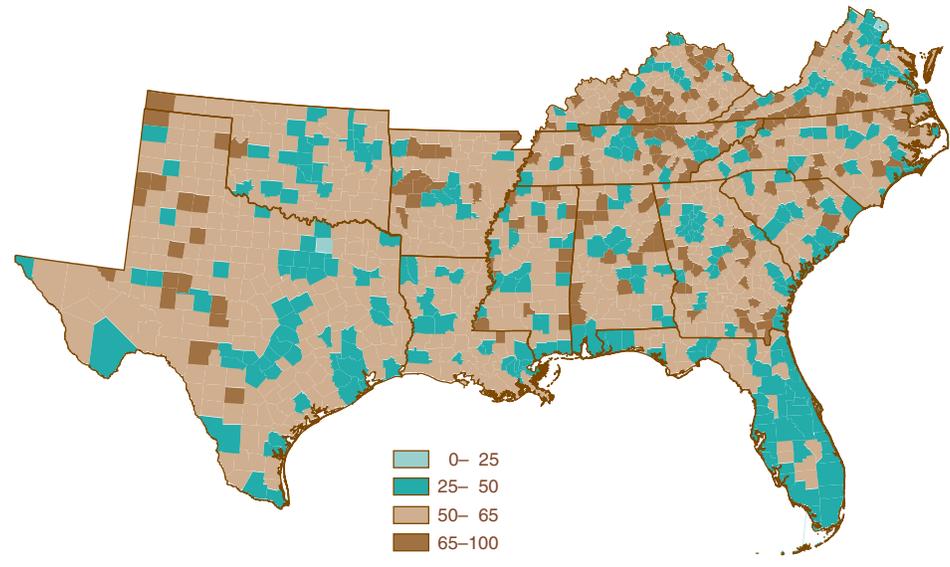


Figure 7.10—Percent of blue-collar workers in the South, 1990.

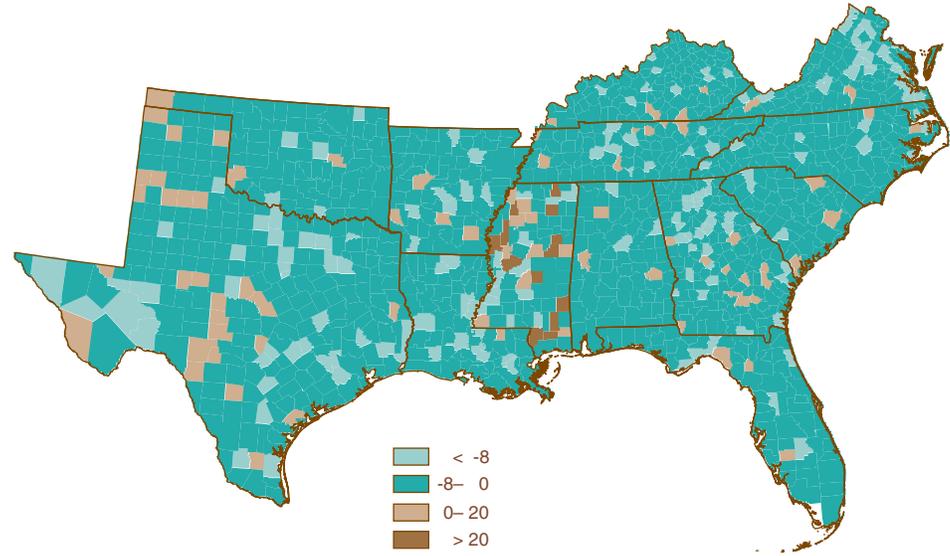


Figure 7.11—Change in percent of blue-collar workers in the South, 1980 to 1990.

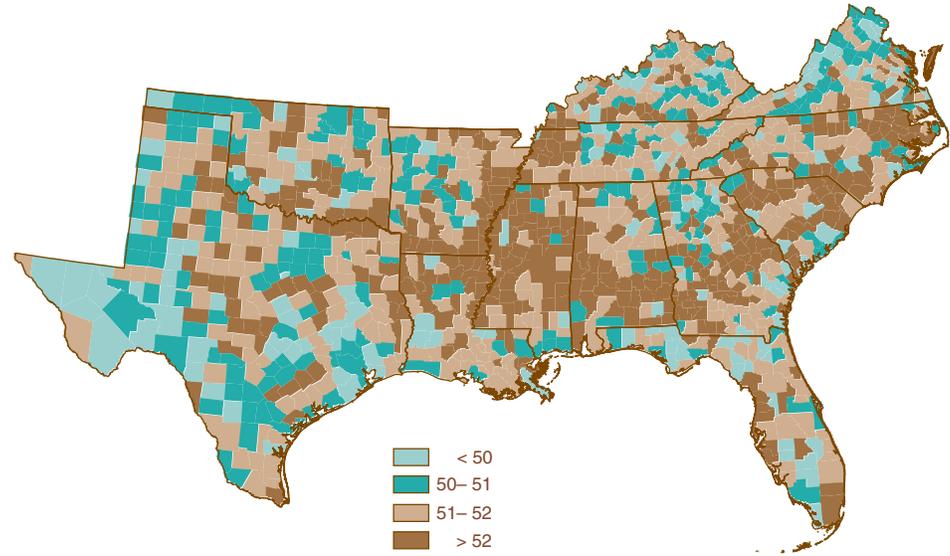


Figure 7.12—Percent of female residents in the South, 1990.

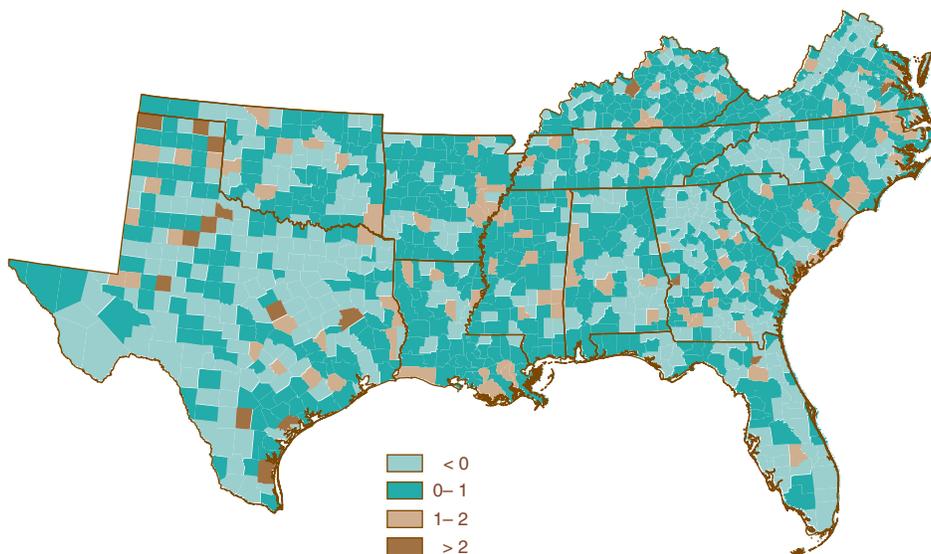


Figure 7.13—Change in percent of female residents in the South, 1980 to 1990.

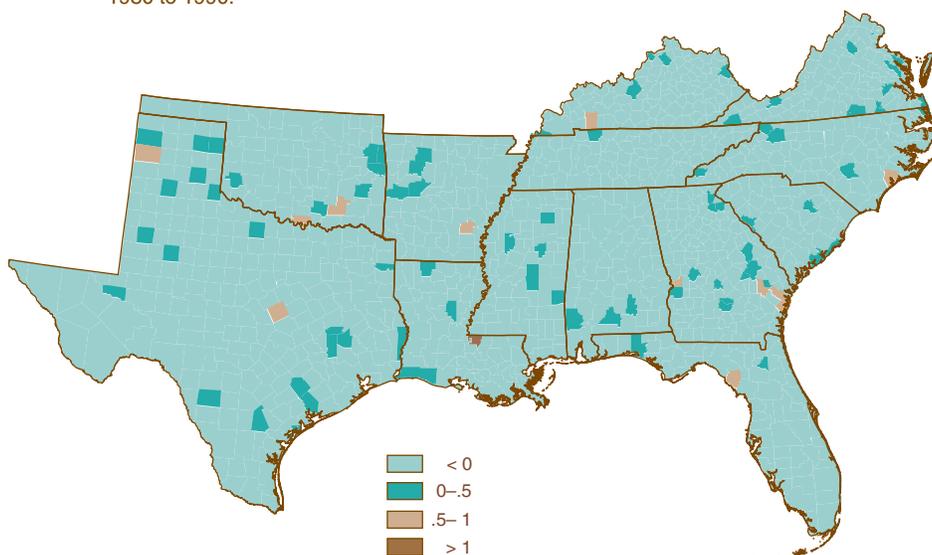


Figure 7.14—Change in percent of female residents in the South, 1990 to 1999.

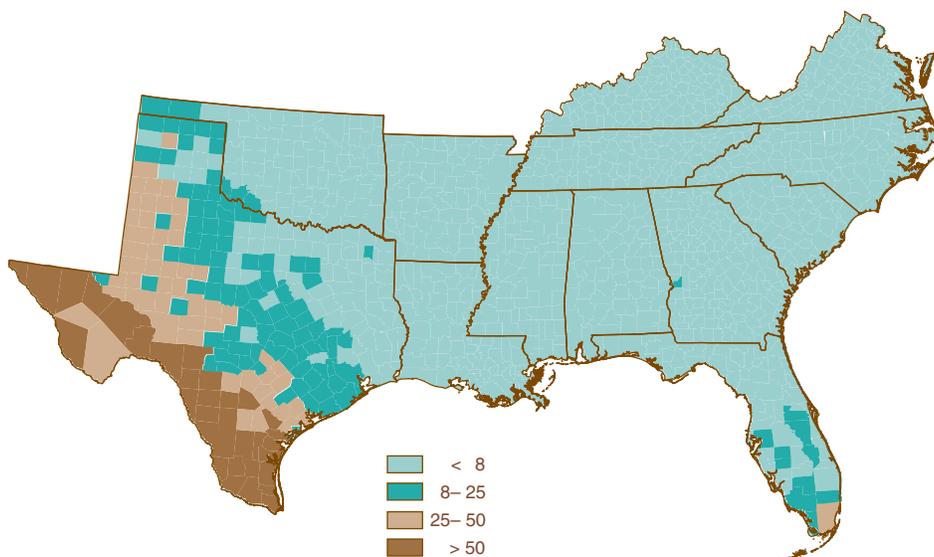


Figure 7.15—Percent of Hispanic residents in the South, 1990.

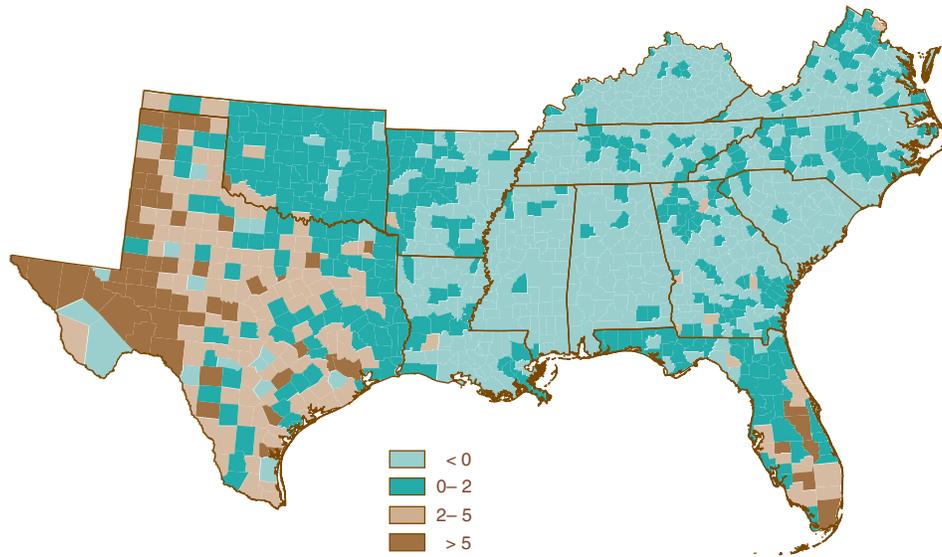


Figure 7.16—Change in percent of Hispanic residents in the South, 1980 to 1990.

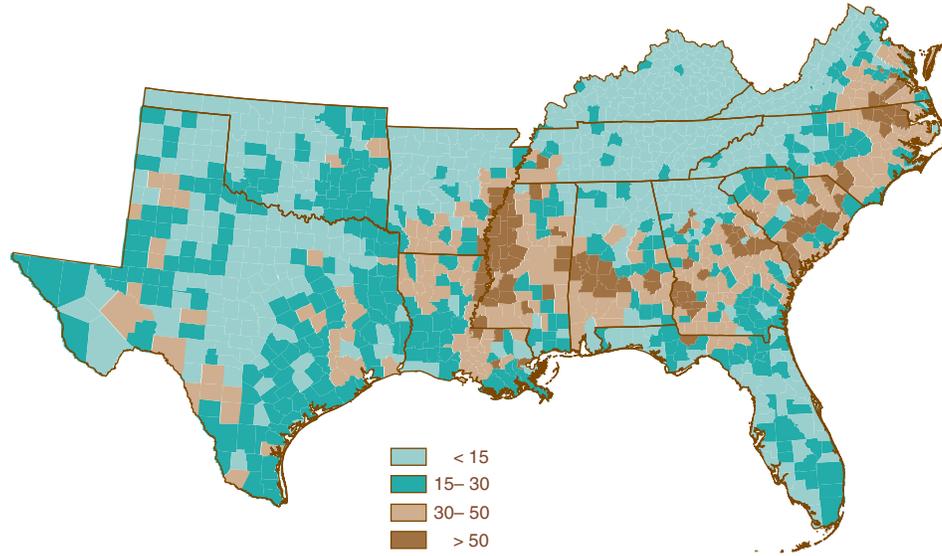


Figure 7.17—Percent of nonwhite residents in the South, 1990.

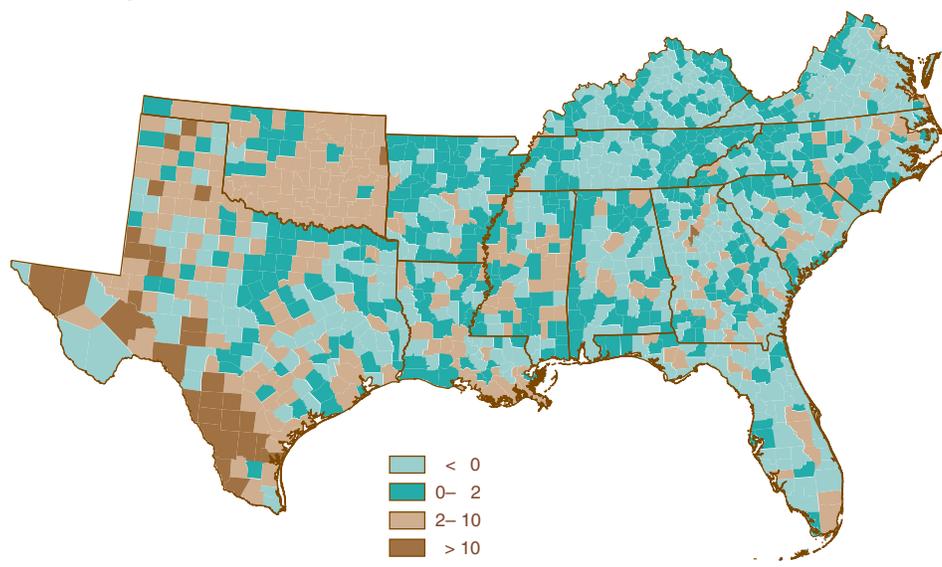


Figure 7.18—Change in percent of nonwhite residents in the South, 1980 to 1990.

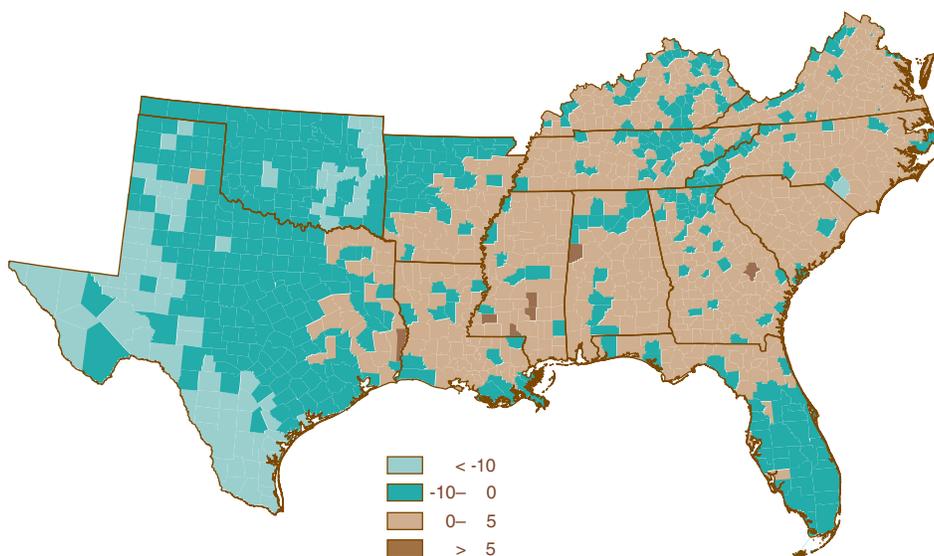


Figure 7.19—Change in percent of nonwhite residents in the South, 1990 to 1999.

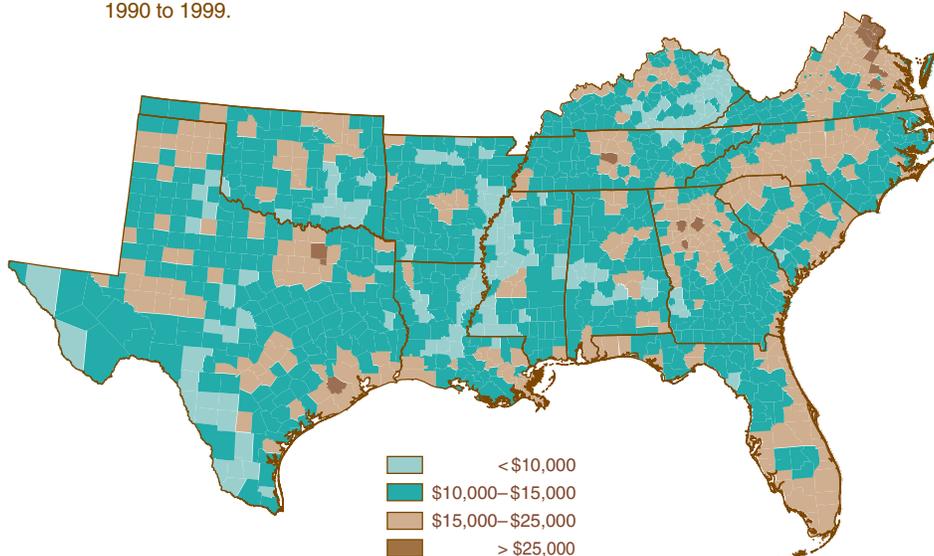


Figure 7.20—Median household income (adjusted by Consumer Price Index) in the South, 1990.

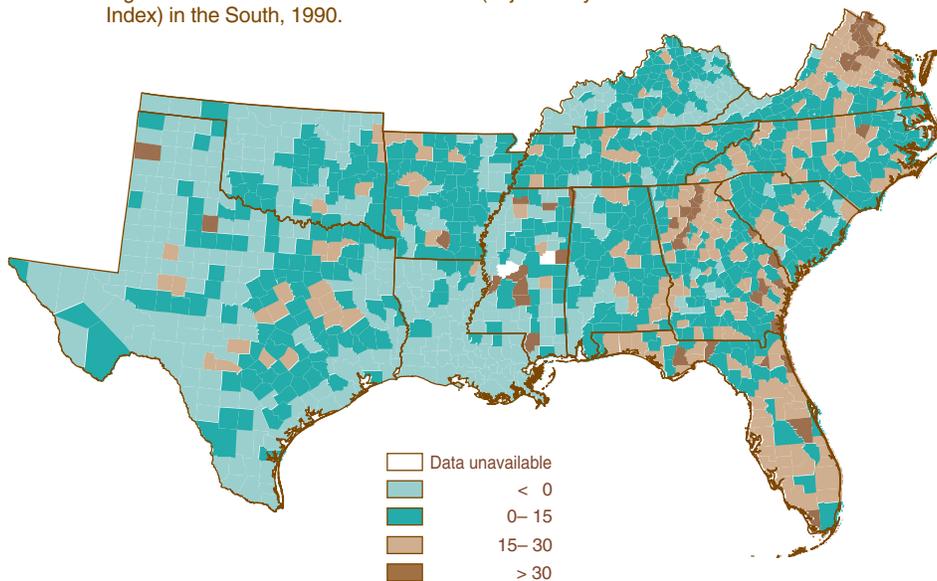


Figure 7.21—Percent change in median household income (adjusted by Consumer Price Index) in the South, 1980 to 1990.

Texas, Oklahoma, and the Mississippi River Basin (fig. 7.18). From 1990 to 1999, the rates of increase in nonwhite populations reversed, with the greatest increase along a broad band from the Mississippi River Basin through the Piedmont to the Carolinas coast (fig. 7.19).

In 1990, the wealthiest areas in the South were primarily in major cities, while the poorest areas tended to be rural (fig. 7.20). Between 1980 and 1990, the highest gains in median household income were in the eastern half of the South, especially in major cities, and along the Carolinas and Florida coast. Decreases occurred in the Mississippi River Basin, the Southern Appalachians, Texas, Oklahoma, and the coast of Louisiana (fig. 7.21).

Attitudes and Values Toward Public and Private Forests

Wood production was generally rated as the least important of the four values associated with forests, and clean air as the most important (tables 7.3 and 7.4). However, some differences existed between public and private forests. The provision of wood products was valued higher for private forests than for public forests, and the provision of clean air was valued lower for private forests than for public forests. These results suggest that respondents held stronger values about public than private forests. They strongly believe that public forests should provide clean air and should not provide wood products, but do not hold such restrictive values for private forests.

A majority of respondents felt that (1) “too little” was being spent on protecting the environment (62.5 percent) versus only 9.2 percent who reported “too much,” and (2) environmental laws had gone “not far enough” (45.5 percent) versus only 13.1 percent who thought that the laws had gone “too far.” A mean score of 23.75 on the modified NEP (range from 10 to 50) suggests a moderately strong proenvironmental attitude. Individual item scores for the modified NEP are shown in table 7.2.

Table 7.3—Assigned and held values of public forests

| | n | Mean | Rank | Standard deviation |
|------------------------------------|-----|------|------|--------------------|
| Assigned values^a | | | | |
| Wood products | 510 | 3.32 | 4 | 0.93 |
| Clean air | 525 | 1.51 | 1 | .75 |
| Scenic beauty | 521 | 2.44 | 2 | .97 |
| Cultural and natural heritage | 512 | 2.69 | 3 | .98 |
| Held values^b | | | | |
| Wood products | 520 | 3.14 | 4 | 1.5 |
| Clean air | 530 | 1.25 | 2 | .68 |
| Scenic beauty | 527 | 1.22 | 1 | .57 |
| Cultural and natural heritage | 520 | 1.25 | 2 | .59 |

^a Assigned forest values were ranked from most (1) to (4) least important.

^b Held forest values were rated from (1) agree to (4) disagree.

Table 7.4—Assigned and held values of private forests

| | n | Mean | Rank | Standard deviation |
|------------------------------------|-----|------|------|--------------------|
| Assigned values^a | | | | |
| Wood products | 498 | 2.77 | 3 | 1.20 |
| Clean air | 505 | 1.62 | 1 | .78 |
| Scenic beauty | 498 | 2.65 | 2 | 1.00 |
| Cultural and natural heritage | 492 | 2.91 | 4 | .96 |
| Held values^b | | | | |
| Wood products | 513 | 2.31 | 4 | 1.31 |
| Clean air | 524 | 1.37 | 1 | .71 |
| Scenic beauty | 526 | 1.71 | 3 | .96 |
| Cultural and natural heritage | 521 | 1.66 | 2 | 1.00 |

^a Assigned forest values were ranked from most (1) to (4) least important.

^b Held forest values were rated from (1) agree to (4) disagree.

Environmental Attitudes and Values by Social and Demographic Characteristics

Area of residence—Three groups were sampled: urban (n = 804), near urban (n = 459), and rural (n = 160). With one exception, there were no significant differences between the three groups in rating the four objects (wood products, clean air, scenic beauty, and heritage). The single exception was that rural residents rated scenic beauty as a more important object of public forests than did near-urban residents. There

were no significant differences between the three groups in their attitudes toward the environment. Overall, results suggest that where people live in the South (in an urban or rural area) is not related to their values of forests or attitudes toward the environment.

Intergenerational differences—Three age groups (generations) were measured: < 24 years (n = 201), 25 to 49 years (n = 699), and 50+ years (n = 501). Ages of respondents ranged from 16 to 94 years old. Overall, age influenced public values toward forests and environmental attitudes. In evaluating private forests, the

youngest generation (16 to 24 years) placed significantly less importance on wood products and significantly more on scenic beauty than did the oldest generation (50+ years). For public forests, the youngest generation valued scenic beauty significantly higher than did the oldest generation. Younger people were significantly more likely than older people to believe (1) that we are spending too little to protect the environment, and (2) that environmental laws have not gone far enough. There were no significant differences between the three age groups on the modified NEP scale. Overall, however, younger people tended to have more biocentric values in regard to forests than did older people.

Length of residency—Length of residency was measured by asking respondents to specify the number of years that they had lived where they are (range from 0 to 87 years, mean = 18.92 years). There were no significant correlations between length of residency and (1) valuation of public or private forests or (2) environmental attitudes.

Land ownership—Respondents were asked to indicate if they or their spouse owned any rural tract of 10 acres or more. Almost one-fifth (18.6 percent, $n = 202$) reported that they owned such a tract. With one exception, there were no significant differences between rural landowners and nonlandowners regarding forest values. The exception was that landowners rated wood products as a more important object of private forests than did nonlandowners. Furthermore, there were no significant differences between the two groups in attitudes toward the environment. Overall, results suggest that land ownership has relatively little bearing on southern residents' valuation of forests or attitudes toward the environment.

Gender—Women ($n = 829$) exhibited significantly stronger proenvironmental attitudes (as measured by the modified NEP) than men and were more likely than men to believe that (1) we had spent too little on the environment and (2) laws and regulations had not gone far enough. Men valued private forests for wood production significantly more than did women, while women valued public forests for scenic beauty significantly more than

did men. Overall, women demonstrated more biocentric values and proenvironmental attitudes than men.

Race—Overall, there were minor differences between whites ($n = 1162$) and nonwhites ($n = 203$) in forest values and environmental attitudes. Nonwhites placed significantly higher importance on wood production and clean air values of public forests than whites, but whites rated public forests as more important for scenic values than did nonwhites.

Regions within the South—Of the 9 ecological divisions within the South (Rudis 1999), only 5 divisions had a sample size of greater than 30 respondents: Hot Continental ($n = 273$), Subtropical (inland) ($n = 484$), Subtropical (coastal) ($n = 113$), Prairie ($n = 144$), and Temperate Steppe ($n = 91$). For this reason, no further analysis was conducted.

Broad Changes in Environmental Attitudes and Values

A review of the literature revealed a strong and fundamental shift in public valuation of forests over the past two decades (e.g., see Bengston 1994, Bengston and Fan 1999, Cramer and others 1993, Manning and others 1999, Rolston and Coufal 1991, Steel and Lovrich 1997, Steel and others 1994, Tarrant and Cordell 1997, Xu and Bengston 1997). Support has shifted away from a commodity-oriented, anthropocentric approach to forest management and toward a more inclusive and diverse (commodity and noncommodity) biocentric approach. For the past 100 years, forest management has endorsed a resource conservation philosophy that emphasizes wise human use and development of resources, dominance of economic over noneconomic values, and human control over nature (Bengston 1994, Steel and others 1994). The change to a biocentric philosophy of forest management recognizes multiple values (which include traditional uses as well as nonuses) of forests, the production of human and nonhuman benefits, and the importance of public involvement in management decisions. Steel and Lovrich (1997) argued that the movement toward a biocentric approach to forests and forest

management in North America reflects a postindustrial society in which higher order needs for self-development and self-actualization have supplanted subsistence needs that are satisfied through material acquisition. Factors that have contributed to this change include a shift in population from rural to urban areas, an increase in economic growth, and technological innovations.

Overall, research findings support (1) a relative decline in utilitarian forest values, (2) a concomitant increase in valuing life-support aspects of forests in the past decade, and (3) more favorable attitudes toward noncommodity forest issues and objectives (see Bengston and Fan 1999, Cordell and others 1996, Cramer and others 1993, Manning and others 1999, Steel and others 1997, Xu and Bengston 1997). In one of the few studies that focused specifically on the South, Cordell and others (1996) showed that Southern Appalachian residents exhibited moderately stronger proenvironmental values and attitudes than the national average. For example, more Southern Appalachian respondents were against increasing timber harvesting on private land (46.5 percent) than were in favor (35.8 percent), and a large majority were against timber harvesting on public lands (72.1 percent) compared with those in favor (17.6 percent). These results are consistent with our findings that wood production was valued as least important of the four objects associated with private or public forests. Other studies also reveal a relatively high level of environmental concern among southern residents. For example, a University of North Carolina (1993) study reported that 48 percent of southern respondents (versus 43 percent of nonsoutherners) felt that the environment had become worse in the past 10 years, and 13 percent (versus 19 percent of nonsoutherners) felt that the environment had improved. In a University of South Carolina (1992) study, 81 percent of South Carolina residents indicated that it was more important to maintain an acceptable level of water quality than to increase the number of jobs in the State. In other work, Bengston and Fan (1999) found that the most strongly held attitudes about roads in national forests were that they provide recreation access and contribute to ecological damage. While commodity-related benefits

such as access for timber harvesting or mining were rated less important than noncommodity values such as access for recreation, eastern (including southern) residents placed higher value on commodity benefits than did western and Intermountain residents. Nonindustrial private forest (NIPF) landowners account for about 70 percent of the forest land in the South and 58 percent in the Nation as a whole. A majority of southern NIPF landowners report that they manage their forests for economic and noneconomic nontimber attributes (Bourke and Luloff 1994, Sinclair and Knuth 2000).

Discussion and Conclusions

Except for the Mississippi River Basin and western Texas, southerners are becoming more numerous, better educated, more urbanized, and wealthier. There also remains a larger (albeit decreasing) proportion of women than men across the region. Together, these factors may explain why southern residents favor biocentric values over economic and utilitarian uses of forests. For example, biocentric values were notably higher (in the NSRE sample) among women than men (as well as among younger than older people). Other studies also found: (1) an overall increase in proenvironmental attitudes from the mid-1980s to a peak in recent years (Dunlap 1991, Dunlap and Scarce 1991, Steel and Lovrich 1997) and (2) higher proenvironmental attitudes and values among female, educated, and urban residents (e.g., Kellert and Berry 1987, Steel and Lovrich 1997, Steel and others 1994). Kellert and Berry (1987), for example, found gender to be the most important demographic influence on wildlife values, in regard to which men demonstrated significantly stronger utilitarian and scientific beliefs, while women had higher moralistic and humanistic beliefs. In other work, Dunlap and Scarce (1991) report findings showing that environmental concern is highest among female, educated, and urban residents.

By managing forests for nonhuman as well as human values, foresters can (1) introduce biological ecosystem management approaches that are

socially and politically acceptable (Bengston 1994), (2) refine measurement techniques to recognize the total (economic and noneconomic) value of forests to society, (3) include a broader spectrum of interested publics in the decisionmaking process (Tarrant and others 1997), and (4) reduce potential conflict and resistance to management practices by responding to public views and opinions (Steel and others 1994). Furthermore, these goals must also be considered in light of the extensive industrial and nonindustrial private land that exists in the South, recognizing the multiple and varied outcomes desired by each landowner. Identifying the publics' valuation of and attitudes toward forests is a first step in understanding the complexities of providing for multiple outcomes of our public and private forests and in addressing the potential costs and benefits to all foresters when making land management decisions.

Needs for Additional Research

The social, demographic, and economic database for the South will need to be updated with information from the 2000 Census. Future studies should address the reasons for southern residents' environmental attitudes and forest values. With that kind of information, ways may be found to generate future support for forest management actions in the South.

At least two limitations to the study should be identified. First, many of the questions on the survey were narrowly focused; for example, the various forest uses were presented as mutually exclusive when, in fact, there are probably complementary relations among the various uses. Second, the respondents' use of the forest products was not examined; for example, the extent to which people may enjoy wood and paper products.

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The southern forest resource assessment provides a comprehensive analysis of the history, status, and likely future of forests in the Southern United States. Twenty-three chapters address questions regarding social/economic systems, terrestrial ecosystems, water and aquatic ecosystems, forest health, and timber management; 2 additional chapters provide a background on history and fire. Each chapter surveys pertinent literature and data, assesses conditions, identifies research needs, and examines the implications for southern forests and the benefits that they provide.

Keywords: Conservation, forest sustainability, integrated assessment.

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