

SOCIO-2: Socio-Demographics, Values, and Attitudes

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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?

1 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 pro-environmental 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 in public values about forests and their management over the past two decades. 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 females and younger people have stronger biocentric values about forests and stronger pro-environmental attitudes than males 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.

2 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 toward forests evaluate the desirability of forest uses such as timber harvesting and recreation.

3 Methods

Three different methods were used to answer the four questions. For question “a”, 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 questions “b” and “c”, 1,423 randomly sampled residents of the 13 States (AL, AR, FL, GA, KY, LA, MS, NC, OK, SC, TN, TX, VA) were interviewed by telephone. Question “d” was addressed using a literature review.

Nine social, economic, and demographic population variables ([Table 1](#)) were mapped. 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: $(1990 \text{ value} - 1980 \text{ value}) / 1980 \text{ value}$.

The telephone survey (about 2 minutes in length) was part of the National Survey on Recreation and the Environment (NSRE) (about 20 minutes in length) administered by the Human Dimensions Research Lab 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 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 percentage 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. (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 clear 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 (a utilitarian object), clean air (a life support object), scenic beauty (an aesthetic object), and heritage (a spiritual object). Respondents were asked to rank the four objects in their relative order of importance from highest (most important) to lowest (least important) for (a) private forests and (b) public forests. The most important object was given a score/ rank of 1 and the least important object, 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), one item was reworded, and four new items were added (Table 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 (representing a highly unfavorable attitude). Cronbach’s alpha for the modified NEP was 0.70.

Urban residents were over-sampled 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 environmental attitudes and forest values among the social and demographic groups.

4 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.

5 Results

5.1 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 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 ([Figure 1](#)). Between 1980 and 1999 ([Figure 2](#) and [Figure 3](#)) these major metropolitan areas received the greatest percent 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 ([Figure 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 ([Figure 5](#)). 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 ([Figure 6](#)). Overall, the entire region experienced a general decrease in rural residency between 1980 and 1990 ([Figure 7](#)).

Areas with the highest percentage of residents aged over 55 years in 1990 include central Texas, Arkansas, Oklahoma and southern and central Florida ([Figure 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 ([Figure 9](#)). In 1990, the highest percentage of blue-collar workers occurred in western Texas and Oklahoma, parts of the Southern Appalachians, and in the central and north-central area of the South ([Figure 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 ([Figure 11](#)). In 1990 there were more females than males 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 ([Figure 12](#)). Between 1980 and 1999, the percentage of females largely decreased throughout the South, except in small pockets of the coast (with the exception of Florida) and the Texas and Oklahoma Panhandle ([Figure 13](#) and [Figure 14](#)).

In 1990, the highest concentrations of Hispanics were in west Texas (along the Mexico border) and south Florida ([Figure 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 ([Figure 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 coast ([Figure 17](#)). The largest increase in nonwhite populations from 1980 to 1990 occurred in western Texas, Oklahoma, and the Mississippi River Basin ([Figure 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 ([Figure 19](#)).

In 1990, the wealthiest areas in the South were primarily in major cities, while poorest areas tended to be rural ([Figure 20](#)). Between 1980 to 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 ([Figure 21](#)).

5.2 Attitudes and Values Toward Public and Private Forests

Wood production was generally rated as the least important of four listed values associated with forests and clean air as the most important ([Table 3](#) and [Table 4](#)). However, some differences existed between public and private forests. The provision of wood products was not valued as low for private forests as for public forests, and the provision of clean air was not valued as high for private forests as for public forests. These results suggest that respondents held stronger (more intense) 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: (a) “too little” was being spent on protecting the environment (62.5 percent) versus only 9.2 percent who reported “too much,” and (b) 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 2](#).

5.3 Environmental Attitudes and Values by Social and Demographic Characteristics

5.3.1 Area of Residence

Three groups were sampled: urban (n = 804), near-urban (n = 459), and rural (n = 160). With only 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.

5.3.2 Intergenerational Differences

Three age groups (generations) were measured: <24 years (n = 201), 25-49 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 (16-24 years) placed significantly less importance on wood products and

significantly more on heritage than did the older generation (50+ years). For public forests, the younger generation valued scenic beauty significantly higher than did the older generation. Younger people were significantly more likely than older people to believe: (a) that we are spending too little to protect the environment, and (b) 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 tend to have more biocentric values of forests than older people.

5.3.3 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 (a) values of public or private forests or (b) environmental attitudes.

5.3.4 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 only one exception, there were no significant differences between rural landowners and nonlandowners regarding forest values. The single 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' values of forests or attitudes toward the environment.

5.3.5 Gender

Females (n = 829) exhibited significantly stronger pro-environmental attitudes (as measured by the modified NEP) than males, and were more likely than males to believe that (a) we had spent too little on the environment and (b) laws and regulations had not gone far enough. Males valued private forests for wood production significantly more than did females, while females valued public forests for heritage values significantly more than did males. Overall, females demonstrated more biocentric values and pro-environmental attitudes than males.

5.3.6 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.

5.3.7 Regions Within the South

Of the nine ecological divisions within the South (Rudis, 1999), only five 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.

5.4 Broad Changes in Environmental Attitudes and Values

A review of the literature revealed a strong and fundamental shift in public valuation of forest values over the past two decades (for example, see Bengston 1994, Bengston and Fan 1999, Cramer and others 1993, Manning and others 1999, Rolston and Coufal 1991, Steel and others 1994, Steel and Lovrich 1997, 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) and biocentric approach. For the past 100 years, forest management has endorsed a resource conservation philosophy that has emphasized 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 non-uses) 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 life support values 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) than were in favor (17.6 percent). These results are consistent with our findings that wood production was the least important of four values 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

acceptable 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 provided recreation access and contributed 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 forestland 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).

6 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 females than males 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 females than males (as well as among younger than older people). Other studies also support (a) an overall increase in proenvironmental attitudes from the mid-1980's to a peak in recent years (Dunlap 1991, Dunlap and Scarce 1991, Steel and Lovrich 1997) and (b) higher pro-environmental attitudes and values among females, 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, for 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: (a) introduce biological ecosystem management approaches that are socially and politically acceptable (Bengston 1994), (b) refine measurement techniques to recognize the total (economic and noneconomic) value of forests to society, (c) include a broader spectrum of interested publics in the decisionmaking process (Tarrant and others 1997), and (d) reduce potential conflict and resistance to management practices by responding to public views and opinions (Steel and others 1994).

7 Needs for Additional Research

The social, demographic, and economic database for the South will need to be updated with information from the 2000 Census. These data should be available by end of 2001. 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.

8 Acknowledgments

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10 Tables and Figures

Table 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	226,545,805	248,709,873	67,973,072	77,597,917
Median household income (\$)	16,647	30,056	14,675	25,192
Percent rural	26.3	24.8	33.4	31.7
Percent female	51.4	51.3	41.4	51.4
Percent nonwhite	16.9	19.6	21.6	22.9
Percent Hispanic	6.5	8.8	6.4	8.4
Percent blue-collar	47	41.9	49.6	44.2
Percent some college	31.8	45.3	29	42.1
Percent over 55 years	20.9	21	20.6	21.1

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Table 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).

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Table 3--Assigned and held values of public forests

Assigned values ^a	n	Mean	Rank	Standard Deviation
Wood products	510	3.32	4	0.93
Clean air	525	1.51	1	0.75
Scenic beauty	521	2.44	2	0.97
Cultural and natural heritage	512	2.69	3	0.98
Held values ^b				
Wood products	520	3.14	4	1.5
Clean air	530	1.25	2	0.68
Scenic beauty	527	1.22	1	0.57
Cultural and natural heritage	520	1.25	2	0.59

^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".

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Table 4--Assigned and held values of private forests

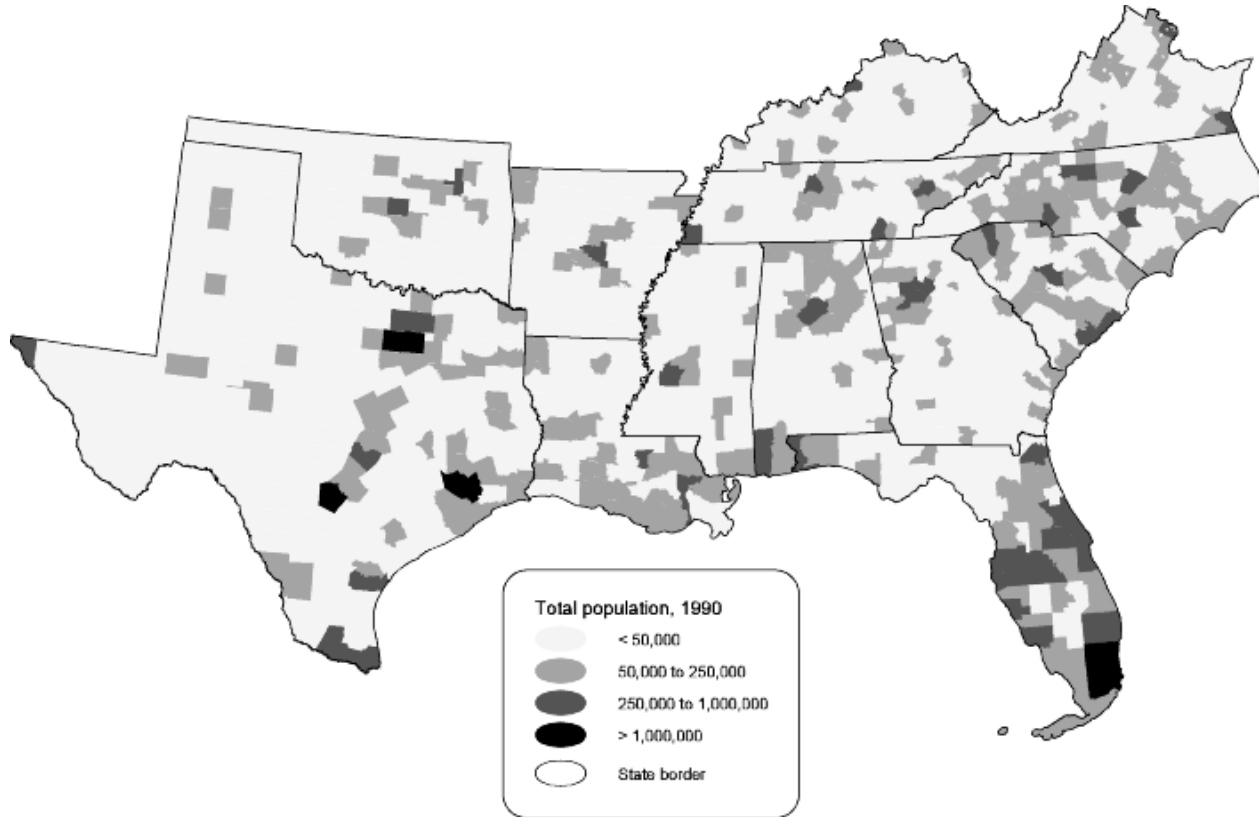
	n	Mean	Rank	Standard deviation
Assigned values ^a				
Wood products	498	2.77	3	1.20
Clean air	505	1.62	1	0.78
Scenic beauty	498	2.65	2	1.00
Cultural and natural heritage	492	2.91	4	0.96
Held values ^b				
Wood products	513	2.31	4	1.31
Clean air	524	1.37	1	0.71
Scenic beauty	526	1.71	3	0.96
Cultural and 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".

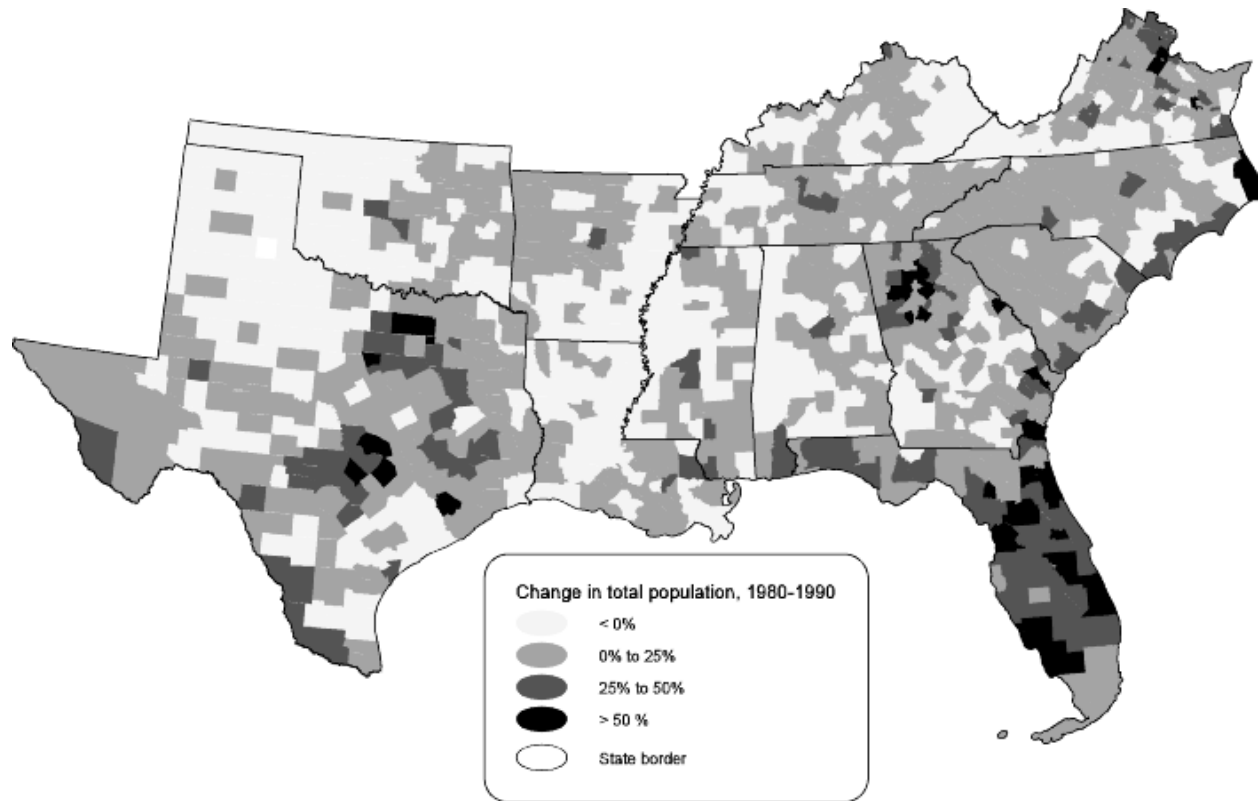
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Figure 1--Total population, 1990.



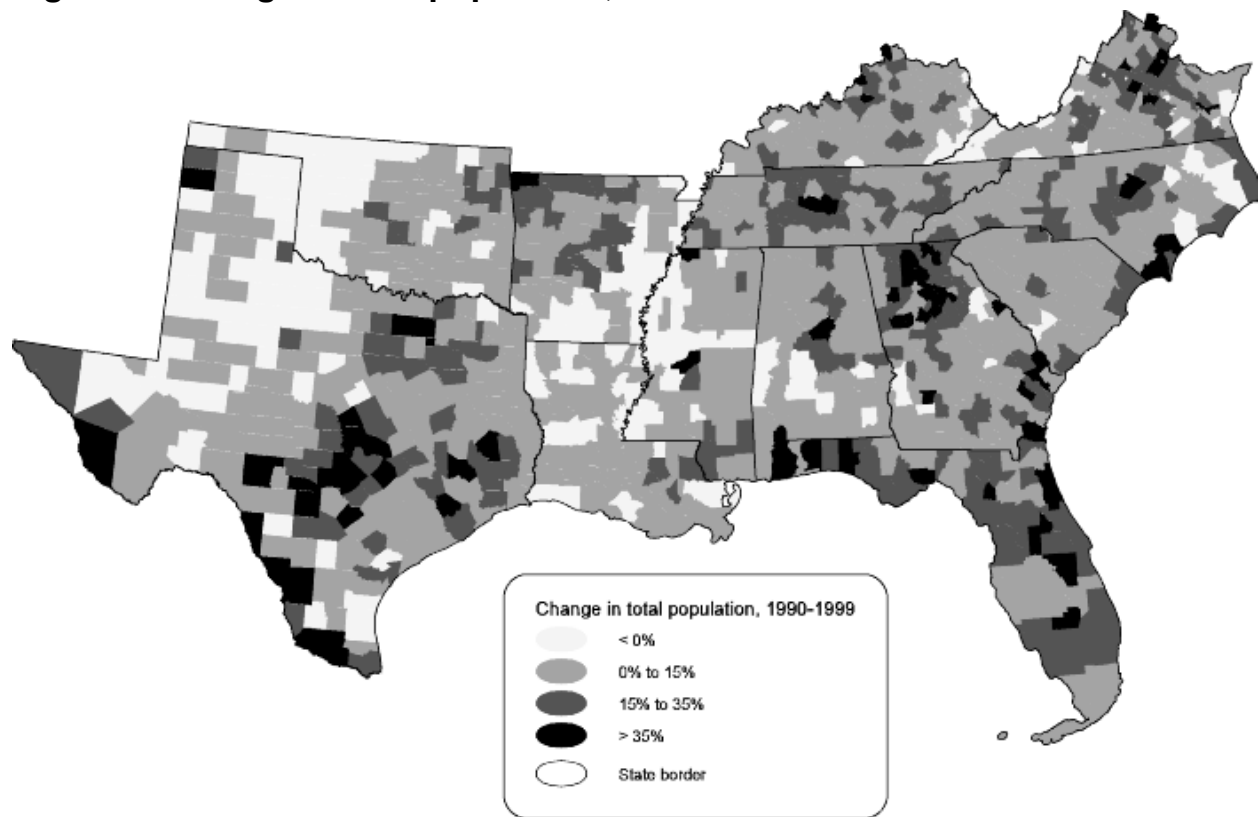
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Figure 2—Change in total population, 1980-1990.



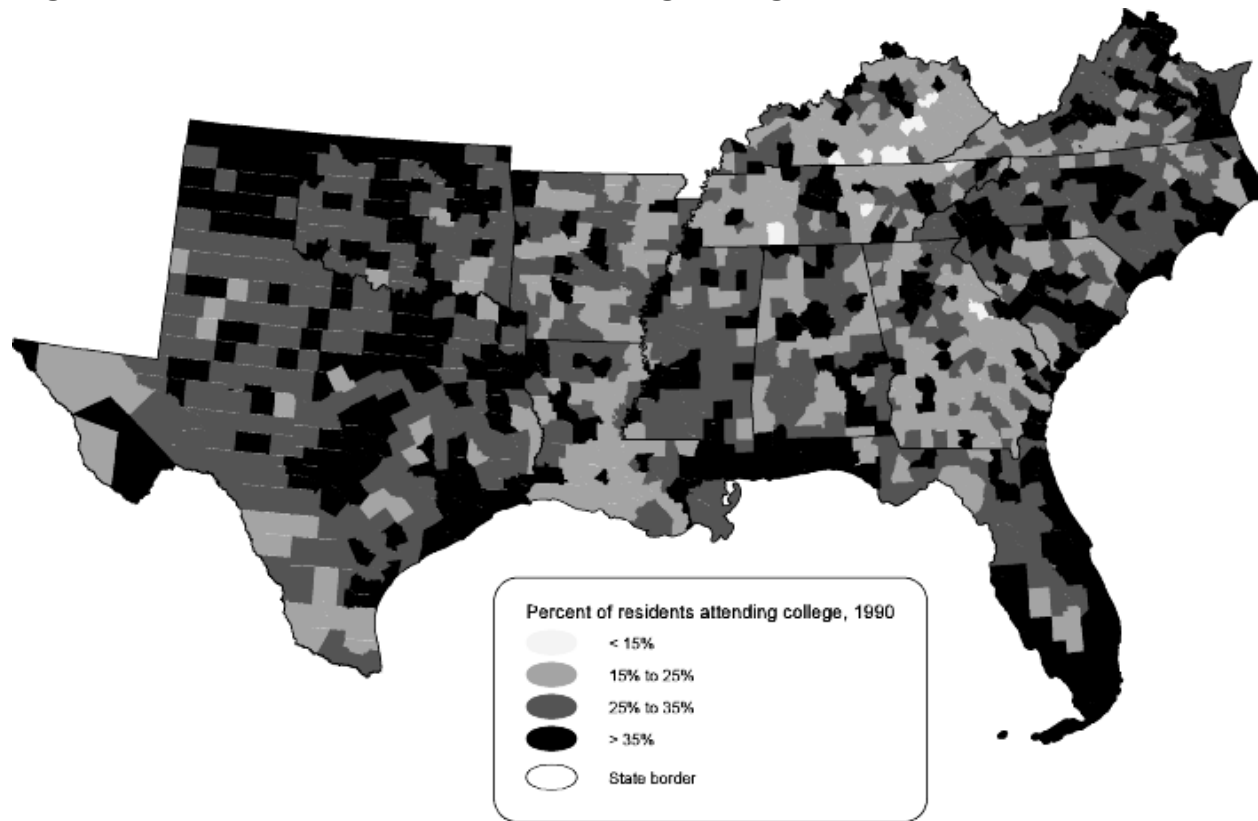
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Figure 3--Change in total population, 1990-1999.



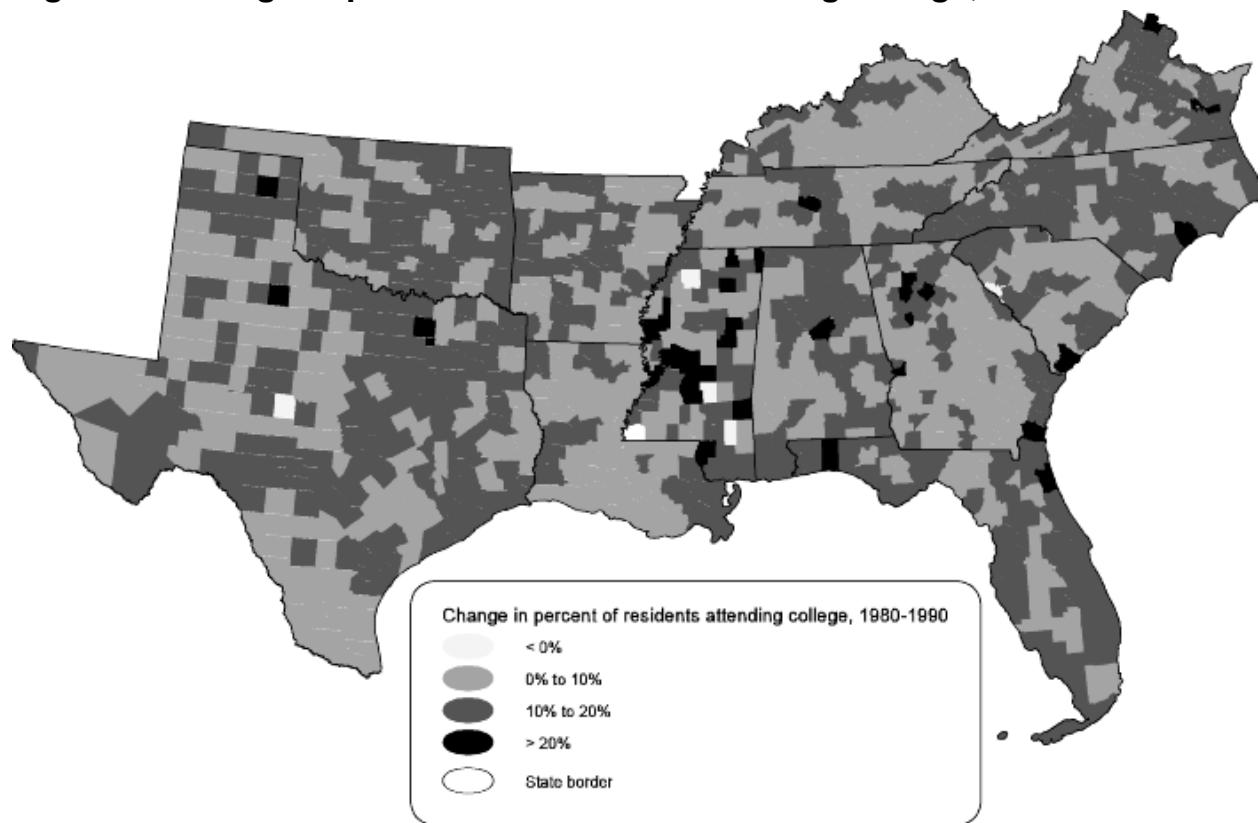
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Figure 4—Percent of residents attending college, 1990.



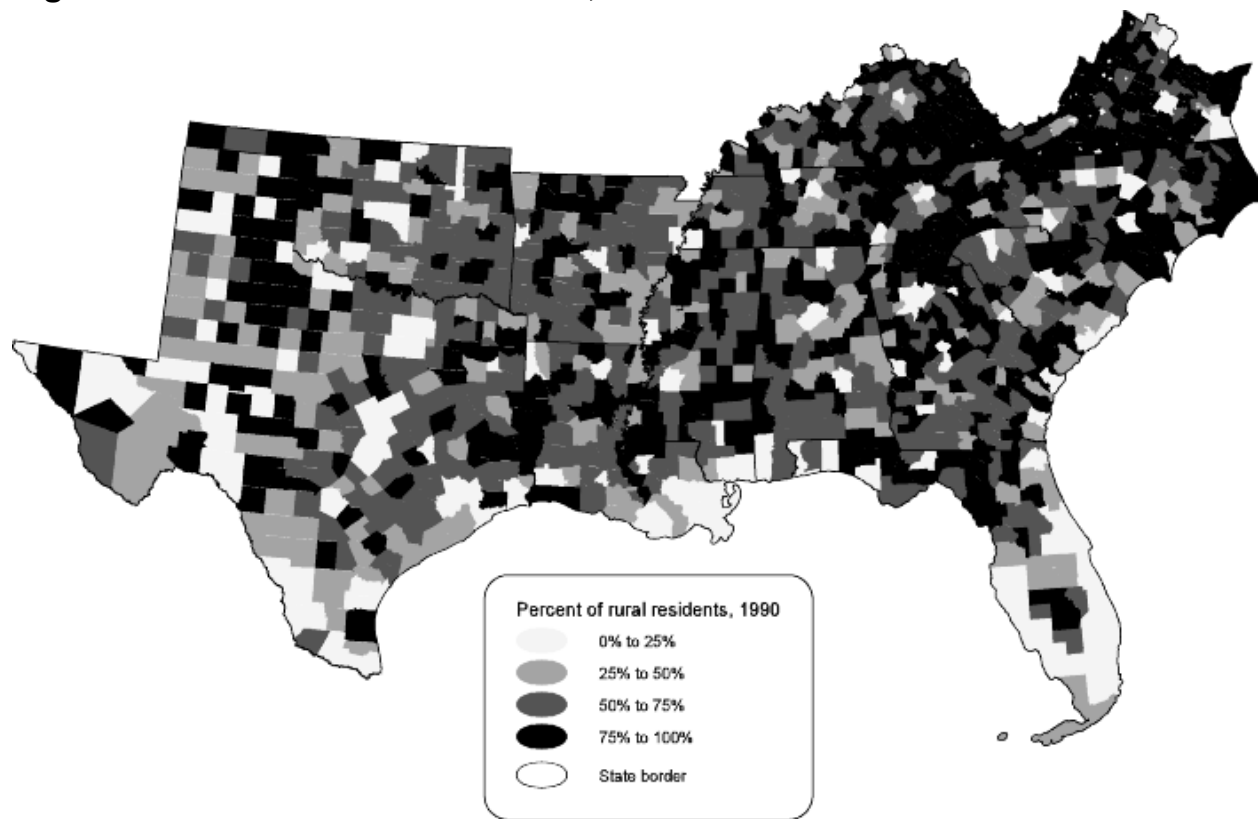
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Figure 5--Change in percent of residents attending college, 1980-1990.



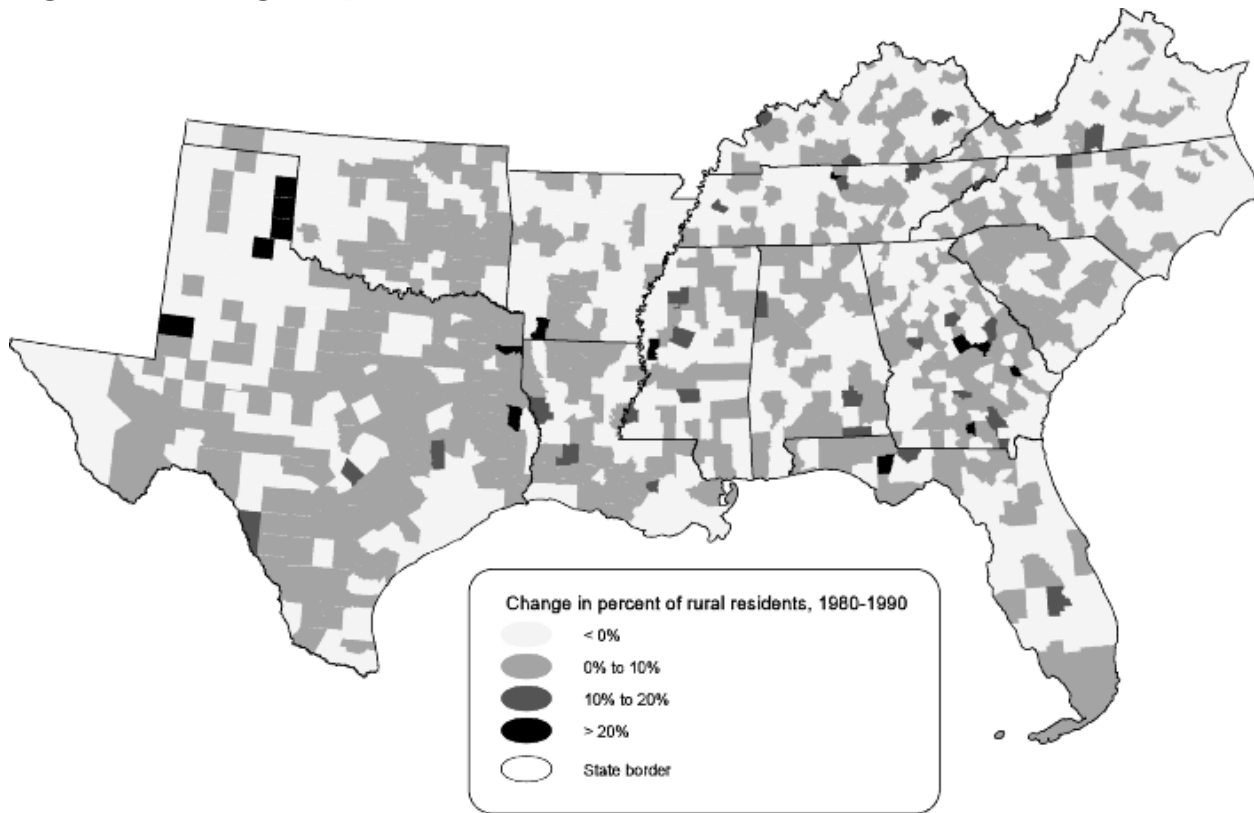
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Figure 6--Percent of rural residents, 1990.



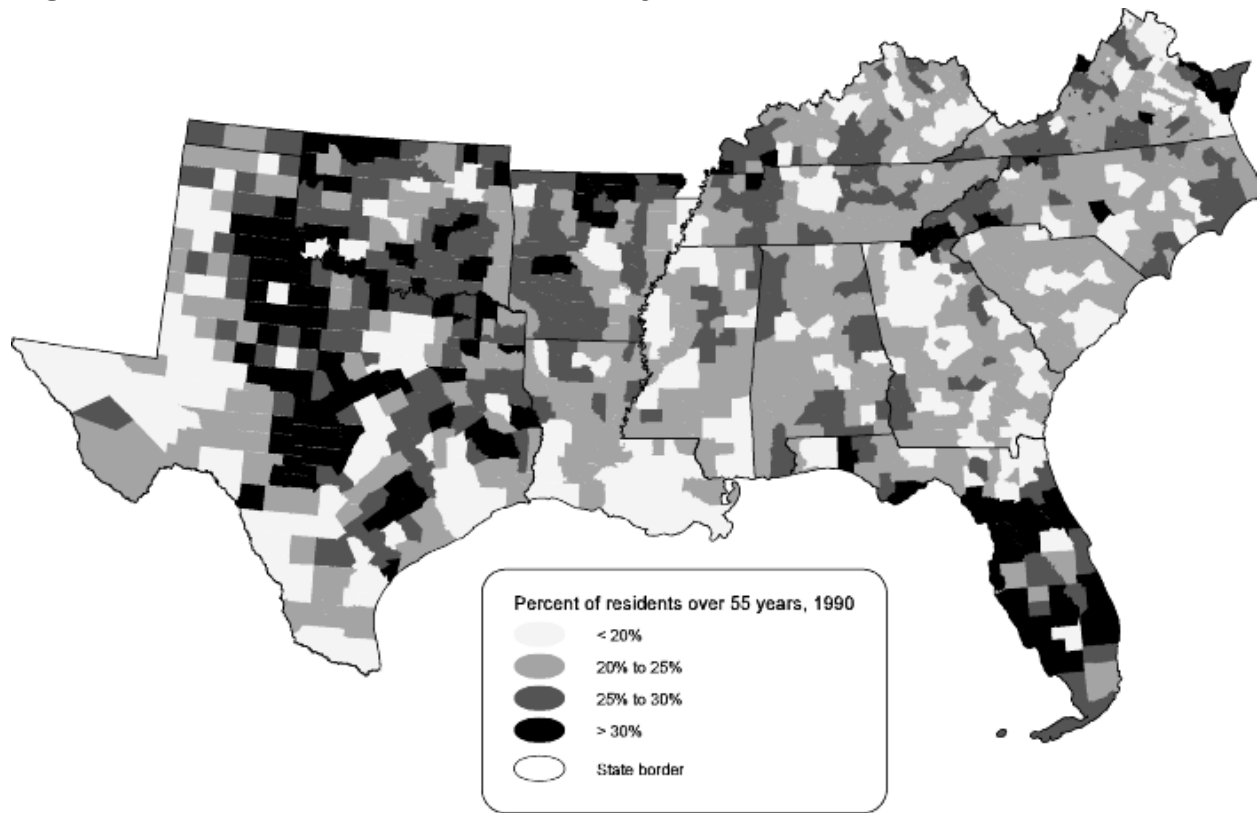
[Return to first reference in text](#)

Figure 7--Change in percent of rural residents, 1980-1990.



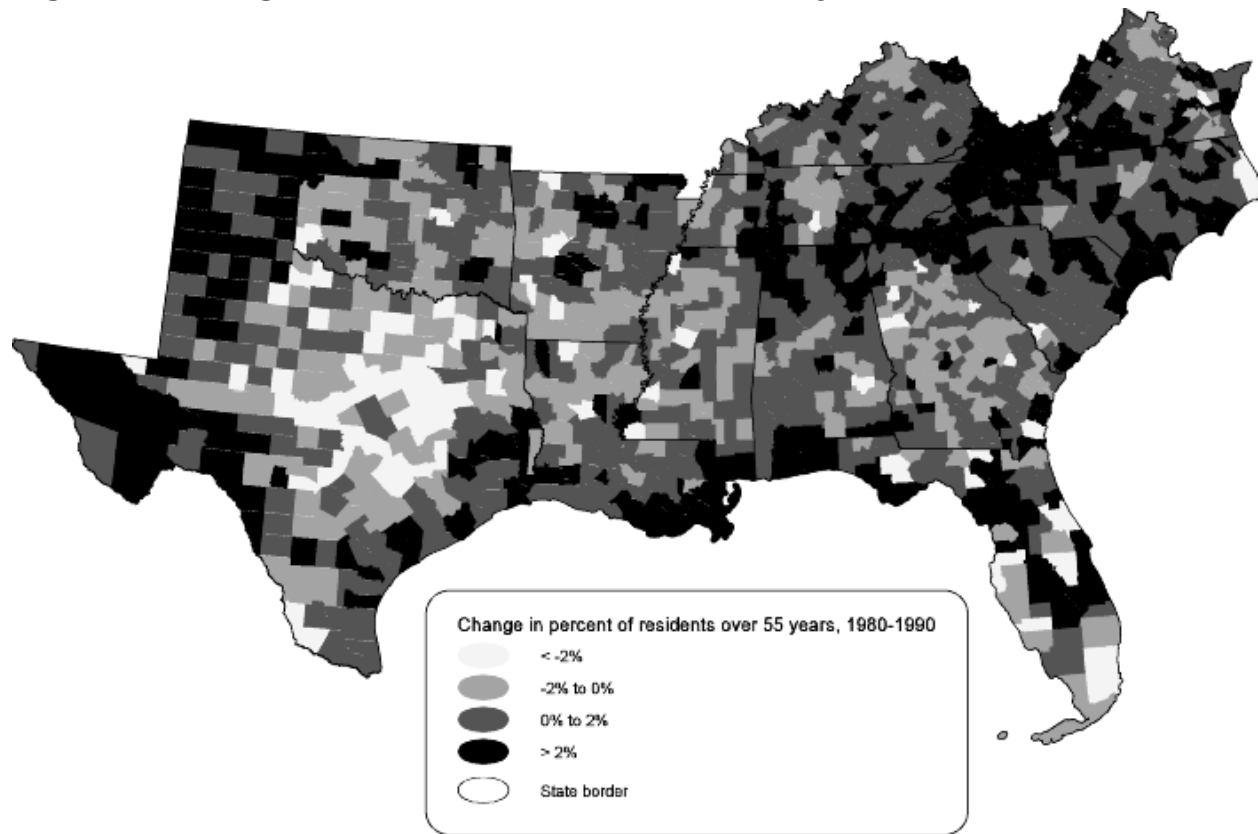
[Return to first reference in text](#)

Figure 8--Percent of residents over 55 years, 1990.



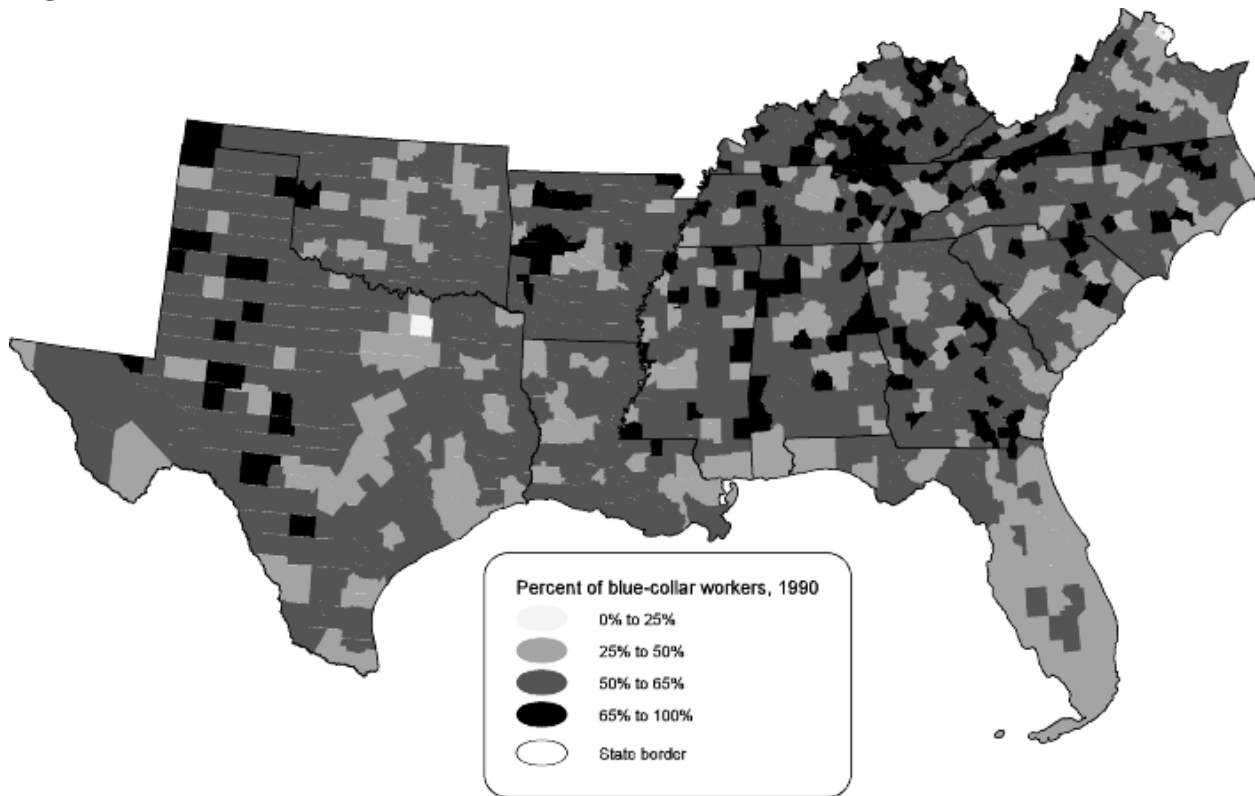
[Return to first reference in text](#)

Figure 9--Change in percent of residents over 55 years, 1980-1990.



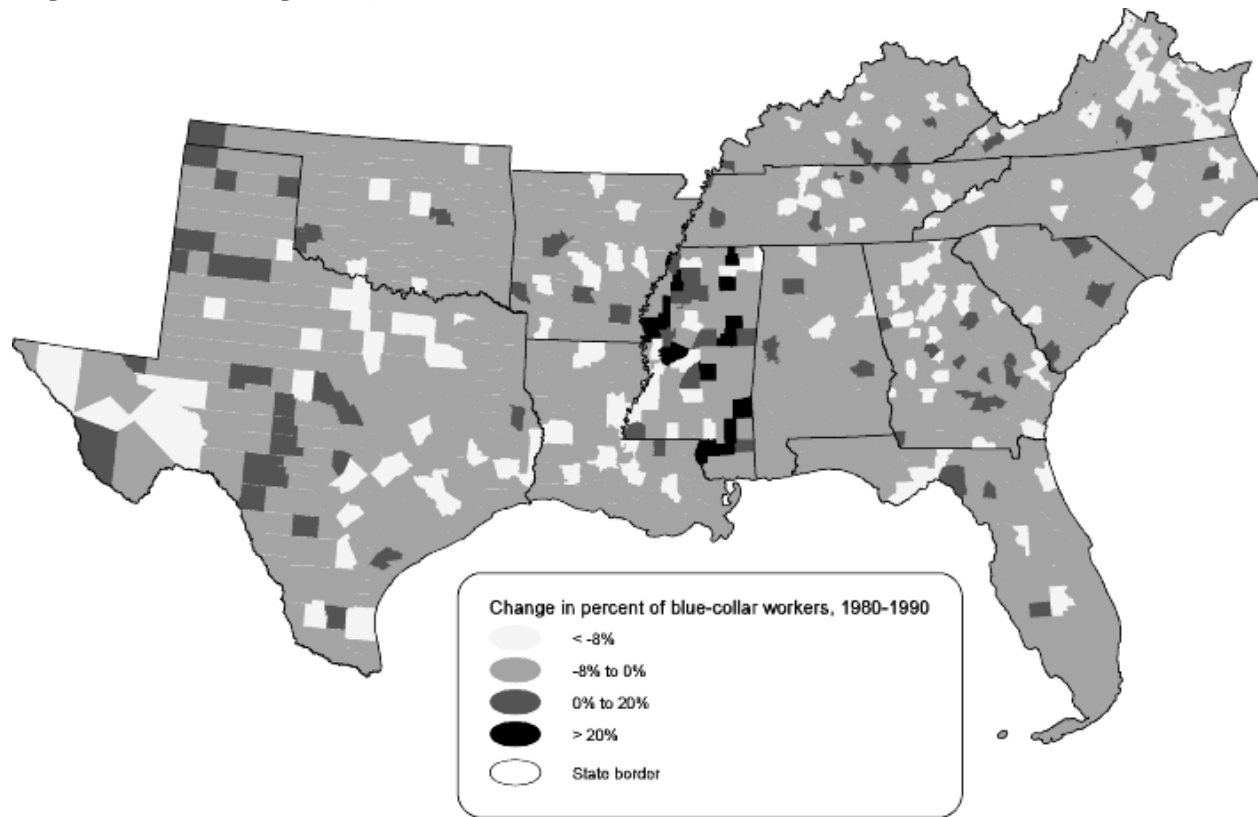
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Figure 10--Percent of blue-collar workers, 1990.



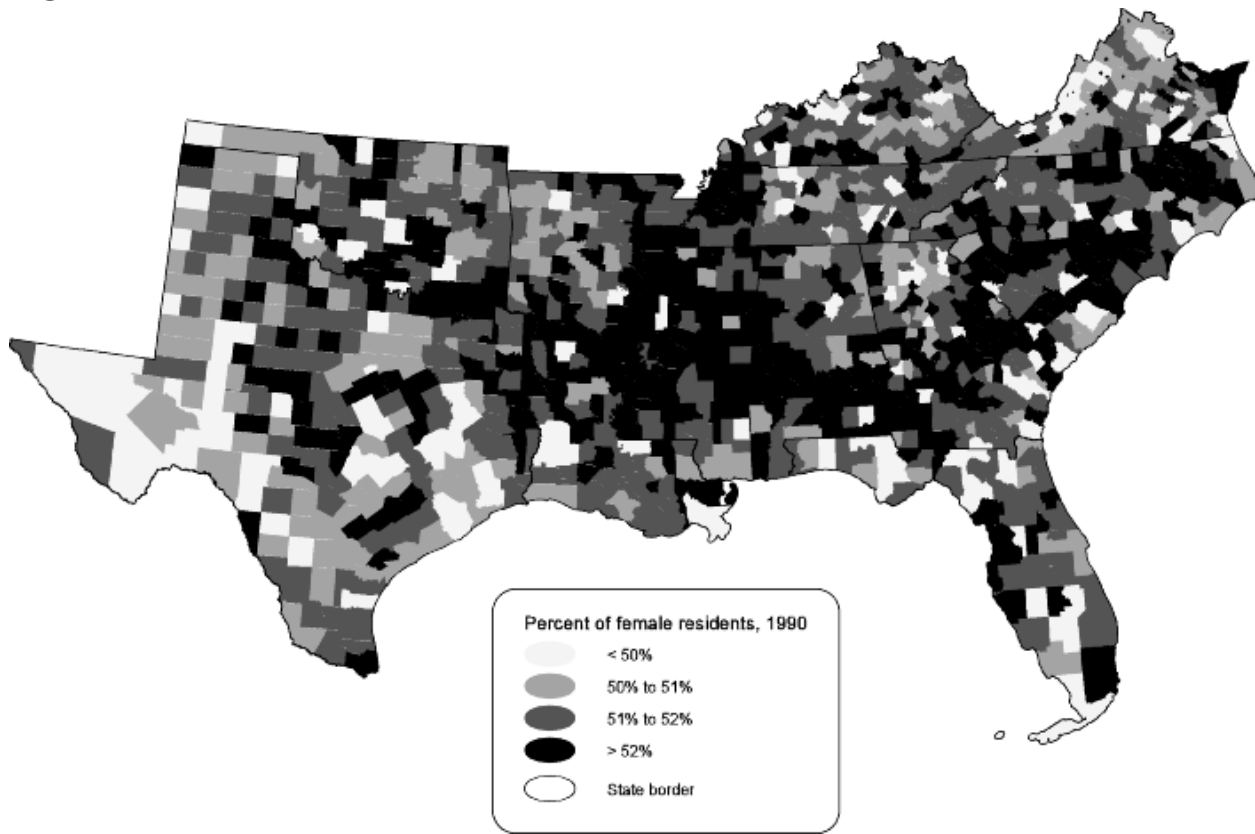
[Return to first reference in text](#)

Figure 11--Change in percent of blue-collar workers, 1980-1990.



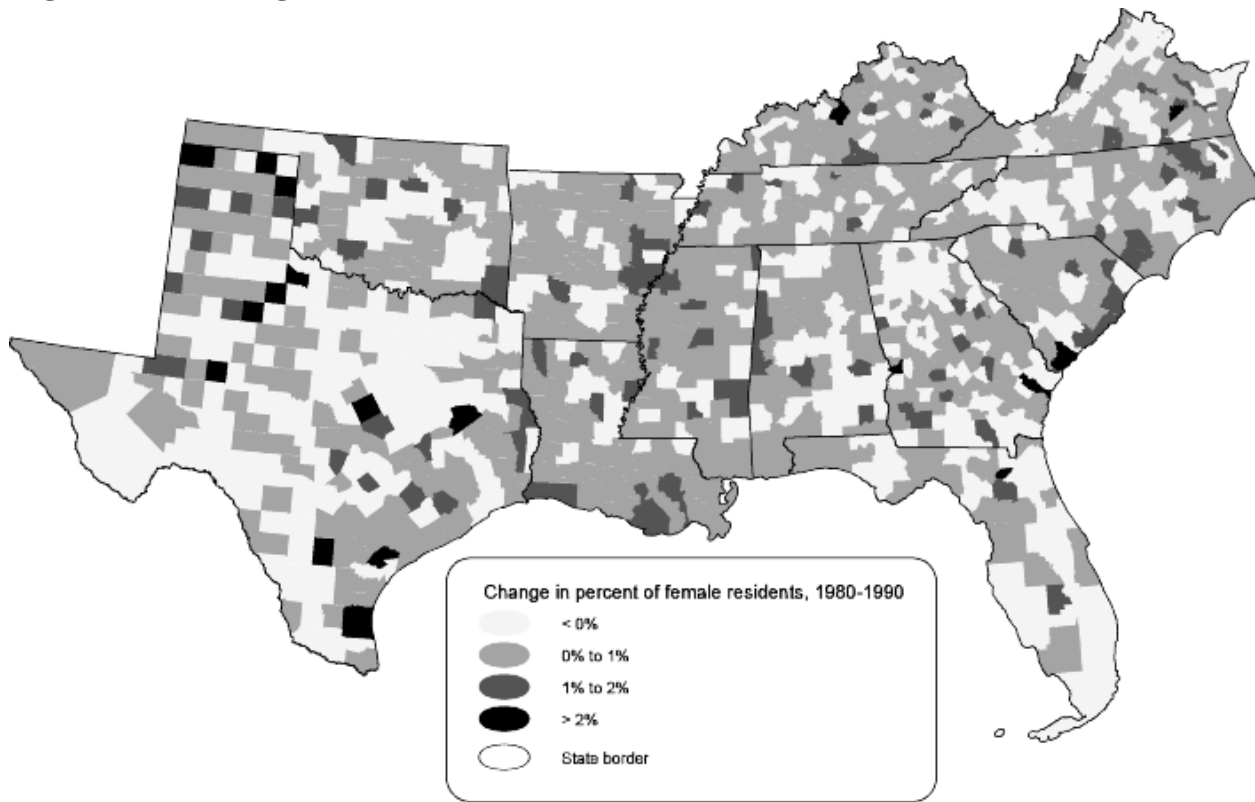
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Figure 12--Percent of female residents, 1990.



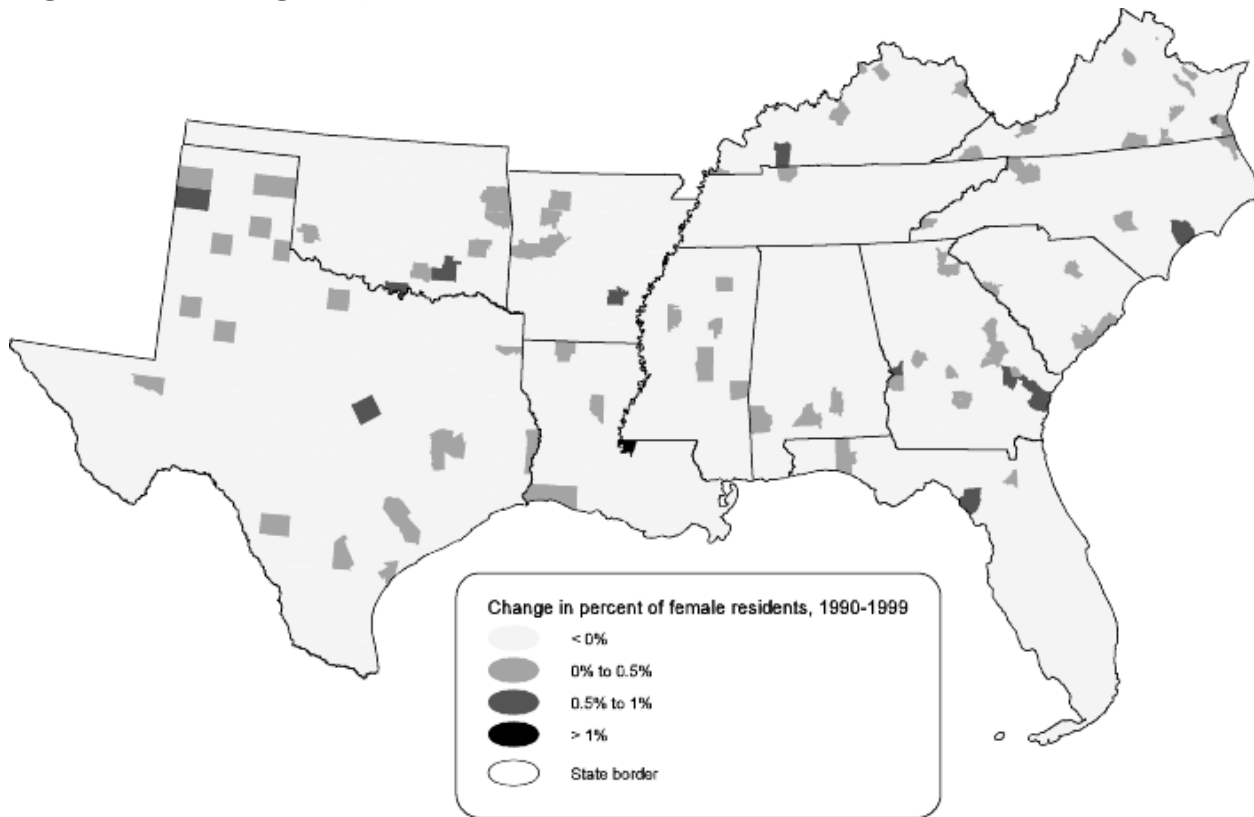
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Figure 13--Change in percent of female residents, 1980-1990.



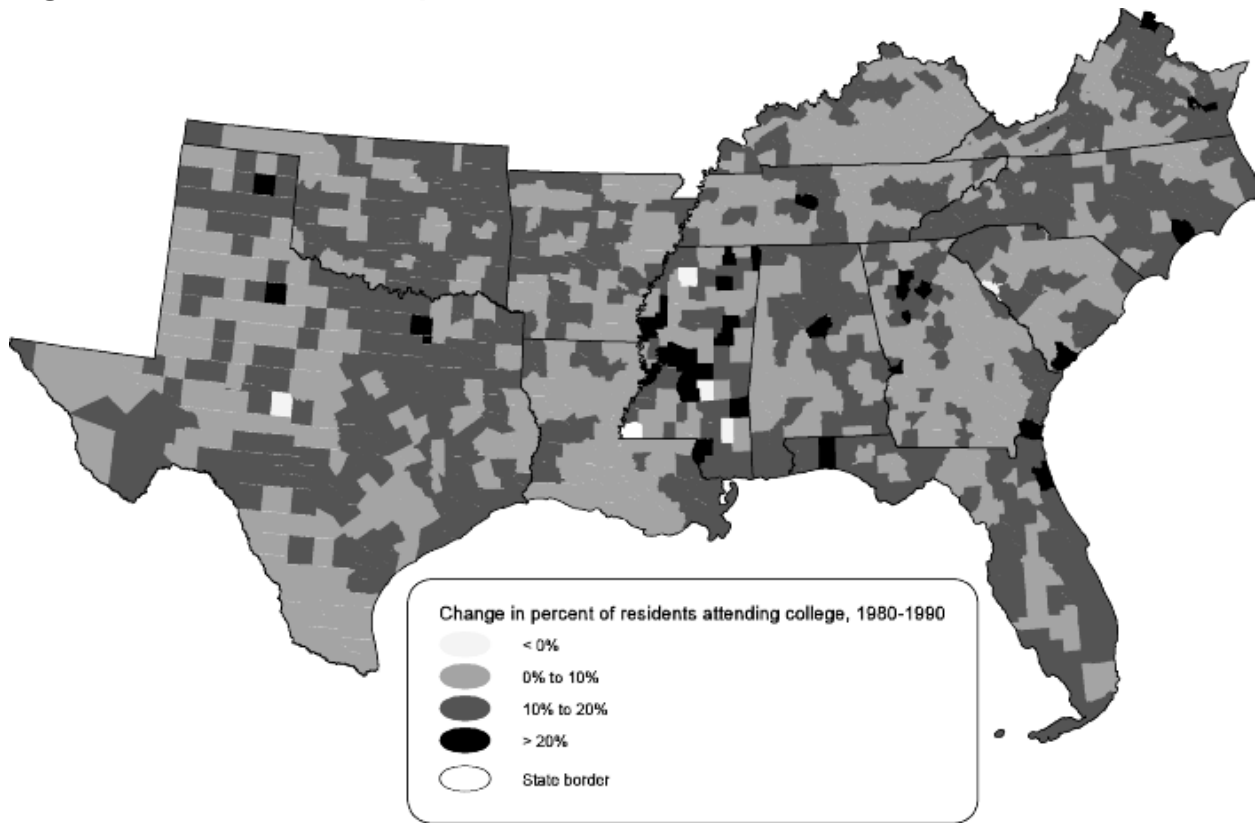
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Figure 14--Change in percent of female residents, 1990-1999.



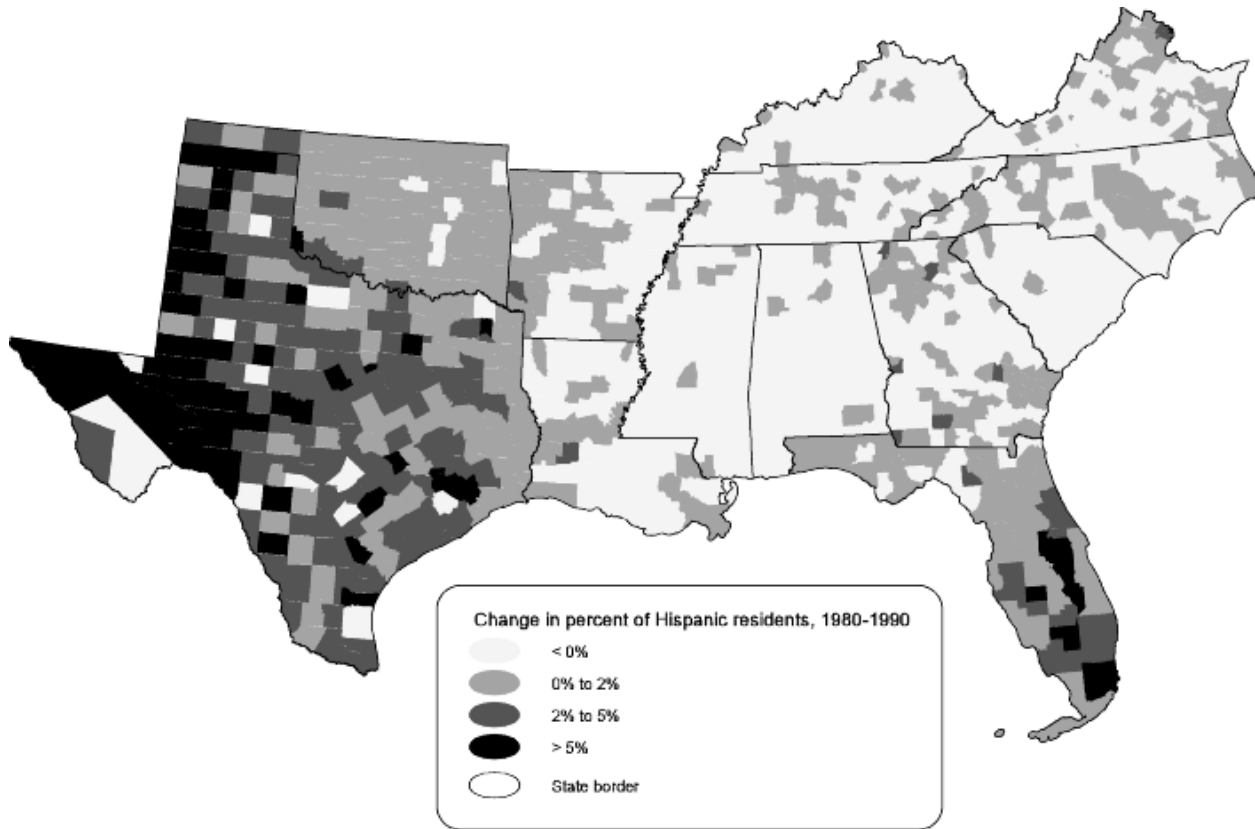
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Figure 15--Percent of Hispanic residents, 1990.



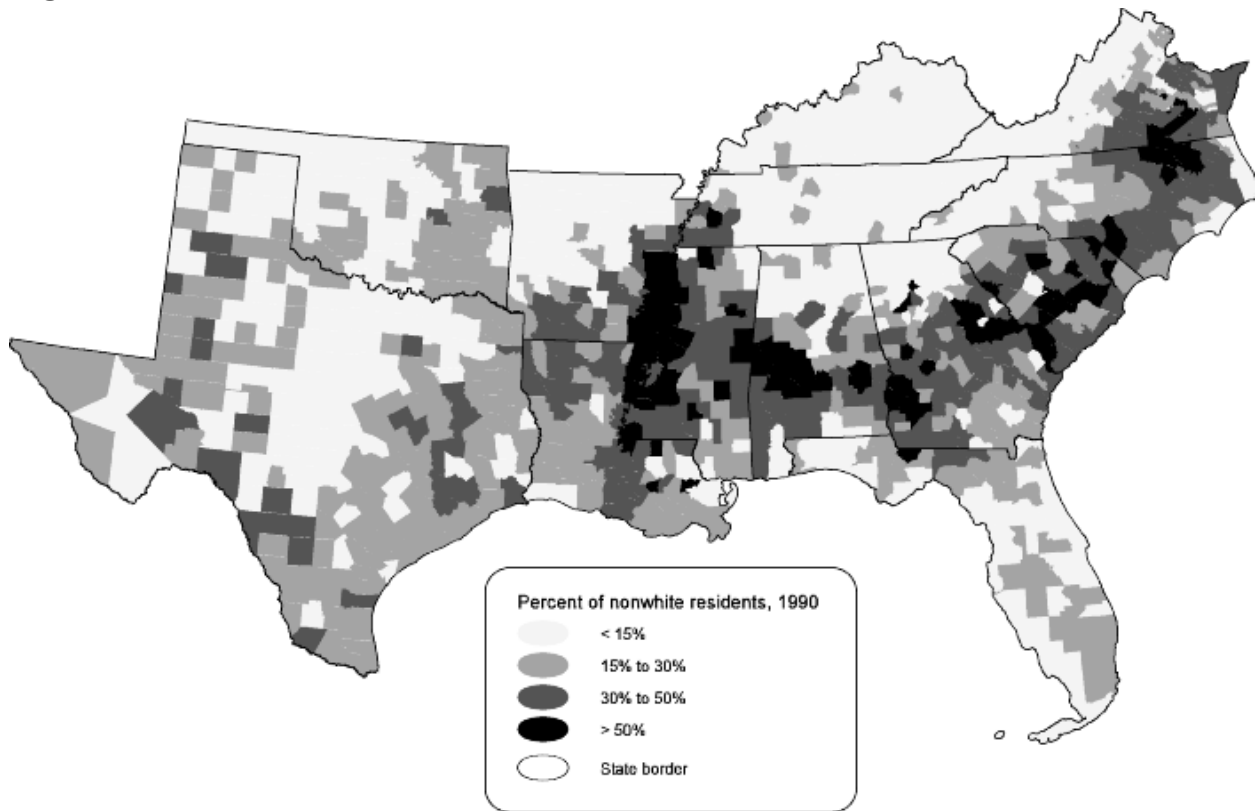
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Figure 16--Change in percent of Hispanic residents, 1980-1990.



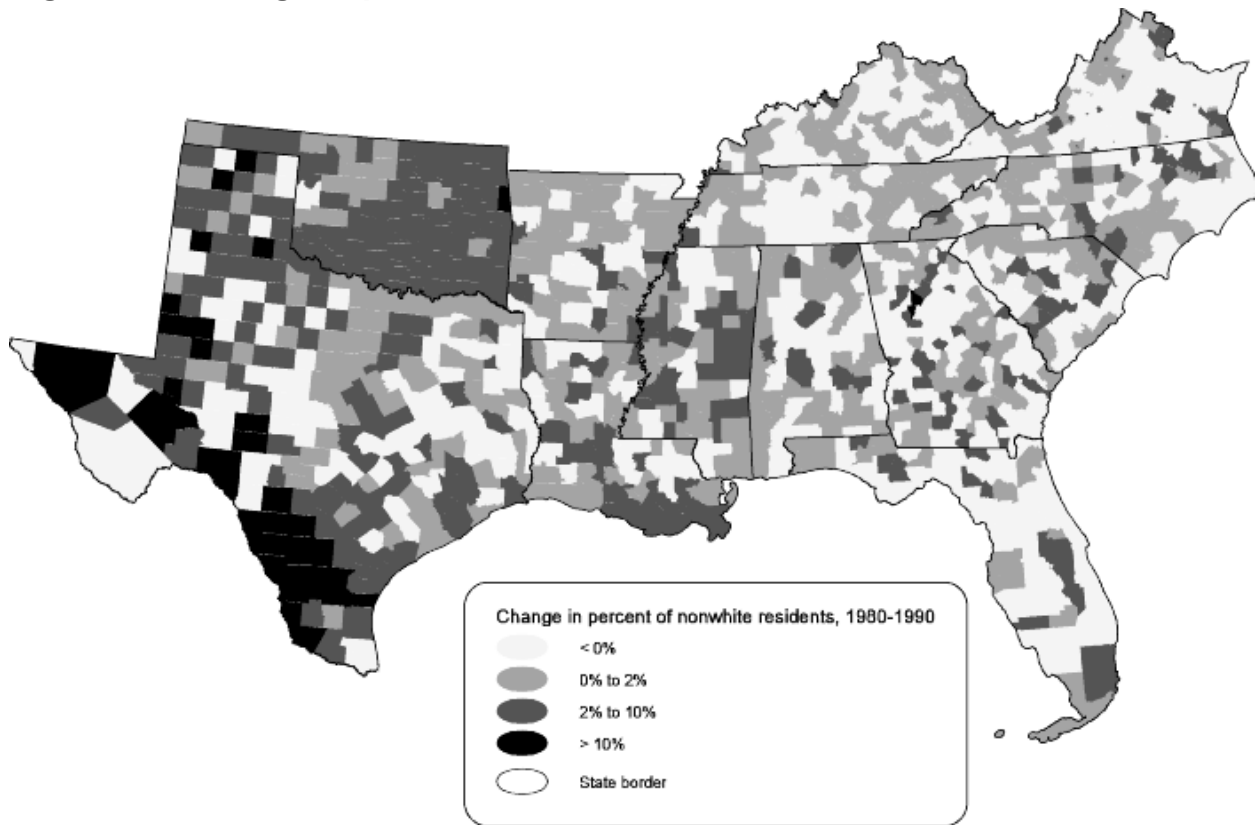
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Figure 17--Percent of nonwhite residents, 1990.



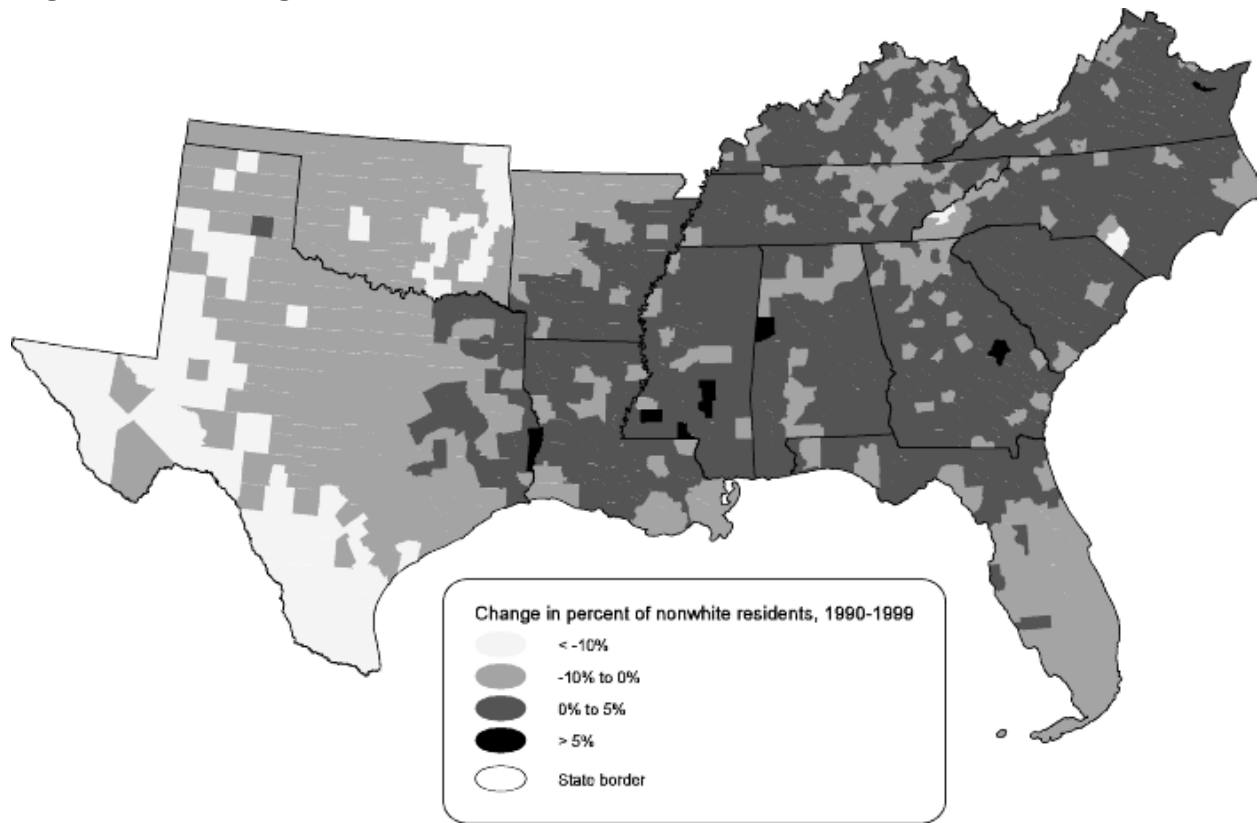
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Figure 18--Change in percent of nonwhite residents, 1980-1990.



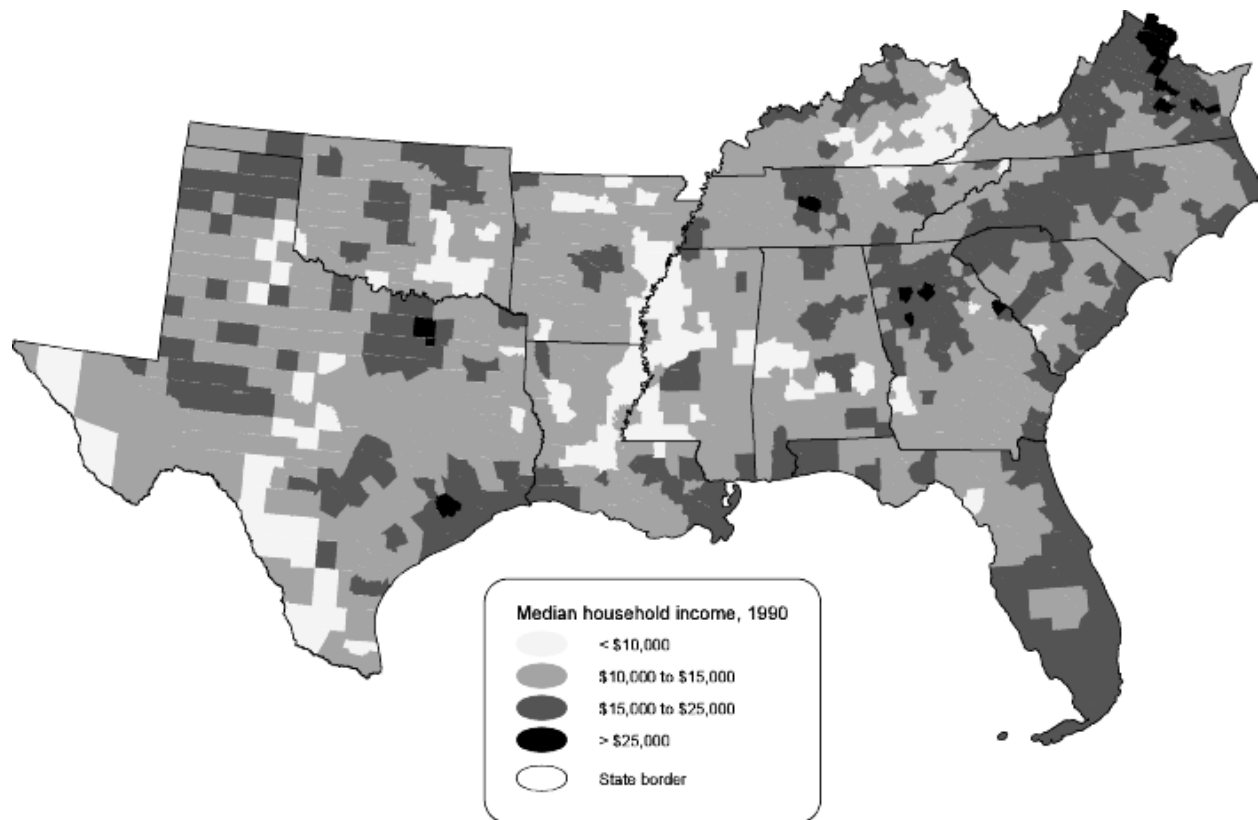
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Figure 19--Change in percent of nonwhite residents, 1990-1999.



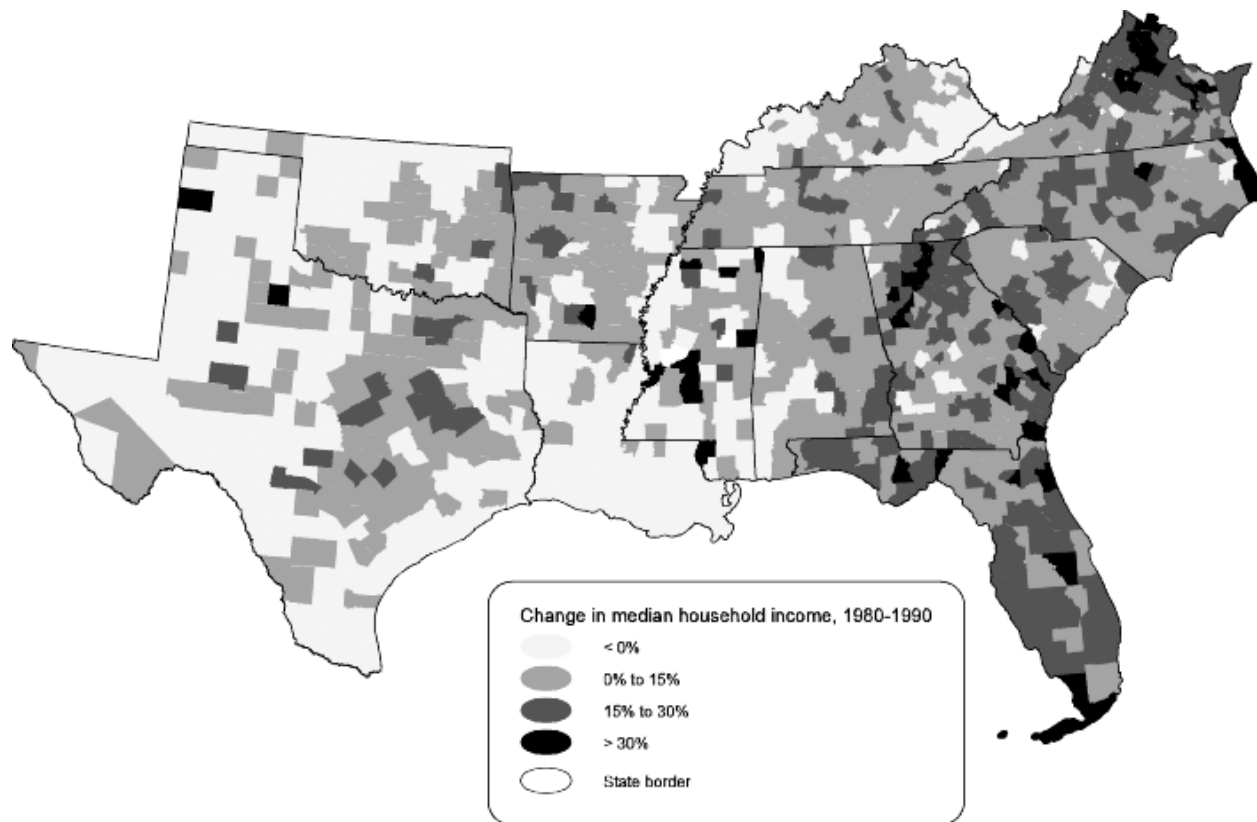
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Figure 20--Median household income (adjusted by Consumer Price Index), 1990.



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Figure 21--Change in median household income (adjusted by Consumer Price Index), 1980-1990.



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